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Degradation of α-Synuclein in Cellular Models of Parkinson's Disease with Novel AUTACs

Mr Kang Kyoung Jin

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Degradation of α-Synuclein in Cellular Models of Parkinson's Disease with Novel AUTACs

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Introduction. Parkinson's disease (PD) is a progressive neurodegenerative disorder characterized by the accumulation of misfolded alpha-synuclein (α-syn) aggregates within dopaminergic neurons. The precise strategies for removing pathogenic α-syn aggregates remain to be elucidated. Autophagy-targeting chimeras (AUTACs) are a promising approach for the targeted degradation of pathogenic proteins, with potential as a disease-specific therapeutic strategy for PD.

Aims. This study aims to evaluate novel AUTACs for the selective degradation of α-syn aggregates in cellular PD models.

Methods. As a model of PD, SH-SY5Y cells and HEK293 cells stably overexpressing the A53T mutant of α-syn were used. Exogenous A53T pre-formed fibrils (PFF) promoted intracellular α-syn aggregation. The efficacy of AUTAC candidates was assessed by measuring the degradation of soluble and insoluble α-syn multimers and monomers using Western blotting.

Results. Our results revealed that AUTAC candidates #12, #17, and #30 effectively reduced insoluble α-syn multimers and monomers. These lead compounds prevent aggregate formation (co-treatment) and clear pre-existing aggregates (post-treatment).

Discussion. This study demonstrates that AUTACs are a potent therapeutic strategy for targeting and clearing pathological α-syn aggregates, with future studies needed to elucidate the underlying degradation mechanisms. These findings suggest that this targeted degradation approach may have therapeutic potential in animal models of PD.

P101

Traditional, complementary and integrative medicine. A view from Cuba

Dr Diadelis Remirez Figueredo

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Traditional, complementary and integrative medicine. A view from Cuba

Diadelis Remirez, PhD, National Centre for State Quality Control of Drugs and Medical Devices in Cuba, Havana, Cuba.

Introduction: In recent decades there has been an increase in the use of traditional and complementary medicine in developed and developing countries. The present work reflects a characterization of traditional complementary and integrative medicines (TCIM) within the National Program of Public Health in Cuba.
Objectives: to provide elements of the use of TCIM at the different levels of the health system, the training program for TCIM use, in addition to the regulatory framework that supports the modalities of TCIM in Cuba
Methods: The Resolution 381/2015 from Public Health Ministry (approves the use of traditional and complementary medicines in Cuba and its integration in the Health System as TCIM), and regulatory framework were the support for this work, besides that, national pharmacovigilance data base was used in order to get information about the consumption and frequencies of adverse events of TCIM.
Results, In Cuba there are 11 TCIM modalities approved, there is an Essential List of the TCIM product. The data from the Ministry of Health reflects that more than 80% of the population consumes these products, the national Pharmacovigilance network shows the adverse events associated with use have been mild. Moreover, Cuba has an academic program for studying the modalities and regulatory framework, which ensure the quality, safety and effectiveness of TCIM products. Some of the current challenges are: lack of enough scientific research and reliable methods for standardization.
Discussion: In general, health systems and regulatory agencies must ensure the use of traditional and complementary medicines with quality, safety and efficacy.

P102

Elemental profiling and improved glucose tolerance of Chlorophytum alismifolium in diabetic rats

Dr Abdulhakim Abubakar

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Elemental profiling and improved glucose tolerance of *Chlorophytum alismifolium* in a murine model of diabetes

Abubakar A[1*], Highab MS[2], Faruk RI[1], Isyaku I[1], Olamide BI[1], Hassan FI[1], Nazifi, A.B[3]., Jimoh A[4], Ibrahim M[5,] Yunusa I[1], Danraka RN[1], Abubakar AZ[6] and Maje IM[1]

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Introduction: Diabetes mellitus (DM) is one of the leading chronic diseases affecting a significant percentage of the global population and linked with debilitating complications. *Chlorophytum alismifolium* is used in Nigeria and other tropical regions of the world for the management of DM.

Aim: This study focused on the elemental content and improved glucose tolerance of *Chlorophytum alismifolium* in a murine model of type 2 diabetes mellitus

Method: The elemental content of *Chlorophytum alismifolium* was determined using sequential Atomic Absorption Spectrophotometer following standard methods. Wistar rats were fed with high fat diet for six (6) weeks and then administered streptozotocin (40 mg/kg) to establish type 2 diabetes mellitus. The rats were administered graded doses (150, 300 and 600 mg/kg) of the ethylacetate extract of *Chlorophytum alismifolium* and pioglitazone and subjected to oral glucose tolerance test. Data was analysed using Repeated Measures ANOVA followed by Bonferroni's Post hoc test.

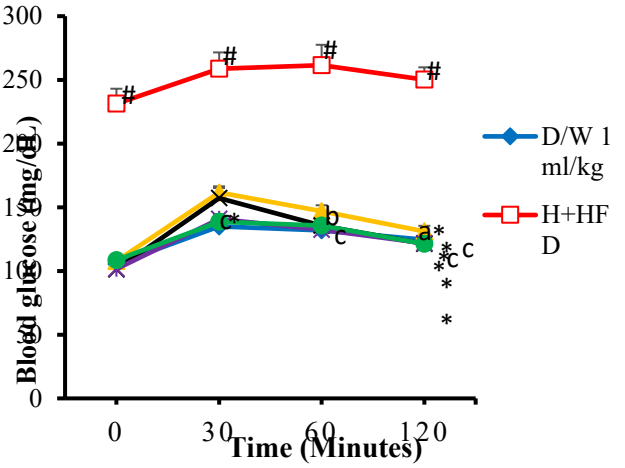
Results: The elemental content analysis of *C. alismifolium* showed the presence of fifteen (15) elements with Sn having the largest concentration (6,709.09 mg/kg) and Z having the lowest concentration (16.29 mg/kg). However, elements like; V, Cr, nickel, Cu, Pb and Hg were absent (Table 1). Treatment of diabetic rats with EACA at all the doses under investigation significantly (p>0.05) reduced the blood glucose level compared to hyperglycaemic control and over time (Figure 1).

Discussion: Impaired glucose tolerance is depicted by postprandial hyperglycaemia as a result of altered insulin secretion and/or insulin resistance. In the present study, EACA improved glucose tolerance in HFD-STZ-induced hyperglycaemic rats demonstrating that it could significantly improve glucose tolerance and reduce the postprandial rise in blood glucose level

Conclusion: *Chlorophytum alismifolium* contains valuable elements and improves glucose tolerance in a murine model of type 2 diabetes.

thical Approval:The studies were conducted with the approval of the Ahmadu Bello University Committee on Animal Use and Care (ABUCAUC) with the Ethical Approval Number: ABUCAUC/2020/31.

Figure 1: Effect of Ethylacetate extract of *Chlorophytum alismifolium* on Glucose-loaded Hyperglycaemic Rats. Values are presented as Mean ± S.E.M; # = p<0.05 compared to D/W *= p<0.05, **=p<0.01, *** = p<0.001 compared to HFD+ H control; a, b and c represent p<0.05, p<0.01 and p<0.001 compared to 0 Minute – repeated measure ANOVA followed by Bonferroni post hoc test. EACA- Ethylacetate extract of *Chlorophytum alismifolium* extract, H = Hyperglycaemic, HFD =High fat Diet D/W = Distilled water, PIO=Pioglitazone n=5



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Chlorophytum alismifolium attenuates glucose level and inflammatory cytokines in Drosophila melanogaster

Dr Abdulhakim Abubakar

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Chlorophytum alismifolium attenuates glucose level and inflammatory cytokines in Drosophila melanogaster

Abubakar A[1*], Highab MS[2], Faruk RI[1], Isyaku I[1], Olamide BI[1], Hassan FI[1], Nazifi, A.B[3]., Jimoh A[4], Ibrahim M[5,] Yunusa I[1], Danraka RN[1], Abubakar AZ[6] and Maje IM[1]

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Background: Type 2 diabetes mellitus (DM) is a global health challenge characterized by hyperglycaemia and inflammation which worsens metabolic disruptions and complications. *Chlorophytum alismifolium* is utilized widely in the management of type 2 DM and its complications.
Aim: This study focused on the investigation of the link between hyperglycaemia and inflammation and the role of ethylacetate extract of *Chlorophytum alismifolium* in mitigating them using *Drosophila melanogaster.*
Method: *Drosophila melanogaster* (Harwich Strain) flies were fed with high-sucrose diet (100 mg per 5 g diet) induce elevated glucose levels. Ethylacetate extract of *Chlorophytum alismifolium* at various doses (10, 20 and 40 mg per 5 g of diet and glimepiride 0.2 mg per 5 g diet were administered to the flies. The flies were homogenized and hemolymph glucose level, TNF-alpha and interleukin-6 were evaluated. GraphPad Software was used to statistically analyse the data using one-way ANOVA, followed by Tukey's post hoc test.
Results: The results demonstrated that EACA at 40 mg per 5 g diet significantly (p<0.05) improved hemolymph glucose, TNF-alpha and Interleukin-6 levels when compared to the control.
Conclusion: Ethylacetate extract of *Chlorophytum alismifolium* decreased hemolymph glucose level and inflammatory cytokines in *Drosophila melanogaster.*

Abubakar A, Nazifi AB, Maje IM, Tanko Y, Anuka JA, Abdurahman EM. *Chlorophytum alismifolium* mitigates microvascular complications of type 2 diabetes mellitus: the involvement of oxidative stress and aldose reductase. Drug metabolism and personalized therapy. 2022 Apr 5;37(1):69-80.
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Longitudinal comparative pharmacodynamic modeling of novel targeted biologics in Generalised Myasthenia Gravis

Dr Sayantan Shankar Roy

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Longitudinal comparative pharmacodynamic modeling of novel targeted biologics in generalised myasthenia gravis

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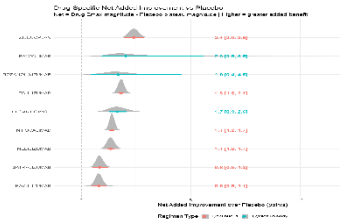

Introduction. Generalised myasthenia gravis (gMG) is a chronic autoimmune disorder. Targeted biologics demonstrate efficacy through diverse mechanisms and dosing regimens. Traditional meta-analyses overlook longitudinal trajectories, dose accumulation, and regimen heterogeneity.

Aims. To develop nonlinear mixed-effects models quantifying the time-dose-response relationship of MG-ADL (Myasthenia Gravis-Activities of Daily Living) and QMG (Quantitative myasthenia gravis) score change, and estimate PD and derived PD summary measures, week-26 predictions, and ranking net benefit vs placebo.

Methods. PubMed, Embase, Cochrane Central and Clinicaltrials.gov were searched. Summary-level data with multiple time points per treatment arm were extracted from phase III randomised, double-blind, placebo-controlled trials. Distinct Emax-onset models were fitted for continuous and cyclical/weekly regimens. Inverse variance weighting and Bayesian estimation were applied. Models were validated. It was registered with PROSPERO (ID: CRD420261288549).

Results. Zilucoplan demonstrated the highest Emax (4.8 [4.3, 5.2]) and net added improvement versus placebo (2.4 [2.0, 2.9]) for MG-ADL, while Batoclimab demonstrated the highest values for QMG (Emax 5.7 [4.4, 8.6]; net added improvement 3.9 [2.6, 6.8]), indicating superior long-term efficacy. Efgartigimod achieved the fastest meaningful benefit, with a time-to-change of 2.2 weeks for MG-ADL and 1.6 weeks for QMG. Zilucoplan also had the greatest cumulative benefit (area under the effect curve) of 112 for MG-ADL at week 26, while efgartigimod had 121 for QMG.

Discussion. Zilucoplan showed the greatest long-term efficacy and cumulative benefit, while efgartigimod achieved the fastest meaningful improvement. Our results align with prior network meta-analyses, but our dose-time-exposure modeling approach quantifies the parameters, making the findings robust and interpretable for future guidelines.

Ma Y et al (2024) CNS Drugs 38:93-104
Zhong H et al (2024) Front Neurol 15:1479685

P105

Anticancer activity of thiourea derivatives via EGFR and efflux pumps inhibition

Dr Osama Abusara

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Anticancer activity of thiourea derivatives via EGFR and efflux pumps inhibition

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Introduction. One of the proteins being overexpressed in various tumors and facilitate their growth and proliferation is the epidermal growth factor receptor (EGFR). There are several compounds being investigated to target EGFR and thus affecting tumor growth with thiourea derivatives considered as promising compounds.
Aims. The aims of our study are to synthesize novel thiourea derivatives along with *in silico* and *in vitro* studies to evaluate their ability to target EGFR and affecting tumor growth and proliferation.
Methods. Thiourea derivatives were synthesized using the well-established nucleophilic addition pathway between primary amines and carbon disulfide. Virtual screening of the synthesized compounds was carried out with AutoDock Vina 1.2.3 software on 4 members of the EGFR family (HER1, HER2, HER3, and HER4). Resazurin fluorometric analysis was performed to evaluate the anticancer activity of the compounds as single agents and in combination with doxorubicin (DOX) on lung cancer cell line (H69). Fibroblasts were also used to evaluate their selectivity towards cancer cells. JC-1 assay was performed to evaluate the induction of apoptosis by the cytotoxic compounds.
Results. High binding affinity was observed for Compound 1 on HER1 and HER2 with lowest energy binding of -9.6 and -10.9 kcal/mol, respectively. The IC_{50} for Compound 1 was 4.00±0.53 (n = 3) µM on H69 cells, which was the highest activity among all synthesized compounds with selectivity index greater than 25. Combining DOX with Compound 1 further decreased the IC_{50} value for Compound 1 to 2.00±0.32 (n = 3) µM on H69 cells. Similarly, DOX's IC_{50} value decreased to 0.3±0.1 (n = 3) µM from 0.6±0.1 (n = 3) µM when combined with Compound 1 on H69 cells. Combination index value of 1.0 was obtained following the combination of Compound 1 with DOX on H69 cells. Virtual screening has shown a high binding affinity to the efflux pumps expressed in H69 cells, namely: ABCC1 and RALPB1, which are known contributors for DOX resistance. The combination between Compound 1 and DOX resulted in a significant ($P<0.0001$) increase in the green fluorescence of the monomer dye following the loss of mitochondrial membrane potential, although a significant decrease was observed with Compound 1 alone.
Discussion. Compound 1 has the highest cytotoxic activity among all synthesized compounds against H69 cells, which express EGFR. Enhanced cytotoxic activity was observed following the combination of DOX. An additive activity was observed on H69 cells with the combination of Compound 1 and DOX. Cytotoxic activity of Compound 1 may be driven, in part, via non-mitochondrial apoptotic pathway and EGFR inhibition. In addition, Compound 1 may inhibit the activity of DOX's efflux pumps, thus enhancing the entry of DOX and its cytotoxicity. Compound 1 may be further investigated on different cancer cells expressing EGFR and efflux pumps variably to further evaluate the mechanism(s) of cytotoxicity.

P106

Treatment with Natural Nephroprotective from Citrus amblycarpa Peel Ameliorates Doxorubicin-Induced Kidney Damage

Prof Ni Made Dwi Sandhiutami

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Treatment with Natural Nephroprotective from Citrus amblycarpa Peel Ameliorates Doxorubicin-Induced Kidney Damage

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Introduction. Doxorubicin is one of the most widely used cancer drugs as chemotherapy. However, it has many severe side effects that limit the therapeutic use of doxorubicin, one of them is kidney damage. In addition to oxidative stress have an important role in the pathogenesis of doxorubicin-induced kidney damage.
Aims. This study aimed to investigate the antioxidant mechanisms of protective effects of *Citrus amblycarpa* against doxorubicin-induced kidney damage in rats.
Methods. *C. amblycarpa* peel was extracted by ultrasonication (70% ethanol). Twenty five rats were equally divided into five groups; normal (0.5 % CMC-Na), Doxorubicin 4 mg/kg/day, i.p. on days 2, 6, 10 and 14 (Dox), and Dox+*C. amblycarpa* group with three dose levels of 100; 200; 400 mg/kgBW orally for 14 days. Kidney and plasma were taken for antioxidant and renal function analysis.
Results. Doxorubicin administration in rats demonstrated kidney injury as shown by increased plasma BUN, creatinine, caused oxidative stress with increased kidney MDA, decreased superoxide dismutase (SOD) and catalase. Treatment with *C. amblycarpa* significantly ameliorated oxidative stress by reduce the levels of MDA, increase SOD and catalase activities. In addition, *C. amblycarpa* increase renal function by reducing BUN, creatinine levels, and increasing albumin. Histopathological examination furthers confirmed the kidney damage protection effect of *C. amblycarpa.*
Discussion. These data indicate that *C. amblycarpa* has nephroprotective properties against doxorubicin-induced kidney damage in rats and this effect is associated with its antioxidant. Hence, *C. amblycarpa* may be useful for preventing kidney damage against doxorubicin and other chemotherapy administration. *C. amblycarpa* could occur due to the decreased free radicals resulting from the presence of phenolic content such as flavonoids, flavonols, hesperidin, didymin, hesperetin, and rutin which act as antioxidants.

Mattioli R, et al. Doxorubicin and other anthracyclines in cancers: activity, chemoresistance and its overcoming. Mol Aspects Med. 2023; 93:101205,1-43
Mahmoud HUR, et al. Effects of rutin and quercetin on doxorubicin-induced renocardiotoxicity in male wistar rats. Adv Anim Vet Sci. 2020;8(4):370–84.

P108

Structure-Guided Discovery of Natural, Selective Drosophila melanogaster AChE Inhibitors for Biopesticides

Dr Fadi Saqallah

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Structure-Guided Discovery of Natural, Selective *Drosophila melanogaster* AChE Inhibitors for Biopesticides
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Introduction. Agriculture is the backbone of human civilization, food security, and economic development. However, pest infestations continue to pose a severe global threat, leading to up to 40% crop losses annually and economic damage exceeding $70 billion (Wang et al, 2025). The challenge is further intensified by international bans on conventional broad-spectrum insecticides, such as the organophosphate chlorpyrifos, leaving farmers, particularly in developing countries, with limited tools for pest control. In this context, the discovery of selective, environmentally safe biopesticides is both urgent and essential.
Aims. This study aimed to computationally identify and evaluate natural compounds that selectively inhibit *Drosophila melanogaster* acetylcholinesterase (*Dm*AChE), with minimal activity against human AChE (hAChE). The goal is to lay the groundwork for the development of next generation biopesticides that are both effective and environmentally sustainable.
Methods. To compare the structural and functional divergence between *Dm*AChE and hAChE, sequence alignment was performed using the Fast Pairwise Alignment algorithm with the BLOSUM matrix. In addition, a total of 720,245 natural compounds from the COCONUT and CMNPD databases were filtered using insecticide-likeness rules based on Quantitative Estimate of Insecticide-Likeness (QEI) and Gaussian (GAU) metrics. The remaining 2,141 compounds were prioritized using a virtual screening pipeline combining molecular docking and selectivity index (SI) calculation. Compounds with $\Delta G \leq -7.5$ kcal/mol, $SI \geq 4.0$, and $S_{combined} \geq 9.5$ were shortlisted. Molecular dynamics (MD) simulations were performed on the top hits for 100 ns.
Results. Sequence alignment revealed a sequence identity of 37.5% between DmAChE and hAChE, and a similarity value of 60.1%, with high conservation in the catalytic core. Sixteen natural compounds exhibited strong and selective binding to *Dm*AChE. The top two were diethyllachesine (from *Veratrum nigrum* L., SI = 107.85) and xenimanadin B (from *Xenia sp.*, SI = 11.50). MD simulations confirmed the high structural stability of the diethyllachesine-*Dm*AChE complex (mean RMSD = 1.85±0.11 Å) and strong hydrogen bonding with Tyr370 (33.88% of the simulation time). MM-PBSA analysis showed ΔG_{bind} of -21.51±0.56 kcal/mol for diethyllachesine and -16.28±0.96 kcal/mol for xenimanadin B, with diethyllachesine clearly outperforming, and xenimanadin B performing comparably to the chlorpyrifos oxon reference.
Discussion. The findings acknowledge the promise of natural compounds as a foundation for selective biopesticides. Several phytochemicals, such as β-caryophyllene and linalool, have previously shown strong AChE binding capabilities, contributing to neurotoxic effects in target pests (Kumar et al, 2024). Moreover, numerous plants have demonstrated biopesticidal potential, notably *Azadirachta indica*, whose active compound azadirachtin affects over 400 pest species by disrupting feeding, growth, and reproduction (Ünsal, 2019).
Additionally, marine-derived compounds are gaining attention for their efficacy and low ecological impact. For example, calothrixin A, isolated from marine cyanobacteria, has shown strong insect-repellent properties with minimal environmental footprint (Abdoul-Latif et al, 2025). These converging lines of evidence support our results, emphasizing the value of diethyllachesine and xenimanadin B as promising leads. This study advances the rational design of biopesticides that align with international environmental standards while retaining strong insecticidal efficacy.

Wang T et al (2025) J Mol Graph Model 140:109111
Kumar R (2024) Int J Mol Sci 25:12788
Ünsal S (2019) Turk Tarim Gida Bilim Teknol Derg 7:1415-1423
Abdoul-Latif F M (2025) Molecules 30: 1621

P109

Structure-based design of P2Y12 receptor antagonists from Heterometrus laoticus scorpion dipeptides

Dr Fadi Saqallah

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Structure-based design of $P2Y_{12}$ receptor antagonists from *Heterometrus laoticus* scorpion dipeptides

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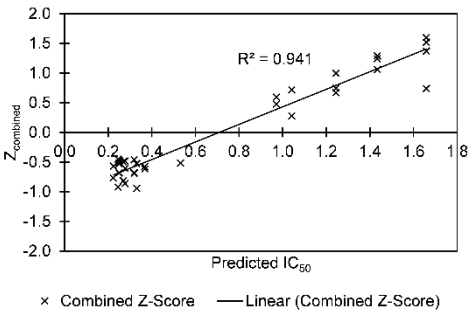
Introduction. Scorpion venom peptides are a well-known source of bioactive compounds with potent pharmacological properties, particularly in their ability to modulate ion channels and membrane receptors (Tran et al, 2017). One such receptor, the $P2Y_{12}$ receptor, plays a central role in platelet aggregation and thrombosis, making it a critical target in the treatment of cardiovascular diseases and stroke. Given the need for more selective and potent $P2Y_{12}$ antagonists, naturally derived peptide-based compounds offer a promising avenue for therapeutic development.



Aims. This study focuses on investigating the antagonistic potential of two dipeptides, LeuTrp and IleTrp, isolated from the venom of *Heterometrus laoticus*, along with 209 of their chemical derivatives. The primary objective is to evaluate these compounds for binding affinity and selectivity toward the $P2Y_{12}$ receptor and to identify structural features that enhance their interaction with the receptor as effective antithrombotic agents.

Methods. To assess receptor binding and structure-activity relationships, a combination of computational techniques was employed. Molecular docking was used to evaluate binding poses and estimate interaction energies with the $P2Y_{12}$ receptor. Pharmacophore mapping identified key interaction features such as hydrophobic regions and hydrogen bond acceptors, while Quantitative Structure-Activity Relationship (QSAR) analysis was performed to correlate specific chemical modifications with predicted binding affinities (Al-Najjar et al, 2023). Structural alterations investigated included benzylation and halogenation of the indole ring, incorporation of *D*-amino acids, *N*-methylation of amides, and peptide extension with polar or aromatic residues.

Results. Docking studies revealed that benzylation of the indole ring significantly enhanced binding affinity, primarily through improved π-π stacking and hydrophobic interactions with receptor residues. Halogenation at position 5 of the indole ring, particularly with fluorine, further increased binding stability, likely due to enhanced hydrogen bonding or electronic effects. Modifications such as *D*-amino acid incorporation and *N*-methylation of secondary amides improved electrostatic interactions, thereby stabilizing the receptor-ligand complex. Peptide extension with polar or aromatic groups promoted additional hydrogen bonding and aromatic stacking interactions. Pharmacophore mapping identified consistent interaction hotspots, notably involving Tyr105 and Lys280, with fit values ranging from 2.399 to 3.604. QSAR analysis showed strong correlations between specific structural changes and binding affinity, highlighting the role of structural flexibility and electrostatic complementarity. Predicted IC_{50} values for the most potent compounds ranged from 0.224 to 1.659 nM.

Discussion. The findings suggest that structural modifications, particularly benzylation and fluorine halogenation of the indole ring, as well as the incorporation of *D*-amino acids, greatly enhance the potency and selectivity of $P2Y_{12}$ receptor antagonists derived from scorpion venom dipeptides. These changes contribute to improved receptor-ligand complementarity, resulting in more stable and effective binding. The study provides valuable insight into the molecular determinants of receptor engagement and offers a rational framework for the design of next-generation antithrombotic agents. Overall, these results support the therapeutic potential of venom-derived compounds as a foundation for the development of targeted cardiovascular drugs.

Al-Najjar B O et al (2023) RSC Med Chem 14:239-246
Tran, T V et al (2017) Toxins 9:343

P110

ERO1α overexpression in triple-negative breast cancer links to EMT and mitochondria-dependent inhibition

Prof Mohamad Aljofan

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

ERO1α overexpression in triple-negative breast cancer links to EMT and mitochondria-dependent inhibition

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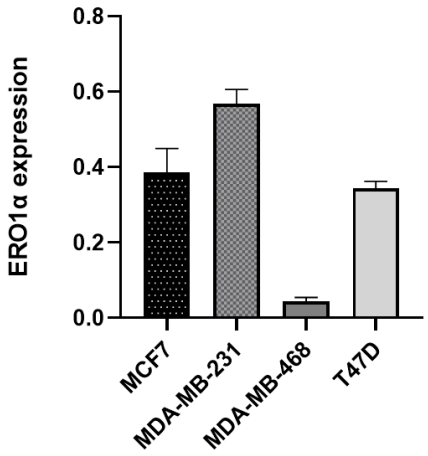
Introduction. Endoplasmic reticulum oxidoreductin-1α (ERO1α) is an oxidase involved in protein folding and Reactive Oxygen Species (ROS) generation (Shergalis et al, 2020). It promotes epithelial-mesenchymal transition (EMT) (Chen et al, 2024) and links ER redox regulation to mitochondrial function and cancer progression (Bassot et al, 2023).

Aims. To evaluate ERO1α expression in breast cancer cell lines and assess the effect of the inhibitor EN460.

Methods. Western blotting was used to analyze ERO1α expression in MCF-7, T47D, MDA-MB-231, and MDA-MB-468 cells. Treatment with 40 µmol/L of EN460 was tested in normal and mitochondria-depleted MDA-MB-231 cells.



Results. ERO1α expression was highest in MDA-MB-231 cells, showing a ~1.5-fold increase over MCF-7 and T47D, and ~14-fold higher than MDA-MB-468 (ANOVA, $P < 0.01$). EN460 treatment reduced ERO1α in normal MDA-MB-231 cells to 0.25 ± 0.06 (31% of control, $P < 0.01$), but had no effect in mitochondria-depleted cells.

Discussion. These findings suggest that ERO1α overexpression drives the aggressive phenotype of MDA-MB-231 cells, and that EN460 inhibits ERO1α via a mitochondria-dependent mechanism. Targeting this pathway may offer a strategy to suppress EMT and invasiveness in breast cancer.

Bassot A et al (2023) Cell Rep. 42:111899.
Chen P et al (2024) J Exp Clin Cancer Res. 43:71.
Shergalis AG et al (2020) Pharmacol Ther. 210:107525.

P111

PDD00017273 effectively inhibits osteoclast differentiation.

Dr Yuka Sasaki

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

PDD00017273 effectively inhibits osteoclast differentiation.

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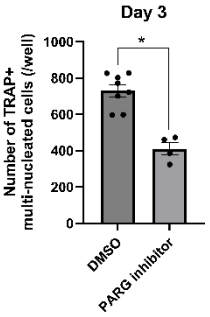
[1]Department of Pharmacology, School of Dentistry, Osaka Dental University, Hirakata, Japan; [2] Department of Molecular and Genomic Biomedicine, Center for Bioinformatics and Molecular Medicine, Nagasaki University Graduate School of Biomedical Sciences, Nagasaki, Japan



Introduction. Poly (ADP-ribose) glycohydrolase (PARG) is the main enzyme that degrades poly (ADP-ribose) (PAR) synthesized by poly (ADP-ribose) polymerase (PARP) family proteins. The synthesis and degradation cycle of PAR regulates various biological phenomena such as DNA repair, cell death, and cell differentiation. However, the relationship between osteoclast differentiation and poly ADP ribosylation, especially role of PARG, remains unclear.

Aims. The aim of our study is to clarify the role of PARG in osteoclast differentiation.

Methods. The murine macrophage cell line RAW264 was treated with the PARG inhibitor PDD00017273 in the presence of RANKL, and osteoclast differentiation was assessed by TRAP staining, qRT-PCR and western blotting. A comprehensive analysis of microRNA was performed using small RNA-seq.

Results. PDD00017273 significantly reduced the number of TRAP-positive multinucleated cells. The mRNA expression levels of osteoclast differentiation marker genes such as *Trap*, *Ctsk* and *Dcstamp* were downregulated, and accumulation of intracellular PAR was observed in PDD00017273-treated cells. The protein expression of NFATc1 was slightly decreased in these cells. Additionally, small RNA-seq analysis revealed that 133 genes were upregulated and 81 genes were downregulated by more than twofold in PDD00017273-treated cells compared to untreated cells.

Discussion. Our findings suggest that dysfunction of PARG by PDD00017273 suppressed osteoclast differentiation in RANKL-stimulated RAW264 cells through intracellular PAR accumulation and partial downregulation of NFATc1 expression. In addition, small RNA-seq analysis revealed altered microRNA expression profiles, which may also contribute to the suppression of osteoclast differentiation. Taken together, these results suggest that PARG plays a critical role in promoting osteoclast differentiation and may be a potential therapeutic target for metabolic bone diseases associated with excessive osteoclast activity.

P112

DIF-1 as a novel pharmacological strategy for skin fibrosis treatment

Assoc Prof Masaki Arioka

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

DIF-1 as a novel pharmacological strategy for skin fibrosis treatment

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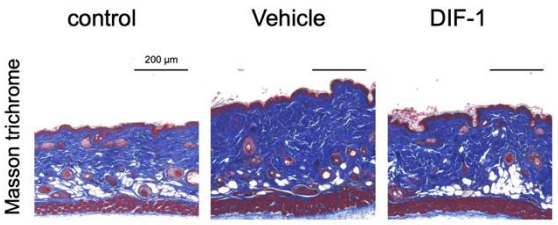

Introduction. Hypertrophic scars and keloids, characterized by excessive deposition of extracellular matrix (ECM), pose significant clinical challenges. Current treatments often have high recurrence rates, and effective pharmacological prevention is lacking. Differentiation-inducing factor-1 (DIF-1) is known to inhibit cancer cell proliferation, but its effects on skin fibrosis have not been explored.

Aims. This study aimed to investigate the anti-fibrotic effects of DIF-1 on skin fibrosis and to elucidate the underlying mechanisms.

Methods. We used a bleomycin-induced systemic sclerosis (BIS) mouse model, topically applying a DIF-1 solution to the skin. Skin sections were analysed for their thickness and adipose tissue content. We also conducted in vitro experiments using human skin fibroblasts to evaluate the effects of DIF-1 on their proliferation, contraction, and transdifferentiation into myofibroblasts. Adipocyte differentiation was also examined.

Results. Topical administration of DIF-1 significantly suppressed skin thickening and maintained healthy adipose tissue in the BIS mouse model. In vitro, DIF-1 inhibited fibroblast proliferation and contraction. It also suppressed the differentiation of fibroblasts into myofibroblasts, which are crucial for scar formation, leading to a decrease in ECM production. Additionally, DIF-1 promoted adipocyte differentiation, which is essential for maintaining a healthy skin structure.

Discussion. Our findings demonstrate that topically administered DIF-1 effectively inhibits and potentially prevents skin fibrosis by suppressing fibroblast proliferation and myofibroblast differentiation. The promotion of adipocyte differentiation further supports the potential of DIF-1 to restore a healthy skin environment. Given these promising results, DIF-1 could be a valuable therapeutic agent for the treatment or prevention of skin fibrosis.

P113

Herbomineral treatment in hepatic encephalopathy in alcohol induced cirrhosis: A case report

Prof Urmila Aswar

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Herbomineral treatment protocol in hepatic encephalopathy in alcohol induced cirrhosis of liver: A case report
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Introduction: Hepatic encephalopathy is a wide spectrum of neuro-psychiatric abnormalities in patients with chronic liver disease, is caused due to liver insufficiency or porto-systemic blood shunting. Severity ranges from subtle cognitive responses, intellectual deterioration, extrapyramidal dysfunction, disorientation and coma. These symptoms can be alleviated by using appropriate herbomineral formulation according to Indian System of Medicine, Ayurveda.
Aim: To evaluate the efficacy of a herbomineral treatment protocol in reversing hepatic encephalopathy (HE) symptoms and improving biochemical parameters in a patient with alcohol-induced liver cirrhosis.
Methods: A 55-year-old male with a 30-year history of heavy alcohol drinking was admitted in IPD for ascites, jaundice, constipation and bilateral pedal edema. He had reported sudden decreased urine output and per rectal bleeding. He exhibited a disoriented, aggressive behaviour, flapping tremors and slurred speech, delayed cognitive responses, deranged LFT including total bilirubin, AST, ALP, GGT and albumin, increased PT/INR, creatinine and plasma ammonia and thrombocytopenia. Abdominal computed tomography (CT) revealed mild to moderate ascites specifically omental and mesenteric congestion, extensive patchy fatty infiltration predominantly caudate lobe and adjacent right lobe of liver, mildly dilated portal vein. The Patient was treated for 15 days with herbomineral, hepatoprotective drugs, *Tapyadi Loha (TL), Raupya Bhasma (Calx of Silver)* and decoction of Cassia Fistula.
Results: Following treatment Ayurvedic formulation, the patient exhibited complete resolution of clinical symptoms, including ascites, jaundice, constipation, bilateral pedal edema, oliguria, rectal bleeding, disorientation, aggressive behavior, flapping tremors, slurred speech, and delayed cognitive responses. The Liver function tests (total bilirubin, AST, ALP, GGT, albumin), PT/INR, serum creatinine, plasma ammonia levels, and platelet count returned to reference ranges. Abdominal CT follow-up confirmed reduction in ascites, omental/mesenteric congestion, and portal vein dilation, with persistent but stable fatty infiltration.
Discussion: Hepatic Encephalopathy with mild to moderate grade can be reversed using Ayurveda. Also, administration of this regimen since initial stage of diagnosis can prevent consequences of cirrhosis of liver.

P114

Pharmacological Evaluation of Myrtenol Against Metabolic Dysfunction Associated Steatotic Liver Disease (MASLD)

Mr Pervej Alom Barbhuiya

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Pharmacological Evaluation of Myrtenol Against Metabolic Dysfunction Associated Steatotic Liver Disease (MASLD)

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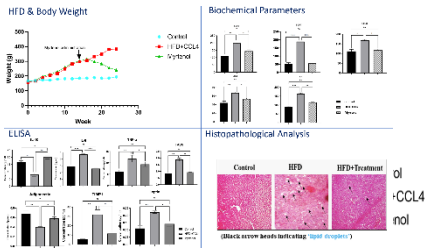

Introduction. Lack of FDA approved drug for MASLD has led to vigorous research for the development of lead compound to tackle the epidemic of MASLD. Myrtenol is a bicyclic alcohol monoterpene, whose source *Zanthoxylum oxyphyllum* is used traditionally to treat hepatic diseases.

Aims. The aim of this study is to scientifically investigate the potency of myrtenol against MASLD.

Methods. In this study, we have subjected myrtenol to various *in-silico* studies, anti-oxidant, anti-inflammatory (COX-II), cytotoxicity studies, lipid accumulation studies, and *in-vivo* studies.

Results. Myrtenol has shown potent *in-vitro* anti-oxidant and COX-II inhibition activity with IC_{50} for COX-II inhibition was 2.298 ± 0.10 µl/ml. In Tryphan blue assay in HepG2 cells myrtenol showed an IC_{50} value of 229 ± 10 µM. In HepG2 cells, myrtenol significantly reduced lipid accumulation while also ameliorating the cytokine levels. Docking studies of Myrtenol against different MASLD associated proteins (TIMP1, suPAR, FOXO3) have shown higher binding affinity. *In-vivo* studies like body weight, biochemical parameters, histopathology, ELISA and western blotting revealed that myrtenol (50 mg/kg body weight) was able to ameliorate MASLD.

Discussion. Myrtenol demonstrated significant antioxidant, anti-inflammatory, and hepatoprotective effects through both *in-vitro* and *in-vivo* studies, highlighting its capacity to reduce lipid accumulation and modulate cytokine levels in MASLD. These findings indicate that myrtenol holds strong therapeutic potential as a natural lead compound for the management of MASLD by altering the inflammatory and *de novo* lipogenesis pathways.

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Lu Z et al. (2023) Sci Rep 13:7996. https://doi.org/10.1038/s41598-023-34654-2

P115

Vitamin D inhibits SARS-CoV-2 Nsp15: in silico docking and dynamics evaluation

A/Prof Elora Sharmin

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Vitamin D inhibits SARS-CoV-2 Nsp15: in silico docking and dynamics evaluation

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Introduction. COVID-19, caused by SARS-CoV-2, remains a global health threat with limited targeted therapies. Non-structural protein 15 (Nsp15), an endoribonuclease essential for viral replication and immune evasion, represents a promising drug target. Vitamin D, a secosteroid with immunomodulatory roles, has been hypothesized to interfere with viral proteins. Integrating molecular docking with molecular dynamics (MD) provides robust insights into ligand–protein stability.

Aims. To evaluate the inhibitory potential of Vitamin D against SARS-CoV-2 Nsp15 through molecular docking and MD simulations, supported by MMGBSA free energy, RMSD, RMSF, radius of gyration (Rg), and solvent-accessible surface area (SASA) analyses.

Methods. The crystal structure of SARS-CoV-2 Nsp15 (PDB ID: 6VWW) was prepared and minimized in Discovery Studio. Docking was performed using AutoDock 4.2.6 with Vitamin D, Remdesivir, Chloroquine, and Hydroxychloroquine. Predicted binding sites were identified via PrankWeb and DeepSite. Top complexes were subjected to 100 ns MD simulations. Binding free energies were computed using Prime-MMGBSA. Structural stability was assessed through RMSD, flexibility via RMSF, compactness via Rg, and hydration changes via SASA.

Results. Docking revealed that Vitamin D exhibited the strongest affinity to Nsp15, particularly at pocket 2 (LBE = -10.26 kcal/mol, Ki = 0.03 μM), outperforming Chloroquine and Hydroxychloroquine, and comparable to Remdesivir. MD trajectories confirmed stable binding of Vitamin D–Nsp15 complexes, with low RMSD fluctuations and favorable Rg values, indicating structural compactness. RMSF analysis demonstrated reduced flexibility at active-site residues upon Vitamin D binding. SASA values showed stable solvation, supporting binding persistence. MMGBSA results confirmed Vitamin D's stronger binding free energy compared with the control drugs.

Discussion. Docking combined with MD analysis highlights Vitamin D as a promising inhibitor of Nsp15, with stable binding, low-energy conformations, and consistent dynamic behavior. These findings provide molecular-level evidence supporting Vitamin D's potential as an adjuvant or repurposed therapeutic for COVID-19. Further in vitro and in vivo studies are warranted to validate these computational insights.

P116

Decoding biased signalling and inhibition at CXCR3 isoforms

Miss Ania Beyger

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Decoding biased signalling and inhibition at CXCR3 isoforms

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Introduction. CXCR3 is a chemokine G protein-coupled receptor (GPCR) with critical roles in cancer, autoimmunity, and transplant rejection. By directing T-cell recruitment to sites of inflammation, CXCR3 serves as both a driver of protective immune responses and a promoter of pathological processes, including tumour growth and metastasis. CXCR3 is activated by four endogenous chemokines (CXCL4, CXCL9, CXCL10, CXCL11), which differentially engage G protein-dependent and -independent pathways, giving rise to biased signalling. Two splicing variants, CXCR3A and CXCR3B, further diversify receptor function, displaying opposing effects on cell proliferation and disease progression. Despite growing interest in CXCR3 as a therapeutic target, major gaps remain: the signalling capacity of CXCR3B is poorly defined, and the mechanisms by which antagonists modulate biased signalling remain largely unexplored. Addressing these gaps is essential for advancing precision pharmacology, enabling the rational design of therapeutics that selectively target pathogenic signalling while preserving protective functions of CXCR3.

Aims. To systematically characterise the signalling profiles that attribute to diverse physiological responses of the two CXCR3 isoforms and assess their inhibition by monoclonal antibody (mAb) and small-molecule antagonists; highlighting differences in allosteric and orthosteric antagonism.

Methods. HEK293T cells were transfected with BRET biosensors to quantify β-arrestin1/2 recruitment and G protein activation (Gαi0/a, Gαi1, Gαi2, Gαi3, Gαq) by CXCR3A and CXCR3B in response to CXCL4, CXCL9, CXCL10 and CXCL11. Antagonism was assessed using patented mAbs (MAB160, Hu37) and the small molecule AMG487.

Results and Discussion. CXCR3 isoforms display ligand- and pathway-specific signalling bias. Both CXCR3A and CXCR3B are competent for G protein coupling, with strongest recruitment of Gαi3 and weaker engagement of Gαi1, Gαi2 and Gαo, contradicting earlier assumptions that CXCR3B lacks G protein activity. CXCL11 acted as a full agonist at both isoforms, whereas CXCL9 and CXCL10 showed weaker, selective responses; CXCL9 in particular failed to recruit β-arrestins at CXCR3B. These findings demonstrate that endogenous ligands are not redundant but instead drive distinct signalling outcomes, consistent with their differential disease associations. Antagonist profiling revealed mechanistic differences: the small molecule AMG487 broadly inhibited both β-arrestin and G protein pathways with highest potency, reflecting its orthosteric-like binding within the conserved transmembrane pocket. In contrast, monoclonal antibodies (Hu37, MAB160) showed weaker, more selective inhibition, sparing CXCL9 responses and displaying reduced potency at CXCR3B, likely due to its extended N-terminus. Together, these results refine the pharmacological landscape of CXCR3. They show that biased agonism, isoform-specific signalling, and antagonist mechanism collectively shape receptor activity, with broad inhibitors like AMG487 offering complete pathway suppression, while antibodies may enable more selective therapeutic modulation.

P117

African foods as medicines: targeting prevention rather than cure with Adansonia digitata

Assoc Prof Aishatu Shehu

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

African foods as medicines: targeting prevention rather than cure with *Adansonia digitata*

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Introduction. Health promotion (HP) and disease prevention (DP) are very important concepts in keeping people healthy. A number of medicinal plants commonly used in Africa as foods have been found to be effective in the prevention of many diseases and promotion of general wellbeing. Baobab (*Adansonia digitata*) is a popular plant commonly used as food and medicine. It has been reported to improve learning, memory and general mental health.

Aim. The aim of this study was to formulate and determine the pharmaceutical parameters of Baobab leaves in order to promote its usage as medicine in the enhancement of memory and delay cognitive disorders progression.

Methods. Fresh leaves of Baobab were collected, identified and extracted using infusion, subsequently freeze-dried and flakes tabletted using wet granulation method. The tablets were tested for friability, dissolution and absorption.

Results. Greenish tablets were produced with friability of 0.5%, dissolution rate 20 mins and absorption 220 nm.

Discussion. The tablets of *Adansonia digitata* were found to be of suitable pharmaceutical characteristics, suggesting its potential benefit as medicine in the health promotion of learning and memory. The plant is used as source of foods, drinks and clothing in Africa, and medicinally as immuno-stimulant, anti-inflammatory, analgesic and worms' expeller. It has been scientifically proven to be highly nutritious and improves mental health.

De'Caluwe E et al (2010). Afr Focus, 23(1): 11-51.
Shehu A et al (2019). Trop J Nat Prod Res, 3(2): 54-57.
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Shehu et al (2021). J Herbmed Pharmacol, 10(1): 84-92.

P118

The protective effect of Dendrobium prevents H2O2-induced cellular aging in human keratinocytes

Dr Narumol Bhummaphan

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

The protective effect of Dendrobium prevents H_2O_2-induced cellular aging in human keratinocytes

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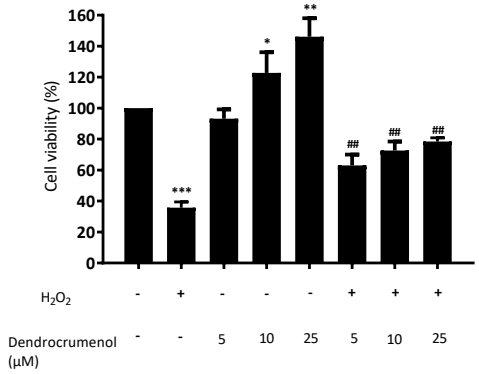
Introduction. Skin aging is a natural process that weakens the skin's barrier, leading to dryness and inflammation. The accumulation of inflammatory cytokines stimulates reactive oxygen species (ROS) that damage skin tissues and cells and increase the expression of senescent cells.

Aims. This study aims to evaluate the effects of Dendrobium species on H_2O_2-induced cellular aging and skin damage in human keratinocyte cells and to explore its underlying mechanisms.



Methods. The cytotoxicity of Dendrobium species was examined in human keratinocytes (HaCaT) cells using the MTT assay. Then, cells were used to evaluate antioxidant properties in the proliferation and wound healing assay. Finally, anti-aging and related mechanism pathways were evaluated by Western blot assay.

Results. Dendrocrumenol showed antioxidant and antiaging potential and prevented skin aging and damage in human keratinocytes. Dendrocrumenol enhances the proliferation and migration of H_2O_2-induced HaCaT cells and reduces oxidative stress. In addition, Dendrocrumenol reduced gene expression of aging markers p21, p53, and senescence-associated secretory phenotype (SASP) and modulated gene expression of differentiation markers.

Discussion. This study demonstrates that Dendrocrumenol alleviates oxidative stress-induced aging and repairs H_2O_2-induced DNA damage in HaCaT cells, potentially through reducing senescent and DNA damage mechanisms. These findings facilitate the further investigation and development of the orchid flower Dendrobium species, which is proposed as a specialty ingredient for cosmetics in the future.

P119

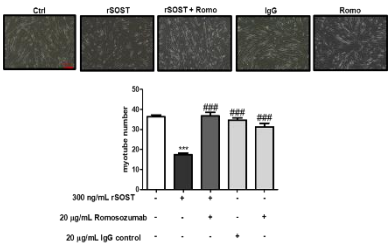
Romosozoumab ameliorates sclerostin-suppressed myogenic differentiation in C2C12 cells

Dr Sai Wang Seto

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Romosozoumab ameliorates sclerostin-suppressed myogenic differentiation in C2C12 cells

Sai-Wang Seto[1] and Chun-Ka Kwok[2] School of Biomedical Sciences, University of Western Australia, WA, Australia[1]; Department of Food Science and Nutrition, Hong Kong Polytechnic University, Kowloon, Hong Kong SAR, China[2].



Introduction. Chronic inflammation is a contributing factor to skeletal muscle atrophy. Macrophages have been shown to be one of key immune cells that drive muscle wasting by releasing various factors that degrade muscle. We recently demonstrated that macrophages are novel sources of sclerostin (SOST) during inflammation (Kwok et al, 2025). Given recent study highlighted the role of SOST in muscle atrophy (Zhou et al, 2025), we hypothesize that romosozumab (Romo) could ameliorates myogenic differentiation impaired by SOST.

Aims. This study aims to investigate whether Romo, a humanized SOST monoclonal antibody, can ameliorate SOST-suppressed myogenic differentiation.

Methods. C2C12 cells were pretreated with Romo (20 μg/mL) for 30 minutes prior to coincubation with mouse recombinant SOST (300 ng/mL) in differentiation medium (DM) for 5 days. On day 5, cells were subjected to subsequent analysis, including morphological assessment of myotubes and immunofluorescence staining (IF).

Results. Our results showed that rSOST (300 ng/mL) inhibited myogenic differentiation of C2C12 as evidenced by significantly inhibited myotube formation and reduced myotube number ($p < 0.001$, $n = 3$), whereas Romo (20 μg/mL) restored myotube formation and myotube number to the levels comparable to control group ($p < 0.001$, $n = 3$). Similarly, IF results demonstrated that Romo (20 μg/mL) improved myogenesis as evidenced by upregulated MyoD expression and improved myotube morphology (MHC). Romo alone and IgG control did not affect myogenesis when compared to control.

Discussion. Our results demonstrated that Romo may be effective in ameliorating muscle atrophy by targeting SOST which warrants future study investigating its efficacy in animal models of muscle atrophy.

Kwok CT et al (2025) Inflamm Res 74(1): 27
Zhou B et al (2025) J Cachexia Sarcopenia Muscle 16(3), e13831

P120

Integrated Network and Structural Biology: Identify Alternative Therapeutics for Non-melanoma Skin Cancer

Dr Sohini Chakraborty

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Integrated Network and Structural Biology: Identify Alternative Therapeutics for Non-melanoma Skin Cancer

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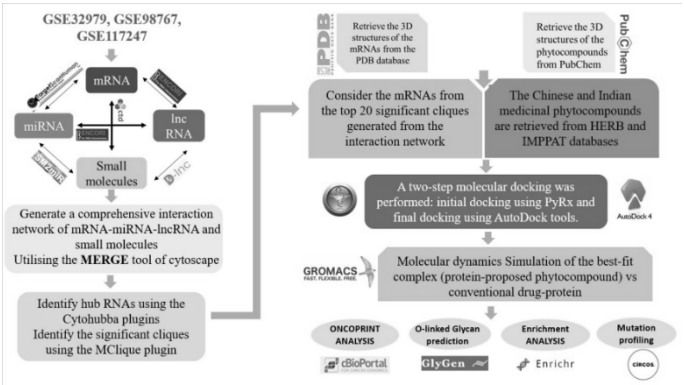
Introduction. Non-melanoma skin cancer (NMSC), which includes basal cell carcinoma (BCC) and squamous cell carcinoma (SCC), is very common in the world. Its complex molecular pathogenesis requires a deep understanding of RNA regulation and tumour microenvironment interaction. Our research will seek to find potential biomarkers and screen for natural compounds as target therapy in NMSC through an integrated in-silico approach.



Methods. A network pharmacology strategy was used to screen for important RNAs, miRNAs, lncRNAs, and small molecules of NMSC. Outstanding biomolecules were ranked based on interaction networks and comprehensive literature reviews. Structural biology techniques, ranging from two-step molecular docking to molecular dynamics (MD) simulations, were utilised to assess the predicted protein-ligand binding efficiency and stability. Expression patterns, mutational profiles, and glycosylation features of the selected RNAs were further explored. Functional annotation and pathway enrichment analyses were also conducted to clarify the associated biological processes.

Results. The research identified key regulatory elements, which were mRNAs (RGS5, DDX3X, BBX, LAMC1, TOMM20, RERE), miRNAs (miR-92a-3p, miR-142-3p), lncRNAs (NEAT1, MALAT1), and small molecules (quercetin, methotrexate, ivermectin). Molecular docking analysis revealed that binding affinity of DDX3X-daidzein (-8.7 kcal/mol) was higher than that of the control drug DDX3X-5-fluorouracil (-4.6 kcal/mol). Molecular dynamics simulation validated the structural stability of the DDX3X-daidzein complex. Expression profiling and mutagenesis, and glycosylation studies highlighted the clinical relevance of the identified RNAs. Enrichment analysis associated these genes with cancer-related key pathways and biological processes.

Conclusion. This in-silico integrated study reveals new RNA-based biomarkers and natural compounds with therapeutic value in NMSC. The study discovers DDX3X-daidzein as a potential drug-target interaction and offers a preliminary framework for subsequent experimental validations and drug design for targeted NMSC therapy.

P121

Targeting NOX2 with NMOD1 in AC3RL-Induced Platelet Activation

Prof Ming-yi Shen

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Targeting NOX2 with NMOD1 in AC3RL-Induced Platelet Activation

Chieh-Wen Cheng[1], Ping-Hsuan Tsai[2], Meng-Chi Lin[2,3], Yu-Hsien Chang[1], Chun-Ho Yam[1], Fang-Yu Chen[2], Ming-Yi Shen[2,4,*]. School of Medicine[1]; Graduate Institute of Biomedical Sciences[2], China Medical University, Taichung, Taiwan; Division of Cardiovascular Medicine, Yumin Medical Corporation Yumin Hospital[3], Nantou, Taiwan; Department of Medical Research, China Medical University Hospital[4], Taichung, Taiwan

Introduction. Platelet hyperactivation is a key driver of thrombotic risk in cardiovascular disease, and apolipoprotein C3–rich LDL (AC3RL) has emerged as a potent pro-thrombotic factor. AC3RL promotes excessive platelet activation and thrombosis, contributing to residual cardiovascular risk even in patients receiving LDL-C–lowering therapy. This effect is mediated by NOX2-driven oxidative stress, and NMOD1, a natural Euphorbia terpenoid with antioxidant and anti-inflammatory properties, may inhibit NOX2 signaling to provide antithrombotic protection.

Aims. To examine how AC3RL promotes platelet activation via NOX2-driven oxidative stress and to evaluate whether NMOD1 can suppress this pathway and reduce AC3RL-induced thrombosis.

Methods. AC3RL was isolated from patient plasma by ultracentrifugation and ApoC3 affinity chromatography, platelet aggregation and signaling were assessed with ADP-induced aggregation and Western blot assays with or without inhibitors, NMOD1 effects and cytotoxicity were evaluated in vitro, in vivo thrombosis was examined in $ApoE^{-/-}$ mice, and plasma from ACS patients and controls was analyzed for AC3RL content and platelet activity.

Results. AC3RL markedly enhanced ADP-induced platelet aggregation through activation of the LOX-1/NOX2/p38 MAPK/IKK signaling pathway, as evidenced by increased phosphorylation of p38 MAPK and IKK and elevated NOX2 activity. Inhibition of LOX-1, NOX2, or downstream signaling substantially attenuated this effect, confirming the pathway's central role. Treatment with NMOD1 effectively suppressed AC3RL-induced platelet hyperactivation in vitro without cytotoxicity and, in vivo, delayed thrombus formation and prolonged bleeding time, demonstrating its anti-thrombotic potential. These results collectively indicate that AC3RL drives platelet hyperactivation via the LOX-1/NOX2/p38 MAPK/IKK axis and that NMOD1 can counteract this pro-thrombotic signaling, highlighting a potential therapeutic strategy.

Discussion. AC3RL promotes platelet hyperactivation via NOX2, and NMOD1 mitigates this effect, highlighting a potential therapeutic strategy to reduce thrombotic risk in cardiovascular disease.

P122

Targeting Cathepsin S reduces oral cancer metastasis via upregulation of LAMP1 N-glycosylation

Prof Jang-yang Chang

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Targeting Cathepsin S reduces oral cancer metastasis via upregulation of LAMP1 N-glycosylation

Yung-Chieh Chang[1, 2], Kwang-Yu Chang[2], and Jang-Yang Chang[1*]. TMU Research Center of Cancer Translational Medicine, Taipei Medical University[1], Taipei, Taiwan; National Institute of Cancer Research, National Health Research Institutes[2], Tainan, Taiwan.

Introduction. Cathepsin S (CTSS) is a lysosomal cysteine protease uniquely active at neutral pH, allowing it to regulate diverse cellular processes. CTSS is overexpressed in tumor tissue and correlates with cancer progression, metastasis, angiogenesis, and immune regulation, making it a potential therapeutic target for cancer treatment. We developed a specific CTSS activity inhibitor, RJW-58, which suppresses tumor metastasis in head and neck cancer (HNC) and triple-negative breast cancer. However, the molecular mechanisms underlying CTSS-driven metastasis remain unclear.

Aims. We aim to explore the tumor microenvironment modulation effect of CTSS in HNC.

Methods. HNC patient samples and publicly available RNA-seq datasets were analyzed to assess the association between CTSS expression and metastasis. Transwell migration and invasion assays were performed to determine the role of CTSS in HNC cell metastasis. Additional cell-based experiments were conducted to investigate the molecular mechanisms of CTSS-driven metastasis in HNC cell lines.

Results. Higher CTSS protein expression was observed in our in-house HNC patient samples. Elevated CTSS mRNA levels were confirmed in public HNC RNA-seq datasets, particularly in metastatic cases. Functional assays demonstrated that CTSS promoted migration and invasion of HNC cells, which were suppressed by CTSS siRNA or RJW-58, indicating its role in tumor metastasis. Mechanistically, the lysotracker staining and Western blot analyses revealed that CTSS enhanced lysosome formation by upregulating LAMP1 N-glycosylation. Furthermore, we identified that CTSS promoted STIM1–ORAI1 interaction, leading to elevated cytosolic Ca^{2+} and subsequent upregulation of LAMP1 N-glycosylation.

Conclusion and Discussion. Our findings indicate that CTSS promotes HNC metastasis by enhancing lysosome formation through upregulation of LAMP1 N-glycosylation. These findings highlight CTSS as a critical regulator of the tumor microenvironment and a promising therapeutic target to reduce HNC metastatic progression.

(This work was supported by grants from the National Science and Technology Council, Taiwan (NSTC 114-2314-B-038-166) and The Higher Education Sprout Project by the Ministry of Education, Taipei, Taiwan).

P124

Carnosic Acid Shields Bone: Mitigating Dexamethasone-Induced Oxidative Stress and Mineralization Loss

Ms Antra Chaudhary

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Carnosic Acid shields Bone: Mitigating Dexamethasone-Induced Oxidative Stress and Mineralization Loss
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Introduction: Glucocorticoid-induced osteoporosis is a significant clinical concern, affecting a notable percentage of patients undergoing long-term glucocorticoid therapy and contributing to substantial healthcare costs annually. Connexin 43 (Cx43), the predominant gap junction protein in bone tissue, plays a pivotal role in regulating the viability, differentiation and mechanotransduction of osteogenic cells. Pharmacological modulation of Cx43 has been shown to restore gap junction intercellular communication, promote osteogenic lineage commitment and suppress apoptosis in osteoblasts and osteocytes. Dexamethasone, a well-known inducer of osteoporosis, downregulates Cx43 in human osteoblast MC3T3-E3 cells. Carnosic acid (CA), a bioactive diterpene from *Rosmarinus officinalis*, exhibits potent antioxidant and anti-inflammatory properties and has been reported to inhibit osteoclastogenesis in mouse ST2 cells via suppression of RANKL expression.
Aims: To assess the effect of Carnosic acid on Dexamethasone-induced alterations in Cx43, calcium deposition and oxidative stress in mouse osteoclast and human osteoblast cells.
Methods: RANKL-induced RAW 264.7 and SaOS-2 cells were treated with dexamethasone (50µM). The effects of carnosic acid on dexamethasone-induced alterations were assessed using Ethidium bromide and Evans blue hemichannel assays in both cell lines. Oxidative stress parameters, including malondialdehyde, reduced glutathione, reactive oxygen species and nitric oxide, were also quantified in both cell lines. Furthermore, alizarin red staining was performed to evaluate mineralization in SaOS-2 cells.
Results: The results demonstrated that dexamethasone elevated oxidative stress and decreased mineralization. CA restored malondialdehyde and nitrite concentrations to baseline levels and enhanced glutathione activity, reflecting improved antioxidant capacity in both osteoclasts and osteoblasts. Dexamethasone-induced downregulation of Cx43 was restored by CA, which was confirmed by hemichannel assays. The mineralization assay of carnosic acid further demonstrated enhanced calcium deposition in SaOS-2 cells.
Discussion: The findings of this study demonstrate that CA effectively mitigates dexamethasone-induced alterations in bone cell function. These results suggest that carnosic acid holds promise as a protective agent against dexamethasone-induced bone degeneration, potentially through its dual regulation of gap junction communication and redox homeostasis.

P125

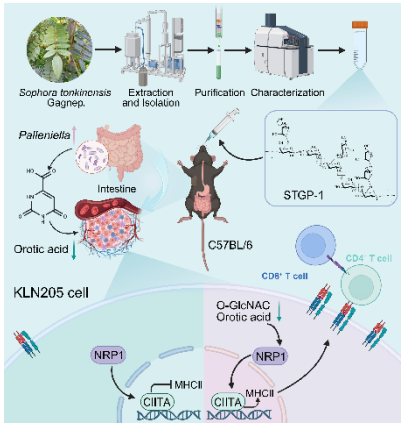
Novel polysaccharide from Sophora tonkinensis: structural characterization and sensitizing anti-PD-1 immunotherapy activity

Ms Ya (雅) Chen (陈)

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Novel polysaccharide from Sophora tonkinensis: structural characterization and sensitizing anti-PD-1 immunotherapy activity

Ya Chen[1], Dong-dong Li[1], Ling-tao Zeng[1], Liang-jun He[1], Chang-sheng Li[1], Ting-ting-Li[1], Zhi-hua Deng[1], Jin-yun Duan[1], Zhuo Luo[1*], Jie Yang[1*]. Department of Pharmacology, School of Pharmacy, Guangxi Medical University[1], Nanning, 530021, China



Introduction. Lung squamous cell carcinoma (LUSC) shows limited response to immune checkpoint inhibitors (ICIs). *Sophora tonkinensis* Gagnep., a Zhuang ethnic medicine, has traditional anti-cancer use, but its polysaccharide structure and ICI-sensitizing potential remain unknown.

Aims. To characterize STGP-1 from S. tonkinensis and its mechanism of enhancing anti-PD-1 therapy in LUSC.

Methods. STGP-1 was isolated by water extraction and chromatography. Structure was analyzed by monosaccharide composition, methylation and NMR. In a LUSC-bearing C57BL/6J mice model was evaluated for tumor growth, T cells, gut microbiota, metabolomics and CIITA-MHC II pathway.

Results. STGP-1 (7.726 kDa) comprises a main chain of →4)-α-D-Glc*p*-(1→, →4)-β-D-Gal*p*-(1→, →4,6)-α-D-Glc*p*-(1→, →4,6)-β-D-Gal*p*-(1→ and →3,6)-β-D-Gal*p*-(1→, with α-D-Glc*p*-(1→ side chains. Combination therapy synergistically inhibited tumor growth, increased $CD4^+/CD8^+$ T cells and cytokines ($P<0.05$), enriched *Palleniella*, reduced orotic acid and activated CIITA-MHC II.

Discussion. STGP-1 sensitizes anti-PD-1 via the gut microbiota–orotic acid–CIITA-MHC II axis. This novel polysaccharide provides a safe strategy to overcome ICI resistance in LUSC.

Wang C et al (2025) Nat Commun 16:1477
Zhang G et al (2025) Int J Biol Macromol 310:143323

P126

An immunopharmacognostic intervention to aid immune recognition against prostate cancer

Assist Prof Hui-Ming Chen

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

An immunopharmacognostic intervention to aid immune recognition against prostate cancer

Tzu-Ting Su[1], Jun-Wei Lin[1], Ting-Wei Yeh[1], Tai-Yang Chen[1], Pei-Wen Hsiao[1, 2], Lie-Fen Shyur[1,2], Hui-Ming Chen*[1, 2]1 Agricultural Biotechnology Research Center, Academia Sinica, Taipei, Taiwan 3 Institute of Biotechnology, National Taiwan University, Taipei, Taiwan

Introduction. The most challenge for treating prostate cancer (PCa) is the high incident rate (65~75%) of bone metastasis. The feature of PCa as the "cold" immune landscape contributes to less or even no responsiveness of immunotherapies for metastatic PCa. AbP is from a medicinal *Asteraceae* plant that possesses anti-inflammatory, anti-cancer and liver-protective activity. However, whether and how AbP can elicit tumor immunogenicity and recognition remains unclear.

Aims. We investigated the effect of AbP on anti-bone metastasis and immune regulation.

Methods. Flow cytometry, bulk RNA sequencing and DC–T cell co-culture were employed to assess immune responses. T cell adoptive transfer and tumor cell lysate-pulsed dendritic cell vaccine were used to validate anti-tumor immunity.

Results. The results showed that AbP caused a significant reduction on cell viability of RM1 cells by MTT assay. HMGB1 and ATP release, the markers for immunogenic cell death (ICD), was found significantly increased in AbP treated RM1 cells. Docetaxel can further enhance the AbP-induced ICD markers. Besides, we observed AbP increased autophagic vacuoles and sequestosome 1, indicating autophagy was induced in RM1 cells. we found the AbP resultant TCL increased CD86 in dendritic cells (DC) and T lymphocyte cytotoxic activity and retarded the tumor growth in RM1 tumor models. In addition to DC, we also observed AbP can significantly inhibit the suppressive function of monocytic, not granulocytic, myeloid-derived suppressor cells on proliferation of cytolytic T cells, which could be due to its inhibitory effects on key suppressive factors-IL4Ra, iNOS and TNFa and cytokines/chemokines.

Discussion. To sum up, this study is to address the potential development of AbP as an immunopharmacognostic Interventions through eliciting tumor immunogenicity, regulating immune status of primary and bone metastatic tumor microenvironment, and thus synergizing immunotherapies, i.e. cancer vaccine & cell therapy, against metastatic PCa.

P127

Preclinical rationale and clinical development of ambroxol in amyotrophic lateral sclerosis (ALS)

Prof Michael Spedding

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Preclinical rationale and clinical development of ambroxol in amyotrophic lateral sclerosis (ALS)
Michael Spedding[1], Sophia Luikinga[2], Alexandre Henriques[3], Frédérique René[4], Jean-Philippe Loeffler[4], Steve Vucic[5], Matthew Kiernan[6], Bradley Turner[2], [1]Spedding Research Solutions SAS, Le Vésinet, France), [2]Florey Institute of Neuroscience and Mental Health, Victoria, Australia, [3]Neurosys, Gardanne, France, [4]INSERM U1118, Strasbourg, France, [5]Brain and Nerve Research Center, Concord Clinical School, Sydney, Australia, [6]NeuRa, Randwick, Australia.

Introduction. More than 50 drugs have failed in ALS, with riluzole offering slight benefit. New approaches are needed.
Results: Non-lysosomal glucosylceramidase (GBA2) activity was specifically increased 8-10 fold in spinal cord of presymptomatic $SOD1^{G86R}$ mice, increasing ceramide and depleting glucosylceramide and more complex glycosphingolipids (GSLs) including GM1, a neurotrophic GSL, critical for neuromuscular junctions (NMJs)[1]. Glucosylceramidase synthase inhibitors are deleterious in amyotrophic lateral sclerosis (ALS) models, while GBA2 inhibitors are beneficial. Ambroxol is a potent inhibitor of GBA2 while being a chaperone for lysosomal GBA1[1]. The drug was effective in $SOD1^{G86R}$ mice, $CHMP2B^{intron5}$ mice and $TDP43^{Q331K}$ mice, by preventing denervation, preserving GM1, with major metabolomic effects on GSL metabolism[2]. Ambroxol is now in phase II for ALS, in Australia, with the study financed by Fight MND (NCT05959850) and is independently in phase II for Lewy Body Dementia and phase III for Parkinson's disease. The clinical results in ALS should be available for July 2026. The clinical trial (dose progression to 1260mg/day) involves treatment of 40 patients, with 20 untreated, using standard/functional endpoints (Kings staging, MUNIX, split-hand index, grip strength), NfL and metabolomic biomarkers..
Conclusions. Effects on biomarkers such as GSLs and neurofilaments may be crucial for efficacy and further development. The role of, and funding by, patient associations (e.g. Fight MND, Australia) has been critical in facilitating the progress of generic drugs such as ambroxol, which are otherwise difficult to finance[3].

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3. van der Pol KH, et al. (2023) Appl Health Econ Health Policy. 21, 831-840.

P128

A dihydrophenanthran induces GPx4 inhibition and ferroptosis for treating colorectal cancer

Assist Prof Po-Jen Chen

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

A dihydrophenanthran induces GPx4 inhibition and ferroptosis for treating colorectal cancer

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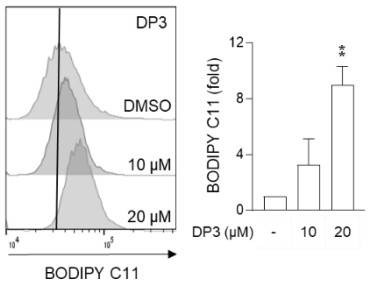
Introduction. Colorectal cancer (CRC) consistently ranks among cancers with the highest incidence and mortality rates globally. Emerging evidence highlights ferroptosis inducers as promising therapeutic agents in CRC treatment. *Pholidota chinensis*, a medicinal plant traditionally used in Southeast Asia, possesses anticancer potential; however, its active constituents and pharmacological mechanisms remain poorly understood.



Aims. This study aims to identify active anticancer compounds from *P. chinensis* and elucidate their mechanisms of action against CRC.

Methods. CRC cells and computational analyses were utilized to evaluate the therapeutic effects of active compounds from the pseudobulbs of *P. chinensis*. The anticancer efficacy was assessed using an *in vivo* zebrafish xenograft model.

Results. A series of dihydrophenanthrans from *P. chinensis* demonstrated notable anticancer potential. Among these, a special type of dihydrophenanthran (DP3) selectively induced ferroptosis in CRC cells by increasing intracellular ferrous iron concentrations, lipid peroxidation, and oxidative stress accumulation, while simultaneously inhibiting antioxidant defences. Using *in silico* molecular docking and cellular thermal shift assays, we identified glutathione peroxidase 4 (GPx4) as the direct molecular target of DP3. Significantly, DP3 inhibited tumor growth in a zebrafish xenograft CRC model.

Discussion. This study is the first to demonstrate the anticancer efficacy of a unique dihydrophenanthran (DP3) from *P. chinensis* through GPx4 inhibition-mediated ferroptosis. These findings position DP3 as a promising novel lead compound for ferroptosis-based CRC therapeutics.

Yan H et al (2023) Br J Cancer 128: 1439-1451.

P129

Development and pharmacological characterisation of novel adenosine A2A receptor probes

Miss Chloe Li

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Development and pharmacological characterisation of novel adenosine A_{2A} receptor probes

Chloe K Li[1], Manuela Jörg[1] & Karen J Gregory[2,3]. Medicinal Chemistry[1], Drug Discovery Biology[2], Monash Inst. Pharm. Sci., VIC, Australia; Australian Research Council Centre for Cryo-electron Microscopy of Membrane Proteins[3], VIC, Australia

Introduction. The adenosine A_{2A} receptor ($A_{2A}R$) is a G protein-coupled receptor (GPCR) broadly expressed in the brain, and a promising therapeutic target for neurodegenerative and psychiatric disorders (Cunha, 2016). Chemical probes are essential tools to study $A_{2A}R$ distribution and function. Fluorogenic probes have been developed to visualise $A_{2A}R$ *in vitro*. However, introducing large fluorescent labels can reduce ligand affinity and result in low signal-to-noise ratios, which complicates the translation to primary cells and animal models (Iliopoulos-Tsoutsouvas et al, 2018). To advance our understanding of $A_{2A}R$, there is a demand for new tools to overcome these obstacles.

Aims. We aimed to first design and synthesise novel $A_{2A}R$ irreversible chemical probes. We planned to introduce turn-on fluorescent functionalities, including the installation of a clickable handle for bioorthogonal reactions. Additionally, we attempted to synthesise ligand-directed covalent $A_{2A}R$ probes that allow traceless labelling.

Methods. A series of chemical probes based on orthosteric antagonists were synthesised. Chemical probe pharmacology was evaluated in recombinant cells stably expressing human $A_{2A}R$, measuring inhibition of agonist-stimulated cAMP accumulation.

Results. Compared to parent compounds, addition of irreversible warheads maintained or increased affinity by 1.5-7 fold. To determine the irreversible binding of chemical probes, we conducted pre-treatment and washout experiments. One out of the four chemical probes maintained antagonist properties in the washout experiment confirming irreversible binding.

Discussion. The confirmed irreversible probe serves as a starting point for the design and synthesis of novel clickable and ligand-directed $A_{2A}R$ probes. Expanding the current chemical toolbox to study $A_{2A}R$ will enable us to dissect the underlying mechanisms of $A_{2A}R$ signalling pathways in neurodegenerative and psychiatric disorders.

Cunha RA (2016) J Neurochem 139:1019-1055.
Iliopoulos-Tsoutsouvas C et al (2018) Expert Opin Drug Discov 13:933-947.

P130

Modeling cellular senescence in UVA-irradiated skin fibroblasts to study the anti-aging approach

Assoc Prof Yih-fung Chen

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Modeling cellular senescence in UVA-irradiated skin fibroblasts to study the anti-aging approach

Teh Ci Chen[1], Yih-Fung Chen[1,*]. [1]Graduate Institute of Natural Products, College of Pharmacy, Kaohsiung Medical University, Kaohsiung 80708, Taiwan.

Introduction. Skin aging is characterized by a gradual decline in epidermal and dermal cell functions, mainly driven by cellular senescence. Among extrinsic factors, chronic ultraviolet A (UVA) exposure is a significant inducer of cellular senescence in dermal fibroblasts, primarily through DNA damage and oxidative stress. These mechanisms subsequently exaggerate hallmarks of cellular senescence, including permanent cell-cycle arrest, enlarged and flattened cell morphology, and senescence-associated secretory phenotypes (SASPs).

Aims. We aimed to establish the study model of UVA-induced cellular senescence in skin fibroblasts for evaluating the anti-aging approach.

Methods. Human dermal fibroblast CCD-966SK cells were irradiated with 2 or 5 J/cm² UVA to induce cellular senescence. Cell viability was assessed based on resazurin reduction, and oxidative stress was evaluated using 2′,7′-dichlorodihydrofluorescein diacetate (H_2DCFDA). Senescence-associated β-galactosidase (SA-β-gal) activity was detected through 5-dodecanoylaminofluorescein di-β-D-galactopyranoside (C_{12}FDG) staining. Immunofluorescence and immunoblotting were applied to analyze senescence-associated proteins. Statistical analyses were performed using one-way ANOVA.

Results. UVA irradiation significantly reduced cell viability and promoted a dose-dependent accumulation of ROS. Cellular senescence was evidenced by the downregulation of the nuclear lamina proteins lamin B1 and A/C, accompanied by the upregulation of cell cycle inhibitor proteins p16 and p21, as well as elevated SA-β-gal activity. Nuclear factor erythroid 2–related factor 2 (Nrf2) signaling is a key cellular defense mechanism against oxidative stress by activating antioxidant responses and maintaining redox balance. Omaveloxolone (RTA 408), an FDA-approved Nrf2 activator, effectively attenuated UVA-induced viability loss and ROS accumulation, underscoring its anti-aging potential.

Discussion. The study model of UVA-induced cellular senescence was successfully established in human dermal fibroblasts. Assessments of cell viability, ROS, and senescent biomarkers provide a reliable platform for developing the anti-aging approach.

P131

Anti-melanogenic activity and underlying mechanism of compounds isolated from Zingiber zerumbet rhizomes

Assoc Prof Yih-fung Chen

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Anti-melanogenic activity and underlying mechanism of compounds isolated from *Zingiber zerumbet* rhizomes

Hsin-Ya Yu[1], Yu-Chen Chen[1], Horng-Huey Ko[1], Shuen-Shin Yang[3], Hsun-Shuo Chang[1,2], Yih-Fung Chen[1,2,*]. School of Pharmacy[1], Graduate Institute of Natural Products[2], Kaohsiung Medical University, Taiwan; Department of Pharmacy, Chia Nan University of Pharmacy and Science, Taiwan.

Introduction. Melanin pigments produced by melanocytes protect skin from ultraviolet irradiation. Hyperpigmentation caused by sunlight overexposure increases the risk of melanoma, age spots, and freckles. However, commonly used whiting agents still have side effects, including photosensitivity and contact dermatitis, emphasizing the need for safer alternatives. *Zingiber zerumbet* is a Zingiberaceae plant that has been shown to possess anti-melanogenic activities.

Aims. We aimed to identify effective anti-melanogenic compounds from the rhizome of *Zingiber zerumbet* using the melanocyte-based anti-melanogenesis platform and investigate its anti-melanogenic mechanism through cell assays, *in vitro* enzyme assays, and *in silico* molecular docking.

Methods. Melanin biosynthesis in mouse B16-F10 melanocytes was induced with 50 or 100 nmol/L α-melanocyte-stimulating hormone (α-MSH) for 24 hours. Anti-melanogenesis assays, Masson Fontana staining, and immunoblotting were conducted after treating with 5~50 μmol/L testing compounds for another 48 hours. *In vitro* tyrosinase activity was evaluated with the mushroom tyrosinase assay. Molecular docking was performed based on the mushroom tyrosinase (protein data bank ID: 2y9x), analysed with PyRx (0.8 version), and visualized with Discovery Studio (2019 Client version 24). Statistics were analysed by one-way ANOVA.

Results. Among testing samples, compound **6**, a flavonoid, at non-cytotoxic concentrations significantly ameliorated α-MSH-induced melanin content and cellular tyrosinase activity ($P<0.01$ vs. α-MSH induction). Despite displaying high binding affinity with mushroom tyrosinase in molecular docking, compound **6** did not exhibit a cellular tyrosinase inhibitory effect. Moreover, compound **6** reduced α-MSH-induced protein levels of tyrosinase-related protein 1 (TRP1). Additionally, compound **6** reduced cellular dendrite formation without influencing melanosome transport and distribution.

Discussion. The flavonoid compound **6** isolated from *Zingiber zerumbet* rhizomes served as a potent anti-melanogenic compound with inhibitions on TRP1 protein expressions and dendrite formations in melanocytes.

P132

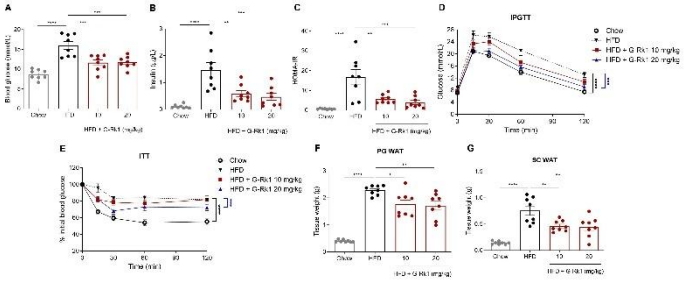
Ginsenoside Rk1 alleviates adipose tissue inflammation by targeting Stat3 in diabetic mice

Miss Yutong Chen

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Ginsenoside Rk1 alleviates adipose tissue inflammation by targeting Stat3 in diabetic mice

Chi Teng Vong[1], Meihan Liu[1], Yutong Chen[1], Maggie Pui Man Hoi[1], Shengpeng Wang[1]. The State Key Laboratory of Mechanism and Quality of Chinese Medicine, Institute of Chinese Medical Sciences, University of Macau[1], Macau, China.



Introduction. Type 2 Diabetes Mellitus (T2DM) is a metabolic disease, which is associated with low-grade chronic inflammation in various tissues, such as white adipose tissue, and this plays a vital role in the development of insulin resistance. Ginsenoside Rk1 (G-Rk1) is a minor ginsenoside isolated from Ginseng. G-Rk1 has various pharmacological effects, however, its anti-diabetic effects were not studied.

Aims. To investigate the therapeutic effects of G-Rk1 in diabetic mice with a focus on adipose tissue inflammation.

Methods. High-fat diet-induced diabetic mice were used to study the anti-diabetic effects of G-Rk1, in the presence or absence of Stattic, a Stat3 inhibitor. Metabolic parameters, white adipose tissue morphology and inflammation were evaluated. Diabetic bone marrow-derived macrophages (BMDMs) were also used to study the anti-inflammatory effects of G-Rk1.

Results. G-Rk1 improved metabolic parameters, reduced white adipose tissue expansion and inflammation by enhancing IL-10 levels in diabetic mice. The anti-inflammatory effects were also confirmed in diabetic BMDMs. We found that Stat3 was a direct target of G-Rk1. Stat3 inhibition reversed the therapeutic effects of G-Rk1 in diabetic mice and BMDMs, indicating that the involvement of Stat3 in mediating these therapeutic effects.

Discussion. Our study was the first to demonstrate the anti-diabetic effects of G-Rk1, mainly through suppressing adipose tissue expansion and inflammation. The IL-10/Stat3 pathway was shown to be crucial for the alleviation of adipose tissue inflammation by G-Rk1. Therefore, our findings unveiled the remarkable anti-diabetic effects of G-Rk1 in diabetic mice, highlighting its potential as a novel therapeutic candidate for the treatment of T2DM.

P134

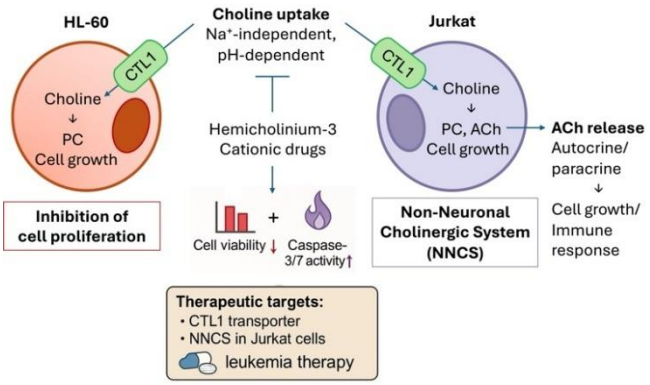
Therapeutic targeting of the non-neuronal cholinergic system in human leukemia cells

Prof Inazu Masato

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Therapeutic targeting of the non-neuronal cholinergic system in human leukemia cells

Masato Inazu[1,2], Ayumi Matsushita[1], Maki Kimura[2], Naoko Tajima[2], Tsuyoshi Yamanaka[2]. Institute of Medical Science, Tokyo Medical University[1], Tokyo, Japan; Department of Molecular Preventive Medicine, Tokyo Medical University[2], Tokyo, Japan.



Introduction. Choline uptake via specific transporters is essential for phospholipid metabolism and cancer cell proliferation. The non-neuronal cholinergic system (NNCS), consisting of acetylcholine-related enzymes, receptors and transporters, also regulates cellular growth, but its role in leukemia remains unclear.

Aims. To investigate the molecular and functional properties of choline transporters and the NNCS in human leukemia cell lines.

Methods. Choline uptake was assessed using [^{3}H]choline in HL-60 and Jurkat cells. Gene expression was evaluated by RT-PCR. Cell viability and caspase-3/7 activity were measured by luminescence-based assays.

Results. Choline uptake was Na^+-independent, pH-dependent, and mediated by a single transport system in both cell lines. Uptake was markedly inhibited by hemicholinium-3 and cationic drugs. Both HL-60 and Jurkat cells expressed choline transporter-like protein 1 (CTL1) at the mRNA and protein levels. Inhibiting CTL1 suppressed proliferation and induced caspase-3/7 activity. Notably, ChAT expression and intracellular conversion of [^{3}H]choline to [^{3}H]ACh were detected only in Jurkat cells, indicating the presence of a functional NNCS.

Discussion. Our findings demonstrate that CTL1 is the major choline transporter in leukemia cells and is closely linked to proliferation and survival. Furthermore, Jurkat cells possess a functional NNCS, suggesting ACh-mediated auto/paracrine signaling. These results identify CTL1 and the NNCS as potential therapeutic targets for leukemia treatment.

P135

Between-species differences in effects of kappa and mu opioid ligand CJ-15,208

Dr Andy Kuo

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Between-species differences in effects of kappa and mu opioid ligand CJ-15,208

Andy Kuo[1], Sumedha Negi[1], Mohammad Zafar Imam[1], Dehui Kong[2], Marco Francescato[3], Luca Gentilucci[3], Craig Williams[2], Maree Smith[1]. Centre for Integrated Preclinical Drug Development, School of Biomedical Sciences[1], School of Chemistry and Molecular Biosciences[2], University of Queensland, Brisbane, QLD, Australia. Department of Chemistry[3], University of Bologna, Italy.

Introduction. Opioid analgesics are widely used to treat acute pain, including post-operative and moderate to severe cancer-related pain. Most clinically used opioids are primarily mu-opioid (MOP) receptor agonists and frequently produce significant adverse effects. CJ-15,208 is a cyclic peptide that activates both kappa-opioid (KOP) and MOP receptors and has been shown to elicit potent antinociception in mice (Ross et al. 2012)

Aims. The aim of this study was to assess the extent to which the multi-receptor activity of CJ-15,208 alters its antinociceptive versus constipation potency relative to the MOP receptor agonist morphine.

Methods. Male Sprague–Dawley rats (190–230 g) were housed under standard conditions. Intracerebroventricular (icv) guide cannulae were surgically implanted targeting the lateral ventricle of anaesthetised rats, followed by 5–7 d recovery. Rats received a single icv bolus dose of CJ-15,208 (0.01–30 nmol), morphine (70-100 nmol), U69,593 (450 nmol), or vehicle. Antinociception and constipation were assessed using the warm-water tail-flick test, and the charcoal-meal test respectively under 'blinded'' conditions. T-tests were used for in-vivo statistical analyses.

Results. Single doses of CJ-15,208 did not evoke antinociception in rats, like vehicle, whereas morphine elicited robust antinociception. At the highest dose tested, icv CJ-15,208 (30 nmol) did not alter gastrointestinal (GI) transit at 30 or 90 min, whereas morphine markedly inhibited GI transit. In a pilot study, pre-treatment of rats with icv CJ-15,208, attenuated U69,593-induced antinociception, suggesting that in rats, CJ-15,208 is a KOP antagonist.

Discussion. There are between-species differences in the pharmacological profile of CJ-15,208. Specifically, icv CJ-15,208 did not evoke antinociception or impair GI transit in rats in contrast to previous work by others that showed icv CJ-15,208 evoked potent MOP- and KOP-receptor mediated antinociception in mice. Our findings highlight the importance of cross-species evaluation when assessing multifunctional opioid ligands.

Ross et al. (2012) Br J Pharmacol 165:1097

P136

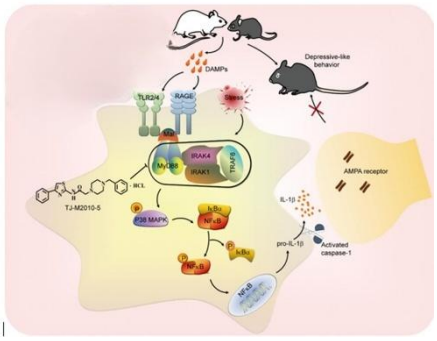
Innate Immunity-Mediated Mechanisms in Depression: Pathways for Drug Discovery

Prof Jian-Guo Chen

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Innate Immunity-Mediated Mechanisms in Depression: Pathways for Drug Discovery

Jian-Guo Chen, Fang Wang, Peng-Fei Wu, Zhuang-Li Hu, Hong-Sheng Chen, Li-Hong Long, Yang Liu. Department of Pharmacology, School of Basic Medicine, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, Hubei 430030, China.



Introduction. It is well-established that external and internal stressors trigger depressive behaviour by elevating the production of proinflammatory cytokines. Recent studies have indicated that stress-induced release of immune danger signals, such as complement system and danger-associated molecular patterns (DAMPs) may serve as critical mediators of inflammation-driven alterations in cellular and behavioral processes underlying major depressive disorder. However, the precise mechanism and therapeutic strategy are poorly understood

Aims. This study investigates the role of key immune danger signals, including complement 3 (C3) and MyD88 in depressive-like behaviour, elucidating their underlying mechanisms and identifies novel therapeutic candidates through MyD88 blockade.

Methods. Chronic social defeated stress; behaviour test; immunofluorescence; western blotting; cell culture.

Results. We demonstrated that chronic stress exposure increased hepatic C3 expression in mice. Genetic knockdown of hepatic C3 effectively mitigated stress-induced deleterious effects, whereas overexpression of hepatic C3 was sufficient to induce depressive-like behaviour following subthreshold social stress. Mechanistically, hepatic C3 manipulation bidirectionally regulated claudin-5 expression in nucleus accumbens (NAc) endothelial cells through the C3a receptor-CCAAT/enhancer-binding protein-α signalling pathway. Concurrently, MyD88 expression was up-regulated in the medial prefrontal cortex. MyD88 overexpression aggravated, whereas knockout or pharmacological inhibition of MyD88 ameliorated chronic stress-induced depressive-like behaviour. Importantly, we developed TJ-M2010-5, a novel synthetic inhibitor targeting MyD88 dimerization, which demonstrated therapeutic efficacy in alleviating both chronic stress-induced depressive-like behaviours.

Discussion. These findings suggest that targeting hepatic C3 and MyD88 signalling pathways may serve as a promising therapeutic strategy for stress-related mental disorders, with inhibitors of MyD88 dimerization potentially developed as novel antidepressant drugs.

P137

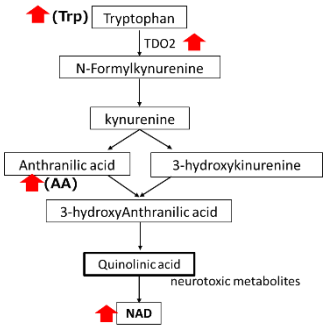
Analysis of altered hypothalamic tryptophan metabolism in a cancer cachexia mouse model

Takumi Kobayashi

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Analysis of altered hypothalamic tryptophan metabolism in a cancer cachexia mouse model

Takumi Kobayashi[1], Miaki Uzu[1], Hiroyuki Nakamura[1]. Dept of chem pharmacol[1], Chiba Univ, Chuo-ku, Chiba, Japan.



Introduction. Cancer cachexia is a systemic metabolic syndrome characterized by unintentional anorexia and a progressive loss of skeletal muscle mass, with or without accompanying fat mass loss. As the hypothalamus is a key region for regulating appetite and energy homeostasis, we focused on its dysfunction in the pathophysiology of this condition.

Aims. This study aimed to elucidate the hypothalamic metabolic alterations underlying hypothalamic dysfunction in the progression of cancer cachexia.

Methods. A murine model of cachexia (RenCa) was induced via the s.c. injection of renal cancer cells into mice. Plasma ghrelin concentrations were quantified using an enzyme-linked immunosorbent assay (ELISA). Protein expression levels of the mature neuronal marker NeuN, along with the tryptophan (Trp) metabolism rate-limiting enzymes IDO1 and TDO2, were determined by Western blot analysis. The profile of hypothalamic Trp metabolites was analyzed using capillary electrophoresis time-of-flight mass spectrometry (CE-TOF-MS).

Results. Although plasma ghrelin concentrations increased with cachexia progression, food intake continuously declined. Concurrently, the expression of the hypothalamic neuronal marker NeuN was reduced. To investigate the underlying cause of this NeuN downregulation, a comprehensive metabolomic analysis of water-soluble compounds was performed. This analysis revealed elevated levels of multiple Trp metabolites, including Trp, AA, and NAD. Consistent with this finding, the protein expression of TDO2 was also upregulated.

Discussion. The dissociation between elevated ghrelin levels and suppressed feeding behavior is indicative of hypothalamic dysfunction. Furthermore, the reduced NeuN expression in the RenCa model suggests that this dysfunction is a consequence of neuronal loss. Given the upregulation of Trp metabolism—a pathway known to generate neurotoxic metabolites—in the hypothalamus, these findings suggest that the aberrant activation of this pathway induces neuronal damage and subsequent hypothalamic dysfunction, ultimately contributing to the development of cachexia.

P138

Refining the α4(+)α4(-) nicotinic pharmacophore to advance development of subtype selective therapeutics

Mr Tan Thai

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Refining the α4(+)α4(-) nicotinic pharmacophore to advance development of subtype selective therapeutics

Tan Thai[1,2], Justin Cheah[1,2], Thomas Balle[1,2]. School of Pharmacy[1], Faculty of Medicine and Health, University of Sydney, Sydney, NSW, Australia; Brain and Mind Centre[2], University of Sydney, Sydney, NSW, Australia.

Introduction: Drug development for neuronal nicotinic acetylcholine receptor (nAchR) is a field with few clinically successful compounds, owing to poor subtype selectivity of nicotinic agonists and antagonists. The α4(+)α4(-) binding site on the α4β2 nAchR subtype is a unique Ach binding site exclusive to the $(\alpha4)_3(\beta2)_2$ isoform, presenting the opportunity for development of subtype selective modulators whilst avoiding the off-target liability seen in prior drug candidates. Structural studies have characterised a pharmacophore with a water-mediated hydrogen bond acceptor, a cationic/π-interaction centre and a 'check-mark geometry' that accounts for neutral and cationic ligands.

Aims: To refine key parameters of the α4(+)α4(-) pharmacophore to enhance the development of $(\alpha4)_3(\beta2)_2$ selective modulators.

Methods: Compounds from published literature and rationally designed virtual analogues are docked utilising Maestro Glide into the α4(+)α4(-) binding site, derived from human nAchR (PDB 6CNK) superimposed with NS3531, CMPI and NS9283 poses obtained from Kusay et al, 2025. Top ligands undergo GROMACS molecular dynamics simulation (explicit solvent, 100-200 ns) to assess interaction stability, water-bridge persistence and loop-C dynamics. Free-energy perturbation calculations are performed to estimate relative binding affinities.

Results: Early findings indicate CMPI, compared to NS9283 and NS3531, differs in water-bridge interactions formed with the α4(+)α4(-) site, informing the conformational difference of its binding pose despite holding the 'checkmark' geometry. The interaction between water and H116 in the poses of NS9283 and NS3531 correlates with stabilisation of the δ-tautomer. CMPI lacks this interaction with the α4(+)α4(-) site, with poses clustered at the ε-tautomer.

Discussion: Whilst preliminary, these findings warrant ongoing refinement of the α4(+)α4(-) pharmacophore. Prior literature indicates the role of H116 in NS9283 activity, suggesting functionalisation of the α4(+)α4(-) pharmacophore with hydrophilic substituents towards H116 may enhance potency. This observation awaits findings obtained from the docking study and following evaluation to validate recommendations into rational drug design and development.

Kusay et al (2025) J Neurochem 169:e70000

P140

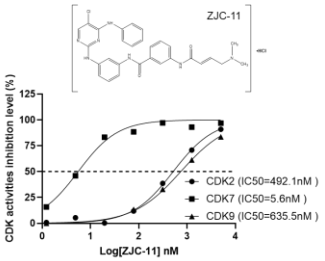
ZJC-11, a novel selective CDK7 inhibitor for triple negative breast cancer treatment

Prof Weiying Zhou

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

ZJC-11, a novel selective CDK7 inhibitor for triple negative breast cancer treatment

Bo Chen[1], Weiying Zhou[1,] *. Dept. of Pharmacology, COP[1], CQMU, CQ, CHN



Introduction. Lacks effective therapeutic targets is a clinical challenge in triple-negative breast cancer (TNBC). Cyclin-dependent kinase 7 (CDK7) is an attractive cancer target in TNBC and selective CDK7 inhibitors (CDK7i) are in clinical development for the treatment of TNBC.

Aims. The lack of selective CDK7 inhibitors, and the precise mechanisms responsible for the activity of CDK7i remain elusive in TNBC. Here, we describe a selective CDK7 inhibitor ZJC-11, which has a high selectivity over other CDK family members and a strong anti-cancer activity in TNBC.

Methods. 21 novel CDK7i candidate small molecule compounds were designed, synthesized and evaluated for anti-tumor activity *in vitro*. Using kinase activity detection, molecular docking and cellular thermal shift assay (CETSA) experiments, we evaluated the targeting effect of ZJC-11 on CDK7. The anti-cancer activity of ZJC-11 in TNBC models was assessed *in vitro* and *in vivo* through cell-based assays, 3D tumor sphere model, and cell line-derived xenograft experiments. Furthermore, RNA sequencing and rescue experiments were utilized to investigate the potential mechanism of ZJC-11 in TNBC models.

Results. Among 21 CDK7i candidates we found that ZJC-11 exhibited potent inhibition activity against TNBC cells (IC50=0.6μM/L). Kinase activity detection and CETSA experiments identified that ZJC-11 showed a strong targeting effect on CDK7. ZJC-11 arrested the cell cycle in the G2 / M phase, and induced cell death in vitro. RNA sequencing and cell-based assays revealed that ZJC-11 showed antitumor activity by suppressing Gene expression (Transcription), RNA Polymerase II Transcription, Cell Cycle, Cell Cycle Checkpoints pathway. Further analysis revealed that ZJC-11 induced cell senescence by DNA damage and oxidative stress. More importantly, ZJC-11 presented significant antitumor efficacy *in vivo* without obvious toxicity.

Discussion. ZJC-11 is a novel CDK7i and has a potent antitumor activity in TNBC. These findings support the potential of ZJC-11 in the clinical development of TNBC, providing a new option and theoretical basis for targeting CDK7 for the treatment of TNBC.

P141

Investigation of 3,4-Dimethoxycinnamic acid as a Novel Therapeutic Agent for Rheumatoid Arthritis

Assist Prof Shan-chi Liu

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

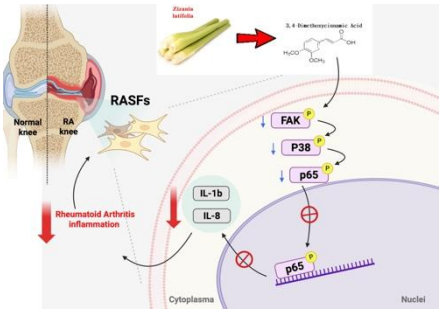
Investigation of 3,4-Dimethoxycinnamic acid as a Novel Therapeutic Agent for Rheumatoid Arthritis

Shan-Chi Liu*[,1]. [1]Institute of Biomedical Sciences, Mackay Medical University, New Taipei City 252005, Taiwan

Introduction. Rheumatoid arthritis (RA) is a chronic autoimmune disease characterized by inflammatory infiltration of joints, causing synovial hyperplasia, cartilage damage, and bone erosion. Synovial fibroblasts and chondrocytes secrete pro-inflammatory cytokines, such as IL-1β, IL-6, and IL-8, disrupting bone homeostasis. Current therapies, including NSAIDs, steroids, and DMARDs, alleviate symptoms and slow progression but cannot cure RA and often cause side effects, highlighting the need for safer alternatives.Aims. We aim to explore the potential of five compounds extracted from water bamboo shoots (Zizania latifolia; WBS)—Naringenin, Sinensetin, Ferulic Acid methyl ester, Nobiletin, and 3,4-Dimethoxycinnamic acid—in the treatment of rheumatoid arthritis. While these compounds have been shown in previous studies to possess anti-inflammatory and antioxidant activities, their efficacy in treating rheumatoid arthritis remains unknown.

Methods. MTT assays were performed to evaluate drug cytotoxicity. Quantitative PCR (qPCR) and Western blot analyses were conducted to assess cytokine expression as well as FAK, p38, and p65 phosphorylation levels.

Results. Our data reveal significant expression of IL-1β and IL-8 in the synovial tissues of RA patients, contributing to synovial inflammation and arthritis formation. Treatment with 3,4-Dimethoxycinnamic acid inhibits the pro-inflammatory cytokines IL-1β and IL-8 expression levels in MH7A. Additionally, treatment with 3,4-Dimethoxycinnamic acid suppresses the inflammatory pathway (FAK/p38/NF-kB), leading to reduced expression of IL-1β and IL-8.



Discussion. Our data support clinical investigations using 3,4-Dimethoxycinnamic acid in RA disease

1. Wang, M., et al., Characterization, antioxidant activity and immunomodulatory activity of polysaccharides from the swollen culms of Zizania latifolia. Int J Biol Macromol, 2017. 95: p. 809-817.

P143

Drug screening for ERO1α inhibitors identifies resveratrol as a potent candidate

Ms Kamilla Khojayeva

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Drug screening for ERO1α inhibitors identifies resveratrol as a potent candidate

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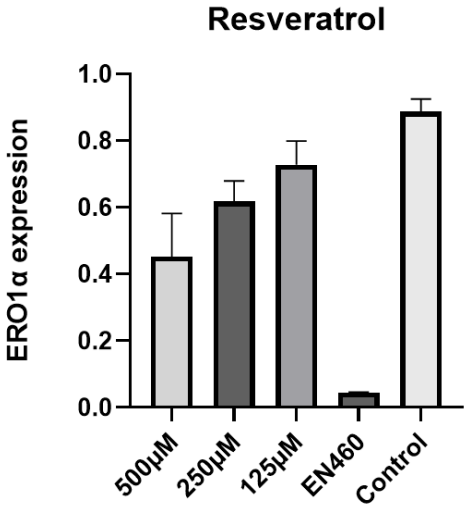

Introduction. Endoplasmic reticulum oxidoreductin-1α (ERO1α) is an oxidase that regulates disulfide bond formation and redox homeostasis (Chen et al, 2024). Its overexpression has been linked to tumor progression and poor prognosis in cancer (Johnson et al, 2020), making it a potential therapeutic target.

Aims. To screen candidate drugs for their ability to inhibit ERO1α and reduce oxidative stress in breast cancer cells.

Methods. Several drug candidates screened for their potential inhibition of ERO1α in MDA-MB-231 cells. Cell viability determined using MTT assay, ERO1α protein expression measured by Western blot, and Reactive Oxygen Species (ROS) evaluated by d-ROMs test.

Results. Resveratrol reduced ERO1α protein expression, and activity in a dose-dependent manner with an IC_{50} of 250 µmol/L. Compared with the control (0.89 ± 0.07), ERO1α levels decreased at 250 µmol/L (0.62 ± 0.11, $p<0.05$) and 500 µmol/L (0.45 ± 0.13, $p<0.05$). ROS levels also declined in a concentration-dependent manner.

Discussion. Resveratrol effectively reduced both ERO1α expression and ROS levels in MDA-MB-231 cells in a dose-dependent manner. Given the role of ERO1α in tumor progression, resveratrol emerges as a promising candidate for targeting ERO1α-driven pathways in breast cancer.

Chen P et al (2024) J Exp Clin Cancer Res. 43:71.
Johnson BD et al (2020) J Cancer Immunol 2:103–115

P144

Novel Non-Apoptotic Cell Death Induction by TPH104c in Metastatic Melanoma

Dr Alicja Urbaniak

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Novel Non-Apoptotic Cell Death Induction by TPH104c in Metastatic Melanoma
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Introduction. Metastatic melanoma is a highly aggressive skin cancer, and treatment options become limited once resistance to immunotherapy develops. Novel compounds that induce non-apoptotic cell death may represent alternative strategies to overcome resistance or serve as adjuvants to enhance therapeutic outcomes. TPH104c, previously characterized in triple-negative breast cancer, induces a distinct form of non-apoptotic cell death involving mitochondrial dysfunction, mitophagy, and downregulation of mitochondrial fission protein Drp1, leading to potent antitumor activity *in vitro* and *in vivo*.
Methods. TPH104c selectively targeted melanoma cells in NCI-60 panel. We evaluated the cytotoxic activity of TPH104c in a panel of melanoma cell lines: SK-MEL-5 (human), B16F10 (murine), and Yumm1.7 (murine). Cell viability and proliferation assays were performed to determine IC_{50} values. Ongoing studies are investigating the mechanism of action using apoptosis and non-apoptotic cell death markers, mitochondrial function assays, and proteomic profiling.
Results. TPH104c demonstrated sub-micromolar potency in melanoma models, with IC_{50} values of 449 ± 121 nM in SK-MEL-5, 238 ± 68 nM in B16F10, and 965 ± 286 nM in Yumm1.7 cells. These findings suggest strong cytotoxic activity across human and murine melanoma lines. Preliminary observations are consistent with previously reported non-apoptotic mechanisms in TNBC, and mechanistic/proteomics data will be presented.
Discussion. Our findings highlight TPH104c as a promising candidate for melanoma therapy, with potent *in vitro* activity and potential to circumvent therapeutic resistance through alternative cell death pathways. The forthcoming mechanistic and proteomic analyses will further clarify the molecular underpinnings of TPH104c activity and its translational potential in melanoma treatment.

P145

Insilico, Invitro and Invivo Evaluation of Herbomineral formulation in Hepatic Encephalopathy

Mrs Shruti Chindam

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

***Insilico*, *Invitro* and *Invivo* Evaluation of Herbomineral formulation in Hepatic Encephalopathy**

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Introduction. Hepatic encephalopathy (HE) is a serious neuropsychiatric disorder, marked by cognitive decline, brain edema, and increased intracranial pressure, potentially leading to death in acute cases. Lactulose and rifaximin used here provide only symptomatic relief and fail to halt disease progression. Tapyadi Loha (TL), an Ayurvedic formulation, shows hepatoprotective promise but lacks detailed scientific validation.

Aims. To perform preliminary evaluation of TL in the management of HE through in silico and in vitro analysis.

Methods. Potential HE-related targets were identified through Network pharmacology. Molecular docking revealed good binding affinity of phytoconstituents, which were quantified by LC-MS/MS. Their hepatoprotective activity was validated in HepG2 cells, and bile duct ligation (BDL) induced HE in rats.

Results. Network pharmacology indicated involvement of NF-κB, TNF-α, and TLR-4 signaling. LC-MS/MS identified gallic acid, quercetin, ascorbic acid, and luteolin that had high binding affinities. TL significantly enhanced HepG2 cell viability. In BDL-induced HE rats, TL ameliorated motor and memory deficits, reduced blood and brain ammonia levels, decreased pro-inflammatory cytokines and improved histopathology as observed by reduced neuronal swelling in brain tissue. These therapeutic effects were linked to increased BDNF expression and inhibition of the TLR-4/NF-κB signaling pathway.

Discussion. TL demonstrated hepatoprotective and antioxidant potential, supported by enhanced HepG2 cell viability as well as *in vivo* study. Network pharmacology and docking analyses identified key HE-related targets, with gallic acid, quercetin, and ascorbic acid emerging as major active constituents. These findings highlight TL as a promising therapeutic candidate for managing hepatic encephalopathy via TLR-4 signaling pathway.

P146

Fisetin and quercetin co-treatment upregulates skin hydration and ceramide biosynthesis genes

Prof Wanil Kim

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Fisetin and quercetin co-treatment upregulates skin hydration and ceramide biosynthesis genes

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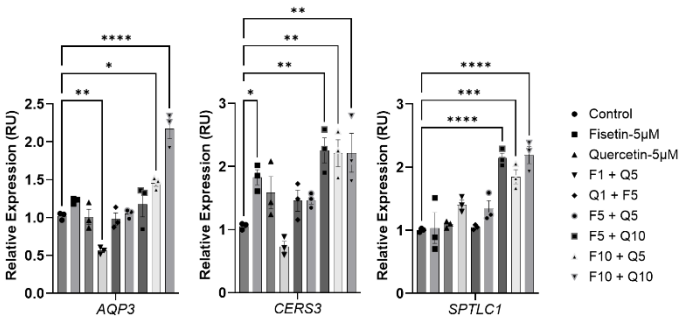
Introduction. Fisetin and quercetin are dietary flavonoids with protective effects in stimulated skin models (Wu et al, 2017; Beken et al, 2020). However, their combined effects on key epidermal genes remain poorly characterised.

Aims. To evaluate fisetin and quercetin, alone and in combination, on mRNA expression of three skin barrier and hydration genes—*AQP3*, *CERS3* and *SPTLC1*—in HaCaT keratinocytes.



Methods. HaCaT cells in DMEM/10% FBS were treated for 24 h with fisetin (5 µmol/L), quercetin (5 µmol/L), or their combinations at 5 + 5, 5 + 10, 10 + 5 and 10 + 10 µmol/L; DMSO (≤0.1%) was the vehicle. *AQP3*, *CERS3* and *SPTLC1* mRNAs were quantified by qRT-PCR (GAPDH reference; n = 3). Fold-change was calculated within each independent batch; comparisons vs. control used one-way ANOVA with Dunnett's post-hoc test.

Results. Low-dose single treatments (5 µmol/L) produced only minor changes in all three genes. In contrast, combinations containing at least one component at 10 µmol/L induced significant upregulation. At 10 + 10 µmol/L, *SPTLC1* increased 2.19 ± 0.14-, *AQP3* 2.13 ± 0.13- and *CERS3* 2.14 ± 0.30- fold over vehicle (mean ± SEM; n = 3; *P < 0.05, **P < 0.01, ***P < 0.001, ****P < 0.0001).

Discussion. Fisetin + quercetin combinations containing ≥ 10 µmol/L consistently upregulated hydration-related (*AQP3*) and ceramide biosynthesis (*SPTLC1*, *CERS3*) genes in HaCaT keratinocytes. Protein-level validation and assessment in primary and senescent keratinocytes are planned.

Beken B et al (2020) Pediatr Allergy Immunol Pulmonol 33:69–79
Wu PY et al (2017) Molecules 22:1982.

P148

Targeting PCOS with Ficus platyphylla: natural fractions improve metabolic dysfunction

Dr Chinenye Ugwah-Oguejiofor

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Targeting PCOS with Ficus platyphylla: Natural Fractions Improve Metabolic Dysfunction

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Introduction. Polycystic ovary syndrome (PCOS) is a common endocrine disorder characterised by hyperandrogenism, insulin resistance, inflammation, dyslipidemia, and oxidative stress. Conventional therapies have limitations and side effects, driving interest in natural alternatives. Ficus platyphylla, a West African medicinal plant known for its antioxidant and anti-inflammatory properties, remains largely unexplored for PCOS management.

Aim. This study aimed to investigate the therapeutic efficacy of various solvent fractions (n-hexane, ethyl acetate and n-butanol) of Ficus platyphylla stem bark in mitigating biochemical and oxidative stress-related abnormalities associated with letrozole-induced PCOS in Wistar rats.

Methods. Successive extraction according to polarity was done. Sixty adult female Wistar rats were assigned to ten groups (n=6), including normal and PCOS controls, six treatment groups receiving graded doses (50, 100, 200 mg/kg) of ethyl acetate and n-butanol fractions, 50 mg/kg of n-hexane fraction, and a standard treatment group administered metformin/clomiphene. PCOS was induced using letrozole (1 mg/kg/day) for 21 days, followed by 28 days of treatment. Evaluated parameters included fasting glucose, plasma insulin, HOMA-IR, TNF-α, lipid profile, and oxidative stress biomarkers (SOD, CAT, GR, MDA).

Result and Discussion. PCOS with letrozole in rats resulted in significant metabolic and oxidative disturbances, confirming the reliability of the model. Treatment with the n-hexane and n-butanol fractions, particularly at the 50 mg/kg dose, produced notable improvements in glucose metabolism, insulin sensitivity, and lipid regulation compared with untreated PCOS rats. These fractions also enhanced antioxidant defense by elevating superoxide dismutase, catalase, and glutathione reductase activities, while significantly reducing MDA and proinflammatory cytokine TNF-α. Such effects suggest that these fractions alleviate oxidative stress and inflammation, both central to PCOS pathogenesis. In contrast, the ethyl acetate fraction showed variable activity at 50 and 100 mg/kg, suggesting a weaker or dose-dependent efficacy. Overall, F. platyphylla fractions attenuated insulin resistance, inflammation, dyslipidemia, and oxidative stress.

P149

Linarin alleviates renal ischemia-reperfusion injury via suppressing ferroptosis mediated by MT1

Prof Fei Li

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Linarin alleviates renal ischemia-reperfusion injury via suppressing ferroptosis mediated by MT1

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Introduction. Acute kidney injury (AKI) is a clinically common critical syndrome characterized by a rapid decline in renal function within a short period, no specific therapeutic drugs are currently available. Renal ischemia-reperfusion injury (RIRI) is one of the primary causes of AKI, and excessive reactive oxygen species generated during RIRI can trigger ferroptosis that has emerged as an important target for the prevention and treatment of AKI. Metallothionein 1 (MT1) plays a significant role in regulating oxidative stress and DNA damage. Existing studies suggest that MT1 can exert anti-inflammatory effects by inhibiting the STAT3 signaling pathway and may also alleviate ferroptosis; however, the role of this mechanism in RIRI remains unclear. Linarin is a natural flavonoid compound with demonstrated antioxidant, anti-inflammatory, and anti-apoptotic activities. Previous work by our research group has indicated its potential in ameliorating renal injury. To date, its specific mechanism of action in RIRI remains to be fully clarified.

Aims. This study aims to elucidate the protective effect of linarin against RIRI and further investigate whether the underlying mechanism is related to MT1-mediated ferroptosis, thereby providing a theoretical basis for the prevention and treatment of AKI with linarin.

Methods. The RIRI mice model and NRK-52E cell model induced by hypoxia/reoxygenation (H/R) were established to evaluate the effect of Linarin on improving AKI. Mass spectrometry-based proteomic analysis was performed on renal tissues to identify potential targets of linarin. Subsequently, siRNA and overexpressed FAK plasmid were operated to explore the mechanism.

Results. This work demonstrates that linarin substantially ameliorates AKI and markedly reduces the levels of apoptosis, inflammation, and fibrosis induced by RIRI. Furthermore, it elucidates the underlying mechanism by which linarin protects against RIRI through suppressing ferroptosis via inhibition of the MT1-mediated JAK2/STAT3.

Discussion. The present research is the first to reveal the role of MT1 in renal IRI, providing a novel therapeutic target for AKI prevention and treatment. It also initially clarifies the functions and mechanisms of linarin relieving RIRI, offering a theoretical foundation for the development of linarin as a prophylactic and therapeutic agent against AKI.

P150

L-theanine reduces cellular senescence through the HAS2–NRF2 axis

Assist Prof Bo-hyun Choi

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

L-theanine reduces cellular senescence through the HAS2–NRF2 axis

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Introduction. Cellular senescence is a stable state of growth arrest in which cells lose their proliferative capacity while remaining viable, typically associated with aging. Natural compounds have attracted attention for their potential to alleviate senescence and restore suppressed cell growth.
Aims. This study investigated whether L-theanine exerts anti-senescence effects in cellular models and explored the role of the HAS2–NFE2L2 (NRF2) axis in mediating these effects.
Methods. Senescence was induced in vitro using cisplatin and tert-butyl hydroperoxide (t-BHP). Cells were treated with L-theanine, and senescence markers were assessed, including senescence-associated β-galactosidase (SA-β-gal) activity, reactive oxygen species levels, cell cycle arrest, and inflammatory gene expression. Expression of HAS2 and NFE2L2 was measured by qPCR and immunoblotting. Hyaluronic acid supplementation and NRF2 knockdown experiments were performed to assess the mechanistic pathway.
Results. L-theanine significantly reduced SA-β-gal activity, oxidative stress, cell cycle arrest, and inflammation-related gene expression in both senescence models. L-theanine increased HAS2 and NRF2 expression. Hyaluronic acid treatment enhanced NRF2 expression, supporting HAS2 as an upstream regulator. Although L-theanine elevated HAS2 expression in NRF2-knockdown cells, alleviation of senescence markers was not observed under these conditions, indicating NRF2 dependency.
Discussion. L-theanine exerts anti-senescence effects by activating the HAS2–hyaluronic acid–NRF2 axis, leading to upregulation of NRF2 and its downstream antioxidant genes. These findings highlight L-theanine as a novel anti-senescence compound with a distinct mechanism involving HAS2-mediated NRF2 activation.

P151

Study estimating lenalidomide and pomalidomide enantiomer levels in myeloma patients.

Dr Gyan Vardhan

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Study estimating lenalidomide and pomalidomide enantiomer levels in myeloma patients.

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Introduction. Multiple myeloma (MM) is a malignant plasma cell disorder representing 1.8% of all cancers. Immunomodulatory drugs like lenalidomide (LND) and pomalidomide (PMD) are crucial for treating MM. This study developed and validated a novel chiral stationary phase high-performance liquid chromatography (CSP-HPLC) method to quantify LND and PMD enantiomers in human plasma.
Aims. To explore the therapeutic drug level estimation of Lenalidomide and Pomalidomide Enantiomers in Multiple Myeloma Patients**.**
Methods. The study included 12 MM patients (6 on LND, 6 on PMD) in their second chemotherapy cycle. Blood samples were collected for trough and crest levels. The CSP-HPLC method successfully separated and quantified the enantiomers of both drugs.
Results. For LND, the S-(-) enantiomer showed mean trough and crest concentrations of 11.98 ng/mL and 211.44 ng/mL, respectively. The R-(+) enantiomer had mean trough and crest concentrations of 11.13 ng/mL and 199.86 ng/mL. For PMD, enantiomer-I showed mean trough and crest concentrations of 1.68 ng/mL and 71.45 ng/mL, while enantiomer-II had 1.06 ng/mL and 69.54 ng/mL, respectively.
Discussion. The study demonstrated that the S-enantiomer of LND and enantiomer-I of PMD had slightly higher plasma concentrations and potentially greater antimyeloma activity. These findings provide a basis for developing enantiomeric compounds of LND and PMD, which could lead to more effective and safer treatments for MM.

Vardhan G, Kumar V, Sahu PL, et al. Development and validation of a novel chiral chromatographic method for separation of lenalidomide enantiomers in human plasma. *Chirality*. 2023;35(2):83-91.

P153

MC Attenuates DSS-Induced Colitis by Target Modulation and Gut Microbiome Restoration

Prof Young Hee Choi

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

MC Attenuates DSS-Induced Colitis by Target Modulation and Gut Microbiome Restoration

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Introduction. Inflammatory bowel disease (IBD) is associated with aberrant immune signaling and gut microbiome dysbiosis. Natural compounds capable of target-specific immunomodulation and microbiome restoration are emerging as potential therapeutic agents.
Aims. We evaluated the effects of MC to ameliorate IBD considering target modulation and gut microbiome restoration to suggest MC as a potential herbal agent for IBD treatment.
Methods. A DSS-induced colitis mouse model was used to evaluate the efficacy of MC. Disease activity index (DAI), colon length, and histological scores were assessed. Pro-inflammatory cytokines were quantified to confirm inflammatory target modulation, and 16S rRNA sequencing was performed to analyze microbiome composition and diversity.
Results. A DSS-induced colitis mouse model was used to evaluate the efficacy of MC. Disease activity index (DAI), colon length, and histological scores were assessed. Pro-inflammatory cytokines were quantified to confirm inflammatory target modulation, and 16S rRNA sequencing was performed to analyze microbiome composition and diversity.
Discussion. MC alleviates DSS-induced colitis through modulation of inflammatory targets and restoration of gut microbiome balance. These findings highlight MC as a promising natural therapeutic candidate for IBD management.

P154

AI-DrugIP: an AI-empowered Innovative Drug R&D Web Service Platform

Prof Aillin Liu

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

AI-DrugIP: an AI-empowered Innovative Drug R&D Web Service Platform

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Introduction. In traditional small molecule drug research and development, target identification and ADMET evaluation are two major pain points characterized by low efficiency and high failure rates, directly impacting the R&D timeline and costs.

Aims. To develop the AI-DrugIP platform, integrating the target prediction module 3DSTarPred and the ADMET evaluation module ADMETPred, aiming to enhance the efficiency of early-stage drug discovery and reduce R&D risks through AI empowerment.

Methods. 3DSTarPred employs proprietary algorithms, AlphaConf (rapid conformation generation) and AlphaShape (3D shape similarity calculation), and utilizes the ChEMBL 29 and PDBbind databases to construct a ligand-target relationship library for small molecule target prediction. ADMETPred integrates four machine learning algorithms, covering 27 key ADMET parameters. It incorporates a graph attention network to enable interpretable predictions and supports high-throughput parallel computing.

Results. 3DSTarPred achieved a success rate of 76.27% in predicting targets for 118 FDA-approved drugs, outperforming mainstream platforms. It also supports multi-format file uploads and customizable parameters. ADMETPred surpasses admetSAR3.0 in both speed and accuracy, with the capability to highlight key substructures to guide molecular optimization.

Discussion. The AI-DrugIP platform, through its proprietary algorithms and integrated design, demonstrates higher accuracy and robustness in target prediction and ADMET evaluation. Its user-friendly interface and efficient workflow contribute to accelerating early-stage drug R&D, showcasing promising potential for application and broader adoption. Platform URL: https://ai-drugip.pumc.wecomput.com/.

P155

Novel approaches to targeting the short-chain fatty acid receptor 2 (FFA2/GPR43)

Dr Elizabeth Vecchio

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Novel approaches to targeting the short-chain fatty acid receptor 2 (FFA2/GPR43)

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Introduction. Free fatty acid receptor 2 (FFA2, formerly GPR43) is a G protein-coupled receptor (GPCR) that is activated by short-chain fatty acids (SCFAs), generated via microbial fermentation of dietary fibre in the gut. FFA2 is an important modulator of cardiovascular health, with its absence increasing the risk of high blood pressure in experimental models and humans (Muralitharan et al, 2025). The paucity of high-potency ligands has limited the therapeutic targeting of FFA2 but may provide a novel avenue to treat cardiovascular disease.
Aims. To optimise an *in vitro* semi-high-throughput screening assay to identify novel, small-molecule ligands for FFA2.
Methods. Inhibition of cAMP accumulation (an indicator of FFA2 activation) was measured in CHO cells overexpressing FFA2 using a LANCE® Ultra homogenous time-resolved fluorescence resonance energy transfer assay kit (Revvity). Once assay conditions were optimised, 113 compounds identified during an in-silico screen of our in-house library of 20 million small molecule compounds were tested at a single point concentration (50 µM) to assess potential receptor hits. Ligand activity was normalised to the level of cAMP inhibition elicited by the endogenous ligand, acetate.
Results. Cell suspensions of FFA2-CHO cells (500 cells/well in a 384-well plate), stimulated with 3 µM of the direct adenylate cyclase activator, forskolin, demonstrated the optimal window for measurement of cAMP inhibition. The 113 lead compounds identified in the in-silico screen displayed varying levels of receptor activation. 12 compounds demonstrated >25% cAMP inhibition relative to 10mM acetate. Some compounds appeared to attenuate cAMP inhibition levels below baseline, which may indicate inverse agonist activity.
Discussion. This study has developed an experimental pipeline for identifying FFA2 ligands. The potential identification of novel ligands contributes to our understanding of FFA2 pharmacology and supports the early-stage development of therapeutic strategies for cardiovascular disease, in particular hypertension.

Muralitharan R et al (2025) Circulation Research 136:e20-e33

P156

A novel 2-aminobenzimidazole-based compound, Jzu 25, exhibits anti-glioblastoma activity in preclinical studies

Ms Chin Hui Chuang

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

A novel 2-aminobenzimidazole-based compound, Jzu 25, exhibits anti-glioblastoma activity in preclinical studies

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Introduction. Glioblastoma, the most aggressive primary brain tumor in adults, is highly resistant to conventional therapies, leading to a poor prognosis with a median overall survival of only 12-15 months. It underscores the critical need for developing more effective therapeutic strategies. In this study, we investigated the anti-glioblastoma activities of Jzu25, a novel benzimidazole compound.
Aims. We aim to establish the underlying mechanisms by which Jzu25 induces glioblastoma cell death.
Methods. Cell viability, cell cycle distribution, and apoptosis were analyzed by MTT assay and flow cytometry. The underlying mechanisms of Jzu25 were investigated using siRNA and pharmacological inhibitors, with subsequent confirmation by luciferase reporter assays and Western blot analysis. We also established the orthotopic xenograft and syngeneic glioblastoma mouse models to evaluate the in vivo efficacy of Jzu25, with tumor progression assessed via IVIS Spectrum Imaging and histological staining.
Results. Jzu25 effectively reduced glioblastoma cell viability, arrested the cell cycle, and induced apoptosis. Mechanically, Jzu25 modulated cell cycle regulators, including p21 and survivin, by activating the AMPK-p38MAPK-p53 signaling cascade. This cascade led to elevated levels of p21 and reduced levels of survivin. Knockdown of survivin using siRNA significantly induced cell cycle arrest and apoptosis in glioblastoma cells. In murine models, systemic administration of Jzu25 significantly suppressed the intracranial growth of glioblastoma and improved survival rates.
Discussion. Our findings demonstrate that Jzu25 is a promising therapeutic candidate for glioblastoma. It induces glioblastoma cell apoptosis by regulating the cell cycle and exhibiting potent anti-angiogenic activity. These multimodal effects work synergistically to suppress glioblastoma growth and prolong survival in vivo. Importantly, effective tumor suppression was achieved with systemic administration in an orthotopic glioblastoma model, highlighting Jzu25's potential, as it suggests the compound's ability to cross the blood-brain barrier, a critical hurdle for many glioblastoma treatments.

P157

Drug-likeness and anticancer potential of hexane volatile compounds from Viscum continuum

Dr Ntwanano Mapfumari

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Drug-likeness and anticancer potential of hexane volatile compounds from *Viscum continuum*: An integrated in vitro and in silico study

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Introduction. *Viscum continuum*, a South African mistletoe species, is widely used in traditional medicine but remains poorly characterized scientifically. Despite growing interest in mistletoe species as sources of anticancer agents, little is known about the pharmacological activity or molecular mechanisms of *V. continuum*. Investigating its volatile constituents provides an opportunity to bridge ethnomedicinal knowledge with modern pharmacological validation.

Aims. This study evaluated the cytotoxic potential and drug-likeness of volatile compounds from the n-hexane extract of *V. continuum* using integrated in vitro and in silico approaches.

Methods. Gas chromatography–mass spectrometry (GC-MS) was used to identify volatile constituents. Cytotoxicity was assessed against MCF7 (breast) and A549 (lung) cancer cell lines. Pharmacokinetic profiles were predicted with SwissADME. Protein targets were identified using SwissTargetPrediction, followed by molecular docking. QSAR modelling of PPARG inhibitors (AID 743199 dataset) was performed using a random forest algorithm.

Results. Eucalyptol and conjugated linoleic acid (CLA) ester were identified as major constituents. The n-hexane extract displayed selective cytotoxicity toward MCF7 and A549 cells. SwissADME predicted favourable drug-likeness for both compounds. Target prediction indicated CYP19A1, an oestrogen biosynthesis enzyme, as eucalyptol's top target (docking score: –2.7 kcal/mol), suggesting relevance in hormone-dependent breast cancer. CLA ester showed the highest affinity for PPARG (–4.9 kcal/mol), a nuclear receptor implicated in lung cancer, with additional predicted targets including ALOX5, SCD, and PPARA. QSAR modelling achieved high accuracy (AUC = 0.99), with ExtFP663 and ExtFP956 as key predictive features.

Discussion. Eucalyptol and CLA ester are promising anticancer candidates with selective cytotoxicity and favourable pharmacokinetics. Their predicted targeting of CYP19A1 and PPARG supports potential therapeutic applications in hormone-dependent breast and lung cancers, meriting further preclinical investigation.

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Barlow BA, Wiens D (1975). Permanent translocation heterozygosity in *Viscum hildebrandtii* Engl. and *V. engleri* Tiegh. (Viscaceae) in East Africa. *Chromosoma*, 53(3):265-272.

P158

Investigating the biased signalling of orphan G protein-coupled receptor, bombesin 3

Ms Olivia Clink

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Investigating the biased signalling of orphan G protein-coupled receptor, bombesin 3

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Introduction. There is an urgent need for novel lung cancer therapeutics, as patients experience significant development of drug resistance and have a five-year survival of only 26%. Our lab has identified the orphan G protein-coupled receptor, Bombesin 3 (BB_3), as a novel therapeutic target for lung adenocarcinoma. Though it lacks the characteristics of an oncogenic driver, BB_3 could be used as a conduit for delivering a toxic payload to cancer cells. Identifying appropriate drugs for conjugation requires an accurate understanding of BB_3's signalling profile, including its potential for ligand bias, which has not yet been characterised.
Aims. We sought to elucidate the signalling profile of selective synthetic ligands at BB_3, agonists MK-5046 and Bag-1, and our in-house synthesised antagonist Bantag-1. Pathways of interest are the canonical G protein signalling pathways $G\alpha s$, $G\alpha i$, and $G\alpha q$, as well as β-arrestin recruitment and ERK phosphorylation pathways.
Methods. Human embryonic kidney (HEK293) cells transiently transfected with human BB_3 were stimulated with the selective synthetic ligands across four assays: BRET1 cAMP sensing assay for $G\alpha s$ and $G\alpha i$ signalling; GCaMP5G calcium sensing fluorescent assay for $G\alpha q$; NanoBiT β-arrestin recruitment assay and BRET1-based biosensor for ERK1/2 phosphorylation. The Operational Model of Ligand Bias will be applied to the data.
Results. We report that BB_3 can be activated by Bag-1 and MK-5046 to varying degrees, depending upon the endpoint measured. Our in-house synthesised antagonist, Bantag-1, differed in displaying competitive vs non-competitive antagonism depending upon the assay and the ligand used.
Discussion. Our early results indicate that biased signalling is present at BB_3. Further experiments are needed to understand the extent to which bias may affect development of conjugated BB_3 therapeutics in lung cancer.

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Enhanced anticancer effect of carfilzomib by calcium peroxide nanoparticles targeting ER stress

Assoc Prof Xiao-Ming Zhu

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Enhanced anticancer effect of carfilzomib by calcium peroxide nanoparticles targeting ER stress

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Introduction. Encouraged by the clinical success of proteasome inhibitors treating hematological malignancy, continuous efforts are being made to improve their efficacy and expand their applications to solid tumor therapy.

Aims. Motivated by the excellent synergistic anticancer effect of oxidative stress and proteasome inhibitors, the calcium peroxide (CaO_2) nanoparticles were incorporated with proteasome inhibitor carfilzomib (CFZ)-based chemotherapy in this report.

Methods. In this study, liposomes were used to encapsulate CFZ and CaO_2 nanoparticles for effective combination therapy targeting the interplay between calcium overload and oxidative stress.

Results. The reactive oxygen species (ROS) generation and glutathione depletion by low-dose CaO_2 complement CFZ-induced ubiquitinated protein accumulation further triggering endoplasmic reticulum (ER) stress leading to calcium overload and mitochondrial dysfunction. The liposome-based codelivery system is capable of transporting CFZ and CaO_2 simultaneously to the tumor, and results in a superior antitumor effect in U-87 MG tumor-bearing mice compared with monotherapy.

Discussion. Taken together, CaO_2 holds great potential to sensitize proteasome inhibitors in the treatment of solid tumors, and this work also presents a new combination therapy strategy targeting the crosstalk between proteasome inhibitors and oxidative stress for future cancer therapy.

Acknowledgement: This work was funded by Macau Science and Technology Development Fund (0093-2024-RIB2, 0035/2022/A1)

P162

Cetuximab inhibits BTC-induced angiogenesis via EGFR/MAPK/ANGPT2 pathway in non-small cell lung cancer

Assist Prof Syuan-Ling Lin

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Cetuximab inhibits BTC-induced angiogenesis via EGFR/MAPK/ANGPT2 pathway in non-small cell lung cancer
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Introduction. Lung cancer remains a leading cause of cancer-related mortality worldwide, largely due to the poor prognosis associated with metastatic disease. Angiogenesis plays a pivotal role in tumor growth and dissemination. Betacellulin (BTC), a member of the epidermal growth factor (EGF) family, has been implicated in promoting tumor angiogenesis and metastasis in several malignancies; however, its function in lung cancer has not been fully elucidated.
Aims. This study aimed to investigate the role of BTC in promoting angiogenesis in non-small cell lung cancer (NSCLC) and the potential therapeutic effects of Cetuximab.
Methods. Analysis of the GEO database was performed to examine BTC mRNA levels in NSCLC, with a focus on adenocarcinoma cell lines. Functional in vitro assays were conducted to evaluate the effects of BTC overexpression on ANGPT2 expression and angiogenic activity in HUVECs. ANGPT2 knockdown experiments, EGFR/MAPK signaling inhibition, and Cetuximab treatment were applied to explore underlying mechanisms. In vivo validation was carried out using xenograft tumors derived from BTC-overexpressing A549 cells.
Results. Elevated BTC expression was identified in NSCLC, particularly adenocarcinoma. BTC overexpression significantly increased ANGPT2 expression and promoted tube formation in HUVECs, effects abolished by ANGPT2 knockdown. Cetuximab treatment suppressed BTC-induced ANGPT2 expression, EGFR phosphorylation, and angiogenic activity. Mechanistically, BTC activated the EGFR/MAPK (ERK, p38, JNK)/c-Jun pathway, leading to nuclear translocation of c-Jun, which was blocked by MAPK inhibitors. In vivo, BTC-overexpressing xenografts displayed increased tumor growth and elevated expression of BTC, ANGPT2, and CD31.
Discussion. BTC promotes angiogenesis in NSCLC via the EGFR/MAPK/c-Jun/ANGPT2 signaling pathway. Cetuximab effectively inhibits BTC-driven angiogenesis, underscoring its therapeutic potential in lung cancer. Targeting BTC signaling may represent a novel strategy to suppress angiogenesis and improve clinical outcomes.

P163

Factors influencing the uptake of doxorubicin into BT-20 triple-negative breast carcinoma spheroids

Mrs Cara de Moura-Cunningham

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Factors influencing the uptake of doxorubicin into BT-20 triple-negative breast carcinoma spheroids

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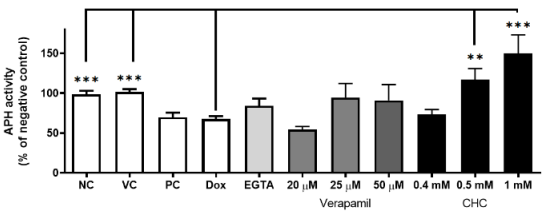

Introduction. Doxorubicin, a commonly used antineoplastic drug against triple-negative breast cancer relies on cellular transport, ionisation, and membrane permeability for uptake into solid tumours (Rivankar 2014). Given rising chemoresistance, further elaboration for contributing factors to uptake is needed.

Aims. To determine doxorubicin's cytotoxicity in combination with agents altering membrane integrity (P-gp transporter function (verapamil) and pH (α-cyano-4-hydroxycinnamate [CHC]) in BT-20 triple-negative breast carcinoma spheroids.

Methods. The 72-hour cytotoxic effects of Day 4 spheroids treated with doxorubicin, EGTA, verapamil, or CHC were assessed with planimetry, and acid phosphatase activity. Combinations were evaluated by fluorescence microscopy, while western blotting profiled E-cadherin and overall cadherin expression.

Results. Doxorubicin (10 µM) reduced spheroid volume by 27.5% and viability by 39.9% (n=10, P<0.0001), while EGTA (2 mM) disrupted spheroid integrity. Doxorubicin with 1.5 mM EGTA increased viability by 16%, verapamil at 25–50 µM increased viability by 25%, and CHC increased viability by 49% (n=10, P<0.001) at 0.5 mM and 82% at 1 mM (n=11, P<0.0002). Microscopy revealed an increase in doxorubicin accumulation in spheroid cores after combinational treatment. Western blotting showed differential cadherin profiles between monolayer and spheroid cultures.

Discussion. Doxorubicin treatment may upregulate E-cadherin expression through reactive oxygen species generation (Na et al 2021). Retained protons, resulting from CHC treatment, could limit nuclear uptake of the drug through ionisation. These findings suggest that altering these factors may alter the response towards doxorubicin, however, further investigation is needed to ascertain to what degree this can be modulated.

Rivankar S (2014) J. Cancer Res. Ther. 10(4):853-8
Na et al (2021) Biochem Biophys Res Commun. 567:131-137

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High-throughput medulloblastoma 3D modelling reveals a repurposed CNS drug targeting MYC-driven disease

Ms Shubneet Kaur

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

High-throughput medulloblastoma 3D modelling reveals a repurposed CNS drug targeting MYC-driven disease

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Introduction. Medulloblastoma is the most common malignant brain tumour in children. Despite multimodal treatment strategies, outcomes for aggressive subtypes demonstrate poor overall survival rates and high incidences of metastatic disease. Current drug discovery efforts rely heavily on two-dimensional culture systems with limited tumour architecture, brain-like mechanics, and invasive behaviour recapitulation, limiting their predictive value. Therefore, demonstrating an urgent need for physiologically relevant platforms capable of identifying effective blood–brain barrier-permeable therapeutics with improved selectivity.

Aims. Development of a novel high-throughput three-dimensional soft-agar–based assay that models brain tissue stiffness and enables quantitative assessment of medulloblastoma growth and viability in a 384-well format.

Methods. Group 3 medulloblastoma cells were grown as colonies within a 0.4% agar matrix, and the assay was optimised to have Z′-factors greater than 0.6 and high signal-to-background ratios using complementary fluorescence-based viability readouts. This platform was used to screen 320 clinically approved, brain-penetrant compounds.

Results. From this screen, several dopamine D2 receptor modulators demonstrated medulloblastoma suppression, and pimozide was selected for follow-up based on potency and selectivity. Validation studies demonstrated concentration-dependent suppression of cell viability across multiple MYC-driven Group 3 medulloblastoma cell lines in both two- and three-dimensional systems, with minimal toxicity to normal brain cells. Pimozide significantly reduced c-Myc protein levels without any corresponding changes in MYC mRNA, consistent with translational regulation. Analysis of patient transcriptomic datasets identified higher DRD2 expression in medulloblastoma samples compared with normal brain tissue, indicating enrichment of this target axis in medulloblastoma and supporting the translational relevance of dopamine receptor modulation in MYC-driven disease.

Discussion. We report a robust, scalable and physiologically relevant three-dimensional screening platform, enhancing rapid identification of clinically approved and brain-penetrant therapeutic candidates, and translational potential for medulloblastoma. Additionally, we identify Pimozide as a promising repurposed candidate for aggressive medulloblastoma subtypes, warranting further preclinical evaluation alone and in combination with existing therapies.

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Non-canonical Oxytocin Receptor Trafficking and Compartmentalised ERK Signalling

Mrs Shuqi Dong

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Non-canonical Oxytocin Receptor Trafficking and Compartmentalised ERK Signalling

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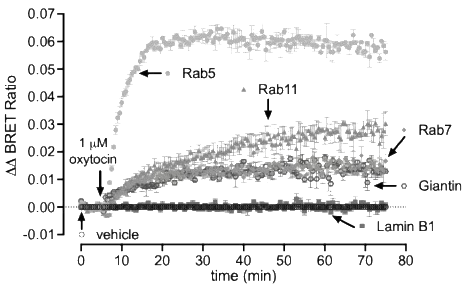
Introduction. Oxytocin receptors (OTRs) regulate physiological processes through G protein-dependent pathways via coupling to $G\alpha_{q/11}$ and $G\alpha_{i/o}$ subunits. Following activation, OTRs traffic via a Rab4/Rab5-dependent recycling pathway (Conti et al, 2009). Studies have also demonstrated OTR localisation in the nucleus (Kinsey et al, 2007). However, whether the OTR can traffic to and signal from intracellular organelles remain understudied.



Aims. To investigate the spatial regulation of the OTR by mapping receptor trafficking and compartmentalised signalling.

Methods. All experiments were conducted in transiently transfected HEK293 cells. Receptor trafficking was monitored using bioluminescence resonance energy transfer (BRET) (Lan et al, 2012). Receptor activation in intracellular organelles was assessed using Venus-tagged mini-G proteins (Wan et al, 2018). Location-specific ERK1/2 activity was quantified using ERK kinase activity reporter 4 (EKAR4) sensors (Keyes et al, 2020; Kwon et al, 2022).

Results. Oxytocin induced rapid OTR trafficking to early (1 μM oxytocin area under the curve (AUC) mean±SEM 3.89±0.07, $P<0.05$ vs vehicle, n=4), late (0.67±0.15, $P<0.05$ 1 μM oxytocin vs vehicle, n=4) and recycling endosome as well as Golgi (0.81±0.03, $P<0.05$ 1 μM oxytocin vs vehicle, n=4), but not the nucleus (figure above). MiniGsq recruitment also highlighted compartmentalised OTR activation. Oxytocin caused a concentration-dependent increase in ERK activity in endosomes and the nucleus.

Discussion. These results reveal non-canonical OTR activation of ERK at endosomes and the nucleus. Endosomal, but not nuclear, trafficking of OTRs correlates with ERK activation in this compartment. Future studies will need to determine the location of the OTR that regulates nuclear and endosomal ERK activity.

Conti F et al (2009) Am J Physiol Endocrinol Metab 296:E532-42. Keyes J et al (2020) Elife 9:e57410. Kinsey C G et al (2007) J Cell Mol Med 11:96-110. Kwon Y et al (2022) Nature 611:173-179. Lan T et al(2012) Traffic 13:1450-1456. Wan Q et al (2018) J Biol Chem 293:7466-7473.

P167

Beyond the 3Rs: The 12Rs of animal research

Prof Dave Lewis

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Beyond the 3Rs: The 12Rs of animal research

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Introduction. Research involving animals has issues with reliability, reproducibility, and translatability to other species. The Principles of Humane Experimental Technique, the 3Rs, were introduced to support the humane care and use of animals in research. However, research involving animals requires additional ethical issues to be considered. Further, there is not one global uniform opinion. Ethical values differ between cultures, communities, legislations, and may change over time. This myriad of views and values can be confusing, particularly for those new to ethics or research.

Aims. To create an inclusive ethical framework encompassing all the ethical issues surrounding research involving animals.

Methods. The 12Rs Framework, consisting of three domains: Animal Welfare (Replacement, Reduction, Refinement), Social Value (Respect, Responsibility, and Regulations), Scientific Integrity (Reproducibility, Relevance, and Transferability) was created. The intersection of the three domains leads to Righteousness, Reliability, and Reckoning.

Results. The 12Rs are being disseminated globally. They have been incorporated into the South African Ethics in Health Research Guidelines, adopted by a company as the ethical basis of their product and by other animal welfare sectors.

Discussion. Adoption of the 12Rs framework by researchers will support humane, high-quality, and impactful scientific research. Whilst we all are on the same journey to replace the involvement of animals in research, different stakeholders and communities across the world will have different priorities, needs, and constraints. They will focus on different Rs. This is particularly relevant to research in the Global South where access to technologically advanced in vitro alternatives is limited.

Dept of Health (2024). https://www.health.gov.za/wp-content/uploads/2024/05/NDoH-2024-Health-Research-Guidelines-3rdEdition-v0.1.pdf

Somark. https://www.somarkinnovations.com/news/innovative-laboratory-animal-identification-solutions/

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The structural and pharmacological characterisation of the neuropeptide S receptor 1

Ms Feng (Ruby) Tang

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

The structural and pharmacological characterisation of the neuropeptide S receptor 1

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Introduction. Endometriosis is described as the growth of uterine-like tissue outside of the uterus and a key symptom is chronic severe pelvic pain (Crump et al, 2024). The current treatments are limited and include surgery and hormonal contraceptives, which are suggested to be inadequate for pain management and supress fertility, respectively (Crump et al, 2024). Recently, a neuropeptide S receptor 1 (NPSR1) antagonist was demonstrated to reduce abdominal pain in an endometriosis mouse model (Tapmeier et al, 2021), highlighting its therapeutical potential as a drug target. Currently, there are no experimentally determined atomic structures of the NPSR1, which is suggested to be a major contributor to the lack of NPSR1 targeted drugs progressing to clinical studies.

Aims. To structurally and pharmacologically determine the active and inactive state structures of the NPSR1 in complex with its ligands.

Methods. Active state NPSR1 constructs were designed and screened in insect cells, followed by protein expression and purification. Additionally, NPSR1 antagonists were pharmacologically characterised in functional assays.

Results. Here, we report that 20 mL/L of the NPSR1 fused mini-G protein construct exhibits high expression at 48 h and it was subsequently purified with G protein beta-gamma subunits. Additionally, pharmacological characterisation showed that NPSR1 antagonists SHA 68, NCGC84 and MIPS-54170 inhibit neuropeptide S (NPS)-induced calcium mobilisation with pA_2 ± SEM values of 7.13 ± 0.12, 7.67 ± 0.07, and 8.21 ± 0.03 (n=3), respectively.

Discussion. We aim to gain a deeper understanding of the molecular interactions involved in ligand binding at NPSR1 and the differences between receptor activation and inactivation. In vitro profiling of the NPSR1 antagonists will enable us to directly compare their functional and binding activities. Collectively, this knowledge may help guide the development of new NPSR1 compounds for the treatment of pain associated with endometriosis.

Crump J et al (2024) Aust J Gen Pract 53:11-18
Tapmeier T et al (2021) Sci Transl Med 13(608)

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Sulforaphane Affects Astrocytic Modulation and Neurological Recovery After Ischemic Stroke

Dr Lida Du

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Sulforaphane Affects Astrocytic Modulation and Neurological Recovery After Ischemic Stroke
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Introduction. Ischemia–reperfusion injury induces complex neurovascular and glial responses that drive secondary brain damage. Astrocytic lipid metabolic dysregulation has emerged as a key contributor to post-stroke progression. Sulforaphane has shown anti-inflammatory and antioxidant properties and potential neuroprotective effects; however, its impact on astrocytic lipid metabolism during stroke remains unclear.
Aims. To evaluate whether sulforaphane modulates astrocytic lipid metabolism and improves neurovascular recovery following ischemic stroke, and to assess the effects of treatment.
Methods. Transient middle cerebral artery occlusion was performed in mice, followed by reperfusion. Sulforaphane was administered during the acute phase. Neurological deficits, infarct volume, astrogliosis, blood–brain barrier integrity, inflammatory markers, vascular remodeling, and lipid metabolic profiles were assessed using behavioral testing, histological analysis, and lipidomic evaluation.
Results. Sulforaphane treatment significantly improved neurological outcomes and reduced infarct size after I/R. Treatment attenuated reactive astrogliosis and normalized astrocytic lipid metabolic signatures, particularly within sphingolipid and glycerophospholipid pathways. These changes were associated with preserved blood–brain barrier integrity and reduced neuroinflammation. However, prolonged administration impaired vascular remodeling during later stages of recovery.
Discussion. Sulforaphane demonstrates therapeutic potential by modulating astrocytic lipid metabolism, supporting glial metabolism-oriented strategies for ischemic stroke intervention.

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NGI-1 enhances immunotherapy against glioblastoma via blocking PLOD2 glycosylation

Dr You-Cheng Liao

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

NGI-1 enhances immunotherapy against glioblastoma via blocking PLOD2 glycosylation

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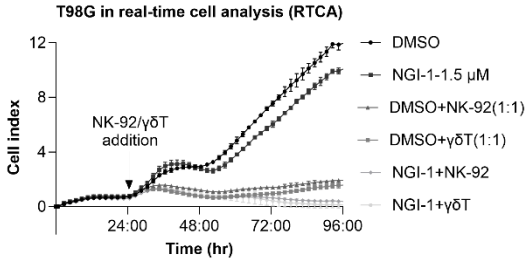
Introduction. Glioblastoma (GBM) is an aggressive brain tumor with limited treatment options. Tumor hypersialylation facilitates immune evasion by reducing recognition and cytotoxicity of natural killer (NK) and γδ T cells. Inhibiting glycosylation may restore immune recognition and enhance the efficacy of immunotherapy.



Aims. We aim to assess the effects of NGI-1 (N-glycosylation inhibitor-1) on GBM progression, sialic acid metabolism, the glycosylation pathway, and immune susceptibility.

Methods. NGI-1-treated GBM cells were subjected to CCK-8 assays to assess cell viability, immunoblotting to detect glycoprotein expression, immunofluorescence to measure sialic acid levels, RNA sequencing combined with Ingenuity Pathway Analysis (IPA) to investigate the underlying mechanisms, and NK and γδ T cells co-culture cytotoxicity.

Results. NGI-1 treatment significantly suppressed GBM proliferation and increased sensitivity to NK and γδ T cell–mediated cytotoxicity. RNA-seq and IPA further revealed suppression of mitochondrial-related genes, activation of glycolysis, and inhibition of both N- and O-glycosylation pathways. Additionally, NGI-1 decreased glycosylated PLOD2 (Procollagen-Lysine,2-Oxoglutarate 5-Dioxygenase 2) and upregulated ULBP2 (U16 binding protein 2), thereby enhancing immune cell recognition. Immunofluorescence confirmed reduced sialylation signals in NGI-1–treated GBM cells, validating its effect on removing the glycan shield. However, the overexpression of PLOD2 diminished the impact of NGI-1 on cell growth, immune susceptibility to NK and γδ T cells, and the removal of glycosylated PLOD2.

Discussion. NGI-1 acts as a dual modulator by disrupting glycosylation and altering tumor metabolism, thereby reducing immune evasion and sensitizing GBM cells to NK and γδ T cell cytotoxicity. Importantly, PLOD2 overexpression confers resistance, emphasizing its importance as a critical factor in immune evasion. These findings highlight NGI-1 as a promising adjunctive strategy to enhance innate immune–based therapies for GBM.

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In vitro probiotic evaluation of Lactobacillus isolates from African fermented food condiments

Prof Charles Esimone

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

In vitro probiotic evaluation of Lactobacillus isolates from African fermented food condiments

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Introduction: The use of fermented food condiments with its attendant improvement in organoleptic quality and shelf-life of foods and the fact that lactic acid bacteria (LAB) are responsible for its fermentation have necessitated this study.

Aim of the study: to isolate and characterize lactic acid bacterial strains from African fermented food condiments (FFC).

Methods: Samples of market-ready, artisanal prepared, FFC in South-East Nigeria were procured. Lactic acid bacteria were isolated using De Man, Rogosa Sharpe (MRS) agar by a surface drop plate technique. After enumeration and initial identification, LAB isolates obtained were further evaluated based on their *in vitro* probiotic properties.

Results and discussion: The 16S rRNA gene sequence analysis identified mostly *Lactobacillus* species. The species showed adherence to Caco-2 cell lines, auto-aggregation after 24 hr and the ability to inhibit some human enteric pathogens. They were susceptible to antibiotics tested except for a few ampicillin-resistant strains. All strains exhibited tolerance to simulated gastrointestinal conditions of pH 4.0, NaCl (3.5 and 6.5%) and Bile (0.3 and 0.6%) at 4 hr treatment better than or similar to reference strain *Lactobacillus rhamnosus* GG (LGG).

Conclusion: This study revealed the abundance of *lactobacillus* species in African fermented food condiments. Having demonstrated promising strain-specific *in vitro* probiotic attributes, they can be further assessed for their safety, other health benefits and possibly considered for formulation as probiotics.

Key words: Probiotics, *Lactobacillus,* Africa, Fermented food condiments, *in vitro.*

P172

Activity of a Polyherbal Formulation on Type 2 Diabetes in Wistar Rats

Prof Charles Esimone

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Activity of a polyherbal formulation on type 2 diabetes in Wistar rats

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Background: Type 2 diabetes leads to complications due to an imbalance in reactive oxygen species production. Therefore, managing oxidative stress is vital for addressing diabetes-related issues and improving health outcomes.
Aim of the study: To assess the effect of a polyherbal formulation on oxidative stress markers and the hepatic and renal function in type 2 diabetic rats.
Methodology: The methodology involved creating a polyherbal formulation using a mixture design approach, where the masses of different spices served as factors, and antioxidant activities (ABTS, DPPH, FRAP) as responses. Acute toxicity study was conducted to validate the optimal formulation. Rats were administered extracts at doses of 300 mg/kg (D1) and 150 mg/kg (D2), with an untreated group. Subsequently, the impact of this formulation on various oxidative stress markers (MDA, SOD, catalase), blood glucose levels, lipid profile (triglycerides, total cholesterol, LDL, and HDL), liver function (ASAT, ALAT), and kidney function (creatinine, urea) was evaluated. Finally, a correlation between oxidative stress markers and these parameters was established.
Results and discussion : The study revealed that formulation X, consisting of specified 0.251 mg of *Xylopia parviflora*, 0.1 mg of *Zanthoxylum leprieurii*, 0.417 mg of *Dichrostachys glomerata*, and 0.231 mg of *Xylopia aethiopica*, was chosen after antioxidant and acute toxicity assessment. Groups D1 and D2 showed increases in SOD (49.67% and 46.30%) and catalase (74.13% and 72.23%) activities compared to the untreated diabetic group (TP). MDA levels decreased by 48.38% and 47.92% in these groups. Notable improvements in lipid profiles were also observed, along with enhanced liver and kidney function markers. A significant correlation was found between reduced oxidative stress markers and improved hepatic and renal functions.
Conclusion: The findings suggest that Formulation X shows promise in managing complications associated with type 2 diabetes.
Keywords: Type 2 diabetes, oxidative stress, polyherbal formulation, biochemical markers.

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Role Of FGF-23 In Promoting MMP-14-Mediated Angiogenesis And Osteosarcoma Progression

Dr Chih-Yang Lin

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Role Of FGF-23 In Promoting MMP-14-Mediated Angiogenesis And Osteosarcoma Progression

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Introduction. Osteosarcoma is a highly aggressive primary bone tumor with rapid growth, early metastasis, and poor prognosis, in which angiogenesis plays a key role in disease progression. Fibroblast growth factor-23 (FGF-23), a bone-derived hormone, has been implicated in tumor development and metastasis; however, its role in osteosarcoma-associated angiogenesis remains unclear.

Aims. This study aimed to investigate the role of FGF-23 in promoting angiogenesis in osteosarcoma and its molecular mechanisms, focusing on MMP-14 regulation.

Methods. Gene expression profiles from the GSE218035 dataset were analyzed to compare the expression of matrix metalloproteinases (MMPs) in osteosarcoma versus normal bone tissues. In vitro experiments using 143B and MG63 osteosarcoma cells were performed to evaluate the effects of FGF-23 on MMP-14 expression and angiogenic activity, assessed by qPCR, Western blot, and HUVEC tube formation assays. The p85/Akt/mTOR/p65 signaling pathway was examined using pharmacological inhibitors and siRNA knockdown. In vivo validation was conducted using osteosarcoma xenograft models with FGF-23 overexpression.

Results. Bioinformatics analysis revealed significant upregulation of MMP-2, MMP-9, MMP-13, and MMP-14 in osteosarcoma tissues, with high MMP-14 expression correlating with poor patient survival. FGF-23 treatment increased MMP-14 expression and enhanced tube formation in HUVECs, effects abolished by MMP-14 knockdown. Mechanistically, FGF-23 activated the p85/Akt/mTOR/p65 pathway, leading to MMP-14 upregulation and increased angiogenesis. Inhibiting this pathway significantly reduced FGF-23-induced MMP-14 expression and angiogenic activity. In vivo, FGF-23 overexpression in xenografts promoted tumor vascularization, growth, and elevated MMP-14 and CD31 expression.

Discussion. FGF-23 promotes angiogenesis and osteosarcoma progression by activating the p85/Akt/mTOR/p65–MMP-14 axis. These findings highlight FGF-23 as a potential therapeutic target to suppress angiogenesis and limit osteosarcoma progression.

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Fagerlindia scandens Impairs Glycolysis in Nasopharyngeal Carcinoma via HIF-1α/PPARγ Metabolic Axis

Dr Jingjing Li

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Fagerlindia scandens Impairs Glycolysis in Nasopharyngeal Carcinoma via HIF-1α/PPARγ Metabolic Axis
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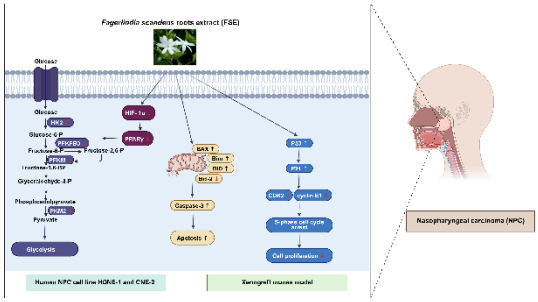
Introduction. Nasopharyngeal carcinoma (NPC) is an aggressive malignancy with limited treatment options and severe side effects, underscoring the need for safer and more effective therapies. Fagerlindia scandens, a traditional Chinese medicinal herb endemic to NPC regions, represents a promising source of novel anti-NPC agents. However, its efficacy and underlying mechanisms remain unknown.



Aims. To investigate the anti-NPC activity of Fagerlindia scandens root extract (FSE) and elucidate its molecular mechanisms, with emphasis on glycolytic metabolism.

Methods. The phytochemical profile of FSE was characterized by LC-MS. Anticancer effects were evaluated in HONE-1 and CNE-2 cells using CCK-8, colony formation, and flow cytometry. An NPC xenograft mouse model was established to confirm its anti-tumor efficacy in vivo. Potential mechanisms were predicted by network pharmacology and RNA sequencing, followed by in vitro and in vivo validation.

Results. FSE significantly inhibited NPC cell proliferation, induced S-phase cell cycle arrest, and promoted apoptosis. In vitro and in vivo experiments demonstrated that FSE suppressed glycolytic metabolism by downregulating HK2, PFKFB3, PFKM, and PKM2. Transcriptomic and mechanistic analyses revealed that FSE exerted these effects by inhibiting HIF-1α/PPARγ pathway. Pharmacological activation of this pathway using Roxadustat attenuated the anti-glycolytic, anti-proliferative, and pro-apoptotic effects of FSE. In NPC-bearing mice, FSE significantly inhibited tumor growth without observable toxicity, demonstrating efficacy comparable to fluorouracil.

Discussion. Our findings demonstrate for the first time that FSE suppresses NPC progression by inhibiting the HIF-1α/PPARγ-mediated glycolysis pathway, resulting in cell cycle arrest and apoptosis. This study highlights FSE as a promising multi-targeted therapeutic candidate for NPC.

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Targeting melanoma mitochondrial function through VDAC inhibition

Prof Danyelle Townsend

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Melanoma is a highly aggressive and metabolically adaptable cancer that often resists conventional therapies. Targeting core bioenergetic pathways offers a strategy to improve treatment responses, particularly in tumors dependent on mitochondrial function. SC18 is an imidazolidine-2,4-dione compound that binds the NADH-binding pocket of voltage-dependent anion channels (VDACs), inducing mitochondrial dysfunction. VDAC expression is increased in melanoma and strongly associated with advanced disease stage and poor prognosis. In this study, we evaluated the effects of SC18 on melanoma cell lines with distinct characteristics, either melanin-rich melanotic human MNT-1 or mouse B16-F1, or low/amelanotic human SKMel28 or mouse YUMM lines. VDAC1, VDAC2 and VDAC3 were highly expressed in these melanoma lines, and all lines relied on both glycolysis and mitochondrial oxidative phosphorylation for ATP production. SC18 treatment reduced cell viability, exhibiting an initial survival-curve shoulder followed by increased sensitivity. Mitochondrial membrane potential and oxygen consumption rates were reduced following SC18, accompanied by a decline in intracellular ATP levels and decreased TCA cycle substrate utilization. SC18 induced increases in reactive oxygen species, mitochondrial superoxide, and lipid peroxidation. Functional assays revealed that SC18 significantly inhibited cell migration in multiple melanoma lines, indicating anti-metastatic potential. Synergistic cytotoxicity was observed when SC18 was combined with other chemotherapeutic agents. Overall, SC18 impaired mitochondrial metabolism, induced oxidative stress, and disrupted survival and motility pathways, with effects more pronounced in low/amelanotic compared with melanotic cell lines. Together, these findings support further development of SC18 as a mitochondrial metabolic disruptor targeting redox vulnerabilities in melanoma.

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Neuroprotection by Ryanodine receptor inhibition in neonatal hypoxic-ischemic brain injury

Prof Zhong-Ping Feng

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Neuroprotection by Ryanodine receptor inhibition in neonatal hypoxic-ischemic brain injury

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Introduction. Neonatal hypoxic-ischemic (HI) brain injury is a leading cause of hypoxic-ischemic encephalopathy, with limited effective therapies beyond hypothermia. Dysregulated calcium homeostasis via ryanodine receptors (RyRs) contributes to neuronal death, making RyR antagonists potential neuroprotectants.
Aims. To investigate whether dantrolene, an FDA-approved RyR inhibitor, reduces HI-induced neuronal damage and improves functional recovery in neonatal mice.
Methods. HI was induced in postnatal day 7 CD1 mice by right carotid artery ligation and hypoxia exposure. Dantrolene (i.p.) was administered prophylactically. Infarction volume was assessed by TTC and Nissl staining. Short- and long-term neurobehavioral outcomes were measured. In vitro, primary cortical neurons underwent oxygen-glucose deprivation (OGD), with or without dantrolene treatment. Calcium dynamics were examined by Fura-2 imaging; apoptotic and survival signaling proteins were analyzed by Western blot.
Results. Dantrolene significantly reduced infarct volume, attenuated neuronal loss, and preserved whole-brain morphology up to 25 days post-HI. Treated mice exhibited improved reflexes, grip strength, rotarod performance, and learning/memory retention compared to HI controls. In vitro, dantrolene decreased OGD-induced neuronal death and reduced intracellular calcium elevation. Molecular analysis showed reduced caspase-3/9 activation, increased PKC signaling, and elevated p-GSK3β, consistent with anti-apoptotic and pro-survival mechanisms.
Discussion. Dantrolene exerts sustained neuroprotection in neonatal HI injury by limiting pathological calcium release, reducing apoptosis, and supporting pro-survival signaling. These findings highlight RyRs as critical mediators of HI pathology and support the potential of dantrolene as a repurposed therapy for neonatal brain injury.

P178

Cinnamic acid alleviates colonic injury by activating GPR109A in diabetic mice

Ms Meihan Liu

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Cinnamic acid alleviates colonic injury by activating GPR109A in diabetic mice

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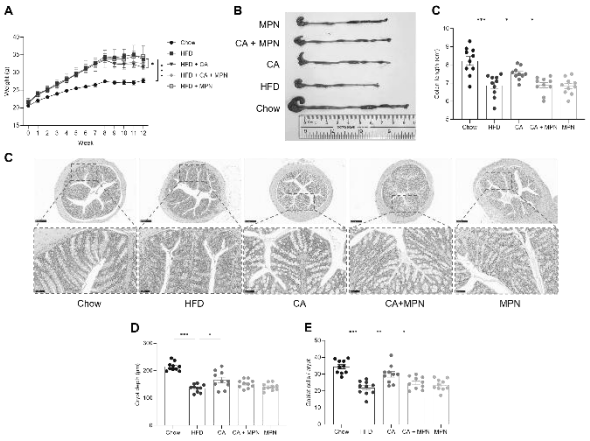

Introduction. Type 2 diabetes mellitus (T2DM) is characterized by insulin resistance, hyperglycaemia and chronic inflammation, often exacerbated by disruption of the gut barrier integrity. Cinnamic acid (CA), a natural compound from *Cinnamomi cortex* and other plants, has demonstrated anti-diabetic properties, but its contribution to colonic inflammation in T2DM remains unclear.

Aims. To investigate the protective effects and mechanisms of CA on colonic inflammation and epithelial barrier integrity in T2DM.

Methods. High-fat diet-induced diabetic mice were used to study the therapeutic effects of CA in the presence or absence of mepenzolate bromide (MPN), a GPR109A inhibitor. Metabolic parameters, colonic morphology, cytokine profiles, and tight junction proteins were evaluated. NCM460 colonic epithelial cells were also used to verify the therapeutic effects of CA and its underlying mechanisms.

Results. CA improved metabolic parameters, alleviated colonic damage, reduced colonic immune cell infiltration and inflammation, and restored epithelial barrier integrity in diabetic mice. It also decreased cell permeability and inflammation in NCM460 cells. All these effects were reversed by MPN, indicating the involvement of GPR109A in mediating these therapeutic effects.

Discussion. Our results provided direct evidence demonstrating that CA did not only exhibit anti-diabetic effects but also alleviate colonic inflammation and injury in T2DM. These data suggest that CA exerts dual regulatory effects on metabolism and intestinal barrier integrity, making it as a promising agent for the integrated management of T2DM.

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Inhibition of TRADD-TRAF2 binding prevents development of renal fibrosis

Prof Wei Wei

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Inhibition of TRADD-TRAF2 binding prevents development of renal fibrosis

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Introduction. Renal fibrosis is the pathological basis of various chronic kidney diseases (CKD), which is irreversible and currently lacks ideal treatment. Tumor necrosis factor-alpha (TNF-α) inhibitors block pro-inflammatory effects of type I receptor (TNFR1) to exert therapeutic benefits, bur they also inhibit immunoregulatory function of TNFR2, leading to severe adverse effect. TRADD is the downstream signalling molecular of TNFR1 but not of TNFR2. Therefore,TRADD is an potential medicinal target for selectively inhibiting TNFR1-mediated signaling.

Aims. The present study was to assess effectiveness of blocking Tumor necrosis factor receptor- associated death domain protein (TRADD) mediating signalling to against renal fibrosis.

Methods. TRADD expression was detected from CKD patients and experimental renal fibrosis models. Renal fibrosis was constructed in TRADD knockdown, overexpression/wild type mice, and biochemical parameters and histopathology were examined to evaluate protective effect of blocker of TRADD and TRAF2 binding (CP-231 and ICCB-19). Molecular docking and amino acid mutations were conducted to disclose the potential targeted sites of CP231.

Results. TRADD expression was upregulated in renal samples from CKD patients and renal fibrosis mice. Knockdown of TRADD in unilateral ureteral obstruction(UUO) mice or Transforming Growth Factor-beta (TGF-β) stimulated renal tubular epithelial cell (RTECs) HK-2 selectively blocked TNFR1 signaling, and reduced expression of downstream inflammation and necrosis signal-related proteins, leading inhibition on epithelial-mesenchymal transition (EMT) or renal fibrosis. Moreover, overexpression of TRADD increased TNF-α-TNFR1 downstream related proteins and fibrosis marker protein α-SMA, exacerbating HK-2 EMT and UUO-induced renal fibrosis. CP-231 and ICCB-19 effectively inhibited renal fibrosis in UUO and ischemia-reperfusion mice. Mechanistic studies revealed CP-231 selectively blocked TNFR1 mediated pathway instead of that of TNFR2. CP-231 specifically combined with Arg160 and Arg146 of TRADD, thereby disrupting TRADD-TRAF2 interaction and exerting its anti-fibrotic effects.

Discussion. TRADD regulates renal fibrosis via mediating downstream inflammatory necrosis signaling. CP-231 blocks TRADD and TRAF2 binding and selectively inhibits TNFR1 signaling, inducing anti-renal fibrosis effect.

P180

Genetic and pharmacological inhibition of lipocalin-type prostaglandin D synthase suppresses obesity

Prof Ko Fujimori

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Genetic and pharmacological inhibition of lipocalin-type prostaglandin D synthase suppresses obesity

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Introduction. Obesity is a serious health problem worldwide and increases the risk of etiology of metabolic diseases such as type 2 diabetes and cardiovascular disease. However, its regulation is complex. Various genetic, endocrine, metabolic, and nutritional factors are involved in this regulation. Understanding the regulatory mechanisms of obesity is important for the control of obesity. Prostaglandins (PGs) are members of the lipid mediators, some of which are involved in the regulation of obesity. Lipocalin-type PGD synthase (L-PGDS) is expressed in adipocytes, and its expression level is elevated in the adipose tissue in obese.
Aims. The role of L-PGDS and PGD_2 in adipose tissue remains unclear. We investigated the roles of L-PGDS and PGD_2 in obesity using adipose-specific L-PGDS gene-knockout (KO) mice and an orally available L-PGDS inhibitor.
Methods. We generated adipose-specific L-PGDS KO mice using an aP2-*Cre* transgene (*aP2-Cre/L-PGDS*$^{flox/flox}$). *aP2-Cre/L-PGDS*$^{flox/flox}$ mice and their control littermates (*L-PGDS*$^{flox/flox}$ mice) were fed either a low-fat or a high-fat diet (HFD). Moreover, an orally available L-PGDS inhibitor, AT-56 (10 mg/kg) was administered to HFD-fed mice.
Results. When fed an HFD, *aP2-Cre/L-PGDS*$^{flox/flox}$ mice lowered body weight gain with smaller adipose size, as compared with *L-PGDS*$^{flox/flox}$ mice. The expression levels of the adipogenic and lipogenic genes were decreased in HFD-fed *aP2-Cre/L-PGDS*$^{flox/flox}$ mice. In contrast, the transcription levels of the lipolytic genes were enhanced in HFD-fed *aP2-Cre/L-PGDS*$^{flox/flox}$ mice. Moreover, glucose level in serums was decreased, and insulin sensitivity was improved in HFD-fed *aP2-Cre/L-PGDS*$^{flox/flox}$ mice. In addition, administration of AT-56 decreased body weight gain in HFD-fed mice.
Discussion. Adipose L-PGDS-produced PGD_2 increased body weight gain and enhanced insulin resistance under nutrient dense condition. Moreover, the pharmacological inhibition of L-PGDS reduced body weight gain, indicating that L-PGDS inhibition possesses potential for the treatment of obesity.

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Evidence for a Novel Cholesterol Binding Site on the P2X7 Receptor

Mr Alankar Ghosh

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Docking studies targeting a novel allosteric site on the P2X7 receptor

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Introduction. The P2X7 receptor (P2X7R) is a heterotrimeric purinergic receptor uniquely activated at high concentrations of ATP. It is widely expressed in immune cells and the central and peripheral nervous systems. It also plays an active role in the inflammatory pathway, making P2X7R an attractive therapeutic target. Unfortunately, there has been limited success in developing a modulator for this receptor. Our group has computationally identified a novel allosteric cholesterol binding site. To identify potential inhibitors, this study draws on docking studies to identify hit compounds that can target this binding site. The results from this study help to understand the structure-activity relationships (SARs) of this novel binding site, informing the direction of future projects.

Aims:.To identify potential hit compounds through virtual screening and understand SARs of the novel binding site.

Methods: A total of 603 compounds were obtained from PubChem, primarily drawn from steroid, sterol, fatty acids, and terpene and terpenoid libraries. These were screened for duplicates and filtered for druggability according to 'Lipinski's rule of five'. These compounds were then docked with GLIDE and ranked by docking score. Compounds with a docking score ≤-7.0 kcal/mol were identified as potential hits and assessed for their SARs.

Results. A total of 19 hit compounds were determined to have favourable interactions with the binding site. These were evaluated for structural components that contribute to their affinity.

Discussion. Three positive determinants predict favourable interactions: steroidal rings, saturation, and head or tail substitution. Compounds that share a steroidal ring structure interact with key cholesterol-binding residues and interact hydrophobically with the palmitoyl chains. The presence of unsaturated hydrocarbons in steroidal ring structures predictably improves the docking score. Hydrophobic substitutions near the tail region further improve interactions with the palmitoyl chains. On the other hand, hydrophilic substitutions at the head region interact favourably with polar residues through H-bond networks. The results from this study will be used to inform our *in vivo* experiments to determine lead compounds, and by extension, develop a pharmacophore for the P2X7R.

P183

Translational Evidence for Herbal Galactagogues: A Systematic Review

Mr Muhammad I Gibran

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Translational Evidence for Herbal Galactagogues: A Systematic Review
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Introduction. Herbal galactagogues are widely used to enhance lactation, but the strength of evidence supporting their mechanisms, clinical efficacy, and safety has not been comprehensively evaluated.
Aims. To synthesise molecular, preclinical, and clinical evidence on herbal galactagogues and assess their translational potential for improving breastfeeding outcomes.
Methods. Following PRISMA guidelines, electronic databases (PubMed, ScienceDirect, Cochrane Central, Wiley) were screened from 2000-2025. From 6,056 records, 2,109 duplicates were removed, and 3,947 titles/abstracts were screened. Of 151 full texts assessed, 72 studies met inclusion: 20 mechanistic (in silico/in vitro), 31 preclinical (in vivo), and 35 clinical trials in humans.
Results. Mechanistic studies highlighted activation of PRLR–JAK2–STAT5, Wnt/β-catenin, and aquaporin pathways, supporting milk synthesis and secretion. These translated in animals into higher milk yield, mammary development, and pup growth. Clinical trials showed the strongest and most consistent benefits for fenugreek, ginger, shatavari, and barley β-glucan, each linked to increased early postpartum milk volume and, in some cases, infant growth. Polyherbal teas and soups were also effective, particularly when initiated within 24 h postpartum and maintained for 2–4 weeks. Barley formulations showed preparation-dependent divergence (β-glucan positive; alkaloid-rich inhibitory). Vaccarin, Codonopsis polysaccharide, and daylily demonstrated robust mechanistic and animal efficacy but lack human data. In contrast, moringa and fennel yielded inconsistent results in higher-quality RCTs. Across studies, safety profiles were reassuring, with only mild gastrointestinal effects reported and no serious maternal or infant harms.
Discussion. Cross-tier evidence indicates that selected herbs can enhance lactation via shared biological pathways. Fenugreek, ginger, shatavari, and barley β-glucan show the strongest support, while vaccarin and Codonopsis are priorities for early human trials. Future trials should be well-designed with objective outcomes and safety monitoring.

Beller EM et al (2013) PLoS Med 10: e1001419

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CXCL13 Drives MMP9-Mediated Metastasis in Oral Squamous Cell Carcinoma

Assoc Prof Ju-fang Liu

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

CXCL13 Drives MMP9-Mediated Metastasis in Oral Squamous Cell Carcinoma

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Introduction. Oral squamous cell carcinoma (OSCC), prevalent in Taiwan, is an aggressive malignancy with frequent lymph node metastasis and poor prognosis. Despite advances in surgery and chemoradiotherapy, effective molecular markers for metastasis prediction or targeted therapies are lacking. Bioinformatic analysis of GEO and TCGA datasets identified upregulated CXCL13 in advanced OSCC, correlating with lymphatic metastasis. Preliminary data show CXCL13 promotes OSCC cell migration, wound healing, and MMP9 expression via the CXCR5–JNK–NF-κB axis, but its role in metastasis remains unclear.

Aims. This study aims to investigate the role of CXCL13 in promoting metastasis in OSCC and its molecular mechanisms, focusing on the CXCL13–CXCR5–JNK–NF-κB–MMP9 axis.

Methods. Gene expression profiles from GEO and TCGA datasets were analyzed to confirm CXCL13 and MMP9 upregulation in metastatic OSCC tissues. In vitro, OSCC cell lines (SCC-4, SCC-25) were used to assess CXCL13 effects on MMP9 expression, migration, and invasion via qPCR, Western blot, wound healing, and Transwell assays. CXCR5's role was studied using siRNA knockdown and pharmacological inhibitors. JNK and NF-κB pathway activation was evaluated with phospho-specific antibodies and pathway inhibitors. In vivo, orthotopic OSCC mouse models with CXCL13 overexpression or CXCR5 inhibition were used to assess tumor growth, metastasis, and MMP9/CD31 expression by immunohistochemistry.

Results. Bioinformatic analysis of GEO and TCGA datasets confirmed significant upregulation of CXCL13 and MMP9 in metastatic OSCC tissues, with high expression levels correlating with poor patient survival ($p < 0.05$). In vitro, CXCL13 treatment significantly increased MMP9 mRNA and protein expression in SCC-4 and SCC-25 cells, enhanced cell migration by 1.8-fold, and invasion by 2.1-fold in Transwell assays. These effects were abolished by CXCR5 siRNA knockdown or pharmacological inhibition, reducing MMP9 expression and migration/invasion to baseline levels. Mechanistically, CXCL13 treatment activated JNK and NF-κB pathways, as evidenced by increased phosphorylation of JNK and NF-κB p65, which was blocked by specific inhibitors, leading to reduced MMP9 expression and metastatic activity.

Discussion. This study will elucidate the role of the CXCL13–CXCR5–JNK–NF-κB–MMP9 axis in OSCC metastasis, establishing CXCL13 as a potential prognostic biomarker and therapeutic target. By integrating transcriptomic, functional, and in vivo approaches, our findings aim to provide a foundation for precision medicine strategies in OSCC, addressing the critical need for effective molecular markers and targeted therapies in this aggressive malignancy.

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Drug discovery trends – Which compounds, targets and diseases are gaining interest?

Assoc Prof David Gloriam

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Drug discovery trends – Which compounds, targets and diseases are gaining interest?

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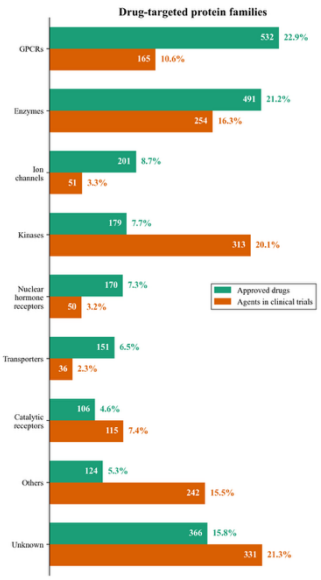

Introduction. Drug discovery is advancing rapidly with swift shifts across compounds, targets and diseases. Over a thousand compounds and a hundred targets are emerging for the first time in clinical trials. Furthermore, around half of the nearly two thousand approved drugs are being tested again, for additional diseases.

Aims. Reveal insights on current trends in current clinical trials across all compounds, targets, and diseases (Lorente JS et al, manuscript).

Methods. We leverage our pipeline from (Lorente et al., 2025) to integrate data from OpenTargets, Therapeutic Target Database, DrugBank and ClinicalTrials.gov. We also develop AI-based searches and manually annotate company pipelines and press releases to complete data.

Results. Our analysis gains insights into the following major questions: Which are the most prominent drug targets and which protein families are new or increasing in clinical trials? What is the distribution of approved drugs across disease areas, and which disease areas are gaining in clinical trials? What are the trends in molecule type, pharmacological mechanism-of-action and specificity of new agents in trial compared to approved drugs?

Discussion. This study presents insights on current clinical trends and an actionable foundation for researchers, biotech companies, and pharmaceutical developers, seeking to reduce the risk and cost of drug discovery.

Lorente JS et al, manuscript
Lorente JS et al (2025) Nat Rev Drug Discov, 24:458-479

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Amsulostat inhibits lysyl oxidase-mediated growth factor modulation

Dr Jessica Stolp

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Amsulostat inhibits lysyl oxidase-mediated growth factor modulation

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Introduction. Under physiological conditions, growth factor receptors serve as key regulators of cellular development and angiogenesis. In contrast, within stromal or fibrotic microenvironments, growth factors drive tissue remodelling by promoting cell proliferation and extracellular matrix deposition. Members of the lysyl oxidase enzyme family contribute to extracellular matrix stiffening by catalysing collagen cross-linking, while also amplifying growth factor signalling through N-terminal oxidation activity.
Aim. This study employs the novel pan-lysyl oxidase inhibitor amsulostat to investigate the role of lysyl oxidase-mediated oxidation on growth factor receptors anddownstream cellular events associated with fibrosis.
Methods. Recombinant growth factor receptors (PDGFR, EGFR and VEGFR) were treated with lysyl oxidase in the presence or absence of amsulostat, with oxidation sites mapped and quantified using mass spectrometry and fluorescent labelling. Receptor expression and signalling were subsequently assessed at the cellular level after similar treatment conditions.Results. Amsulostat effectively prevented lysine oxidation on growth factor receptors. Inhibition of lysyl oxidase activity reduced receptor surface expression and attenuated intracellular signalling upon ligand stimulation, without significantly altering to canonical kinase pathways.
Conclusion. Lysyl oxidase activity enhances both cell surface expression and signalling activity across multiple growth factor receptors. Pharmacological inhibition with amsulostat may therefore represent a novel broad therapeutic approach for fibrotic diseases and cancer, by simultaneously targeting growth factor signalling in addition to the well-known effects of lysyl oxidases on extracellular matrix remodelling.

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Modeling AML response to venetoclax treatment in AML tumor microenvironment models

Ms Karina Goluba

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Modeling AML response to venetoclax treatment in AML tumor microenvironment models

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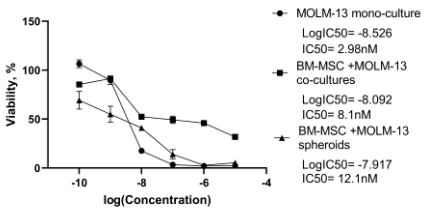

Introduction. Acute myeloid leukaemia (AML) is an aggressive haematological malignancy originating from myeloid precursor cells in the bone marrow with poor prognosis. The B cell lymphoma 2 (BCL2) protein inhibitor venetoclax has improved treatment outcomes- however, tumour microenvironment (TME) mediated therapy resistance remains a major challenge.

Aims. To establish AML TME *in vitro* models, including monoculture, two-dimensional (2D) and three-dimensional (3D) co-culture with bone marrow mesenchymal stromal cells (BM-MSCs), and to evaluate cell viability to venetoclax treatment.

Methods. AML cell lines MOLM-13, THP-1, and AML patient peripheral blood mononuclear cells (PBMCs) were used to test venetoclax sensitivity in monoculture, and 2D and 3D co-culture models with donor (BM-MSCs). Venetoclax was applied across a concentration range of 0.1–10000 nmol/L, and cell viability was assessed after 24, 48, and 72 hours timepoints.

Results. After 72 hours, MOLM-13 models showed IC50 values of 2.98 nmol/L in monoculture, 8.1 nmol/L in co-culture, and 12.1 nmol/L in spheroids, indicating a 2.7- and 4.1-fold increase compared to monoculture and suggesting BM-MSC-mediated protection against venetoclax treatment. THP-1 monocultures showed an IC50 value of 1627 nmol/L, whereas in co-cultures and spheroids no reliable IC50 could be determined due to minimal reductions in cell viability, indicating a microenvironment-mediated protective effect of the co-culture and spheroid microenvironment.

Discussion. This model can be applied to elucidate the role of other TME components like macrophages and immune cells. And other therapies. 2D co-culture and 3D spheroid models indicate BM-MSC-mediated reduced sensitivity to venetoclax. These findings suggest that microenvironment-relevant models better reflect AML therapy resistance compared to monocultures.

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Pentraxin 3 contributes to stromal cell senescence and HCC sorafenib resistance

Prof Ju-ming Wang

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Pentraxin 3 contributes to stromal cell senescence and hepatocellular carcinoma cell sorafenib resistance

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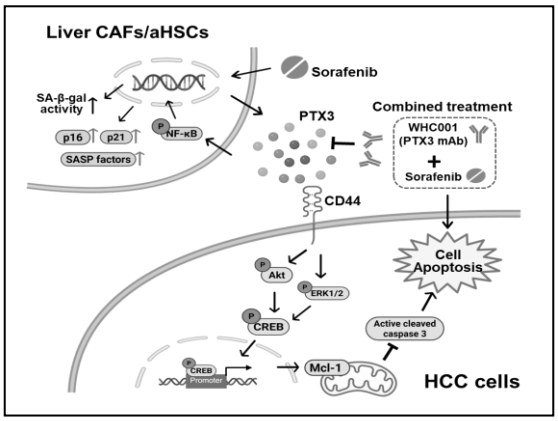

Introduction. Hepatocellular carcinoma (HCC) is frequently associated with resistance to sorafenib therapy. The tumor microenvironment (TME), particularly therapy-induced stromal senescence, is increasingly recognized as a key contributor to therapeutic failure.
Aims. This study investigates the role of pentraxin 3 (PTX3) in mediating senescence-associated drug resistance in HCC. **Methods**. We examined PTX3 expression in tumor stroma and serum from HCC patients treated with sorafenib. In vitro and in vivo models were used to elucidate the functional role of PTX3 in sorafenib resistance and its mechanistic link to cellular senescence. The therapeutic impact of the PTX3 inhibitor (WHC001) in combination with sorafenib was assessed in vitro and in vivo.
Results. PTX3 expression was significantly elevated in stromal fibroblasts and hepatic stellate cells during HCC progression, correlating with poor clinical outcomes. PTX3 was induced by sorafenib and promoted cellular senescence in the TME, leading to increased resistance in liver cancer cells. PTX3 activated CD44-dependent NF-κB signaling in stromal cells and enhanced the expression of antiapoptotic protein Mcl-1 in cancer cells. Disruption of the PTX3/CD44 interaction using WHC001 restored sorafenib sensitivity and enhanced apoptosis both in vitro and in orthotopic HCC models.
Discussion. This study identifies PTX3 as a novel stromal biomarker and driver of senescence-associated drug resistance in HCC. Targeting the PTX3/CD44 axis enhances the therapeutic efficacy of sorafenib, providing a promising combinatorial strategy for improving outcomes in advanced HCC patients.

P192

Bifunctional carbonyl scavengers afford superior protection against carbonyl stress-induced protein damage

Mr Thomas Griffiths

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Bifunctional carbonyl scavengers afford superior protection against carbonyl stress-induced protein damage

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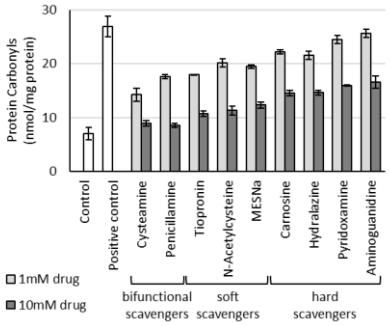

Introduction. Biogenic carbonyls are a broad group of noxious toxicants produced endogenously in cells during oxidative stress. In an ongoing search for carbonyl scavenger therapies to mitigate their toxicity, nine candidate drugs have been selected from the literature, each containing a thiol, amine or both nucleophilic functional groups.

Aim. To investigate whether "bifunctional" scavenger drugs possessing both thiol and amine groups exhibit superior protective efficacy against protein damage caused by the diverse chemistries of carbonyl toxicants encountered in vivo.

Method. A model protein system comprising a 1:1 ratio of thiolated BSA and native BSA was exposed to a mixture of six carbonyls—acrolein, crotonaldehyde, pent-2-enal, hex-2-enal, malondialdehyde and methylglyoxal—each at LOAEL concentration in a DNPH-based spectroscopic assay. This model was then used to assess the protective efficacy of nine carbonyl scavenger drugs (n=3) compared to a control that was not exposed to the carbonyl mixture and a positive control exposed to carbonyl mixture with no drug present (n=6).

Results. At both 1 and 10 mM drug concentrations, the bifunctional scavengers cysteamine and penicillamine exhibited the strongest anti-carbonylation efficacy. Only these bifunctional scavengers afforded complete suppression of protein carbonylation at the 10 mM concentration.

Discussion. Due to the diverse reactivities of mixtures of toxic carbonyls likely to contribute to oxidative stress in vivo, bifunctional scavengers possessing both "hard" and "soft" nucleophilic centres might be superior anti-carbonyl drugs.

This research was supported by the Commonwealth through an Australian Government Research Training Program Scholarship [DOI: https://doi.org/10.82133/C42F-K220] and by The Medical Advances Without Animals Trust (MAWA) through a Supplementary Doctoral Scholarship.

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Edamame Ethanol Extract for Malnutrition: Bridging In Vivo Evidence and Computational Pharmacology

Prof Tri Widyawati

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Edamame Ethanol Extract for Malnutrition: Bridging In Vivo Evidence and Computational Pharmacology
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Introduction. Malnutrition remains a global health challenge that impairs growth, immunity, and long-term outcomes. Edamame (*Glycine max* L. Merr), a flavonoid-rich soybean, has potential roles in malnutrition.
Aims. This study evaluated the efficacy of ethanol extract of edamame (EEE) in malnourished rats and explored its molecular mechanisms using ADMET screening, network pharmacology, and molecular docking.
Methods. Diet-induced malnutrition was established in Wistar rats, followed by oral administration, once daily for 28 days with EEE (40 mg/kg bw). Bodyweight recovery was measured. Bioactive compounds identified by LC–MS underwent ADMET screening. Network pharmacology was conducted using STRING, CTD, and Open Targets. Molecular docking was performed on AKT1 (PDB: 2AZ5).
Results. EEE improved bodyweight recovery. LC–MS identified 43 metabolites, of which 17 met ADMET criteria. Toxicity prediction indicated most compounds were low-risk, while isovitexin showed higher toxicity but strong absorption. Network pharmacology highlighted TNF, IL6, IL1B, IGF1R, IGF1, AKT1, MTOR, and SOD2 as key targets. Docking revealed strong affinities for apigenin 7-rhamnoside, sophoraflavone B, apigenin 4'-glucoside, and isovitexin
Discussion. The results show that edamame extract compounds have potential for malnutrition. The findings suggest EEE act via dual modulation: inhibiting pro-inflammatory mediators (TNF, IL6, IL1B, NF-κB) and activating IGF1/AKT1 growth signaling. Compounds namely apigenin 7-rhamnoside, sophoraflavone B, apigenin 4'-glucoside, and isovitexin are the most effective, particularly through their role in inhibiting TNFA and activating IGF1/IGF1R to support malnutrition treatment.

P194

Guazuma ulmifolia Extract Modulates Inflammation and Oxidative Stress in Prediabetic Rats

Dr Desak Gede Budi Krisnamurti

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Guazuma ulmifolia Extract Modulates Inflammation and Oxidative Stress in Prediabetic Rats

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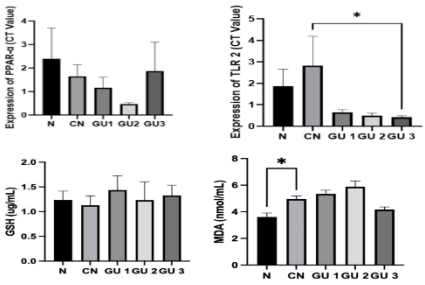

Introduction. Prediabetes is characterized by inflammation and oxidative stress that contribute to progression toward type 2 diabetes mellitus (T2DM). Toll-like receptor 2 (TLR2) activation and reduced peroxisome proliferator-activated receptor-α (PPAR-α) expression enhance inflammation and insulin resistance, while elevated malondialdehyde (MDA) and depleted glutathione (GSH) reflect oxidative imbalance. *Guazuma ulmifolia* leaves are traditionally used as herbal medicine and may provide preventive benefits.

Aims. This study investigated the effects of *Guazuma ulmifolia* ethanolic extract on TLR2, PPAR-α, MDA, and GSH in prediabetic Wistar rats.

Methods. Male Wistar rats were rendered prediabetic by a high-fat, high-fructose diet and treated orally with *Guazuma ulmifolia* ethanolic extract at different doses. Blood glucose, glucose tolerance, TLR2 and PPAR-α expression (qRT-PCR), and oxidative stress markers (MDA and GSH in plasma) were analyzed.

Results. The extract significantly reduced fasting glucose and improved glucose tolerance. TLR2 expression decreased while PPAR-α expression increased in treated groups. Moreover, MDA levels were lowered, and GSH levels were restored compared to untreated prediabetic controls.

Discussion. *Guazuma ulmifolia* extract demonstrates protective effects in prediabetic rats by simultaneously modulating immune-inflammatory pathways and oxidative stress. These findings support its potential as a preventive herbal intervention to delay or reduce the progression of T2DM.

P195

Active learning-guided docking with QM rescoring and FEP for PGK2 selectivity

Dr Davy Guan

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Active learning-guided docking with QM rescoring and FEP for PGK2 selectivity

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Introduction. Phosphoglycerate kinase-2 (PGK2) underpins sperm bioenergetics and fertility. CACHE Challenge 7 requests orthosteric inhibitors that exclude quinazolines while achieving potency for PGK2 and selectivity over PGK1. Available apo, ATP-bound and ligand-bound structures reveal an enclosed adenine pocket with conserved waters and minor PGK2/PGK1 side-chain differences that can be leveraged for selectivity.
Aims. To prospectively identify non-quinazoline chemotypes with IC50 < 10 µM and ≥20-fold PGK2/PGK1 selectivity (primary hits IC50 < 50 µM and ≥5-fold) using a modular, scalable funnel workflow.
Methods. Active-learning docking (AL-Dock) steers large-library exploration and is paired with learned pose filters. Cross-docking against PGK1 penalises dual binders and a SMARTS rule removes quinazolines. Surviving poses are rescored with a SQM2.20 protocol (PM6-D3H4X, implicit solvation, entropic proxy) on matched PGK2/PGK1 complexes assembled from apo 2P9Q, ATP-bound 2PAA and ligand entries; conserved waters/ions are retained. Top series advance to free-energy perturbation (FEP) for ΔΔG refinement. Cycle sizes are set from realised docking throughput.
Results. By mid-2026 we will report prospective enrichment on held-out sets, selectivity distributions versus PGK1, diversity/synthesizability summaries and purchase shortlists as the challenge proceeds. Discrepancies between SQM2.20 and FEP will prioritise hydration, protonation and cofactor-state hypotheses for iteration.
Discussion. A staged approach with AL-Dock for large scale screening, quantum-mechanical rescoring for physics-based refinement, and FEP for confirmation aims to deliver selective PGK2 chemotypes efficiently and transparently while adhering to CACHE-7 constraints.

CACHE (2025) Challenge #7: PGK2 selectivity. cache-challenge.org.
Danshina PV et al (2010) Biol Reprod 82:136–145.
Pecina A et al (2024) Nat Commun 15:1127.
RCSB PDB: 2P9Q, 2PAA, PGK1/PGK2 ligand entries.

P196

Betulinic acid induces lysosome-dependent death in prostate cancer by targeting DDX5

Prof Hongwei Guo

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Betulinic acid induces lysosome-dependent death in prostate cancer by targeting DDX5

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Introduction. Prostate cancer (PCa) is a leading cause of cancer-related mortality in males. Betulinic acid (BA) exhibits antitumor activity, yet its direct target and mechanism in PCa are not fully understood.
Aims. This study aimed to identify the direct molecular target of BA and elucidate its underlying mechanism in suppressing PCa progression.
Methods. The antitumor effects of BA were assessed using PCa cell lines and xenograft models. Apoptosis was evaluated by Hoechst staining, flow cytometry, and TUNEL assay. Lysosomal membrane permeabilization (LMP) was examined via LysoTracker Red and acridine orange (AO) staining and validated with CA074-Me. Target identification employed pull-down, drug affinity responsive target stability (DARTS), molecular docking, and microscale thermophoresis (MST). Clinical data analysis and siRNA knockdown were used to validate the role of DDX5.
Results. BA significantly inhibited PCa growth in *vitro* and in *vivo* without toxicity. BA directly bound to DDX5, suppressing transcription factor EB (TFEB)-mediated lysosomal biogenesis and downregulating ATP6V1H, a key subunit for lysosomal acidification. This disruption induced LMP, triggering lysosome-dependent cell death (LDCD) via apoptosis, as confirmed by CA074-Me. DDX5 was downregulated in PCa tissues. Knockdown of DDX5 abolished BA-induced LDCD and lysosomal dysfunction.
Discussion. BA directly targets DDX5, inducing LDCD via the novel BA-DDX5-TFEB-ATP6V1H axis, revealing a lysosomal vulnerability. These findings highlight BA's potential as a therapeutic agent and propose lysosomal membrane destabilization as a precision strategy for PCa.

P197

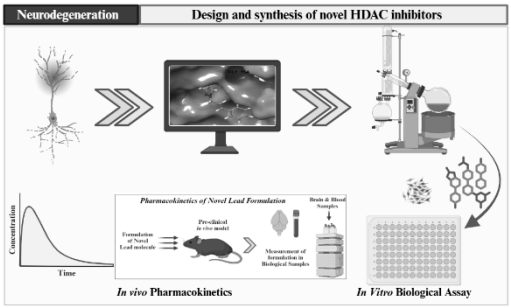
Development of HDAC2 inhibitor for neuroprotection from chemical-induced neurotoxicity and pharmacokinetic analysis

Mr Debojyoti Halder

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Development of HDAC2 inhibitor for neuroprotection from chemical-induced neurotoxicity and pharmacokinetic analysis

Debojyoti Halder[1,2,3], Thiruma V. Arumugam[2,3]. Balaram Ghosh[1], Epigenetic Research Laboratory, Department of Pharmacy, Birla Institute of Technology and Science - Hyderabad Campus[1], Secunderabad, Telangana, India; Department of Microbiology, Anatomy, Physiology and Pharmacology, School of Agriculture, Biomedicine and Environment, La Trobe University[2], Bundoora, VIC 3086, Melbourne, Australia; La Trobe Institute for Molecular Science, La Trobe University[3], Bundoora, VIC 3086, Melbourne, Australia.



Introduction. Epigenetic dysregulation, especially unregulated histone deacetylase (HDAC) activity, contributes to transcriptional repression of neuroprotection and neuroplasticity-associated genes. Pharmacological inhibition of HDACs, especially class I HDACs, restores histone acetylation, which promotes neuroprotection in neurocognitive disorders. A research gap was observed that very few HDAC2 inhibitors have been explored for neuroprotection and neurocognitive impairments.

Aims. Design, synthesis of HDAC2 inhibitor, and its *in vitro* biological evaluation in the chemical-induced neurotoxicity model and *in vivo* pharmacokinetic analysis.

Methods. A combined *in silico* and literature review method was implemented for the design of new compounds. After analysis of the retrosynthetic pathway, a series of 10 compounds was synthesized, and structural analysis was performed using ^{1}H, ^{13}C, and ^{19}F NMR. HPLC purity and HRMS were performed for all the compounds. Further, to choose a lead compound, a fluorophore-based HDAC assay was performed, and the lead compound was selected for further biological analysis. A H_2O_2 and $AlCl_3$-induced neurotoxicity *in vitro* models were developed using Neuro2A cells, and the lead compound was exposed in both the chemical-induced models for neuroprotection. Moreover, anti-apoptotic, ROS, and nuclear morphology analyses were performed with the lead compound to understand its neuroprotective potential. Furthermore, *in vivo* pharmacokinetic analysis (plasma and brain) was performed to analyse the BBB permeability, bioavailability, and clearance.

Results. The design of new compounds was performed using a rationale-based literature analysis and target analysis using various computational open servers. Further, molecular docking, DFT analysis, and dynamics simulation were performed on the HDAC2 protein catalytic binding site. It was observed that the designed compounds showed a good fit to the HDAC2 protein (PDB: 4LY1). The designed compounds were synthesized, and structural confirmation and purity analysis were performed using ^{1}H, ^{13}C, and ^{19}F NMR, HRMS, and HPLC, followed by LC-MS. For the analysis of a lead compound, a fluorophore-based HDAC enzyme assay provided the lead compound (M2) with an IC_{50} of 500 nmol/L against HDAC2 and a 100-fold selectivity over HDAC8 and a minimum 10-fold selectivity over HDAC1 and HDAC3 isoforms. Furthermore, the lead compound M2 showed the highest neuroprotection at a 2µmol/L concentration against H_2O_2- and $AlCl_3$-induced neurotoxicity in Neuro2A cells, with **** significance at $p<0.0001$ (one-way ANOVA). On that concentration, anti-apoptosis analysis showed a live cell population of 84% in $AlCl_3$-induced neurotoxicity in Neuro2A cells. A significant ROS reduction in the fluorescence image analysis, as well as MTT assay protocol analysis of ROS study in the H_2O_2-induced neurotoxicity model in Neuro2A cells. Further, nuclear morphology was analysed using the DAPI staining in the $AlCl_3$-induced neurotoxicity model of Neuro2A cells. The study was compared with CI994 (a positive control), and significance analysis was performed using one-way ANOVA. The lead compound, M2, provided better protection than CI994 in all *in vitro* analyses. Further, *in vivo* pharmacokinetic analysis was performed using C57BL/6 mice, and it was observed that the compound M2 showed excellent blood-brain barrier (BBB) penetration with *Cmax* (brain) of 1.5µg/mL, and plasma *Cmax* of 2.7µg/mL with clearance time 4 h from plasma and 8 h from brain.

Discussion. The lead compound M2 was designed and synthesized, and showed preferential HDAC2 inhibition over other HDAC isoforms in the fluorophore-based enzyme inhibition assay. M2 showed neuroprotection

against H_2O_2- and $AlCl_3$-induced neurotoxicity in Neuro2A cells. Also, the *in vivo* pharmacokinetic analysis showed the compound efficiently crosses the BBB. Further, the lead compound M2 can be explored in various therapeutic efficacy studies in *in vivo* models, and the exploration of the pathway of HDAC2 in neuroprotection and cognitive impairments.

P198

Predicting ligand affinity at the human A3 adenosine receptor from protein sequence

Mr Thomas Lonsdale

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Predicting ligand affinity at the human A_3 adenosine receptor from protein sequence

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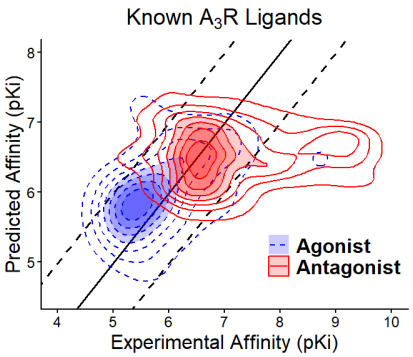
Introduction. PSICHIC, a physicochemical graph neural network, predicts protein-ligand interactions from sequence data with accuracy that outperforms or is comparable to other structure-based and sequence-based models (Koh et al., 2024). The current study evaluated PSICHIC predictions of agonist and antagonist binding affinities at the A_3 adenosine receptor (A_3R), a potential non-opioid target for the treatment of nociceptive and neuropathic pain.



Aims. Investigate how PSICHIC-predicted A_3R binding data compares to experimentally derived values.

Methods. BindingDB was used to obtain binding affinity data for the human A_3R. PSICHIC was used to predict binding affinity. Analysis was conducted in RStudio, including calculations of mean absolute error (MAE).

Results. In general, PSICHIC predicted binding affinity values for the A_3R with a similar level of accuracy as previously described (MAE_{ALL} = 1.04). A stronger correlation was observed for experimental values derived from radiolabelled antagonist data, as compared to radiolabelled agonist data (MAE_{ANT} = 1.00, MAE_{AGO} = 1.13). Interestingly, PSICHIC-predicted binding affinities were substantially lower than reported experimental values for a subset of A_3R antagonists, predominantly belonging to a class of urea-containing compounds (MAE_{UREA} = 2.20).

Discussion. Urea-containing antagonists were particularly susceptible to discrepancies between experimental and predicted binding affinity values, suggesting these discrepancies may reflect a specific physicochemical characteristic of these ligands. Notably, many A_3R ligands were assigned functionality based on their structures, suggesting that further pharmacological characterisation of these antagonists is required to ensure accurate classification. Our results highlight the utility of PSICHIC in drug discovery and the potential for this approach to provide pharmacological insights.

Koh HY et al. (2024) Nat Mach Intel 6:673-687.

P199

Phytochemical characterization and biological activities of Clausena harmandiana leaf extracts

Assist Prof Anusorn Thampithak

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Phytochemical characterization and biological activities of *Clausena harmandiana* leaf extracts

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Introduction. *Clausena harmandiana* (Rutaceae), commonly known as "Song Fa" in Thailand, has been traditionally used to treat abdominal discomfort, headache, bronchitis, fever, skin rashes, and itching. Despite its traditional use, there is limited scientific evidence concerning its phytochemical composition and biological activities.

Aims. This study aimed to quantify the phenolic and flavonoid contents and to evaluate the antioxidant, anti-inflammatory, and antimicrobial activities of *C. harmandiana* leaf extracts.

Methods. Fresh leaves were macerated in ethanol (EtOH1) to obtain a crude extract, which was then fractionated by solvent polarity into petroleum ether (PE), dichloromethane (DCM), ethyl acetate (EtOAc), and ethanol (EtOH2) fractions. The total phenolic and flavonoid contents were quantified. Antioxidant activity was assessed using DPPH, ABTS, TBARS, and hydroxyl radical scavenging assays. Anti-inflammatory activity was evaluated through protein denaturation and nitric oxide inhibition assays. Antimicrobial activity was tested against *Staphylococcus aureus* (TBRC4930) and *Candida albicans* (TBRC209).

Results. EtOH2 exhibited the highest total phenolic (35.94 mg GAE/g extract) and flavonoid (29.88 mg QE/g extract) contents, followed by EtOAc, DCM, EtOH1, and PE. All extracts demonstrated antioxidant activity in the assays. EtOH1 showed the strongest DPPH radical scavenging activity (IC_{50} = 906.22 µg/mL), while EtOH2 displayed the highest ABTS scavenging activity (IC_{50} = 46.21 µg/mL) and hydroxyl radical inhibition (IC_{50} = 216.31 µg/mL). EtOAc provided the greatest lipid peroxidation inhibitory activity (IC_{50} = 755.00 µg/mL). Among the extracts, only DCM exhibited notable anti-inflammatory activity, inhibiting protein denaturation (IC_{50} = 4.72 mg/mL) and nitric oxide production (IC_{50} = 267.19 µg/mL). Regarding antimicrobial activity, EtOAc showed the strongest activity against *S. aureus* (MIC = 25.50 mg/mL), followed by PE and EtOH1, with MBC values approximately twice the MIC. DCM and PE showed comparable activity against *C. albicans* (MICs of 12.65 and 12.98 mg/mL, respectively), with MFCs approximately twice the MIC.

Discussion. These findings suggest that *C. harmandiana* leaf extracts possess significant bioactive compounds and demonstrate notable biological activities, supporting their potential for development as natural antioxidant, anti-inflammatory, and antimicrobial agents in future healthcare applications.

P201

Ivabradine-derived dihydroxybenzoate salts as novel modulators of HCN channels

Dr Whitney Venturini

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Ivabradine-derived dihydroxybenzoate salts as novel modulators of HCN channels

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Introduction. Hyperpolarization-activated cyclic nucleotide-gated (HCN) channels are key regulators of cellular excitability Hyperpolarization-activated cyclic nucleotide-gated (HCN) channels are key regulators of cellular excitability and are increasingly implicated in cancer-related processes. Ivabradine is a well-known HCN channel blocker; however, strategies to improve its pharmacological performance remain scarce. In this context, the formation of novel salt forms represents an attractive approach to fine-tune physicochemical and biological properties

Aims. To synthesize ivabradine-derived salts with dihydroxybenzoic acids and evaluate their potential as modulators of HCN channel activity.

Methods. Commercially available ivabradine hydrochloride was neutralized to obtain the free base, which was combined with selected dihydroxybenzoic acids to form salt systems. Characterization was performed using infrared spectroscopy (IR), nuclear magnetic resonance (NMR), and thermogravimetric analysis (TGA). Solubility was evaluated in different solvents. Biological activity was assessed using functional assays of HCN channel modulation.

Results. Ivabradine-derived dihydroxybenzoate salts exhibited differential modulation of HCN channel activity compared to the parent compound. Activity varied depending on the dihydroxybenzoic acid derivative, suggesting a relevant role of the counterion. Salt formation was also associated with changes in physicochemical properties, including solubility, which may contribute to the observed biological effects.

Discussion. These findings support salt formation as a strategy to generate novel HCN channel modulators. The observed differences highlight the importance of molecular design in optimizing ion channel-targeted therapies, particularly in cancer-related processes

P202

Scratching the itch: tackling wombat mange by targeting scabies mites with pesticides

Miss Irina Lotsaris

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Scratching the itch: tackling wombat mange by targeting scabies mites with pesticides

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Introduction. Sarcoptic mange is a contagious skin infestation caused by the parasitic mite *Sarcoptes scabiei* (scabies mites). Sarcoptic mange is a serious issue for bare-nosed wombats in south-eastern Australia, with implications of severe skin crusting, scratching, hair loss, and death due to malnutrition or secondary infections. There is a strong need to improve the currently limited options for treatment of mange in free-living wombats.
Aims. This study focusses on the pharmacological characterization of two glutamate-gated chloride channels (GluCls) and a resistant to dieldrin GABA-activated chloride channel (Rdl) from the scabies mites expressed by *Xenopus laevis* oocytes using two-electrode voltage clamp (TEVC) electrophysiology.
Methods. Oocytes were voltage clamped at -60 mV and concentration-dependent glutamate and GABA gated chloride channels were measured. The sensitivity of pesticides (fluralaner and moxidectin) as either agonists or antagonists were characterised using TEVC electrophysiology to gain an understanding of how the channels and pesticides alter channel functions, and determine the impact of genetic variants.
Results. GluCl1.16 and GluCl1.9 are splice variants but have significantly different sensitivities to glutamate (EC_{50} 6.4 ± 1.7 µM and 36 ± 1.9 µM; $p < 0.05$) respectively. Fluralaner is one of the currently used pesticides to treat wombat mange and inhibits glutamate-gated and GABA-gated ion currents mediated by GluCl1.16 and GluCl1.9, and Rdl2.18 respectively. In contrast, another currently used pesticide, moxidectin, generated a rapidly activated current for both GluCl1.16 and GluCl9, that desensitized to a steady state but did not wash out after stopping the perfusion of the pesticide from the bath. This suggests that moxidectin is an irreversible agonist of GluCl1.16, and GluCl1.9, which shows similarities to the mechanism of action of ivermectin on mammalian glycine-gated chloride channels.
Discussion. This is the first study of GluCl and Rdl ion channels from scabies mites and demonstrates that they are sensitive to current pesticides and also provides the means for screening novel pesticides for the treatment of wombat mange. Further characterisation of the pharmacological characteristics of these channels and their genetic variants will contribute to the development of new treatments of scabies mites infestations and where resistance to current treatments has limited treatment options.

P203

Anti-diabetic constituents from Punica granatum with mechanistic insights into PTP1B inhibition

Prof Jeong Ah Kim

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Anti-diabetic constituents from *Punica granatum* with mechanistic insights into PTP1B inhibition

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Introduction. *Punica granatum* L. is a rich source of polyphenolic compounds with diverse biological activities.
Aims. The discovery of natural compounds with dual inhibitory activity against protein tyrosine phosphatase 1B (PTP1B) and α-glucosidase is of considerable interest for the development of novel antidiabetic agents.
Methods. Extraction and isolation of compounds from the stem and pericarpium of *P. granatum*; α-glucosidase and PTP1B inhibitory activity; enzyme kinetic analysis; molecular docking simulation; glucose uptake and PTP1B expression level in HepG2 cells.
Results. A comprehensive phytochemical investigation of the stems and pericarpium of *P. granatum* led to the isolation of five new polyphenols, designated punicagranols A–E, along with 47 known compounds. Among them, ellagitannins (9–10, 13, and 25–33) demonstrated potent α-glucosidase inhibitory activity. Notably, compounds 25, 29, and 33 exhibited strong inhibition of PTP1B. Enzyme kinetic studies and molecular docking simulations revealed that compound 25 acts as a competitive inhibitor, whereas compounds 29 and 33 function as non-competitive inhibitors of PTP1B. Furthermore, these compounds significantly enhanced glucose uptake in HepG2 cells without affecting PTP1B protein expression levels, suggesting that their glucose-lowering effects are mediated through direct enzymatic inhibition.
Discussion. These findings highlight the potential of ellagitannin-rich compounds from *P. granatum* as promising candidates for the development of antidiabetic agents. In addition, the stems and pericarpium represent valuable sources of bioactive compounds that may be utilized in functional foods and nutraceutical applications.

Phong NV et al (2021) Int J Biol Macromol 188: 719-728
Dinh TNA et al (2026) Nat Prod Sci 32: 63-75

P205

Bufotalin Promoted Osteosarcoma Regression by Targeting SIRT1 Acetylation and Regulating Lipid Synthesis

Dr Xiangqi Zhang

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Bufotalin Promoted Osteosarcoma Regression by Targeting SIRT1 Acetylation and Regulating Lipid Synthesis

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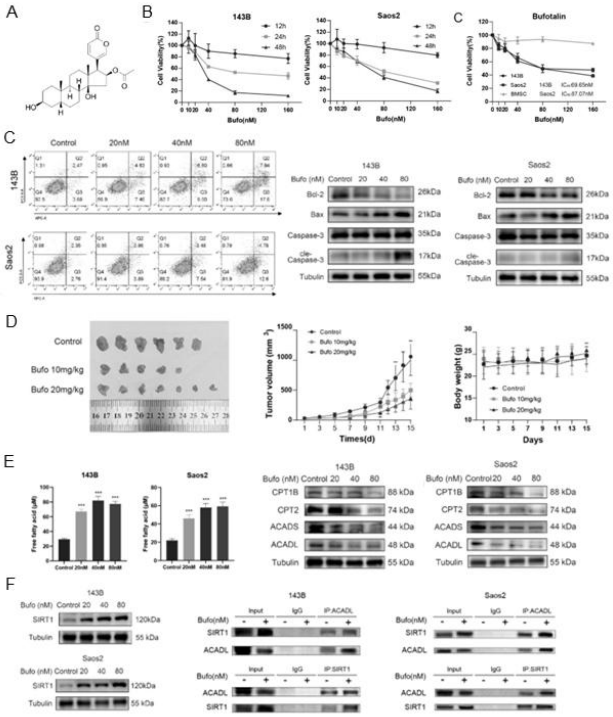
Introduction. Bufotalin, a predominant bufadienolide component in the traditional Chinese medicine dried *Bufo gargarizans Cantor* skin, exhibits potential for clinical anticancer applications.

Aims. To evaluate anti-tumor activity of bufotalin against osteosarcoma *in vitro* and *in vivo*, and elucidate the underlying molecular mechanisms.

Methods. CCK-8 assay, Flow cytometry, Western blot, Co-Immunoprecipitation.

Results. Bufotalin demonstrated significant anti-tumor activity against human osteosarcoma cell lines 143B and Saos2, with IC_{50} values of 69.65nmol/L and 87.07nmol/L, respectively. In xenograft model, bufotalin(i.p.) markedly reduced tumor volume. It revealed that bufotalin induces dysregulation of lipid synthesis in tumor cells. Mechanistically, bufotalin upregulated the expression of deacetylase SIRT1 in a concentration-dependent manner, leading to increased acetylation of its substrate ACADL and decreased ACADL expression.

Discussion. These findings suggest that bufotalin may modulate lipid synthesis processes by targeting SIRT1, thereby inhibiting osteosarcoma progression.



P207

Pharmacological effects of scutellarein on neutrophilic inflammation.

Miss Luc Ngoc Bao Khanh

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Pharmacological effects of scutellarein on neutrophilic inflammation

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Introduction. Balancing pro-inflammatory and anti-inflammatory responses in neutrophils is essential for a healthy immune system. Disruption of this balance can lead to inflammatory diseases (Bennett et al, 2018; Loh et al, 2022).
Aims. This study aimed to clarify the anti-inflammatory effects of scutellarein (SN15), a small-molecule natural product, and its mechanism of action in neutrophils.
Methods. The anti-inflammatory effects were determined in activated human neutrophils. The *in vitro* cell assays and enzymatic activities were utilized to identify the underlying pharmacological mechanisms.
Results. SN15 significantly reduced the production of reactive oxygen species (ROS) in activated human neutrophils. However, it did not affect the release of human neutrophil elastase. Additionally, it also showed effective free radical scavenging, indicating that the anti-inflammatory effects may involve inhibition of NADPH oxidase activity and direct neutralization of ROS. SN15 inhibited the activation of Akt but did not affect calcium mobilization in activated neutrophils.
Discussion. SN15 reduces oxidative stress in neutrophils by inhibiting Akt-dependent NADPH oxidase activation and by scavenging radicals. Its selective action on ROS highlights its potential as a novel anti-inflammatory candidate.

Bennett JM et al (2018) Front Med (Lausanne) 5:316.
Loh W et al (2022) Cells 11:4076.

P209

Dioscorea villosa extract enhances myogenesis and attenuates doxorubicin-induced muscle atrophy

Dr Ryusuke Hosoda

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

***Dioscorea villosa* extract enhances myogenesis and attenuates doxorubicin-induced muscle atrophy**

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Introduction. Chemotherapy-induced sarcopenia, characterized by progressive loss of skeletal muscle mass and function, worsens prognosis and often leads to interruption of chemotherapy. We recently screened four stilbenoid-rich botanicals by quantifying myogenic marker expression (MyoD, Myh4, myogenin) in C2C12 myoblasts and identified *Dioscorea villosa* (DV) culture extract as the myoprotective candidate.
Aims. To evaluate whether DV culture extract promotes myogenic differentiation in vitro and attenuates doxorubicin (DOX)–induced skeletal muscle atrophy in vivo.
Methods. Constituents of DV culture extract were analyzed by HPLC-DAD. Viability of C2C12 myoblasts after treatment with DV culture extract (2.5–20 μg/mL) was assessed by CCK-8. C2C12 cells during differentiation received DV culture extract (2.5 μg/mL) for 5 days. Myh4 was quantified by Western blotting, and myotube area was quantified from immunofluorescence images of Myh4. Male C57BL/6J mice at 12 weeks old received DOX (5 mg/kg, i.p., once weekly for 4 weeks). A diet containing DV culture extract (0.4 g/kg) was started 1 week before DOX and continued for 5 weeks. Body weights of mice were measured, and sections of tibialis anterior muscles were stained with wheat germ agglutinin conjugated with Alexa Fluor 488 to determine minimal Feret diameter of muscle fibers.
Results. HPLC-DAD analysis revealed that resveratrol, δ-viniferin, and two uncharacterized stilbenoid constituents were detected in DV culture extract. DV extract at 2.5–5 μg/mL showed no cytotoxicity in C2C12 cells. Compared with differentiation medium alone, treatment with DV culture extract significantly increased Myh4 protein to 218% and enlarged myotube area to 170%. In vivo, DOX treatment reduced body weight to 95.1% of baseline, whereas DV culture extract-fed mice significantly maintained body weight at 96.4%. The proportion of myofibers larger than the median diameter in control mice (37 μm) decreased from 50.0% (untreated) to 42.9% with DOX and was significantly preserved at 49.9% with DV culture extract.
Discussion. DV culture extract enhances myogenesis and attenuates DOX-induced muscle atrophy, although further analyses are needed to clarify which stilbenoids are involved.

P210

Computational Targeting of Lysyl Oxidase Reveals Ferroptosis Regulation during Epileptogenesis

Prof Bikash Medhi

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Computational Targeting of Lysyl Oxidase Reveals Ferroptosis Regulation during Epileptogenesis

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Epilepsy is a prevalent neurological condition characterized by abnormal, excessive neuronal firing that leads to recurrent seizures. These seizures, particularly when prolonged, can cause extensive neuronal damage and death. Ferroptosis, a regulated form of cell death distinguished by iron-dependent lipid peroxidation and excessive accumulation of reactive oxygen species (ROS), has emerged as a key contributor to neurodegeneration in epilepsy. Recent evidence implicates lysyl oxidase (LysOX), an extracellular matrix-modifying enzyme, in the pathophysiology of various neurological disorders. However, its exact role in ferroptosis and epilepsy remains insufficiently elucidated.

This study aimed to investigate the potential of LysOX as a therapeutic target for preventing ferroptosis-induced neuronal damage in epilepsy. An *in silico* drug discovery approach was adopted, employing virtual screening of a comprehensive FDA-approved compound library against the LysOX protein. Top-ranking ligands were selected based on docking scores and blood-brain barrier (BBB) permeability, a critical factor for central nervous system drug delivery.

Further pharmacokinetic profiling was conducted using ADMET (Absorption, Distribution, Metabolism, Excretion, and Toxicity) parameters to assess drug-likeness and safety. Molecular dynamics (MD) simulations were performed to analyze the stability and conformational integrity of LysOX-ligand complexes, confirming the reliability of docking predictions.

To validate the computational findings, *in vitro* assays were carried out using SH-SY5Y human neuroblastoma cells. The neuroprotective efficacy of the selected compounds was assessed through the MTT assay, which demonstrated a significant improvement in cell viability upon treatment. Additionally, intracellular ROS levels were quantified using flow cytometry, revealing a marked decrease in oxidative stress in treated cells, indicating effective inhibition of ferroptosis.

Overall, this integrative study identified promising LysOX inhibitors with favorable pharmacokinetic profiles and strong anti-ferroptotic effects. These findings not only highlight the therapeutic relevance of targeting LysOX in ferroptosis-related neurodegeneration but also propose novel candidate compounds for further development in epilepsy treatment.

Keywords: Epilepsy, Ferroptosis, Lysyl Oxidase (LysOX), In Silico Screening, Molecular Dynamics, ADMET, SH-SY5Y, Reactive Oxygen Species (ROS), MTT Assay, Blood-Brain Barrier (BBB)

P211

Bioassay-Guided Fractionation of Clinacanthus nutans: An In Vitro/In Silico Approach.

Prof Mae Sri Hartati Wahyuningsih

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Bioassay-Guided Fractionation of Clinacanthus nutans: An In Vitro/In Silico Approach

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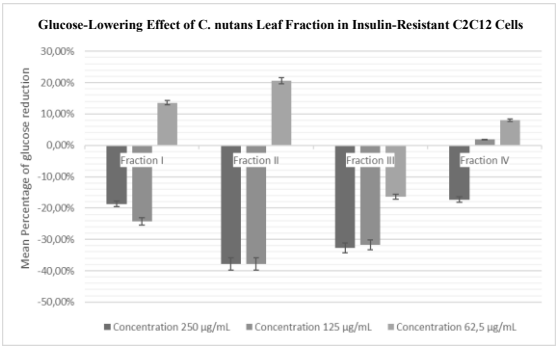

Introduction. *Clinacanthus nutans* (Dandang gendis) is an Indonesian medicinal plant known for its antidiabetic properties. This study investigates the antihyperglycemic mechanism of its active ethanol extract fraction using bioassay-guided fractionation, followed by in vitro and in silico analyses.

Aims. To evaluate the antihyperglycemic activity and to investigate the mechanism of action of the most active fraction of *Clinacanthus nutans* ethanol extract.

Methods. Insulin-resistant C2C12 myoblast cells were used as an in vitro diabetes model. Bioassay-guided fractionation separated compound groups in three stages, each monitored via a glucose consumption assay. Molecular docking was conducted to predict the underlying molecular mechanism.

Results. The methanol (MeOH) extract showed stronger glucose-lowering activity than the chloroform ($CHCl_3$) extract. Its insoluble partition significantly increased glucose uptake, with Fraction II showing the highest activity. Molecular docking identified luteolin as the most prominent active compound, binding to AKT (PDB ID: 1UNQ) with an affinity of −6.0 kcal/mol to the Arginine and the Lysine amino acids of AKT receptor.

Discussion. Arginine promotes insulin secretion and β-cell regeneration by activating the insulin signaling pathway through AKT phosphorylation and increasing PDX-1 levels, aided by nitric oxide production. Lysine and arginine stimulate insulin release by depolarizing β-cell membranes, leading to calcium influx. Additionally, lysine may enhance AKT activity and reduce insulin resistance, suggesting both amino acids contribute to antidiabetic effects through AKT modulation.

P214

MSC-Exosomes mediated IDE intranasal delivery for Alzheimer's Disease synergistic therapy

Prof Zhao Wang

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

MSC-Exosomes mediated IDE intranasal delivery for Alzheimer's Disease synergistic therapy

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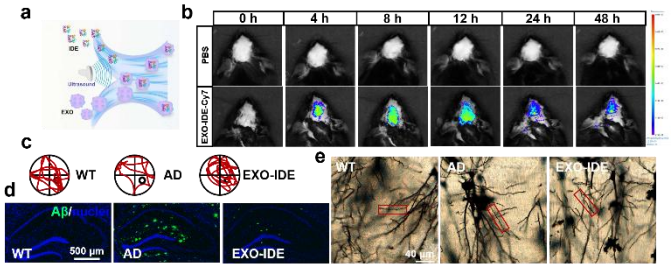

Introduction. Aβ clearance is an important strategy for the development of new therapies for Alzheimer's disease (AD), and Insulin degrading enzyme (IDE) can mediate the degradation of Aβ and promote its elimination. Inspired by the possibility that exosomes in the brain may be involved in the secretion and transport mechanism of IDE, mesenchymal stem cell derived exosomes (MSC-EXOs) as natural carriers have many advantages in treating AD and delivering IDE.

Aims. To utilize therapeutic MSC-EXOs as the carrier to directly deliver IDE into the brain, establishing an EXO-IDE drug delivery system, promoting the degradation of Aβ, thereby achieving efficient and synergistic improvement of AD pathological phenotypes.

Methods. The system was constructed and physical-chemical properties were characterized using TEM, DLS, NTA, WB and other methods. The therapeutic effect was evaluated from a pharmacological perspective in AD model mice through methods such as brain-targeted imaging, behavioral tests, pathological sections, and molecular biology.

Results. The central achievement of this study was to successfully merge the therapeutic properties of MSC-derived exosomes with their function as a delivery vehicle. By engineering them to carry IDE, we developed a non-invasive, intranasal system was developed and demonstrated excellent brain bioavailability. This approach effectively ameliorated both neuronal damage and neuroinflammation in AD model.

Discussion. The study highlights a clear synergistic effect between the exosome vehicle and its IDE cargo. While empty EXO alone did not reduce the brain's Aβ burden, they conferred a modest improvement in cognitive performance and neuronal integrity compared to AD mice. At the same time, IDE does indeed play a role in reducing Aβ plaques in the hippocampus, highlighting the benefits of the combined approach.

P215

Cordycepin Improve Glycolipid Metabolism Disorder in High Fat Diet-induced Obese Mice

Dr Nan Hu

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Cordycepin Improve Glycolipid Metabolism Disorder in High Fat Diet-induced Obese Mice

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Introduction. Obesity is a chronic metabolic disease resulting from energy imbalance, which leads to glucose - lipid disorders and associated complications, posing a major global public health challenge. Cordycepin (COR) has been demonstrated to regulate blood glucose and lipid metabolism. However, its molecular mechanism in alleviating obesity-related metabolic disorders, especially its effects on key signaling pathways, remains incompletely understood.

Aims. A high-fat diet (HFD)-induced obese mouse model was established to investigate the mechanism of COR through intestinal microflora, metabolomics, and proteomics analyses.

Methods. A total of 18 male C57BL/6J mice were used in this study. They were randomly assigned to three groups (n = 6 per group): the control group (CON) received a normal diet; the high - fat diet group (HFD) was fed a high - fat diet for 8 weeks; and the cordycepin treatment group (HFD_COR) was fed a high - fat diet for 8 weeks while receiving daily oral administration of 100 mg/kg cordycepin. Metabolic parameters, histopathology, 16S rRNA sequencing, fecal metabolomics, liver proteomics, and hepatic gene mRNA expression were detected.

Results. Cordycepin reduced body weight, fasting blood glucose (FBG), area under the curve of intraperitoneal glucose tolerance test (IPGTT AUC), as well as serum and liver total cholesterol (TC) and triglyceride (TG) levels in obese mice. It also improved pancreatic and hepatic histopathological changes and alleviated hepatic lipid deposition. Additionally, cordycepin remodeled the intestinal microbiota, identified 207 differential fecal metabolites (enriched in α-linolenic acid metabolism) and 151 differential liver proteins (involved in PPAR signaling), upregulated hepatic PPARA and APOAI mRNA expression, and downregulated PPARG mRNA expression.

Discussion. Cordycepin ameliorates high-fat diet (HFD)-induced glycolipid metabolism dysfunction by reshaping the intestinal microbiota, regulating α-linolenic acid metabolism, and activating hepatic PPAR signaling, thereby providing multi-omics evidence for its therapeutic potential in obesity-related metabolic disorders.

P216

Relationship between skeletal muscle atrophy and sphingolipids in a cancer cachexia model

Ms Mayuka Morita

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Relationship between skeletal muscle atrophy and sphingolipids in a cancer cachexia model

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Introduction. Cancer cachexia is a complex metabolic disorder observed in approximately 80% of patients with advanced cancer. Its primary symptoms include weight loss, skeletal muscle atrophy, anorexia, and depletion of adipose tissue, which significantly reduce the patient's quality of life. Previous studies have reported changes in the expression of enzymes involved in sphingolipid metabolism in the skeletal muscle of cancer cachexia model mice. However, the relationship between skeletal muscle atrophy and altered sphingolipid metabolism remains unclear.

Aims. This study aims to elucidate the relationship between skeletal muscle atrophy and sphingolipids using a mouse model of cancer cachexia to identify novel therapeutic targets.

Methods. The model was established by subcutaneously transplanting the mouse renal cancer cell line RenCa into the right flank of 8-week-old male BALB/c mice on day 0. They were sacrificed, and the gastrocnemius muscle was collected on days 7, 14, 20, and 30.

Results. Around day 20 post-transplantation of RenCa cells, a decrease in gastrocnemius muscle weight and increased muscle atrophy markers Atrogin-1 and MuRF-1 were confirmed. Subsequently, metabolome analysis of the gastrocnemius muscle on day 20 revealed decreased glycolytic metabolites. Furthermore, the expression levels of Akt/p-Akt, a key activator of glycolysis, and its downstream effector Glut4 changed between day 7 and day 30. Additionally, ceramide species, a central metabolite in sphingolipid metabolism, decreased in the gastrocnemius muscle of RenCa mice, accompanied by altered expression of six isoforms of ceramide synthase (CerS1-6), the enzymes responsible for their synthesis through the addition of various fatty acid chains to sphingoid bases.

Discussion. It is suggested that an alteration in the sphingolipid composition of the cellular membrane affects the membrane localization of Glut4, which mediates glucose uptake, thereby changing the energy metabolism of the glycolytic pathway. By analysing the detailed changes in sphingolipid metabolism and preventing the decline in energy production from glycolysis, there is a potential to ameliorate skeletal muscle atrophy caused by cancer cachexia.

Pierucci F et al (2018) Biochim Biophys Acta Mol Basis Dis 1864:3598-3614; Pierucci F et al (2021) Cancers 13:3285

P217

Construction of a prognostic model for breast cancer based on mitochondria-related genes

Prof Rong Xu

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Construction and validation of a prognostic model for breast cancer based on mitochondria-related genes

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Introduction. Breast cancer is a highly prevalent malignant tumor in women, characterized by strong heterogeneity and remarkable prognostic variability. Single-cell RNA sequencing (scRNA-seq) technology provides a powerful tool for dissecting the heterogeneity of cell subsets within the tumor microenvironment. However, existing prognostic models lack validation at the single-cell level, and the functional characterization of core genes remains insufficient. In this study, we employed scRNA-seq to identify key cell subsets and elucidate the underlying molecular mechanisms in breast cancer. A prognostic model was constructed and validated based on differentially expressed genes, followed by analyses of its associations with immune infiltration, drug sensitivity, and signaling pathways. Core prognostic genes were also screened out, which provides novel evidence for prognostic evaluation and individualized treatment of breast cancer.

Aims. By integrating single-cell RNA sequencing with multi-database analysis, this study explored the prognosis-related mechanisms and therapeutic targets of breast cancer.

Methods. In this study, we employed scRNA-seq to identify key cell subsets and elucidate the underlying molecular mechanisms in breast cancer. A prognostic model was constructed and validated based on differentially expressed genes, followed by analyses of its associations with immune infiltration, drug sensitivity, and signaling pathways. Core prognostic genes were also screened out, which provides novel evidence for prognostic evaluation and individualized treatment of breast cancer.

Results. After quality control and subpopulation annotation of cells from 12 breast cancer-related tissue samples, tumor epithelial cells were identified as the key cell subtype, and mitochondria-associated pathways as the core. A prognostic model was constructed, which demonstrated robust predictive performance in both TCGA and GEO datasets. Immune infiltration analysis revealed that the low-risk group exhibited stronger antitumor immune activity, whereas the high-risk group displayed immunosuppressive features. Significant differences in chemotherapeutic drug sensitivity were observed between the two groups, and abnormalities in metabolism- and proliferation-related pathways may contribute to poor prognosis. Core prognostic genes were ultimately screened out.

Discussion. The prognostic model established in this study provides a novel tool for the clinical prognostic evaluation of breast cancer, while the identified mechanisms offer potential targets for precision therapy.

P218

MC, a Natural Plant Extract, Blocks Angiogenesis by Inhibiting VEGF-A/VEGFR-2 Signaling

Assoc Prof Shiu-wen Huang

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

MC, a Natural Plant Extract, Blocks Angiogenesis by Inhibiting VEGF-A/VEGFR-2 Signaling

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Introduction. Angiogenesis, the formation of new blood vessels, is a critical process for tumor growth and metastasis. The vascular endothelial growth factor (VEGF-A) and its receptor VEGFR-2 form a key signaling axis that drives this process. As such, targeting the VEGF-A/VEGFR-2 pathway is a highly effective therapeutic strategy for treating angiogenesis-related diseases, including cancer. Natural products continue to be an important source for the discovery of new drug leads.

Aims. This study aimed to investigate the anti-angiogenic properties and underlying mechanisms of MC, a natural dietary extract.

Methods. The anti-angiogenic effects of MC were evaluated using a comprehensive panel of in vitro and ex vivo assays, including endothelial cell proliferation (BrdU assay), migration, invasion, and tube-formation assays, as well as an ex vivo aortic ring microvessel sprouting assay. The efficacy of MC was further validated in an in vivo mouse metastasis model.

Results. Our findings demonstrate that MC suppressed VEGF-A-induced angiogenic responses in a concentration-dependent manner in vitro. Furthermore, MC significantly reduced neovascularization and tumor metastasis in vivo. Mechanistically, we found that MC inhibits the activation of VEGFR-2 and its downstream signaling cascades in endothelial cells.

Discussion. These results establish MC as a promising natural compound that targets the VEGF-A/VEGFR-2 signaling pathway. This study highlights its potential as a lead candidate for developing anti-angiogenic therapies against cancer and other diseases driven by abnormal angiogenesis.

P219

Pharmacological characterisation of positive allosteric modulation at M2 and M3 receptors

Mr Adeep Monger

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Pharmacological and structural insights into positive allosteric modulation at M2 and M3 muscarinic acetylcholine receptors

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Introduction. The muscarinic acetylcholine receptors (mAChRs) are a family of five class A G protein coupled receptors designated M_1-M_5. Current mAChR drugs have significant cholinergic side effects, limiting their clinical utility due to poor subtype selectivity within the receptor family. A major challenge in achieving subtype selectivity arises from the highly conserved orthosteric sites shared among the five mAChR subtypes [1]. As a result, targeting allosteric sites has emerged as a promising strategy for more selective modulation of specific mAChR subtypes.

Aims. To characterise the recently discovered M_2 and M_3 mAChR selective positive allosteric modulators (PAMs), BAY2413555 and ASP8302 using structural and pharmacological methods.

Methods. The pharmacological profiles of these novel PAMs were characterized in Flp-In CHO cells stably expressing M_2 and M_3 mAChRs using the TruPATH and ERK phosphorylation assays. Protein were purified and Cryogenic electron microscopy (cryo-EM) was employed to determine the human M_3 mAChR in complex with the PAM ASP8302.

Results. The recently discovered M_2 and M_3 selective PAMs exhibited low micromolar potency and affinity. Cryo-EM structures revealed distinct ligand binding modes at the M_3 mAChR.

Discussion. These structural insights establish a platform for structure-guided optimization of M_2 and M_3 mAChR selective PAMs, thereby accelerating the development of highly selective therapeutic agents.

1. Tobin, A.B. [2024] A golden age of muscarinic acetylcholine receptor modulation in neurological disease. Nat Rev Drug Discov 23, 743-758. https://doi.org/10.1038/s41573-024-01007-1

P220

Population-based assessment of compartmentalised intracellular cAMP signalling mediated by incretin receptors

Dr Laura Humphrys

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Population-based assessment of compartmentalised intracellular cAMP signalling mediated by incretin receptors

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Introduction. G protein coupled receptors (GPCRs) are primarily expressed in the plasma membrane. However, some GPCRs are also expressed at intracellular locations, while others can traffic to subcellular compartments following agonist-mediated activation. Monitoring and quantifying receptor signalling from intracellular compartments often relies on single-cell imaging, exemplified by studies on the glucagon-like peptide-1 receptor (GLP-1R; Fletcher et al. 2018).

Aims. We have developed methods for measuring subcellular signalling on a population level using bioluminescence resonance energy transfer (BRET) biosensors anchored to subcellular compartments, allowing for higher throughput measurement of ligand activity.

Methods. HEK293A cells were stably transfected with plasmid cDNA for a BRET biosensor of cyclic adenosine monophosphate (cAMP; CAMYEN sensor) with fused localisation tags. Biosensor localisation was confirmed using confocal microscopy. The GLP-1R or glucose-dependent insulinotropic polypeptide receptor (GIPR) were then transiently expressed at low levels in these cell lines, plated to 96 well plates and ligand-induced BRET measurements were determined for each pathway to assess location dependent cAMP on the same day.

Results. Ligand-mediated cAMP was detected in the cytosol, plasma membrane, and endosomes with differing kinetic profiles and pharmacological parameters in response to GIP with the GIPR and GLP-1(7-36)NH_2 with the GLP-1R.

Discussion. We have created stable cell lines expressing localised BRET biosensors for cAMP measurements. These cell lines will be used to characterise the responses of GLP-1R and GIP with various peptide ligands to determine the impact of their subcellular downstream cAMP signalling.

Fletcher MM, Halls ML, Zhao P, et al. (2018) Biochem Pharmacol. 156:406-419

Starr R et al (2005) Pharmacology of FAB-4, ed Ono Y. pp 12-23, Tokyo, Abbey Road Press

P221

Nuclear IGF1R promotes tumorigenesis by preventing Smurf2-depentent EZH2 degradation in HCC

Dr Wu XinFeng

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Nuclear IGF1R promotes tumorigenesis by preventing Smurf2-depentent EZH2 degradation in HCC

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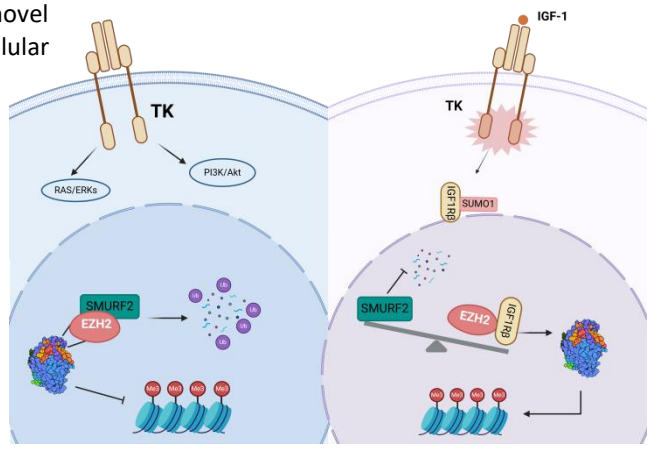

Introduction : In this study, we revealed a novel mechanism by which nIGF1R facilitates hepatocellular carcinoma (HCC) progression by preventing Smurf2-dependent degradation of enhancer of zeste homolog 2 (EZH2). EZH2 is the catalytic subunit of polycomb repressive complex 2, which is frequently abnormal in cancers and which alters the entire epigenome by increasing H3K27me3 level. Therefore, EZH2 is a key therapeutic target for cancer treatment. Several EZH2 inhibitors exist. However, these EZH2 inhibitors are not as effective as anticipated, likely because activation of IGF1R confers resistance to EZH2 inhibitors in multiple cancers.

There is considerable interest in the SMAD Specific E3 Ubiquitin Protein Ligase 2 (Smurf2) because it controls the levels of other proteins by tagging them for proteasomal degradation. We identified interactions between nIGF1R, Smurf2, and EZH2 in HCC cells when IGF1R was translocated into the nucleus. We propose that these interactions lead to upregulation of EZH2 level, which promotes HCC development.

Aims: Nuclear IGF1R (nIGF1R) is associated with the development of hepatocellular carcinoma (HCC), but we presently lack a comprehensive, mechanistic understanding of this association. Here we uncovered a novel mechanism of nIGF1R in the promotion of HCC.

Methods: Liquid chromatography-tandem mass spectrometry was performed for identifying the nIGF1R's target. Stimulated emission depletion (STED) super-resolved microscopy analyzed the colocalization strength and the diameter between Zeste homolog 2 (EZH2) and Smad ubiquitination regulatory factor-2 (Smurf2) or nIGF1R. Orthotopic model of HCC in nude mice was employed for further interpreting the mechanism of nIGF1R in promoting cancer progression through preventing EZH2 degradation.

Results and Discussion: Activation of IGF1R led to the nuclear translocation of IGF1R through the SUMOylation mediation. EZH2 was identified as the target of the newly nIGF1R. Mechanistically, the nIGF1R possessed a stronger affinity than Smurf2 to EZH2, leading to the disaggregation of the Smurf2-EZH2 complex, resulting in the prevention of the Smurf2-mediated EZH2 degradation. Further mechanism study revealed that the Tyr1161/1165/1166-initiated phosphorylation of IGF1R led to the conformational changes to flip its A-loop forward to the RNA binding helix of EZH2, which rendered the preferential binding of the nIGF1R with the RNA binding helix of EZH2 through competition with the HECT C-lobe of Smurf2, leading to the disaggregation of Smurf2-EZH2 complex. The disaggregation of Smurf2-EZH2 complex failed the Smurf2-mediated EZH2 degradation, resulting in the accumulation of EZH2. As the enzymatic catalytic subunit of PRC2, EZH2 accumulation led to the increases of H3K27me3 for promoting cancer progression. CONCLUSION: The nIGF1R promotes HCC progression through preventing the Smurf2-mediated degradation of EZH2.

P222

Biological activities and GC-MS profiling of Bidens pilosa acetone and methanol extracts

Assoc Prof Mmamosheledi Mothibe

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Biological activities and GC-MS profiling of *Bidens pilosa* acetone and methanol extracts of

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Introduction. *Bidens pilosa* is a widely distributed plant reported to have pharmacological effects on over 40 diseases, chiefly attributed to its phytochemicals. While it is regarded as a weed, it is one of the commonly used traditional medicines in South Africa for various conditions.
Aims. The study aimed to characterise acetone and methanol extracts of *B. pilosa* for antioxidant, antimicrobial, anti-Alzheimer activities and conduct GC-MS analysis of the extracts.
Methods. Phytochemical analysis (total polyphenol content, total flavonoid content) of the acetone and methanol extracts of *B. pilosa* were carried out, followed by antioxidant assays: 2,2-diphenyl-1-picrylhydrazyl (DPPH) and the ferric reduction antioxidant power (FRAP). Antimicrobial activity was tested against the ESKAPE pathogens and cytotoxicity effects were tested against skeletal muscle C2C12 cell line and HeLa cells. The BACE inhibition assay as well as the acetylcholinesterase inhibition assay were conducted to determine the anti-Alzheimer potential of the plant extracts. GC-MS analysis was performed on the extracts to confirm the presence of bioactive phytochemicals.
Results. The acetone extract had higher total phenolic (0.033 mg/GAE) and flavonoid (0.023 mg/QE) content, as well as higher radical scavenging activity through the DPPH (78.54%) and FRAP (5050.2 µM Fe2+ at 500 µg/ml) assays. Methanol extract had higher AChE inhibition (IC50 0.921 µg/ml) but lower BACE inhibition as compared to the acetone extract. Both extracts showed no activity at 50 µg/ml against *Acinetobacter baumannii* ATCC 19606, *Staphylococcus aureus* ATCC 12600, *Escherichia coli* ATCC 10536 and *Pseudomonas aeruginosa* ATCC 2785.The extracts showed high cell viability of C2C12 cells and HeLa cells, confirming that they are no cytotoxic. GC-MS analysis revealed the presence of numerous compounds with known biological activities in both extracts, including eicosane, tetratetracontane and propiconazole.
Conclusion. The findings indicated that B pilosa could have the potential for anti-Alzheimer activity and therefore could serve as a drug lead for further investigation. The presence of various bioactive compounds further validate the continued use of the plant in traditional medicine.

P223

Birch sap attenuates atopic dermatitis-like lesions by regulating NFκB and MAPK pathways

Prof Chi-Feng Hung

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Birch sap attenuates atopic dermatitis-like lesions by regulating NFκB and MAPK Pathway

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Introduction. Atopic dermatitis (AD) is a chronic inflammatory skin disease characterized by pruritus, barrier dysfunction, and immune dysregulation. Conventional treatments often fail to provide optimal disease control, highlighting the need for safer, effective alternatives. Birch sap, derived from Betula species, contains bioactive compounds with anti-inflammatory and antioxidative properties.

Aims. This study investigates birch sap's therapeutic potential in AD by exploring its effects on inflammatory pathways and skin barrier function.

Methods. The chemical composition of birch sap was analyzed and found to be mainly composed of polysaccharides. In vitro experiments were conducted using TNF-α/IFN-γ-activated HaCaT keratinocytes to assess its impact on cytokine expression and phosphorylation of Mitogen-Activated Protein Kinase (MAPK) and NF-κB proteins. In vivo studies involved DNCB-induced AD-like lesions in BALB/c mice treated with birch sap. Skin barrier parameters, histological changes, and inflammatory markers were evaluated.

Results. Birch sap significantly reduced mRNA levels of IL-1β, IL-6, and IL-8 and inhibited phosphorylation of MAPK and NF-κB proteins in HaCaT cells. In mice, birch sap alleviated AD-like symptoms, reduced epidermal hyperplasia, improved hydration, and normalized transepidermal water loss. Blood flow modulation further supported its anti-inflammatory effects.

Conclusion. Birch sap demonstrates promising anti-inflammatory and barrier-repair properties in AD models. While preclinical findings are compelling, further clinical trials are necessary to validate its therapeutic potential.

P226

USP24-i-101 targeting USP24 inhibits inflammation in NASH through inhibiting NF-kb activity

Prof Jan-Jong Hung

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

USP24-i-101 targeting USP24 inhibits inflammation in NASH through inhibiting NF-κb activity

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Introduction. Ubiquitin-specific peptidase 24 (USP24), a deubiquitinase, regulates the protein stability of its substrates by removing ubiquitin. Our previous studies demonstrated that functional knockout of USP24 in mice or inhibition of USP24 with a specific inhibitor, USP24-i-101, reduced body weight and decreased lipid droplet accumulation in adipocytes and hepatocytes. Recent studies clarified that USP24 promoted adipogenesis through stabilizing PKA-Cα and p300. We also found that genes related to inflammation were inhibited in USP24-deficient mice and USP24-i-101-inhibited mice.

Aims. Based on the previous study, we will study the role and mechanisms of USP24 in inflammation of NASH.

Results. We have established the NASH animal model and found that USP24-i-101 can reduce body weight of the HFD-mice. In addition, the fatty accumulation was also decreased. The effect of USP24-i-101 on inflammation and fibrosis in vivo will be investigated by measuring the related genes expression. In addition to the in vivo study, several in vitro studies have been finished. At first, we found that USP24-i-101 can inhibit FFA- or LPS-induced NF-κB activity. Second, knockdown of USP24 can decrease the mRNA and protein levels of NF-κB. Third, NF-κB inhibition can decrease mRNA and protein levels of USP24. All the data suggest that USP24 and NF-κB can be positively regulated each other. FFA or LPS increased the phosphorylation of NF-κB, thereby transferring into nucleus, subsequently recruiting to the promoter of USP24 to increase its expression. Moreover, upregulation of USP24 can stabilize p300 to increase NF-kB expression. Therefore, targeting USP24 by USP24-i-101 can inhibit inflammation during non-alcoholic steatohepatitis (NASH) progression through inhibiting NF-κB signaling pathway.

Discussion. Understanding the role of USP24 in inflammation will be advantage to study the NASH progression such as fibrosis in the future and might be potential to develop USP24-i-101 as a clinical drug for NASH.

P227

Surfaceome-based discovery of CD70 as a high-priority immunotherapeutic target in NK/T-cell lymphoma

Dr Nurulhuda Mustafa

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Surfaceome-based discovery of CD70 as a high-priority immunotherapeutic target in NK/T-Cell lymphoma
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Introduction. Natural Killer/T-cell lymphoma (NKTL) is an Epstein–Barr virus (EBV)-associated subtype of non-Hodgkin lymphoma that disproportionately affects patients in Asia and South America. Current therapies, including chemo-radiotherapy and newer targeted agents, remain suboptimal underscoring an urgent need to identify novel, actionable targets to develop next-generation immunotherapies with improved specificity and reduced toxicity.
Aims. To characterise the plasma membrane landscape ("surfaceome") of NKTL, prioritise novel immunotherapeutic targets, and evaluate the potential of CD70 for antibody-based therapeutic development.
Methods. We established a quantitative, label-free mass spectrometry–based plasma membrane profiling workflow using aminooxy-biotin labelling and streptavidin bead enrichment to characterise the NKTL surfaceome. A customised membrane annotation pipeline was developed, integrating UniProt, Gene Ontology, and in silico surfaceome databases to systematically annotate and rank candidates by immunotherapeutic potential. Top-ranked targets were validated at the protein level. Protein expression and internalisation were assessed by flow cytometry, immunohistochemistry, and Fab-ZAP assays. Complement-dependent cytotoxicity (CDC) and antibody-dependent cellular cytotoxicity (ADCC) assays were utilised to assess the anti-cancer effect of anti-CD70 antibody, Cusatuzamab which was subsequently a conjugated to monomethyl auristatin E (MMAE) to generate an antibody-drug conjugate.
Results. Through surfaceome analysis, CD70, ITGA4, and CD48 emerged as top candidates, with CD70 ranking highest in immunotherapeutic potential. CD70 was expressed in eight of nine NKTL cell lines but absent in healthy PBMCs. CD70 demonstrated strong internalisation capacity. Cusatuzumab elicited potent CDC and ADCC responses and, when conjugated with MMAE to form an antibody-drug conjugate, exhibited significant cytotoxicity in NKTL cell models.
Discussion. This study provides the first comprehensive map of the NKTL surfaceome and a novel prioritisation strategy for target discovery. CD70 emerged as a promising immunotherapeutic target with favourable expression, internalisation, and effector function characteristics, supporting its potential as an ADC candidate. Our findings lay the groundwork for the development of novel CD70-directed therapies to improve outcomes for patients with NKTL.

P228

Geniposide prevents neuropathic pain through ATP-mediated P2X3 receptors by regulating MAPKs/NF-κB signaling

Prof Bin-Nan Wu

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Geniposide prevents neuropathic pain through ATP-mediated P2X3 receptors by regulating MAPKs/NF-κB signaling

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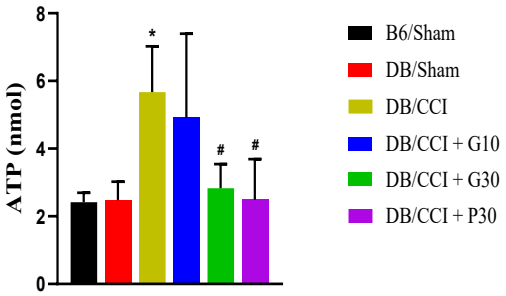
Introduction. The current options for managing neuropathic pain are insufficient; it is essential to keep investigating innovative targets and better therapeutic approaches.

Aims. We explored whether the iridoid glycoside geniposide could improve chronic constriction injury (CCI)-induced neuropathic pain and related underlying mechanisms in a diabetic mouse model.

Methods. The neuropathic pain model was performed by CCI surgery in type 2 diabetic db/db mice (DB). Mice were divided into B6/sham, DB/sham, DB/CCI+vehicle, DB/CCI+geniposide (10, 30 mg/kg/d, i.p.), and DB/CCI+pregabalin (30 mg/kg/d, i.p.).



Results. On day 14, DB/CCI mice enhanced pain behaviors, proinflammatory cytokines and proteins; those responses were mitigated by geniposide and pregabalin. In the spinal dorsal horn, DB/CCI increased p-NF-κB in neurons and astrocytes, connexin 43 (Cx43) in astrocytes, and P2X3R in neurons; those immunoreactivities were reduced by geniposide and pregabalin. In the spinal cords, DB/CCI-augmented proinflammatory cytokines and ATP release were attenuated by geniposide and pregabalin.

Discussion. Geniposide and pregabalin prevent db/db mice after CCI-induced neuropathic pain, possibly due to suppressing astrocyte Cx43-mediated ATP release and P2X3R activation, reducing MAPKs-regulated NF-κB activation. Our findings demonstrated that geniposide might be a candidate for treating diabetic neuropathy with peripheral nerve injury.

P229

Structure-Guided Screening for Formyl Peptide Receptor 1 Inhibitor

Prof Tsong-Long Hwang

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Structure-Guided Screening for Formyl Peptide Receptor 1 Inhibitor

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Introduction. Neutrophils are key drivers of inflammation, and their dysregulation contributes to autoimmune and inflammatory diseases. Formyl peptide receptor 1 (FPR1), a critical regulator of neutrophil activation, is a promising therapeutic target.
Aims. This study aimed to discover novel FPR1 inhibitors using structure-based virtual screening.
Methods. Candidate compounds were identified by virtual screening and docking, followed by in vitro assays assessing neutrophil functions and downstream signaling.
Results. We identified an initial hit from the National Cancer Institute library by integrating an in-silico screening approach with receptor-binding assays. Following this, an evaluation of the analogues for the hit compound revealed several compounds that exhibited FPR1 inhibitory activity in the micromolar range. Among the compounds, Boc-L-Trp-L-Trp-L-Trp-Ome (668429) exhibits the strongest antagonistic activity. Docking revealed key FPR1 interactions, and selectivity testing confirmed preference over FPR2. 668429 selectively suppressed FPR1-mediated ROS production, degranulation, and integrin expression and inhibited calcium, MAPK, and Akt pathways in human neutrophils.
Discussion. Compound 668429 is a selective FPR1 inhibitor with potential as a lead candidate for neutrophil-driven inflammatory disorders.

P230

Pranlukast, a cysteinyl leukotriene receptor 1 antagonist, alleviates high-fat diet-induced obese mice

Assist Prof Masatoshi Nakatsuji

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Pranlukast, a cysteinyl leukotriene receptor 1 antagonist, alleviates high-fat diet-induced obese mice
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Introduction. Cysteinyl leukotrienes (CysLTs), such as LTC_4, LTD_4, and LTE_4, are lipid mediators that are synthesized from arachidonic acid. CysLTs play important roles in the pathogenesis of various inflammatory diseases. We have demonstrated that LTC_4 and LTD_4 activated adipogenesis through CysLT1 receptors in adipocyte-differentiated 3T3-L1 cells[1)].
Aims. We investigated the effect of pranlukast, a CysLT1 antagonist, on obesity in high-fat diet (HFD)-fed mice.
Methods. C57BL/6 mice (male, 5 weeks old) were fed a low-fat diet (LFD) or an HFD, and intraperitoneally administered pranlukast (1.5 mg/kg, daily) for 2 months. Body weight, food and water intake, and rectal temperature were measured once a week. Insulin tolerance and oral glucose tolerance were evaluated by measuring blood glucose levels from the tail vein after insulin and glucose administration, respectively. The expression of adipogenesis- and thermogenesis-associated genes in the visceral white adipose tissue (vWAT) were examined by real-time PCR.
Results. Pranlukast lowered the body weight gain in HFD-fed mice with the decreased weights of visceral and subcutaneous WAT. In LFD-fed mice, there was no significant change in the body weight gain between the pranlukast-administered and the vehicle-administered groups. Although pranlukast treatment did not improve insulin sensitivity and glucose tolerance in HFD-fed mice, the blood glucose level was lowered in the pranlukast-administered HFD-fed mice. Moreover, the rectal temperature increased in HFD-fed mice by pranlukast administration. The mRNA levels of the adipogenesis- and thermogenesis-associated genes in vWAT of HFD-fed mice were not changed by pranlukast administration.
Discussion. These results suggest that pranlukast, a CysLT1 antagonist, had an ability to suppress obesity. We are performing a bacterial 16S rRNA gene sequencing analysis in feces to clarify the mechanism of anti-obesity effect of pranlukast.

1) *Biochim. Biophys. Acta Mol. Cell Res.* 1869: 119203 (2022)

P232

Cold atmospheric plasma patch amplifies JAK inhibitor efficacy via AMPK–SOCS3 signaling

Mr Abdulaziz Jabborov

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Cold atmospheric plasma patch amplifies JAK inhibitor efficacy via AMPK–SOCS3 signaling

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Introduction. Atopic dermatitis (AD) is a chronic inflammatory skin disorder characterized by immune dysregulation and Th2-dominant cytokine signaling. While Janus kinase (JAK) inhibitors are effective, their benefits can diminish over time, highlighting the need for new adjunctive strategies. Cold atmospheric plasma (CAP) generates reactive species with the potential for immunomodulation, yet its synergy with molecularly targeted therapies remains largely unexplored.

Aims. In this study we aimed to investigate whether patch delivered CAP can potentiate the efficacy of the JAK inhibitors, and to elucidate the underlying signaling mechanisms, with a focusing on the AMPK-SOCS3 axis.

Methods. Atopic dermatitis (AD) was induced in BALB/c mice, which were then treated with a CAP patch, upadacitinib, or their combination. Mechanistic studies were performed in HaCaT keratinocytes to evaluate the regulation of STAT6 downstream signaling alongside SOCS3 expression and AMPK activation.

Results. CAP treatment generated reactive oxygen species that activated AMPK leading to robust SOCS3 induction and suppression of STAT6-driven Th2 inflammation. The CAP patch-upadacitinib combination significantly reduced epidermal thickening, immune cell infiltration, and IgE levels compared with either treatment alone. Blocking AMPK abrogated SOCS3 upregulation and diminished CAP's immunomodulatory effects, confirming AMPK as a key mediator.

Discussion. Our findings demonstrate that CAP patch amplifies the therapeutic effect of JAK inhibition by engaging the AMPK-SOCS3 signaling axis. CAP patch's ability to enhance SOCS3 expression highlights a novel immunoregulatory pathway for precision modulation of cytokine signaling. Beyond its role as a non-invasive adjunct, CAP offers a drug-sparing advantage that may reduce the need for prolonged or high-dose JAK inhibitor therapy, potentially minimising adverse effects. These results suggest that CAP patch integration into existing therapeutic regimens could redefine treatment strategies for AD and other chronic inflammatory skin conditions.

P233

Comparative Evaluation of Nanodiamond-Curcumin and Copper-Curcumin in Triple-negative breast cancer

Mr Keith Ncube

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Comparative Evaluation of Nanodiamond-Curcumin and Copper-Curcumin in Triple-negative breast cancer

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Introduction. Curcumin and its metal complexes are promising anticancer agents due to their potential to overcome drug resistance. β-Diketonato-functionalized nanodiamonds (ND) conjugated to curcumin (ND-curcumin) and copper-curcumin complexes may enhance delivery and potency in triple-negative breast cancer (TNBC).
Aims. To compare the cytotoxic effects of ND-curcumin and copper-curcumin in BT-20 TNBC monolayers and spheroids.
Methods. Cytotoxicity was evaluated in BT-20 monolayers using the sulforhodamine B assay, with IC_{25}, IC_{50}, and IC_{75} values calculated. Three-dimensional spheroids were generated via the liquid overlay method at 10,000 cells per well and cultured for four days prior to treatment. Monolayers and spheroids were exposed to ND-curcumin or copper-curcumin for 72 hours. Spheroid viability and structure were assessed using acid phosphatase assays, phase contrast microscopy, and FDA/PI live/dead staining.
Results. ND-curcumin showed an IC_{50} of 10.7 µM (IC_{25} 6.6 µM, IC_{75} 17.2 µM), and copper-curcumin an IC_{50} of 8.9 µM (IC_{25} 7.9 µM, IC_{75} 20 µM) in monolayers. These concentrations did not significantly affect spheroid viability or morphology. Live/dead staining confirmed minimal cell death, and spheroids retained overall structure, suggesting that 3D culture conditions confer resistance to cytotoxic effects observed in monolayers.
Discussion. The differential responses highlight limitations of 2D assays. Reduced spheroid sensitivity likely reflects microenvironmental factors such as limited diffusion, hypoxia, and cell-cell interactions. Ongoing work aims to assess effects in non-cancerous cells and elucidate cytotoxicity mechanisms to guide therapeutic potential.

P234

DIF-1 ameliorates liver fibrosis inducing the reversion of activated hepatic stellate cells

Assist Prof Momoka Yamaguchi

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

DIF-1 ameliorates liver fibrosis inducing the reversion of activated hepatic stellate cells

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Introduction. Quiescent hepatic stellate cells (HSCs) transdifferentiate into myofibroblast-like, collagen-producing activated HSCs during liver injury, leading to liver fibrosis (LF). Therefore, the reversion of activated HSCs is expected to be a therapeutic target for LF. Our previous study showed that differentiation-inducing factor-1 (DIF-1), a small molecule derived from cellular slime molds, inhibited HSC activation. Here, we investigated whether DIF-1 could induce the reversion of activated HSCs, thereby exerting anti-fibrotic effects.
Methods. HSCs isolated from mouse livers were transdifferentiated into activated HSCs by culturing in plastic dishes and then treated with DIF-1. The *in vivo* effects of DIF-1 were investigated in a thioacetamide-induced LF mouse model of thioacetamide-induced LF.
Results. DIF-1 reverted the cell morphology of activated HSCs to quiescent HSC-like shapes and significantly reduced the expression of α-smooth muscle actin, a marker of activated HSCs. In the LF mouse model, blood AST and ALT levels and the area of collagen fibres in the liver were significantly lower in the DIF-1-treated group than in the vehicle-treated group. Moreover, decreased expression of *Acta2*, *Col1a1*, *Pdgfrb*, and *Timp1*, genes related to LF and markers of activated HSCs, and increased expression of *Lrat*, a marker of quiescent HSCs, were observed in the liver tissue of the DIF-1-treated group.
Conclusions. The data obtained here suggest that DIF-1 ameliorates LF by inducing the reversion of activated HSCs to a quiescent-like phenotype *in vivo*. DIF-1 is a valuable anti-fibrotic compound that not only inhibits HSC activation but also induces activated HSCs to revert to a quiescent form.

P235

Genestein reduces PD1/PDL1 expression in IgA nephropathy induced rats.

Mr Rajiv Jash

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Genestein reduces PD1/PDL1 expression in IgA nephropathy induced rats.

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Introduction. IgA nephropathy (IgAN), commonly referred to as Berger's disease, represents the most widespread type of inflammation-associated glomerulonephritis globally, impacting a considerable number of people and possibly influencing health systems around the world. Existing therapies are largely aimed at reducing the progression of the disease by the use of immunosuppressant drugs. However, these drugs come with substantial adverse effects when they are used for a considerable amount of time (Barratt J et.al. 2006).
Aim and Objective. In this research, we examined the effectiveness of Genestein, a type of bioflavonoid, in alleviating inflammation and fibrosis in a rat model of IgA nephropathy (IgAN) and also study the impact of PD1/PDL1 signaling pathway in IgA Nephropathy.
Method. A total of thirty Sprague Dawley rats were randomly assigned to control, IgAN, and treatment groups, with the treatment group receiving Genistein following the induction of IgAN. The disease model, induced by bovine serum albumin,carbon tetrachloride and lipopolysaccharides.
Results. The treatment with Genistein in the animals resulted in a significant reduction in albumin levels and red blood cell count in urine, a reduction in Blood urea nitrogen and serum creatinine in blood after 4 weeks of treatment was also observed indicating a decrease in kidney damage. There was no notable effect on SGOT or SGPT levels, suggesting no hepatotoxicity after genistein therapy. Histopathological analysis showed that the average glomerular diameter was preserved in the treatment group whereas it significantly decreased in the induced group. Additionally, immunofluorescence and ELISA tests indicated an increase in PD1/PDL1 levels whereas decrease in proinflammatory markers like IL-6 and profibrotic TGF-β markers in the treated rats, implying that genistein may possess renoprotective properties.
Discussion and Conclusion. Our findings indicate that Genestein may serve as a promising therapeutic agent for IgAN, as it appears to reverse the parameters of IgA nephropathy.It may be safe to state that after the experimental procedure genistein tends to reduce inflammation and fibrosis and thereby alleviate the progression of IgA nephropathy. Elevation of PD1/PDL1 in the nephrons suggests that these cells can evade the immune and inflammation mediated destruction which ultimately preserves the renal architecture and reduces symptoms of IgA nephropathy. However additional studies are necessary to determine the long-term efficacy and safety profile of the drug.
Keywords- Genestein, IgA Nephropathy, PD1, Inflammation, Fibrosis

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Xing L et al(2019) J Int Med Res 47(10):5205-5215.

P236

Novel Approaches to Target Opioid Receptors

Ms Mai Deborah Nguyen

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Novel Approaches to Target Opioid Receptors

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Introduction. The growing opioid crisis has underscored an urgent need for the development of novel opioid drugs that can provide effective pain relief while minimising the risk of harmful side effects. Novel opioid drugs, especially those with new mechanisms of action, could revolutionise pain management and improve the quality of life for millions of patients. Alternative approaches to target opioid receptors, such as biased ligands that selectively engage some signalling partners over others, offer promising strategies to develop more selective and safer pain management therapies.
Aims. The overarching aim of this research project is to pharmacologically characterise a panel of novel ligands μ-opioid receptor (MOR) ligands and determine whether they exhibit signalling bias across key signalling pathways.
Methods. Sixteen ligands with previously undefined bias profiles were evaluated using BRET-based functional assays to measure proximal signalling events, including β-arrestin2 recruitment, Gi2 protein activation and Nb33 recruitment. Concentration-response curves were generated and analysed using area-under-the-curve (AUC) measurements and the operational model of agonism to quantify ligand efficacy and signalling bias.
Results. Quantitative bias analysis indicated that several ligands showed trends toward either G protein- or β-arrestin2-preferring profiles. However, a predominant finding was that, across proximal signalling readouts, many ligands exhibited reduced intrinsic efficacy consistent with partial agonism. This pattern mirrors recent reports describing the clinically approved MOR agonist oliceridine, where apparent bias may partly reflect lower efficacy rather than pathway selectivity (Gillis et al., 2020).
Discussion. By applying analytical pharmacology and mathematical models to quantify and interpret ligand-receptor interactions, this work deepens our understanding of how biased agonists engage opioid receptors. Defining critical binding interactions provides a blueprint for the rational development of safer and more effective opioid therapeutics.

Gillis A et al (2020) Science Signaling, 13(625)

P237

Corylin attenuates angiotensin II-induced senescence of pulmonary artery smooth muscle cells

Prof Jwu-Lai Yeh

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Corylin attenuates angiotensin II-induced senescence of pulmonary artery smooth muscle cells

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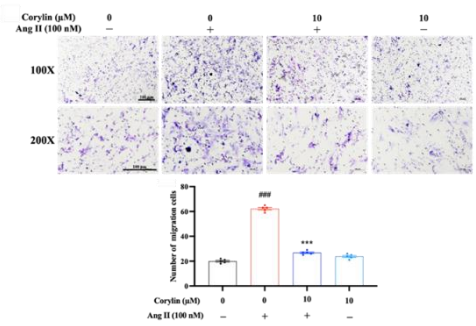
Introduction. Senescence of pulmonary artery smooth muscle cells (PASMCs) contributes to pulmonary hypertension (PH) by driving pulmonary artery wall remodelling, a process accelerated by angiotensin II (Ang II)-induced oxidative stress, inflammation, and calcification. Corylin, a flavonoid derived from *Psoralea corylifolia L.*, exhibits anti-inflammatory, antioxidant, and anticancer properties; however, its effects on Ang II-stimulated PASMCs have not been elucidated.

Aims. We examined whether corylin inhibits Ang II-induced senescence, thereby inhibiting the proliferation, migration, and phenotypic transformation of PASMCs.

Methods. A senescence model was established by culturing primary rat PASMCs with Ang II. Cell proliferation was evaluated using MTT and CCK-8 assays, while migration and invasion were assessed through wound-healing and transwell assays. Protein levels were analyzed by Western blot, and cellular senescence was visualized using SA-β-gal staining.

Results. Corylin pre-treatment attenuated the proliferation, migration, and phenotypic switching of PASMCs induced by Ang II. Mechanistically, corylin reduced Ang II-enhanced activation of the MAPK and Akt pathways, leading to downregulation of senescence-related proteins involved in p16, p53, and p21. Corylin activated the Nrf2/HO-1 pathway, conferring antioxidant properties that were abolished by the specific HO-1 inhibitor SnPP.

Discussion. These protective effects of corylin are mediated through activation of the Nrf2/HO-1 pathway. Corylin exhibits anti-senescence properties and may represent a potential therapeutic agent for preventing pulmonary vascular remodelling in PH.



P238

To identify the pathophysiology of rare cancer and generate novel treatment strategies

Dr Da Jung Jung

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

To identify the pathophysiology of rare cancer and generate novel treatment

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Introduction. Organoid technology, the use of three-dimensional cultures derived from stem cells that have physiological characteristics similar to the human body, thereby serving a crucial role in studying physiology, pathophysiology, and drug screening. Additionally, organoids can be propagated and expanded from a patient biopsy, allowing for the study of rare diseases that would otherwise be very difficult to analyze. Angiosarcoma is a rare type of malignant tumor that arises from vascular or lymphatic endothelial cells.

Aims. We generated angiosarcoma organoids derived from surgical resection of the primary tumor as proof of concept to preclinical and translational studies (from now on, this organoid will be called "sarconoid").

Methods. To verify sarconoids that mimic the various aspects of patient's tumors, including transcriptomic signatures, cell type specificity, and morphological characteristics, we performed histological and transcriptomic analyses. Subsequently, we expanded the scope of our study to include an evaluation of a sarconoid-based compound screening platform; for this purpose, a Diversity Set (version VI, 1584 compounds, 20 plates), supplied by the NCI's Developmental Therapeutics Program, was screened using 96-well plates.

Results. Here, we demonstrate proof-of-concept that it is possible to dissociate and grow efficiently in vitro as patient-derived sarconoids that retain the genomic and phenotypic profiles of their original tumor. Incidentally, high-throughput screening identified novel compounds with potential anticancer activity against angiosarcoma.

Discussion. It is expected that this technology can be used to establish new treatment strategies for chronic diseases or intractable diseases in the future.

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Bone-Targeted Liposomes of Metformin: Promising Treatment Strategy for Reversing Post-Menopausal Osteoporosis

Dr Nikita Nirwan

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Bone-Targeted Liposomes of Metformin: Promising Treatment Strategy for Reversing Post-Menopausal Osteoporosis

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Introduction. Metformin is one of the safest drugs which is being repurposed in multiple diseases other than diabetes. In present study, we have planned to fabricate its bone targeted formulation and evaluate its pre-clinical efficacy in rodent model of osteoporosis. Among nano-based drug delivery systems, liposomes are superior due to biocompatibility, and cell specificity. Previous literature has shown that drug- loaded liposomes containing cholesterol-conjugated pyrophosphate is the novel approach to carry non-bone targeted drugs to bone.

Aims. In this study we have developed the bone-targeted liposomes of metformin by using cholesterol-conjugated pyrophosphate.

Methods. Bone targeted liposomes of metformin were tailored by using rotary evaporation and evaluated for particle size, encapsulation efficacy & release study. Female Balb/c mice were used for the in-vivo study and Ovariectomy (OVX) was performed as per the previously established protocol. Post surgery mice were kept untreated for next 4 weeks and thereafter treated with either metformin, bone targeted liposomes of metformin (150mg/kg) or vehicle (10ml/kg) for 28 days. Bones and serum were isolated to evaluate estrogen, bone micro-architecture, turnover biomarkers and inflammatory cytokines.

Results and Discussion. Metformin loaded liposomes showed particle size of 213 nm and drug release of 81%. Osteoporosis in the ovariectomized mice was confirmed by reduced primary ovarian follicle & estradiol levels. In-vivo evaluation demonstrated the significant increase in bone mineral density ($p<0.05$), trabecular number and BV/($p<0.01$), while trabecular separation was reduced ($p<0.05$). Further, the possible mechanism involved in the above effect is the AMPK pathway, as bone-targeted liposomes of metformin significantly increases the osteocalcin ($p<0.01$), while reducing TRAP and Interleukin-1beta ($p<0.05$).

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Evaluation of food-derived exosome-like nanoparticles on pancreatic β-cell survival

Assist Prof Yukiko Kaneko

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Evaluation of food-derived exosome-like nanoparticles on pancreatic β-cell survival

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Introduction. Pancreatic β-cell dysfunction is critically involved in the pathogenesis of type 2 diabetes, and preventing β-cell apoptosis is considered an important therapeutic strategy. Extracellular vesicles (EVs) have recently been recognized as mediators of intercellular communication through the transfer of RNA and proteins, drawing increasing interest in their biological roles and potential in drug discovery. Among them, plant-derived exosome-like nanoparticles (PENs) have attracted interest because of their high biocompatibility, low cytotoxicity, and efficient production. However, their effects on pancreatic β-cell function remain largely unknown.

Aims. This study aimed to isolate PENs from various food sources and evaluate their effects on pancreatic β-cell apoptosis.

Methods. PENs were extracted from wasabi, ginger, spinach, and Jerusalem artichoke by mechanical disruption, filtration, and ultracentrifugation. Their physicochemical properties were assessed using particle analysis systems and transmission electron microscopy. To evaluate their effects on β-cell apoptosis, INS-1 rat pancreatic β-cells were treated with thapsigargin, a SERCA inhibitor that induces endoplasmic reticulum stress, for 14 h, or exposed to high glucose (20 mM) for 72 h.

Results. Particle analysis showed that PENs from all tested sources exhibited a bilayer membrane structure with particle sizes ranging from 100 to 200 nm. None of the PENs altered thapsigargin-induced increases in cleaved caspase-3 expression under either co-treatment or pre-treatment conditions. Only Jerusalem artichoke-derived PENs, but not the others, significantly suppressed the elevation of cleaved caspase-3 expression induced by prolonged high-glucose exposure.

Discussion. These results indicate that Jerusalem artichoke-derived PENs suppress apoptosis of pancreatic β-cells, likely by suppressing apoptosis caused by glucotoxicity rather than endoplasmic reticulum stress. Overall, our results suggest that exosome-like nanoparticles derived from Jerusalem artichoke may help alleviate pancreatic β-cell dysfunction in type 2 diabetes.

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Molecular mechanisms of acquired resistance to mirvetuximab soravtansine in ovarian cancer

Ms Yoo Rim Noh

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Molecular mechanisms of acquired resistance to mirvetuximab soravtansine in ovarian cancer

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Introduction. Ovarian cancer remains a leading cause of gynecologic cancer mortality due to its high recurrence rate and poor prognosis. Mirvetuximab soravtansine (MIRV), a folate receptor alpha (FOLR1)-targeted antibody-drug conjugate (ADC), delivers the maytansinoid payload DM4 specifically to FOLR1-expressing cells.
Aims. Despite its clinical efficacy, the development of acquired resistance limits long-term outcomes. Elucidating the underlying molecular mechanisms of this resistance is essential for improving treatment durability.
Methods. MIRV-resistant cell lines were established by continuously exposing SKOV3 and IGROV1 ovarian cancer cells to MIRV. Drug sensitivity was quantified by IC_{50} values using MTT assays. FOLR1 expression was assessed via RT-qPCR and Western blot. To identify regulators of FOLR1, RNA-seq was performed, and candidate genes were validated using RT-qPCR and Western blot. The functional impact of candidate gene depletion on MIRV sensitivity was evaluated by MTT assay.
Results. MIRV-resistant cells exhibited significantly higher IC_{50} values and decreased FOLR1 levels compared to parental cells. RNA-seq identified several candidate genes associated with MIRV resistance, among which ZBED2 was selected for further investigation. Notably, ZBED2 depletion via siRNA significantly reduced both FOLR1 mRNA and protein levels. Furthermore, the loss of ZBED2 led to reduced sensitivity to MIRV, effectively mimicking the resistant phenotype.
Discussion. Our findings suggest that the downregulation of FOLR1 is a primary driver of acquired MIRV resistance in ovarian cancer. ZBED2 appears to function as a key regulator in maintaining FOLR1 expression levels; consequently, its loss promotes resistance by reducing the availability of the ADC target. In conclusion, this study provides novel insights into the mechanisms of MIRV resistance and highlights the ZBED2-FOLR1 axis as a potential therapeutic target to overcome ADC resistance in ovarian cancer.

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Study on the anticonvulsive effect of Shitei-To

Dr Reiko Nozawa

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Study on the anticonvulsive effect of Shitei-To

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Introduction. Cancer patients are often found to suffer from hiccups during chemotherapy and at the end of life. Hiccups are spasms of the diaphragm, and major tranquilizers and benzodiazepine drugs with anticonvulsant properties are generally used, but few drugs have been shown to be significantly effective. The traditional Chinese medicine Shitei-To (STT), which is a mixture of extracts from three medicinal herbs, Shitei (Persimoon; Kaki Calyx; calyx *of Diospyros kaki* L.f.), Shokyo (Zinger; Zingiberis rhizome; rhizome of *Zingiber officinale Roscoe*) and Choji (Clove; Caryophylli flos; flower-bud of *Syzygium aromaticum* [L.] Merrill et. Perry) has long been used for the treatment of hiccups as natural herbal therapy in Japan and China. Therefore, we suspected that Shitei may have an anticonvulsant effect and investigated its effect on drug-induced convulsions. As a result, we reported that STT and Shitei extract have anticonvulsant effects against the $GABA_A$ receptor antagonist picrotoxin and the glycine receptor antagonist strychnine-induced convulsions[1)].

Aims. In this study, we investigated whether STT has an anticonvulsant effect against convulsions induced by the glutamate AMPA receptor agonist 4-aminopyridine (4-AMP).

Methods.Mice were orally administered STT and then intraperitoneally administered 4-AMP, and the time to tremor onset and tonic convulsion onset were measured. As a control experiment, the effect of the $GABA_A$ receptor antagonist on pentylenetetrazole-induced convulsions was also confirmed.

Results. STT significantly extended the time to onset of tonic convulsions in 4-AMP-induced convulsions.

Discussion. The anticonvulsant effect of STT not only acts on the GABA system but was also shown to be effective against convulsions mediated by glutamate AMPA receptors.

1) Ishii-Nozawa R, et al., (2022) Pharmacometrics, 102: 69-73

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Acute oral toxicity evaluation of polyherbal tablet containing Abrus precatorius folia

Prof Eti Nurwening Sholikhah

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Acute oral toxicity evaluation of polyherbal tablet containing *Abrus precatorius* folia

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Introduction. The polyherbal tablet has been proven to possess pharmacological activities that help alleviate mouth ulcers. However, its safety has not yet been determined.
Aims. This research was conducted to evaluate the acute toxicity of polyherbal tablet containing *Abrus precatorius* L. folia, *Glycyrrhiza glabra*, *Thymus vulgaris*, *Chrysanthemum indicum* L. and *Imperata cylindrica* according to OECD 420.
Methods. Five female Wistar rats 8-10 weeks old weighing 120 g ± 10 g were acclimatized for 7 days. The initial dose was chosen at 300 mg/kg. Each animal was observed and recorded for toxicity symptoms at 30 minutes, every 4 hours within 24 hours, and observation was continued for 14 days.
Results. In the preliminary study on one rat with a dose of 300 mg/kg, we did not find any toxicity symptoms, so the dose was increased to 2,000 mg/kg. Further preliminary tests at a dose of 2,000 mg/kg also showed that there were no toxicity symptoms. Furthermore, in the main test, a dose of 2,000 mg/kg on 4 additional rats was continued.
Discussion. The polyherbal tablet at doses up to 2000 mg/kgBW did not produce any signs of toxicity, either in the preliminary test with one rat or in the main test with four rats. Since no toxic symptoms were observed at the highest tested dose of 2000 mg/kg in the main study, the preparation can be categorized as unclassified in terms of acute toxicity.

Kim J et al (2012) Protective effects of Chrysanthemi flos extract against streptozotocin-induced oxidative damage in diabetic mice, J Med Plants Res, 6(4): 622-630.
OECD (2002), Test No. 420: Acute Oral Toxicity - Fixed Dose Procedure, OECD Guidelines for the Testing of Chemicals, Section 4, OECD Publishing, Paris, https://doi.org/10.1787/9789264070943-en.

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The bioactive and cytotoxicity profiles of Securidaca longipenduculata extracts

Dr Modupe Ogunrombi

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

The bioactive and cytotoxicity profiles of Securidaca longipenduculata extracts

Dr Modupe Ogunrombi, Thembi Lamola, Olivier Mutendela, John Bolukaoto, Andrew Musyoki, Ananias Kgopa, Chikwelu Larry Obi

Background. Securidaca longipenduculata (SL) is an African medicinal plant commonly known as violet tree, that belongs to the Polygalaceae family. It has proven its ethnomedicinal potentials, including antibacterial and antioxidant properties. It represents alternative therapy to various diseases, and its use is increasing globally. The bioactivity of SL is reported to be closely related to the secondary metabolites (SMs) found in it. Reported screening of the phytochemicals in SL indicated that terpenes, phenolics and nitrogen containing SMs were present. Nevertheless, a comprehensive understanding of its bioactivity and cytotoxicity profiles is crucial for its potential incorporation into modern medicine.

Aims. This research study investigated the composition of phytochemicals, bioactive properties and cytotoxicity profile of the extracts of SL plant in South Africa (SA). The investigation was carried out by first qualitatively identifying different SMs present in SL extracts and then quantifying the SMs, determining the antibacterial and antioxidant activity. The study also included the establishment of its cytotoxicity profile.

Methods. Sequential solvent extraction was carried out on the pulverised materials of SL using water, methanol, acetone, dichloromethane (DCM) and hexane. The extracts were investigated for their phytochemical contents, thin layer chromatography (TLC) profiling, antioxidant, antibacterial and cytotoxicity profiles. The extracts were screened for possible antioxidant activities by ferric reducing antioxidant power (FRAP) and 2,2-Diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging (qualitative and quantitative) methods. Kirby-Baeur disc diffusion and agar well diffusion methods were used in the evaluation of the antibacterial activity and MIC testing using broth microdilution. The method was performed in 96-well plates, and bacterial growth was assessed by visual inspection for turbidity and by measuring absorbance at 600 nm after adding an INT indicator. The cytotoxicity of the extracts was also evaluated with the use of MTT assay on MDA-MB-231 breast cancer cells.

Results. Phytochemical screening revealed a diverse range of compounds especially, with polar extracts, particularly the polar ones. The agar well diffusion method revealed antimicrobial activity where the disc diffusion method did not. The SL hexane extract showed bacteriostatic activity against Escherichia coli and Staphylococcus. aureus, with Minimum Inhibitory Concentration (MIC) values of approximately 2.5 mg/ml. The SL hexane extract showed an MIC of approximately 2.5 mg/ml against both Staphylococcus. aureus and Escherichia coli. The SL water extract was less potent against S. aureus, with an MIC of approximately 5 mg/ml. These results show the concentration-dependent inhibitory effect of the extracts, with absorbance readings decreasing as extract concentrations increased. DPPH (qualitative) screening revealed antioxidant activity in all the SL extracts. The highest concentration (10 mg/mL) for all the extracts gave the following results: acetone (88.5 %), methanol (84.8 %) and DCM (44.1 %) extracts. The cytotoxicity studies revealed that it is safe to use.

Conclusion. The results indicate that SL is a rich source of bioactive compounds, validating its traditional use and highlighting their potential for the development of new therapeutic agents.

This study validated the published reports that SL can contribute immensely to the design of novel therapeutic agents. SL could be a potential raw material for antibacterial agent and antioxidants of natural origin against oxidative stress. which is regarded as one of the major causes of biological damage in living tissues. Further studies like isolation, structural elucidation and quantification of the SMs may provide a tool useful for drug development

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Phytochemical Composition, Bioactive Properties, and Toxicity Studies of Vernonia amygdalina in South Africa

Dr Modupe Ogunrombi

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Phytochemical Composition, Bioactive Properties, and Toxicity Studies of Vernonia amygdalina in South Africa

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Background.*Vernonia amygdalina* (*VA*), family Asteraceae, is an indigenous medicinal plant in tropical Africa that has proven its ethnomedicinal potentials, including antibacterial and antioxidant properties. It represents an alternative therapy to various diseases, and its use is increasing globally. The bioactivity of *VA* is reported to be closely related to the secondary metabolites (SMs) found in it. Reported screening of the phytochemicals in *VA* indicated that terpenes, phenolics and nitrogen containing SMs were present. However, the contents of SMs in medicinal plants depend on environmental factors and the geographical location. There is, therefore, the need for adequate bio-profiling of *VA* from different sources. Cytotoxicity assessment of *VA* in various geographical location is also necessary to validate its eligibility as a source of pharmaceuticals.

Aims. This research study investigated the composition of phytochemicals, bioactive properties and cytotoxicity profile of the extracts of *VA* (leaf and stem) plant in South Africa (SA). The investigation was carried out by first qualitatively identifying different SMs present in *VA* (leaf and stem) extracts and then determining the antibacterial and antioxidant activities as well as the inhibitory potential of *VA* (leaf and stem) extracts against monoamine oxidase A (MAO A) and monoamine oxidase B (MAO B). The study also included the establishment of the cytotoxicity profile of the water extracts *VA* (leaf and stem).

Methods. Sequential solvent extraction was carried out on the stem and leaf materials of *VA* using water, methanol, acetone, dichloromethane (DCM) and hexane. The extracts were investigated for their phytochemical contents, thin layer chromatography (TLC) profiling, antioxidant, antibacterial, monoamine oxidase inhibitory activities and cytotoxicity profiles. Phytochemical analyses were performed by using various qualitative standard methods and solvent systems of varying polarity were employed for TLC profiling. The extracts were screened for possible antioxidant activities by ferric reducing antioxidant power (FRAP) and 2,2-Diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging (qualitative and quantitative) methods. Kirby-Baeur disc diffusion and agar well diffusion methods were used in the evaluation of the antibacterial activity of the *VA* (leaf and stem) extracts against *Acinetobacter baumannii*, *Enterococcus faecalis, Escherichia coli* and *Staphylococcus aureus.*

The MAO-A and B inhibition potential of the extracts was evaluated *in vitro* using recombinant human MAO-A and B as the enzyme source, while kynuramine served as the substrate. The potencies of the inhibition were expressed as IC_{50} values. The cytotoxicity of the water extract was also evaluated with the sulforhodamine B (SRB) assay.

Results. Saponins, alkaloids, steroids and triterpenes, tannins, flavonoids and phenols were all detected in the phytochemical (qualitative) screening of extracts of *VA* (leaf and stem) but anthraquinones were not detected. DPPH (qualitative) screening revealed antioxidant activity in all the *VA* (leaf and stem) extracts. The highest concentration (10 mg/mL) for all the extracts gave the following results: For the stem extracts, acetone (88.5 %), methanol (84.8 %) and DCM (44.1 %) extracts. For the leaf extracts, the extract with the highest inhibition was methanol (86.2 %), followed by acetone and water (78.4 % and 71.6 %), respectively.

Only the DCM extracts showed antibacterial activity against *Acinetobacter baumannii, Enterococcus faecalis* and *Staphylococcus aureus*. The MAO B inhibitory evaluation revealed that *VA* may have a lead compound that can be further developed to a novel therapeutic agent useful in the management of neurodegenerative diseases as the methanol extracts of the leaf showed a significant inhibitory activity against MAO-B. The water extracts of *VA* (leaf and stem) were not cytotoxic to the mouse fibroblast cells.

Conclusion. This study validated the published reports that *VA* can contribute immensely to the design of novel therapeutic agents. *VA* could be a potential raw material for antibacterial agent and antioxidants of natural origin against oxidative stress. which is regarded as one of the major causes of biological damage and

neurodegenerative diseases in living tissues. Further studies like isolation, structural elucidation and quantification of the SMs may provide a tool useful for comparative research on the variation in the amount of the SMs in the various parts of the plant as well as among *VA* populations in different geographical regions with different climates.
Keywords: *Vernonia amygdalina*, Secondary metabolites, Phytochemical screening, Antioxidant activity, Monoamine oxidase inhibition, Cytotoxicity study.

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GPR176 modulates mitochondrial hypometabolism and ferroptosis resistance in fibroblasts

Dr Yasuo Okamoto

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

GPR176 modulates mitochondrial hypometabolism and ferroptosis resistance in fibroblasts

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Introduction. Fibrosis, a pathological consequence of chronic inflammation and tissue injury, contributes to poor outcomes across multiple organ diseases. We previously identified G protein-coupled receptor GPR176 as a regulator of fibroblast activation and fibrosis progression (Okamoto et al., BBA-MCR, 1871:119798, 2024). However, its underlying molecular mechanisms remain poorly understood.

Aims. This study aimed to elucidate how GPR176 influences fibroblast metabolic adaptation and stress responses, thereby uncovering its novel role in fibrotic pathogenesis.

Methods. Rat kidney fibroblasts (NRK-49F) were engineered to overexpress or knockdown GPR176. Cell proliferation and ATP production were evaluated under low- (1–5%) and normal-serum (10%) conditions. Expression of metabolism- and mitochondrial stress-related genes was assessed by qPCR. Cell death sensitivity to hydrogen peroxide (H_2O_2), staurosporine, and ferroptosis inducers (erastin, RSL3) was determined by WST-8 assay. Fibroblast activation markers (αSMA, Col1a1) upon TGF-β1 stimulation were analyzed by qPCR and Western blotting.

Results. GPR176 overexpression reduced proliferation and ATP levels under low-serum conditions, accompanied by suppression of key metabolic and mitochondrial stress-response genes. Sensitivity to H_2O_2 and staurosporine was unaffected, whereas resistance to erastin and RSL3 was enhanced. Conversely, GPR176 knockdown increased metabolic gene expression and ferroptosis susceptibility. Knockdown also attenuated TGF-β1-induced αSMA and Col1a1 expression, while overexpression did not further potentiate activation.

Discussion. Fibroblasts dynamically transition between basal, proliferative, activated, and quiescent states during fibrosis. Current anti-fibrotic therapies predominantly target proliferative or activated fibroblasts, yet quiescent fibroblasts often persist in advanced lesions and contribute to treatment resistance. Our findings indicate that GPR176 not only regulates fibroblast activation but also sustains a low-activity yet stress-tolerant state resembling quiescent fibroblasts, by dampening metabolic and stress responses. Thus, GPR176 represents a novel regulator of fibroblast plasticity. Targeting GPR176 may help overcome treatment resistance mediated by quiescent fibroblasts in refractory fibrosis.

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Ginger ethanol extract ameliorates insulin resistance in obese rats by regulating NLRP3

Assoc Prof Vivian Sutikno

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Ginger ethanol extract ameliorates insulin resistance in obese rats by regulating NLRP3

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Introduction. Prevalence of obesity in Indonesia is increasing, and obesity can lead to increase insulin resistance (IR). Ginger is known to have antioxidants and anti-inflammatory activity.
Aims. This research investigates effects of ginger ethanol extract on insulin resistance due to obesity in adipose tissue and the liver, focusing on the inhibition of NLRP3 inflammasome activation.
Methods. To induce obesity and insulin resistance, male Spraque-Dawley rats were fed with a high fat and high fructose (HFHF) diet for 16 weeks. After 16 weeks of HFHF diet feeding, the rats were treated orally with ginger ethanol extract (125, 250 and 500 mg/kg/day). At the end of the research, all animals were terminated, plasma, liver and adipose tissue were harvested for biochemical analysis including the measurements of total cholesterol, triglycerides, HDL-cholesterol, fasting plasma glucose, insulin, MDA, G6PD, NLRP3, IL-1β, IL-18, and liver and adipose tissue histopathology.
Results. Total cholesterol, fasting plasma glucose, insulin, MDA, G6PD, NLRP3, IL-1β, IL-18 was higher in obese rats than in normal control. Treatment with ginger ethanol extract restored all those changes to normal values as well as lipid accumulation in the liver and adipose tissue.
Discussion. These findings indicate that ginger ethanol extract, in a dose-dependent manner, demonstrated ability to improve insulin resistance in obesity rats through NLRP3 regulation.

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Invitro anticancer evaluation of fractions of Tetracarpidium conophorum against breast cancer cells

Prof Olufunke Olorundare

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Invitro anticancer evaluation of fractions of *Tetracarpidium conophorum* against breast cancer cells

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Introduction. Breast cancer is the leading cause of cancer-related morbidity and mortality among women globally. While mortality rates are rising globally, low-medium income countries have reported higher incident rates to this cancer (Cai et al, 2025). The burden of this disease is particularly worrisome in resource-poor settings where accessibility to, and affordability of therapeutic interventions are still limited.
Aims. The aim of this study was to identify cytotoxic fractions from *Tetracarpidium conophorum* nut (TC) extracts and delineate mechanism(s) underlying their growth inhibition against MCF-7 breast cancer cells.
Methods. TC was defatted using petroleum ether and fractionated using acetone (TCF1) and ethanol (TCF2). The fractions were subjected to GCMS analysis and molecular docking simulations. Cell proliferation assay, Cell cycle analysis and gene expression assays (probing p21, Bcl-2, Cyclin D1, Cyclin dependent kinases 4 and 6) were carried out on the fractions using the MTT assay, Muse flow cytometer and Agarose gel electrophoresis respectively.
Results. The most abundant phytochemicals were 1-Monoacetin and linolenic acid in TCF1 and TCF2 respectively. The IC_{50} against MCF-7 cells were 39.2±7.26, 81.5±7.77 and 1.83±7.00 µg/mL for TCF1, TCF2 and cisplatin (standard drug) respectively. TCF1 and TCF-2 (3, 10 and 30 µg/mL) concentration-dependently induced a significant ($p< 0.05$) cell cycle arrest at the G_1/S checkpoint of the cell cycle. Gene expression studies showed an increased expression of p21 in TCF2 treated cells and reduced expression of CDK 4, 6 and Bcl-2 in the same cells. Linolenic acid present in both TCF1 and TCF2 showed the highest affinity (-7.5kcal/mol) for the ER receptor.
Discussion. TCF1 and TCF2 show some promising inhibitory activity against MCF-7 breast cancer cells judging from the $IC_{50.}$ Although higher than the standard control (cisplatin), there have been report of higher selectivity index (HIS) associated with natural phytochemicals with higher IC_{50} (Fassl et al, 2022). Linking the reduced CDK 4 and 6 activity with the G_1/S cell cycle arrest induced by both TCF1 and TCF2, we suggest that TCF2 may mediate its anticancer activity via G_1/S arrest.

Cai Y et al (2025) Sci Rep 15(1):9347.
Fassl A et al (2022) Science 375(6577):eabc1495.

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Extracellular BGN is a new player of axonal regeneration

Mr Kosei Takeuchi

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Extracellular BGN is a new player of axonal regeneration

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Introduction. Axonal regrowth is a complex and challenging process. However, our laboratory identified a compound called "Diosgenin," a constituent of Dioscorea Rhizome, which has shown the ability to promote axonal regeneration and improve cognitive dysfunction in AD model 5XFAD mice. Although we already identified molecules driving axonal growth in neurons, possible involvement of Diosgenin-driven extracellular molecules remains unknown. Our hypothesis is that Diosgenin may secrete some molecules from neurons, which could help axonal regeneration.

Methods. This study investigated the extracellular molecular changes induced by Diosgenin treatment in primary cortical neurons, as well as alterations in plasma associated with memory improvement in 5XFAD mice, using Tandem Mass Tag proteomics analysis.

Results. Biglycan (BGN) was more abundant in the conditioned medium of Diosgenin-treated neurons and in the plasma of Diosgenin-administered 5XFAD mice compared to vehicle-treated groups. BGN expression was observed in the cell bodies, dendrites, and axons of cultured cortical neurons. Notably, BGN expression levels in neuron cell bodies increased not only in response to diosgenin-induced axonal regeneration but also throughout the neuronal growth period. To investigate the functional role of BGN in neurons and its impact on axonal growth, neurons were seeded on BGN-coated dishes, and extracellular BGN was masked by a BGN antibody in cultured neurons. Neurons cultured on BGN-coated dishes exhibited significantly longer axons at every stage of growth. Conversely, BGN masking significantly reduced axon elongation. We could conclude that extracellular BGN plays an essential role in axonal elongation. We further examined the effect of Diosgenin treatment on extracellular BGN-masked neurons. While Diosgenin treatment significantly promoted axonal elongation in untreated neurons, it failed to enhance axonal growth in the BGN-masked condition.

Discussion. We identified the presence of BGN in neuron cell body and neurites and demonstrated the importance of extracellular BGN in axonal elongation. Our findings provide deeper insights into the mechanisms underlying Diosgenin-induced axonal elongation and the significant involvement of extracellular BGN in this process.

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Protective additive effects of fermented soybean and flaxseed in IBD animal model

Dr Amber Palla

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Protective additive effects of fermented soybean and flaxseed in IBD animal model

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Background. Inflammatory Bowel Disease a rising concern, cause inflammation, gut dysbiosis and oxidative stress as its hallmarks. Current treatment options pose challenges and natural products ameliorate severity of disease. This study aims to examine the effect of fermented soybean and flaxseed alone and in combination against acetic acid-induced colitis mouse model, which has not previously been studied.

Methodology. Soybean (SB.f) and flaxseed (FS.f) were fermented and tested against 6% acetic acid (AA)-induced colitis model in BALB/c mice at different doses given orally for 14 days, as compared to prednisolone. Disease activity index, macroscopic damage was evaluated & colonic tissues were analyzed for inflammatory cytokine expressions.

Results and Conclusion. SB.f and FS.f showed the strongest H_2O_2 scavenging activity as compared to non-fermented samples (% scavenging = 60% $\pm$ 20%) in vitro setting. The combination of soybean and flaxseed significantly improved the DAI (63.35% $\pm$ 34%); $p < 0.001$, as compared to soybean (19%) and flaxseed (28%) alone. Similarly, macroscopic damage has shown significant improvement in the combination group (41.8% $\pm$ 9.2%); $p < 0.001$, as compared to soybean (12.7%) and flaxseed (30.25%) alone. This effect was additive. The expression of TNF-α was reduced by more than 2-fold, and downregulation of TNF-α and IL-17A was achieved by the fermented product which was significantly greater with combination of fermented products as compared to either of them given alone. Hence, the combination group of fermented soybean flaxseed ameliorated the severity of IBD in mice as compared to either of given alone. Henceforth combination group can be used as a treatment strategy against IBD.

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Identification of a novel target for Th17-mediated autoimmune disease

Dr Yuxin Zhuang

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Identification of a novel target for Th17-mediated autoimmune disease

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Introduction. Th17 cells are central drivers of autoimmune pathology, including multiple sclerosis (MS), yet the endogenous metabolic signals that shape their pathogenic differentiation remain incompletely defined.
Aims. To identify the PAS-PA axis as a novel and druggable checkpoint in Th17 cell-driven inflammatory diseases.
Methods. Using *Pas*$^{fl/fl;Cd4\text{-}Cre}$ mice in EAE model, we assessed $CD4^+$ T cell-specific *Pas* deletion, exogenous PA supplementation, and pharmacological PAS inhibition on disease progression and Th17 cell responses. Mechanistic studies, including molecular docking, biolayer interferometry, mutagenesis-based structure-function rescue, luciferase reporter assays, and ChIP-qPCR, were performed to confirm PA as a PPAR*γ* natural antagonist.
Results. PA levels were elevated in the plasma of MS patients and correlated with disease severity and Th17 frequency. *Pas*$^{fl/fl;Cd4\text{-}Cre}$ mice were protected against EAE with impaired Th17 differentiation, while exogenous PA restored both Th17 responses and disease pathogenesis. PA directly bound PPAR*γ* at H266/S342 and antagonized its transcriptional activity. Pharmacological PAS inhibition suppressed Th17 cell responses and alleviated EAE.
Discussion. Our findings define a crucial role for the PAS-PA axis in Th17 cell-mediated autoimmunity, establishing PAS as a promising therapeutic target for Th17 cell-mediated autoimmune diseases such as MS.

Acknowledgments. Supported by the Science and Technology Development Fund, Macau SAR (0018/2023/AMJ, 043/2024/AGJ, 0007/2025/AIJ).

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Citrus limon (L.) Osbeck Fruit Peel Essential Oil Ameliorated Polycystic Ovarian Syndrome

A/Prof Manash Pratim Pathak

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

***Citrus limon* (L.) Osbeck Fruit Peel Essential Oil Ameliorated Polycystic Ovarian Syndrome**

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Introduction: The limitations of current therapies for polycystic ovarian syndrome (PCOS) have sparked growing interest in natural resources like medicinal plants.

Aims: This study investigated the anti-PCOS potential of *Citrus limon* (L.) Osbeck fruit peel essential oil (CLEO), traditionally used for female health issues.

Methods. CLEO was extracted via hydro-distillation, formulated into a nano-emulsion (CLEO-NE), and chemically characterized and administered to letrozole-induced obese PCOS rats to determine its potency in *in-vitro* and *in-vivo* models.

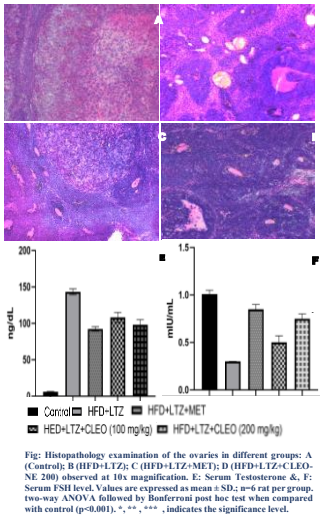

Fig: Histopathology examination of the ovaries in different groups: A (Control); B (HFD+LTZ); C (HFD+LTZ+MET); D (HFD+LTZ+CLEO-NE 200) observed at 10x magnification. E: Serum Testosterone &, F: Serum FSH level. Values are expressed as mean ± SD.; n=6 rat per group. two-way ANOVA followed by Bonferroni post hoc test when compared with control ($p<0.001$). *, **, *** , indicates the significance level.

Results. CLEO was found to be a potent antioxidant. D-limonene (52.37%) and eucalyptol (10.10%) found to be the most abundant active constituents in GC-MS analysis. D-limonene strongly binds to PCOS-specific proteins, CMKLR1 and INSR in *in-silico* assay. CLEO-NE treatment led to significant reductions in body weight, corrections in hormonal imbalances, and improvements in the lipid profile in obese PCOS animals. CLEO-NE exhibits strong anti-inflammatory effects as evidenced by modulation of serum TNF-α and IL-10 levels. Histopathological examination of the ovaries from the treated groups showed a marked decrease in cystic follicles.

Discussion. The therapeutic effects observed in the PCOS-obese rats are likely driven by the CLEO's high concentration of d-limonene and eucalyptol. The strong binding of d-limonene to CMKLR1 and INSR proteins points to a possible mechanism of modulation of inflammation and insulin signaling in PCOS condition which is supported by the marked reduction in inflammatory markers, decreased serum insulin level, and restoration of normal ovarian function. These findings validate the traditional use of *Citrus limon* and position CLEO as a promising natural candidate for managing obesity-associated PCOS, pending further clinical studies.

Mobasher MA et al. (2022) Molecules 28:122; El-Kersh DM et al. (2021) Sci Rep 11:7121

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The PD-1/TIGIT dual blockade as therapeutic strategy in high-grade serous ovarian cancer

Dr Anna Pawłowska-Łachut

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

The PD-1/TIGIT dual blockade as a therapeutic strategy in high-grade serous ovarian cancer

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Introduction. High-grade serous ovarian cancer (HGSOC) is the most aggressive ovarian cancer subtype and is typically diagnosed at advanced stages, resulting in poor prognosis. PD-1/PD-L1 inhibitors show limited clinical efficacy, and no immune checkpoint (ICP) inhibitors have yet been approved for HGSOC treatment[1].

Aims. To characterize therapeutic targets in HGSOC, we evaluated PD-1, TIGIT, and DNAM-1 expression on NK cells in peripheral blood (PB), peritoneal fluid (PF), and tumor-infiltrating cells (TT), and quantified their soluble forms in plasma and PF. The obtained results were correlated with clinicopathological characteristics of HGSOC patients.

Methods. The NK cells immunophenotype was assessed via flow cytometry in PB, PF, and TT of HGSOC patients (n=36). Concentrations of soluble TIGIT (sTIGIT), sPD-1, and sDNAM-1 in plasma and PF were performed by ELISA.

Results. We detected TIGIT$^+$ NK cells accumulation in PF in comparison to PB (p<0.01) and PD-1$^+$ NK cells in TT compared to PF (p<0.05). A higher sPD-1 concentration was observed in patients' plasma than in PF (p<0.001), and it was lower in the control group than in plasma (p<0.05), and PF (p<0.001). We showed a positive relationship between %PD-1$^+$ and TIGIT$^+$ NK cells in PB and TT (both p<0.05), and sPD-1 and sDNAM-1 concentration in PF (p<0.05). There was a negative correlation between %TIGIT$^+$ NK cells in PF and sDNAM-1 concentration in patients' plasma (p<0.05).

Discussion. Compartment-specific alterations in NK cells with ICPs expression suggest local immunosuppression in ascites and tumor microenvironment of HGSOC. Preclinical study show dual PD-1/TIGIT blockade restores NK antitumoral activity[2]. Thus, combined targeting of PD-1 and TIGIT may represent a promising immunotherapeutic strategy in HGSOC. Financed by National Science Center, Poland. Grant no. 2021/41/N/NZ6/01727 and Medical University of Lublin grant no. DS124.

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Age-related skin thinning is suppressed by resveratrol, a SIRT1 activator

Ms Fuka Tamura

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Age-related skin thinning is suppressed by resveratrol, a SIRT1 activator.
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Introduction. Age-related cellular senescence in the epidermis and dermis reduces regeneration and elasticity, causing skin thinning and barrier dysfunction. SIRT1, an NAD^+-dependent protein deacetylase, has been reported to suppress cellular senescence in epidermal keratinocytes and dermal fibroblasts. Resveratrol (RSV) is a SIRT1 activator that has been shown to attenuate cellular senescence, but its ability to suppress skin aging remains unclear.
Aims. We investigated whether RSV suppresses age-related skin thinning.
Methods. DDY mice were fed a standard diet or a diet containing RSV (0.4 g/kg diet) for 37 weeks starting at 23 weeks of age. Dorsal skin was collected from 60-week-old mice (Old), RSV-fed 60-week-old mice (Old+RSV), and 20-week-old mice (Young). Skin thickness was assessed by hematoxylin and eosin staining. Immunohistochemistry was performed for Ki67, a marker of cell proliferation, acetyl-lysine, a marker of deacetylation activity of SIRT1, MMP-9/MMP-13 for activity of matrix degradation, and p-SMAD2 for activity of TGF-β signaling, and SIRT1.
Results. Epidermal and dermal thicknesses were reduced in Old compared with Young but preserved in Old+RSV. Ki67-positive epidermal cells decreased in Old relative to Young but were maintained in Old+RSV. Acetyl-lysine–positive epidermal cells were lower in Old+RSV than in Old, suggesting SIRT1 activation by RSV. The percentage of SIRT1-positive cells in both epidermis and dermis did not differ among groups. Dermal MMP-9 and MMP-13-positive areas were increased in Old but not in Old+RSV compared with Young. p-SMAD2-positive dermal cells were reduced in Old compared with Young and RSV did not change the positivity.
Discussion. These findings suggest that RSV-mediated SIRT1 activation mitigates age-related skin thinning, partly through preserving keratinocyte proliferation and reducing collagen degradation.

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CHLC20 suppresses renal fibrosis in vitro and in vivo through TGF-β1/Smad3 signaling

Dr Wanangkan Poolsri

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

CHLC20 suppresses renal fibrosis *in vitro* and *in vivo* through TGF-β1/Smad3 signaling
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Introduction. Renal fibrosis is a hallmark of chronic kidney disease (CKD) with no approved antifibrotic therapy. The TGF-β1/Smad3 signaling pathway, a central driver of fibroblast activation and extracellular matrix deposition, has emerged as a promising therapeutic target. Among potential agents, chalcone-based natural compounds offer intriguing possibilities, although their efficacy against kidney fibrosis has not been fully elucidated.
Aims. To investigate the antifibrotic effects of CHLC20, a novel chalcone derivative, on renal fibrosis both *in vitro* and *in vivo*, and to elucidate its mechanism of action.
Methods. *In vitro*, human renal proximal tubular epithelial cells (RPTEC) were exposed to TGF-β1 (10 ng/mL) with or without CHLC20, followed by assessment of cell morphology, collagen deposition (using Sirius red staining), and pro-fibrotic markers (via Western blotting). *In vivo*, CHLC20 was administered to unilateral ureteral obstruction (UUO) mice for 7 days, with serum creatinine and TGF-β1, and kidney histology subsequently analyzed.
Results. CHLC20 reversed TGF-β1-induced morphological alterations in RPTEC cells, markedly reducing collagen deposition and dose-dependently suppressing pro-fibrotic proteins (α-SMA, fibronectin). TGF-β1-driven Smad3 phosphorylation was strongly inhibited. In UUO mice, CHLC20 significantly lowered serum creatinine and TGF-β1 levels ($p<0.05$, n=4–6/group) and attenuated interstitial collagen accumulation in kidney tissues.
Discussion. CHLC20 exerts potent antifibrotic effects by inhibiting the TGF-β1/Smad3 pathway, suppressing epithelial-to-mesenchymal transition, and limiting extracellular matrix deposition. Preservation of renal function in UUO mice highlights its therapeutic promise for CKD, supporting CHLC20 as a potential novel treatment for renal fibrosis and addressing a critical unmet medical need.

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BRET biosensors elucidating the formation and pharmacology of novel GPCR-scavenger receptor heteromers

Mr Julyan Tan

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

BRET biosensors elucidating the formation and pharmacology of novel GPCR-scavenger receptor heteromers
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Introduction. G protein-coupled receptors (GPCRs) can form receptor heteromers with other GPCR partner receptors, exhibiting novel pharmacological changes pertaining to ligand-binding, signalling, and intracellular trafficking. These are significantly implicated in diseases of inflammation, such as atherosclerosis, in which the non-G protein-coupled 'scavenger receptors' are also implicated. Mounting evidence suggests that GPCRs can also heteromerise with non-GPCRs; recently, the scavenger receptors have appeared as candidates for heteromerisation, with implications for intracellular signalling and inflammation.[1] Screening for potential receptor heteromers between GPCRs and scavenger receptors may elucidate novel, heteromer-specific pharmacology, and thereby represent potential undiscovered disease mechanisms and drug targets.
Aims. To establish the formation of novel receptor heteromers between GPCRs and various scavenger receptors, and to investigate pharmacological changes that subsequently arise.
Methods. This study utilises bioluminescence resonance energy transfer (BRET)-based assays and biosensors.[2] The Receptor-Heteromer Investigation Technology (Receptor-HIT) detects a BRET signal between a labelled receptor, and a labelled interacting protein that is recruited specifically to the unlabelled partner receptor.[1] This BRET signal informs the proximity of receptors, providing insights into receptor pharmacology (such as G protein or β-arrestin signalling).
Results. BRET-labelled scavenger receptors produce signals indicative of heteromerisation with several GPCRs when co-transfected. G protein and downstream biosensors indicated heteromer-specific signalling profiles with select GPCR-scavenger receptor heteromer candidates.
Discussion. Findings support the existence of novel GPCR-scavenger receptor heteromers, evidencing the close proximity of the protomers, and distinct GPCR signalling activity with implications for the signalling pathways involved in inflammation, and other pro-atherosclerotic mechanisms.

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Metabolomics-Based Strategy for Early Detection and Therapeutic Monitoring in Prostate Cancer Patients

Ms Vaishali Prajapati

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Metabolomics-Based Strategy for Early Detection and Therapeutic Monitoring in Prostate Cancer Patients

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Introduction. Prostate cancer (PCa) remains the second most prevalent malignancy and a leading cause of cancer-related mortality in men globally. While Androgen Deprivation Therapy (ADT) is a cornerstone in PCa management, resistance invariably emerges, progressing to metastatic castration-resistant prostate cancer (mCRPC)—a lethal, therapy-resistant phenotype. Metabolomics, the systems-level study of small-molecule metabolites, offers a powerful lens to uncover disease-specific metabolic reprogramming, enabling biomarker discovery and guiding therapeutic interventions.

Aims. This study aimed to decipher distinct plasma metabolomic signatures differentiating benign prostatic hyperplasia (BPH), castration-sensitive prostate cancer (CSPC), and castration-resistant prostate cancer (CRPC). A key goal was to identify dynamic metabolic shifts correlating with disease progression and response to androgen-targeted therapies.

Methods. With institutional ethical clearance, a cross-sectional cohort of 60 age-matched male patients was enrolled: BPH (n=20), CSPC (n=20), and CRPC (n=20). Peripheral blood (5 ml) was collected, and plasma was isolated for untargeted metabolomic profiling using high-resolution LC-MS/MS. Data were normalized and analyzed via MetaboAnalyst 6.0, applying multivariate and pathway enrichment analyses to extract statistically and biologically relevant features.

Results. Out of 617 significantly altered metabolites, distinct clusters were observed across BPH, CSPC, and CRPC groups. BPH samples exhibited stable metabolic patterns with a mild pro-inflammatory signature. CSPC samples showed marked upregulation in pathways linked to glycolysis, nucleotide synthesis, and immune escape—hallmarks of tumour growth. Notably, CRPC samples revealed profound metabolic rewiring involving lipid metabolism, amino acid catabolism, and steroid biosynthesis, reflecting adaptation to ADT and aggressive progression. Several metabolites, including kynurenine, sarcosine, and sphingolipids, emerged as potential discriminators of treatment response and disease state.

Conclusion. This study delineates a progressive metabolic reprogramming trajectory from benign to castration-resistant prostate cancer. The findings underscore metabolomics as a valuable tool for non-invasive biomarker discovery, therapeutic monitoring, and personalized pharmacological targeting in prostate cancer. The identified signatures offer promise for stratifying patients and optimizing treatment algorithms, aligning with advancing precision pharmacology.

Keywords: Prostate Cancer, Castration Resistance, Metabolomics, Biomarker Discovery, LC-MS/MS, Precision Medicine, Therapeutic Monitoring.

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The anti-inflammatory effect of benzophenanthridine alkaloids isolated from Bocconia arborea

Ms Diana L. Torres-Chacón

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

The anti-inflammatory effect of benzophenanthridine alkaloids isolated from *Bocconia arborea*

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Introduction. Many chronic degenerative diseases are characterized by inflammatory processes. The transcription factor NF-κB (p50 / p65) is one of the main therapeutic targets in these diseases, due this factor induces the transcription of important inflammatory mediators. Medicinal plants are the most important alternatives in the search for new therapeutic substances. Benzophenanthridine isolated from *B. arborea*, such as dihydrosanguinarine, oxychelerythrine, angoline, and bocconarborine, are considered promising molecules in the development of new anti-inflammatory agents. However, their effect on the modulation of pro-inflammatory signalling pathways, particularly NF-κB, has not yet been thoroughly explored.

Aims. Establish whether the anti-inflammatory activity of compounds isolated from *B. arborea* and its effect on the transcription factor NF-κB

Methods. RAW 264.7 macrophages cells were cultured, pretreated with the benzophenanthridine compounds isolated from *B. arborea* and then stimulated with LPS. Was evaluated the effect on the relative expression and secretion of inflammatory cytokines (TNF-α, IL -6 and IL-1β). Also, we evaluated the NF-κB pathway (p65, IκB-α, IKKα) by Western Blot.

Results. A decrease was observed in the levels of expression and secretion of the cytokines TNF-α, IL-6 and IL-1β. In the Western Blot, a decrease in the levels of IκB-α phosphorylation and p65 subunit was observed in the groups that had been pretreated with the benzophenanthridine compounds isolated from *B. arborea* and then stimulated with LPS, but no phosphorylation changes were observed at the complex level. IKKα / β.

Discussion. The benzophenanthridine compounds isolated from *B. arborea*, possess potent anti-inflammatory activity. This activity is closely related to the compounds ability to modulate the NF-κB signalling pathway, as evidenced by the inhibition of p65 and IκB-α phosphorylation and the subsequent reduction of pro-inflammatory cytokines.

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Antidiabetic activity of the fractions of Capraria biflora ethanolic extract in vitro.

Ms Diana L. Torres-Chacón

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Antidiabetic activity of the fractions of *Capraria biflora* ethanolic extract *in vitro*.
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Introduction. Diabetes mellitus is a chronic-progressive disease characterised by insulin resistance. It is one of the major causes of death worldwide. Pharmacological treatment includes the administration of antidiabetic drugs, but these drugs generate adverse effects. For this reason, people use traditional medicine as a therapeutic alternative. Many Mexican traditional herbalism reports multiple species with empirical uses in this disease, and further investigation is important.
Aims. Obtain the fractions of *Capraria biflora* ethanolic extract responsible for the antihyperglycemic effect.
Methods. RNA was isolated using TRIzol LS Reagent from previously treated C2C12 cells. cDNA was synthesized with ImProm II Reverse Transcription System Kit, following the manufacturer's instructions. The quantitative polymerase chain reaction was performed with SYBR Green technology in Rotor-Gene real-time. The fractions responsible for the effect were analysed by Nuclear Magnetic Resonance.
Results. From the 20 fractions and the precipitated ones analysed, the fractions able to modify the GLUT-4 expression (F5, F39, F41, F64, F64) were obtained with different solvents, whereby the presence of different compounds related to the antihyperglycemic activity is possible.
Discussion. Based on the *in vivo* assays, the ethanolic extract of *C. biflora* showed a similar activity to Pioglitazone. The GLUT-4 expression showed that some fractions have better effect isolated than the complete extract. This could be associated with a competitive behaviour of some compounds.

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Evaluating Licochalcone A for Therapeutic Application in Taiwanese Oral Squamous Cell Carcinoma

Assist Prof Yi-Chieh Yang

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Evaluating Licochalcone A for Therapeutic Application in Taiwanese Oral Squamous Cell Carcinoma
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Introduction. Licochalcone A (LCA) is a naturally occurring bioactive flavonoid and one of the major pharmacologically active constituents of licorice, derived from the root of Glycyrrhiza uralensis Fisch, a traditional Chinese herb. LCA has been reported to exert anti-inflammatory, anti-cancer, and anti-angiogenic effects in various cancer types. However, only limited studies have investigated its role in oral cancer, and the reported effective doses vary considerably across studies. Moreover, the anti-cancer effects and underlying mechanisms of LCA in Taiwanese oral cancer remain largely unexplored.
Aims. Our study aimed to evaluate the effects of LCA on Taiwanese oral cancer cells, elucidate its potential mechanisms, and assess whether it could enhance the efficacy of radiotherapy and chemotherapy.
Methods. The effects of LCA on oral squamous cell carcinoma (OSCC) cells were evaluated by assessing cell proliferation, colony formation, and migratory abilities using the Sulforhodamine B (SRB) assay, colony formation assay, and migration assay, respectively. Protein expression levels of key regulators involved in cell motility, survival, apoptosis, and autophagy were examined by immunoblotting. In addition, RNA sequencing was performed to identify novel LCA-regulated pathways.
Results. Our preliminary data demonstrated that LCA significantly suppressed the proliferation of OSCC in Taiwanese cell lines (TW2.6 and OECM1), with an IC_{50} slightly lower than that observed in Caucasian-derived cells. LCA treatment markedly reduced cell migration and downregulated mesenchymal markers, which are critical mediators of cellular motility. Moreover, LCA-induced cell cycle alterations and autophagy were confirmed by examining the expression of relevant protein markers. Mechanistically, RNA-sequencing identified novel LCA-regulated pathways underlying its anti-cancer effects. These pathways will be further investigated to validate their roles in mediating LCA-induced phenotypes.
Discussion. These findings underscore the novel mechanistic actions of LCA in Taiwanese oral cancer cells and support its potential role in advancing adjuvant therapy strategies.

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Galla Rhois and tannic acid alleviate IBD via direct NLRP3 PYD binding

Dr Gabsik Yang

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Galla Rhois and tannic acid alleviate IBD via direct NLRP3 PYD binding
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Introduction. Inflammatory bowel disease (IBD), encompassing Crohn's disease and ulcerative colitis, is characterised by chronic intestinal inflammation driven by dysregulated innate immune responses. The NLRP3 inflammasome, a multiprotein complex mediating caspase-1 activation and interleukin (IL)-1β/IL-18 maturation, plays a pivotal role in IBD pathogenesis. Galla Rhois, a traditional medicinal herb enriched with tannic acid, has demonstrated anti-inflammatory properties; however, its precise molecular mechanism targeting the NLRP3 inflammasome remains poorly defined.
Aims. To determine whether *Galla Rhois* extract and its major constituent, tannic acid, alleviate IBD by directly binding to the pyrin domain (PYD) of NLRP3, thereby suppressing inflammasome assembly and downstream inflammatory cascades.
Methods. Molecular docking simulation and surface plasmon resonance (SPR) assay were performed to evaluate direct binding of tannic acid to the NLRP3 PYD domain. NLRP3 inflammasome activation was assessed in lipopolysaccharide (LPS)-primed bone marrow-derived macrophages (BMDMs) stimulated with ATP or nigericin. IL-1β and IL-18 secretion (ELISA), caspase-1 cleavage, and gasdermin D (GSDMD) processing (immunoblot) were quantified. In vivo efficacy was evaluated in a dextran sulfate sodium (DSS)-induced colitis model; colonic inflammation was assessed by histopathology, cytokine quantification, and immunohistochemistry.
Results. Molecular docking analysis revealed that tannic acid directly binds the NLRP3 PYD domain with high affinity, forming stable hydrogen bonds at key residues; SPR confirmed dose-dependent binding. In LPS-primed BMDMs, *Galla Rhois* extract and tannic acid significantly inhibited NLRP3 inflammasome activation, reducing IL-1β and IL-18 secretion, caspase-1 cleavage, and GSDMD processing in a concentration-dependent manner without cytotoxicity. In the DSS-colitis model, oral administration of *Galla Rhois* extract markedly attenuated colonic shortening, histological injury scores, and pro-inflammatory cytokine expression compared with vehicle-treated controls.
Discussion These findings demonstrate that *Galla Rhois* and tannic acid alleviate IBD through direct PYD domain binding of NLRP3, suppressing inflammasome assembly and downstream inflammatory signalling. This mechanism provides a molecular basis for the therapeutic potential of tannic acid-enriched natural products as selective NLRP3 inflammasome inhibitors, supporting their translational application for the treatment of inflammatory bowel disease.

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Characterising the spatial and temporal interaction of TRPV4 and RhoA signalling

Mr Frankie Zhang

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Characterising the spatial and temporal interaction of TRPV4 and RhoA signalling

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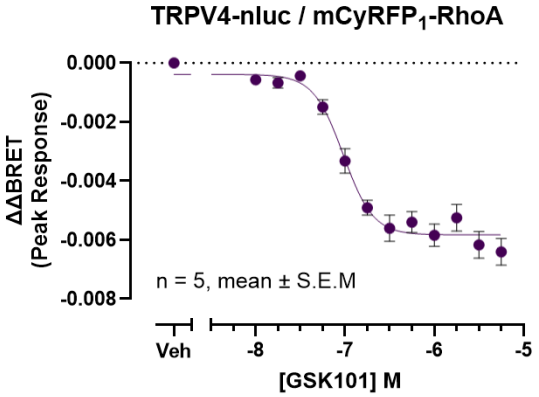

Introduction. Transient Receptor Potential Vanilloid 4 (TRPV4) is a polymodally activated ion channel that integrates physical and chemical signals across tissues. Clinical mutations of TRPV4 result in phenotypically diverse skeletal dysplasias (SD) and neuropathies, yet limited therapeutic options exist. Emerging evidence points to RhoA, a small G-protein, as a candidate regulator of TRPV4 function. Crucially, only neuropathic mutants disrupt the TRPV4-RhoA signalling axis, hinting at disease-specific mechanisms. Despite this, systematic characterisation of the spatial and temporal nature of RhoA binding is scarce.

Aims. To profile the TRPV4-RhoA signalling axis and assess how clinically relevant mutations disrupt this process.

Methods. Bioluminescence resonance energy transfer (BRET)-based biosensors and super-resolution imaging were used to ascertain TRPV4-RhoA localisation. Ligand-induced un-coupling of TRPV4 and RhoA was quantified using BRET.

Results. We observed robust, saturable BRET signals between TRPV4 and RhoA, consistent with specific molecular binding. This was supported by super resolution imaging, where we observed TRPV4-RhoA co-localisation at the cell surface and in intracellular structures. Acute stimulation with TRPV4-specific agonist GSK101 produced a significant, concentration dependent peak reduction in BRET compared to vehicle (-0.006 $\pm$ 0.0008, n = 5, $p<0.001$).

Discussion. These findings provide the first direct evidence that TRPV4 and RhoA form a dynamic complex that is disrupted upon channel activation. This further confirms previous findings that RhoA acts as a regulatory partner of TRPV4. Importantly, we highlight potential implications for targeting the TRPV4-RhoA signalling pathway as a therapeutic approach to treat neuropathy-associated TRPV4 mutations.

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DTC1225, a novel benzothiazole-based compound ameliorates MASLD and reshapes the hepatic lipidome

Ms Siqi Zhang

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

DTC1225, a novel benzothiazole-based compound ameliorates MASLD and reshapes the hepatic lipidome
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Introduction. Metabolic dysfunction-associated steatotic liver disease (MASLD) is a leading contributor to a broad spectrum of chronic liver disorders worldwide, yet effective pharmacotherapies remain limited.
Aims. Autophagy is an essential catabolic process that maintains hepatic homeostasis by mitigating lipid-induced cellular stress and modulating lipogenesis with fatty acid β-oxidation. This study aimed to evaluate the translational therapeutic relevance of DTC1225, a newly identified benzothiazole-based compound with autophagy-activating properties, in regulating hepatocellular metabolism in MASLD.
Methods. Utilizing an *in vitro* reporter-based screening of a chemical compound library, 2-((3-morpholinopropyl) amino) benzo[*d*]thiazol-6-yl 4-nitrobenzenesulfonate (code name as DTC1225) was identified as a novel autophagy modulator. Its therapeutic efficacy was evaluated in steatotic HepG2 cells, differentiated 3T3-L1 adipocytes, and a MASLD mouse model induced by a fructose-palmitate-cholesterol diet combined with high fructose corn syrup-55.
Results. DTC1225 drove transcription factor EB-mediated lysosomal biogenesis and autophagosome formation, positioning it as a promising therapeutic candidate for metabolic dysfunction characterized by impaired autophagy. *In vitro*, DTC1225 reduced lipid deposition and mitigated MASLD-associated cellular injury in both steatotic HepG2 cells and differentiated 3T3-L1 adipocytes, accompanied by coordinated changes autophagy-related protein and gene expression. In a MASLD mouse model, DTC1225 alleviated hepatic damage by modulating autophagy-related signaling pathways, restoring lipid metabolism and redox homeostasis, and attenuating ferroptotic dysregulation. Hepatic lipidomics analysis further revealed that DTC1225 induced selective structural lipid remodelling, shifting the lipid profile toward longer-chain and more unsaturated species, with preferential enrichment of n-3 polyunsaturated fatty acids–containing lipids, a signature characteristic of attenuated lipotoxicity and improved membrane fluidity.
Discussion. This study elucidates the multifaceted mechanisms underlying the anti-MASLD activity of DTC1225, and provides a critical rationale for its further development as an innovative therapeutic candidate for MASLD and its associated metabolic complications.

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Hybrid decentralized randomized clinical trial with self-administration and remote adverse event reporting

Prof Namyi Gu

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Hybrid decentralized randomized clinical trial with self-administration and remote adverse event reporting
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Introduction. Decentralized clinical trials (DCTs) are expected to improve accessibility and convenience by incorporating self-administration and remote safety monitoring, reducing the need for on-site visits.
Aims. This study evaluated the feasibility and reliability of DCT elements and assessed participant burden.
Methods. In this open-label, randomized clinical trial, 20 healthy adult volunteers were randomly assigned 1:1 to DCT or conventional arms. The periods included inpatient single-dose venlafaxine at baseline and readmission (Period 1 and 3), identical in both arms; and an arm-differentiated 5-day paroxetine phase (Period 2). In Period 2, the DCT arm participants self-administered paroxetine with a wearable dosing-monitoring device and paper-log recording, and reported adverse events (AEs) through a remote platform. In contrast, the conventional arm participants administered medication on-site, where AEs were collected by investigators. Participant burden was surveyed on all participants on the last day. Outcomes were analyzed using descriptive statistics and inferential statistics.
Results. During the period 2, there was one missed outpatient dose in the conventional arm, while the DCT arm achieved 100% dosing adherence. Wearable dosing-monitoring device records were missing in 1 of 50 cases (2%), and the mean difference in dosing time between device records and paper-log was 0.24 min. The incidence of AEs was similar between arms, suggesting remote reporting did not compromise AE detection. Survey results showed that app/web was rated as the least burdensome self-administration recording method, followed by paper, then wearable device, while on-site visits were rated most burdensome. No significant differences in burden scores for electronic versus paper AE reporting were observed either between arms or within each arm.
Discussion. This study demonstrated the feasibility and reliability of self-administration with a wearable device and remote AE reporting, and identified app/web-based methods as imposing the lowest recording burden.

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A scoping review of artificial intelligence applications in immune checkpoint inhibitor safety

Ms Thuy Tien Le

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

A scoping review of artificial intelligence applications in immune checkpoint inhibitor safety
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Introduction. Immune checkpoint inhibitors (ICIs) have revolutionised cancer treatment but are frequently associated with immune-related adverse events (irAEs). Timely identification and management of irAEs remain challenging in routine practice. Artificial intelligence (AI) is increasingly being applied in clinical oncology settings and potentially improves ICI safety.
Aims. To systematically map the current applications of AI in ICI-related safety, identify knowledge gaps, and explore potential future clinical applications.
Methods. A scoping review based on the PRISMA-ScR guidelines was conducted using different databases: MEDLINE (Ovid), Embase and Scopus. Eligible studies applied at least one AI method to investigate ICI-related safety outcomes and were grouped into three domains: risk prediction, identification or detection, and clinical information or decision support. Data were synthesised qualitatively.
Results. The database search retrieved 4070 records, of which 3197 articles remained after deduplication. Forty studies were included, comprising 33 analyses of real-world electronic medical record (EMR) data and four analyses of clinical trial populations, representing a total of 45,897 ICI-treated patients. The other three studies evaluated LLM-based or AI chatbot tools to address clinical questions related ICI safety without patient-level data. Most studies applied AI for risk prediction (n = 27), followed by adverse event identification or detection (n = 10) and clinical information or decision support (n = 3). AI models demonstrated promising performance (e.g., Area Under Curve) for patient-level risk stratification, automated irAEs detection from structured and unstructured data sources, and supporting clinical decision-making. However, all studies relied on retrospective data that lacked external validation or assessment of real-world outcomes, constraining generalisability and clinical applicability.
Discussion. AI-based approaches demonstrate potential to enhance ICIs safety by enabling early irAEs detection, personalised monitoring, and real-world pharmacovigilance. To support clinical translation, future research should prioritise external and prospective validation that links AI performance to tangible impacts on patient care within real-world clinical workflow.

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A Review of Virtual Twins in Physiologically-Based Pharmacokinetic Modeling and Simulation

Miss Emily Mannix

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

A Review of Virtual Twins in Physiologically-Based Pharmacokinetic Modeling and Simulation

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Introduction. The application of personalised medicine through targeted, individualised treatments will increasingly become part of the standard of care as modern medicine departs from a one-size-fits-all approach. Currently, many treatment guidelines do not account for interindividual variability that can produce significant variation in treatment response. Whilst physiologically-based pharmacokinetic (PBPK) models have a significant history of supporting the exploration of pharmacokinetic variability at the population level, the novel application of Virtual Twins (VTs) presents the opportunity to further therapeutic optimisation through personalisation to the individual.

Aims. To collate and analyse existing research on the use of VTs in PBPK in order to understand the prevalence and diversity of use, compare methodologies, and identify opportunities for future advancement of VTs.

Methods. A literature search was conducted to identify studies describing virtual twinning of a whole human body for the purpose of predicting drug concentration and/or effect. The search strategy involved Medline, Embase, Google Scholar, Perplexity AI, citation-searching and reviewing recent abstracts from pharmacometrics conferences. Details of the VT-PBPK models and VT design were extracted from each study and verified by a second reviewer. A framework assessing and categorising each study's method of simulation and virtualisation was then applied to the extracted data.

Results. Eighteen (18) studies were included in this review, including 17 original research articles and one conference abstract. Results highlight the application of virtual twinning across a range of populations, disease states and drug classes, for the purpose of PBPK model development and evaluation, and model-informed precision dosing (MIPD). All studies applied virtual twinning to real-world data (RWD) retrospectively. In the VT approaches, there are at least three levels of virtualisation; low, medium and high, as determined by the number of RWD covariates such as physiological, demographic, and genetic data integrated into the model. There is a lack of prospective application of MIPD-VTs, reflecting the current 'proof-of-concept' status of this novel methodology.

Discussion. Advancement of MIDP-VTs will depend on a shift in application of PBPK modelling and simulation from producing population-based to specific, individualised predictions. As such, there is a sizeable step required in evaluating VT models and amassing evidence of success before prospective clinical implementation is achievable.

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First-in-human study: long-acting GLP-1 receptor agonist (TE-8105) in healthy overweight/obese adults

Mr Kushal Paneliya

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

First-in-human study: long-acting GLP-1 receptor agonist (TE-8105) in healthy overweight/obese adults

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Introduction. TE-8105, a novel GLP-1 receptor agonist, has been developed for metabolic indications, including overweight/obesity and T2DM. TE-8105 has high affinity for human serum albumin with an extended half-life and pharmacological action in non-clinical studies.
Aims. This first-in-human study aimed to determine the pharmacology and early safety profile of TE-8105 in healthy overweight/obese adults.
Methods. An open-label study of 4 single ascending dose cohorts (Part A: A1-A4, 0.5, 0.75, 1.0 and 3.0 mg SC TE-8105, respectively) and 2 multiple dose cohorts (Part B: B1 flat dosing, 1.0 mg TE-8105 Q2W SC for 5 doses, and B2 titration dosing, sequence 2 x 1.5 mg, 2 x 2.0 mg, 2 x 2.5 mg and 3 x 3.0 mg TE-8105 Q2W SC) was conducted.
Results. The half-life of TE-8105 was about 120 hours. The mean (SD) % change in body weight from baseline to the end of study visit for B2 titration dosing was 2.06%, with 4/8 participants maintaining weight loss of ≥ 5%. Treatment-related TEAEs were consistent with the mechanism of action of TE-8105 and dose-dependent, including nausea (Part A: 16.7%; Part B: 21.4%), abdominal pain (Part A: 4.2%), constipation (Part A: 4.2%; Part B: 7.1%), and vomiting (Part A: 4.2%; Part B: 7.1%).
Discussion. Overall, TE-8105 was safe and well tolerated with pharmacokinetics allowing for less frequent SC dosing than currently available GLP-1 agonists.

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Community Pharmacists' Perspectives Regarding Discontinuation of Essential Health Products in South Africa

Dr Lehlohonolo J. Mathibe

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Community Pharmacists' Perspectives Regarding Discontinuation of Essential Health Products in South Africa

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Introduction. Discontinuing essential health products negatively impacts individual patient outcomes and healthcare systems (Bain et al., 2008). The implications of discontinuing essential medicines extend beyond immediate access to life-saving health products to the economic prospect of retail pharmacy as a business (Thio et al., 2018). Although the extent and consequences of the withdrawal of essential health products have been studied globally, there is insufficient scientific research regarding this challenge in South Africa.
Aim. Therefore, this study investigated the community pharmacists' perspectives on the implications of discontinuation of essential health products in South Africa.
Method. This was a prospective, cross-sectional, and descriptive questionnaire-based study. The Google Forms link was used to disseminate questionnaires, consisting of a 5-point Likert scale and open-ended items, to pharmacists in South Africa. The University of KwaZulu-Natal Bioethics Committee approved the study proposal.
Results. Thirty-six (n = 36) community pharmacists participated in this study. Altogether, 56% (n = 20) and 44% (n = 16) were females and males, respectively. The median age of participants was 45 years (IQR 30 – 51 years); with a median period of 6 years (IQR 3 – 19 years) as practicing community pharmacists. Ninety-one percent (n = 32), 78% (n = 28), and 65% (23 = 15) of participants agreed/strongly agreed that the discontinuation of essential health products has led to an increase in healthcare costs for patients; felt confident in their abilities to help patients with alternative therapies; and that essential health products should never be discontinued when an appropriate alternative therapy is unavailable, respectively.
Discussion. These findings suggest that discontinuation of medicines is driven by patient safety, regulatory requirements, therapeutic inefficacy, pricing issues, and supply chain disruptions. However, there is a need for improved communication with patients and for the South African Health Products Regulatory Authority (SAHPRA) to play a more proactive role in ensuring the availability of alternatives and enhancing supply chain management to minimise healthcare interruptions.

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Extent of Post-Marketing Withdrawal of Medicines in South Africa

Dr Lehlononolo J. Mathibe

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Extent of Post-Marketing Withdrawal of Medicines in South Africa

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Introduction. Continuous and reliable supply of essential medicines, i.e., effective, old, and inexpensive as well as the newer products, is a crucial component of good health-related quality of life from the prenatal stage until death ensues (Vyas *et al.*, 2019). Therefore, discontinuation of health products, recalls, or withdrawal of essential medicines hinders the global efforts for appropriate and effective management of life-threatening conditions (Salib, 2023). However, there is limited scientific research on the magnitude and the causes of discontinuation of medicines in South Africa.
Aim. Therefore, this study investigated the extent, patterns, and reasons for discontinuation of medicines and registered health products in South Africa.
Method. This was a retrospective health product discontinuation record review study. Data were provided by the South African Health Products Regulatory Authority (SAHPRA). Descriptive analysis was used to calculate, summarise, explain and interpret collected data (Vetter, 2017). Focus was on the reasons for discontinuation and the proportion of pharmacological categories for which withdrawals were sought.
Results. A total of 299 records of withdrawn medicines were received from SAHPRA for 5 and 808 health products, which were registered for veterinary and human use, respectively, between 2003 and 2023. About 43% (n = 350) of the health products were listed in the South African Essential Medicines List as essential medicines, and approximately 90% (n = 725) of withdrawn medicines had pharmaceutical alternatives. Eighteen percent (n = 142), 11% (n = 88) and 5% (n = 39) of discontinued products belonged to antimicrobials, antihypertensives and antineoplastics pharmacological categories, respectively. About 65% (n = 524) of health products were discontinued due to commercial reasons.
Discussion. There is a high post-marketing discontinuation of health products in South Africa. However, a considerably high percentage of pharmaceutical alternatives were available for consistent, appropriate, and effective management of life-threatening diseases.

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Predicting the clinical dose of SIG001 from preclinical studies by modelling approach

Assist Prof Qingyu Yao

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Predicting the clinical dose of SIG001 from preclinical studies by modelling approach

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Introduction. Sialylated immunoglobulin G (SIA-IgG) is a novel therapeutic target specifically expressed in malignancies of epithelial origin. Humanized therapeutic antibody SIG001 specifically binds to tumor-derived SIA-IgG, and considered to be a promising first-in-class broad-spectrum therapy against epithelial tumors.
Aims.This study aims to predict the first-in-human (FIH) dose and the pharmacological active dose (PAD) of SIG001 can be predicted based on preclinical data by modelling approach.
Methods.PK studies were performed in cynomolgus monkey and mice. The anti-tumor efficacy was studied in various xenografts. The cell cytokine release assay was conducted in human PBMC. The pharmacometric modelling was developed using NONMEM.
Results. The PK properties of SIG001 in cynomolgus monkey and mice were both well described by a two-compartment model with linear clearance, and human PK parameters were scaled from those obtained in cynomolgus monkeys. SIG001 at 50 μg/mL did not significantly stimulate cytokine release in human PBMCs, thus considered as a safety threshold concentration for predicting the FIH dose. A maximum recommended starting dose of 0.15 mg/kg Q2W was selected based on simulation with moderate PK variability. Additionally, SIG001 demonstrated flat dose-dependent efficacy in mouse xenografts from 2.5 to 10 mg/kg, indicating a saturated anti-tumor effect, with the predicted human PAD ranging from 1.8 to 7.0 mg/kg.
Discussion. The PK properties and therapeutic efficacy of SIG001 were investigated through preclinical studies. Furthermore, the FIH dose and human PAD were predicted using a modeling approach, providing valuable insights for the translational research of SIG001.

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Updating AdrenoCortical Carcinoma preclinical models: characterization of two new patient-derived cell lines

Dr Andrea Abate

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Updating AdrenoCortical Carcinoma preclinical models: characterization of two new patient-derived cell lines

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Introduction. AdrenoCortical Carcinoma (ACC) is an aggressive rare malignancy. Mitotane is the reference drug alone or combined with etoposide, doxorubicine and cisplatin (EDP-M) [Fassnacht M et al 2020].
Aims. Due to the high heterogeneity of ACC, preclinical investigation requires different experimental models: here we reported the development and characterization of two new human ACC cell lines, SMAC-2 and SMAC-3 cells.
Methods. The characterization included their mutational profiling, an evaluation of steroidogenic enzymes expression, secretory activity and the expression of steroid hormone receptors. The proliferative ability of these cells within a zebrafish embryos xenograft was also evaluated.
Results. SMAC-2 originated from the primary mass of a metastatic EDP-M-treated ACC in a female patient with Cushing syndrome and hyperandrogenism, while SMAC-3 derived from a male patient with a mitotane-treated local recurrence, with no sign of hormone hypersecretion. *TP53* was mutated in both lines. SMAC-2 cells were characterized by a pathogenic alteration on *CTTNB1* gene and a deletion of *CDKN2A* gene, while SMAC-3 on *MSH2* gene. Basal hormonal status analysis showed a cell model-specific fingerprint either in the hormonal secretion and gene and protein expression of steroid hormone receptors. SMAC-2 secreted high levels of cortisol. Mitotane displayed in both cell lines a low potency. Under the experimental conditions used, the xenografted area did not increase for both cell models.
Discussion. SMAC-2 and SMAC-3 display unique molecular and functional features, expanding the repertoire of experimental ACC models and representing valuable tools for preclinical research alongside established cell lines.

Fassnacht M et al. Adrenocortical carcinomas and malignant phaeochromocytomas: ESMO-EURACAN Clinical Practice Guidelines for diagnosis, treatment and follow-up. Ann Oncol. (2020);31(11):1476-90.

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Therapeutic potential of ISG20 in diabetic mice via Inhibition of Ferroptosis

Dr Di Zhou

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Therapeutic potential of ISG20 in diabetic mice via Inhibition of Ferroptosis

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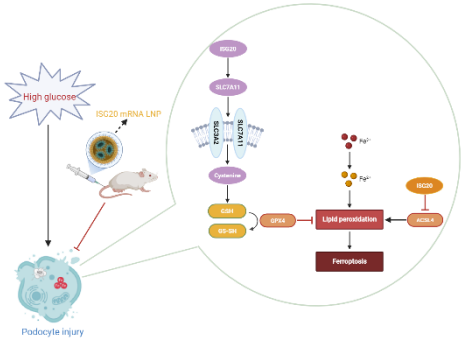

Introduction. Ferroptosis, an iron-dependent cell death driven by lipid peroxidation, contributes to podocyte injury in diabetic kidney disease (DKD). While Interferon-Stimulated Gene 20 (ISG20) regulates RNA oxidation stress in acute kidney injury, its specific role and mechanism in DKD remain unknown.

Aims. This study aimed to investigate the role of ISG20 in ferroptosis within DKD and evaluate its therapeutic potential.

Methods. Used ISG20-deficient and wild-type mice, assessing iron, ROS, lipid peroxidation, proteinuria, and kidney injury. Tested Ferrostatin-1's rescue effect. In vitro, silenced ISG20 in podocytes under high glucose (HG) ± Ferrostatin-1. To evaluate therapeutic potential, diabetic mice received either an adenovirus vector overexpressing ISG20 or novel mRNA-loaded lipid nanoparticles (LNPs) delivering ISG20 mRNA.

Results. ISG20 deficiency regulated GPX4/SLC7A11/ACSL4 expression, exacerbated iron accumulation, ROS, lipid peroxidation, proteinuria, and kidney injury in mice, mitigated by Ferrostatin-1. ISG20 silencing worsened HG-induced podocyte damage in vitro, rescued by Ferrostatin-1. Both the adenovirus-mediated ISG20 overexpression and the ISG20 mRNA-LNP therapy effectively reduced podocyte ferroptosis, alleviated podocyte injury, and decreased proteinuria in DKD mice.

Discussion. This study identifies a novel protective role for ISG20 in podocyte survival by inhibiting ferroptosis in DKD. The findings demonstrate that ISG20 deficiency exacerbates ferroptotic damage, while its restoration, either genetically or via innovative LNPs, is therapeutic. This suggests ISG20 as a promising innovative therapeutic strategy for treating proteinuric kidney diseases like DKD.

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Non-Surgical Resolution of Double Ectopic Pregnancy After IVF Using Methotrexate: Case Report

Dr Nurgul Ablakimova

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Non-Surgical Resolution of Double Ectopic Pregnancy After IVF Using Methotrexate: A Rare Case Report

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Introduction. Ectopic pregnancy (EP), a life-threatening condition and leading cause of first-trimester maternal mortality, is increasingly associated with assisted reproductive technologies (ART), with rare cases involving double implantation in the cervix and tubal stump presenting significant clinical challenges.
Aims. To present a rare case of double ectopic pregnancy—cervical and tubal stump—following IVF, successfully managed with a multi-dose methotrexate (MTX) protocol as a fertility-preserving treatment.
Methods. A 33-year-old woman with a history of bilateral salpingectomy presented with abdominal pain 21 days post-IVF. Ultrasound revealed two ectopic pregnancies: one cervical with cardiac activity, and one in the tubal stump. A multi-dose methotrexate protocol (1 mg/kg on days 1, 3, 5, 7) with folinic acid was administered. β-hCG and ultrasound were closely monitored.
Results. Despite an initial β-hCG level of 30,000 mIU/mL and the presence of fetal cardiac activity, fetal viability ceased by day 4. β-hCG peaked at 41,000 mIU/mL before beginning to decline. The patient was hospitalized for 20 days and discharged in stable condition. Follow-up hysteroscopy confirmed complete resolution. No surgical intervention was required.
Discussion. Despite high β-hCG, fetal cardiac activity, and dual implantation, methotrexate was effective. This rare case supports conservative treatment in select IVF-related ectopic pregnancies and is the first such report from Kazakhstan.

Zikopoulos A et al (2023) Radiol Case Rep 18:4106–09
Naveed AK et al (2022) Arch Gynecol Obstet 305:547–53

P279

Androgen Receptor Mediates Sexual Dimorphism in HNSCC: Mechanisms & Interventions

Prof Yiwen Zhang

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Androgen Receptor Mediates Sexual Dimorphism in HNSCC: Mechanisms & Interventions

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Introduction. Head and neck squamous cell carcinoma (HNSCC) exhibits a significant gender bias in clinical practice, with male patients presenting higher malignancy and worse prognosis.

Aims. This study is expected to elucidate a novel mechanism underlying the gender bias in HNSCC and to provide a cost-effective immunotherapeutic strategy.

Methods. We utilize clinical samples in conjunction with gene knockout mice to confirm the key role of AR in inhibiting the activation of naïve $CD8^+$ T cells. Employing techniques such as single-cell sequencing to elucidate the AR-regulated naïve $CD8^+$ T cell subsets and their activation pathways. CRISPR-Cas9 gene editing technology, dual-luciferin reporter gene systems will be used to clarify the molecular mechanism by which AR regulates VISTA.

Results. The study found that $CD8^+$ T cells may be key to the observed gender bias. Androgen can inhibit the activation of naïve $CD8^+$ T cells with the mechanism involving the transcriptional upregulation of the immune checkpoint VISTA following androgen receptor (AR) activation.

Discussion. Targeting AR inhibition is an immunotherapeutic strategy to enhance the antitumor activity of sex-biased $CD8^+$ T cells in HNSCC.

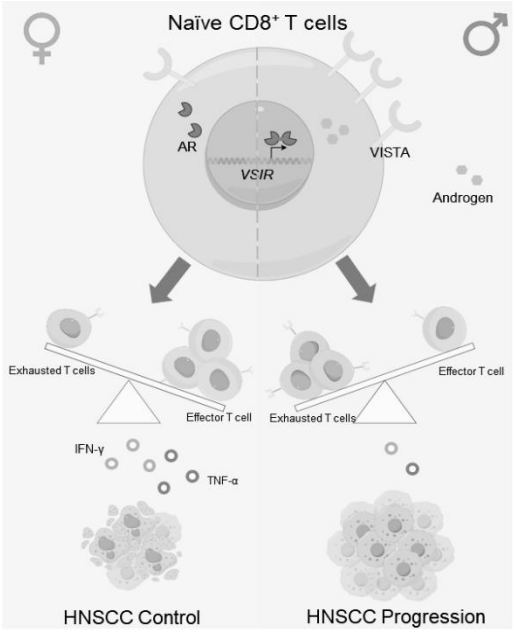

Fig1. AR inhibits the activation of naïve CD8+ T cells through transcriptional activation of the VISR gene leading to immune escape in HNSCC

P280

The potential repurposing of SSRIs for the treatment of lung cancer

Dr Osama Abusara

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

The potential repurposing of SSRIs for the treatment of lung cancer

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Introduction. The repurposing of existing drugs for the potential treatment of cancer is continuously being investigated. Selective serotonin reuptake inhibitors (SSRIs), a group of antidepressants, have been investigated for their anticancer effect on several types of cancer.

Aims. The aims of our study are to biologically investigate the potential anticancer effect of SSRIs, namely citalopram, escitalopram, and paroxetine, against small cell lung cancer (SCLC) cells along with the identification of the possible mechanism(s) of action involved. In addition, we would investigate the potential of SSRIs to enhance the cytotoxicity of doxorubicin (DOX) on these cells and identify the possibility of synergistic effect.

Methods. Resazurin fluorometric analysis was performed to evaluate the anticancer activity of the compounds as single agents and in combination with doxorubicin (DOX) on lung cancer cell lines; H69 and DOX-resistant H69AR. Fibroblasts were also used to evaluate their selectivity towards cancer cells. JC-1 assay was performed to evaluate the induction of apoptosis by the compounds.

Results. Paroxetine had the least IC_{50} values on both cell lines, H69 and H69AR, with IC_{50} values of 9.70±0.54 and 16.40±0.19, respectively, (n = 3) µM. The selectivity index for paroxetine on these cells was greater than 24 on both cell lines. Combining DOX with paroxetine further decreased the IC_{50} value for paroxetine to 5.10±0.83 (n = 3) µM on H69 cells and 4.90±0.03 (n = 3) µM on H69AR cells. Similarly, when combined with paroxetine, DOX's IC_{50} value decreased to 0.05±0.01 (n = 3) µM from 0.11±0.01 (n = 3) µM on H69 cells and to 0.59±0.01 (n = 3) µM from 1.80±0.26 (n = 3) µM on H69AR cells. Combination index value of less than 1.0 was obtained following the combination of paroxetine with DOX on H69 and H69AR cells. The addition of 5 µM paroxetine enhanced DOX's activity against H69AR cells with DOX's IC_{50} value decreasing to 0.50±0.04 (n = 3) µM from 1.80±0.26 (n = 3) µM, while no significant effect observed in H69 cells. Paroxetine resulted in a significant ($P<0.0001$) increase in the green fluorescence of the monomer dye following the loss of mitochondrial membrane potential.

Discussion. Paroxetine has the highest cytotoxic activity among all SSRIs used against H69 and H69AR cells. Enhanced cytotoxic activity was observed following the combination of DOX. A synergistic activity was observed on both cell lines with the combination of paroxetine and DOX. Knowing that H69AR is DOX-resistant cell line and the addition of paroxetine enhanced cytotoxic activity of DOX, paroxetine may had inhibited the activity of DOX's efflux pumps and increased the entry of DOX into H69AR cells. Cytotoxic activity of paroxetine may also be driven via mitochondrial apoptotic pathway. Paroxetine may be further investigated on different cancer cells as well as cells expressing efflux pumps variably to further evaluate the mechanism of cytotoxicity.

P281

Validation of Antigen-Antibody Drug Interaction Predictions Using AlphaFold3

Dr Kodai Yajima

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Validation of Antigen-Antibody Drug Interaction Predictions Using AlphaFold3

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Introduction. Recently, the appearance of deep learning based computational models such as AlphaFold (AF) has been a breakthrough in structure prediction and is transforming research in protein structure prediction. Although AF3 may be a useful tool for predicting protein-antibody structures, it is still uncertain how well this prediction reflects the actual structure.

Aims. In this study, we focused on the binding between antigens and antibody drugs and investigated the validity of antigen-antibody interaction predictions using AF3.

Methods. We targeted seven antigens, for which AF3 demonstrated high accuracy in predicting their individual three-dimensional structures, and 14 antibody drugs that target them. The full-length amino acid sequences of the antigens were obtained from UniProt, while the corresponding amino acid sequences for the antibody drugs were sourced from DrugBank Online and KEGG. We input the amino acid sequences of the antigen, along with the heavy and light chain Fabs of the antibody drug, into the AF Server to obtain the ipTM score, an indicator of the prediction accuracy for the complex structure.

Results. Among the 14 combinations of target antigens and antibody drugs, five pairs had an ipTM score between 0.6 and 0.8 (gray zone), and two pairs had 0.8 or higher (high-quality prediction). While known interacting pairs showed high ipTM scores, there were instances where non-interacting pairs also exceeded an ipTM of 0.6. For the TNFα monomer, the ipTM scores with the anti-TNFα antibodies adalimumab and certolizumab were approximately 0.6. However, since TNFα forms a homotrimer, inputting three TNFα molecules as the AF3 query increased the ipTM to about 0.8. Furthermore, for some antigens exceeding 200 amino acids, the interaction prediction was significantly improved by extracting and inputting the domain sequence near the epitope.

Discussion. It was challenging to accurately predict antigen-antibody drug binding using the full-length amino acid sequences corresponding to the protein monomers with AF3. On the other hand, it may be possible to improve prediction accuracy by optimizing the input query, for instance by defining the correct oligomeric state or using specific protein domains.

P282

Nitric oxide-mediated epigenetic regulation as an underlying molecular basis for long COVID

Yuto Moriya

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Nitric oxide-mediated epigenetic regulation as an underlying molecular basis for long COVID
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Introduction. After recovery from COVID-19, some patients develop post-acute sequelae known as long COVID. Prior studies have shown that the cytokine storm caused by SARS-CoV-2 infection enhances the expression of inducible nitric oxide (NO) synthase, triggering dramatic increases NO generation. Excessive NO generation endangers nitrosative stress, leading to redox-based posttranslational modification, known as *S*-nitrosylation (SNO), to a specific cysteine thiol. Our group previously demonstrated that *S*-nitrosylation of DNA methyltransferase (DNMT) attenuates its enzymatic activity and consequent aberrant gene expression through demethylation of CpG sites in genomic DNA. Additionally, we isolated the unique chemical compound DBIC as a specific inhibitor of DNMT3 *S*-nitrosylation.
Aims. In this study, we addressed the pathophysiological link between redox-dependent epigenetic regulation mediated by SNO-DNMT and long COVID.
Methods. Using blood samples from 100 long COVID patients, we measured total *S*-nitrosylated protein levels in plasma through DAN assay. In cell-based assay, we investigated specific genes upregulated by SNO-DNMT formation through multi-omics analysis. We evaluated the expression levels of these genes in long COVID patients by qPCR.
Results. The amount of *S*-nitrosylated proteins was significantly higher in patients with long COVID, providing critical evidence that nitrosative stress caused by SARS-CoV-2 infection and consequent protein *S*-nitrosylation still persists even at the time of long COVID onset. In cell-based assay, we found that SNO-DNMT serves as novel mechanism of epigenetic gene regulation by establishing epigenetic landscape favorable for transcription factor binding, such as hypoxia-inducible factor. Finally, the expression of DBIC-sensitive genes, whose NO-dependent upregulation is abrogated by DBIC, was significantly elevated in patients with long COVID.
Discussion. Taken together, the present study suggested that redox-dependent epigenetic gene regulation mediated by SNO-DNMT formation is a potential molecular mechanism of long COVID, highlighting that DBIC holds promise as a potential therapeutic agent.

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Anti-inflammatory and osteogenic roles of tonsil mesenchymal stem cell-derived exosomes

Prof Ju Yeon Ban

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Anti-inflammatory and osteogenic roles of tonsil mesenchymal stem cell-derived exosomes
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Introduction. Periodontitis is characterized by chronic inflammation and impaired osteogenesis of periodontal ligament cells. Exosomes derived from mesenchymal stem cells (MSCs) have emerged as potential therapeutics via paracrine signaling. However, the role of tonsil MSC-derived exosomes (TMSC-Exo) in periodontal inflammation and regeneration remains unclear.
Aims. The objective of this study was to determine the capacity of TMSC-Exo to counteract lipopolysaccharide (LPS)-induced inflammation and to promote osteogenic potential in human periodontal ligament fibroblasts (hPDLFs).
Methods. TMSC-Exo were isolated by ultracentrifugation and characterized by transmission electron microscopy (TEM), nanoparticle tracking analysis (NTA), and Western blotting. hPDLFs were exposed to LPS to induce an inflammatory environment and then treated with TMSC-Exo. Cell proliferation and migration were assessed. Expression of inflammation-related genes and proteins was measured by quantitative real-time polymerase chain reaction (qRT-PCR) and Western blot analysis. Additionally, osteogenesis was assessed by alkaline phosphatase (ALP) staining/activity, Alizarin Red S staining, and qRT-PCR.
Results. TMSC-Exo significantly promoted the proliferation and cell migration of hPDLFs. TMSC-Exo effectively suppressed the expression of pro-inflammatory cytokines such as IL-8, IL-6, IFN-γ, and IL-1β in LPS-induced inflammatory conditions. In addition, TMSC-Exo has been demonstrated to reduce the phosphorylation of ERK and JNK, down-regulate AP-1 components (c-Jun, c-Fos) and NF-κB, and decrease JAK2/STAT3 activation, which are central to inflammatory signaling pathway. In regard to osteogenesis, TMSC-Exo markedly enhanced ALP activity and calcium deposition. The qPCR results showed that TMSC-Exo significantly increased the mRNA expression of osteogenic markers, including ALP, OCN, BSP, Sost, and OPN.
Discussion. These findings suggest that TMSC-Exo may have therapeutic potential for the treatment of periodontitis by modulating inflammation and enhancing periodontal regeneration.

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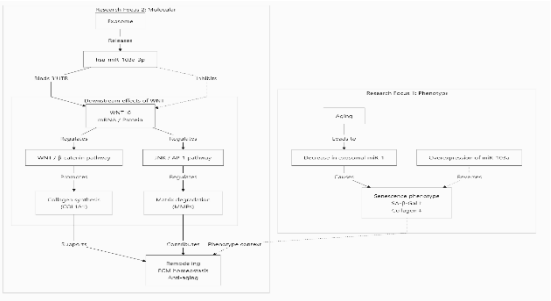
Exosomal miR-103a-3p restores mitochondrial redox homeostasis and attenuates skin aging

Dr Yu Wu

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Exosomal miR-103a-3p restores mitochondrial redox homeostasis and attenuates skin aging.

Yu Wu[1], Yan Gong[1], Liming Zhou[1]. Department of Pharmacology, West China School of Basic Science and Forensic Medicine[1], Sichuan University, Chengdu, China.



Introduction. Skin aging is associated with disrupted redox homeostasis and accumulated mitochondrial dysfunction in dermal fibroblasts. While exosomes derived from young human dermal fibroblasts (HDFs-Exo) exhibit rejuvenating potential, their precise anti-aging mechanisms remain unclear.

Aims. This study aimed to explore the mechanism by which exosomal miRNAs, particularly miR-103a-3p, delay skin aging and identify their functional targets.

Methods. Exosomes were isolated from young human dermal fibroblasts and characterized. Differentially expressed miRNAs were identified by RNA sequencing and validated via qRT-PCR. Cellular senescence was induced by H_2O_2, and photoaging was modeled in mice using UVB irradiation. Functional and mechanism studies were conducted using the function acquisition/loss of function method, dual-luciferase reporter gene assay, Western blotting, SA-β -GAL determination, aging-related marker detection, mitochondrial function and oxidative stress assessment.

Results. Exosomes from young HDFs were enriched with miR-103a-3p. Overexpression of miR-103a-3p or knockdown of its target, WNT16, attenuated cellular senescence, reduced oxidative stress and inflammation, and enhanced collagen synthesis in vitro. Mechanistically, miR-103a-3p inhibited the WNT16/JNK/AP-1 axis, thereby preserving mitochondrial function and redox homeostasis. In a UVB-induced photoaging mouse model, local delivery of HDFs-Exo or miR-103a-3p alleviated skin wrinkling, reduced senescence markers, and suppressed collagen degradation, coinciding with downregulation of WNT16 and p-JNK in vivo.

Discussion. In summary, we have identified a novel anti-aging mechanism in which exosomal miR-103a-3p prevents cellular senescence by suppressing WNT16 and restoring mitochondrial bioenergetics, providing a powerful strategy for the treatment of oxidative stress-related skin pathologies.

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Artificial Intelligence in Pharmacovigilance: opportunity for better reporting with potential challenges

Dr Shouvik Choudhury

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Artificial Intelligence in Pharmacovigilance: opportunity for better reporting with potential challenges

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Introduction: Pharmacovigilance (PV) activities are increasing globally with huge number of data every day and making human task more challenging regarding processing and analyzing it. It does not only include drugs now, but also concerned with herbals, traditional and complementary medicines, blood products, medical devices, hemovigilance, and materiovigilance. Artificial intelligence(AI) mimics and simulates human intelligence by using informatics. It includes machine learning (ML) which means ability of computer to learn without being explicitly programmed. It represents algorithms developed to help making decision in new situations. Deep learning is a part of it which is based on artificial neural networks. Natural language processing can analyze or understand human voice and transcript it. AI is being used in almost every field of healthcare from drug development to strategizing therapy. AI can be of great help in both quality and quantity of ADR reporting.

Method:AI can be helpful in PV in the following fields – Automatic execution of tasks associated with case report entry and processing ,Conduction of pharmacoepidemiological studies, Identification of clusters of adverse events, Identification of unreported cases by browsing Social Media, Assist signal detection, automate data entry.

Result and Discussion: AI shortens the workload in respect of time, cost and complexity. Already technological tools are being used in PV activities like VigiBase, VigiLyze, VigiAccess, VigiFlow, VigiGrade, VigiRank, VigiMatch. AI can improve data quality in many ways like implementing triage rule to identify real effective adverse events, ensure consistency in all narratives, determine faster expectedness and causality, assist in quality assessment. It can reduce the human burden of repetitive works, reduce cycle time, handle diverse data and scalable. But to adopt AI in PV there are few potential challenges like fear of loss of human jobs, reluctance to adopt AI, data privacy and security issue, laws and regulations, cost factor, continuous training and device up gradation etc. It requires government funding, collaboration between medical and technical institutions, continuous electronic health record capture.

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P286

A PK/PD framework for music: overview of acoustic-human biology relationships and considerations

Dr Arlene Taylor

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

A PK/PD framework for music: overview of acoustic-human biology relationships and considerations
Arlene M Taylor, PRAISES, Australia.

Introduction. Music produces measurable effects on human physiology, behaviour, and symptoms, supported by clinical and neurobiological evidence [1]. Emerging evidence suggests that acoustic stimulation can influence mammalian cells directly [2]. However, relevant evidence remains fragmented across clinical, biological, and physical sciences and has not previously been synthesised using pharmacological concepts.
Aim. To develop a pharmacology framework for music by synthesising evidence on pharmacodynamic effects in humans, cells and tissues, and outlining pharmacokinetic principles based on acoustic transmission-tissue interactions.
Methods. Narrative overview of literature across three domains: human studies evaluating clinical and physiological effects of music; experimental studies examining cellular or tissue responses to acoustic stimulation; and acoustics and tissue-physics literature relevant to sound propagation in biological media. Findings were organised into PD and PK-style domains including route, exposure characteristics, transmission, distribution, attenuation, and persistence.
Results. Human studies demonstrate reproducible effects of music on anxiety, pain, distress, and arousal [1]. Experimental evidence indicates that acoustic stimulation can modulate mechanosensitive gene expression and cellular processes in mammalian systems [2]. Mechanobiological frameworks support the consideration of sound as a biologically active stimulus [2]. Established tissue-physics principles support a structured PK-style model in which exposure varies according to delivery route, frequency (Hz and timing), intensity, duration, medium, directional focus, and tissue interface behaviour [3].
Discussion. Music can be conceptualised as a biologically active therapeutic exposure with clinically relevant pharmacodynamic effects and analysable PK-style properties. This framework highlights opportunities for therapeutic optimisation, risk mitigation, and investigation of interactions between music and pharmacological interventions.

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P287

Cannabinoids in glioblastoma: immunological and radiomic perspectives for precision oncology

Dr Camelia Dascalu

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Cannabinoids in glioblastoma: immunological and radiomic perspectives for precision oncology
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Introduction. Glioblastoma (GBM) is an aggressive tumour with poor prognosis and therapy resistance. Cannabinoids, particularly via CB2 signalling, modulate immune and vascular components, while cannabidiol (CBD) shows broader microenvironmental effects. Preclinical data support antitumour modulation, yet radiomic biomarkers of cannabinoid response remain unexplored.
Aims. To synthesise current evidence on the immunological effects of cannabinoids in GBM models and to assess how MRI/PET radiomics may provide noninvasive biomarkers of therapeutic response.
Methods. A structured literature search (PubMed, Scopus, Web of Science; 2015–2025) was performed using the terms "glioblastoma", "cannabinoids", "immune microenvironment", and "radiomics". Eligible studies included in vitro, in vivo and early clinical data on cannabinoid interventions in GBM, as well as radiomics work on immune- or therapy-related imaging biomarkers.
Results. In GBM models, CB2 modulation reduced TAMs, enhanced T-cell activity, and induced antitumour effects, while inhaled CBD suppressed growth and altered immune–angiogenic factors. Early clinical data suggest CBD may influence MRI dynamics, and radiomics studies associate imaging features with immune changes, though integration with cannabinoid therapy is still lacking.
Discussion. CB2-targeted cannabinoids show immunomodulatory effects in GBM and may complement standard therapy. Radiomic tools offer noninvasive biomarkers of immune and vascular changes but remain underused. This work provides CANTAVAC project with a translational framework by showing how immunological and radiomic approaches can support the development of personalized biotherapies.
Funding: Acknowledgement is given to The Health Program (PS) 2021-2027, Policy Objective 1, 1571 Priority 5, project ti-tle "Development of translational research for vaccines, serums and other biological drugs - Acronym CANTAVAC 2.0", SMIS code 326920.

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Ferroptosis: promising avenue for therapeutic targets in neurodegenerartive diseases using iron chelators

Dr Arpita Maitra

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Ferroptosis: promising avenue for therapeutic targets in neurodegenerartive diseases using iron chelators

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Introduction. Ferroptosis is a nonapoptotic iron mediated regulated cell death.It is caused by an imbalance between intracellular lipid ROS generation and degradation which could result in compromised plasma membrane integrity, cytoplasmic organelles swelling and increased mitochondrial membrane density with decreased or absent mitochondrial cristae. Increased cellular unbound iron by any means can increase reactive oxygen species (ROS) formation by Fenton reaction which will use up available reduced glutathione (GSH). GSH will be unavailable for conversion of lipid peroxide to lipid alcohol. So, lipid peroxide will undergo lipid peroxidation and ultimately ferroptosis mediated cell death. Parkinson's disease (PD), Alzheimer's disease (AD), Huntington's disease (HD) are some commonly occurring diseases with limited promising therapy. So ardent search of promising therapy is need of the hour. Iron deposition mediated ferroptosis can be a promising therapeutic strategy.
Method. Databases like PubMed, Web of Science, Scopus, Science Direct and Cochrane library were searched using keywords "ferroptosis". Total 603 article were found from 2014 to 2023.Then adding keyword "neurodegenerative disease", total 18 articles found from which 10 articles were selected after choosing iron chelators.
Results. Iron accumulation has been proven key factor for neurodegenerative diseases found in several preclinical studies. Ferroptosis, induced by RSL3 or erastin, can be blocked by most anti-oxidants (e.g. ferrostatin-1, vitamin-E, iron chelators (deferoxamine (DFO), deferiprone (DFP)). It was found DFO can inhibit amyloidogenic APP (amyloid precursor protein) processing and amyloid beta (Aβ) aggregation in animal studies.DFP had shown to alleviate nerve function scores and improve iron related neurological symptoms. A phase II trial showed DFP has beneficial effect in PD. Accumulation of iron, abnormalities of GSH and glutamate levels are found in HD; DFO/DFP can be promising.
Conclusion. This review will through us light on the ferroptosis mediated pathogenesis of neurodegenerative diseases and give us some hope on treatment strategy with iron chelators preventing ferroptosis.

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P289

Time-resolved gene expression studies using efficient cDNA synthesis method from cell cultures

Dr Daniel Stránský

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Time-resolved gene expression studies using efficient cDNA synthesis method from cell cultures

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Introduction. Applications such as drug development need simple and streamlined methods for gene expression measurements. Previously, we developed a cell to cDNA protocol with emphasis on efficiency, cost-effectiveness and simplicity (Stránský et al, 2025), which we updated with new reverse transcription mix reducing the cost to approx. 30€/100rxns to synthesise cDNA from the cells (approx. 50times cheaper than similar commercially available kits).

Aims. Our aim was to use the improved methodology to map the time course expression of multiple genes following LPS stimulation in PBMCs and HUVECs creating a robust tool for time-resolved gene expression studies.

Methods. PBMCs and HUVECs were seeded in 96-well plates, stimulated with LPS (100 ng/mL) and harvested at 2, 6, 12, 24, 48 h. The cDNA was prepared by lysing cells with water solution of 0.5% SDS, 10mM DTT, 1mg/mL proteinase K, followed by 60 mins incubation at 50 °C, inactivation at 90°C for 5 mins, neutralisation with 1:1 dilution by 20% Tween 20 solution followed by reverse transcription. For gene expressions custom designed probe-based assays validated for their cDNA specificity and efficiency were used. All qPCRs runs included No-RT and blank controls.

Results. We have explored the time course of gene expression of 80 and 28 genes in PBMCs and HUVECs, respectively. Expression of selected 75 and 20 genes was detected in PBMCs and HUVECs, respectively. 3 housekeeping genes (TBP, YWHAZ, HPRT1) were stably expressed in both cell types. In PBMCs 4 genes (IL17A, IL2, VCAM1, TrkA) showed minimal expression.

Discussion. Our results provide guidance for selecting the optimal time point for in vitro based gene expression studies. Together with our new methodology, which avoids the use of proprietary reagents, this work has the potential to broaden access to research and streamline drug discovery applications, which even laboratories with limited budgets can afford.

Stránský D et al (2025) Open Biol. 15:240226

Supported by the GAUK project No. 140823. DS acknowledges support by The Parc platform (www.theparc.eu).

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Engineering nanobody-peptide conjugates to dissect GPCR function in diabetes and obesity

Ms Phoenix Davis

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Engineering nanobody-peptide conjugates to dissect GPCR function in diabetes and obesity

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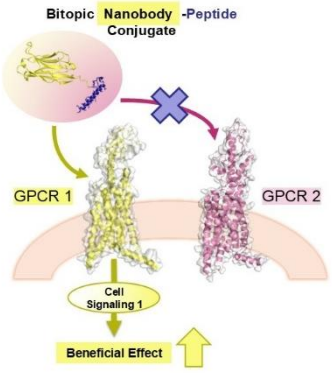

Introduction. G protein-coupled receptors (GPCRs) are the largest collection of cell surface receptors. The glucagon receptor (GCGR) and the incretin receptors glucagon-like peptide 1 receptor (GLP1R) and gastric inhibitory polypeptide receptor (GIPR), are GPCRs that are activated by peptide hormones and play important roles in type 2 diabetes and obesity. Recent findings have demonstrated that administration of engineered peptide hormones displaying GIPR/GLP-1R/GCGR co-agonism promotes greater body weight loss and superior glycemic control compared with GLP-1R agonism alone. However, the potential pharmacological mechanism(s) by which these benefits are conferred remain under explored.

Aims. Develop new tools to dissect the individual GPCR-mediated mechanisms underlying therapeutic responses imparted by multi-agonist treatments for diabetes and obesity.

Methods. Ongoing work from our group has shown that antibody fragments (nanobodies, Nbs) can be used to deliver peptide hormones to cell types of choice to increase potency and specificity. We hypothesized that Nbs linked to co-agonist peptides could enable delivery to cell types and tissues of interest. Toward this end, Nbs that bind to cell- and tissue-specific markers are needed. Using flow cytometry and enzyme-linked immunosorbent assays we evaluated the performance of antibody fragments raised against GLP-1R and GCGR. These Nbs were then conjugated to a synthetic glucagon-derived triple agonist peptide via enzymatic labeling and click chemistry.

Results. A majority of these Nbs showed high target affinity and specificity during characterization and as Nb-peptide hormone conjugates show potent, biased receptor activation contingent on the expression of the Nb target receptor.

Discussion. This Nb-driven receptor specificity will be leveraged to activate GIPR/GLP-1R/GCGR in a cell type- and tissue-specific manner. Tools for targeting and mechanistically probing GPCRs involved in diabetes and obesity, two globally expanding epidemics, will be highly valuable for guiding the development of impactful therapeutics with fewer side effects.

P291

Silencing PDE4 in DCs via Phospholipid Nanoparticles for Enhancing Pancreatic Cancer immunotherapy

A/Prof Xudong Li

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Silencing PDE4 in DCs via Phospholipid Nanoparticles for Enhancing Pancreatic Cancer immunotherapy

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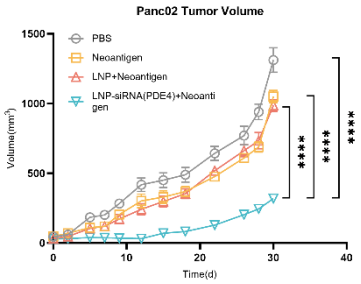
Introduction. The reduced abundance of the cDC1 subset in pancreatic cancer severely impairs dendritic cell (DC)–mediated antigen cross-presentation and antitumor immunity. Dysregulated lipid droplet metabolism has been identified as a key contributor to cDC1 depletion in DCs. Therefore, identifying therapeutic targets that restore DC lipid metabolism represents a promising strategy to enhance cDC1 abundance and antitumor immunity. Although lipid nanoparticles (LNPs) have emerged as effective gene delivery vehicles, current LNP platforms are constrained by safety concerns, limited delivery precision to DCs, and substantial patent barriers, underscoring the need for next-generation LNP designs.



Aims. To identify novel targets that restore lipid droplet metabolism in DCs and to develop new LNPs for safe and efficient gene delivery to DCs.

Methods. Multi-omics analyses were conducted to screen lipid metabolism–related genes in DCs from pancreatic cancer models. In parallel, novel ionizable phospholipids were designed and synthesized via multicomponent reactions, and their gene delivery efficiencies were systematically evaluated.

Results. Multi-omics analyses revealed that elevated PDE4 expression was closely associated with lipid droplet accumulation in DCs. PDE4 silencing normalized lipid metabolism and significantly increased the cDC1 proportion. Among newly developed formulations, the LNP B9-SP achieved superior gene delivery efficiency and safety in DCs compared with the clinically used SM-102. In vivo, B9-SP LNPs markedly inhibited tumor growth in Panc02 tumor-bearing mice.

Discussion. Targeting PDE4 restores lipid metabolism in DCs and enhances cDC1 abundance in pancreatic cancer. The novel LNP B9-SP enables safe and efficient delivery of PDE4 siRNA to DCs, resulting in improved antitumor immune responses. This strategy represents a promising approach to enhance immunotherapy efficacy in pancreatic cancer.

P292

Transcription-Independent Control of Proximal Tubular Transporters Associated with Sex-Biased Nephrotoxicity

Assist Prof Satoshi Shimizu

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Presentation title in sentence case (bold)

Satoshi Shimizu[1, 2], Pornparn Kongpracha[2], Masaki Miyasaka[2], Pattama Wiriyasermkul[2, 3], Kazuho Sakamoto[1, 4], Masami Kodama[1, 2], Yuji Nakai[5], Shushi Nagamori[2], Junko Kurokawa[1], Dept. Bio-inform. Pharmacol., Univ. Shizuoka[1], Shizuoka, Japan; Ctr. SI Med. Res., Jikei Univ. Sch. Med.[2], Tokyo, Japan; Dept. Food & Agric. Sci., Iwate Univ.[3], Morioka, Japan; Dept. Pharm. Sci., Int. Univ. of Health & Welfare.[4], Ohtawara, Japan; Fac. Agric. & Life Sci., Dept. Biochem. & Mol. Biol., Hirosaki Univ.[5], Hirosaki, Japan

Introduction. The kidney, particularly the proximal tubules, governs drug excretion via secretion and reabsorption. Intracellular accumulation increases tubular susceptibility to toxicity. Although sex differences in drug-induced nephrotoxicity are reported, mechanisms remain unclear. Because many drugs rely on membrane transporters, comprehensive quantification of these membrane proteins remains technically challenging.

Aims. To elucidate mechanisms of renal sex differences in drug-induced toxicity by integrating a collaborator-developed membrane-proteomics method specialized for membrane proteins with whole-kidney transcriptomics.

XY / XX

Membrane Proteomics \ Transcriptomics	Up	No Change	Down
Up	0	280	0
No Change	14	5439	13
Down	0	110	0

Sry(+) / *Sry*(-)

Membrane Proteomics \ Transcriptomics	Up	No Change	Down
Up	61	536	14
No Change	174	4023	163
Down	24	802	59

Methods & Results. Because sex differences reflect both sex hormones and sex chromosomes, we used Four Core Genotypes (FCG) mice to disentangle these effects. Proximal-tubule brush-border membrane vesicles were purified from FCG kidneys and analyzed by membrane proteomics, yielding profiles for ~5,000 proteins. In parallel, total RNA from whole kidney was profiled by microarray to identify sex-differentially expressed genes. Integrating proteomic and transcriptomic data revealed that many brush-border membrane proteins show sex differences not accounted for by transcription. Pathway enrichment implicated membrane-protein transport and recycling, indicating a post-transcriptional mechanism for sex differences. Focused analyses of SLC and ABC transporter families further linked these pathways to clinically reported sex differences in cisplatin-induced nephrotoxicity.

Discussion. These omics data may provide foundational evidence for sex-specific medicine. We will make the dataset publicly available and extend analyses to sex differences in additional forms of drug-induced nephrotoxicity.

P293

Characterization of Uterine Slow Waves by Microelectrode Array (MEA) for Preclinical Screening.

Ms Yingyi Deng

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Characterization of Uterine Slow Waves by Microelectrode Array (MEA) for Preclinical Screening

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Introduction. The uterus is critical in women's health and pregnancy, but it is rarely risk-assessed in preclinical drug screening protocols. The uterus has a spontaneous electrical rhythm, which underpins several physiological processes in health and disease. In the present study, we establish electrophysiological and analytical recording techniques to permit drug safety studies.

Aims. To develop an automatic pipeline using the microelectrode array for drug safety purposes.

Methods. Intact uterine tissues were dissected from healthy 9-12-week-old C57BL/6J female mice, and cut into 6 equal segments, then incubated in oxygenated Krebs solution to maintain viability. 1μM nifedipine was added to the solution to prevent contractions. Tissues were placed on a MEA chip and electrical activity was recorded for 5-min under the following conditions: absence of Ca^{2+}, K^{+}; temperature 27- 37 °C; estrous cycles; and during pregnancy (TP8, TP16). Slow wave features including amplitude (AMP), slope, average frequency, and a motility index were analyzed.

Results. Removal of extracellular ions markedly suppressed activity, with Ca^{2+} removal producing the strongest reductions in AMP, slope and motility index (n=8, $P<0.0001$). K^{+} removal also had significant inhibitory effects (n=8, $P<0.001$). Uterine activity was maximal at 37 °C, with higher AMP, slope and motility index, compared with lower temperatures (n=8, all $P<0.0001$). No significant differences were observed between estrous cycle stages in any of the parameters (n= 8, $P>0.05$). In contrast, pregnancy (TP8, TP16) was associated with reduced activity relative to the non-pregnant diestrus stage, with pronounced decreases in AMP, slope, and motility index (both n=8, $P<0.0001$); however, no significant differences were detected between TP8 and TP16.

Discussion. Slow waves recorded from the uterus were ion- and temperature-dependent, consistent with the known physiology of slow waves generated from other tissues. The significant reduction of slow waves in the pregnant uterus is consistent with the physiological fact that the uterus tends to maintain quiescence during gestation. Together, these results confirm both the ability of our platform to record uterine slow waves, paving the way for drug screening purposes in the future.

P294

Hypoxic tumor microenvironment induces alteration of chromatin structure in breast cancer cells

Dr Koh Nakayama

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Hypoxic tumor microenvironment induces alteration of chromatin structure in breast cancer cells

Koh Nakayama[1] and Tom Misteli[2]. Department of Pharmacology, Asahikawa Medical University[1], Asahikawa, HOKKAIDO, Japan; Cell Biology of Genomes Group, Center for Cancer Research, NCI, NIH[2], Bethesda, MD, USA.

Introduction. Cancer cells are often exposed to hypoxic conditions, which are thought to increase malignancy. Hypoxia-Inducible Factor (HIF) and CREB are two transcription factors which play a central role in the response to hypoxia. We have previously demonstrated that HIF is activated in the early phase of hypoxic response, whereas CREB is activated in the prolonged phase of the response. We examined here how chromatin structure is related to the regulation of gene expression under hypoxic condition.

Aims. To understand how the hypoxic-dependent transcription is regulated by chromatin structure.

Methods. MB231 breast cancer cells were treated with hypoxic condition (1% O_2). Cells were fixed and high-throughput imaging position mapping (HIPMap) analysis was performed to determine the spatial location of 104 hypoxia-inducible genes in the cell nucleus.

Results. Radial distance analysis demonstrated that the majority of HIF- and CREB-dependent hypoxia-responsive genes are located in the intermediate region of the nucleus, and some of them changed their radial position in response to hypoxia. Relative distance analysis of a subset of HIF target genes indicated that some gene pairs altered their relative location to each other upon hypoxic treatment, suggesting that there are higher-order chromatin rearrangements. While these changes in location occurred in response to hypoxia, they did not correlate with the extent of the activation of repositioned genes.

Discussion. The results indicate that induction of the hypoxia-responsive gene expression program is accompanied by spatial alterations of the genome, but that radial and relative gene positions are not directly related to gene activity. The results imply the possibility that chromatin structures may serve as a target to regulate hypoxic-dependent gene expression in cancers.

P295

Potential extract formulation of green tea, turmeric, and cinnamon as antidiabetic agents

Mrs Trisni Untari Dewi

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Analysis in vitro extract of green tea, turmeric, and cinnamon as antidiabetic agents

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Introduction. Type 2 diabetes mellitus (T2DM) is a chronic condition marked by insulin resistance and impaired insulin secretion. Conventional treatments can lower blood glucose, but often need combination therapy, which has long-term side effects and high costs.

Aims. This in vitro study examines the antidiabetic and antioxidant properties of combination extracts from turmeric, cinnamon, and green tea, which contain beneficial compounds such as curcumin, cinnamaldehyde, and epigallocatechin gallate (EGCG).

Methods. We analyzed ten formulation extracts, each tested three times, for 2,2-diphenyl-1-picrylhydrazyl (DPPH), Ferric Reducing Antioxidant Power (FRAP) assays and pyhtochemical content (Total phenolic content (TPC) and total flavonoid content (TFC)). All test were measured using spectrophotometry. Additionally, we assessed α-glucosidase inhibitory properties and entered the data into Design Expert Software 13. The recommended optimized extract formulation from Design Expert was then retested to verify its antioxidant capacity, phenolic and flavonoid content, and its ability to inhibit the α-glucosidase enzyme. We also performed verification on the DPP-4 inhibitory enzyme extract combination and identified key compounds in the extract using HPLC.

Results. The recommended formulation contains 28% green tea, 5% turmeric, and 67% cinnamon. The experimental results are as follows TPC test reveals 474.2 ± 7.8 mg GAE per dry weight, TFC test shows 25.5 ± 0.7 mg QE per dry weight, and DPPH the inhibitory rate of 141.0 mg TE per dry wet. The FRAP test indicates a value of 3610.0 ± 74.8 mg TE per dry weight, and the inhibitory activity against α-glucosidase has an IC50 of 81.5 ppm and inhibitory activity 94.0%. We also conducted a DPP-4 inhibitory activity test, which yielded a result of 419.2 ppm. Quality tests confirmed that all formulations were free from microbial contamination (such as Total Plate Count, coliform, yeast and mold showed negative result) and heavy metals (lead and cadmium). The biomarker compounds identified in this formulation through chromatographic analysis include curcumin, cinnamaldehyde, and EGCG.

Discussion. A polyherbal formulation with 5% turmeric, 67% cinnamon, and 28% green tea showed strong α-glucosidase inhibitory activity, with an IC_{50} of 81.5 ppm and 94.0% inhibition. This low IC_{50} value indicates better effectiveness compared to previous studies of aqueous extracts, which only reported a percentage inhibition of 88.7%. In antioxidant capacity, earlier studies had a DPPH activity IC_{50} of 817 µg/mL, suggesting weaker scavenging ability. In contrast, this study found a high Trolox equivalent antioxidant capacity of 141 mg TE/g dry weight. Although these values cannot be directly compared, the high Trolox equivalent indicates strong total antioxidant capacity. The increased enzyme inhibitory and antioxidant activities may come from using ethanol as the extraction solvent. Ethanol helps extract semi-polar compounds like catechins and curcuminoids, which are effective at inhibiting α-glucosidase and scavenging radicals. Aqueous extraction mainly recovers highly polar compounds, resulting in less of these active ingredients.

P296

High-Fat Diet and Bone Loss: A Novel Approach Mimicking Osteoporosis in Rodents

Dr Nikita Nirwan

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

High-Fat Diet and Bone Loss: A Novel Approach Mimicking Osteoporosis in Rodents

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Introduction. Obesity affects about one-third global population which also develops bone metabolic disorders like osteoporosis. High-fat diet (HFD) is one of the vital factors contributing to obesity and bone loss.
Aims. Hence, there is an inevitable need to focus on HFD-based animal models that could meaningfully mirror the clinical osteoporosis condition.
Methods. In present work, we have evaluated the potential of HFD-induced osteoporosis in rodents as a valuable and clinically relevant model for preclinical osteoporosis research.
Results and Discussion. We have found the integration of WNT signaling and inflammatory pathways as the mechanistic approaches and the targeted effects of HFD on various bone cells. Factors influencing the development of this model-like characteristic of the rodents (including species, strain, sex, and age), the type and composition of fat, duration of diet intervention and housing conditions such as temperature, light/dark cycle are important while using this model in rodent. We have found that HFD induced osteoporosis as indicated by bone micro architecture damage and loss of bone mineral density.

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Herbal Silver Nanoparticles as a Novel Antifungal Approach Against AMR-Associated Candida species

Dr Pratibha Gaur

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Herbal Silver Nanoparticles as a Novel Antifungal Approach Against AMR-Associated *Candida species*

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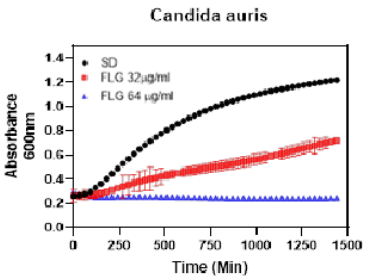
Introduction: Multidrug-resistant (MDR) *Candida* species, especially *C. auris*, are serious public health threats due to limited therapies and high mortality. Herbal silver nanoparticles (AgNPs) are promising antimicrobials with broad-spectrum efficacy and fewer side effects. Understanding strain-specific activity is vital for targeted antifungal strategies [1], [2].

Aim: To evaluate the antifungal potential of herbal AgNPs (Neral, Linalool, and lemon grass-derived) against clinically relevant *Candida* strains (*C. albicans, C. glabrata, C. auris, C. tropicalis,* and *C. parapsilosis*) and explore their mechanisms of action.



Methods: AgNPs were synthesized, characterized, and tested against ATCC and clinical isolates. Antifungal susceptibility was assessed by broth microdilution following CLSI guidelines [3]. Lemon grass AgNPs and herbal compounds (Neral, Linalool) were tested at 1024–2 µg/mL. Fluconazole and untreated cultures served as controls.

Results: Herbal AgNPs showed selective antifungal activity. *C. auris* growth was inhibited at MIC 32 µg/mL, and *C. tropicalis* was susceptible at MIC 64 µg/mL. Other strains (*C. albicans, C. glabrata, C. parapsilosis*) showed poor or no inhibition at tested concentrations (Fig. 1).

Conclusion: Herbal AgNPs exhibited strong, strain-specific antifungal activity, particularly against *C. auris* and *C. tropicalis*. Susceptibility differences may arise from variations in cell wall composition, efflux transporters, and NP uptake.

[1] Gong X. et al. (2024) Adv Coll & Int Sci 323: 103053
[2] Khan MR et al (2023) Env Nano, Moni & Mnag 20:100872
[3] Mare AD et al (2021) plants 10: 2153

P299

CASK-mediated kinase control of AKT signaling promotes prostate cancer progression

Dr Varsha Rathore

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

CASK-mediated kinase control of AKT signaling promotes prostate cancer progression

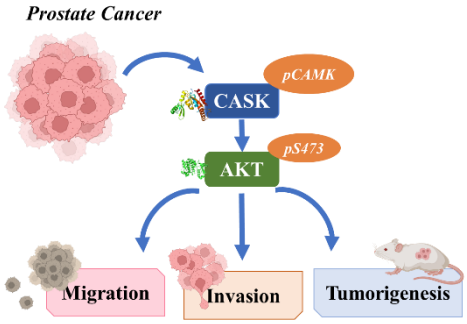
Varsha Rathore[1,2], Ching-Yuan Cheng[1], Shao-Peng Chen[1], Chia-Yee Lin[1], Chuang-Rung Chang[2], Wan-Wan Lin[1]. Department of Pharmacology, College of Medicine, National Taiwan University[1], Taipei 100233, Taiwan; Institute of Biotechnology, College of Life Sciences and Medicine, National Tsing Hua University[2], Hsinchu 300044, Taiwan.

Introduction. Calcium/calmodulin-dependent serine protein kinase (CASK) is part of the membrane-associated guanylate kinase (MAGUK) family, acting as a multidomain scaffold protein with domains similar to CaMK, LIN, PDZ, SH3, and guanylate kinase. CASK is recognized for its involvement in brain development, synaptic plasticity, and neurotransmission, yet its role in prostate cancer (PCa) progression and the molecular mechanisms involved are not well understood.

Aims. To understand CASK's functional role in PCa tumorigenesis and clarify the signaling pathways through which CASK influences PCa cell migration and invasion.

Methods. CASK expression, genetic changes, and clinical significance were examined using GEO, TCGA, and GTEx datasets. Stable CASK knockdown was achieved in androgen-sensitive LNCaP and androgen-insensitive PC3 cells. Cell proliferation, migration, and invasion were evaluated with or without TGF-β stimulation. Molecular mechanisms were investigated through immunoblotting, co-immunoprecipitation, and pharmacological inhibition of AKT, CASK, and CaMKII. Tumorigenic potential was assessed using a xenograft mouse model.

Results. CASK expression was increased in human PCa tissues, and high levels of CASK mutations were linked to poorer overall survival. Silencing CASK did not impact cell proliferation or survival but significantly reduced PCa cell migration and invasion. Mechanistically, CASK directly interacted with AKT and enhanced AKT Ser473 phosphorylation via a kinase-dependent mechanism. Pharmacological inhibition of CASK or CaMK activity mimicked CASK knockdown by decreasing AKT activation, migration, and invasion. Importantly, CASK-driven AKT activation occurred independently of TGF-β-induced Smad2/3 and ERK signaling. The tumor-promoting role of CASK was further validated in xenograft models.



Discussion. This study identifies CASK as a novel promoter of PCa progression and the first positive regulator of AKT signaling in PCa cells. Our findings demonstrate that CASK functions as an active kinase rather than a pseudokinase and reveal a kinase-dependent oncogenic mechanism driving PCa cell migration and invasion, highlighting CASK may be a potential therapeutic target in advanced PCa.

P300

Proteomic profiling of thrombocytes from patients living with Type 2 diabetes

Ms Shamiso Mlambo

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Proteomic profiling of thrombocytes from patients living with Type 2 diabetes)

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Introduction. The rise in global diabetes prevalence has inevitably led to an increase in diabetes-related complications. Diabetic foot ulcers (DFUs) are one of the serious complications experienced by patients living with diabetes (Roglic,2016). These are characterised by a significantly impaired healing process, largely attributed to a prolonged inflammatory phase (Juster-Switlyk et al, 2016). Considering that thrombocytes are the key drivers of the wound healing cascade and secrete cytokines and growth factors that regulate processes such as inflammation (Locatelli et al 2021), variations in the expression of the thrombocyte proteins could potentially be a contributing factor.

Aims. The study aimed to identify proteomic patterns in thrombocytes that can be linked to the delayed wound healing characteristic of DFUs.

Methods. Thrombocyte samples were subjected to hydrophilic interaction liquid chromatography (HILIC) on-bead protein capture, clean-up and digestion using Trypsin and LysC. This was followed by LC-MSMS analysis of the peptides. Data was searched in Spectronaut™ 17 and pathway enrichment visualised using Cytoscape.

Results. Bioinformatics analysis revealed significant differentially abundant proteins and enrichment of pathways associated with a prolonged non-healing state in diabetic patients. Patients on metformin exhibited protein expression profiles that differed from the rest of the group as well as the controls.

Discussion. Molecular anomalies that may underlie the impaired wound healing commonly observed in end-stage diabetic patients were identified. The findings also revealed the potential influence of drug-induced modulation on key protein expression pathways. This demonstrated the potential of the analysis techniques in disease identification and monitoring. Knowledge from the study also paves way for more personalized and effective treatment strategies.

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Locatelli L et al (2021) Front. Bioeng. Biotechnol. 9:716184
Roglic G (2016) Int J Noncommun Dis. 1(1):3-8

P301

Optimising Computational Population Models to Improve Drug Safety Prediction

Ms Haoyi Han

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Optimising Computational Population Models to Improve Drug Safety Prediction

Haoyi Han[1], Stewart Heitmann[1], Adam Hill[1,2]. Victor Chang Cardiac Research Institute[1], Sydney, NSW, Australia; St. Vincent's Hospital[2], Sydney, NSW, Australia.

Introduction. Torsades de Pointes (TdP) is a life-threatening arrhythmia that can be triggered by drug exposure. Computational modelling has made significant progress in predicting the risk of drug-induced TdP and is increasingly used to support drug research and development. However, most existing models rely on average cellular behaviour and fail to account for inter-individual variability. It was estimated that approximately 60% of new chemical entitles have their process halted – often unnecessarily. Incorporating patient-specific factors has the potential to improve the specificity of preclinical safety assessments.

Aims. To optimise computational population models of human cardiac cells by integrating population variability, thereby improving the accuracy of drug-induced TdP risk prediction.

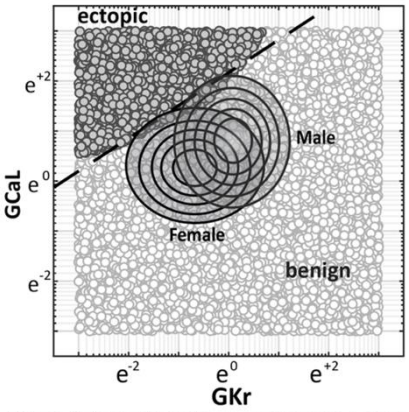

Figure. Male and Female populations with natural variation in Ca^{2+} and K^{+} conductance mapped to healthy (benign) and TdP (ectopic) populations.

Methods. Genetic data reflecting real-world population variability were incorporated into existing computational cardiac cell models to generate virtual population.

Results. The resulting virtual populations capture the diversity observed in patients and provide a foundation for predicting population-specific susceptibility to drug-induce TdP with computational models.

Discussion. Incorporating population variability into computational models helps identify subgroups with increased sensitivity to repolarisation-prolonging drugs and supports earlier detection of potential TdP liabilities. This approach may also reduce unnecessary attrition during drug development by enabling early prediction of subgroup-dependent risks before clinical trials take place.

De Ponti F (2008) Pharmacological and Regulatory Aspects of QT Prolongation, eds Vaz RJ, Klabunde T. pp 55-88, Weinheim, Germany, Wiley-VCH

P302

Protective Role of Nettle Leaf Water Extract in Experimental NAFLD Cell Model

Ms Beatrise Luize Revina

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Protective Role of Nettle Leaf Water Extract in Experimental NAFLD Cell Model

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Introduction. Urtica dioica (stinging nettle) has been reported to improve lipid metabolism, enhance fatty acid oxidation (FAO), and reduce hepatic oxidative stress. Excessive fatty acid uptake induces lipid droplet formation in hepatocytes, driving non-alcoholic fatty liver disease (NAFLD) progression from steatosis to inflammation and fibrosis. The impact of nettle extracts on mitochondrial function during steatosis, however, remains poorly understood.

Aims. This study investigated the hepatoprotective potential of aqueous nettle leaf extract in an in vitro HepG2 steatosis model, focusing on mitochondrial FAO capacity.

Methods. HepG2 cells were treated with a 2:1 oleate:palmitate mixture (0.5 mM) to induce steatosis and/or nettle extract (6.25 mg/mL) for 24 h. Oxidative stress was modeled using tert-butyl hydroperoxide (0.5 mM). Lipid accumulation was assessed via Nile red staining, and cell viability was measured with CCK-8 assays. Mitochondrial respiration was analyzed in digitonin-permeabilized cells using high-resolution respirometry (Oroboros O2k) and sequential substrate–inhibitor titrations to evaluate FAO-linked OXPHOS and electron transport capacity. Data were analyzed by one-way ANOVA ($p \leq 0.05$).

Results. Oxidative stress reduced HepG2 viability by ~40%, which was partially rescued by nettle extract (IC_{50} = 6.314 mg/mL). Fatty acid overload doubled intracellular lipid content, whereas nettle treatment attenuated lipid droplet formation in a dose-dependent manner (IC_{50} = 5.560 mg/mL). Respirometry showed that lipid overload impaired complex I–linked FAO respiration (FN-OXPHOS), which was restored to control levels by nettle treatment (p=0.0018 vs. the control). No significant effects were observed in other respiratory states.

Discussion. Urtica dioica leaf extract mitigates oxidative stress and lipid-induced cytotoxicity in HepG2 cells and preserves mitochondrial FAO capacity under steatotic conditions. These findings support its potential as a hepatoprotective agent in early NAFLD and highlight mitochondrial function as a therapeutic target.

Acknowledgements: Supported by University of Latvia Foundation (grant No. 2269). No conflicts.

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Samakar B, Mehri S, Hosseinzadeh H (2022) Iran J Basic Med Sci 25:543-553.

P303

Pharmacology of induced artificial platelets in regenerative medicine: Beyond transfusion

Prof Sungpil Han

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Pharmacology of induced artificial platelets in regenerative medicine: Beyond transfusion

Kyuyeon Choe[1,2], Suein Choi[1,2], Chihwa Kim[3], Hyo-Jin Jeon[3], Seunghoon Han[1,2,4], Dong-Seok Yim[1,2,4], Sungpil Han[1,2,4]

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Introduction. Platelet-rich plasma has emerged as a widely utilized regenerative therapy, yet fundamental quality control and standardization challenges have limited its clinical evidence base. Induced pluripotent stem cell(iPSC)-derived artificial platelets represent a next-generation approach that addresses these limitations through standardized manufacturing.
Aims. This review examines the pharmacological properties of iPSC-derived artificial platelets with emphasis on their pharmacokinetics, pharmacodynamics, and safety profiles in regenerative medicine applications.
Methods. We analysed iPSC-derived platforms that enable precise control over product composition and functional characteristics, comparing them with donor-derived platelet concentrates that exhibit substantial batch-to-batch variability.
Results. Preclinical studies demonstrate therapeutic efficacy in osteoarthritis models through modulation of anabolic and catabolic pathways, with emerging clinical data supporting acceptable safety profiles.
Discussion. Manufacturing standardization, quantifiable pharmacokinetic parameters, and reproducible pharmacodynamic effects position iPSC-derived artificial platelets as promising candidates for regenerative applications where current platelet-rich plasma therapies show inconsistent outcomes. This represents a paradigm shift from transfusion-focused applications to regenerative medicine.

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Pharmacological role of polydatin on lead-intoxicated Drosophila melanogaster (Harwich strain)

Dr Salisu Muhammad Highab

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Pharmacological role of polydatin on lead-intoxicated *Drosophila melanogaster* (Harwich strain)

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Introduction: While lead (Pb) is poisonous and can have many negative clinical effects on both adults and children, polydatin (PD) is a naturally occurring plant product that has been shown to have anti-inflammatory, neuroprotective, and antioxidant qualities.
Aim: This work aimed to examine the Pharmacological role of polydatin on lead-intoxicated *Drosophila melanogaster* (Harwich strain).
Methods: Lead acetate (PbAc) (0, 50, 100, 250, and 500 µM/5g food) and PD (0, 5, 10, 20, and 40 µM/5g diet) were given orally to *D. melanogaster* (Harwich strain, 1 to 3 days old) for the 14-day survival experiments, respectively. Afterwards, one concentration of PbAc (250 µM/5g diet) and three concentrations of PD (10, 20, and 40 µM/5g diet) were chosen to assess the possible ameliorative effect of polydatin on PbAc-induced toxicity in D. melanogaster following a 5-day oral concurrent therapy. Evaluations were conducted on indicators of oxidative stress-antioxidant state (hydrogen peroxide, total thiol, glutathione-S-transferase, and cell viability), inflammation (nitric oxide), and behavioral markers (acetylcholinesterase, locomotor performance, fecundity, and eclosure of the flies, and emergence). Following the course of treatment, pro-inflammatory and immunohistochemistry markers were assessed in brain and plasma samples.
Findings: Up to 40 µM/kg diet, PD increases *D. melanogaster's* lifespan in a dose-dependent way. Moreover, polydatin reverses the suppression of *D. melanogaster's* catalase, glutathione-S-transferase, and acetylcholinesterase activities caused by PbAc. Furthermore, PbAc-induced cell death, behavioral abnormalities, hydrogen peroxide buildup, nitric oxide accumulation, total thiol levels, and histopathological lesions in flies are all considerably ($p < 0.05$) alleviated by PD. Additionally, PD raised BDNF expressions and dramatically ($p < 0.05$) decreased GFAP in the brains of D. melanogaster inebriated by PbAc.
Conclusion: Polydatin is a beneficial agent that can prolong life and improve PbAc-mediated toxicity in flies by improving behavioral deficits, antioxidants, biochemical enzymes, anti-inflammatory properties, and GFAP and BDNF expressions. As a result, it is a good choice for treating lead poisoning.
Significant Statement: Innovative compounds with a healthier efficacy and protective profile against lead intoxication may be based on polydatin. Because of these significant characteristics, polydatin is a desirable subject for research into its potential as a chelating agent or antidote for lead poisoning.
Key words: Polydatin; *Drosophila melanogaster*; Behavioural deficits; Lead toxicity; Immunohistochemical markers; Oxidative stress.

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Pharmacological role of polydatin on lead-intoxicated Drosophila melanogaster (Harwich strain)

Dr Salisu Muhammad Highab

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Pharmacological role of polydatin on lead-intoxicated *Drosophila melanogaster* (Harwich strain)

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Key words: Polydatin; *Drosophila melanogaster*; Behavioural deficits; Lead toxicity; Immunohistochemical markers; Oxidative stress.

P306

Polydatin as a potential solution to alleviate lead-intoxicated Wistar rats

Dr Salisu Muhammad Highab

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Polydatin as a potential solution to alleviate lead-intoxicated Wistar rats

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Introduction: Lead is among the most prevalent heavy metals and is highly toxic to living organisms. Polydatin (PD), or piceid (3, 4', 5-trihydroxystilbene-3-β-D-glucoside), is a crystal compound extracted from *Polygonum cuspidatum* Sieb. et Zucc. (Polygonaceae), but it can also be found in various fruits and commonly consumed foods.

Aim: Polydatin as a potential solution to alleviate lead-intoxicated Wistar rats.

Methods: Acute toxicity was done according to OECD 425 Guideline. The sub-chronic toxicity assessment was done using the OECD 407 Guideline where lead acetate (PbAc) was administered for 90 days, followed by a 30-day treatment with PD. The groups included: Control DW (1 mL/kg); PbAc (120 mg/kg); PbAc (120 mg/kg) + PD (250 mg/kg); PbAc (120 mg/kg) + PD (500 mg/kg); PbAc (120 mg/kg) + PD (1000 mg/kg); and PbAc (120 mg/kg) + DMSA (10 mg/kg), all given daily for 16 weeks orally. At the conclusion of the treatment period, samples of blood, plasma, and brain were analyzed for hematological indicators, pro-inflammatory markers, immunohistochemical and histopathological features.

Results: PD significantly ($p < 0.05$) improved hematological parameters in PbAc-intoxicated rats. PD significantly ($p < 0.0001$) decreased the levels of pro-inflammatory cytokines (IL-1β, IL-6 and TNF-α) both in serum and brain homogenate of PbAc-intoxicated rats. Histological findings revealed that PD significantly restored the lesions caused by PbAc in PbAc-intoxicate Wistar rats' brain. Moreover, PD significantly ($p < 0.05$) reduced glial fibrillary acid protein (GFAP) and increased brain derived neurotrophic factor (BDNF) expressions in the brains of PbAc-intoxicated rats.

Conclusion: The results indicate that polydatin prevented Wistar rats from lead toxicity, likely due to its ability to restore normal hematological values, reduce inflammatory responses, and mitigate immunohistochemical and histopathological changes. It may also offer therapeutic promise as a treatment for lead poisoning in humans.

Significance Statement: Polydatin may serve as the basis for novel molecules with a protective profile and improved efficacy against lead toxicity. Research on polydatin's potential as a chelating agent or antidote for lead poisoning is desirable due to these important properties.

Key words: Polydatin; Wistar rat; Haematological indicators; Lead acetate; Immunohistochemical markers; Pro-inflammatory cytokines.

P307

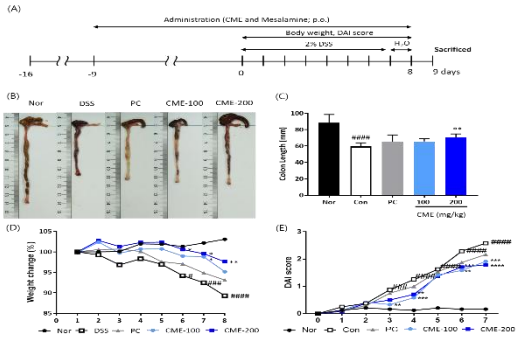
Cucumis melo var. makuwa extract alleviates dextran sulfate sodium-induced ulcerative colitis

Dr Yun Mi Lee

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Cucumis melo var. makuwa extract alleviates dextran sulfate sodium-induced ulcerative colitis

Yun Mi Lee, Eunjung Son, Dong-Seon Kim. KM Convergence Research Division, KIOM, Daejeon, Republic of Korea



Introduction. *Cucumis melo* var. makuwa (oriental melon), a widely consumed fruit in East Asia, particularly in Korea, China, and Japan, contains various bioactive compounds with antioxidant and antibacterial properties. However, studies on *Cucumis melo var. makuwa* remain relatively limited. In particular, its effects on ulcerative colitis (UC) have not been investigated.

Aims. This study investigated the protective effects and mechanisms of *C. melo* var. makuwa peel extract (CME) in a DSS-induced UC model.

Methods. Seven-week-old C57BL/6 mice were acclimatized for 7 days and then orally administered CME and a positive control (PC), mesalamine, for 18 days. UC was induced by administering 2% dextran sulfate sodium (DSS) in the drinking water for 7 days, starting on day 10 of treatment. The DSS-containing water was then replaced with normal drinking water, and the mice were sacrificed the following day. Clinical markers, colon length, histopathological changes, and the expression of markers associated with inflammation, tight junction integrity, and apoptosis were evaluated.

Results. CME significantly attenuated DSS-induced UC. Specifically, CME treatment reduced the disease activity index (DAI), a composite score based on body weight loss, stool consistency, and rectal bleeding, compared with the DSS control group and effectively prevented colon shortening. Moreover, CME significantly decreased serum levels of pro-inflammatory cytokines, including tumor necrosis factor-α (TNF-α), interleukin (IL)-6, and IL-1β. Histopathological analysis revealed that CME markedly alleviated epithelial damage, crypt distortion, and inflammatory cell infiltration. In addition, CME inhibited apoptosis, as evidenced by reduced caspase-3 activity and a decreased Bax/Bcl-2 ratio. Furthermore, CME preserved the integrity of the intestinal barrier, as indicated by the maintained expression of tight junction proteins.

Discussion. These findings suggest that CME alleviates DSS-induced UC by preserving intestinal barrier integrity and suppressing inflammation and apoptosis, highlighting its potential as a novel therapeutic candidate for UC.

Figure 1. Effects of *Cucumis* melo var. makuwa peel extract (CME) in improving dextran sulfate sodium (DSS)-induced ulcerative colitis. (A) Experimental design of CME animal experimental procedure. (B, C) Representative images and colon length of each group. (D) Body weight changes, (E) Disease activity index (DAI), ### $p < 0.001$, #### $p < 0.0001$ vs. normal group; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, **** $p < 0.0001$ vs. DSS-treated group.

Shin Y-S et al. (2008) J. Korean Soc. Appl. Biol. Chem. 51(3), 194-199, Kim A et al. (2025) Front. Pharmacol. Sep 29:16:1672111

P308

Identification of anti-SSc constituents in Fusong tablets using UPLC-Q-TOF/MS and network pharmacology

Dr Chunsu Liang

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Identification of anti-SSc constituents in Fusong tablets using UPLC-Q-TOF/MS and network pharmacology

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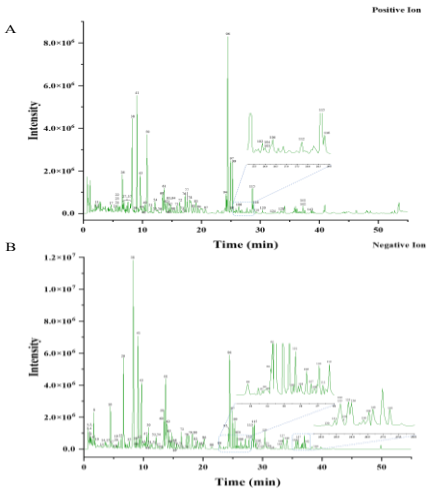
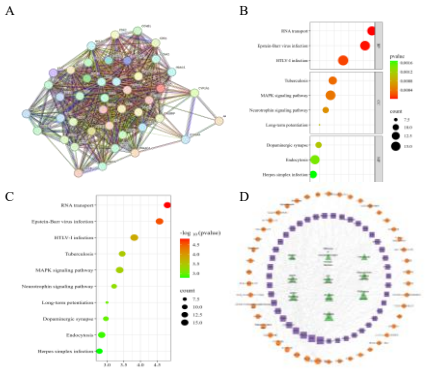
Introduction. Systemic sclerosis (SSc) is a rare autoimmune disease with high mortality which characterized by autoimmunity, fibrosis, and vasculopathy. Fusong tablets a traditional Chinese medicine preparation are clinically used for SSc but their active constituents and mechanisms remain unclear.

Aims. To identify the chemical constituents of Fusong tablets and explore their potential anti-SSc components and related mechanisms by combining UPLC-Q-TOF/MS with network pharmacology.

Methods. 137 compounds were identified. Network pharmacology yielded 559 component-related targets and 16546 SSc-related targets with 521 common targets. 43 core targets were identified. 259 signaling pathways were revealed mainly the MAPK and Neurotrophin signaling pathways. 46 SSc-associated components were found, with butylparaben, naringenin and caffeic acid deemed core anti-SSc constituents.





Results. 137 compounds were identified. 559 component-related and 16546 SSc-related targets yielded 521 common targets, 43 core targets and 259 signaling pathways. Key pathways included MAPK and Neurotrophin. Butylparaben, naringenin and caffeic acid showed high Degree values and were deemed core anti-SSc constituents.

Discussion. Fusong tablets exert anti-SSc effects via multi-component and multi-target synergism. Key components may improve vascular dysfunction, reduce extracellular matrix deposition and alleviate immune dysregulation.

P309

Molecular profiling of lemon myrtle extracellular vesicles

Mr Dongzheng Liu

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Molecular profiling of lemon myrtle extracellular vesicles

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Introduction: Plant-derived extracellular vesicles are emerging as nanoscale carriers of regulatory small RNAs and bioactive metabolites. Lemon myrtle (Backhousia citriodora) is an Australian botanical with pharmacological interest, but the molecular cargo profile of its extracellular vesicle preparations remains insufficiently characterised.

Aims: This study aimed to characterise the small RNA and metabolite-related molecular cargo in lemon myrtle-derived extracellular vesicle preparations and to explore their relevance to a preliminary anti-tumour pharmacological investigation.

Methods: Extracellular vesicle preparations were generated from lemon myrtle material. Small RNA cargo was analysed using microRNA sequencing and bioinformatic annotation. Untargeted metabolomic profiling was performed using UPLC-MS/MS in hydrophilic and lipophilic modes under positive and negative ionisation conditions. Molecular features were annotated using MS2-based database matching and chemical classification.

Results: Small RNA sequencing generated a high-quality dataset, producing 15.1 million reads with Q20 and Q30 values of 99.60% and 97.53%, respectively. Untargeted metabolomic profiling detected broad molecular features across hydrophilic and lipophilic fractions. The annotated metabolite profile included lipid-like and small-molecule classes relevant to cellular regulation. Together, the small RNA and metabolite-related cargo signatures suggest that lemon myrtle-derived extracellular vesicle preparations contain molecular components potentially associated with tumour cell responses, including cell-cycle-related biological processes.

Discussion: These late-breaking data provide a preliminary molecular profile of lemon myrtle-derived extracellular vesicle preparations. The combined small RNA and metabolite-related signatures provide a molecular basis for interpreting their observed effects on tumour cell behaviour and support further functional validation of Australian botanical extracellular vesicles in pharmacological research.

P310

Development of nanobodies targeting the relaxin receptor, RXFP1

Mr Tselmeg Lkhagvajargal

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Development of nanobodies targeting the relaxin receptor, RXFP1

Tselmeg Lkhagvajargal[1,2], Tiffany Myint[1,2], Lisa Willams[1,2], Christopher Draper-Joyce[1,2], Daniel J Scott[1,2], Bradley L Hoare[2], Ross AD Bathgate[1,2*]. Department of Biochemistry and Pharmacology, University of Melbourne[1], Melbourne, VIC, Australia; The Florey Institute of Neuroscience and Mental Health[2], Melbourne, VIC, Australia.

Introduction. Relaxin family peptide 1 (RXFP1), a class A GPCR, is the receptor for the peptide hormone relaxin-2. Numerous RXFP1-targeting drugs are in clinical development to treat cardiovascular disease, yet the mechanisms by which peptide and small molecule drugs bind and activate RXFP1 are not fully understood. In particular, the structure of relaxin-2 bound to the large extracellular domain and its key role in receptor activation remain poorly defined.

Aims. Nanobodies (single-domain heavy-chain only antibody fragments) targeting the extracellular domain of GPCRs have proven effective in both assisting structural imaging and enabling functional modulation. The aim of this work is to isolate nanobodies that target the extracellular domain of RXFP1 with high affinity.

Methods. Nanobody sequences generated from two alpaca immunizations with RXFP1 protein were cloned into a phage display library for iterative rounds of magnetic-based selection against a truncated RXFP1 ectodomain protein containing the N-terminal low-density lipoprotein A module and linker. Panned RXFP1 binding candidates were tested in HEK cell-based RXFP1 binding and signalling assays, flow cytometry binding studies and direct protein-protein interaction analysis with recombinant RXFP1 ectodomain protein using Octet® Biolayer Interferometry (BLi).

Results. The lead nanobody, nb247, displayed low nanomolar binding affinity to the RXFP1 ectodomain using BLi. In HEK-RXFP1 cells it fully competed with Europium-labelled relaxin-2 binding with high affinity (pK_i = 8.75 ± 0.04). In CRE-reporter gene assays nb247 demonstrated no agonist activity but fully antagonised relaxin-2-mediated cAMP activity, with Schild curve shift analysis demonstrating a pA_2 value (8.76 ± 0.25), closely mirroring the affinity value. Importantly, nb247 did not antagonise Forskolin-mediated cAMP activity highlighting the specificity of its action. Epitope mapping indicated mb1 binds to the linker domain between the LRRs and LDLa module and not to the primary relaxin-2 binding site. These findings suggest that nb247 functions as a negative allosteric modulator of relaxin-2 binding and RXFP1 activation.

Discussion. Nb247 is the first ever high-affinity full antagonist/negative allosteric modulator of RXFP1. Its novel mode of binding will be invaluable in determining the ligand activation mechanisms of this challenging therapeutic target.

P311

In non-opsonising nanoparticles size outweighs vascular phenotype in governing tumour accumulation

Dr Baiba Svalbe

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

In non-opsonising nanoparticles size outweighs vascular phenotype in governing tumour accumulation
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Introduction. Nanoparticles (NPs) offer promising strategies for improving cancer diagnostics and enabling tumour-targeted drug delivery, often relying on the enhanced permeability and retention (EPR) effect. However, the full potential of EPR and the optimal NP size for efficient tumour accumulation remains uncertain due to rapid opsonisation which alters NP size and surface properties and varies with tumour vascularisation.
Aims. This work aimed to understand how tumour vascular phenotype influences the biodistribution of non-opsonising NP surrogates, and how NP size affects tumour accumulation in a colon (CT26), breast (4T1), lung (Lewis lung carcinoma (LLC1)) cancer mouse models.
Methods. We synthesised heavily PEGylated, fluorescently labelled brush polymers with three distinct hydrodynamic diameters spanning 15–60 nm. Biodistribution was assessed in subcutaneous syngeneic murine tumours, CT26 and 4T1 in Balb/c mice and LLC1 in C57Bl/6N mice. Ex vivo fluorometric analysis quantified NP concentrations in heart, kidney, liver, spleen, lung, brain, and tumor at 7 days after administration. All procedures were approved by the Latvian Animal Protection Ethical Committee of the Food and Veterinary Service (Riga, Latvia).
Results. Across all three models, tumours exhibited the highest NP accumulation among all tested tissues, including highly vascularized tumours (4T1 and CT26), and poorly vascularized and less permeable LLC1 tumour. Within the tested size range, the 30 nm NPs consistently showed the highest accumulation in tumours.
Discussion. For non-opsinising NP surrogates, NP size of 30 nm maximizes tumour deposition across tumour types with differing vascular phenotypes. These data suggest that size-tuning of stealth polymer constructs can mitigate variability arising from EPR heterogeneity and may inform the design of clinically translatable nanomedicines for both leaky and less leaky tumours.

P312

Mapping the Clinical Pipeline of Gene and RNA-Based Therapies for Rare Disorders

Dr Amanda Tabib

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Mapping the clinical pipeline of gene and RNA-based therapies for rare disorders
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Introduction. Gene and RNA-based therapeutics are rapidly emerging for a wide range of conditions, with potential to transform outcomes in rare genetic disorders. Preparing patients, clinicians, and health systems for their integration into practice is a critical priority.
Aims: To systematically map and characterise the clinical pipeline of gene and RNA-based therapies for rare genetic disorders, including bespoke individualised approaches, and to identify emerging trends and gaps.
Methods: Major clinical trial registries were systematically searched to identify active and completed studies involving gene replacement, gene editing, and RNA-based modalities (e.g., antisense oligonucleotides, RNAi). Trials were categorised by modality, mechanism, indication, sponsor, phase, and reported outcomes where available. N-of-1 therapies were identified using targeted keyword searches, Medical Subject Headings (MeSH), and cross-referencing with published case reports and investigator-led programs. Descriptive analyses were conducted to compare bespoke and conventional trials.
Results: The clinical pipeline is expanding rapidly, with predominantly early-phase studies targeting > 80 rare genetic disorders. Therapeutic modalities include gene replacement, RNA-based approaches, and gene-editing platforms (e.g., CRISPR, zinc finger nucleases, TALENs, base and prime editing), alongside advances in both viral and non-viral delivery systems. Highly individualised N-of-1 therapies were identified; however, many are absent from traditional trial registries and instead appear via alternative regulatory pathways, representing a "hidden pipeline."
Discussion: Gene and RNA-based therapeutics represent a rapidly expanding yet fragmented landscape. Improved registry frameworks and healthcare system readiness are needed to enable equitable implementation in precision genomic medicine.

P313

Identification of c-SRC as an early factor in stepwise Lenvatinib resistance

Mr Yuta Amagasa

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Identification of c-SRC as an early factor in stepwise Lenvatinib resistance
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Introduction. Lenvatinib is a standard systemic therapy for advanced hepatocellular carcinoma (HCC), but many patients develop resistance within one year. Activation of pathways such as PI3K/AKT has been implicated, yet effective strategies to overcome resistance remain lacking. In our previous study, inhibition of c-SRC partially restored lenvatinib sensitivity in highly resistant HCC cells established by continuous 40 µmol/L exposure. Because the restoration was only partial, we inferred that additional factors, beyond c-SRC, contribute to resistance acquisition. However, how multiple factors drive resistance and how their roles change over time remain unclear.
Aims. This study aimed to clarify how multiple factors contribute to the acquisition of lenvatinib resistance, with a focus on their temporal roles and the early contribution of c-SRC.
Methods. JHH-7 HCC cells were exposed to increasing concentrations of lenvatinib (0.5–40 µmol/L) to establish stepwise resistant sublines. Each subline was designated by its final exposure level (e.g., LR4 = 4 µmol/L). Gene expression changes were analyzed by strand-specific RNA sequencing with KEGG pathway analysis on LR4 and LR40. Expression of c-SRC was quantified by qPCR. The effect of dasatinib, a c-SRC inhibitor, in combination with lenvatinib was evaluated across different resistance stages.
Results. IC50 values increased stepwise across resistant sublines. Transcriptomic analysis revealed activation of the focal adhesion pathway in early resistant cells (LR4), characterized by marked upregulation of c-SRC. In contrast, late-stage resistant cells (LR40) showed predominant PI3K/AKT signaling. qPCR confirmed that c-SRC expression increased from the early stage and plateaued with further progression. Functionally, dasatinib restored lenvatinib sensitivity to near-parental levels up to LR20, but only partial recovery was observed in LR40.
Discussion. Acquisition of lenvatinib resistance in HCC occurs stepwise. In the early phase, the result that dasatinib restored sensitivity of resistant sublines to near-parental levels indicates that c-SRC–mediated activation of focal adhesion signaling plays a central role. On the other hand, in the late phase, the PI3K/AKT pathway, being a known resistance factor, plays a crucial role. These findings demonstrate that lenvatinib resistance is controlled by multiple pathways in a temporal manner and provide a basis for stage-specific therapeutic strategies.

P314

SIRT1 activation by resveratrol mitigates doxorubicin-induced skeletal muscle atrophy in mice

Ms Reika Iwafune

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

SIRT1 activation by resveratrol mitigates doxorubicin-induced skeletal muscle atrophy in mice.

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Introduction. Doxorubicin (DOX), a widely used anti-cancer drug, is known to induce skeletal muscle atrophy. An NAD^+-dependent deacetylase SIRT1 promotes autophagy which plays a critical role in maintaining skeletal muscle mass. Resveratrol (RSV), an activator of SIRT1, has been shown to attenuate aging-related skeletal muscle atrophy.

Aims. To investigate whether RSV attenuates DOX-induced skeletal muscle atrophy in mice.

Methods. Male mice were randomly assigned to three groups: vehicle, DOX, and RSV+DOX groups. DOX and RSV+DOX groups received DOX (5 mg/kg, ip) once weekly for four weeks. The RSV+DOX group was fed an RSV-containing diet (0.4 g/kg) for 6 weeks, starting 1 week before the first DOX treatment. Body weight was measured weekly. Tibialis anterior (TA) and gastrocnemius (GAS) muscles were collected 1 week after the last DOX administration for histological, biochemical, and gene expression analyses.

Results. Body weight gradually decreased in the DOX group compared to the vehicle group, but this decrease was partially ameliorated in the RSV+DOX group. Weights of TA and GAS were significantly reduced in the DOX group, indicating skeletal muscle atrophy. These reductions were significantly prevented by RSV treatment. In TA muscles, the percentage of myofibers exceeding the median diameter in the vehicle group was lower in the DOX group, whereas this reduction was prevented in the RSV+DOX group. Quantitative PCR analysis showed no significant differences in the expression levels of Atrogin-1 and MuRF1, ubiquitin ligases associated with muscle atrophy, between the DOX and RSV+DOX groups. In GAS, Western blot analysis showed an increase in levels of p62, a protein degraded by autophagy, in the DOX group compared to the vehicle group. This increase was not observed in the RSV+DOX group.

Discussion. RSV attenuated DOX-induced skeletal muscle atrophy with a restoration of autophagic activity. No changes in Atrogin-1/MuRF1 expression by RSV suggests a mechanism not mediated by the ubiquitin–proteasome pathway. These findings suggest that RSV attenuates DOX-induced skeletal muscle atrophy through the restoration of autophagic activity.

P315

Interspecies pharmacokinetics of rebamipide after oral administration in rats and dogs

Prof In-hwan Baek

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Interspecies pharmacokinetics of rebamipide after oral administration in rats and dogs

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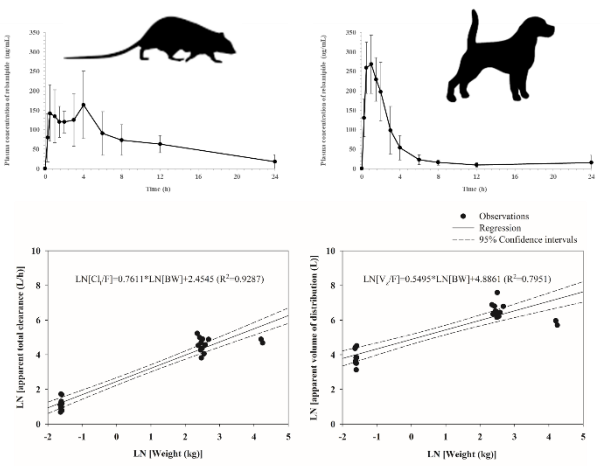
Introduction. Rebamipide is widely used in East Asia for the treatment of gastric ulcers, acute gastritis, and chronic gastritis.

Aims. This study aimed to investigate the pharmacokinetic properties of rebamipide following single oral administration in rats and dogs.

Methods. Eleven rats and eleven dogs received a single oral dose of rebamipide (35 mg/kg and 100 mg, respectively). Serial blood samples were collected at predefined time points, and plasma concentrations were quantified using liquid chromatography–tandem mass spectrometry.



Results. In rats, rebamipide exhibited a double-peak concentration–time profile, whereas dogs showed a conventional pharmacokinetic pattern without double peaks. The half-life of rebamipide was longer in rats (12.85 ± 7.86 h; mean ± SD) than in dogs (5.62 ± 2.24 h; mean ± SD). Apparent total clearance (CL_t/F) was lower in rats (3.32 ± 1.18 L/h; mean ± SD) compared with dogs (105.01 ± 42.37 L/h; mean ± SD). Simple allometric scaling demonstrated a strong correlation between body weight and CL_t/F across rats, dogs, and humans (R^2 = 0.9287).

Discussion. These results provide insights into species-specific pharmacokinetics of rebamipide and support strategies for in vivo evaluation of novel rebamipide formulations.

P316

Pharmacokinetics and pharmacodynamics of omeprazole/calcium carbonate versus omeprazole

Miss Hyung-Ji Jang

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Pharmacokinetics and pharmacodynamics of omeprazole/calcium carbonate versus omeprazole

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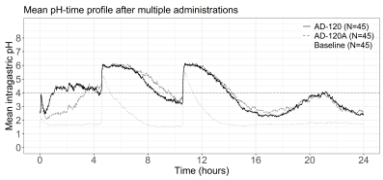

Introduction. Proton pump inhibitors (PPIs) are widely used to treat acid-related disorders. Enteric-coated PPI formulations offer the advantage of sustained acid suppression but have a delayed onset of action. To address this limitation, a novel formulation combining calcium carbonate 600mg with omeprazole 20 mg (AD-120) has been developed.

Aims. To compare PK and PD of AD-120 (omeprazole 20 mg/calcium carbonate 600 mg, test) and AD-120A (omeprazole 20 mg enteric-coated tablet, reference) after multiple oral doses in healthy adult participants.

Methods. A randomized, open-label, multiple-dose, 2×2 crossover study was conducted (14-day washout). Participants received either AD-120 or AD-120A once daily for 7 days. Plasma omeprazole concentration was measured up to 24 h post-dose on Days 1 and 7. PD was assessed by 24 h intragastric pH monitoring at baseline (Day -1) and on Days 1 and 7. Percent decrease in 24 h integrated gastric acidity was calculated as [(baseline − post-dose)/baseline] × 100. Geometric mean ratio (GMR) with 90% CI for $AUC_{\tau,ss}$ and percent decrease in 24 h integrated gastric acidity were estimated using a linear mixed effects model. T_{max} was compared using paired t-test.

Results. Among the 48 randomized participants, 45 completed the study. AD-120 showed faster absorption with median T_{max} of 0.83 h [0.33-4.00] vs 3.00 h [1.00-6.00] for AD-120A (P<0.0001). $AUC_{\tau, ss}$ was comparable between formulations (GMR (90% CI) 0.8865 (0.8068–0.9739)). Percent decrease in 24 h integrated gastric acidity was comparable (74.83±21.61% vs 75.06±16.12%; 1.0418 (0.9677–1.1216)). Mean pH-time profiles demonstrated faster pH elevation with AD-120 after both single and multiple doses.

Discussion. AD-120 demonstrated faster omeprazole absorption and earlier pH neutralization while maintaining comparable systemic exposure and acid-suppression effect. Calcium carbonate enables rapid gastric pH elevation, addressing the delayed onset of enteric-coated PPIs. AD-120 may offer advantages for gastroesophageal reflux disease patients requiring rapid symptom relief.

P317

Drug-drug interactions in elderly osteoarthritis patients with non-communicable diseases, and real-world practice

Dr Phurit Bovornchutichai

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Drug-drug interactions in elderly osteoarthritis patients with non-communicable diseases, and real-world practice

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Introduction. Osteoarthritis (OA) is a leading cause of disability among the elderly and contributes significantly to socioeconomic burden. Elderly OA patients frequently present with multiple non-communicable diseases (NCDs), leading to polypharmacy and an increased risk of drug-drug interactions (DDIs). Common pharmacologic treatments for OA, such as nonsteroidal anti-inflammatory drugs (NSAIDs) and corticosteroids, may interact with cardiovascular and gastrointestinal medications, potentially resulting in adverse outcomes.
Aims. To identify and classify potential DDIs among frequently prescribed medications for elderly OA patients using online databases, and to compare these findings with real-world clinical practice.
Methods. Seventy-seven medications commonly prescribed to elderly OA patients were selected from the Thailand national list of essential medicines (2022) and the Chakri Naruebodindra Medical Institute hospital drug list (2023). Potential DDIs were screened using two databases: Micromedex (professional use) and WebMD (public access). Both platforms provide severity and documentation classifications. DDIs were analysed based on prevalence, severity, mechanism and drug classes involved.
Results. A total of 257 potential DDIs were identified and classified as moderate to severe by both Micromedex and WebMD. Of these, 47% (122/257) involved interactions between OA medications and drugs used to treat NCDs. The most common mechanisms were bleeding (26%) and hyperkalaemia (20%), primarily associated with NSAIDs (56%). Corticosteroids such as methylprednisolone and betamethasone showed minimal interactions but could alter the effects of co-administered drugs including warfarin, metformin, levofloxacin and aspirin.
Discussion. This study demonstrates a high prevalence of clinically significant DDIs in elderly OA patients with coexisting NCDs. The findings support the use of screening tools to enhance medication safety and guide prescribing practices. By identifying common interaction mechanisms and high-risk drug classes, this research provides practical insights for improving pharmacologic management in real-world clinical settings.

P319

Feasibility of IMPDH activity and polymerisation assays in human cells

Dr Katie Burns

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Feasibility of IMPDH activity and polymerisation assays in human cells

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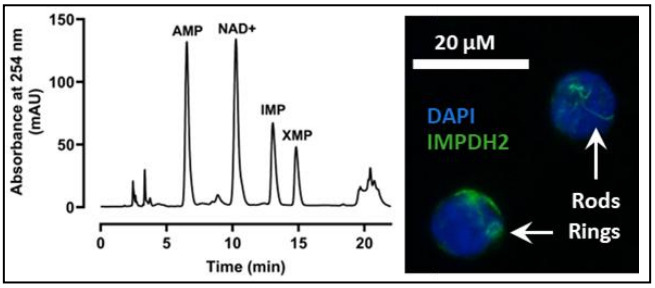

Introduction. Mycophenolic acid (MPA), the active metabolite of mycophenolate mofetil (MMF), inhibits inosine-5'-monophosphate dehydrogenase (IMPDH), a key enzyme for guanine nucleotide synthesis in lymphocytes. Direct assessment of IMPDH activity and polymerisation may provide a more robust assessment of MMF effectiveness than MPA exposure metrics alone.

Aims. To establish IMPDH activity and polymerisation assays and assess their feasibility in human cells.

Methods. Peripheral blood mononuclear cell (PBMC) collection and analysis were approved by the Auckland Health Research Ethics Committee (AH29852). IMPDH activity in Jurkat and PBMC cell lysates was determined by measuring the conversion of exogenous inosine monophosphate (IMP) to xanthosine monophosphate (XMP); these analytes were quantified alongside NAD^+ (IMPDH cofactor) and endogenous AMP using an optimised HPLC-UV assay. IMPDH polymerisation into 'rods and rings' quaternary structures was assessed in intact cells by immunocytochemistry (ICC).

Results. XMP peak splitting observed during assay development was eliminated using an acidified methanol quench, enabling reproducible XMP detection in lysates. IMPDH activity (XMP formation) was readily detectable in all Jurkat samples assayed. In unstimulated PBMCs, [XMP] was above LLOQ (4.5 µM) in 8/18 participants (44%), including 7/13 healthy volunteers (54%) and 1/5 lupus patients (20%) (Fisher's exact p=0.31). IMPDH2 rods and rings were observed frequently in Jurkat cells but rarely in unstimulated PBMCs, which exhibited diffuse IMPDH2 staining.

Discussion. These assays are feasible and clearly detect IMPDH activity and polymer structures in Jurkat cells. PBMC XMP formation and polymer detection were limited under unstimulated conditions, indicating a need for further optimisation. Recruitment and PBMC analyses are ongoing, with planned assessment of phytohaemagglutinin stimulation (lymphocyte activation) and ex vivo MPA exposure (target engagement/pharmacodynamic response).

P320

Population pharmacokinetics of riociguat in patients with chronic thromboembolic pulmonary hypertension

Prof Shinya Uchida

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Population pharmacokinetics of riociguat in patients with chronic thromboembolic pulmonary hypertension

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Introduction. Chronic thromboembolic pulmonary hypertension (CTEPH) is a rare disease characterized by persistent obstruction of the pulmonary arteries, leading to increased pulmonary vascular resistance. Riociguat is an established pharmacological treatment for patients with CTEPH. However, currently available pharmacokinetic (PK) information for riociguat is mainly derived from international clinical trials and may not adequately reflect real-world clinical practice, particularly in Japanese patients. Population pharmacokinetic (PPK) analysis enables the characterization of PK properties using sparse concentration data obtained from multiple individuals.

Aims. The aim of this study was to develop a PPK model for riociguat in Japanese patients with CTEPH in real-world clinical settings and to identify factors influencing its PK characteristics.

Methods. A PPK analysis was conducted using plasma riociguat concentration data from 22 Japanese patients with CTEPH who received riociguat therapy combined with balloon pulmonary angioplasty (BPA). Plasma concentrations were measured before and after BPA, with a total of 344 concentration–time data points. Nonlinear mixed-effects modeling was applied to characterize the pharmacokinetics of riociguat. Apparent clearance (CL/F) and apparent volume of distribution (Vd/F) were estimated, and potential covariates influencing these parameters were evaluated.

Results. The PK of riociguat was adequately described by a one-compartment model with first-order absorption. The estimated population mean values (95% confidence intervals) were 82.4 L (17.3–147.5) for Vd/F and 2.14 L/h (1.72–2.56) for CL/F. Interindividual variability was estimated at 66.8% for Vd/F and 44.7% for CL/F. Covariate analysis identified N-terminal pro–B-type natriuretic peptide (NT-proBNP) as a significant covariate affecting Vd/F. Diagnostic plots, visual predictive checks, and bootstrap analyses demonstrated good model adequacy and robustness.

Discussion. A PPK model for riociguat was developed in Japanese patients with CTEPH in a real-world clinical setting. This model characterized pharmacokinetic parameters and their variability, identifying NT-proBNP as a potential covariate contributing to interindividual variability in the population.

P321

Lymphatics are a major absorption pathway for mRNA-lipid nanoparticles following subcutaneous administration

Dr Peng Li

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Lymphatics are a major absorption pathway for mRNA-lipid nanoparticles following subcutaneous administration

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Introduction. mRNA–lipid nanoparticle (LNP) technology has rapidly become a prominent and versatile platform to develop vaccines as well as protein replacement and gene therapies. However, there are very few quantitative studies characterizing the pharmacokinetics (PK), lymphatic uptake, and biodistribution of all mRNA-LNP components.

Aim. To determine the plasma PK, thoracic lymphatic uptake, and biodistribution of mRNA, lipids, and protein in rats following intravenous (IV) and subcutaneous (SC) administration of three common LNP formulations (SM-102, MC3, and ALC-0315) containing a reporter mRNA (muGFP-P2A-nLuc).

Methods. The mRNA-LNPs were administered IV or SC to rats with plasma and/or lymph, and tissue samples collected at set time points. mRNA and lipids concentrations in plasma and lymph were quantitatively analysed by RT-qPCR and LC-MS, respectively. Tissue-specific expression of luciferase was measured via a luminescence assay.

Results. The plasma PK showed mRNA exposure of 0.1–1 ng/mL and a half-life of >3 h following SC administration of SM-102 and MC3 LNPs, with absolute bioavailability <1% of dose. In contrast, the ionizable and PEG lipids exhibited higher exposure, longer retention times, and greater bioavailability than the encapsulated mRNA. The lymphatic transport study found higher cumulative transport of mRNA, ionizable lipids, and PEG lipids in thoracic lymph compared with their systemic bioavailability in plasma. The mRNA concentrations in lymph were 10–1000-fold higher than in plasma, suggesting that lymphatics were the major route of absorption of mRNA LNPs. After both IV and SC administration, protein expression was predominantly detected in the liver and spleen for all formulations. SC dosing produced greater local protein expression at the injection site and in the draining lymph nodes.

Discussion. These findings provide important insights into the plasma PK, lymphatic transport, and tissue-specific protein expression of mRNA-LNPs. The results demonstrate that the LNP formulation significantly influences plasma PK and tissue biodistribution, with marked discrepancies between mRNA and lipid components in PK. Lymphatic transport is the main absorption route following SC injection of mRNA-LNP formulations.

P322

Bevacizumab cumulative dose and hypertension incidence: a dose-response meta-analysis

Ms Ye Chen

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Cumulative Bevacizumab Exposure and Hypertension Risk: A Bayesian Hierarchical Meta-Analysis of Randomized Controlled Trials

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Introduction. Given the high incidence of hypertension associated with bevacizumab therapy, elucidating the dose-response relationship between its cumulative dose and the development of hypertension is crucial for clinical management.

Aims. To quantify the dose-response relationship between cumulative bevacizumab dose and hypertension risk across different tumor types using Bayesian hierarchical modeling.

Methods. A systematic literature search of PubMed, Embase, the Cochrane Library, and ClinicalTrials.gov was conducted to identify randomized controlled trials reporting on the duration of bevacizumab therapy and the subsequent incidence of hypertension.

Results. A total of 32 studies involving 8,556 patients were included in this analysis. Regarding all-grade hypertension, the Bayesian hierarchical model revealed a significant non-linear U-shaped relationship (posterior probability of the quadratic term $P(\beta_2>0) = 0.998$, posterior mean = 5.81, 95% credible interval [CrI]: 2.10-9.36), with the nadir of risk observed at a cumulative dose of 113.9 mg/kg (95% CrI: 82.1-131.8 mg/kg). For Grade ≥3 hypertension, the model demonstrated a linear positive correlation (posterior probability of the dose term $P(\beta_1>0) = 0.97$, posterior mean = 2.66, 95% CrI: -0.11-5.26), where each standard deviation increase in cumulative dose (approximately 67.1 mg/kg) corresponded to an average absolute increase of 2.66 percentage points in the incidence rate. These findings remained robust across various sensitivity analyses. Subgroup analyses indicated that non-small cell lung cancer, colorectal cancer, and ovarian cancer all exhibited distinct U-shaped patterns (all posterior probabilities >0.99), although heterogeneity in effect sizes was observed.

Discussion. The risk of bevacizumab-associated hypertension varies dynamically with the cumulative dose and is modulated by tumor type. Stratified monitoring and intervention strategies based on tumor type and cumulative dose may help mitigate the risk of cardiovascular toxicity while better preserving therapeutic benefits.

P323

Modelling frailty progression in ageing mice: Impact of monotherapy, polypharmacy, and deprescribing

Mr Subindra Thapa

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Modelling frailty progression in ageing mice: Impact of monotherapy, polypharmacy, and deprescribing
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Introduction. Medications may accelerate frailty progression, but quantitative evidence is limited. Ageing mice models allow the controlled evaluation of how different monotherapies and polypharmacy regimens influence frailty over time, thereby clarifying the role of pharmacotherapy in frailty progression.
Aim. To examine frailty progression in mice exposed to medications alone or in polypharmacy combinations, and deprescribing, using longitudinal pharmacometric modelling.
Methods. Twelve-month-old male C57BL6J mice received control feed or therapeutic doses of monotherapy/polypharmacy regimens with varying anticholinergic and sedative exposures (estimated by Drug Burden Index, DBI scores). Treatment was continued lifelong, with deprescribing from 21 months in a subset. Mouse Clinical Frailty Indices were measured from 12-27 months. Disease progression was modelled using nonlinear mixed-effects approaches (NONMEM 7.5), with model evaluation assessed via likelihood maximization, goodness-of-fit, visual predictive checks, and bootstrapping.
Results. Frailty progression was best described by a nonlinear sigmoidal model, defined by the time to reach half of the maximal frailty (ET50) and the steepness of its rise (γ). When compared to control, high DBI (HDBI) polypharmacy (metoprolol, simvastatin, citalopram, oxybutynin, oxycodone) and citalopram groups reached half-maximal frailty about 7.5 and 13.5 weeks earlier, with an overall increase in frailty index by 25% and 34%, respectively. In comparison, Low DBI (LDBI) polypharmacy (metoprolol, simvastatin, omeprazole, paracetamol, citalopram), oxybutynin and simvastatin reduced the steepness, slowing progression by 33-42% compared with control. Deprescribing citalopram lowered maximum frailty by 33%, whereas deprescribing oxycodone increased maximum frailty by 26%.
Discussion. The final disease progression model allows quantification of both rate and magnitude of frailty progression, which is differentially impacted by exposure to and withdrawal of different polypharmacy regimens and monotherapies. Given that 12-27-month old C57BL6J mice approximate middle-aged to older humans, these results have translational relevance, suggesting that targeted medication management and deprescribing may help slow frailty development in ageing populations.

P324

Tissue-Specific Glucose Uptake Following Oral Smart Insulin Versus Subcutaneous Insulin Administration

Dr Sun Woo Sophie Kang

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Tissue-Specific Glucose Uptake Following Oral Smart Insulin Versus Subcutaneous Insulin Administration
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Introduction. Oral delivery of therapeutic insulin has been a long-held goal. However, to date there has been no successful creation, testing and manufacture of a commercially viable product. We previously reported on Smart Insulin[1], an oral formulation of insulin-conjugated silver sulfide quantum dots coated with a chitosan/glucose polymer that has shown a dose dependent reduction in blood glucose. Whilst we have shown the distribution of Smart insulin in comparison to subcutaneously injected insulin (SC-INS), we have not fully investigated its effect on glucose uptake in tissues and fully examined the impacts of long-term administration of Smart Insulin in preclinical models of Type 1 Diabetes (T1D).
Aims. This study aims to evaluate glucose uptake in muscle and adipose tissue following oral Smart Insulin administration and to examine the metabolic effects of long-term adjunct treatment with SC-INS**.**
Methods. Streptozotocin-treated C57BL/6 mice received SC-INS alone or SC-INS in the presence of oral Smart Insulin for 12 weeks. This titration strategy assessed the impact of Smart Insulin on insulin dose requirements and glucose handling. Glucose uptake was measured during an oral glucose tolerance test using 14C-glucose and 3H-deoxyglucose.
Results. Distinct differences in tissue glucose uptake were observed between animals treated with SC-INS and those receiving Smart Insulin. Oral insulin administration was accompanied by increased hepatic glucose uptake, whereas glucose uptake in gastrocnemius and quadriceps muscle was similar to that observed following SC-INS administration. Comparable patterns were also observed in subcutaneous adipose tissue and gonadal white adipose tissue.
Conclusion. Together, these data highlight distinct hepatic and peripheral glucose uptake patterns associated with oral insulin compared with subcutaneous insulin. These results show the potential of oral Smart Insulin to modulate glucose handling and support its further development as an alternative insulin delivery strategy.

1. Hunt, N.J., et al., *Oral nanotherapeutic formulation of insulin with reduced episodes of hypoglycaemia.* Nature Nanotechnology, 2024. **19**(4): p. 534-544.

P325

Pharmacodynamic and Pharmacokinetic Profiles of Epaminurad in relation to Renal Function

Assoc Prof Sungkweon Cho

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Pharmacodynamic and Pharmacokinetic Profiles of Epaminurad in relation to Renal Function

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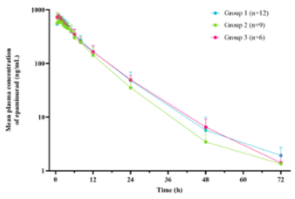
Introduction. 90% of filtered uric acid is reabsorbed through renal uric acid transporter. Epaminurad, a novel uricosuric agent, exhibits potent inhibitory effects on the human uric acid transporter (URAT1).
Aims. This study aimed to evaluate the impact of renal function on the pharmacodynamic and pharmacokinetic characteristics, as well as the safety of a 9 mg dose of Epaminurad.
Methods. This was a phase 1, open-label study involving oral administration of Epaminurad. Participants were categorized into three groups based on renal function: normal, moderate A (30 ≤ eGFR < 60 mL/min/1.73 m²), and moderate B (60 ≤ eGFR < 90 mL/min/1. 73 m²). Each group aimed to enroll 6–10 participants. Blood and urine samples were collected to assess the pharmacodynamic and pharmacokinetic properties of Epaminurad, while safety was evaluated through adverse event monitoring and laboratory tests.
Discussion. A total of 27 subjects completed the study, including 12 with normal renal function and 9 and 6 subjects in the moderate renal impairment groups, respectively. Following a single 9 mg dose of Epaminurad under fasting conditions, no clinically significant differences were observed in pharmacodynamic, pharmacokinetic, or safety profiles across renal function groups. Patients with mild-to-moderate renal impairment can safely receive a 9 mg dose of Epaminurad without requiring dose adjustment.



P326

Bioequivalence of linagliptin/metformin fixed-dose combination in healthy Korean volunteers

Dr Seol Ju Moon

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Bioequivalence of linagliptin/metformin fixed-dose combination in healthy Korean volunteers
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Introduction. For type 2 diabetes mellitus (T2DM) patients, metformin is the first-line therapy that reduces hepatic glucose production and improves insulin sensitivity, while linagliptin, a selective dipeptidyl peptidase-4 (DPP-4) inhibitor, lowers glucose by preventing GLP-1 degradation. Their complementary mechanisms support combination therapy, and fixed-dose combinations (FDCs) can improve patients adherence. NVP-2002 (linagliptin 5 mg/metformin HCl 1000 mg) has been developed as a once-daily FDC.
Aims. This study evaluated the pharmacokinetic (PK) equivalence and safety of NVP-2002 compared to co-administration of the individual components.
Methods. A randomized, open-label, single-dose crossover study was conducted in healthy Korean volunteers. Part A (n=52) assessed linagliptin and metformin PK under fasting conditions, while Part B (n=44) assessed metformin PK after a high-fat meal. Serial blood samples were collected up to 48 hours, and PK parameters were analyzed using non-compartmental methods. Primary PK endpoints were AUC_t and C_{max}, analyzed using ANOVA on log-transformed values. Pharmacokinetic equivalence was assessed if the 90% confidence intervals (CIs) for the geometric mean ratios (GMRs) were within 0.80–1.25. Safety was evaluated by adverse events (AEs), vital signs, clinical laboratory tests, 12-lead ECG, blood glucose, and physical examinations.
Results. In Part A, 52 subjects were randomized and 38 subjects completed the study, while in Part B, 44 subjects were randomized and 33 subjects completed the study. Under fasting state, the GMRs (90% CI) of AUC_t and C_{max} for linagliptin (test/reference) were 0.9755 (0.9286–1.0246) and 0.9131 (0.8053–1.0353), respectively; for metformin, the values were 1.0262 (0.9411–1.1190) and 1.0481 (0.9663–1.1367), respectively. For metformin in the fed state, the values were 0.9823 (0.9343–1.0328) for AUC_t and 1.0928 (1.0470–1.1405) for C_{max}, respectively. No serious AEs occurred, and AE incidence did not differ significantly between groups (p=0.5489 and p>.9999, respectively).
Discussion. NVP-2002 showed comparable pharmacokinetic profiles to those of co-administration of separate tablets under both fasting and fed conditions. Both treatments were well tolerated and safe.

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Renal dysfunction with vancomycin therapy associated with haematological changes, Ulaanbaatar, Mongolia

Dr Tamiraa Tsogzolmaa

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Renal dysfunction with vancomycin therapy associated with haematological changes, Ulaanbaatar, Mongolia

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Introduction. Vancomycin is a glycopeptide antibiotic widely used for the treatment of Gram-positive bacterial infections, which is associated with a risk of damage in renal function and haematological parameters.
Aims. To characterize changes in complete blood count parameters during vancomycin therapy and to evaluate their association with renal function impairment.
Methods. We conducted a retrospective, document-based study at the First Central State Hospital, including patients who received vancomycin between 2020 and 2023. Of 1,070 screened medical records, 406 patients met the eligibility criteria and were included in the data analysis. Data were extracted on vancomycin dosing and treatment duration, complete blood count indices, and renal function parameters using estimated creatinine clearance and estimated glomerular filtration rate calculated using the MDRD equation measuring before, during, and after therapy.
Results. The mean age of the study was 50.4 ± 15.9 years; the mean duration of vancomycin therapy was 11.3 ± 5.8 days, with the mean single dose was 1.0 ± 0.07g, mean daily dose was 2.48 ± 0.6g, and mean cumulative dose was 27.8 ± 15.5g. During therapy, abnormalities in creatinine and urea were observed in 22% and 18% of patients, respectively; after completion of therapy, these proportions increased to 35% and 28%, respectively ($P < 0.05$). Among complete blood count parameters, red blood cell (RBC) count (3.56 → 3.41 $\times 10^6/\mu L$; Δ −0.13; 95% CI −0.23 to −0.06), percentage of haematocrit (28.1 → 27.6%; Δ −1.00; 95% CI −1.4 to −0.4), In contrast, several indices demonstrated both statistical and clinical significance: white blood cell (WBC) count (12.2 → 7.81 $\times 10^9/L$; Δ −3.56; 95% CI −4.07 to −2.58), neutrophil count and percentage (Δ −3.5; −8.7), lymphocyte count and percentage (Δ +0.17; +5.2), platelet count (231 → 271 $\times 10^9/L$; Δ +26.0; 95% CI 3.0 to 40.0), and eosinophil count (Δ +0.02; 95% CI 0.01 to 0.05).
Discussion. Vancomycin therapy was associated with mild-to-moderate deterioration in renal function, and an increased likelihood of progression to stage 2–3 impairment.

P328

Functional characterisation of BCL2 Knockout in Caco-2 cells: Implications for oxaliplatin resistance

Ms Seohyun (Stella) Park

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Functional characterisation of BCL2 knockout in Caco-2 cells: implications for oxaliplatin resistance

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Introduction. Oxaliplatin is important in the clinical treatment of colorectal cancer, but tumour resistance represents a critical therapeutic hurdle. B-cell lymphoma 2 (BCL2) is a key anti-apoptotic regulator that inhibits mitochondrial apoptosis and has been implicated in the survival of various cancer cells, including colorectal cancer, under cytotoxic stress (De Angelo et al, 2025). However, the functional contribution of BCL2 to oxaliplatin resistance in colorectal cancer has not been directly investigated.

Aims. The aim of this study was to generate a CRISPR-Cas9-mediated BCL2-knockout (KO) colorectal cancer (Caco-2) cell line to facilitate evaluation of the contribution of BCL2-dependent oxaliplatin resistance.

Methods. BCL2-KO Caco-2 cells were generated using CRISPR-Cas9-mediated genome editing. Cells were transfected with BCL2 guide-RNA/Cas9 ribonucleoprotein complexes through liposome-mediated delivery. Single clones were isolated by limiting dilution and screened for the loss of BCL2 protein expression by Western blot analysis. Basal cell growth between KO and wild-type (WT) Caco-2 cells was compared using MTT viability assays and colony formation assays. Oxaliplatin-induced apoptosis was measured using the CellEvent™ caspase-3/7 activity assay.

Results. Successful genome editing was confirmed by genomic cleavage assay and the loss of BCL2 protein expression was further confirmed by Western blotting. Under drug-free conditions, BCL2-KO cells exhibited reduced viability and a significant decrease in colony formation abilities compared to WT cells. Loss of BCL2 led to increased oxaliplatin-induced apoptosis rate in Caco-2 cell.

Discussion. These findings demonstrate the contribution of BCL2 in basal survival and long-term proliferative capacity in Caco-2 cells. The established BCL2-KO Caco-2 cell model provides a robust cellular platform for future studies of BCL2-dependent survival mechanisms in chemotherapy response and resistance.

DeAngelo TM et al (2025) Nat Commun 16:8623

P329

Neurobehavioral and pharmacokinetic interactions of methamphetamine and ketamine co-administration in rats

Ms Aeri Ha

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Neurobehavioral and pharmacokinetic interactions of methamphetamine and ketamine co-administration in rats

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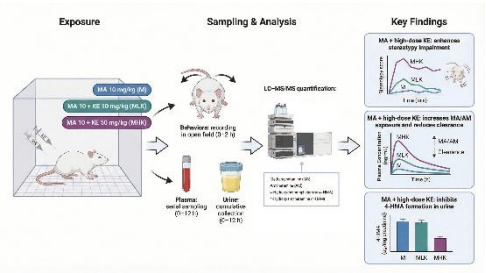

Introduction. Polysubstance abuse of methamphetamine (MA) and ketamine (KE) is an increasing public health concern; however, its neurobehavioral and pharmacokinetic effects remain poorly characterized, limiting mechanistic insight into associated toxicity.

Aims. This study aimed to systematically evaluate dose-dependent interactions between MA and KE and to elucidate their impact on behavioral outcomes and systemic drug exposure.

Methods. Rats were administered MA (10 mg/kg, ip, M) alone or in combination with low-dose KE (10 mg/kg, ip, MLK) or high-dose KE (50 mg/kg, ip, MHK). Neurobehavioral responses were assessed, and pharmacokinetic profiles were characterized by quantifying MA, KE, and their metabolites using a validated LC–MS/MS method.

Results. MA alone induced stereotyped head-bobbing, whereas co-administration with high-dose KE produced marked motor impairment characterized by circling and ataxia. Pharmacokinetic analysis demonstrated that high-dose KE significantly increased the maximum plasma concentration (C_{max}) and cumulative systemic exposure, as reflected by the area under the concentration–time curve (AUC), of both MA and its major metabolite, amphetamine (AM), concomitant with a reduction in MA total clearance (CL). Urinary metabolite analysis further revealed significant inhibition of 4-hydroxymethamphetamine (4-HMA) formation under high-dose KE co-exposure. In contrast, low-dose KE produced no significant behavioral or pharmacokinetic effects.

Discussion. Collectively, these findings indicate that high-dose KE suppresses MA metabolism, increasing systemic exposure and neurobehavioral toxicity and demonstrating dose-dependent MA–KE interactions with enhanced toxicity risk in polysubstance abuse.

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Improving chronic non-cancer pain management using sex- and gender-specific approaches

Prof Petra A. Thürmann

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Improving chronic non-cancer pain management using sex- and gender-specific approaches
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Background and aims Chronic non-cancer pain (CPNP) and the associated long-term opioid therapy (LTOT) constitutes a highly prevalent clinical problem worldwide with a substantial burden for society. Accumulating evidence shows that both sex and gender critically influence pain perception, expression and treatment outcomes. Addressing these issues is therefore essential to provide effective, personalized, and equitable care. The GESCO study (funded by the Ministry of Health, 2522FSB14A/2522FSB14B) aims to develop a sex- and gender-sensitive intervention for patients with CNCP receiving LTOT in primary care.
Methods Phase I of the project included literature reviews, stakeholder interviews and workshops to inform intervention development. Phase II tested the intervention in a single-arm pre-post design with 38 adults with CNCP and LTOT and 8 general practitioners (GPs). The program comprised targeted in-person training for GPs and two 30-minute GP–patient consultations complemented by a qualitative process evaluation.
Results Interviews were conducted with 7 patients with CNCP and five GPs. Literature reviews focusing on sex- and gender-related differences were conducted across six modules—pharmacology, comorbidities, communication, guidelines, social systems, and chronic pain therapy. The results were consolidated into a toolbox and a comprehensive pharmacological handbook, both for incorporation into the educational sessions for GPs. Phase II has been completed.
Conclusions A sex- and gender-sensitive approach for patients with CNCP receiving LTOT has the potential to enhance individualized treatment. This study aims to provide preliminary evidence to inform a larger trial and to evaluate its impact on treatment outcomes and patient satisfaction.

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In vivo fate and mechanistic insights of hepatocyte transplantation

Dr Chen Ma

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

In vivo fate and mechanistic insights of hepatocyte transplantation

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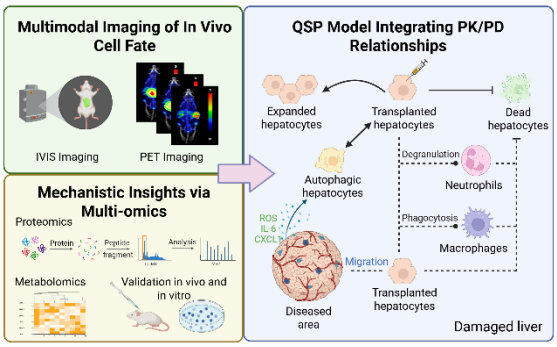

Introduction. Clinical studies have reported that hepatocyte transplantation served as a therapeutic approach for end-stage liver diseases. However, the in vivo fate and underlying mechanisms of transplanted hepatocytes remain unclear.

Aims. In this study, we evaluated the pharmacokinetics and pharmacodynamics (PK/PD) of transplanted proliferating human hepatocytes (ProliHHs) in a mouse model of acute liver injury.

Methods. Molecular imaging techniques were employed to evaluate the in vivo distribution, proliferation, persistence, and clearance phases of transplanted hepatocytes. Proteomic and metabolomic analyses were integrated to elucidate the molecular mechanisms of hepatocyte transplantation. Furthermore, a quantitative systems pharmacology (QSP) model was developed to characterize and integrate the pharmacokinetic–pharmacodynamic (PK/PD) relationships.

Results. Transplanted hepatocytes (ProliHHs) were predominantly localized in the liver and were cleared within 72 hours in wild-type mice. Hepatic macrophages and neutrophils surrounded ProliHHs, thereby triggering inflammatory responses. Within the immune microenvironment, ProliHHs induced autophagy as a self-protective mechanism. Inhibition of autophagy markedly attenuated the therapeutic efficacy of ProliHHs. Based on these findings, a quantitative systems pharmacology (QSP) model was established to integrate the interactions among transplanted hepatocytes, host immunity, and therapeutic outcomes.

Discussion. This study quantitatively characterized the cellular kinetics of hepatocyte transplantation and revealed the crosstalk between transplanted hepatocytes and immune cells. Our findings further demonstrated that autophagy plays a critical role in mediating the therapeutic effects of hepatocyte transplantation.

Dwyer B.J et al (2021) Journal of Hepatology 74(1): 185-199. Zhang K et al (2018) Cell Stem Cell 23(6): 806-819 e4.

P332

Pupillary diameter correlates with dose regardless of drug class in Parkinson's disease

Dr Jan Hlaváč

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Pupillary diameter correlates with dose regardless of drug class in Parkinson's disease

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Introduction. Parkinson's disease is the second most common neurodegenerative disorder, and its treatment in clinical practice lacks simple pharmacodynamic indicators of dopaminergic stimulation. Dopamine directly activates α1 adrenergic receptors in the musculus dilatator pupillae, leading to mydriasis.
Aims. 1. To verify how different classes of chronic dopaminergic treatment in de novo diagnosed PD change pupillometric parameters. 2. To verify dose-response relationship. 3. To assess the relationship to clinical status.
Methods. A total of 51 newly diagnosed PD patients were divided into two groups: L-DOPA (n=24) and ropinirole (n=27). Patients were first examined at BASELINE (before treatment initiation) and then after one year of treatment in the OFF state (in the morning 12 h after discontinuation of L-DOPA or 48 h after ropinirole) and ON state (1 h after taking the morning dose). In all three states, the motor functions were examined using MDS-UPDRS III, and pupillometric parameters were determined using a monocular IR pupillograph NeuroLight (IDMed). The following pupillometric parameters were measured: static (MIN and MAX – minimal and maximal pupil diameter, DIF = (MAX-MIN), VAR = ((MAX-MIN)/MAX) × 100%) and dynamic (MCV – maximum constriction velocity, LAT – latency of constriction). A linear mixed effect model (LMEM) was created.
Results. N=51, format BASELINE/OFF/ON: MAX (mm): 4.4±0.8/4.6±0.8/4.8±0.9; MIN (mm): 2.6±0.4/2.7±0.7/2.8±0.6; DIF (mm): 1.9±0.5/1.9±0.5/2.0±0.5; VAR (%): 42.2±7.0/41.7±11.6/39.8±6.9; MCV (mm/s): 5.2±2.0/5.5±2.8/5.7±3.2; LAT (ms): 202.9±64.7/216.7±50.9/205.6±62.7; MDS-UPDRS III: 30.1±10.9/27.3±10.5/23.4±9.2. LMEM, even after adjustment for age, confirmed the relationship between dose and pupillometric parameters.
Discussion. Static pupillometric parameters reliably reflect acute dopaminergic stimulation and are independent of the class of drug used. They don't reflect motor functions but can be used as indicators of adherence or overuse.
Acknowledgements. This study was supported by Czech Health Research Council NU21-04-00535 and the Cooperatio program (research area PHAR). JH would like to acknowledge support from The Parc platform (www.theparc.eu).

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Pharmacokinetics and safety of a CYP3A4-metabolised compound: healthy Chinese, Japanese, European participants

Dr Romina Nand

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Pharmacokinetics and safety of a CYP3A4-metabolised compound: healthy Chinese, Japanese, European participants

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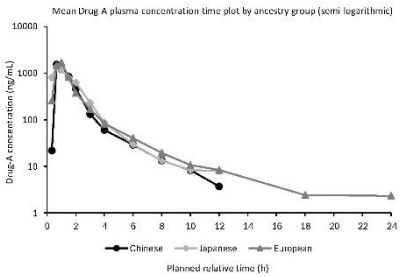

Introduction. Simultaneous global drug development strategies integrating Japan and China into early global multi-centre clinical trials (MRCTs) improve efficiency, reduce drug lag and accelerate patient access to new medicines. To facilitate Japan and China joining global MRCTs, a Phase 1 study in the USA investigated PK and safety of Drug-A in healthy Chinese, Japanese and European participants (GSK-sponsored study 222308). This study enabled inter-ethnic comparisons based on data from a single study for Drug-A, which is primarily metabolised via CYP3A4.

Aims. To evaluate the ethnic sensitivity of Drug-A PK and safety in healthy Chinese and Japanese participants versus European participants.

Methods. This randomised, placebo-controlled, double-blind, parallel-group Phase 1 study enrolled 36 participants (n=12 per ancestry group). Participants received a single oral dose of 160 mg Drug-A or placebo (3:1) under fasted conditions. PK parameters were assessed using non-compartmental analyses, and safety evaluations included adverse events (AEs), clinical laboratory tests, vital signs and electrocardiograms (ECGs).

Results. Drug-A was rapidly absorbed, with median T_{max} of 0.67–0.75 h across ancestry groups. Plasma concentrations declined rapidly after C_{max}, with geometric mean elimination t1/2 from 1.93–2.58 h (Figure). Geometric mean C_{max} and AUC were similar across ancestry groups. Across all ancestry groups, all AEs were mild and considered unrelated to study treatment, with no serious AEs or deaths reported. No clinically relevant changes in laboratory values, vital signs, or ECGs were observed.

Discussion. These findings demonstrate low ethnic sensitivity for Drug-A PK, a compound demonstrating high CYP3A4-dependent metabolism. Conducting such studies early in development would help bring new medicines to Asian markets more efficiently and expeditiously.

Funding: This study (222308) was funded by GSK.

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Integration of the receptor binding database BindingDB with adverse drug event databases

Assist Prof Ryuichiro Hosoya

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Study on the integration of the receptor binding affinity database BindingDB and adverse drug event databases

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Introduction. The use of adverse drug event databases in research has been on the rise. Recently, these databases have not only been employed for basic analyses of drugs and adverse events, they have also been utilized to investigate chemical structures and biochemical factors linked to adverse events, as well as to predict their onset. However, few studies have evaluated information obtained from adverse event databases at the receptor level.

Aims. This study focused on BindingDB, a comprehensive database of receptor–ligand binding affinities compiled and publicly available online by the Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS) in the USA to assess its potential utility in analyzing adverse event.

Methods. We downloaded the complete dataset "BindingDB_All" from the official SSPPS website. This dataset includes approximately one million compounds along with biochemical and physicochemical data, including Ki, IC50, and Kd values. Although these values were experimentally derived, many entries were incomplete. We specifically focused on the glucocorticoid receptor (GR), one of the receptors listed in BindingDB that is associated with various clinical symptoms. For GR-related compounds (N = 3,781), we applied quantitative structure–activity relationship analysis to develop predictive models for estimating Ki values of compounds lacking experimental measurements.

Results. A predictive model developed using a neural network achieved mean R^2 and RMSE values of 0.764 and 0.60, respectively, in the external validation set, indicating relatively good predictive performance. These results suggest the model's utility for estimating Ki values of compounds with unknown GR involvement.

Discussion. We are currently working on integrating BindingDB with the US FDA's adverse event database to explore associations between adverse events and receptor-level mechanisms.

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Aztreonam plus ciprofloxacin synergistically kills resistant Pseudomonas aeruginosa.

Ms Charlotte Picton

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Aztreonam plus ciprofloxacin synergistically kills resistant *Pseudomonas aeruginosa*.

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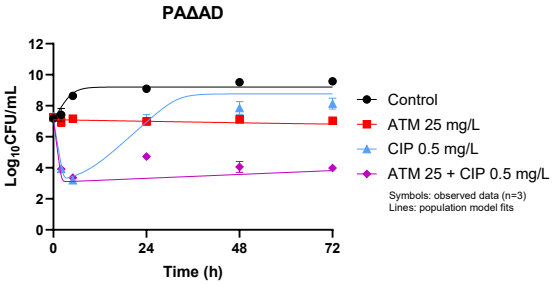

Introduction. Effective use of antibiotics is crucial to successfully treat resistant infections in patients.

Aims. To investigate the efficacy of aztreonam (ATM) and ciprofloxacin (CIP) combination therapy against *Pseudomonas aeruginosa* strains with common resistance mechanisms.

Methods. The PAO1 wild-type reference strain and 11 isogenic strains (single mutants PAΔdacB, PAΔAD, PAΔADADh3 and PAΔADADh2ADh3 with AmpC β-lactamase hyperproduction caused by different mutations, PAΔmexR and PAΔmexZ with MexAB-OprM and MexXY-OprM efflux pump overexpression, respectively, and PAΔOprD with reduced entry porins and double mutants PAΔOprDΔdacB, PAΔOprDΔAD, PAΔADΔmexR, and PAΔOprDΔmexR) were investigated in 72-h static-concentration time-kill studies. Clinically relevant concentrations of CIP and ATM were studied. Total viable and resistant bacterial counts were determined, and a mechanism-based mathematical model (MBM) was developed that incorporated the resistance mechanisms.

Results. Synergy (≥2-$\log_{10}$ lower than most effective monotherapy) was observed at ATM 25 mg/L plus CIP 0.5 mg/L for 9 of the 12 strains (Fig. shows one strain), with mutants containing the *mexR* deletion (PAΔmexR, PAΔADΔmexR, and PAΔOprDΔmexR) being the exception. PAΔmexR and PAΔOprDΔmexR resulted in synergistic killing at ATM 25 mg/L plus CIP 1.0 mg/L, whilst PAΔADΔmexR resulted in additive bacterial killing. All monotherapies failed except for PAΔADADh2ADh3, where CIP 1.0 mg/L was bactericidal. The MBM described the data well.

Discussion. Combination therapy of ATM and CIP synergistically killed bacteria and inhibited regrowth in the wild-type strain and 10 of the 11 isogenic strains where monotherapies failed to do so. This research highlights the promising synergy of ATM and CIP against strains with common resistance mechanisms.

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Efficacy and safety of FLT3-inhibitors in AML: a systematic review and meta-analysis

Dr Dymphy Huntjens

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Efficacy and safety of FLT3-inhibitors in acute myeloid leukemia: a systematic review and meta-analysis

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Background. Patients with FLT3-ITD acute myeloid leukemia (AML) remain at high risk of relapse after allogeneic hematopoietic stem cell transplantation (allo-HSCT), resulting in higher mortality. FLT3 inhibitors (FLT3i) have been investigated as post-transplant maintenance therapy to improve survival, but their effect on safety, particularly graft-versus-host disease (GVHD) is not well established. This meta-analysis aims to determine the effect of post-allo-HSCT FLT3 inhibitor maintenance therapy, compared with placebo or no maintenance, on the incidence of acute and chronic GVHD, as well as overall and relapse free survival in patients with FLT3-ITD AML.
Methods. A literature search was performed in PUBMED to identify randomized control trials (RCT) in FLT3-ITD AML. Risk of bias was assessed using Cochrane risk of bias assessment tool 2. Efficacy endpoints included OS and RFS, and safety endpoints included acute and chronic GVHD. Pooled hazard ratio (HR) or relative risk (RR) with corresponding 95% confidence interval (CI) were calculated using random effects models. Analyses were performed using R (version 4.4.1), using package meta (version 8.0-2).
Results. Five RCT studies with 890 patients were included in this meta-analysis. No between-study heterogeneity was observed. Post-transplant FLT3i maintenance was associated with a higher incidence of chronic GVHD (RR = 1.23, 95%CI 1.04–1.45, p = 0.02), but not acute GVHD (RR = 1.08, 95%CI 0.88–1.32, p = 0.48). FLT3 inhibitors significantly prolong OS and RFS (HR_OS = 0.63; 95%CI 0.47– 0.84, p < 0.01, HR_RFS = 0.50; 95%CI 0.35– 0.72, p < 0.01), corresponding to a 37% relative reduction in the risk of death or 50% reduction in relapses.
Discussion. A limitation of our analysis is the existing heterogeneity in transplant procedures and drug treatments used. Nevertheless, post- transplant FLT3i maintenance therapy in FLT3- mutated AML patients showed significant improvement in OS and RFS yet a higher risk of chronic GVHD than control treatment. These findings highlight a relevant benefit–risk profile that warrants consideration in post-transplant management.

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KEFALOS trial: does losartan reduce cephalexin plasma concentrations in humans?

Mr Mikael O. W. Piha

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

KEFALOS trial: does losartan reduce cephalexin plasma concentrations in humans?

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Introduction. Cephalexin, a clinically important oral antibiotic, is absorbed almost completely due to active intestinal uptake by peptide transporter 1 (PEPT1). In a previous study, the simultaneous ingestion of zinc sulphate, an in vitro PEPT1 inhibitor (Okamura et al, 2003), reduced cephalexin plasma concentrations markedly in humans (Ding et al, 2012). Interestingly, losartan, an antihypertensive drug, inhibits PEPT1 even more potently than zinc sulphate in vitro (Knütter et al, 2009).
Aims. This phase I clinical trial aims to investigate the effects of losartan on the pharmacokinetics of cephalexin during simultaneous and staggered ingestion in humans.
Methods. For this randomised, crossover, 3-phase, open-label, vehicle-controlled clinical trial, 12 healthy volunteers will be recruited to ingest single doses of 100 mg of losartan at the same time with, or 3 h prior to, single doses of 500 mg of cephalexin. The comparator for losartan will be water. On 3 study days separated by 1-week washout periods, venous blood samples will be drawn and urine collected for up to 8 h after ingestion of cephalexin. The plasma and urine concentrations of cephalexin will be measured using liquid chromatographic-mass spectrometric methods and compared between the trial phases. This trial will be registered on ClinicalTrials.gov during autumn 2025.
Results. The trial is planned for January 2026, and drug concentration results can be expected in early spring.
Discussion. Cephalexin and losartan are among the most commonly used drugs worldwide. If ingested at the same time, losartan could potentially reduce the absorption and antibacterial effect of cephalexin. Given the high risk of concomitant use, it is crucial to investigate an optimal dosing interval to prevent this drug interaction.

Ding et al (2012) Br J Clin Pharmacol 73:422-427
Knütter et al (2009) Drug Metab Dispos 37:143-149
Okamura et al (2003) Pharm Res 20:1389-1393

P338

Deprescribing allopurinol in a typical gout patient receiving haemodialysis: A PKPD simulation

Ms Noha Kamel

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Deprescribing allopurinol in a typical gout patient receiving haemodialysis: A PKPD simulation

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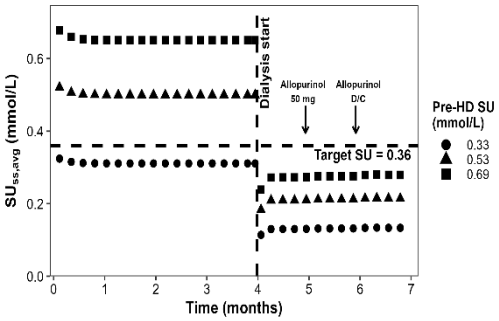
Introduction. Allopurinol, a urate-lowering therapy used to manage gout, is commonly prescribed in patients receiving haemodialysis (HD). Urate is effectively removed by HD raising the question of whether allopurinol is needed to achieve the serum urate (SU) target of < 0.36 mmol/L.

Aims. To simulate SU concentration changes for a typical gout patient with CKD stage 5 taking allopurinol 100 mg daily with and without dialysis and after allopurinol dose reduction and deprescribing.



Methods. A semi-mechanistic PKPD model was built using a PK model for oxypurinol (Hishe et al, 2023) and a PD model for uric acid (Hill-McManus et al, 2018). An additional compartment was added to capture intestinal urate clearance and dialysis was added as a flag (on/off). A single subject simulation of SU concentrations was conducted for a typical gout patient weighing 85 kg with CKD stage 5. Nine pre-dialysis SU concentrations were tested in 0.05 increments (0.33-0.69 mmol/L). SU was simulated for allopurinol 100 mg/day over 4 months without HD. At 4 months, HD thrice weekly over 4 h was initiated. At month 5, the allopurinol dose was reduced to 50 mg/day, and at month 6 allopurinol was discontinued. The model was coded in R package 'mrgsolve' (R 4.5.1). Average steady-state weekly SU concentrations ($SU_{ss,avg,}$) were reported.

Results. After the initiation of HD, the $SU_{ss,avg}$ was < 0.36 mmol/L for allopurinol 100 and 50 mg daily and after allopurinol deprescribing. (Fig. Pre-HD SU 0.33, 0.56 and 0.69 mmol/L depicted).

Discussion. Our indicative results suggest that allopurinol deprescribing may be feasible in some patients with gout on HD without a loss of efficacy. These findings support prospective allopurinol deprescribing studies for patients receiving HD.

Hill-McManus D et al. (2018). Br J Clin Pharmacol, 84, 142–152
Hishe HZ et al. (2023). Clin Transl Sci, 16, 422–428.

P339

Optimizing rivaroxaban dosing in hepatic and renal impairment via PBPK-PD virtual trial

Mr Jianbin Li

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Optimizing rivaroxaban dosing in hepatic and renal impairment via PBPK-PD virtual trial
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Introduction. Balancing the efficacy and safety of rivaroxaban for stroke prevention in atrial fibrillation is complicated by organ impairment and drug-drug interactions. Current guidelines lack specific dosing recommendations for these scenarios, primarily due to a lack of direct clinical trial evidence in these populations.
Aims. An integrated PBPK-pharmacodynamic (PBPK-PD) model was developed to simulate the effects of rivaroxaban in virtual patient populations.Through simulations across varying degrees of hepatic and renal impairment and diverse drug-drug interaction scenarios, this framework is particularly designed to provide quantitative, individualized dosing recommendations for complex clinical situations not explicitly addressed by current guidelines.
Methods. This was a virtual clinical study employing a PBPK-PD model. Virtual patient cohorts were generated to represent healthy individuals and patients with six distinct clinical conditions. Simulated daily oral doses of rivaroxaban (5 mg to 30 mg) in virtual patient cohorts to determine optimal dosing regimens. Key outcomes included plasma concentration and Factor Xa inhibition. An optimal dose aligned with the therapeutic window (25th-75th percentile) for healthy subjects receiving a 20 mg daily dose.
Results. The validated model provided a mechanistic basis for established dose adjustments, such as the 15 mg qd dose for moderate renal impairment, and suggested no dose change for Child-Pugh A. It identified 10 mg qd as optimal for Child-Pugh B and 7.5 mg qd for moderate renal impairment with the CYP3A4 inhibitor co-administration. Conversely, a 30 mg qd dose was proposed for mild hepatic impairment with a strong CYP3A4 inducer. For severe renal failure, the model confirmed that no dose could safely achieve therapeutic targets, highlighting significant risks.
Discussion. By integrating drug exposure and response, this PBPK-PD modeling framework provides an aided decision-support tool for optimizing rivaroxaban doses in challenging clinical scenarios.

P341

CYP450-mediated drug–drug interactions in oncology: recognition, management and educational perspective

A/Prof Olivian Stovicek

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

CYP450-mediated drug–drug interactions in oncology: recognition, management and educational perspective
Liliana Mititelu-Tarțău[1], Cristina Mihaela Ghiciuc[1], Michael Schenker[2,3], Dan Gheorghe Mălăescu[4], Puiu Olivian Stovicek[2,4], Ramona Adriana Schenker[2]. University of Medicine and Pharmacy Grigore T Popa[1], Iași, Romania; Sf. Nectarie Oncology Center[2], Craiova, Romania; University of Medicine and Pharmacy[3], Craiova, Romania; Titu Maiorescu University[4], Bucharest, Romania.

Introduction. Cancer patients are at increased risk of drug–drug interactions (DDIs) due to polypharmacy and the narrow therapeutic window of many antineoplastic agents. Cytochrome P450 (CYP450) enzymes play a central role in the metabolism of both anticancer drugs and adjuvant medications. DDIs can reduce treatment efficacy, increase toxicity, compromise patient safety, and significantly impact treatment adherence and quality of life.
Aims. The aim of this study is to analyze DDIs in cancer patients, with a focus on mechanisms mediated by the CYP450 system.
Methods. A systematic search was conducted in PubMed, ResearchGate, and Google Scholar databases using terms related to DDIs in oncology. Observational studies, systematic reviews, and meta-analyses reporting clinically relevant DDIs in oncology mediated by CYP450 enzymes were included.
Results. Studies report a variable prevalence (30–60%) of potential or actual DDIs in cancer patients. Inhibition of CYP3A4 by azole antifungals or macrolides increases levels of tyrosine kinase inhibitors; induction of CYP3A4 by dexamethasone decreases imatinib concentrations; inhibition of CYP2D6 by SSRI antidepressants reduces tamoxifen activation; CYP2C9 interactions amplify warfarin's anticoagulant effect (5-fluorouracil, capecitabine, ciprofloxacin, metronidazole) or diminish it (rifampicin, antiepileptics); induction of CYP1A2 by smoking accelerates erlotinib metabolism. Clinical consequences include hospitalizations, dose adjustments, or discontinuation of cancer therapy.
Discussion. Recognition and management of DDIs are critical in oncology, with the potential to directly influence therapeutic outcomes and patient safety. Systematic use of DDI screening tools and fostering interdisciplinary collaboration may reduce risks and support a safe, personalized therapeutic approach. In addition, patient and caregiver education regarding self-medication and dietary supplement use is essential for DDI prevention. Unrecognized DDIs may compromise oncological outcomes as severely as disease progression itself, highlighting the critical importance of early detection and proactive management.

P342

Clinical decision support models to optimise controlled ovarian hyperstimulation: a scoping review

Mr Robin Lu

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Clinical decision support models to optimise controlled ovarian hyperstimulation: a scoping review

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Introduction. Optimising artificial reproductive technologies (ART) remains a major challenge due to the high variability in ovarian reserve and responsiveness to controlled ovarian hyperstimulation (COH), contributing to suboptimal oocyte yield. Different COH response prediction models are emerging, designed to inform therapy decision-making and optimise COH outcomes.

Aims. To examine the efficacy of model-based, machine learning (ML) and artificial intelligence (AI) clinical decision support (CDS) approaches to inform COH medication decisions.

Methods. A scoping search of Embase, MEDLINE, PubMed, and Scopus followed PRISMA-ScR. Studies evaluating model-based, ML or AI-driven CDS tools to optimise COH dosing and/or ovulation trigger timing were included. The number of retrieved or metaphase II (MII) oocytes and clinical pregnancy rates were assessed.

Results. From screening 2879 studies, five were included (n = 16441). Three studies examined ML-based models whilst two used AI-based prediction models. Using precision dosing models (n=2) resulted in a modest increase in the number of MII oocytes (+1.5; P <0.001), and a decrease in the total gonadotropin dose used for COH (- 195IU; P <0.001), compared to standard care. Oocyte trigger timing (n=1) retrieved more MII oocytes (+2.5; P <0.01) compared to standard care. Models incorporating both dosing and oocyte trigger timing (n=2) produced results consistent with precision dosing alone. Studies did not assess clinical pregnancy rates, using MII oocytes number as a proxy for treatment success.

Discussion. No additive benefit of combing precision dosing and oocyte trigger timing models was observed. Follicles vary in sensitivity to follicle stimulating hormone, with highly sensitive follicles responding earlier and driving heterogeneous growth. Precision dosing models promote follicular growth homogeneity and increase simultaneous follicle maturation, optimising COH response. Current literature focuses on AI- or ML- driven prediction. Future research should evaluate whether pharmacological model-based approaches (e.g. Pharmacokinetic-informed dosing models) integrated into CDS tools can further optimise COH processes and clinical outcomes.

P344

Population pharmacokinetic-pharmacodynamic modelling of follicle-stimulating hormone and inhibin-B to predict ovarian response

Ms Toni Michael

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Population Pharmacokinetic-Pharmacodynamic Modelling of Follicle-Stimulating Hormone and Inhibin-B to Predict Ovarian Response

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Introduction. Controlled ovarian hyperstimulation (COH) involves administration of recombinant follicle-stimulating hormone (FSH) to stimulate follicular maturation. Follicles secrete inhibin-B as they grow, making it a sensitive ovarian response biomarker. There is inter-individual variability in FSH PK, inhibin-B dynamics, and oocyte retrieval.

Aims. To: (i) update and extend a published popPK/PD model of FSH and inhibin-B, (ii) evaluate the influence of covariates, and (iii) assess model performance using real-world clinical data to inform individualised FSH dosing.

Methods. A published one-compartment PK model with first order absorption and linear elimination, linked to a PD turnover model for inhibin-B production stimulated by FSH, served as the *a priori* model. Data from 81 women undergoing COH was used to update the model, followed by stepwise correlation tests for covariate evaluation. Covariates assessed included baseline age, weight, anti-Müllerian Hormone (AMH), oestradiol, and luteinizing hormone (LH). Model performance was assessed using diagnostic plots and visual predictive checks (VPCs). Models were estimated using non-linear mixed-effects modelling through the SAEM algorithm using Monolix (2024R1).

Results. Of 81 patients, all contributed ≥2 [FSH] and 28 contributed ≥2 [inhibin-B] to the PK and PD models, respectively. The typical patient was 36 years old (SD 4.7), weighing 67 kg (SD 11.6), was 1.64 m tall (SD 0.6), and taking 250 IU/d (range 125-450 IU/d) of follitropin alfa. The updated model improved fit relative to the *a priori* model (BICc = 2196.77 vs. 2240.15; −2LL = 2066.64 vs. 2127.4). The final PK parameter and covariate relationships are: $CL/F=0.53*(Weight/70)^{0.92}$ L/h; $[FSH]=0.62*e^{(-0.0012*[oestradiol])}$ IU/L. The final PD parameter and covariate relationships are: $K_{out\ (Inhibin\text{-}B)}=1.01*e^{(0.026*[LH])}$ h^{-1}; $[Inhibin\text{-}B]=21.28*e^{(0.049*AMH)}$ pg/mL. VPCs indicated adequate description of data.

Discussion. Integrating covariates improved the FSH-Inhibin-B popPK/PD model performance. Individualised FSH dosing should consider patient weight, AMH, oestradiol and LH concentration. All identified effects are biologically plausible. Inclusion of in-cycle biomarkers as time-varying covariates would be useful to inform FSH dose adjustments. Planned simulations will evaluate personalised dosing strategies for predicted poor responders to improve outcomes.

P345

Menthol dose reframes nicotine metabolism under controlled aerosol exposure

Ms Jiyun Nam

Tuesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Menthol dose reframes nicotine metabolism under controlled aerosol exposure
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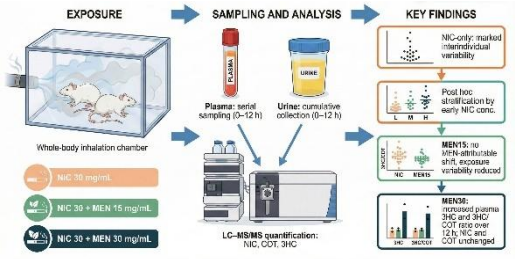

Introduction. Menthol (MEN) is widely added to electronic cigarette liquids to reduce aerosol harshness; however, its effects on nicotine (NIC) uptake and systemic metabolism remain inconsistent. These discrepancies highlight the need for controlled inhalation models to clarify MEN-associated modulation of NIC metabolism.
Aims. This study aimed to determine the concentration-dependent effects of MEN on systemic NIC metabolism under controlled aerosol inhalation using a validated LC–MS/MS platform.
Methods. Rats were exposed via whole-body inhalation to aerosolized nicotine (NIC, 30 mg/mL) alone or with menthol (MEN, 15 or 30 mg/mL). Serial plasma samples were collected up to 12 h post-exposure, and urine was collected cumulatively over 12 h. NIC and its primary metabolites, cotinine (COT) and trans-3'-hydroxycotinine (3HC), were quantified in plasma and urine using validated LC–MS/MS.
Results. Despite identical exposure, the NIC-only group showed marked interindividual variability in plasma NIC levels, prompting post hoc stratification by early systemic exposure. After stratification, differences between NIC-only and MEN 15 mg/mL were attributable to NIC exposure rather than MEN. No MEN-attributable changes were observed in plasma or urinary metabolite ratios at 15 mg/mL. In contrast, MEN 30 mg/mL significantly increased plasma 3HC concentrations and the 3HC/COT ratio over 12 h, without altering plasma NIC or COT levels.
Discussion. These findings indicate a concentration-dependent menthol effect. While MEN 15 mg/mL did not alter nicotine metabolism, MEN 30 mg/mL enhanced downstream biotransformation from COT to 3HC, as reflected by an increased 3HC/COT ratio.

P348

Advanced hybrid GNN-ML framework for robust CYP3A4 inhibition prediction and validation

Ms Somin Woo

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Advanced hybrid GNN-ML framework for robust CYP3A4 inhibition prediction and validation
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Introduction. Cytochrome P450 3A4 (CYP3A4) is a primary cause of adverse drug-drug interactions (DDIs). Developing robust predictive models across diverse chemical spaces remains a critical challenge in pharmacological screening.
Aims. This study developed an augmented hybrid Graph Neural Network-Machine Learning (GNN-ML) framework to enhance the reliability of CYP3A4 inhibition (%) predictions.
Methods. A curated dataset of 23,713 compounds was utilized to train and evaluate multiple architectures. The framework combines vector-based ML models (e.g., LightGBM) with GNNs incorporating contrastive learning and manifold mixup. To ensure robustness, Simplified Molecular Input Line Entry System (SMILES) enumeration-based test-time augmentation was applied during the inference phase (Bjerrum, 2017). Performance was validated using an external set of 100 newly generated experimental data points to assess generalizability in real-world screening scenarios.

Category	Model	RMSE	R2	PCC	Custom Metric
ML	CatBoost	19.9161	0.5343	0.7313	0.7661
ML	XGBoost	19.9099	0.5345	0.7326	0.7668
ML	LightGBM	19.7346	0.5427	0.7375	0.7701
ML	Weighted Ensemble	19.1031	0.5715	0.7566	0.7828
GNN	GAT	20.9954	0.4824	0.6960	0.7430
GNN	D-MPNN	20.9835	0.4829	0.6963	0.7432
GNN	GINE	20.3554	0.5135	0.7204	0.7584
GNN	O-GNN Contrastive Learning Mixup	20.1002	0.5257	0.7265	0.7627
GNN-ML	**Weighted Ensemble O-GNN Test Time Augmentation**	**19.0784**	**0.5726**	**0.7570**	**0.7831**

Results. The hybrid model outperformed individual models (root mean square error (RMSE)=19.0784, *r*=0.7570) and significantly stabilized predictions for structurally novel compounds. External validation confirmed high reliability (Custom Metric=0.8035), while SHapley Additive exPlanations (SHAP) analysis identified key molecular fragments contributing to CYP3A4 binding affinity.
Discussion. Integrating graph-based features with descriptor-based ML improves metabolic liability prediction. This framework offers a practical tool for high-throughput DDI risk assessment and streamlines early-stage drug discovery. Future research will focus on extending this methodology to develop %inhibition models for other major CYP isoforms.

Bjerrum EJ (2017) arXiv:1703.07076

P349

HDAC inhibition-driven phosphoglucomutase 1 succinylation promotes hepatocellular carcinoma progression

Dr Xiangchang Zeng

Tuesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

HDAC inhibition-driven phosphoglucomutase 1 succinylation promotes hepatocellular carcinoma progression
Xiangchang Zeng[1], Deliang Huang[1], Jun Chen[1] Department of Liver Diseases, Shenzhen Third People's Hospital, The Second Affiliated Hospital of Southern University of Science and Technology[1], Shenzhen, Guangdong 518112, China.
Introduction. Hepatocellular carcinoma (HCC) is one of the leading causes of cancer-related mortality worldwide, and metabolic reprogramming is a key regulatory factor driving the occurrence and development of liver cancer. Phosphoglucomutase 1 (PGM1) is a crucial enzyme involved in both the synthesis and breakdown of glycogen. However, the role of succinylation of PGM1 in HCC progression remains unclear.
Aims. This study aims to elucidate the succinylation modification of PGM1 and its effect on the progression of hepatocellular carcinoma.
Methods. Quantitative proteomic analysis of lysine succinylation was conducted on human hepatocellular carcinoma tissues and paired adjacent non-tumor tissues by mass spectrometry. The key succinylation (Ksuc) sites affecting PGM1 were analyzed through mass spectrometry, immunoprecipitation (IP), and site-directed mutagenesis. The enzyme responsible for catalyzing lysine succinylation of PGM1 was identified. The enzymatic activity of PGM1 was assessed. The effects of succinylation at PGM1 lys234/235 on tumor growth were evaluated in vitro by CCK8 assays. The influence of PGM1 lys234/235 succinylation on the anti-liver cancer effect of lenvatinib was evaluated.
Results. The levels of PGM1 lys234/235 succinylation were significantly higher in hepatocellular carcinoma tissues than those in adjacent non-tumor tissues. The mimicking mutation (K234/235E) markedly increased the succinylation levels and reduced the protein expression of PGM1 compared with wild-type PGM1. Trichostatin A (TSA), a potent and specific inhibitor of HDAC class I/II, increased the succinylation level of PGM1. Furthermore, succinylation of PGM1 lys234/235 (K234/235E) reduced the enzymatic activity of PGM1. The mimicking PGM1 lys234/235 succinylation mutation (K234/235E) significantly enhanced the proliferation of HepG2 and Huh7 cells. Moreover, PGM1 lys234/235 succinylation reduced the sensitivity of hepatocellular carcinoma to lenvatinib.
Discussion. The succinylation of PGM1, which is negatively regulated by HDAC, promotes hepatocellular carcinoma progression, thereby uncovering a novel regulatory mechanism of PGM1. This finding suggests that targeting the succinylation of PGM1 could be a promising therapeutic strategy for hepatocellular carcinoma.

P350

Population pharmacokinetics of intravenous ampicillin in non-critical inpatients

Prof Andres Zuluaga

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Population pharmacokinetics of intravenous ampicillin in non-critical inpatients

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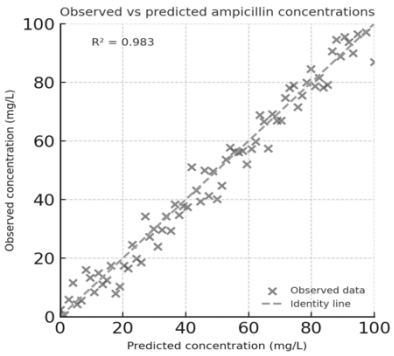

Introduction. Ampicillin remains a cornerstone of treatment for severe infections, yet pharmacokinetic (PK) data in non-critical hospitalized patients are scarce. Population PK (pop-PK) modeling may support individualized dosing and optimize therapeutic outcomes.

Aims. To develop a pop-PK model describing the pharmacokinetics of ampicillin administered as a 3 g intravenous infusion over two hours in non-critical hospitalized patients.

Methods. Fifteen inpatients receiving ampicillin were prospectively enrolled. Serial blood samples were collected during and after the infusion, yielding 75 observations. One- and two-compartment models with first-order elimination were tested. Covariates included age, weight, and renal function. NLM effects modeling was performed with Pmetrics. Model fit was assessed by goodness-of-fit plots, R^2, bias, and imprecision.

Results. A one-compartment model with first-order elimination provided the best fit, converging after 74 cycles. Individual observed-predicted plots yielded an R^2 of 0.983. Model bias was 0.008 and imprecision 5.27. Final parameter estimates (median) included an elimination constant of 0.8 h^{-1}, apparent central volume of distribution of 35.6 L, and absorption rate constant (Ka) of 1.04 h^{-1}. BSV was substantial (CV% 34–159). Renal function and body weight were significant covariates affecting clearance. The median trough concentration was 35.7±12 mg/L.

Discussion. The developed pop-PK model adequately described ampicillin pharmacokinetics in non-critical hospitalized patients and highlighted the influence of renal function and weight on clearance. These findings support the use of individualized dosing strategies in this population, although validation in larger cohorts is needed.

Neely MN, et. Al. (2012). Ther Drug Monit 34(4):467–476.

P351

Population pharmacokinetics of metformin in Colombian patients with type 2 diabetes mellitus

Prof Andres Zuluaga

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Population pharmacokinetics of metformin in Colombian patients with type 2 diabetes mellitus

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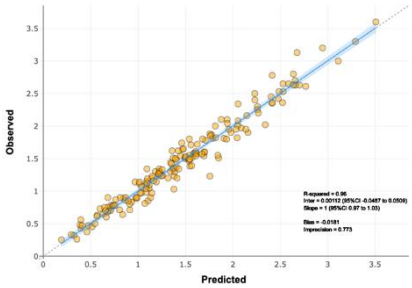
Introduction. Achievement of glycaemic targets in Colombian patients with type 2 diabetes mellitus (T2DM) under metformin monotherapy remains low. Population pharmacokinetic (PK) studies may clarify drug behaviour and optimise dosing.



Aims. To determine the PK of metformin in Colombian adults and evaluate covariates affecting clearance.

Methods. Twenty-nine T2DM patients received a single oral dose of 500, 850, or 1000 mg. Plasma concentrations were quantified by HPLC and analysed with Pmetrics using non-linear mixed effects modelling. Covariates assessed: age, weight, fat mass, clearance, and SLC22A1 polymorphisms.

Results. A two-compartment model with first-order elimination best described the data (R^2 = 0.96). Mean estimates: clearance 5.5 L/h, distribution volume 74.0 L, absorption constant 0.379 h^{-1}, lag time 0.437 h, intercompartmental clearance 61.7 L/h, bioavailability 0.58. Body weight significantly influenced clearance ($CL = CL1*(wt/70)^{0.75}$).

Discussion

Metformin PK in Colombian T2DM patients is best explained by a two-compartment model. Body weight was the main covariate affecting clearance, supporting the need for weight-adjusted dosing to improve treatment outcomes.

Neely, M.N., et al. (2012). Ther Drug Monit;34(4):467–476
Inzucchi SE, et al (2015). Diabetes Care. 2015.

P352

Population pharmacokinetics of tacrolimus in long-term adult transplant recipients

Prof Andres Zuluaga

Tuesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 14, 2026

Population pharmacokinetics of tacrolimus in long-term adult transplant recipients

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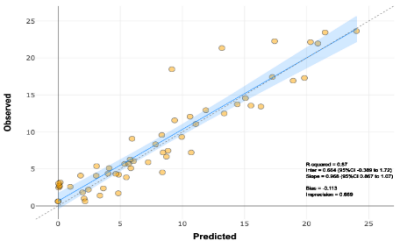
Introduction. Tacrolimus is a cornerstone immunosuppressant in organ transplantation, but its pharmacokinetics (PK) show wide interindividual variability. Most studies have focused on early post-transplant periods, leaving long-term use less understood.
Aims. To develop a population PK model of tacrolimus in adult transplant recipients more than four years post-transplant and identify relevant covariates.



Methods. Nine adult transplant recipients, all >4 years post-transplant, were enrolled. Intensive sampling (six samples/day) generated 57 tacrolimus concentration data points. Plasma concentrations were analysed using Pmetrics with non-linear mixed effects modelling. Covariates tested included body mass index (BMI), haematocrit, time since transplant, and CYP3A5 and ABCB genotypes.
Results. A two-compartment model with first-order elimination best fitted the data (R^2 = 0.86). Median lag time and bioavailability were 55 min and 75%, respectively. Subpopulations were identified for parameters including bioavailability, elimination rate (Ke), absorption constant (Ka), and intercompartmental clearance (Q).
Discussion. This model describes tacrolimus PK in long-term transplant recipients and highlights the influence of patient-specific factors. Findings support the potential for individualised dosing strategies. External validation is required to confirm clinical utility.

Asberg A et al (2013) Transpl Int 26:1198–1205. Campagne O et al (2019) J Clin Pharmacol 59:309–320.

P353

Post-COVID Etiology of Community-Acquired Pneumonia and Pharmacological Implications: Cross-Sectional Study from Kazakhstan

Dr Nurgul Ablakimova

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Post-COVID Etiology of Community-Acquired Pneumonia and Pharmacological Implications: A Cross-Sectional Study from Kazakhstan

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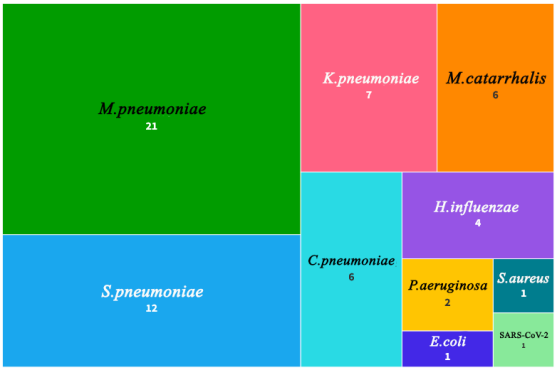
Introduction. Community-acquired pneumonia (CAP) remains a major global health issue. The impact of COVID-19 on CAP etiology, especially in Central Asia, is unclear.
Aims. To assess the etiologic profile of CAP in hospitalized adults in Kazakhstan during the post-COVID-19 period.
Methods. This cross-sectional study included adults hospitalized with CAP in two hospitals in Aktobe, Kazakhstan. Diagnostics included sputum culture, rapid antigen tests (for *S. pneumoniae*, *L. pneumophila*, influenza A/B, SARS-CoV-2), and PCR for *M. pneumoniae* and *C. pneumoniae*.



Results. Among 184 patients (median age 55; 56.5% female), an etiology was identified in 28.8%. *M. pneumoniae* was the most common pathogen (34.4%), followed by *S. pneumoniae* (19.7%), *K. pneumoniae* (11.5%), *C. pneumoniae* (9.8%), and *M. catarrhalis* (9.8%). Only one SARS-CoV-2 case was found; no influenza was detected. Mixed infections occurred in 18.9%. PCR outperformed culture due to prior antibiotic use and poor sputum quality.
Discussion. Atypical pathogens, especially *M. pneumoniae*, predominated in post-COVID CAP. These findings highlight the importance of molecular diagnostics and support revising empirical treatment strategies to promote targeted therapy and antimicrobial stewardship.

Ogawa H, Kitsios GD, Iwata M, Terasawa T (2020) Clin Infect Dis 71:499–513
Goeijenbier M, van der Bie S, Souverein D, Bolluyt D, Nagel M, Stoof SP, et al (2024) J Clin Med 13:3443

P354

Optimizing antibiotic use for community-acquired pneumonia in hospitals: meta-analysis of stewardship interventions

Dr Nurgul Ablakimova

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Optimizing antibiotic use for community-acquired pneumonia in hospitals: meta-analysis of stewardship interventions

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Introduction. Antimicrobial stewardship programs (ASPs) aim to optimize antibiotic use and reduce resistance, but their effectiveness in community-acquired pneumonia (CAP) remains under debate.
Aims. To assess the effectiveness of ASPs in improving clinical outcomes, diagnostic practices, and antibiotic prescribing in hospitalized adults with CAP.
Methods. We conducted a systematic review and meta-analysis following PRISMA guidelines (PROSPERO: CRD42023492494). Primary outcomes included 30-day mortality, time to clinical stability, adherence to recommended therapy, and timely antibiotic initiation. Meta-analyses using random-effects models were performed on outcomes reported in ≥3 studies. Risk of bias was assessed with ROB2, ROBINS-I, and EPOC tools.
Results. Twenty-five studies were included, and 22 were meta-analyzed. ASPs significantly reduced time to clinical stability (SMD = –0.16; 95% CI: –0.24 to –0.07) and 30-day mortality (OR = 0.69; 95% CI: 0.56–0.85), and increased adherence to guideline-recommended antibiotic therapy (OR = 3.01; 95% CI: 1.56–5.81). They improved timely antibiotic administration within 8 hours (OR = 1.32; 95% CI: 1.02–1.72) and increased use of *Legionella* urinary antigen testing (OR = 2.91; 95% CI: 1.56–5.42). However, no significant effects were observed on hospital mortality, length of stay, 30-day readmissions, or IV antibiotic duration. High heterogeneity was observed for several outcomes.
Discussion. ASPs improve key aspects of CAP management, notably clinical recovery, appropriate antibiotic use, and diagnostics. Future research should isolate specific ASP elements, standardize approaches, and include patient-level outcomes to better guide implementation and combat resistance.

Nathwani D et al (2019) Antimicrob Resist Infect Control 8:35
Yao L et al (2020) Glob Health Res Policy 5(1):45

P355

Monotropein Attenuates Mast Cell–Mediated Allergic Inflammation via Inhibition of FcεRI Signaling

Ms Seoyeong Kim

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Monotropein Attenuates Mast Cell–Mediated Allergic Inflammation via Inhibition of FcεRI Signaling

Seoyeong Kim[1] and Sang-Hyun Kim[1]. Department of Pharmacology, School of Medicine, Kyungpook National University[1], Daegu 41944, Republic of Korea

Introduction. Mast cells are key effector cells that initiate allergic inflammation through the release of various allergic mediators, such as histamine and pro-inflammatory cytokines. Monotropein (MON) is the predominant iridoid glycoside isolated from the roots of *Morinda officinalis* How., with reported anti-inflammatory and immunomodulatory activities.

Aims. In the present study, we investigated the beneficial effects of MON on mast cell-mediated allergic inflammation.

Methods. For the *in vivo* study, two well-established mouse models of mast cell-mediated local and systemic allergic responses were used: passive cutaneous anaphylaxis (PCA) and active systemic anaphylaxis mouse models (ASA).

Results. Oral administration of MON dose-dependently suppressed IgE-mediated PCA responses, as evidenced by reduced Evans blue extravasation, ear thickening, and mast cell degranulation. MON also significantly mitigated ovalbumin-induced ASA responses, including hypothermia, histamine release, and the production of IgE and interleukin-4. The regulatory mechanisms of mast cell activation by MON were further investigated using a mast cell line and primary cultured mast cells (RBL-2H3 and mouse bone marrow–derived mast cells). MON reduced IgE-stimulated mast cell degranulation and intracellular calcium influx through inhibition of the FcεRI signaling pathway (Lyn, Fyn, and Syk). Moreover, MON suppressed the expression of pro-inflammatory cytokines by inhibiting the major transcription factor, nuclear factor-κB.

Discussion. Collectively, these findings suggest that MON may serve as a therapeutic candidate for the treatment of mast cell–mediated allergic inflammatory diseases.

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Evaluation of pertussis immunogenicity via novel microneedle vaccination: a preclinical study

Dr Ishumeet Kaur Bajwa

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Evaluation of pertussis immunogenicity via novel microneedle vaccination: a preclinical study

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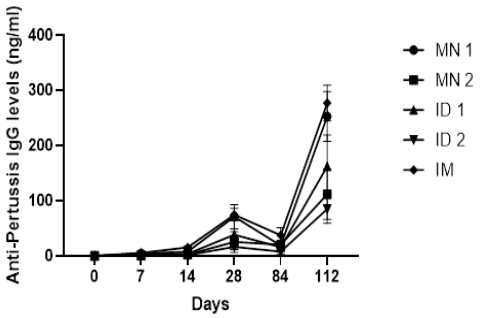

Introduction. Microneedles enable precise, painless vaccine delivery into the dermis rich in antigen-presenting cells, but their safety and efficacy require systematic evaluation before clinical use.
Aims. To evaluate the safety and efficacy of indigenously developed microneedles by delivering standard and reduced pentavalent vaccine doses via MN, ID, and IM routes and to compare anti pertussis immune kinetics and anamnestic responses.
Methods. Novel hollow microneedle (750 µm, 200 µm bore) delivered standard (0.2 ml) and reduced (0.1 ml) pentavalent vaccine containing *Bordetella pertussis* (whole-cell, killed; 4 IU) doses in BALB/c mice (aged 6–8 weeks, 20–25 g). Immunogenicity against pertussis was compared across microneedle [MN1 (0.2 ml), MN2 (0.1 ml)], intradermal [ID1 (0.2 ml), ID2 (0.1 ml)], and intramuscular (IM 0.2 ml) groups by evaluating antibody kinetics (days 0, 7, 14, and 28), anamnestic response was evaluated on day 84 (post-booster) and day 112, and splenic T/B cell profiling (day 7) using ELISA and flow cytometry. Pain was assessed in all groups using the mouse grimace scale [1].
Results Microneedle (MN) injections were well-tolerated, producing the lowest pain score [MN1: 0.26, MN2: 0.21] compared to IM (1.82), ID1 (1.46) and ID2 (1.35). MN1 vaccination achieved anti-pertussis IgG titers comparable to IM (day 28: 71.1 vs 75.0 ng/ml, p=0.99; day 112: 252.9 vs 277.1 ng/ml, p=0.12) and significantly higher than ID1 ($p<0.05$). Reduced-dose MN2 elicited higher titers than ID2 (day 28: 25.4 vs 16.4 ng/ml, p=0.90; day 112: 111 vs 85.2 ng/ml, p=0.07) but remained significantly lower than the standard dose. T/B cell responses were higher in MN groups but not statistically significant. Overall, MN delivery is statistically equivalent to IM, superior to ID, and less painful.
Discussion. The data confirm that intradermal injection through microneedles is safe and efficacious, paving the way for clinical studies in human subjects.

[1] Waghchaure M (2021) Biomed Microdevices 23:1–9

P358

Anti-Allergic Effects of Compound X on Mast Cell-Mediated Allergic Airway Inflammation

Miss Hyun Ji Kim

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Anti-Allergic Effects of Compound X on Mast Cell-Mediated Allergic Airway Inflammation

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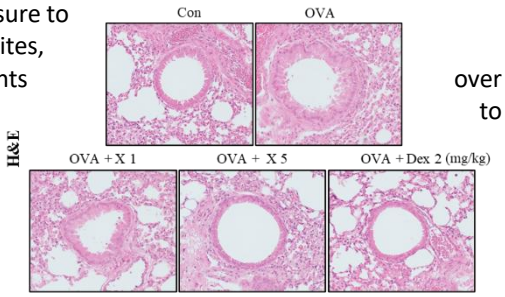
Introduction. Asthma is a chronic respiratory disease, with the majority of cases being allergic asthma that can be readily triggered by exposure to various environmental factors such as food, pollen, house dust mites, or dander. Despite the development of various asthma treatments over the past several decades, conventional therapies remain limited to symptom management rather than targeting the underlying causes of the disease. Therefore, identifying novel therapeutic targets able to overcome these limitations is essential.



Aims. This study aimed to evaluate the anti-allergic effects of Compound X and investigate its mechanisms in mast cell–mediated allergic responses *in vitro* and *in vivo.*

Methods. Following the initial sensitization process, each drug was orally administered at the specified concentration. 1 hour later, asthma was induced in the mice by challenging them with 3% OVA using a nebulizer.

Results. In the asthma model, Compound X alleviated asthmatic symptoms by reducing immune cell infiltration, serum IgE levels, and bronchoconstriction. It also decreased cytokines and inflammatory mediators in lung lavage fluid and tissue.

Discussion. Mast cells play a critical role in allergic inflammation. Although resorcinol derivatives have been reported to exhibit anti-inflammatory properties, their effects on mast cell-mediated allergic responses remain poorly understood. In this study, we screened synthesized resorcinol derivatives using mast cell-based assays and identified Compound X as a potent anti-allergic candidate. Based on these findings, Compound X could be a potential therapeutic agent for asthma.

Jeong S et al (2024) Antioxidants 26;13(5):528.

P359

Placental Lipid Mediators: Inflammation and Resolution in Gestational Diabetes Mellitus

Ms Aifiona Yan Vestano

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Placental Lipid Mediators: Inflammation and Resolution in Gestational Diabetes Mellitus

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Introduction. Gestational diabetes mellitus (GDM) is marked by chronic low-grade inflammation. Ideally, inflammation is a self-limiting process that transitions into resolution, a phase mediated by specialized pro-resolving lipid mediators (SPMs) such as resolvins, protectins, and maresins, and lipoxins. Unlike conventional anti-inflammatory drugs, naturally-occurring SPMs restore immune balance without compromising host defense[1]. In GDM, this resolution process may be impaired, sustaining inflammation and metabolic dysfunction in systematically and across tissue types[2].
Aims. This study investigates differences in placental inflammation-resolution in pregnancies with GDM and higher maternal BMI compared with control uncomplicated pregnancies.
Methods. Placental villous biopsies were obtained at term elective cesarean section from women with GDM (n=28) and normoglycemic controls (n=26). Samples were homogenized and analyzed using liquid chromatography–tandem mass spectrometry (LC-MS/MS) metabololipidomics to quantify pro-inflammatory eicosanoids and pro-resolving SPMs. Quantification was adjusted with deuterated internal standard, with MS spectra matched against synthetic standards.
Results & Discussion. Comparing normoglycemic and GDM pregnancies, GDM placentas showed increased pro-inflammatory eicosanoids (e.g. prostaglandins) and reduced pro-resolving SPMs, including maresin and protectin. This indicates a heightened inflammatory state with impaired resolution in GDM. Higher maternal BMI was associated with increased pro-inflammatory eicosanoids, particularly leukotrienes, suggesting that elevated maternal BMI exacerbates placental inflammation.
Conclusion. In conclusion, GDM is characterized by a heightened placental inflammatory state with an impaired ability to resolve inflammation. Higher maternal BMI increases the risk of developing GDM and is also itself associated with greater placental inflammation, potentially exacerbating GDM pathology further. The implications of these findings on the pregnancy and fetus remains to be investigated.

(1) Peh, H. Y. and Chen, J. *Pharmacol Ther* **2025**, *265*, 108753. (2) Watkins, O. C.; et al. *J Physiol* **2023**, *601*, 4151-4169.

P360

Targeting brevican improves key disease features in experimental chronic obstructive pulmonary disease.

Ms Cory Butlin

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Investigating the roles, and potential for therapeutic targeting, of brevican in COPD

Cory Butlin, Chantal Donovan, Richard Y Kim, Madison L Coward-Smith, William Dewar, Jessica Tolentino, Hudson Taylor-Blair, Brian GG Oliver. School of Life Sciences, Univ of Technology Sydney, Sydney, NSW; Respiratory Cell and Molecular Biology, Woolcock Institute of Medical Research, Sydney, NSW.

Introduction. Chronic Obstructive Pulmonary Disease (COPD) is a progressive lung disease characterised by a reduction in respiratory airflow, destruction of the small airways, excess mucous secretion and chronic inflammation. Extracellular Matrix (ECM) proteins play a critical role in maintaining lung structure and repair in COPD and disruption of homeostasis of these proteins can lead to tissue remodelling. Brevican, and ECM protein has been previously unstudied in COPD, however, emerging evidence suggests that it may have a critical role in COPD pathology.

Aims. To analyse the effects of targeting *Bcan* in the lungs on lung structure and function. Assess the efficiency of siRNA treatment, confirmed by measuring *Bcan* mRNA and brevican protein levels. To characterise *Bcan* on immune cell populations in COPD.

Methods. Mice (n=8/group) were administered porcine pancreatic elastase (PPE; 0.25IU). i.n. (day 0; or saline control) to induce pulmonary emphysema. Mice were then treated with *Bcan*-siRNA or scrambled-siRNA (2.5mg/kg; 3x per week) i.n. for two weeks. Endpoint analysis (day 21) included lung function measurements, airway inflammation measured in bronchoalveolar lavage fluid and flow cytometry in single cell suspensions. Changes in lung architecture were assessed through histology, and expression of brevican was assessed using immunohistochemistry and gene expression analysis.

Results. PPE treated mice (PPE/scr-siRNA) had COPD compared to the control. *Bcan*-siRNA (PPE/*Bcan*) treatment significantly reduced area, improving lung tissue stability. This treatment also improved lung function in the conducting airways. Mean linear intercept (MLI) was significantly reduces in *Bcan*-siRNA treated mice compared with PPE/scr-siRNA controls, indicating preservation of alveolar architecture.

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Bidirectional interaction between skeletal muscle atrophy and pulmonary fibrosis in mice

Assoc Prof Atsushi Koike

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Bidirectional interaction between skeletal muscle atrophy and pulmonary fibrosis in mice

Atsushi Koike, Ko Fujimori. Faculty of Pharmacy, Osaka Medical and Pharmaceutical University, Takatsuki, Osaka, Japan

Introduction. Idiopathic pulmonary fibrosis (IPF) is a progressive and fatal lung disease. More than 80% of patients develop skeletal muscle atrophy such as sarcopenia. This c atrophy further lowers quality of life (QOL) and exacerbates pulmonary fibrosis by impairing respiratory muscle function, forming a vicious cycle.
Aims. This study aimed to clarify the bidirectional interaction between skeletal muscle atrophy and pulmonary fibrosis using a mouse model of bleomycin (BLM)-induced fibrosis and denervation-induced muscle atrophy.
Methods. C57BL/6 mice (8-week-old, male) underwent sciatic nerve resection to induce hindlimb muscle atrophy. After 14 days, BLM or saline was administered intratracheally to generate the denervated- and control-groups, and the mice were maintained for further 14 days. Body weight, food and water intake were monitored. Pulmonary fibrosis was assessed by analysing saturation of percutaneous oxygen (SpO_2), chest CT, histology, and expression of the fibrosis-related genes and proteins. Skeletal muscle was evaluated by muscle weight and expression of the muscle atrophy-and regeneration-related genes.
Results. Muscle denervation in mice showed significant loss of muscle mass in all hindlimb muscles except the quadriceps. Mortality after BLM administration was markedly higher in the muscle-denervated group than the control group, suggesting that muscle loss may be associated with the aggravation of fibrosis. Following BLM administration, body weight decreased, but SpO_2 was declined, and collagen deposition and fibrosis-related gene expression were increased. Hindlimb muscle weight was reduced, with the elevated expression of MuRF1 and Atrogin-1, which promote muscle proteolysis and atrophy through the ubiquitin–proteasome system. In contrast, the gene expression of the muscle regeneration-related molecules such as Myf5 and MyoD was not changed.
Discussion. These results suggest that the ubiquitin–proteasome system may be involved in the development of muscle atrophy in BLM-induced pulmonary fibrosis. Moreover, muscle loss may be associated with acceleration of pulmonary fibrosis.

P363

Roles for CREB-regulated transcription coactivators (CRTC) in β2-adrenoceptor-induced signalling and transcription

Ms Priyanka Chandramohan

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Roles for CREB-regulated transcription coactivators (CRTC) in β_2-adrenoceptor-induced signalling and transcription

Priyanka Chandramohan, Mark A. Giembycz, Robert Newton. Department of Physiology and Pharmacology, Synder Institute for Chronic Disease, University of Calgary, Calgary, AB, Canada.

Introduction. β_2-adrenoceptor (β_2AR) agonists, such as formoterol (form) or indacaterol (ind), bind β_2-adrenoceptors to stimulate the cAMP pathway and activate gene transcription via cAMP response elements (CREs). This is believed to involve CRE-binding protein (CREB)-regulated transcription coactivators (CRTCs), which interact with CREB, or other basic leucine-zipper transcription factors present at CREs. However, the existence of three homologous CRTCs (CRTC1–3) raises questions as to differential or redundant regulation of gene expression.

Aims. To explore roles for CRTC1, 2 & 3 in β_2AR-mediated signaling and transcription in airway epithelial cells.

Methods. Human BEAS-2B airway epithelial cells were treated for 1–24 h with maximally effective concentrations of form (10 μM), ind (100 nM), forskolin (10 μM), prostaglandin E_2 (1 μM), or rolipram (30 μM). CRTC expression and phosphorylation status were assessed by RNA-seq, western blotting, and phos-tag gels. Functional roles were tested using siRNA silencing, CRISPR/Cas9 knockout (KO) and CRE-luciferase reporter assays. Nuclear translocation was evaluated by subcellular fractionation and western blotting.

Results. Analysis of mRNA and total protein showed that ind and form had minimal effects on CRTC1–3 expression in BEAS-2B cells at times up to 24 h. In contrast, all cAMP agonists revealed varying degrees of CRTC dephosphorylation, as shown by downward mobility shifts on phos-tag gels. Form induced CRTC1–3 nuclear translocation within 10 min, with significant presence by 30–60 min. Silencing CRTC2 or CRTC3 reduced form-induced CRE activity by 40–45% and basal activity by ~30%, whereas KO suppressed form-induced CRE activity by 60–70% and basal activity by 50–70%. Combined CRTC2 plus CRTC3 KO caused greater repression. Additionally, form induced CRE activity in CRTC2, or CRTC3, KO clones were more sensitive to CRTC3, or CRTC2, silencing, respectively. CRTC1 KO showed minimal impact on CRE-activity, but these CRTC1-KO clones were more sensitive to CRTC2 than CRTC3 silencing.

Discussion. CRTC2 and CRTC3, but not CRTC1, play significant, partially redundant roles in β_2AR-induced CRE-dependent transcription. This leaves open the possibility that individual CRTCs may engage with common or distinct transcription factors to drive common and/or gene-specific responses. Defining these genomic mechanisms may provide new insights to enhance therapeutic efficacy of β_2AR agonists.

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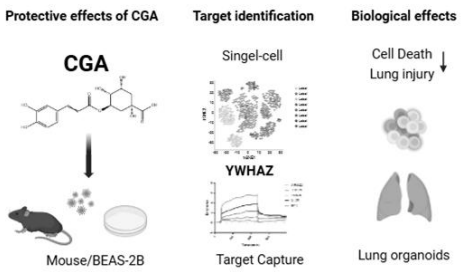
Chlorogenic Acid Attenuates H1N1-Induced Lung Injury via Host Antiviral Immune Modulation

Prof Xiaoying Wang

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Chlorogenic Acid Attenuates H1N1-Induced Lung Injury via Host Antiviral Immune Modulation

Yuqi Zhang[1], Zhaoqi Wang[1], Zhiqiang Chai[1], Bin Lv[1], Xiaoying Wang[1] and Xiumei Gao[1].1 Key Laboratory of Pharmacology of Traditional Chinese Medical Formulae, Ministry of Education, Tianjin University of Traditional Chinese Medicine, Tianjin, 301617, China.



Introduction. H1N1-induced lung injury is a major contributor to severe influenza and remains associated with limited therapeutic options. As interest in natural bioactive compounds continues to grow, chlorogenic acid (CGA), a naturally occurring phenolic compound, has demonstrated promising antiviral activity; however, its precise molecular mechanisms remain largely unclear.

Aims. This study aimed to elucidate the protective mechanisms of CGA against H1N1-induced lung injury by identifying its functional target YWHAZ and evaluating its biological relevance.

Methods. The antiviral effects of CGA were evaluated using both in vivo and in vitro H1N1 infection models. Single-cell transcriptomic sequencing combined with multi-omics analyses was performed to characterize CGA-mediated immune regulation and to predict potential mechanisms. Chemical biology approaches were subsequently applied to validate the direct interaction between CGA and YWHAZ. In addition, lung organoid models were employed to further confirm the functional role of YWHAZ in CGA-mediated protection.

Results. CGA significantly suppressed H1N1 replication and mitigated virus-induced lung injury. Single-cell analysis revealed that CGA enhanced host antiviral immune responses, while YWHAZ was identified as a key immunoregulatory target directly interacting with CGA.

Discussion. These findings suggest that CGA exerts antiviral effects against H1N1 through YWHAZ-associated immunomodulation, providing mechanistic insights into natural compound-based antiviral therapeutic strategies.

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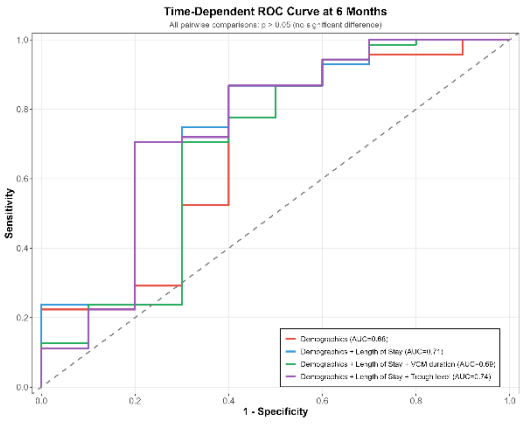
Determination of optimal vancomycin trough level for predicting VRE occurrence

Ms Sooyoun Lee

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Determination of optimal vancomycin trough level for predicting VRE occurrence

Sooyoun Lee[1], Kyung-Sang Yu, MD, PhD[1], Ki Young Huh, MD, PhD[1]. Dept of Clin Pharmacol and Ther, Seoul Nat Univ Coll of Med and Hosp[1], Seoul, Rep. of Korea



Introduction. Vancomycin is essential for treating serious Gram-positive infections, but prolonged exposure may promote vancomycin-resistant enterococci (VRE) colonisation. However, clinically relevant exposure thresholds associated with VRE risk remain unclear.

Aims. To evaluate the association between vancomycin trough level and VRE occurrence and to identify an optimal trough cut-off for risk stratification.

Methods. This retrospective cohort study included patients receiving vancomycin with therapeutic drug monitoring (TDM) and VRE surveillance screening at Seoul National University Hospital (January 2023–December 2025). Four logistic regression models were developed: Model 1 (demographics only), Model 2 (Model 1 + length of stay), Model 3 (Model 2 + vancomycin taken duration), Model 4 (Model 2 + vancomycin trough level). Model performance was compared using time-dependent receiver operating characteristics (ROC) analysis at 6 months. Patients were classified into exposure groups based on the majority of their trough measurement across candidate cut-offs.

Results. Among 223 patients, 26 (11.7%) developed VRE during follow-up. Model 4 showed the highest predictive performance (AUC=0.744), followed by Model 2 (AUC=0.713), Model 3 (AUC=0.688), and Model 1 (AUC=0.675). However, pairwise comparisons revealed no statistically significant differences between models (all p>0.05). The addition of vancomycin-related parameters did not significantly improve predictive performance compared to the baseline demographic model.

Discussion. Baseline patient factors were comparable predictors of VRE colonization compared to vancomycin-related parameters. This suggest that therapeutic strategies aimed at optimizing underlying patient conditions may be more effective for VRE prevention than focusing solely on vancomycin exposure.

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Immunogenicity, Efficacy and Safety of Covishield Vaccine in Chronic Kidney Disease Patients

Prof Girish Chandrashekaran

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Immunogenicity, Efficacy and Safety of Covishield Vaccine in Chronic Kidney Disease Patients
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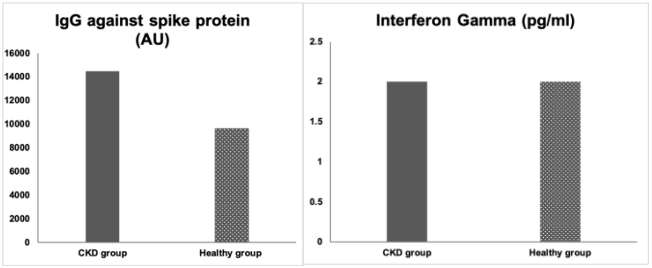
Introduction. The incidence of chronic kidney disease (CKD) is more than ten percent globally and they show higher mortality with COVID-19. The immune response of CKD patients to Covishield vaccine may vary (Windpessl et al, 2021). Therefore, understanding vaccine efficacy and safety in this population is critical.



Aims. To compare the immunogenicity, safety and efficacy of Covishield vaccine in non-dialysis CKD patients with healthy subjects.

Methods. Non dialysis CKD patients represent cohort one and healthy participants represent cohort two. Eligible participants were recruited between 21 and 90 days post second dose of Covishield vaccination. IgG and IFN-γ levels were measured to assess immunogenicity. The occurrence of COVID-19 illness was used to assess efficacy. The adverse effects were documented in an Adverse Event Following Immunization form through direct or telephonic interview. Further the safety was monitored by complete blood count, liver and renal function test.

Results. We recruited 40 non-dialysis CKD patients and 38 healthy participants. IgG ($p = 0.072$) and IFN-γ levels ($p = 0.339$) were not statistically different between these groups. The ADR profile and biochemical parameters were also similar between the two groups. None of the participants developed COVID-19 illness during the study period.

Discussion. Non-dialysis CKD patients showed similar immunogenicity, safety, and efficacy to the Covishield vaccine as compared to healthy participants. Hence, they can follow the routine vaccination schedule.

Windpessl M et al (2021) Nat Rev 17:291-293.

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CXCL1 and CXCL8 Promote a Proinflammatory Microenvironment in Neurofibromas

Assoc Prof Chung-Ping Liao

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

CXCL1 and CXCL8 Promote a Proinflammatory Microenvironment in Neurofibromas

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Introduction. Neurofibromas are a hallmark of neurofibromatosis type 1. They feature a complex tumor microenvironment that is known to sustain tumor growth. However, the specific drivers responsible for maintaining this inflammatory niche have previously remained elusive.
Aims. The study aimed to investigate the role of chemokines in shaping the neurofibroma tumor microenvironment to identify the underlying mechanisms of the inflammatory environment.
Methods. The study compared the secretome of neurofibroma cells with that of control Schwann cells. We utilized overexpression models of CXCL1 and CXCL8 in Schwann cells to observe downstream effects. Functional assays were conducted using conditioned media to test the response of macrophages, neutrophils, and fibroblasts. Finally, pharmacological blockade was tested using Reparixin, a CXCR1/2 antagonist.
Results. Neurofibroma cells exhibit a markedly elevated secretome compared to control Schwann cells, with CXCL1 and CXCL8 being the most significantly upregulated. Overexpression of these two chemokines induced a broad pro-inflammatory panel (including CXCL9, CXCL10, CCL2, and others), effectively recapitulating the native neurofibroma secretome. Conditioned media induced: (1) M1 macrophage polarization, phagocytosis, and migration; (2) N1 neutrophil proliferation and polarization; (3) Fibroblast activation into a pro-inflammatory, proliferative state. Additionally, Reparixin successfully suppressed the mRNA expression of key chemokines in neurofibroma cells.
Discussion. This study identified CXCL1 and CXCL8 as master regulators of the immune landscape. The attenuation observed with Reparixin underscores the central, initiating role of the CXCL1/8 signaling axis in maintaining the chemokine-rich environment. In summary, our study delineates a critical chemokine cascade. Targeting this pathway represents a promising therapeutic strategy to disrupt the pro-inflammatory niche and neutralize the pro-tumor microenvironment.

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CARD9 mediates T1D by reshaping macrophage through sensing pancreatic islet sympathetic nerve

Prof Ming Xiang

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

CARD9 mediates T1D by reshaping macrophage function through sensing the pancreatic islet sympathetic nerve

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Introduction. Type 1 diabetes (T1D) is an autoimmune disease characterized by selective destruction of pancreatic β cells. Early in T1D, sympathetic neurons in the endocrine pancreas are selectively lost while those in the exocrine pancreas are preserved, suggesting that sympathetic signaling imbalance may contribute to T1D progression.

Aims. This study aimed to investigate changes in pancreatic sympathetic nerve signaling during T1D progression and determine how norepinephrine (NE)–caspase recruitment domain-containing protein 9 (CARD9) signaling in macrophages regulates macrophage function in T1D.

Methods. Single-cell omics and 3D fluorescence imaging were used to analyze pancreatic islet sympathetic nerve changes in T1D patients and mouse models (NOD and STZ-induced). Sympathetic adrenergic activity was inhibited using 6-OHDA or CGX, and macrophage involvement was assessed in NOD mice. Macrophage responses to β2-AR signaling were examined using the agonist formoterol (FMT) and antagonist butaxamine (BTX) in BMDMs with CARD9 modulation. ChIP-qPCR were used to investigate β2-AR–PKA–CREB1 regulation of CARD9.

Results. (1) T1D patients showed reduced islet nerve cells and decreased expression of the sympathetic marker tyrosine hydroxylase (TH). Both NOD and STZ-induced T1D mice exhibited reduced islet sympathetic nerve density and increased nerve–islet distance. Inhibition of sympathetic activity by 6-OHDA injection or CGX surgery accelerated T1D progression, whereas macrophage depletion abolished the effect of 6-OHDA. (2) In vitro, the β2-AR agonist FMT and antagonist BTX confirmed that CARD9 participates in β2-AR–regulated macrophage activation. CARD9 deficiency exacerbated islet sympathetic nerve loss and T1D progression. (3) Integrated PROMO and transcriptomic analyses identified CREB1 as a transcription factor positively associated with CARD9 expression. CREB1 overexpression or PKA activation reversed BTX-induced macrophage pro-inflammatory activation and CARD9 inhibition. BTX reduced intracellular creatine levels and SLC6A8 expression, while CARD9 overexpression partially restored creatine transport.

Discussion. Selective loss of pancreatic islet sympathetic nerves during T1D reduces NE signaling, weakens β2-AR activity, and suppresses the PKA/CREB1/CARD9 pathway, leading to impaired creatine transport and pro-inflammatory macrophage polarization, thereby promoting T1D progression.

Acknowledgments. This study was supported by the National Natural Science Foundation of China (No. 82371824).

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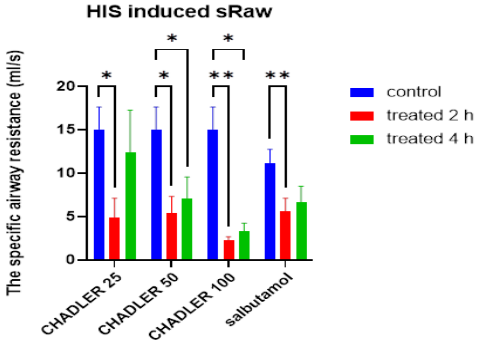
Glycoconjugates from Vaccinium spp. attenuate airway reflexes in guinea-pig model of hyperreactivity

Mrs Lucia Cipková

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Glycoconjugates from *Vaccinium spp.* attenuate airway reflexes in guinea-pig model of hyperreactivity

Lucia Cipková[1], Jozef Mažerik[1], Peter Capek[2], Martina Šutovská[1]. Dept of Pharmacology, Jessenius Faculty of Medicine, Comenius University[1], Martin, Slovakia; Institute of Chemistry, Slovak Academy of Sciences[2], Bratislava, Slovakia



Introduction. Conventional bronchodilators and antitussives often cause systemic adverse effects and tolerance. Natural products such as polyphenols and glycoconjugates with anti-inflammatory and immunomodulatory properties represent promising alternatives.

Aims. The aim of this study was to evaluate the effects of glycoconjugates isolated from *Vaccinium spp.* on airway defense mechanisms in guinea pigs, relate their chemical composition to biological activity, and identify the most effective variety.

Methods. Extracts from *V. corymbosum* (Chandler, Liberty) and *V. myrtillus* were prepared (enzyme inactivation, ethanol treatment, lyophilization, and cold-water extraction) and analyzed (HPLC, spectrophotometry) for anthocyanins, flavonol conjugates, and carbohydrates. Guinea pigs (n = 8/group) were tested for cough (citric acid 0.3 M, 3 min) and airway resistance (citric acid, histamine 10^{-6} M, metacholine 10^{-6} M) at 50 mg/kg and in dose–response.

Results. Cold-water fractions contained anthocyanins (35–45%), flavonols (20–30%), and polysaccharides (15–25%). Chandler had the most anthocyanins. Extracts reduced cough (–35 to –55%, $p \leq 0.01$–0.001) and airway resistance (sRaw): citric acid –40% ($p \leq 0.01$), histamine –30% ($p \leq 0.05$), metacholine –25% ($p \leq 0.05$), with Chandler most effective (sRaw changes induced by histamine presented on figure).

Discussion. *Vaccinium* glycoconjugates show dose-dependent antitussive and bronchodilatory effects, mainly linked to anthocyanin glycosides, supporting their potential as phytotherapeutics for airway defense and inflammation.

Fagbohun OF et al (2024) Molecules 28;29(7):1511.
Kalt W et al (2020) Adv Nutr 11(2):224-236.

P370

Identification and validation of differentially secreted biomarkers of mast cell activation

Ms Lyndseiy D T Limosnero

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Identification and validation of differentially secreted biomarkers of mast cell activation

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Introduction. Drug-induced anaphylaxis is commonly induced by the presence of drug-specific immunoglobulin E (IgE) antibodies and consequent mast cell (MC) activation. However, there is increasing evidence for IgE-independent anaphylaxis with the Mas-related G protein coupled-receptor X2 (MRGPRX2) being extensively studied. While tryptase remains the gold standard as a biomarker of MC activation, it does not distinguish between IgE and MRGPRX2-mediated MC activation.

Aims. This study aims to identify and validate novel secreted proteins released from human MCs as biomarkers that can distinguish between IgE and MRGPRX2-mediated MC activation.

Methods. We activated (for 18 hours) the human MC line, LAD2, with antigen (for IgE pathway stimulation) or compound 48/80 (for MRGPRX2 pathway activation). Cell free supernatants were processed for global secretomics analysis using an Orbitrap Ascend tribrid mass spectrometer. Secretomics analysis identified proteins with greater abundance following MC activation, with the threshold being a >2-fold increase and $q < 0.05$. Identified candidates were also further characterised via Western blotting and ELISA.

Results. Identified proteins following MC stimulation included the expected biomarkers of MC activation, including tryptase, β-hexosaminidase, and carboxypeptidase A, which were common to both activation pathways. However, several novel proteins were secreted that discriminated between IgE and MRGPRX2 pathways. Following antigen stimulation, 6 proteins were shown to be specific to the IgE pathway, and over 40 proteins were only measured with MRGPRX2 activation. Numerous integral membrane proteins were detected, suggesting they are part of secreted vesicles such as exosomes.

Discussion. In this study, we identified numerous protein candidates which may serve as novel and discriminatory biomarkers for MC activation in drug-induced anaphylaxis and other MC-related diseases. Further characterisation of these proteins in human MCs and in serum taken from patients who have experienced drug-induced anaphylaxis will be required to validate the specificity and superiority of these over existing biomarkers.

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Maternal thirdhand e-cigarette exposure reduces respiratory function and induces emphysema in offspring

Dr Madison Coward-Smith

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Maternal thirdhand e-cigarette exposure reduces respiratory function and induces emphysema in offspring

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Introduction. As e-cigarette (vaping) usage increases, attention has turned to the indirect health risks associated with usage such as exposure to third hand e-cigarette vapour. Although there is some evidence to suggest that these exposures may contribute to adverse respiratory health, there is limited evidence assessing the impacts of maternal third hand e-vapour exposure on offspring respiratory health.

Aims. To elucidate the impacts of maternal third hand e-vapour exposure on lung health in offspring in an experimental model of COPD

Methods. Female BALB/c mice (7 weeks of age) were exposed to towels ($_{M}$Sham), low-power e-vapour ($_{M}$LP) or high-power e-vapour ($_{M}$HP). Towels were given to mice 6 weeks prior to pregnancy, during pregnancy and 3 weeks after birth (total 12 weeks) and were changed daily. Following weaning, male mice (6-7 weeks of age) were randomly assigned into experimental groups and treated with phosphate buffered saline (Veh) or porcine pancreatic elastase (PPE; 0.25IU) to induce experimental COPD. On experimental endpoint (day 21), lung function testing was conducted, histological analysis of lung tissue (haematoxylin and eosin staining for mean linear intercept (MLI) analysis, Picosirius red staining for collagen) and gelatine zymography for matrix metalloproteinase (MMP) activity were assessed.

Results. In the absence of PPE, $_{M}$HP offspring showed significant increases in airway resistance and alveolar diameter (measure by MLI) in comparison to $_{M}$Sham offspring, while $_{M}$LP offspring had no effect on respiratory function or structure. $_{M}$HP PPE mice had increased lung hysteresis, inspiratory capacity and forced vital capacity compared to $_{M}$Sham PPE mice. In terms of lung remodeling, $_{M}$Sham PPE mice showed significant reductions in collagen deposition around airways and increased MMP activity when compared to $_{M}$Sham Veh mice, however, maternal exposures had no further effect.

Discussion. Our preclinical study shows that maternal exposures to third hand e-cigarette vapour contribute to significant effects on respiratory health in offspring, and that these exposures may contribute to long lasting impacts on respiratory structure and function later in life.

P372

Characterising HMGB1 in the short-lived African turquoise killifish

Prof Margaret Cunningham

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Characterising HMGB1 in the short-lived African turquoise killifish

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Introduction. High mobility group box 1 (HMGB1) regulates homeostasis, inflammation and ageing, but is poorly studied in short-lived vertebrate models. The African turquoise killifish (Nothobranchius furzeri) provides a unique platform for translational ageing research.

Aims. To characterise killifish HMGB1 relative to mammalian orthologues and examine its skeletal muscle expression.

Methods. Sequence alignment (Clustal Omega) and structural prediction (AlphaFold3, Mol*) were performed against human and rat HMGB1. Skeletal muscle from 10 male 2-month-old killifish was analysed by immunoblotting; band intensities were correlated with body size and health indicators.

Results. Killifish HMGB1 showed conserved fold and redox-sensitive motifs but divergence in NLS2 and RAGE-binding regions. Four immunoreactive bands (23, 36, 40, 90 kDa) were observed. Larger fish with dull pigmentation showed stronger 90 kDa signals, while smaller fish had more canonical 23 kDa HMGB1. Body mass correlated positively with the 36 kDa band (n=10, r=0.73, P=0.02).

Discussion. HMGB1 is structurally conserved in killifish but with species-specific sequence divergence. Distinct muscle isoforms associate with growth and visible health decline, supporting the killifish as a model to explore HMGB1 in ageing.

P373

Redistribution of the alarmin HMGB1 by insulin in skeletal muscle

Prof Margaret Cunningham

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Redistribution of the alarmin HMGB1 by insulin in skeletal muscle

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Introduction. High mobility group box 1 (HMGB1) is a nuclear protein with emerging roles in metabolism and inflammation, implicated in insulin resistance and type 2 diabetes. Whether insulin has a direct physiological role in regulation of HMGB1 dynamics is unexplored.

Aims. To test whether insulin, electrical stimulation (EFS), or their combination acutely regulate HMGB1 expression and localisation in healthy rat skeletal muscle.

Methods. Soleus muscles from male and female Sprague Dawley rats were mounted in an ex vivo organ bath. Groups: Control (snap-frozen directly), Insulin (20 nM, 30 min), EFS (0.1 Hz, 2 min, rest 30 min, repeat), and EFS-Insulin (EFS then insulin then repeat EFS). Samples underwent immunoblotting for pAkt, tAkt, and HMGB1. Pilot mitochondrial fractionation and immunofluorescence examined localisation.

Results. Akt phosphorylation confirmed insulin pathway activation. The canonical 25 kDa HMGB1 band remained stable across conditions (n=8-14, P=0.24). The 100 kDa form differed significantly overall (n=8-14, P=0.02): insulin 0.7±0.07 (n=7, P=0.06), EFS 0.8±0.12 (n=11, P=0.53), EFS-Insulin 1.1±0.13 (n=14, P>0.99) vs control 1.0 (n=8). The 32 kDa form showed a stepwise increase (overall P=0.91): insulin 1.2±0.36 (n=7, P>0.99), EFS 1.7±0.48 (n=11, P>0.99), EFS-Insulin 1.9±0.60 (n=14, P>0.99), with a pronounced effect in males (up to 2.8±0.96, n=8, P=0.48) but not females. Pilot localisation studies supported mitochondrial enrichment of HMGB1 with insulin (Manders' M1: control 0.47±0.05, insulin 0.58±0.02, EFS-Insulin 0.56±0.07) alongside decreased nuclear:cytoplasmic ratios (control 2.4±0.37, insulin 1.7±0.35, EFS-Insulin 1.0±0.04).

Discussion. HMGB1 in healthy skeletal muscle is regulated mainly through redistribution and post-translational modification. Insulin, especially with contractile activity, promoted nuclear export and mitochondrial localisation of higher molecular weight species. These findings indicate that HMGB1 trafficking responds to acute metabolic and contractile stimuli in a sex-dependent manner, providing proof-of-principle for insulin-sensitive regulation in muscle.

P374

Efficacy, safety, and cost-effectiveness of montelukast/bilastine v/s montelukast/levocetirizine in allergic rhinitis

Dr Ganesh Dakhale

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Efficacy, safety, and cost-effectiveness of montelukast/bilastine v/s montelukast/levocetirizine in allergic rhinitis

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Introduction. Several fixed dose combinations (FDCs) have been available for the treatment of allergic rhinitis (AR), of which montelukast and levocetirizine are highly prescribed FDC. The FDC of bilastine with montelukast was approved by the DCGI in March 2020.

Aims. **T**o evaluate and compare the effectiveness, safety, and cost-effectiveness of montelukast/ bilastine versus montelukast/ levocetirizine in relieving symptoms of AR.

Methods. A prospective, open-label comparative study was conducted from March 2024 to September 2024 at the Research Institute of Central India. Patients of either gender, in the age group of 18-65 years suffering from AR having TNSS >8 were enrolled assigned randomly to group A (montelukast-bilastine) or group B (montelukast-levocetirizine) for 4 weeks.

Parameter	Group A (n=31)	Group B (n=30)	P value
Baseline TNSS [mean ± SD (95% CI)]	8.9±1.07 (8.5-9.29)	9.13±1.1 (8.72-9.54)	0.29
Reduction in TNSS [mean ± SD (95% CI)]	-8.22±0.92 (7.88-8.56)	-8.33±1.18 (7.89 – 8.77)	0.86
CER	63.01	73.94	
No of adverse events	17.24%	40%	0.04

Results. TNSS score was significantly reduced in group A (n=31, p=<0.001) and group B (n=30, p=<0.001) at week 2 and week 4 when compared with baseline. Comparative analysis of reduction in TNSS at 4 weeks among two groups shows no significant difference (p=0.86). When analyzed by Fisher's exact test, the incidence of adverse events was significantly higher in group B than in group A. (p= 0.04). Cost-effectiveness ratio (CER) in group A was (518/8.22) 63.01 and in group B was (616/8.33) 73.94.

Discussion. Study findings are consistent with existing literature regarding the efficacy of montelukast combined with antihistamines. Bilastine, a newer second-generation antihistamine, has demonstrated equal efficacy, favorable safety profile and more cost effective making it a viable option for AR treatment. Levocetirizine, while effective, is associated with a higher incidence of sedation, which can impact patient compliance and quality of life.

P375

Childhood Asthma Causes Sex-Specific Cognitive Impairment and Persistent Lung Inflammation.

Dr Simone De Luca

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Childhood Asthma Causes Sex-Specific Cognitive Impairment and Persistent Lung Inflammation.

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Introduction. Asthma is the leading cause of hospitalisation among Australian children aged 1–9 years. It is characterised by airway inflammation and narrowing, resulting in wheeze, shortness of breath, cough and chest tightness. Childhood asthma is associated with attention deficits and reduced IQ. Early-life insults shape the structural and functional organisation of the developing brain, increasing vulnerability to premature brain ageing. Despite this, the long-term impact of childhood asthma on cognitive and neuropathological outcomes remains poorly understood. Moreover, preclinical studies are limited and predominantly model asthma in young adult mice (6–10 weeks), failing to capture critical early-life windows of brain development. We hypothesise that asthma in early adolescence (postnatal day [PND] 24) will induce airflow hyperresponsiveness and cognitive and neuropathological alterations.

Aims. To examine how childhood asthma influences cognition and neuroinflammation in male and female mice.

Methods. At PND24, male and female mice were sensitised to house dust mite (HDM; Dermatophagoides pteronyssinus; 100ug sc). Mice were then challenged intranasally with HDM (50 ug in 35 ul saline) or saline 3 times/week for 6 weeks to establish experimental asthma. A separate cohort of mice were exposed once weekly for an additional 21 weeks to represent adulthood (n=8/group). Spatial memory was assessed using Y-maze and tissues were collected to assess lung inflammation (immune cell differentiation) and neuroinflammation (immunofluorescence).

Results. HDM-challenged mice displayed increased immune cells in the bronchoalveolar lavage (BAL) fluid compared to PBS mice. Female HDM mice had greater immune cells numbers than males, associated with increased macrophages in the BAL fluid (p<0.001) at 6 and 27 weeks of exposure. Female, but not male, HDM mice showed impaired spatial working memory compared to control mice (p<0.01) following 6 weeks of HDM exposure, which resolved at 30 weeks of age.

Discussion. HDM exposure induced pulmonary inflammation and transient cognitive deficits in females. Findings support a lung–brain axis, where early-life airway inflammation may disrupt the neuroinflammatory profile. Despite persistent lung inflammation, cognitive recovery suggests adaptive neuroimmune mechanisms, with sex-specific responses indicating differential vulnerability during development.

P376

Doublecortin-like kinase 1 promotes fibrotic progression in idiopathic pulmonary fibrosis

Mr Lee-Yuan Lin

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Doublecortin-like kinase 1 promotes fibrotic progression in idiopathic pulmonary fibrosis

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Introduction. Idiopathic pulmonary fibrosis (IPF) is a progressive and fatal lung disease with limited therapeutic options, underscoring the need to identify novel molecular targets involved in fibrogenesis and inflammation. Gene expression analyses have revealed elevated levels of doublecortin-like kinase 1 (DCLK1) in IPF lung tissue, although its functional role and pharmacological relevance in pulmonary fibrosis remain unclear.
Aims. To elucidate the role of DCLK1 in IPF and bleomycin-induced pulmonary fibrosis and to evaluate its potential as a pharmacological target.
Methods. DCLK1 function was investigated using lung tissues from patients with IPF, a bleomycin-induced pulmonary fibrosis mouse model, and cultured normal human lung fibroblasts. Genetic deletion of Dclk1 and pharmacological inhibition using a selective DCLK1 inhibitor (DCLK1-IN-1) were employed to assess the effects of DCLK1 suppression on fibroblast activation, fibrotic remodeling, and lung function.
Results. DCLK1 expression was markedly increased in IPF lung tissues and in bleomycin-induced fibrotic lungs. Global deletion of *Dclk1* significantly attenuated fibrotic remodeling and preserved lung function in mice. In human lung fibroblasts, transforming growth factor-β (TGF-β) induced DCLK1 expression through Smad3 and NF-κB signaling, while activation of the Akt/DCLK1/Smad3 axis promoted fibroblast activation and profibrotic marker expression. Mechanistically, DCLK1 formed a nuclear complex with Smad3 to regulate connective tissue growth factor transcription. Importantly, oral administration of DCLK1-IN-1 reduced fibrosis and improved lung function in bleomycin-treated mice.
Discussion. DCLK1 drives fibroblast activation and pulmonary fibrotic progression through Smad3-dependent transcriptional regulation. Pharmacological inhibition of DCLK1 attenuates fibrosis and improves lung function, supporting DCLK1 as a promising therapeutic target for inflammatory and fibrotic lung diseases.

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Analysis of lipid phosphate phosphatase 3 in pulmonary fibrosis

Dr Yasuhiro Takenouchi

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Analysis of lipid phosphate phosphatase 3 in pulmonary fibrosis

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Introduction. Pulmonary fibrosis is a progressive lung disease characterized by chronic inflammation and excessive extracellular matrix deposition. Sphingosine-1-phosphate (S1P) and lysophosphatidic acid (LPA) have been implicated as profibrotic mediators, and many studies have focused on their receptors and synthetic enzymes involved in fibrosis. However, little is known about the role of degrading enzymes including lipid phosphate phosphatase 3 (LPP3). We previously observed reduced expression of LPP3 in fibrotic lungs using comprehensive genetic analysis. We hypothesized that LPP3 downregulation leads to S1P/LPA accumulation and promotes fibrosis.

Aims. This study aimed to elucidate the molecular mechanisms underlying LPP3 suppression in pulmonary fibrosis and to determine whether an increase in LPP3 expression alters lung fibrosis.

Methods. Pulmonary fibrosis was induced in mice by bleomycin (i.p.). Mice were euthanized by an overdose of sodium thiopental (150 mg/kg, i.v.), and samples were collected. Bronchoalveolar lavage fluid (BALF) and lung tissues were analyzed for fibrosis markers. Individual lung cell populations were isolated by magnetic separation and examined for Lpp3 expression by qPCR. Regulation of LPP3 was assessed in A549 alveolar epithelial cells. In addition, we generated a macrophage-specific LPP3 knock-in mouse line and subjected it to bleomycin-induced fibrosis.

Results. Bleomycin treatment increased protein and collagen concentrations in BALF and provided histological evidence of fibrosis. Lpp3 expression was significantly reduced in alveolar epithelial cells, whereas macrophages showed increased Lpp3 expression. MicroRNA-184 was upregulated in fibrotic lungs, and treatment of A549 cells with miR-184 mimic suppressed LPP3 protein, suggesting post-transcriptional regulation. In macrophage-specific conditional knock-in mice, lung fibrosis remained largely unchanged compared with controls.

Discussion. These findings suggest that LPP3 expression is suppressed through increased miR-184 in pulmonary fibrosis. Elevated LPP3 expression in macrophages had little effect on fibrosis, whereas restoration of LPP3 in alveolar epithelial cells may be more effective. We are currently investigating this hypothesis using alveolar epithelial cell-specific LPP3-overexpressing mice.

P378

Neurocognitive effects of prenatal ETI exposure in a preclinical cystic fibrosis model

Dr Aleksandar Dobric

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Neurocognitive effects of prenatal ETI exposure in a preclinical cystic fibrosis model.

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Introduction. Current cystic fibrosis transmembrane conductance regulator (CFTR) modulator therapies have significantly improved survival in people with cystic fibrosis (CF). The highly effective triple combination elexacaftor/tezacaftor/ivacaftor (ETI) is now widely used across the CF population, including in pregnant women. Emerging reports suggest that some individuals receiving ETI experience neuropsychiatric symptoms, including anxiety, depression, and cognitive changes. Given the increasing use of ETI during pregnancy, there is a need to understand its potential effects on offspring neurodevelopment following *in utero* and early-life exposure.
Aim. To assess the safety and efficacy of ETI treatment on neurodevelopment in a pre-clinical model of CF.
Methods. Female dams were treated with vehicle (Nutripet) or combination of elexacaftor (6.7mg/kg/day), tezacaftor (3.5mg/kg/day) and ivacaftor (25mg/kg/day) from conception to weaning. Male and female heterozygous (control) and CF F508del offspring (n=3-8) completed the open field test to assess anxiety-like behaviours and novel object recognition (NOR) to evaluate memory at postnatal day 40. Following testing, blood was collected for inflammatory profiling.
Results. ETI treatment had no effects on anxiety-like behaviours during the open field test. On average, memory retention was higher in the NOR test in males (p=0.07, non sig.) after ETI exposure, however female rats showed no differences. Systemic inflammatory profiling showed ETI treatment lowered leukocyte and lymphocyte numbers in males (p=0.07; non sig and p=0.02), and monocyte numbers in female rats (p=0.02) irrespective of genotype.
Discussion. ETI exposure during pregnancy and via breastmilk showed trends towards improved memory retention in males only, however no changes in anxiety-like behaviour were present in both males and females. This highlights the overall safety and lack of psychological adverse effects of ETI treatment during pregnancy on offspring. Upon blood profiling, in utero ETI treatment improved some systemic inflammatory phenotypes, demonstrating that contemporary CF treatments are beneficial and safe during *in utero* development. However, future research is essential in understanding the complete safety of ETI treatment in mothers.

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Red ginseng suppresses inflammation induced by antibiotic-induced extracellular vesicles from Escherichia coli

Ms Mika Tanaka

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Red ginseng suppresses inflammation induced by antibiotic-induced extracellular vesicles from *Escherichia coli*

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Introduction. Extracellular vesicles (EVs) are membrane-bound vesicles released from cells. EVs produced during infection may originate from either pathogens or the host. We reported that *Escherichia coli*-EVs induce the inflammatory response mediated by macrophage (Mϕ)-derived EVs, leading to increased expression of inducible nitric oxide synthase (iNOS) and cyclooxygenase-2 (COX-2) in uninfected Mϕ. We recently found that low concentrations of ampicillin elevates the level of EVs from *E. coli*.

Aims. We examined whether red ginseng, manufactured from the roots of *Panax ginseng* C. A. Meyer, known for its anti-inflammatory properties, suppresses inflammation induced by *E. coli*-derived EVs in the presence of ampicillin.

Methods. The minimum inhibitory concentration (MIC) value was visually defined as the lowest concentration of ampicillin that inhibited growth of *E. coli* K12 strain. *E. coli* was cultured for 12 hours in the presence or absence of 6.25–12.5 μg/mL ampicillin (1/16–1/8 MIC), and the respective EVs (Amp-EV and none-EV) were purified by ultracentrifugation. Red ginseng extracts (RGE) were added to the *E. coli* culture medium prior to the start of cultivation. Mouse macrophages (RAW264.7) were cultured for 12 hours with or without EVs.

Results. None-EVs increased the mRNA levels of iNOS and COX-2 by 1.8-fold and 1.3-fold and Amp-EVs increased them by 260-fold and 650-fold. In contrast, RGE+Amp-EV suppressed the increase in iNOS and COX-2 mRNA compared to Amp-EV. RGE did not reduce the amount of EVs released from *E. coli* in the presence of ampicillin. However, RGE reduced the levels of CirA protein in EVs. The EVs derived from *cirA*-deficient *E. coli* supressed the increase in inflammatory factors mRNA compared to EVs derived from wild-type *E. coli*.

Discussion. We found that CirA protein in *E. coli*-derived EVs plays a pathogenic role in enhancing the expression of inflammatory factor mRNA. RGE reduced the level of CirA proteinin EVs, resulting in the suppression of antibiotic-induced inflammation.

Imamiya et al (2023) mBio 14:2e
Imamiya et al (2025) Microbiol Res Announc 14: e 0322723

P380

NFATc1-derived new calcineurin-binding peptide selectively suppresses T cell cytokine expression

Prof Osamu Kaminuma

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

NFATc1-derived new calcineurin-binding peptide selectively suppresses T cell cytokine expression

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Introduction. Although calcineurin inhibitors are clinically effective through inhibition of calcium-dependent nuclear factor of activated T cells (NFATc), they frequently cause serious adverse effects, in part because they suppress activity across the entire NFATc family. Selectively modulating specific NFATc subtypes could mitigate toxicity and potentially enhance efficacy, given evidence that NFAT subtypes can exert opposing functions.

Aims. To discover an NFATc-derived peptide that selectively regulates specific NFATc subtypes and achieves stronger, more targeted suppression of T-cell cytokine expression than VIVIT, a pan-NFAT inhibitory peptide (Aramburu et al, 1999).

Methods. Calcineurin-binding activity was quantitatively compared across calcium-regulatory domains (CRDs) of NFATc1–NFATc4. The calcineurin-associating segment present in several, but not all, NFATcs was mapped and narrowed to a 15–20-amino-acid region. Predicted peptide–calcineurin interactions were evaluated by structural modeling. The functional effect of a candidate peptide was tested in stimulated human CD4+ T cells after delivery via fusion to a cell-penetrating sequence, and cytokine mRNA expression was measured.

Results. We identified a previously unrecognized region within the NFATc1-CRD that selectively mediates calcineurin binding in NFATc1 and NFATc4, but not in other NFATc subtypes, and refined this to an 18-amino-acid peptide ("p8"). T-cell expression of IL-4 was suppressed by both p8 and VIVIT. In contrast, IL-5, IL-31, and IFN-γ were suppressed only by p8. IL-17A and TNF-α were unaffected by p8, whereas VIVIT enhanced IL-17A.

	Relative expression (% of control)	
	p8	VIVIT
IL4	30	40
IL5	56	98
IL17A	98	223
IL31	42	89
IFNG	76	109
TNF	92	127

Discussion. Targeting NFATc1/c4 with p8 achieved stronger, cytokine-selective suppression than the pan-NFAT inhibitor VIVIT. These findings support subtype-selective NFAT modulation as a strategy to improve therapeutic selectivity; the potential for reduced adverse effects with p8 warrants further evaluation in vivo.

Aramburu J et al (1999) Science 285:2129

P382

Real-world effectiveness and safety of pembrolizumab in non-small cell lung cancer

Dr Igor Rubinić

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Real-world effectiveness and safety of pembrolizumab in non-small cell lung cancer
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Introduction: Immune checkpoint inhibitors have revolutionized the treatment of advanced non–small cell lung cancer (NSCLC). Pembrolizumab has shown durable survival benefits in pivotal trials, with comparable outcomes between patients stopping treatment at two years and those continuing indefinitely. However, real-world outcomes often differ due to broader patient populations and treatment conditions.
Aims: To evaluate real-world progression-free survival (PFS), treatment patterns, and immune-related adverse events in NSCLC patients receiving first-line pembrolizumab, irrespective of PD-L1 expression, and to compare outcomes with clinical trial data.
Methods: We performed a retrospective analysis of all NSCLC patients approved for pembrolizumab treatment by the Drug and Therapeutics Committee at Clinical Hospital Center Rijeka between January 2020 and December 2024. Demographic, clinical, and treatment data were extracted, including PFS and treatment discontinuation causes.
Results: A total of 302 patients were approved for pembrolizumab treatment, of whom 234 received therapy. Median age was 69 years. Most patients were smokers (76.2%), and 40.9% had PD-L1 expression >50%. Twenty patients completed the planned two years of therapy, 36 remain on treatment, while the remainder discontinued, most commonly due to disease progression (n=96). Median PFS was 10.9 months (331 days). Immune-related adverse events were observed in 7.6% of patients (n=18).
Discussion: This real-world cohort confirms the effectiveness of pembrolizumab, with a median PFS aligning with or exceeding results from pivotal clinical trials. Nevertheless, high rates of discontinuation and occurrence of severe immune-related toxicity underscore the need for careful patient selection and proactive toxicity management. These findings highlight differences between real-world outcomes and trial data, emphasizing the importance of tailoring immunotherapy strategies to everyday clinical practice.

P383

ATP Modulates B-Cell Programs to Ameliorate Systemic Lupus Erythematosus Pathology

Mr Yicheng Lin

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

ATP Modulates B-Cell Programs to Ameliorate Systemic Lupus Erythematosus Pathology

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Introduction. Systemic lupus erythematosus (SLE) is characterized by pathogenic autoantibodies and chronic inflammation. Although extracellular adenosine triphosphate (ATP) is classically viewed as a pro-inflammatory damage signal, pharmacologic ATP exposure may elicit distinct immunoregulatory outcomes via metabolic reprogramming and engagement of stress and metabolic checkpoints.

Aims. To evaluate ATP-driven immunomodulation in SLE, delineate ATP-associated B-cell transcriptional programs, and assess therapeutic efficacy in a lupus-prone mouse model.

Methods. Peripheral blood mononuclear cells (PBMCs) from SLE patients were stimulated to generate antibody-secreting cells (ASCs) and treated with graded ATP; dsDNA-specific ASCs were quantified by ELISPOT. In parallel, MRL/lpr splenic mononuclear cells were cultured with graded ATP and analyzed by flow cytometry for B-cell differentiation subsets. In vivo, MRL/lpr mice received ATP (100 mg/kg, i.p.) once daily for 8 weeks, with prednisone (5 mg/kg, i.p.) as control; plasma anti-dsDNA and total IgG concentrations, renal immune-complex deposition, and histopathology were assessed. Purified splenic $CD19^+$ B cells were treated ex vivo with ATP vs vehicle for RNA-seq and pathway enrichment.

Results. In SLE PBMC cultures, ATP dose-dependently reduced dsDNA-specific ASCs. Flow cytometry of murine splenocytes revealed that germinal center–like B cells ($B220^+GL7^+$) decreased, whereas $CXCR4^+IgA^+$ plasmablasts increased with increasing ATP concentrations. In MRL/lpr mice, ATP lowered plasma anti-dsDNA and IgG concentrations, reduced renal immune-complex deposition, and alleviated glomerular injury. Transcriptomics implicated an mTORC1-linked checkpoint, characterized by repression of anabolic programs and activation of Transcription Factor EB (TFEB)-driven autophagy.

Discussion. Our findings suggest a dose-dependent immunometabolic switch: distinct from classical pro-inflammatory signaling, pharmacologic ATP engages an mTORC1-associated checkpoint that constrains B-cell hyperactivation. By enforcing a shift toward IgA-skewed differentiation, this strategy highlights the purinergic–metabolic axis as a novel therapeutic avenue for SLE.

P384

CRABP2 as a Protective Factor in Asthma

Assoc Prof Changfang Fu

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

CRABP2 as a Protective Factor in Asthma

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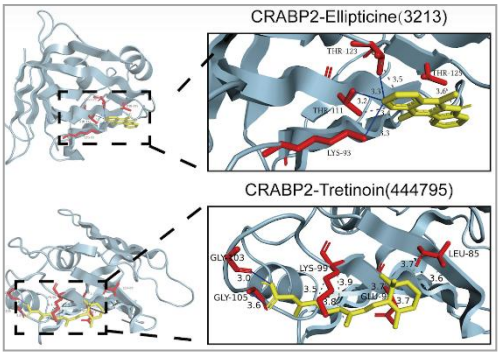

Introduction. Asthma, a heterogeneous chronic airway disease, lacks molecular-specific biomarkers for precision management despite advances in therapeutic strategies.

Aims. This study aims to identify novel biomarkers and validate their causal relationships with asthma pathogenesis.

Methods. We integrated transcriptomic (bulk and single-cell), GWAS summary statistics, and plasma proteomics pQTL data. Machine learning was employed for biomarker selection. Mendelian randomization (MR) analysis validated causal associations, while molecular docking predicted therapeutic compounds. To investigate drug effects on asthma-related inflammation, we established a cellular injury model by treating human bronchial epithelial cells with lipopolysaccharide (LPS).

Results. Eight asthma-related biomarkers (VNN3, TNFAIP2, CRABP2, MPDU1, DQX1, DNAJC1, KIT, PER2) were identified. SHAP analysis revealed KIT as a risk factor and CRABP2/PER2 as protective factors. Single-cell analysis revealed CRABP2 enrichment in bronchial epithelial cells. Molecular docking predicted therapeutic compounds, including FDA-approved imatinib for KIT, two potential agonists-Ellipticine and Tretinoin for CRABP2. And tretinoin significantly upregulated CRABP2 expression and attenuated LPS-induced release of pro-inflammatory cytokines .

Discussion. This study establishes CRABP2 as a causally validated protective biomarker for asthma, with KIT showing therapeutic promise. The multi-omics framework and machine learning model provide a foundation for precision asthma diagnostics and drug development for clinical translation of these biomarkers.

Ferkingstad E et al (2021) Nat Genet 53:1712-1721
Wang Q et al (2021) Nature 597:527-532

P385

P2Y12 blockade disrupts autoantibody–immune complex amplification loop in lupus

Dr Wenjuan Ma

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

P2Y12 blockade disrupts autoantibody–immune complex amplification loop in lupus

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Introduction. Sustained autoantibody production by plasma cells drives systemic lupus erythematosus (SLE) persistence. The resulting immune complexes amplify myeloid inflammation and organ immune deposition, yet strategies simultaneously targeting both antibody output and immune complex-mediated amplification remain lacking.

Aims. To investigate whether purinergic receptor P2Y12 serves as a druggable checkpoint linking humoral output to myeloid amplification in SLE, and to evaluate ticagrelor-mediated P2Y12 blockade.

Methods. P2Y12 expression was profiled by flow cytometry in SLE and healthy PBMCs. Ticagrelor effects on B cell differentiation, activation and proximal kinase phosphorylation were assessed in stimulated human PBMCs. MRL/lpr mice received ticagrelor to evaluate humoral burden and renal outcomes. Mechanisms were interrogated by RNA-seq in ATP-stimulated B cells and by RNA-seq combined with NF-κB p105/p50 CUT&Tag in immune complex-stimulated BMDMs.

Results. P2Y12 was upregulated on SLE B cells and monocytes and enriched in antibody-secreting compartments, with correlated CXCR4 upregulation in plasma cells suggestive of enhanced bone marrow retention. Ticagrelor dose-dependently suppressed effector differentiation, reduced plasma cell and germinal center B cell proportions, and downregulated differentiation transcription factors and costimulatory markers, with concurrent SYK/BTK phosphorylation reduction and remodeling of ATP-driven transcriptional programs. In BMDMs, ticagrelor suppressed immune complex-induced inflammation; CUT&Tag revealed selectively reduced NF-κB occupancy at proinflammatory loci while preserving feedback-associated sites, attenuating myeloid output that feeds back to sustain B cell activation. In MRL/lpr mice, ticagrelor lowered IgG and autoantibodies, attenuated germinal center and plasma cell expansion, and improved renal histopathology with reduced glomerular immune deposition.

Discussion. P2Y12 drives a self-reinforcing loop between plasma cell antibody output and immune complex-mediated myeloid amplification. Ticagrelor disrupts this loop at both ends, supporting P2Y12 blockade as a translatable therapeutic strategy for SLE.

P386

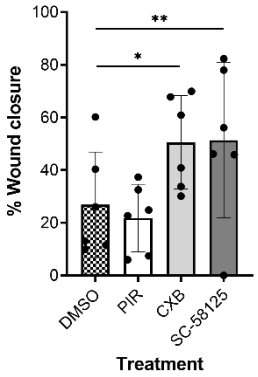
Differential pharmacomodulation of airway epithelial repair in childhood wheeze

Mr Aaron Gomes

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Differential pharmacomodulation of airway epithelial repair in childhood wheeze
Aaron R. Gomes[1,2], Patricia Agudelo-Romero[1,3], Emma Catchpole[1,4], Talya Conradie[1,4] Peter B. Noble[2], Alexander N. Larcombe[1,5], Stephen M. Stick[6], Anthony Kicic[1,4,5], Thomas Iosifidis[1,4,5]. Wal-yan Respiratory Research Centre, The Kids Research Institute Australia[1], Perth, WA, Australia; School of Human Sciences, The University of Western Australia[2], Perth, WA, Australia; School of Molecular Sciences, The University of Western Australia[3], Perth, WA, Australia; School of Medicine, The University of Western Australia[4], Perth, WA, Australia; School of Population Health, Curtin University[5], Perth, WA, Australia; Child & Adolescent Health Services, Perth Children's Hospital[6], Perth, WA, Australia.

Introduction. Defective airway epithelial cell (AEC) repair associates with childhood wheeze recurrence. Celecoxib (CXB) enhances AEC repair *in vitro*, but the efficacy of other non-steroidal anti-inflammatory drugs (NSAIDs) is unclear. Here, we determined whether CXB and other NSAIDs exhibit similar or disparate effects on repair in paediatric wheeze AECs, hypothesising effects would differ by treatment.
Methods. Primary AECs (pAECs) from children with recurrent wheeze (n=6) were cultured, wounded and treated with CXB, piroxicam (PIR), SC-58125 (a celecoxib analogue), or vehicle-control (DMSO). Wound repair rates (IncuCyte) and differential gene expression (RNA-seq) were quantified in matched samples.
Results. At 24-hrs post-wounding, DMSO-treated pAECs failed to achieve complete wound closure. Relative to vehicle, CXB (p=0.01) and SC-58125 (p=0.008) enhanced AEC repair, while PIR had no effect (p=0.81). Transcriptomic interrogation identified CXB and SC-58125 to co-upregulate significant genes involved in keratinisation and retinoic acid biosynthesis, enriching five common pathways. Congruent with wound closure observations, PIR showed no effect on differential gene regulation.
Discussion. Treatment with CXB and SC-58125 enhanced AEC repair and correspondingly induced common transcriptional effects. Similar to vehicle-control, PIR had no effect on AEC repair or transcription. These data support our hypothesis surrounding NSAID heterogeneity in modulating AEC repair in a diseased airway epithelial cell model. Our findings warrant validation in larger cohorts to inform therapeutic strategies aimed at mitigating childhood wheeze recurrence.



P387

Histology-Specific Roles of miR-17-5p in NSCLC Immunotherapy Monitoring

Prof Maiko Machida

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Title. Histology-Specific Roles of miR-17-5p in NSCLC Immunotherapy Monitoring

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Introduction. Liquid biopsy using circulating miRNAs is emerging as a promising tool for monitoring immune dynamics in advanced non-small cell lung cancer (NSCLC) treated with immune checkpoint inhibitors. However, histology-specific immune responses remain underexplored.

Aims. We investigated the role of miR-17-5p, a miRNA implicated in regulatory T cell (Treg) modulation, in patients with squamous cell carcinoma (SQCC) and adenocarcinoma (ADC) receiving pembrolizumab. To evaluate its utility in treatment monitoring, we examined the neutrophil-to-lymphocyte ratio (NLR), cytokine profile, and the association with PD-L1 on immune cell surfaces and master transcription factors in T cells.

Methods. Ten patients with stage IIIb or higher NSCLC (SQCC: n=5, ADC: n=5) were enrolled. Blood samples were collected before and during treatment. miR-17-5p, FOXP3, STAT3, and PD-L1 mRNA levels were quantified via RT-qPCR; cytokines via ELISA; and hematologic indices from clinical records. Multivariate regression with interaction terms was performed.

Results. In SQCC, FOXP3 showed a suppressive effect on NLR, while IL-6 and miR-17-5p (under IL-6 stimulation) were significant promotive factors (81% contribution). In ADC, IL-8 and PD-L1 expression promoted NLR, whereas miR-17-5p exhibited a suppressive effect (72% contribution).

Discussion. miR-17-5p contributed differentially to NLR modulation depending on histology. In SQCC, both anti-inflammatory and pro-inflammatory Treg dynamics were suggested. In ADC, miR-17-5p's anti-inflammatory role contrasted with IL-8–driven inflammation and PD-L1 upregulation. These findings highlight the value of integrating miRNA-based liquid biopsy with immune markers to guide personalized immunotherapy in advanced NSCLC.

This work was supported by the Japan Society for the Promotion of Science Grants-Aid for Scientific Research: 21K06648 Maiko Machida.

P388

Transcriptomic and metabolomic analysis revealed altered central mechanisms in difficult-to-treat rheumatoid arthritis

Dr Lilla Gunkl-Tóth

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Transcriptomic and metabolomic alterations reveal central mechanisms in difficult-to-treat rheumatoid arthritis

Lilla Gunkl-Tóth[1,2,3], Anett Pintér[3], Panna Királyhidi[3], József Kun[1,4], Krisztina Takács-Lovász[1], Róbert Farkas[5], Gellért Karvaly[5], György Nagy[3,6,7], Zsuzsanna Helyes[1,2,8] Dept. of Pharmacol. and Pharmather., Med. Sch., UP, Pécs, HUN[1]; HUN-REN–PTE Chronic Pain Res. Group, Pécs, HUN[2]; Dept. of Rheumatol. and Immunol., SE., Budapest, HUN[3]; Bioinformatics Res. Group, Genomics and Bioinformatics Core Facility, Szentágothai Res. Ctr., UP, Pécs, HUN[4]; Dept. of Lab. Med., SE., Budapest, HUN[5]; Dept. of Int. Med. and Oncol., SE., Budapest, HUN[6]; Heart and Vasc. Ctr., SE., Budapest, HUN[7]; Natl. Lab. for Drug Res. and Dev., Budapest, HUN[8]

Introduction. Persistent pain remains an unmet need in rheumatoid arthritis (RA), particularly in the difficult-to-treat (D2T) subgroup. D2T RA is heterogeneous, but CNS processes may be involved in symptom persistence. Peripheral blood mononuclear cell (PBMC) transcriptomics combined with metabolomics can reflect CNS-related alterations.

Aims. We aimed to characterize PBMC transcriptomic and plasma metabolomic profiles in RA patients to identify pathways related to therapy resistance and to investigate interactions between pain and inflammation.

Methods. PBMC and plasma from 44 RA patients (28 D2T, 16 non-D2T) and 29 healthy controls (HCs) were separated for PBMC transcriptomic (total RNA sequencing) and plasma metabolomic (Biocrates MxP Quant 500) analysis.

Results. RA patients showed distinct transcriptomic profiles compared to HCs (269 DE genes: 174 up, 95 down), including LTK (p=0.003), TLR4 (p=0.005), and CXCL5 (p=0.035). Enrichment analysis indicated roles in immune regulation and oxygen transport. Comparing D2T to non-D2T RA, 87 DE genes were found (17 up, 70 down), such as NRG1 (p=0.015), NEGR1 (p=0.017), and S100B (p=0.026), enriched for CNS processes: neurogenesis, memory, cognition, behavior (all $p<0.001$). Metabolomic profiling revealed alterations in lipids and amino acids distinguishing D2T from non-D2T patients. Integrated transcriptomic–metabolomic analysis highlighted overlapping inflammatory (e.g., sphingolipid metabolism, B-cell signaling) and neuronal pathways (e.g., neuroactive ligand–receptor interaction, axon guidance).

Discussion Our analysis revealed distinct transcriptomic and metabolomic alterations in D2T RA, potentially linked to neuroinflammatory and neuroplastic processes. These results may improve understanding of therapy resistance and identify potential targets for novel treatments.

HUN-REN–PTE Chronic Pain Research Group (14017), OTKA K138046 and K131479, TKP2021-EGA-29, National Brain Research Program, Richter Gedeon PhD Scholarship (LGT)

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Mitochondria–ER Crosstalk in Cigarette Smoke–Induced COPD and its modulation by Naltrexone

Ms Shalini Sharma

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Mitochondria–ER Crosstalk in Cigarette Smoke–Induced COPD and its modulation by Naltrexone

Shalini Sharma[1], Subhashini[1] ,[1]Department of Zoology, Mahila Mahavidyalaya, Banaras Hindu University, Varanasi, Uttar Pradesh, India (221005)

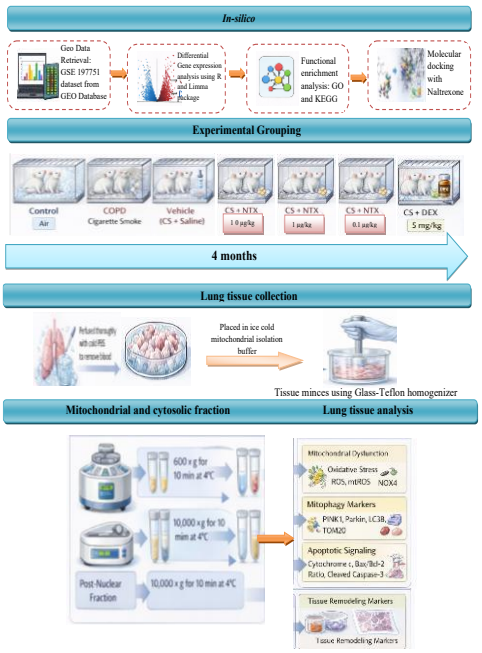
Introduction. Mitochondrial dysfunction and impaired mitochondria–ER crosstalk are emerging as central mechanisms in COPD pathogenesis, driving oxidative stress, defective mitophagy, apoptotic signaling, and persistent inflammation following cigarette smoke (CS) exposure.

Aims: To delineate the role of mitochondrial dysfunction and mitochondria–ER axis dysregulation in CS-induced COPD and to evaluate the modulatory potential of naltrexone (NTX).

Methods. Transcriptomic analysis of GEO dataset (GSE197751) identified dysregulated mitochondrial genes. In vivo validation in CS-exposed mice assessed mitochondrial dynamics (DRP1, Fis1, MFN1/2, OPA1), PINK1/Parkin signaling, VDAC1, COXIV, ROS generation, and inflammatory pathways with NTX intervention

Results. CS exposure significantly dysregulated fusion–fission proteins, activated PINK1/Parkin-mediated mitophagy, altered VDAC1 and COXIV expression, and enhanced NOX4-dependent ROS generation. These alterations were accompanied by increased TLR4 signaling and apoptotic activation. NTX administration markedly restored mitochondrial dynamics, reduced oxidative stress, and attenuated inflammatory and apoptotic signaling.

Figure



Discussion. CS-induced COPD is characterized by disrupted mitochondrial homeostasis and aberrant mitochondria–ER crosstalk, amplifying oxidative stress and inflammatory cascades. NTX significantly restored mitochondrial integrity and attenuated redox and apoptotic imbalance, supporting mitochondria–ER communication as a mechanistic and therapeutic target in COPD.

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Sex and BMI differences in Dupilumab responses during twelve-month follow-up

Assoc Prof Javier Navarro-Zaragoza

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Sex and BMI differences in Dupilumab responses during twelve-month follow-up

Javier Navarro-Zaragoza[1,2,3], Juan José Cortés Collado[3], Pilar Almela[1,2], Rubén Andújar[3], Manuel Castilla[3], Sheila Cabrejos-Perotti[3], Miguel Reyes Cortés[3], Juan Carlos Miralles López[3], José Valverde Molina[3], Manuel Pajarón Fernández[3], RE-Asgramur Group[3]. Department of Pharmacology, University of Murcia[1], Murcia, Spain; Neuroscience and Sense Organs, Murcia Institute for Medical Research (IMIB-PP)[2], Murcia, Spain; ASGRAMUR Catedra University of Murcia[3], Murcia, Spain.

Introduction. The clinical heterogeneity of severe asthma suggests that demographic and anthropometric factors may modulate the response to biologic therapies. Dupilumab is a fully human monoclonal antibody (IgG4 subclass) designed to inhibit type 2 inflammation by blocking the shared receptor subunit IL-4Rα, which is used by both interleukin-4 (IL-4) and interleukin-13 (IL-13).

Aims. This study aimed to evaluate whether sex and body mass index (BMI) influence inflammatory and functional outcomes after 12 months of dupilumab treatment in a real-world cohort of patients with type 2 severe asthma.

Methods. Patients receiving continuous dupilumab therapy for one year were included (n=64). Changes in blood eosinophil counts and forced expiratory volume in one second (FEV_1) were assessed and stratified by sex and BMI categories.

Results. Sex-stratified analyses revealed distinct response patterns. In women, eosinophils decreased to a mean of 536.29 ± 85.55 cells/µL, representing a 12.2% reduction, while FEV_1 increased to 2059.67 ± 95.39 mL (+6.95%). In men, the eosinophil decline was slightly greater, reaching 498.88 ± 97.31 cells/µL (−14.4%), accompanied by a more pronounced improvement in lung function, with FEV_1 rising to 2745 ± 127.3 mL (+14.44%). BMI-based stratification showed that patients with overweight (25 to 29,9 kg/m^2) experienced the most substantial eosinophil reduction, reaching 468.13 ± 102.1 cells/µL (−44.06%). No meaningful eosinophil decreases were observed in normal-weight (18,5 to 24,9 kg/m2) or obese individuals (> 30 kg/m2). Conversely, FEV_1 improved across all BMI groups, with increases of 7.4% in obese patients, 10.56% in normal-weight individuals, and 12.11% in those with overweight.

Discussion. These findings and previous results from other laboratories indicate that both sex and BMI may differentially shape the inflammatory and functional response to dupilumab. Recognizing these modifiers could enhance patient stratification and support a more individualized therapeutic approach in severe asthma.

Bult L, et al (2024) Dupilumab responder types and predicting factors in patients with type 2 severe asthma: A real-world cohort study. Respiratory Medicine. 2024 (231): 107720.

Campisi R, et al. (2021) Real-World Experience with Dupilumab in Severe Asthma: One-Year Data from an Italian Named Patient Program. J Asthma Allergy. 2021 May 27;14:575-583.

P393

LPA shifts LPS-stimulated macrophages to M2 by promoting oxidative phosphorylation over glycolysis

Dr Wataru Nagata

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

LPA shifts LPS-stimulated macrophages to M2 by promoting oxidative phosphorylation over glycolysis.
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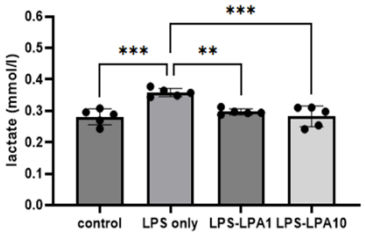
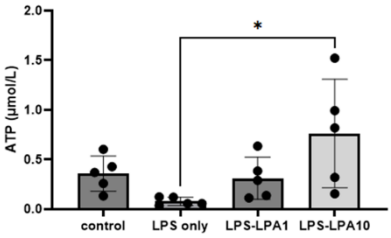
Introduction. Lysophosphatidic acid (LPA) is a bioactive lipid mediator which induces M2 macrophage differentiation in vitro (Mirzoyan K et al, 2017). In addition, LPA ameliorates lupus nephritis in MRL/lpr mice by suppressing the infiltration of activated macrophages (Nagata W et al, 2024). Macrophage polarization (M1/M2) is influenced by its metabolic state.

Aims. This study examined whether LPA reprograms macrophage metabolism to induce M2 polarization.

Methods. RAW264.7 cells were stimulated with LPS (10 ng/L) and/or LPA (1, 10 μM) for 6 h. Immunofluorescence staining using anti-CD68 (a M1 marker) or anti-Arg1 (a M2 marker) was performed. ATP /lactate levels in the cell lysates were measured. In addition, the effect of a glycolytic inhibitor 2-deoxyglucose (2-DG) or a mitochondrial oxidative phosphorylation inhibitor (oligomycin) on the ATP /lactate levels was investigated. Statistical analysis: ANOVA (Tukey's test, $P < 0.05$).





Results. In LPS-stimulated cells, LPA (1 μM) increased Arg1+ cells ($P < 0.01$) and the Arg1/CD68 ratio ($P < 0.0001$), indicating M2 polarization. LPA decreased lactate levels ($P< 0.01$) and increased ATP levels ($P<0.05$, 10μM) in LPS-stimulated cells. In addition, 2-DG reduced lactate production in LPS-stimulated cells. Both 2-DG and oligomycin reduced ATP production in the cells treated with LPS and LPA.

Discussion. These findings suggest LPA appears to induce M2 polarization by shifting the metabolism from glycolysis to oxidative phosphorylation in LPS-stimulated macrophages.

Mirzoyan K et al. (2017) Inflammation. 2017;40(5):1707-16.
Nagata W et al. (2024) Clin Exp Rheumatol. 2024;42(3):658-65.

P394

Function of prostaglandin D2 in the regulation of caerulein-induced pancreatitis in mice

Mr Kenta Hosomi

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Function of prostaglandin D_2 in the regulation of caerulein-induced pancreatitis in mice

Kenta Hosomi[1], Toko Maehara[2], Masatoshi Nakatsuji[1], Yusuke Onishi[3], Shigeru Kawabata[3,4], Yoshinobu Hirose[3], Ko Fujimori[1]

Grad. Sci. Pharm. Sci., Osaka Med. Pharm. Univ.[1], Osaka, Japan; Fac. Agri., Iwate Univ.[2], Iwate, Japan; Fac. Med., Osaka Med. Pharm. Univ.[3], Osaka, Japan; Fac. Med., Shimane Univ.[4], Shimane, Japan

Introduction. Acute pancreatitis (AP) is unexpected inflammatory disease of the pancreas and is caused by various factors such as alcohol abuse. Currently, there is no effective treatment for AP. Prostaglandins (PGs) are lipid mediators and play important roles in regulating various physiological activities. PGD_2 has a variety of physiological effects including the regulation of inflammation. However, these effects alter depending on the tissue or disease.

Aims. The role of PGD_2 in the control of AP remains unclear. We investigated the roles of PGD_2 in caerulein-induced AP model using hematopoietic PGDS (H-PGDS) gene-deficient (*Hpgds*$^{-/-}$) mice.

Methods. We generated the AP model using C57BL/6 (wild-type: WT and *Hpgds*$^{-/-}$) mice by intraperitoneal administration of caerulein (50 μg/kg per hour; 6 times). We harvested the pancreas for 6 hours after the final caerulein administration and analyzed.

Results. Caerulein administration damaged to pancreas. H-PGDS expression was detected in acinar cells and the inflamed areas of the pancreas, and its level was increased by treatment with caerulein. Moreover, PGD_2 production in the pancreas was increased in caerulein-administered mice. The expression of cyclooxygenase (COX)-1 and COX-2, and lipocalin-type PGDS (L-PGDS) was detected in the pancreas; however, these levels were not changed even when caerulein was administered. PGD_2 production in the pancreas of *Hpgds*$^{-/-}$ mice was not altered when caerulein was administered, although its production was increased in WT mice. Caerulein elevated serum amylase and lipase activities, which were further elevated in *Hpgds*$^{-/-}$ mice. Furthermore, the gene expression of M2 macrophage marker in the pancreas was lower in caerulein-administered *Hpgds*$^{-/-}$ mice than WT mice. We suggest that the deficiency of H-PGDS decreased polarization of M2 macrophages and accelerated the inflammation in the pancreas of caerulein-administered mice.

Discussion. H-PGDS-produced PGD_2 induced M2 macrophage polarization and suppressed pancreatic inflammation in caerulein-induced AP mice.

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New therapies in heart failure: a cell-based platform for testing inflammasome inhibitors

Dr Zsófia Onódi

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

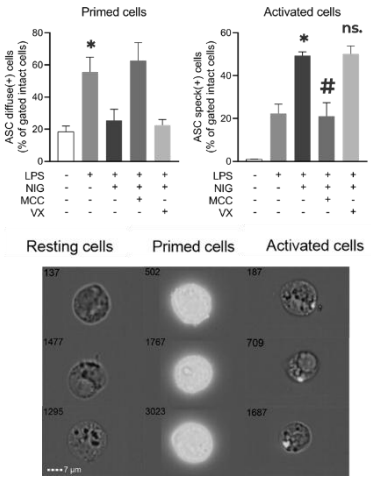
New therapies in heart failure: a cell-based platform for testing inflammasome inhibitors

Zsófia Onódi[1], Sára Jezsoviczky[1], Márton Kocsis[1], Gergely Kozma[2], Andrea Kovács[1], Márta Szabó[1], Zoltán V. Varga[1], Péter Ferdinandy[1]. Department of Pharmacology and Pharmacotherapy[1], Semmelweis University, Budapest, Hungary; Nanomedicine Research and Education Center[2], Semmelweis University, Budapest, Hungary

Introduction. Inflammasomes play an important role in various conditions such as heart failure; thus, investigating agents with potential anti-inflammatory effects can offer new tools to treat these diseases. However, recently used drug screening methods have limitations, which need to be addressed in the future.

Aims. To optimize a cell platform in combination with *in vitro* methods for examining the molecular mechanisms of potential inflammasome inhibitors.

Methods. THP1-ASC-GFP cells were used to examine inflammasomes. Cells were primed with lipopolysaccharide (LPS) and activated with nigericin. NLRP3 or caspase-1 specific inhibitors (MCC950 and VX765) were used to validate the system. Cell viability, caspase-1 activity and cytokine (IL-1β) release were determined by luminescence assays and immunoblot. Imaging flow cytometry (iFlow) was used to visualise cellular GFP signal during priming and activation.



Results. LPS and nigericin induced priming and activation in THP-1 cells, as evidenced by the increased ratio of ASC diffuse(+) and ASC speck(+) cells, IL-1β release, and caspase-1 activity. NLRP3 inhibitor MCC950 blocked inflammasome assembly, while caspase-1 inhibitor VX765 did not altered oligomerization, as detected by iFlow. Among the tested candidates previously reported as potential inhibitors (e.g. canagliflozin), some reduced IL-1β secretion, while others (e.g. atorvastatin) showed no significant anti-inflammatory effects.

Discussion. Our platform has been successfully validated, as it can discriminate inflammasome inhibition at different molecular levels. However, previously reported drug candidates show weak or no direct effects on inflammasome activity, suggesting that their observed anti-inflammatory actions may result from other pharmacological mechanisms. This drug screening platform provides additional pharmacological data on inflammasome inhibitors.

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Effect of particulate matter exposure on dendritic cell responses in asthma

Ms Eyla Oxborrow

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Effect of particulate matter exposure on dendritic cell responses in asthma
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Introduction. Air pollution, particularly particulate matter with a diameter <2.5µm (PM2.5), is a significant environmental threat to human health, contributing to the increased incidence and severity of respiratory diseases, like asthma. Dendritic cells (DCs) play important roles in the activation and differentiation of naïve T cells into the Th2 cells that underpin allergic asthma. However, it is unknown how PM2.5 affects DC function, whether this interaction increases the DC response to antigens, and what impacts this has on the development and increased severity of asthma.
Aims. To develop a novel mouse model to explore the relationship between chronic low-dose Sydney air pollution exposure and the development and severity of asthma, with a focus on DC responses.
Methods. Female wild-type BALB/c mice (*n*=8/group) were administered PM2.5 (or saline control) i.n. daily for 3 weeks. On day 4, the mice were systemically sensitised to ovalbumin (Ova) via i.p. injection, followed by i.n. Ova re-challenge on days 16-19 to induce experimental asthma. Endpoint analysis (day 20) included in vivo invasive plethysmography to measure airway hyperresponsiveness to methacholine challenge, airway inflammation via bronchoalveolar lavage, and detection of DCs using flow cytometry.
Results. Mice exposed to PM2.5 and with experimental asthma (Ova/PM2.5) showed increased airway hyperresponsiveness compared to those with experimental asthma alone (Ova/PBS) and the PM2.5 exposure control (Sal/PM2.5; P<0.0001). Ova/PM2.5 mice also had increased airway inflammation ($2.7\pm0.3 \times 10^5$ cells/mL) compared to Sal/PM controls ($0.36\pm0.04 \times 10^5$ cells/mL; P<0.0001). DC responses were amplified in Ova/PM2.5 compared to PM2.5 alone (P<0.05), with notable increases in plasmacytoid DCs and antigen-presenting plasmacytoid DCs, compared to PM2.5 alone (P<0.05).
Discussion. Chronic low-dose exposure to Sydney PM2.5 exacerbates asthma features, including increased airway hyperresponsiveness, airway inflammation and enhanced DC-mediated allergic sensitisation, contributing to greater asthma severity. These findings highlight future directions for targeted therapeutic strategies to mitigate the respiratory health impacts of air pollution.

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Glycolytic reprogramming reinforces TGF-β signaling and epithelial-to-mesenchymal transition in chronic respiratory diseases

Prof Ming-jen Hsu

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Glycolytic reprogramming reinforces TGF-β signaling and epithelial-to-mesenchymal transition in chronic respiratory diseases
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Introduction. Chronic respiratory diseases (CRDs) involve persistent inflammation, airway remodeling, and progressive airflow limitation. Epithelial-to-mesenchymal transition (EMT) promoted by elevated transforming growth factor-β (TGF-β) is crucial in CRD pathogenesis. However, the impact of TGF-β on cellular energy metabolism, particularly glycolysis, in lung epithelial cells and its link to EMT remain unclear.
Aims. We aim to establish the causal role of glycolysis in TGF-β-induced EMT in lung epithelial cells.
Methods. Immunoblotting, RT-qPCR, migration assays, chromatin immunoprecipitation, Seahorse analysis, lactate assays, glucose uptake, and siRNA transfection, as well as house dust mite (HDM)-induced allergic asthma and bleomycin-induced idiopathic pulmonary fibrosis (IPF) models, were applied to dissect the link between glycolysis and EMT.
Results. TGF-β-promoted EMT, reflected by enhanced motility, and changes in epithelial and mesenchymal markers. It also upregulated glycolytic enzymes and lactate production. These effects are alongside Smad3 phosphorylation. Pharmacological inhibition of glycolysis with 2-deoxy-D-glucose suppressed Smad3 activation and EMT progression. Smad3 knockdown reduced TGF-β-driven glycolytic enzyme expression. Moreover, lactate supplementation enhanced Smad3 phosphorylation, suggesting a feedback loop between glycolysis and EMT signaling. In vivo, decreased E-cadherin and increased Snail expression correlated with elevated GLUT1 and PFKFB3 in lung epithelium of allergic asthma and bleomycin-induced IPF models.
Discussion. These findings reveal that TGF-β reprograms epithelial cell metabolism, where enhanced glycolysis and lactate accumulation reinforce Smad3 signaling to sustain EMT. Targeting this TGF-β-lactate-TGF-β vicious cycle may offer new therapeutic strategies to limit airway remodeling in TGF-β-associated CRDs.

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Distinct transcriptomic responses to formoterol in basal and differentiated airway epithelial cells

Mrs Tamkeen Paracha

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Distinct transcriptomic responses to formoterol in basal and differentiated airway epithelial cells

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Introduction. Long-acting β_2-adrenoceptor agonists (LABAs), including formoterol, are routinely prescribed for asthma and chronic obstructive pulmonary disease, where they improve lung function and alleviate symptoms. Beyond bronchodilation, LABAs also promote gene expression changes, which may impact lung health (Jayasinghe *et al*, 2025). However, studies interrogating many aspects of epithelial cell biology have typically employed basal-like epithelial cells, which may differ, possibly considerably, from the highly differentiated airway epithelium that exists *in vivo*.

Aims. To compare and contrast the formoterol-regulated transcriptomes in the BEAS-2B cells and human primary bronchial airway epithelial cells (HBEs; basal cell models) with HBEs differentiated at an air-liquid interface (ALI).

Methods. BEAS-2B, HBEs and ALIs were treated with formoterol (1nM, 2h and/or 6h) or forskolin (10μM; 6h). Genomic responses were evaluated by mRNA sequencing. Differentially expressed genes (DEGs) (≥1.5-fold/≤0.67-fold) including associated gene ontology, were compared across models**.**

Results. Formoterol regulated 460, 177 and 2 DEGs at 2h, and 497, 899 and 44 DEGs at 6h in BEAS-2B, HBE and ALI cultures, respectively. Transcriptomic overlap across all three models was, therefore, negligible (1 gene at 2h; 6 genes at 6h), and pairwise correlations were uniformly weak (Pearson's $r \leq 0.46$). In contrast, forskolin was a powerful genomic stimulus in all models suggesting that β_2-adrenoceptor signalling was poorly coupled to transcriptional activation in ALI cultures. Eleven DEGs were conserved across all epithelial cell models, which relate to processes central to mitosis.

Discussion. Basal epithelial cells substantially overestimated the genomic impact of formoterol relative to HBEs differentiated at an ALI. Thus, caution should be exercised when extrapolating data from basal cells to the actions of LABAs *in vivo*. However, this conclusion necessarily requires confirmation that the gene expression changes in airway epithelial cells harvested from human subjects by research bronchoscopy is similarly weak after inhalation of a LABA.

Jayasinghe V, et al (2025) J Pharmacol Exp Ther 392:103579.

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Muscarinic M3 receptors mediate synergy between carbachol and indacaterol in BEAS-2B cells

Mr Varuna Jayasinghe

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Muscarinic M_3 receptors mediate synergy between carbachol and indacaterol in BEAS-2B cells

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Introduction. Muscarinic receptor antagonists reduce exacerbations in subjects with chronic obstructive pulmonary disease (COPD), suggesting endogenous Ach up-regulates pro-inflammatory genes in airways. Gram-negative bacterial infections also cause exacerbations by releasing catecholamines from infiltrating phagocytes, which, like Ach, exert genomic effects. Although long-acting β_2-adrenoceptor agonists (LABAs) are recommended treatments for COPD, they could, paradoxically, mimic catecholamines and impair lung health. Moreover, Ach and LABAs activate cAMP response element (CRE)-binding protein, which may represent a node of signal integration that fine-tunes genomic responses.

Aim. To characterise the receptor and define the immediate down-steam signalling by which carbachol (CCh), a stable Ach analogue, augmented gene induction produced by the LABA, indacaterol (Ind).

Methods. Genomic responses in BEAS-2B cells treated with CCh (10µM) and/or Ind (10nM) were evaluated using CRE reporter gene assays, RT-PCR and mRNA sequencing. Receptor characterisation and down-stream signalling were interrogated by Gaddum-Schild analysis, gene silencing and employing selective inhibitors.

Results. CCh and Ind produced concentration-dependent increases in CRE activity ($[A]_{50}$=263nM; E_{max}=2.0-fold and $[A]_{50}$=0.41nM; E_{max}: 8.2-fold, respectively) and interacted *supra*-additively in combination (E_{max}=15.8-fold). *CHRM3* was the most highly expressed transcript of those that encode muscarinic receptors. *CHRM3*-targetting siRNAs suppressed the augmentation of Ind-induced CRE reporter activation. Likewise, the muscarinic receptor antagonists, atropine, glycopyrronium and J-104129 blocked the effects of CCh with pK_B values consistent with activation of the muscarinic M_3-subtype. The Gq inhibitor, YM-254890 (1uM), abolished the enhancement of Ind-induced response by CCh. Agonists of other Gq-coupled receptors (histamine, 10uM; oxytocin, 2uM) also augmented LABA-induced reporter activation in a YM-254890-sensitive manner.

Discussion. These findings identified a muscarinic M_3-receptor-Gq-regulated pathway that enhanced Ind-induced CRE reporter activation and gene expression in BEAS-2B cells. These data provide a mechanistic basis for the efficacy of muscarinic receptor antagonists in COPD, which may block genomic synergy between ACh and catecholamines and/or LABAs.

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Anti-Inflammatory Role of Statins in Emerging Viral Infections: Evidence from COVID-19 Meta-Analysis

Dr Maftuchah Rochmanti

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Anti-Inflammatory Role of Statins in Emerging Viral Infections: Evidence from COVID-19 Meta-Analysis
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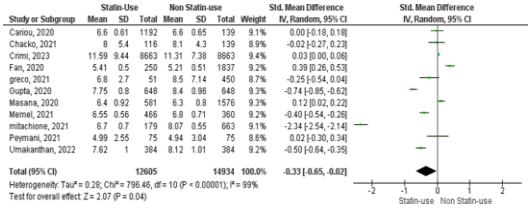

Introduction. Severe viral infections, including COVID-19, are often complicated by hyperinflammation and poor outcomes (Zhou et al, 2021). Statins, commonly prescribed for cardiovascular disease, also have anti-inflammatory and immunomodulatory effects. COVID-19 provides a model to examine their role in virus-induced inflammation (Daniels et al, 2020), though results remain inconsistent.

Aims. This study evaluates the effectiveness of statins as anti-inflammatory agents when added to standard therapy in COVID-19 patients.

Methods. Following PRISMA guidelines, we searched PubMed, ScienceDirect, Scopus, Cochrane CENTRAL, and grey literature (January–December 2024) using the keywords *"statins," "COVID-19" [MeSH], and "inflammation."* Outcomes included mortality, ICU admission, ventilation, inflammatory markers, and hospital stay. Data were analyzed using Risk Ratios and Standardized Mean Differences with 95% CIs ($P < 0.05$).

Results. Thirty-seven studies (1,348,617 participants; 32 cohorts, 5 RCTs) were included. Statins significantly reduced White Blood Cell (WBC) counts but showed no effect on mortality, ICU admission, ventilation, CRP, D-dimer, lymphocyte/neutrophil counts, or hospital stay.

Discussion. These findings in reduced WBC counts suggest that statins may exert modest anti-inflammatory effects, though further studies using specific markers are required for validation. This study highlights statins' potential as adjunctive therapy in viral-induced hyperinflammation and underscores the need for further randomized trials to clarify their role in future outbreaks.

Daniels et al (2020). *The American journal of cardiology, 136*: 149–155.
Zhou et al (2021). *Thrombosis research, 201*: 23–29.

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Therapeutic efficacy of amphiphilically-modified retinoic acid prodrug in ALI/ARDS model

Seungwon Jeong

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Therapeutic efficacy of amphiphilically-modified retinoic acid prodrug in ALI/ARDS model

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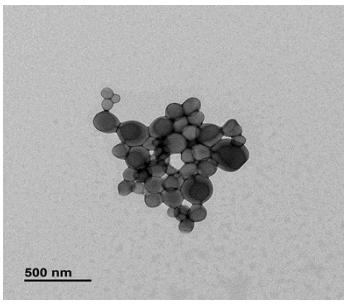

Introduction. Acute lung injury (ALI) and its most severe form, acute respiratory distress syndrome (ARDS), are acute inflammatory pulmonary diseases caused by various factors, including inhalation of harmful substances, pneumonia and sepsis. Despite the development of numerous therapeutic agents for ALI/ARDS over the past few decades, significant limitations remain in their clinical application. Therefore, there is an urgent need to develop novel therapeutic strategies that can overcome these hurdles.

Aims. This study aimed to develop an effective pulmonary delivery system for amphiphilically-modified retinoic acid (RA) nanoparticles and to evaluate their therapeutic efficacy for ALI/ARDS.

Methods. The respective drugs were administered intravenously at their designated concentrations. After 1 hour, the mice were intratracheally injected with 25 µL of 1 mg/mL Lipopolysaccharide (LPS) solution (1 mg/kg per mouse).

Results. In the LPS-induced acute lung injury model, RABA treatment not only reduced the levels of pro-inflammatory cytokines but also inhibited the disruption of the alveolar-capillary barrier, thereby decreasing vascular permeability.

Discussion. RA, a metabolite of vitamin A_1, is widely known as a substance with anti-inflammatory activity. However, the low aqueous solubility and rapid metabolism of RA may slow the absorption of the drug, resulting in inadequate bioavailability and reduced therapeutic efficacy. To improve these issues, we used RA-based small molecule prodrug nanoassemblies (RABA) that can self-assemble with amphiphilic properties, as a therapeutic agent for ALI/ARDS. Our results demonstrated that RABA effectively targeted lung inflammation and inhibited several symptoms of ALI/ARDS. Based on our findings, we suggest that RABA nanoparticles could be a potential therapeutic agent for ALI/ARDS.

Jung E et al (2022) Biomaterials 284:121515.

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Investigating role of Navitoclax in novel senescence related osteoarthritis model in mice

Ms Neha Sharma

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Investigating role of Navitoclax in novel senescence related osteoarthritis model in mice
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Introduction. Osteoarthritis of the knee is an age-related type of arthritis and degenerative disorder affecting the cartilage, subchondral bone, synovial tissue with osteophyte formation. Osteoarthritis affects the whole joint including articular cartilage, subchondral bone and synovial membrane. This novel model mimics the modern world knee joint problems in older population and will be helpful in future academic & research studies on osteoarthritis.
Aims. Development and validation of a novel senescence related knee osteoarthritis model and investigating the effect of Navitoclax on this model.
Methods. C57BL/6 mice were anaesthetized with ketamine 100 mg/kg & xylazine 10 mg/kg cocktail (intra-peritoneal) and shaved at joints. Monoiodoacetate (MIA) (intra-articular) once on day 1 and D-galactose (subcutaneous) for 30 days daily were administered. Navitoclax (oral) was administered for next 30 days. After the end of experiment, pain & inflammation associated parameters like hot plate analysis, rotarod, knee diameter and gait were assessed. X-ray imaging technique in live mice was performed. After the samples were harvested histopathology and micro-CT were also done on knee joint samples.
Results. The X-ray imaging technique and micro-CT assessment showed that MIA with d-galactose induced osteoarthritis more severe than MIA alone while Navitoclax improved the cartilage integrity. Navitoclax increased the pain threshold in osteoarthritic mice in hotplate method ($n = 10$, $p < 0.01$) & increased locomotor activity in rotarod ($n = 10$, $p < 0.01$) as compared with MIA+D-galactose group. Gait stride pattern was more severe in MIA and d-galactose combination than MIA alone ($n = 7$, $p < 0.01$) and navitoclax improved gait as compared with the novel osteoarthritic model ($p < 0.01$) in mice.
Discussion. MIA with d-galactose induced more effective novel ageing associated osteoarthritis model in C57BL/6 mice. D-galactose induces senescence in cartilage and MIA disrupts cartilage integrity only, hence combination of the two mimics model for ageing related osteoarthritis which makes more sense in modern world suffering from severe joint disease. Treatment with Navitoclax improved osteoarthritic symptoms in knee joint of mice by its advanced senolytic property unlike conventional NSAIDs.

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NEK7-NLRP3 Axis in Rheumatoid Arthritis Macrophages and Er Miao San Intervention

Prof Xiaoyi Jia

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

NEK7 - NLRP3 Axis in Rheumatoid Arthritis Macrophages and Er Miao San Intervention

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Introduction. NEK7 has recently been identified as a selective and essential regulator of NLRP3 oligomerization; however, its role in RA pathophysiology remains largely unexplored.
Aims. This study investigates whether NEK7 regulates NLRP3 inflammasome activation in RA macrophages and whether Er Miao San (EMS), a traditional Chinese medicine formula, exerts anti-arthritic effects through this pathway.
Methods. NEK7 and NLRP3, caspase-1, IL-1β, and IL-18 were assessed in clinical samples from RA patients. In a collagen-induced arthritis (CIA) mouse model, NEK7 was silenced via siRNA to evaluate its impact on arthritis severity and inflammatory markers. RAW264.7 macrophages with NEK7 knockdown or overexpression were treated with EMS to examine inflammasome assembly, ASC speck formation, and cytokine release. Molecular docking simulations were performed to predict potential interactions between bioactive EMS constituents and the NEK7 protein.
Results. NEK7 expression was significantly elevated in RA synovial tissues and macrophages and correlated with increased NLRP3 activity. In CIA mice, NEK7 silencing attenuated clinical arthritis severity, reduced synovial inflammation, and suppressed NLRP3 inflammasome activation. Cellular assays confirmed that NEK7 is required for NLRP3 inflammasome assembly in macrophages. EMS effectively inhibited the NEK7/NLRP3 axis and alleviated joint inflammation. Molecular docking identified favorable binding interactions between major EMS components and the NEK7 protein.
Discussion. This study identifies NEK7 as a critical mediator of NLRP3 inflammasome hyperactivation in RA macrophages. The finding that EMS suppresses this pathway, potentially through direct or indirect targeting of NEK7, reveals a novel mechanistic basis for its anti-arthritic effects. These insights suggest that NEK7 may serve as both a potential diagnostic indicator and a promising therapeutic target in RA, while also providing a molecular rationale for the use of EMS in inflammatory arthritis management. Further investigation into the precise NEK7-inhibitory mechanisms of EMS components and their in vivo validation is warranted.

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IRAK3 mitochondrial distribution and effect involve regulation of inflammation

Dr Trang Nguyen

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

IRAK3 mitochondrial distribution and effect involve regulation of inflammation.

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Introduction. Inflammation forms the early defensive responses of our immune system to infection and injuries. Dysregulated or overwhelmed inflammation contributes to many acute or chronic inflammatory diseases. IRAK3 (Interleukin-1 receptor associated kinase 3) as a checkpoint molecule plays crucial roles in regulating inflammation. Mitochondria are a key facilitator of inflammatory signal cascades. However, the relationship of IRAK3 and mitochondrial effects on inflammation remains unclear.

Aims. Our studies aim to investigate the mitochondrial distribution and effect of IRAK3 on inflammation in immune and epithelial cells. To elucidate the mitochondria associated effects of IRAK3, we first identified putative mitochondrial interactors of IRAK3 and then map its role in regulating acute and chronic inflammatory responses.

Methods. Total proteins were extracted from THP-1 monocytes exposed to lipopolysaccharide (LPS)-challenge for 24h and then a second LPS challenge for30min or 2h and analysed using label-free LC-MS/MS. Quantitative proteomic data were examined using clustering, t-SNE dimensionality reduction, and gene ontology enrichment. A549 epithelial and THP-1 cells were fixed and probed with IRAK3 and mitochondria antibodies visualised using confocal fluorescence microscopy. IRAK3 mitochondrial localization is further examined using cellular sub-fractionation and immunoblot.

Results. Our proteomic data analysis provided a comprehensive proteomic landscape of approximately 2600 proteins with distinct temporal signatures of LPS-challenges from control conditions. At 30 minutes, mitochondrial and cytoplasmic regulatory proteins were enriched, while at 2 hours immune effector proteins were predominantly upregulated. Cellular imaging demonstrated IRAK3 mitochondrial distribution in THP-1 and A549 cells, and IRAK3 proteins increasingly localize in mitochondria following LPS-challenge compared to control.

Discussion. Our study reveals IRAK3 as a hub integrating cytoplasmic and mitochondrial pathways during inflammatory challenge and its putative mitochondrial interactors. Cell visualization confirms LPS-induced IRAK3 mitochondrial localization. Ongoing experimental work will explore the potential relationship of IRAK3 effects and its mitochondrial interactors as therapeutic targets for acute/chronic inflammatory conditions.

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TAS2R receptor activation modulates mast cell and airway responses in asthma

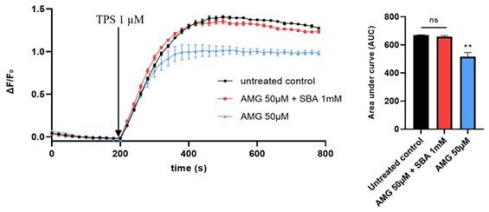
Prof Martina Šutovská

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Bitter taste receptor TAS2R activation modulates mast cell and airway responses in asthma

Jozef Mažerik[1], Eduard Gondáš[1], Radovan Murín[2], Michal Pokusa[3], Soňa Fraňová[1], Martina Šutovská[1]. Dept of Pharmacology[1], Dept of Medical Chemistry[2], Biomedical Centre[3], Jessenius Faculty of Medicine, Comenius University, Martin, Slovakia

Introduction. Bitter taste receptors (TAS2Rs) are expressed in airway epithelium and mast cells. Their activation modulates Ca^{2+} signaling, mediator release, and airway reflexes, processes central to asthma.
Aims. To evaluate the effect of TAS2R activation on Ca^{2+}-dependent mast cell responses, airway reflexes, inflammation, and remodeling in experimental asthma.
Methods. LUVA mast cells were stimulated with the TAS2R agonist amarogentin. Outcomes included Ca^{2+} influx (Fura-2AM), β-hexosaminidase activity, eicosanoid release, cytokines, and signaling protein phosphorylation. In vivo, ovalbumin-sensitized guinea pigs received amarogentin; cough reflex, airway resistance, mucociliary clearance, cytokines, and remodeling markers (EGFR, STAT-6, RhoA, MUC5AC) were assessed and compared with reference drugs.
Results. Amarogentin reduced mast cell degranulation (figure) by ~50%, Ca^{2+} influx by ~45%, and SOCE by 40–60%, lowering PGD_2 and LTC_4 release ($p < 0.01$). It suppressed NFAT and NF-κB phosphorylation. *In vivo,* amarogentin reduced cough frequency (~35%) and airway resistance (~25%), improved mucociliary clearance (+20%), and decreased IL-4, IL-5, and IL-13 by 40–55% ($p < 0.01$). Histology confirmed reduced mucus production and attenuation of EGFR, STAT-6, and RhoA upregulation. Effects were comparable to standard therapy.
Discussion. TAS2R activation mitigates mast cell activation, airway reflex hypersensitivity, and remodeling. These findings identify TAS2Rs as promising therapeutic targets in asthma with persistent cough and mucus hypersecretion.



P410

Calcium signalling–dependent effects of TRPV4 inhibition on airway reflexes and inflammation

Prof Martina Šutovská

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Calcium signaling–dependent effects of TRPV4 inhibition on airway reflexes and inflammation

Martina Šutovská[1], Jozef Mažerik[1], Marta Jošková[1], Eduard Gondáš[1], Lucia Cipková[1], Soňa Fraňová[1]. Dept of Pharmacology, Jessenius Faculty of Medicine, Comenius University[1], Martin, Slovakia

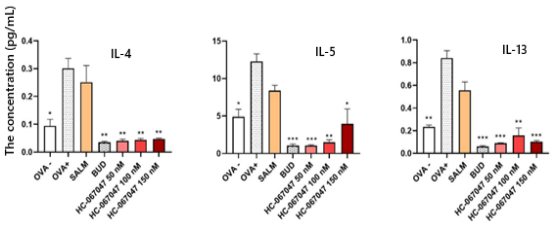
Introduction. Asthma is characterized by airway inflammation, hyperresponsiveness, mucus hypersecretion, and exaggerated airway reflexes. TRPV4 channels mediate Ca^{2+} influx in epithelial and immune cells, triggering ATP release and mast cell activation.

Aims. This study examined whether TRPV4 inhibition alleviates airway reflexes and inflammation in experimental asthma via Ca^{2+} signaling modulation.

Methods. Guinea pigs (n = 8/group) were sensitized with ovalbumin (OVA; 10 mg/kg s.c.). TRPV4 antagonist HC-067047 (10 mg/kg i.p.) or vehicle was given 30 min before OVA challenge. Outcomes: cough reflex (citric acid), airway resistance (sRaw), cytokines (IL-4, IL-5, IL-13), remodeling markers (EGFR, STAT-6, RhoA, MUC5AC). In vitro, LUVA mast cells were stimulated with TRPV4 agonist GSK-1016790A ± HC-067047; Ca^{2+} influx (Fura-2AM) and degranulation (β-hexosaminidase release) were measured.

Results. *In vivo*, HC-067047 reduced cough counts from 45 ± 5 (OVA) to 22 ± 4 ($p = 0.002$) and airway resistance from 1.8 ± 0.2 to 1.2 ± 0.1 AU ($p = 0.01$). IL-4, IL-5, and IL-13 decreased by ~45–50% (all $p < 0.001$, figure). EGFR, STAT-6, and RhoA expression fell by ~50%, and MUC5AC staining by 40% ($p < 0.01$). In LUVA cells, GSK-1016790A induced rapid Ca^{2+} influx (+220 ± 15%) and degranulation (+180 ± 12%, $p < 0.001$); HC-067047 suppressed both by ~70% ($p < 0.001$).

Discussion. TRPV4 promotes Ca^{2+}-dependent airway reflexes, mast cell activation, and inflammation in asthma. Pharmacological inhibition attenuates these processes, highlighting TRPV4 as a mechanistically defined therapeutic target for airway diseases with refractory cough and inflammation.



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Peptidoglycan perturbs NF-κB signaling and suppresses the basal constitutive expression of lactoperoxidase

Prof Wen-Bin Wu

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Peptidoglycan perturbs NF-κB signaling and suppresses the basal constitutive expression of lactoperoxidase
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Introduction. Chronic rhinosinusitis with nasal polyps (CRSwNP) is an important clinical entity diagnosed by the presence of both subjective and objective evidence of chronic sinonasal inflammation. Lactoperoxidase (LPO), an enzyme belonging to the heme peroxidase family, is a mucosal and secretory protein expressed on epithelial cells, using H_2O_2 and thiocyanate (SCN^-)/Cl^- to form HOSCN/HOCl to exert antimicrobial activity. We have shown that LPO is under-expressed in NPs of CRSwNP, suggesting its role in CRSwP pathogenesis/progression. Meanwhile, the epithelial damage and imbalanced/loss of sinus microbiome have been proposed as a crucial factor for CRS pathogenesis. Several G(+) bacteria are found in CRS patients and one of the main pathogenic factors is peptidoglycan (PGN).
Aims. While epithelial LPO plays a role against pathogens, its regulation in the nasal epithelium remains unclear. This study sought to dissect the regulatory mechanism of LPO by PGN in human nasal epithelial cells (hNECs).
Methods. The expression and regulation of LPO were investigated in human RPMI2650 and primary cultured hNECs. The LPO mRNA level was determined by qPCR. The protein expression was assayed by Western blotting and immunofluorescence microscopy. The p65 NF-κB knockdown (KD) was performed by introducing small interfering RNA to cells. The interaction of p65 NF-κB with the LPO promoter was done by chromatin immunoprecipitation assay.
Results. The PGN downregulated the basal constitutive expression of LPO mRNA and protein in RPMI2650 and hNECs. The suppression could be reversed by actinomycin D, cycloheximide, BAY 11-7085, bortezomib, and MG132, indicating the involvement of DNA transcription, protein translation, and proteasome ubiquitin NF-κB-related pathways. Surprisingly, PGN perturbed basal NF-κB/IκB signaling by affecting its activation time course and KD of the NF-κB p65 expression reversed PGN-mediated LPO downregulation. Two novel NF-κB binding sites were identified within the *lpo* promoter region and the PGN treatment compromised NF-κB p65 binding to the sites in the promoter.
Discussion. We demonstrated here for the first time that NF-κB signaling is required for basal LPO production and its perturbation by PGN leads to a decrease in the constitutive expression of LPO in hNECs, which may compromise the antimicrobial system to promote G(+) bacteria colonization in the nasal cavity during CRS development.

P412

Targeting CNOT1 by Mogroside V Enhances MARCH8-Mediated M2 Ubiquitination and Restricts IAV

Ms Simin Yang

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Targeting CNOT1 by Mogroside V Enhances MARCH8-Mediated M2 Ubiquitination and Restricts IAV

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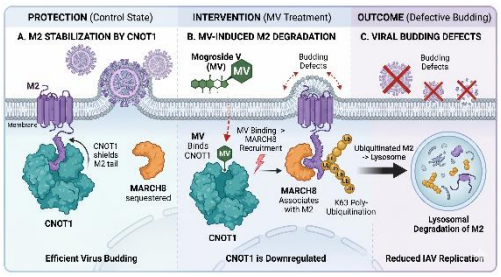


Introduction. Host-directed antiviral strategies are essential to combat drug-resistant Influenza A virus (IAV). Mogroside V (MV), a primary triterpenoid from *Siraitia grosvenorii*, exhibits potent anti-IAV activity, yet its precise molecular mechanism remains elusive.

Aims. To evaluate the therapeutic efficacy of MV against IAV and identify its direct host target and downstream regulatory axis.

Methods. We screened 529 natural compounds and validated MV's efficacy using in vitro infection models and in vivo lung-specific knockdown mice. Target identification and interaction were characterized by TPP, SPR, MST, and molecular docking. Viral budding was visualized via TEM.

Results. MV dose-dependently inhibited both wild-type and oseltamivir-resistant H1N1 strains with low cytotoxicity and significantly improved survival while reducing pulmonary viral burden in vivo. Mechanistically, MV specifically impaired the late-stage viral budding process rather than early entry. Thermal proteome profiling and binding assays identified CNOT1 as the direct host target of MV. Under physiological conditions, CNOT1 physically associates with the viral M2 protein to prevent its degradation; however, MV binding downregulated CNOT1, facilitating MARCH8-mediated K63-linked polyubiquitination and subsequent lysosomal degradation of M2. Furthermore, combined MV and oseltamivir treatment demonstrated superior synergistic antiviral protection.

Discussion. Our study identifies the MV-CNOT1-MARCH8-M2 axis as a novel regulatory node in IAV replication. By modulating host protein homeostasis to promote viral protein degradation, MV represents a high-safety candidate for overcoming viral resistance in anti-influenza therapeutics.

P413

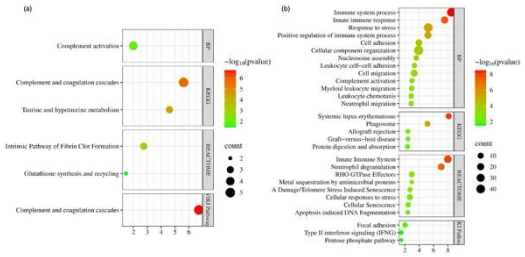
Boron-Based Topical Strategy for Enhancing Flap Survival: Mechanistic Insights Through Proteomic Analysis

Assoc Prof Cafer Yildirim

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Boron-Based Topical Strategy for Enhancing Flap Survival: Mechanistic Insights Through Proteomic Analysis
Cafer Yildirim[1], Merve Gulsen Bal Albayrak[2], Sevinc Yanar[3], Nihal Kayir[4], Ayse Hande Yozgat[5], Sevim Aydin[5] and Fikrettin Sahin[6]. Department of Basic Medical Sciences, Ankara University[1], Ankara, Turkiye; Department of Molecular Gastroenterology and Hepatology, Kocaeli University[2], Kocaeli, Turkiye; Department of Medical Biology, Ankara Yildirim Beyazit University[3], Ankara, Turkiye; Department of Medical Pharmacology, Medipol University[4], Istanbul, Turkiye; Department of Histology and Embryology, Ankara University[5], Ankara, Turkiye; Department of Genetics and Bioengineering, Yeditepe[6] University, Istanbul, Turkiye

Introduction: Flap survival is often compromised by ischemia–reperfusion injury, oxidative stress, and inadequate angiogenesis, leading to distal necrosis in 20–80% of experimental models and 10–25% of clinical cases. Although various pro-angiogenic and antioxidant therapies have been explored, clinical translation remains limited. Boron has shown promise as a modulator of inflammatory and angiogenic pathways, enhancing fibroblast activity and VEGF expression in wound models; however, boron-containing hydrogels have not yet been evaluated in flap ischemia models, highlighting an important translational gap (1,2).
Aims. This study aimed to evaluate the therapeutic efficacy of a sodium pentaborate pentahydrate (SPP)-containing hydrogel in a rat flap model by assessing its effects on angiogenesis, inflammation, extracellular matrix organization, and molecular signaling through histological and proteomic analyses.
Methods: The rats were randomly assigned to two groups (n = 8 per group): control and DBP-treated. Rats were given anesthesia combination of 5 mg/kg xylazine hydrochloride and 50 mg/kg ketamine hydrochloride. A dorsal flap model was established in male Wistar rats, which were treated topically with an SPP-containing formulation twice daily for seven days. Histological changes were evaluated using H&E and M&T staining, and proteomic alterations were analyzed using label-free nano LC-MS/MS followed by bioinformatics analysis.



Results: Treatment significantly improved flap survival ($p < 0.0001$), enhanced granulation tissue formation, promoted organized collagen deposition, and reduced inflammation. Proteomic analysis identified 179 differentially expressed proteins (14 upregulated, 165 downregulated); enriched pathways indicated activation of complement, antioxidant, and extracellular matrix remodeling processes, alongside suppression of immune overactivation and cellular stress, suggesting a shift toward controlled inflammation and tissue homeostasis. To our knowledge, this is the first study demonstrating that an SPP-containing hydrogel enhances flap healing by promoting vascularization, modulating immune responses, and supporting matrix remodeling, highlighting its potential in reconstructive surgery.
Discussion. The present findings are consistent with previous experimental and clinical studies reporting that boron-containing hydrogels enhance angiogenesis, fibroblast activity, and collagen synthesis, supporting improved tissue regeneration in various wound models. Moreover, our proteomic data suggest that DBP promotes flap healing by suppressing excessive inflammatory and IFN-γ–related responses while reinforcing antioxidant and coagulation pathways, aligning with earlier reports highlighting boron's immunomodulatory and oxidative stress–regulating effects.

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P414

Increased ETFA acetylation in rat cardiac mitochondria and functional assessment with HOQNO

Dr Hiroki Aida

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Increased ETFA acetylation in rat cardiac mitochondria and functional assessment with HOQNO

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Introduction. Mitochondrial metabolic remodeling contributes to cardiac dysfunction in diabetes. Lysine acetylation regulates mitochondrial metabolism, but the significance of specific targets is unclear. Specifically, acetylation of electron transfer flavoprotein alpha (ETFA), which links fatty acid oxidation (FAO) to the electron transport chain (ETC), has not been studied in rat cardiac mitochondria.
Aims. (1) To identify acetylated target proteins in diabetic rat hearts. (2) To assess ETFA function using 2-n-heptyl-4-hydroxyquinoline N-oxide (HOQNO), a quinone derivative reported as an ETF-ubiquinone oxidoreductase (ETF-QO) inhibitor in vitro.
Methods. Obese diabetic OLETF and control LETO rat hearts were analyzed by acetylomics, and proteomics. Isolated cardiac mitochondria were studied in extracellular flux analysis with 10 mM pyruvate, 10 mM succinate, or 40 μM palmitoyl-carnitine, ± HOQNO (100-400 μM, dose-dependent).
Results. OLETF hearts showed increased acetylation of FAO proteins, including ETFA residues K69, K75, and K126, while ETFA expressions were unchanged. Immunoprecipitation and immunoblot analyses using mitochondrial samples confirmed augmentation of ETFA acetylation in OLETF compared to LETO with similar expression levels. HOQNO reduced oxygen consumption rate (OCR) with palmitoyl-carnitine as expected, but also with pyruvate or succinate, which does not require ETF. This indicates off-target inhibition of respiration, likely via HOQNO's quinone structure acting on other ETC complexes.
Discussion. ETFA acetylation increases in diabetic rat cardiac mitochondria, but functional assessment with HOQNO revealed non-selective respiratory inhibition, limiting its use as an ETF probe. While HOQNO has been applied as an ETF-QO inhibitor in vitro, these findings highlight the need for more selective compounds or genetic modulation to clarify the functional and therapeutic relevance of ETFA acetylation in diabetic cardiomyopathy.

P415

CD144+/AV+ endothelial microvesicles as markers of treatment response in dyslipidemia

Dr Nik Nor Izah Nik Ibrahim

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

CD144+/AV+ endothelial microvesicles as markers of treatment response in dyslipidemia
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Introduction. Endothelial microvesicles (EMV) are emerging indicators of endothelial injury and dysfunction. Their behaviour in response to lipid-lowering therapy, however, remains incompletely understood.
Aims. This study evaluated the response of selected EMV phenotypes following 6 months intervention with therapeutic lifestyle changes (TLC) and atorvastatin therapy in newly diagnosed patients with dyslipidemia.
Methods. Twenty-eight patients with dyslipidemia were assessed before and after intervention. Peripheral blood EMV were isolated and quantified by flow cytometry, focusing on CD144+/AV+, CD31+/CD42−/AV+, and CD62e+/AV+ phenotypes. Lipid profiles were measured concurrently.
Results. Data are represented as mean ± standard deviation (SD). A significant reduction was observed only in CD144+/AV+ EMV following intervention (6.43±7.40 to 3.27±3.65 count/µL (mean±SD), n=28; *p*=0.035), while other EMV phenotypes showed no significant change. Changes in EMV levels were not correlated with changes in lipid parameters.
Discussion. The selective reduction of CD144+/AV+ EMV following lipid-lowering intervention suggests its sensitivity to treatment-induced endothelial recovery. The absence of correlation with lipid changes may reflect lipid-independent (pleiotropic) effects of statin therapy on endothelial integrity. CD144+/AV+ EMV may serve as a treatment-responsive marker of endothelial dysfunction in dyslipidemia.

P416

Integrated mendelian randomization and multi-omics reveal pharmacological function of acetoacetate in atherosclerosis

Dr Huihai Yang

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Integrated mendelian randomization and multi-omics reveal pharmacological function of acetoacetate in atherosclerosis

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Introduction Atherosclerosis is a leading cause of mortality and reduced quality of life among the elderly worldwide, driven by factors including hypertension, diabetes, hypercholesterolemia, and genetic predisposition. Therapeutic strategies for atherosclerosis are currently limited, mainly consisting of surgical interventions, pharmacological treatments, and lifestyle modifications[1]. The ketogenic diet elevates circulating levels of acetoacetate in humans, which is a ketone body that has been epidemiologically associated with atherosclerosis[2]. However, the causal relationship and the pharmacological potential of acetoacetate in treating atherosclerosis remain unclear.

Aims This study aims to elucidate the causal relationships, molecular mechanisms and therapeutic effects of acetoacetate in atherosclerosis progression.

Methods Two genome-wide association study (GWAS) database (met-d-Acetoacetate and ukb-d-I9_CORATHER) were utilized for two sample mendelian randomized (MR) to decipher the biological causality between acetoacetate and atherosclerosis. Additionally, the atherosclerotic transcriptome databases (GSE43292 and GSE100927) and a single cell-RNA dataset (GSE159677) were analyzed to preform Lasso-Cox regression, signaling enrichment, immune infiltration, and CellChat analyses. The key therapeutic targets of acetoacetate in atherosclerosis, identified through integrated MR and multi-omics screening, were further validated in an atherosclerosis mouse model by qPCR.

Results MR analysis indicated that acetoacetate levels were inversely associated with atherosclerosis risk, suggesting potential therapeutic efficacy. A total of 129 acetoacetate-associated single nucleotide polymorphisms (SNPs) were identified, corresponding to 17 candidate genes. Through machine learning-based feature selection, four key genes (GALNT2, CTSB, PCSK7, and XKR6) were prioritized to construct a prognostic model (Score = -2.032*GALNT2 + 0.449*CTSB + 1.233*PCSK7 + 0.312*XKR6), which demonstrated high predictive performance in GSE43292 (AUC: 0.863) and was externally validated in GSE100927 (AUC: 0.899). Stratification of patients according to the prognostic model identified 500 differentially expressed genes (DEGs) between high- and low-score groups. Pathway enrichment analysis of these DEGs enriched 51 signaling pathways, with the PPAR signaling pathway emerging as a potential molecular mechanism through which acetoacetate exerts its therapeutic effects in atherosclerosis. Experimental validation by qPCR in an atherosclerosis mouse model corroborated these gene expression patterns. Furthermore, integrative immune infiltration and single-cell RNA-seq analyses demonstrated that acetoacetate modulates macrophages, dendritic cells, and monocytes, supporting its therapeutic role in atherosclerosis *via* regulation of immune cell composition and function.

Discussion Our study reveals a causal role of acetoacetate in atherosclerosis and supports its potential as a therapeutic agent to slow or reverse disease progression, highlighting its promise for future clinical translation.

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Acknowledgement
This study is supported by Hong Kong Research Grant Council (RGC) General Research Fund (15123824).

P417

Efficacy of erdosteine on myocardial necrosis through MAPK and Nrf-2/HO-1 pathway

Prof Dharamvir Singh Arya

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Efficacy of erdosteine on myocardial necrosis through MAPK and Nrf-2/HO-1 pathway

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Introduction. Erdosteine, a mucolytic drug, has been shown in several pre-clinical studies to act as an anti-inflammatory agent by mitigating free radicals. To study its protective effects against oxidative stress, inflammation, and cell death (apoptosis/necroptosis), we tested Erdosteine in a rat model of myocardial injury caused by excess catecholamine (isoproterenol, ISO).

Aims. To evaluate whether Erdosteine can protect the heart against ISO-induced damage by reducing oxidative stress, inflammation, and apoptosis.

Methods. Male Wistar rats (48 in total) were divided into eight groups (n=6 each): Normal, ISO-control, and six Erdosteine pre-treatment groups with doses from 5 to 160 mg/kg. Erdosteine was given orally for 28 days. On days 27 and 28, ISO (85 mg/kg, under the skin) was given to the ISO-control and Erdosteine groups to induce heart injury. On day 29, heart function was measured using the BioPac BSL 4.0 system. Blood and heart samples were collected for biochemical tests, histology, and molecular studies.

Results. In ISO-control rats, markers of heart injury (CK-MB, LDH), oxidative stress (MDA, reduced GSH, SOD), inflammatory markers (TNF, IL-6), ROS, and proteins linked to inflammation and apoptosis (MAP kinases, Bax, Bcl-2, Caspase-3) were significantly increased compared to normal rats. Severe tissue damage was also seen in heart sections, along with higher expression of apoptotic proteins. In the Erdosteine-treated groups, there was a dose-dependent improvement. Erdosteine reduced oxidative stress, inflammation, and apoptosis, while improving signalling pathways such as Akt-eNOS, GSK-3β, mTOR, inflammasome, necroptosis, and ferroptosis. The best protective effect was observed at 80 mg/kg, where the heart structure was well preserved.

Conclusion. Erdosteine protected against ISO-induced heart injury by reducing oxidative stress, inflammation, and apoptosis through multiple molecular pathways. This suggests Erdosteine has potential as a therapy for heart inflammation and injury, especially in myocardial infarction.

P418

Metabolic and vascular outcomes of telmisartan in hypertensive patients with TDM

Dr Rimple Jeet Kaur

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Impact of telmisartan on metabolic and vascular outcomes in hypertensive patients with type 2 diabetes: A randomised open-label trial

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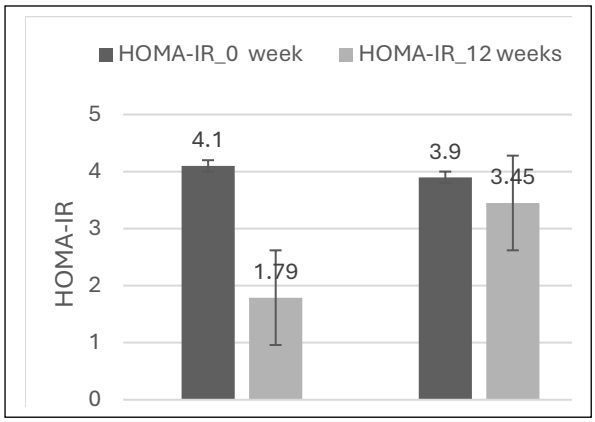
Introduction. Insulin resistance and elevated endothelin-1 (ET-1) levels are key contributors to cardiovascular and renal complications in patients with type 2 diabetes mellitus (T2DM) and hypertension. Telmisartan, an angiotensin receptor blocker with partial peroxisome proliferator-activated receptor-gamma (PPAR-γ) agonist activity, may offer metabolic advantages beyond blood pressure control. This study compared the effects of telmisartan with other commonly used antihypertensive agents on insulin sensitivity and ET-1 levels in patients with T2DM and hypertension.



Aims. This study evaluated the effects of telmisartan beyond its efficacy in blood pressure regulation, specifically its impact on insulin resistance and endothelial dysfunction in comparison to other commonly prescribed first line antihypertensive in patients of T2DM with hypertension**.**

Methods. In this randomized, open-label study, 182 patients with coexisting T2DM and newly diagnosed hypertension were screened between May 2023 and September 2024. Seventy eligible patients were enrolled and randomized 1:1 to receive telmisartan (n=34) or other antihypertensive agents(amlodipine, n=22; cilnidipine, n=12; ramipril, n=2; total n=36) for 12 weeks. The primary outcome was the change in insulin sensitivity as measured by the homeostatic model assessment of insulin resistance (HOMA-IR). ET-1 levels, a marker of endothelial dysfunction and chronic kidney disease, were evaluated as a secondary outcome.

Results. At baseline, the median HOMA-IR values were 4.1 (IQR: 2.2–5.9) in the telmisartan group (n=34) and 3.9 (IQR: 3.1–5.9) in the comparator group(n=36). After 12 weeks, the median HOMA-IR significantly decreased in the telmisartan group to 1.79 (IQR: 1.30–2.63) compared to 3.45 (IQR: 2.43–5.12) in the other antihypertensive group (P = 0.001). Baseline ET-1 levels were 19.23 pg/mL (IQR: 10.02–29.59) and 20.72 pg/mL (IQR: 5.68–28.11) in the telmisartan and comparator groups, respectively. At 12 weeks, median ET-1 levels decreased to 12.49 pg/mL (IQR:5.70–18.70) and11.22pg/mL (IQR:4.28, 23.20), respectively (P=0.90, between groups).

Discussion. The present study demonstrates a greater improvement in insulin resistance, as measured by HOMA-IR, in the telmisartan group compared to the other antihypertensive treatment group. This finding is consistent with previous research highlighting telmisartan's PPAR-γ agonistic activity. In addition to its antihypertensive effects, telmisartan appears to confer favourable metabolic benefits that may contribute to the attenuation of accelerated atherosclerosis and reduction in future cardiovascular risk. However, the reduction in endothelin-1 (ET-1) levels was comparable between groups, suggesting a similar effect on endothelial function over the 12-week treatment period. A longer study duration may be necessary to determine whether the insulin-sensitizing effects of telmisartan translate into differential changes in ET-1 levels over time.

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P419

In vivo and cellular electrophysiological effects of chronic testosterone administration in canines

Prof Istvan Baczko

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

In vivo and cellular electrophysiological effects of chronic testosterone administration in canines

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Introduction. Chronic use of androgen anabolic steroids is expected to cause cardiac remodelling; however, the cardiac cellular electrophysiological effects of chronically high testosterone levels are not fully elucidated.
Aims. The aim of this study was to assess the *in vivo* and cellular electrophysiological effects of chronic administration of high-dose testosterone undecanoate in a canine model, that exhibits significant translational value over small rodent models.
Methods. Male Beagle dogs were randomized into control ('Cont') and treated ('Tr') groups (n = 9 each). The 'Tr' group received 15 mg/kg of long-acting testosterone undecanoate intramuscular injections weekly, for 3 months. To investigate the cardiac remodelling effects of testosterone, *in vivo* (ECG, echocardiography) and *in vitro* (patch-clamp technique, immunocytochemistry) studies were performed. Data are expressed as Mean±SD.
Results. Testosterone level was significantly higher in the 'Tr' group (47.02 nm/L vs. 15.23 nm/L in controls). The chronic treatment resulted in thicker left ventricular anterior and posterior walls, and significantly shortened QT intervals (226±49 vs. 244.9±26.6 ms in controls; $p<0.05$) while widened the QRS interval (49.3±2.91 vs. 40.4±2.71 ms in controls; $p<0.05$). The changes in action potential duration at 90% repolarization (APD_{90}) in left ventricular midmyocardial slices mirrored the *in vivo* QT and QTc changes and were significantly shorter in the 'Tr' group (235.2±26.7 vs. 283.6±28.5 ms in controls). Patch-clamp experiments revealed increased magnitudes of I_{to}, I_{K1}, and I_{Ks} currents in cardiomyocytes isolated form the 'Tr' group.
Discussion. The observed changes may create a proarrhythmic substrate that can contribute to the development of life-threatening arrhythmias following chronic administration of high doses of testosterone.

P420

The effect of cannabinoids on exercise performance

A/Prof Michael Kennedy

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

The effect of cannabinoids on exercise performance

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Introduction. Objective evaluation of the effects of cannabinoids on exercise commenced in the 1960's. All Cannabidiol (CBD) studies commenced in 2017 following the World Antidoping Agency allowing use of this single cannabinoid.

Aims. To review the objective studies evaluating the effects of cannabinoids on exercise.

Methods. A review of published investigations of cannabis, marihuana, tetrahydrocannabinol (THC), cannabidiol, cannabigerol (CBG) and synhexyl (a THC analog) using google scholar, pub med, proceedings of conferences and cross references.

Results. 416 subjects have been studied in 26 investigations. 9 studies used THC as a single agent in doses from 7.5-210mg. 2 studies compared THC and CBD in single doses. Another compared THC and synhexyl. One study used a combination of 50mg CBG / 35mg CBD. 13 used CBD as a single agent in doses from 16.67mg to one gram varying from single doses to 8 weeks duration. Drug administration methods were sublingual, oral, inhalational, transcutaneous or oral delivery systems. Methods of assessment were combinations of: strength, aerobic performance, pain, markers of inflammation and muscle damage, physiological and psychological parameters. THC and synhexyl impair aerobic performance. THC inhibits exercise-induced bronchoconstriction and lowers the threshold for exercise induced angina. CBD has no effect on performance and possibly a small effect on markers of inflammation and damage.

Discussion. The studies differ greatly in doses, duration of therapy, modes of delivery and measured endpoints. Cannabinoids studied do not improve aerobic performance or strength. CBD may decrease some markers of muscle damage but does not appear to improve exercise induced muscle discomfort. THC would be contraindicated in patients with established coronary disease.

P421

Impact of Varying Doses of Isoproterenol on Preclinical Evaluation of Myocardial Necrosis

Dr Priya Bhardwaj

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Impact of Varying Doses of Isoproterenol on Preclinical Evaluation of Myocardial Necrosis

Priya Bhardwaj[1], Vipin Kumar Verma [1], Ekta Mutneja [1], Vaishali Prajapati[1], Jagriti Bhatia [1], Dharamvir Singh Arya[1]*[1]Department of Pharmacology, All India Institute of Medical Sciences, New Delhi, India

Introduction: Cardiovascular diseases (CVD) continue to be a major global health challenge, remaining the major cause of death worldwide. Although medical treatments have advanced, ischemic heart disorders especially acute myocardial infarction (MI) still pose a significant and serious risk. Myocardial injury induction, a key focus in cardiovascular research, frequently utilizes isoproterenol, a synthetic sympathomimetic agent. The administration of isoproterenol stimulates oxidative stress by increasing the production of reactive oxygen species (ROS), which results in damage to cardiac tissue.

Aims: The objective of the present study was to evaluate the effects of different dosages of isoproterenol on cardiac function, myocardial remodeling,and its pathology in adult male wistar rats.

Methods: The present study was conducted on adult male Wistar rats (n = 32), divided into four groups: Sham, Isoproterenol 1 Dose (ISO-1, 85 mg/kg; s.c.), Isoproterenol 2 Doses (ISO-2, 85 mg/kg; s.c.), and Isoproterenol High Dose (ISO-1, 150 mg/kg; s.c.). Each group consisted of 8 rats (n = 8). Rats were treated with different doses of Isoproterenol (85 mg/kg and 150 mg/kg) administered over different time periods: either a single dose or two consecutive doses with a 24-hour interval. The 85 mg/kg and 150 mg/kg doses were injected to induce acute myocardial necrosis, while a single 85 mg/kg dose was used to induce subacute myocardial necrosis. On the 3rd day, rats were anesthetized with sodium pentobarbitone (60 mg/kg, i.p.) for the recording of hemodynamic parameters, followed by serum and heart isolation for morphological and biochemical analysis. Statistical analysis was performed using one-way ANOVA followed by the Tukey-Kramer post hoc test.

Results: Isoproterenol administration caused significant myocardial injury in a dose- and frequency-dependent manner, as seen by reduced hemodynamic performance, increased cardiac injury markers (CK-MB, LDH), elevated oxidative stress (MDA), and depletion of antioxidants (GSH, SOD, CAT). Inflammatory markers (TNF-α and IL-6) were also elevated, with marked tissue damage observed in histopathology. Higher doses produced more severe alterations in cardiac structure and function.

Conclusion: In the future, any of these Iso-induced models can be used to investigate myocardial necrosis and assess the degree and extent of the damage.

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Therapeutic Potential of Erdosteine in mitigating Ischemia-Reperfusion Injury in Diabetic Rat Model

Dr Priya Bhardwaj

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Therapeutic Potential of Erdosteine in mitigating Ischemia-Reperfusion Injury in Diabetic Rat Model
Priya Bhardwaj[1], Vipin Kumar Verma [1], Ekta Mutneja [1], Vaishali Prajapati[1], Jagriti Bhatia [1], Dharamvir Singh Arya[1]*[1]Department of Pharmacology, All India Institute of Medical Sciences, New Delhi, India

Introduction: Ischemic heart disease (IHD) is the leading cardiovascular complication in the patients with type 2 diabetes mellitus (T2DM) and is considered as the primary cause of mortality in T2DM patients. Consequently, current pharmacological treatment strategies focus not only on controlling blood glucose levels but also on preventing IHD in individuals with T2DM.
Aims: The objective of the present study was to evaluate the potential effects of Erdosteine on cardiac resistance to ischemia-reperfusion injury in a diabetic rat model and its underlying mechanism.
Methods: The present study was conducted on adult male Wistar rats (n = 40), divided into five groups: Sham, Dia-C (disease control), Dia+IR, Erdosteine (Erdo, 80 mg/kg; s.c.) + Dia+IR, and Erdo (80 mg/kg) alone. Erdosteine was given as a pre-treatment for 28 days, while diabetes was induced by administering streptozotocin (STZ, 60 mg/kg; i.p.) for one day. On the 29th day, ischemia was induced for 60 minutes, followed by reperfusion for 45 minutes. At the end of the procedure, all rats were sacrificed, and myocardial resistance was assessed. Statistical analysis was performed using one-way ANOVA followed by the Turkey-Kramer post hoc test.
Results: Erdosteine pretreatment significantly reduced advanced glycation end products (AGEs) compared to the Dia-C and Dia+IR groups. Compared to the Dia+IR group, Erdosteine administration in diabetic rats markedly preserved hemodynamic parameters, including mean arterial pressure (MAP), heart rate (HR), and ±LVdP/dt. Additionally, Erdosteine significantly augmented the antioxidants (GSH, SOD, and CAT) and prevented the release of CK-MB and LDH into the serum. Inflammatory markers (TNF-α and IL-6) were significantly decreased in the Erdo+Dia+IR group. Histopathological evaluation revealed that Erdosteine pretreatment effectively protected against myocardial damage. Furthermore, the expression of pro-apoptotic proteins Bax and caspase-3 was reversed in the Erdo+Dia+IR group. Levels of HMGB1 and RAGE expression were also reduced in this group, while PPAR expression remained unchanged.
Conclusion: The study showed that Erdosteine enhances myocardial resistance to ischemia-reperfusion (I/R) injury in diabetic rats by suppressing AGE-RAGE signaling, which in turn reduces HMGB1 and NF-κB activation.

P423

GPR133 activation promotes cardiac fibrosis of experimental arthritis mice

Prof Qingtong Wang

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

GPR133 activation promotes cardiac fibrosis of experimental arthritis mice

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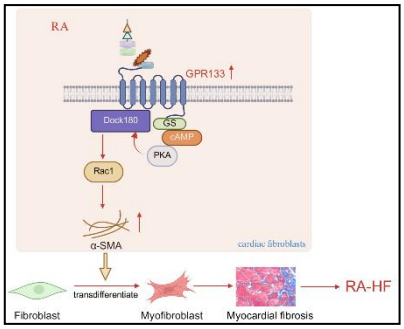

Introduction. Patients with rheumatoid arthritis (RA) have a higher risk of cardiovascular disease and increased mortality, among which myocardial fibrosis is one of the main causes of death, however, the underline mechanisms have not been elucidated.

Aims. In this work, we investigated the effect of GPR133 on cardiac fibroblasts in experimental arthritis mice and revealed the molecular mechanism of GPR133 in the proliferation and transdifferentiation of cardiac fibroblasts.

Methods. DBA/1 mice were established to establish a CIA model, and transcriptome sequencing was performed on myocardial tissue at the disease active stage on day 46. The expression and distribution of GPR133 in heart tissue were detected by immunohistochemistry. The expression and distribution of Vimentin and GPR133 in myocardial tissue were detected by immunofluorescence. The expression levels of GPR133, α-SMA, Collagen I and Dock180 were analyzed by Western blot. CCK-8 was used to detect the viability of CFS, and high-content cell imaging was used to detect the proliferation of CFs. GPR133 was detected by real-time PCR.

Results. With the progression of CIA mice, the expression of GPR133 in the cardiac tissue of CIA mice was significantly increased and was more distributed in CFs during the active stage of joint inflammation and promoted the proliferation and transdifferentiation of normal rat CFs through PKA-DOCK180.

Discussion. GPR133 was highly expressed in the cardiac tissue of CIA mice and was mostly distributed in CFs. GPR133 is involved in the proliferation of cardiac fibroblasts by regulating the PKA-Dock180 signaling pathway in CIA mice.

P424

Inhibition of APC activation through Abatacept attenuates Ischemia-reperfusion induced cardiac Injury

Prof Jagriti Bhatia

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Inhibition of APC activation through Abatacept attenuates Ischemia-reperfusion induced cardiac Injury

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Introduction. When blood flow to the heart is blocked (myocardial ischemia), it causes damage to the heart muscle. Restoring the blood flow (reperfusion) can make the injury worse by producing free radicals, upsetting ion balance, and depleting energy in the cells. Abatacept is a recombinant fusion protein that works by blocking T-cell activation. It binds to CD80 and CD86 receptors on antigen-presenting cells, which reduces inflammation. We suggest that abatacept, by reducing immune cell activation and limiting the entry of inflammatory cells into the heart, may help protect against heart injury after myocardial ischemia.

Aims. To investigate whether abatacept can reduce inflammation and protect the heart from damage caused by myocardial ischemia and reperfusion.

Methods. This study was conducted on male Wistar rats. The effect of abatacept administration (2.5, 5 & 10 mg/kg; s.c.) for 21 days was evaluated in the Isoproterenol (ISO)-induced myocardial necrosis model of rats, in which ISO was injected on days 20 and 21 (85 mg/kg s.c.). The rats were sacrificed 24 h post-last ISO injection after performing hemodynamic studies. The optimal dose of abatacept from amongst the doses administered was determined based on its effect on biochemical (oxidant-antioxidant / cardiac injury markers), histopathological and molecular investigations. In another subsequent study, the optimal dose of abatacept (5mg/kg sc) was administered to rats for 21 days. The rats were anaesthetised, and Ischemia-Reperfusion injury was induced through LAD coronary artery ligation for 60 min, followed by re-opening/reperfusion for another 60 min. The effect of abatacept was evaluated based on hemodynamic, biochemical, and molecular investigation of inflammation and apoptosis signalling pathway-related proteins.

Results. Abatacept improved hemodynamic status (systolic, diastolic and mean blood pressure) of rats following ischemia and reperfusion. It also prevented imbalance of enzyme levels of anti-oxidants v/s oxidants and reduced cardiac injury marker (CK-MB and LDH). This correlated well with the histopathology findings. The inhibition of CD28 T-cell activation by abatacept reduced the release of inflammatory markers (TNF and IL-6) and also attenuated expression levels of Nrf-2/HO-1, Hsp-27 and Hsp-70 signalling pathway proteins involved in the inflammation.

Conclusion. Abatacept is a potent drug as it inhibits the T-cells by inhibiting the CD80/CD86: CD28 co-stimulation. Hence, it inhibited inflammation, oxidative stress, and apoptosis in the models of myocardial infarction in our study. Abatacept may be further evaluated for its beneficial effect on mitigating myocardial infarction clinically.

P425

Administration of nicotinamide mononucleotide alleviates doxorubicin-induced cardio-renal injury in mice

Mrs Mizuna Miyazaki

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Administration of nicotinamide mononucleotide alleviates doxorubicin-induced cardio-renal injury in mice.
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Introduction. Doxorubicin (DOX), a widely used chemotherapeutic agent, exerts deleterious effects on multiple organs, including the heart and kidneys. We previously demonstrated that cardiomyocyte-specific deletion of the NAD^+-dependent deacetylase Sirtuin-1 exacerbates DOX-induced cardiotoxicity in mice.
Aims. This study aimed to investigate the effects of nicotinamide mononucleotide (NMN), a biosynthetic precursor that enhances intracellular NAD^+ levels and thereby supports activity of Sirtuins, on DOX-induced cardiac and renal injury.
Methods. Male C57BL/6N mice were randomly assigned to three groups: vehicle, DOX, and NMN+DOX. DOX (5 mg/kg, IP) was administered once weekly for four weeks to the DOX and NMN+DOX groups. NMN (500 mg/kg, IP) was administered to the NMN+DOX group 30 minutes before and 2 days after each DOX injection.
Results. Body weight gradually declined in the DOX group compared to the vehicle group, whereas NMN treatment partially preserved body weight. Left ventricular fractional shortening (FS) and the heart weight-to-tibia length ratio (HW/TL) were reduced in the DOX group (FS: 28.5 ± 0.7 %; HW/TL: 4.4 ± 0.1 mg/mm) compared to the vehicle group (FS: 36.1 ± 0.7%; HW/TL: 5.3 ± 0.2 mg/mm) but were significantly preserved in the NMN+DOX group (FS: 35.3 ± 1.3%; HW/TL: 4.9 ± 0.1 mg/mm). NMN treatment attenuated the DOX-induced upregulation of myocardial Nppb mRNA expression (relative expression: 1-, 2.1-, and 1.6-fold in the vehicle, DOX, and NMN+DOX, respectively). NMN attenuated DOX-induced renal tubular injury, as evidenced by reduced NGAL immunostaining. Histological analysis also revealed that NMN prevented DOX-induced mitochondrial fragmentation in renal tubular cells. Immunostaining for LC3, a marker of autophagosomes, showed that DOX-induced accumulation of LC3 dots in both cardiomyocytes and renal tubular cells, suggesting disturbed autophagy via suppressed autophagosome degradation. NMN treatment reduced LC3 dot accumulation in tubular cells but not in cardiomyocytes.
Discussion. NMN administration mitigates DOX-induced cardiotoxicity and renal tubular injury in mice. The protective effects of NMN in the kidney may be associated with restored autophagic activity in tubular cells, while a different mechanism may underlie its cardioprotective effects.

P426

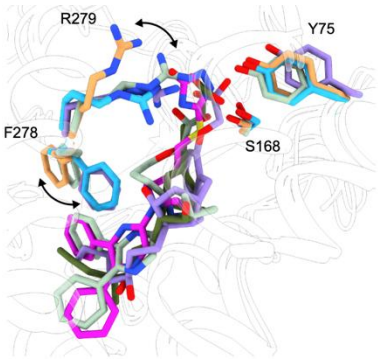
Structural Basis of CS585-Mediated Platelet Activation via the Prostacyclin Receptor

Dr Wessel Burger

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Structural Basis of CS585-Mediated Platelet Activation via the Prostacyclin Receptor

Wessel A. C. Burger[1,2], Theodore Holman[3], Michael Holinstat[4,5], Alisa Glukhova[1,2]. Structural Biology Division, Walter and Eliza Hall Institute of Medical Research[1], Parkville, VIC, Australia; Australian Research Council Centre for Cryo-Electron Microscopy of Membrane Proteins, Monash University[2], Parkville, VIC, Australia. Department of Chemistry and Biochemistry, University of California Santa Cruz, Santa Cruz, CA, USA[3]; Department of Pharmacology, University of Michigan Medical School, Ann Arbor, MI, USA[4]; Department of Internal Medicine, University of Michigan Medical School, Ann Arbor, MI, USA[5].



Introduction. Cardiovascular disease is a primary cause of morbidity and mortality worldwide, with platelet activation playing a crucial role in maintaining haemostasis and preventing blood cell leakage from vessels. Despite the critical need, the development of new drugs targeting platelet reactivity has been limited. Recent findings have identified the oxylipin 12(S)-hydroxy-eicosatrienoic acid (12HETrE) as a modulator of platelet reactivity through activation of the prostacyclin receptor. In this study, we present the cryo-electron microscopy (cryo-EM) structure of a novel 12HETrE analogue, CS585, bound to the prostacyclin receptor and compare it to our cryo-EM structure of the prostacyclin receptor bound to iloprost, a current medication for pulmonary arterial hypertension.

Aims. Determine mechanism of action and enhanced functional selectivity of CS585 over prostanoid receptor agonists.

Methods. Structures of CS585 and iloprost bound to the prostacyclin receptor were solved through cryo-EM. cAMP signalling assays were performed in HEK293 cells.

Results. The binding pocket of CS585 displays marked changes compared to iloprost and other agonist-bound prostacyclin receptor structures.

Discussion. Our work shows that CS585 displays a unique binding profile at the prostacyclin receptor compared to other agonists. Current work is exploring how this contributes to CS585's enhanced selectivity and efficacy.

P427

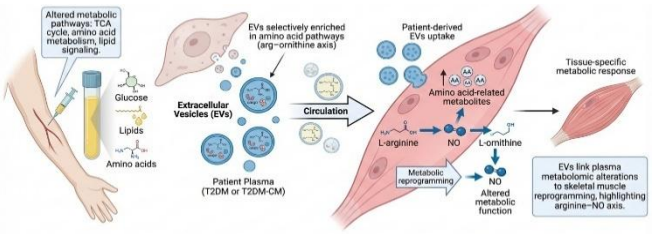
Extracellular vesicle metabolic signatures in type 2 diabetes and diabetic cardiomyopathy

Ms Yejin Jung

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Extracellular vesicle metabolic signatures in type 2 diabetes and diabetic cardiomyopathy

Ye Jin Jung[1], Jae-Hyung Park[2], Hochan Cho[3], Hye Kyoung Sung[4], Sooyeun Lee[1]*. Dept of Pharmacy, Univ of Keimyung[1], Daegu, South Korea; Dept of Physiology, Univ of Keimyung [2], Daegu, South Korea; Dept of Internal Medicine, Univ of Keimyung [3], Daegu, South Korea; Dept of Biology, York Univ[4], Toronto, ON, Canada.



Introduction. Extracellular vesicles (EVs) mediate intercellular communication through the transport of metabolites reflecting disease-specific metabolic states. However, their metabolic alterations and functional relevance in type 2 diabetes mellitus (T2DM) and diabetic cardiomyopathy (T2DM-CM) remain insufficiently characterized.

Aims. This study applies integrated targeted and non-targeted metabolomics to characterize plasma and EVs-associated metabolic alterations in T2DM and T2DM-CM and to evaluate their functional metabolic impact on skeletal muscle homeostasis.

Methods. Plasma samples were obtained from healthy controls, T2DM, and T2DM-CM groups (*n*=15 per group). Targeted metabolomics of amino acids, polyamines, and tricarboxylic acid (TCA) cycle metabolites was performed using liquid chromatography-tandem mass spectrometry, while non-targeted metabolomics was conducted using ultrahigh-performance liquid chromatography coupled with quadrupole time-of-flight mass spectrometry. Functional metabolic responses were evaluated in skeletal muscle cells treated with patient-derived EVs.

Results. Plasma metabolomics analysis revealed decreased levels of TCA cycle metabolites and altered phosphatidylcholine composition in patients with T2DM and T2DM-CM. EVs metabolomics identified disease-specific enrichment of amino acid-related pathways, particularly the arginine-ornithine axis, and EVs-treated cells exhibited alterations in the arginine-ornithine axis, which directly correlated with impaired insulin sensitivity and diminished glucose uptake.

Discussion. These findings indicate that circulating EVs harbor disease-specific metabolic signatures in T2DM and T2DM-CM and may functionally contribute to metabolic dysregulation in tissue-specific pathophysiology.

P428

Plasma and extracellular vesicle metabolic signatures in type 1 diabetes mellitus

Ms Yejin Jung

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Plasma and extracellular vesicle metabolic signatures in type 1 diabetes mellitus

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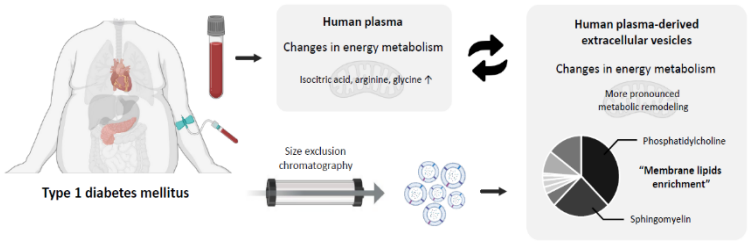

Introduction. Extracellular vesicles (EVs) transport metabolites reflecting cellular metabolic states. Although type 1 diabetes mellitus (T1DM) is characterized by systemic dysregulation of amino acid and phospholipid metabolism, the specific metabolic alterations within the EVs compartment remain poorly defined relative to the plasma metabolomics.

Aims. This study aimed to systematically characterize and compare metabolic profiles of plasma and plasma-derived EVs in T1DM through an integrated targeted and non-targeted metabolomics and lipidomics.

Methods. Plasma and plasma-derived EVs from patients with T1DM and healthy controls were analyzed following size-exclusion chromatography-based EVs isolation. Targeted metabolomics using liquid chromatography-tandem mass spectrometry quantified amino acids, polyamines, and tricarboxylic acid cycle metabolites. Non-targeted metabolomics and lipidomics were performed using a hybrid acquisition mode on ultrahigh-performance liquid chromatography coupled with quadrupole time-of-flight mass spectrometry.

Results. Plasma analysis revealed limited alterations in targeted metabolites and lipid classes in T1DM. In contrast, EVs-specific metabolomics demonstrated more pronounced and distinct metabolic alterations, including enrichment of membrane-associated lipids and broad disease-associated metabolic alterations of amino acids and polyamines.

Discussion. Collectively, these findings indicate that circulating EVs display metabolic alterations distinct from plasma that are not fully captured by plasma metabolomics in T1DM. Consequently, EVs-based metabolomics represents a promising frontier for identifying localized biomarkers and understanding the systemic propagation of metabolic stress in T1DM.

P429

Cyclooxygenase-Dependent Mechanisms Contribute to Cannabidiol-Induced Vasorelaxation in Isolated Rat Aorta

Mr Muhammet Zahit Celik

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Cannabidiol Induces Vasorelaxation in Rat Aorta via Prostanoid Pathway and Voltage-Gated Potassium (Kv) Channel Activation

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Introduction. Cannabidiol (CBD), a major non-psychoactive constituent of *Cannabis sativa*, has attracted growing interest due to its broad pharmacological profile. Although its clinical use in epilepsy has been established, its vascular effects and the underlying mechanisms remain incompletely understood (O'Sullivan et al, 2023).

Aims. The present study was designed to investigate the vasorelaxant properties of CBD in isolated rat thoracic aorta and to comprehensively determine the involvement of the endothelium, the cyclooxygenase (COX)/nitric oxide (NO) pathways, and specific potassium (K^+) channels in this response.

Methods. Thoracic aortas isolated from adult rats were placed in Krebs–Henseleit solution, cleaned of connective tissue, and mounted in 10 mL organ bath chambers for isometric tension recording. Following equilibration and phenylephrine (Phe)-induced precontraction, cumulative concentration–response curves to CBD (10^{-7}–10^{-4} M) were constructed. Mechanistic pathways were evaluated using mechanical endothelium denudation and pre-incubation with L-NAME (NOS inhibitor), indomethacin (non-selective COX inhibitor), and various K^+ channel blockers including TEA (non-selective), 4-AP (Kv), glibenclamide (K_{ATP}), iberiotoxin (BK_{Ca}), apamin (SK_{Ca}), and $BaCl_2$ (Kir). (Stanley et al, 2015).

Results. CBD induced concentration-dependent relaxation in Phe-precontracted rat thoracic aortas (37.74 ± 2.54% at 10^{-4} M). This maximal response was significantly attenuated by 4-AP (10.25 ± 2.95%), TEA (18.82 ± 2.08%), and indomethacin (15.11 ± 2.65%) ($p < 0.05$). In contrast, endothelium denudation, L-NAME, glibenclamide, $BaCl_2$, iberiotoxin, and apamin did not significantly alter the relaxation ($p > 0.05$).

Discussion. CBD induces endothelium-independent vasorelaxation in rat thoracic aortas. This effect is predominantly mediated by voltage-dependent K^+ (Kv) channels and cyclooxygenase (COX)-dependent pathways, without the involvement of NO synthesis or other K^+ channel subtypes. These findings highlight the critical role of Kv channels and prostanoids in driving the vascular actions of CBD.

O'Sullivan SE et al (2023) Journal of cannabis research 5(1):21.
Stanley CP et al (2015) Cardiovascular research 107:568–578.

P430

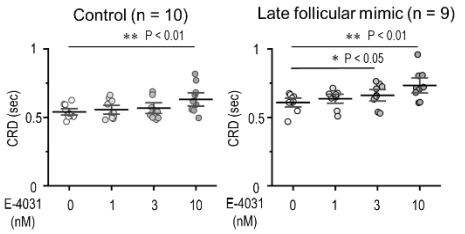
Modeling sex-specific cardiotoxicity with induced pluripotent stem cells derived from dizygotic twins

Mr Masashi Wakabayashi

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Modeling sex-specific cardiotoxicity with induced pluripotent stem cells derived from dizygotic twins

Masashi Wakabayashi[1], Satoshi Shimizu[1], Kazuho Sakamoto[1, 2], Masami Kodama[1], Yoichi Sunagawa[3], Yasunari Kanda[4], Tatsuya Morimoto[5], Junko Kurokawa[1]. Dept. Bio-inform. Pharmacol., University of Shizuoka[1], Shizuoka, Shizuoka, Japan; Dept. Pharm. Sci., International Univ. of Health and Welfare[2], Ohtawara, Tochigi, Japan; Div. Mol. Med., University of Shizuoka[3], Shizuoka, Shizuoka, Japan; Div. Pharmacol., NIHS[4], Kawasaki, Kanagawa, Japan; Dept. Pharmacol., Toho university[5], Ota, Tokyo, Japan.



Introduction. Sex differences significantly impact the incidence of cardiovascular disease and susceptibility to drug-induced cardiotoxicity. However, the molecular mechanisms remain unclear due to the lack of human cardiomyocyte models that incorporate both endocrine influences and sex chromosomes.

Aims. This study aimed to elucidate sex-specific mechanisms of cardiotoxicity by employing human induced pluripotent stem cells (hiPSCs) derived from dizygotic twins with shared genetic backgrounds.

Methods. Activated T cells from male and female twin donors were reprogrammed using Sendai virus carrying OCT3/4, SOX2, KLF4, and c-MYC. Pluripotency and trilineage potential were confirmed by immunocytochemistry and RT-qPCR. Three hiPSC lines per donor were differentiated into cardiomyocytes (CMs). Transcriptomic differences were identified by RNA sequencing and principal component analysis. Furthermore, female CMs were tested with the human ether-à-go-go related gene (hERG) channel blocker E-4031 under simulated late follicular phase hormone conditions. Contractile properties were measured using motion vector waveform analysis.

Results. Transcriptomic profiling revealed sex-dependent gene expression. E-4031 exposure led to concentration-dependent prolongation of contraction–relaxation duration (CRD). Female hormones altered the threshold concentration required for this effect, indicating modulation of drug-induced cardiotoxicity.

Discussion. Incorporating hormone-specific conditions into hiPSC-CM-based assays improved predictive accuracy. The twin-based model minimized genetic variability, providing a robust system to dissect sex-related differences in cardiac function and pharmacological responses. This supports rodent-proposed mechanisms of sex-specific cardiotoxicity.

P432

Atrial-selective antiarrhythmic efficacy of CVie101, an istaroxime analogue, in guinea pig hearts

Prof Gwo-jyh Chang

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Atrial-selective antiarrhythmic efficacy of CVie101, an istaroxime analogue, in guinea pig hearts

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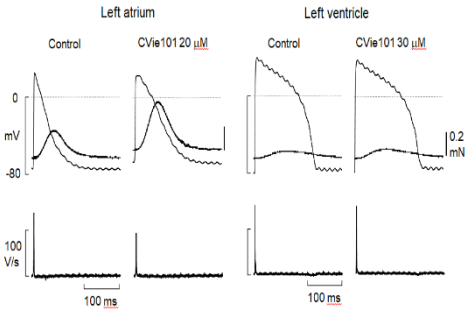
Introduction. Atrial fibrillation (AF) is the most common cardiac arrhythmia encountered in clinical practice. Current pharmacological therapies are limited by low efficacy and adverse effects. Therefore, there is an urgent need for more effective drugs for treatment. Istaroxime is a unique positive ino-lusitropic agent with SERCA2a-activating properties. CVie101 is a new istaroxime analogue with a longer half-life and better bioavailability profile than istaroxime.

Aims. This study aimed to evaluate the acute atrial antiarrhythmic and electromechanical effects of CVie101 in guinea pig hearts.

Methods. Atrial tachyarrhythmias were induced by electrical stimulation in isolated perfused guinea pig hearts. Action potentials of left atrial (LA) strips were recorded using microelectrodes. Calcium transients, cell shortening, and membrane currents were assessed in single atrial myocytes.

Results. In the perfused whole-heart model, co-application of adenosine (20 μM) with CVie101 (1–7.5 μM) markedly prolonged the atrial refractory period and increased the threshold for atrial tachyarrhythmia induction. In isolated LA strips, CVie101 (20 μM) significantly enhanced contractility, prolonged action potential duration, and moderately reduced the maximal upstroke velocity (V_{max}). CVie101 had no significant effect on ventricular action potentials. In atrial myocytes, CVie101 increased calcium transient amplitude and fractional cell shortening. Patch-clamp experiments revealed that CVie101 preferentially reduced delayed outward potassium (I_K) and sodium inward currents (I_{Na}; IC_{50} = 2.3 μM) in a concentration-dependent manner, without significantly affecting other ionic currents.



Discussion. CVie101 effectively reduced the vulnerability to atrial tachyarrhythmias in guinea pig hearts, likely through prolongation of atrial refractoriness and slowed conduction velocity. Our findings suggest that CVie101 possesses novel atrial-selective antiarrhythmic properties.

P433

Gegen Qinlian Decoction Attenuates Myocardial Infarction via Gut Microbiota-Metabolism Axis

Mr Yipu Huang

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Gegen Qinlian Decoction Attenuates Myocardial Infarction via Gut Microbiota-Metabolism Axis
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Introduction. Myocardial infarction (MI) is a leading cause of death worldwide, and current therapies remain insufficient. Gegen Qinlian Decoction (GQD) shows cardioprotective effects, but its mechanisms involving gut microbiota are unclear.
Aims. Investigating the specific mechanism by which GQD protects the heart through gut microbiota modulation.
Methods. MI was induced in male C57BL/6 mice by left anterior descending coronary artery ligation. GQD was administered intragastrically from 4 weeks pre-MI to 5 weeks post-MI. Fecal microbiota transplantation (FMT) was performed to verify gut microbiota involvement. Cardiac function, histopathology, 16S rRNA sequencing, serum metabolomics, Western blot, and in vitro cardiomyocyte assays were conducted.
Results. GQD treatment improved survival and cardiac function, reducing infarct size, fibrosis, and apoptosis in MI mice. Gut microbiota analysis revealed GQD enriched Turicibacter while reducing Colidextribacter These microbial changes correlated with cardiac improvement. The cardioprotective effects were transferable via FMT. Serum metabolomics identified nicotinamide metabolism as a key pathway: GQD reduced serum nicotinamide, restored myocardial NAD^+/NADH balance, and activated SIRT1.IN vitro, GQD-FMT serum protected cardiomyocytes from OGD-induced injury.
Discussion. This study reveals that GQD protects against MI by remodeling gut microbiota to reduce systemic nicotinamide, thereby restoring myocardial NAD^+/NADH balance and activating SIRT1 signaling. These findings establish a novel gut-heart axis and highlight the therapeutic potential of targeting microbiota-host metabolism in cardiovascular disease.

P434

Mapping the Proteomic Landscape of Early-Stage Hypertensive Cardiac Remodelling

Prof Margaret Cunningham

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Mapping the Proteomic Landscape of Early-Stage Hypertensive Cardiac Remodelling
Zainab Bosakhar[1], Graeme MacKenzie[1], Maheen Wahid[1], Ryan Shearer[1], Abdullah Alsultan[1,3], Gillian Farrell[1], Nicholas Rattray[1], Zainab Olatunji[2], Niall Macquaide[2], Susan Currie[1] and Margaret Rose Cunningham[1]. Strathclyde Institute of Pharmacy and Biomedical Sciences (SIPBS), University of Strathclyde[1], Glasgow, Scotland, UK; School of Health and Life Sciences, Glasgow Caledonian University[2], Glasgow, Scotland, UK; Faculty of Pharmacy, Kuwait University[3], Kuwait.

Introduction. Hypertension drives left ventricular (LV) remodelling, fibrosis, and functional adaptation, contributing to heart failure. Cytoskeletal reorganisation and inflammation are central to this process, yet the underlying molecular mechanisms are not fully understood. Shotgun proteomics offers an unbiased approach to identify differentially expressed proteins (DEPs) underlying hypertensive cardiac remodelling.
Aims. This study aimed to identify molecular pathways in the LV of Angiotensin II (AngII)-induced hypertensive rats and generate testable hypotheses for experimental follow-up, with a particular focus on cytoskeletal dynamics.
Methods. Male Sprague Dawley rats were infused with Ang II via osmotic mini-pumps for 28 days. LV tissues were harvested for proteomic analysis using liquid chromatography–mass spectrometry. Differentially expressed proteins were subjected to KEGG and Gene Ontology enrichment to identify networks involved in cytoskeletal remodelling, inflammation, and fibrosis.
Results. Angiotensin II treatment induced sustained hypertension and early left ventricular remodelling, marked by collagen deposition and histological changes. Proteomic analysis revealed upregulation of actin alpha 1 and cofilin-1, with downregulation of tubulin beta-2A chain. Cofilin-1, a central regulator of actin filament turnover, emerged as a key node in cytoskeletal remodelling networks. Both actin alpha 1 and cofilin-1 were associated with Rho GTPase signalling. Interactions between High Mobility Group Box 1 (HMGB1), histone H3 variant H3c1, and actin alpha 1 suggested a nuclear-to-cytoskeletal signalling axis linking chromatin remodelling, inflammation, and structural adaptation.
Discussion. These findings form the basis of a testable hypothesis that cofilin-mediated signalling is a potential driver of cytoskeletal and inflammatory changes during early-stage cardiac remodelling. Future work will target these networks experimentally to elucidate their mechanistic contribution and potential as therapeutic targets in hypertensive heart disease.

P435

Targeting LOX-1 Attenuates tPA-Induced Hemorrhagic Transformation by Mitigating AC3RL-Driven BBB Disruption

Ms Ping Hsuan TSAI

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Targeting LOX-1 Attenuates tPA-Induced Hemorrhagic Transformation by Mitigating AC3RL-Driven BBB Disruption

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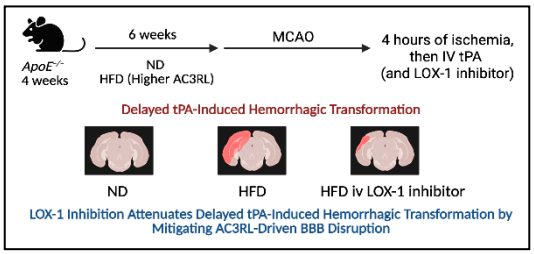
Introduction. Intravenous tissue plasminogen activator (tPA) remains one of the main therapies for cerebral ischemic stroke; however, its clinical utility is restricted by hemorrhagic transformation (HT), a severe complication associated with blood–brain barrier (BBB) disruption. Despite the identification of clinical risk factors, the underlying molecular mechanisms driving HT remain largely elusive.

Aims. This study aims to investigate apolipoprotein C3–rich LDL (AC3RL) as a critical risk factor for tPA-associated HT, acting potentially through a LOX-1–mediated pathway of BBB disruption.

Methods. LOX-1 expression was evaluated in human atherosclerotic plaques and a mouse model of middle cerebral artery occlusion (MCAO) utilizing GEO databases. To mimic the endogenous increase of AC3RL, ApoE knockout mice were fed a high-fat diet (HFD) and subjected to MCAO, followed by intravenous tPA administration.

Results. LOX-1 expression was significantly higher than that of other lipoprotein-binding receptors in both human atherosclerotic plaques and endothelial cells isolated from MCAO mice. In our mouse model, AC3RL markedly increased and exacerbated tPA-induced HT. Furthermore, pharmacological inhibition of LOX-1 significantly attenuated the severity of the hemorrhage. Structural prediction via AlphaFold, integrated with 100 ns MD simulations, identified a putative binding interface and demonstrated a stable, high-affinity interaction between ApoC3 and LOX-1.



Discussion. This study identifies AC3RL as a novel lipid determinant of thrombolysis-associated BBB leakage via direct LOX-1 interaction. Structural modeling supports this receptor–ligand mechanism as a driver of BBB disruption and HT. Consequently, targeting LOX-1 signaling represents a promising therapeutic avenue to enhance the safety of thrombolysis in cerebral ischemic stroke.

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Kefir supplementation restores insulin-mediated vascular relaxation via PI3K/Akt-eNOS pathway in obese rats

Dr Siti Safiah Mokhtar

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Kefir supplementation restores insulin-mediated vascular relaxation via PI3K/Akt-eNOS pathway in obese rats
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Introduction. Obesity impairs endothelial insulin signaling via dysfunction of the phosphoinositide 3-kinase/protein kinase B-endothelial NO synthase (PI3K/Akt-eNOS) pathway and overactivating mitogen activated protein kinase (MAPK) signaling. Kefir, rich in probiotics may counteract these effects.

Aims. To examine the effects of kefir on insulin-mediated vascular relaxation and signaling in obese rats.

Groups	Maximal relaxation response (%)		
	Control	Obese	Obese + Kefir
Baseline (without inhibitor)	66.4 ± 8.4*	21.9 ± 2.5[b]	85.0 ± 5.4*
In the presence of LNAME	16.3 ± 2.0[ab]	13.4 ± 1.6[b]	18.4 ± 2.8[ab]
In the presence of wortmannin	21.5 ± 4.7[ab]	13.3 ± 1.8[b]	23.1 ± 2.0[ab]
In the presence of SB-203580	61.4 ± 12.1	68.1 ± 5.0	62.4 ± 5.5[a]

Values are mean ± SEM (n=6). *P < 0.05 vs. obese; [a]P < 0.05 vs. baseline; [b]P < 0.05 vs. SB-203580 treatment.

Methods. Eighteen male Sprague-Dawley rats were divided into three groups (n=6): control (standard diet), obese, and obese+kefir [both received high fat diet (HFD)]. After 12 weeks of HFD, the obese+kefir group received kefir (10^{10} CFU/kg/day) for 8 weeks. Rats were euthanized using ketamine/xylazine (100/10 mg/kg, ip). Thoracic aortas were mounted in organ baths, and insulin-induced relaxation was assessed under baseline conditions and in the presence of L-NAME (eNOS inhibitor), wortmannin (PI3K inhibitor), or SB-203580 (p38 MAPK inhibitor).

Results. Insulin-mediated relaxation was markedly impaired in obese rats. Kefir supplementation restored and even enhanced relaxation. L-NAME and wortmannin abolished relaxation in all groups. MAPK inhibition improved relaxation in obese rats, indicating MAPK overactivation. Kefir maintained normal relaxation independent of MAPK inhibition.

Discussion. Kefir restores endothelial insulin sensitivity in obesity by reactivating PI3K/Akt–eNOS–NO signaling. Kefir may be a potential dietary strategy to prevent obesity-related vascular dysfunction.

P437

Exploring relaxin family peptide 3 receptor expression in the mouse heart

Ms Maryam Dashti

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Exploring relaxin family peptide 3 receptor expression in the mouse heart
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Introduction. Valvular heart diseases are becoming increasingly prevalent. Stenosis, one of the most common valvular diseases, involves reduced valve flexibility, often leads to heart failure, and can require invasive open-heart surgery for valve repair or replacement. There is evidence that relaxin-3 and its receptor, Relaxin Family Peptide 3 receptor (RXFP3), previously studied almost exclusively in the brain, are expressed in some peripheral organs and may play roles in reducing inflammation and tissue fibrosis.
Aims. This project investigates the expression of RXFP3 in the heart to identify novel pharmacological targets for the treatment of valvular heart disease.
Methods. A transgenic strain of RXFP3-LacZ marker mice was used in this research. X-gal histological staining was performed across a range of peripheral organs to identify the precise location of RXFP3/LacZ-expressing cells. Double-label fluorescent immunohistochemistry was then applied to determine the phenotype of RXFP3-expressing cells. Staining of RXFP3/LacZ-expressing cells was combined with simultaneous fluorescent detection of various candidate markers of prominent cell types within the heart valves. To confirm LacZ as a reliable marker of RXFP3 expression, RNAscope was used to simultaneously detect RXFP3 mRNA and LacZ mRNA within the valves.
Results. We discovered, for the first time, that RXFP3-expressing cells are present within atrioventricular valves. Immunohistochemistry showed that these cells were negative for vimentin and CD45, indicating they are not valvular interstitial cells or immune cells. They are also not melanocytes. Endothelial cells, another major population within heart valves, remain to be investigated.
Discussion. Serelaxin is a recombinant form of human relaxin-2 that primarily signals through RXFP1. Although serelaxin progressed only to large-scale clinical trials for the treatment of acute heart failure, RXFP1 has demonstrated beneficial effects, including vasodilatory, anti-fibrotic, anti-inflammatory, and anti-apoptotic actions in cardiac tissues; but not in valves. Our findings of RXFP3 within atrioventricular valves suggest that RXFP3 may play a synergistic role, by contributing to valve relaxation. This mechanism offers a promising pathway for future pharmacological treatments.

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Downregulation of viral restriction factors in heart failure

Dr Viktoria Toth

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Downregulation of viral restriction factors in heart failure

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Introduction. Viral infections are key risk factors for heart failure exacerbations and are often a leading cause of death in heart failure patients. In response to infection, a key defensive strategy is the activation of the interferon (IFN)-mediated antiviral pathway across many tissue types, which is regulated by IFN regulatory factors (IRFs) and various viral restriction factors, such as IFITM3, which are playing a crucial role in inhibiting viral replication.

Aims. In our current study, we aimed to investigate the expression level of different viral restriction factors (IFITM3, IRF1, IRF2, IRF7, IRF9, BST2, TNFSF10, RSAD2, SAMHD1) in human heart tissue samples from patients with heart failure with reduced ejection fraction [HFrEF] and heart failure with preserved ejection fraction [HFpEF], and also with different comorbidities (diabetic (DM) – non-diabetic).

Methods. mRNA expression levels were investigated by RT-qPCR in the following groups: HFrEF (with ischemic [ICM, n=8] and non-ischemic [DCM, n=8] etiology), and HFpEF (n=6) samples, compared to healthy control samples (n=14). Comorbid HFrEF+DM (n=7) and HFpEF + DM (n=8) samples were also used to compare expression levels. Protein level expression was measured by Western Blot (WB) in the DCM and ICM sample groups.

Results. According to our results, in both DCM and ICM groups, the mRNA level of IFITM3, SAMHD1 and BST2 was significantly downregulated compared to the healthy control samples. IFITM3 expression was also validated at the protein level by WB measurement. Similarly, in both HFrEF and HFpEF/HFpEF+DM sample groups, the expression level of IFITM3 was significantly lower compared to the control group.

Discussion. We hypothesise that the reduced expression level of viral restriction factors (IFITM3, BST2, SAMHD1) in different heart failure groups may play a role in the higher susceptibility to viral infections and may contribute to the higher mortality of these patients.

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Ligilactobacillus murinus alleviates atherosclerosis in mice by promoting 7-DHCA-mediated gut barrier repair

Adj A/Prof Yarong Liu

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Ligilactobacillus murinus alleviates atherosclerosis in mice by promoting 7-DHCA-mediated intestinal stem cells proliferation and gut barrier repair

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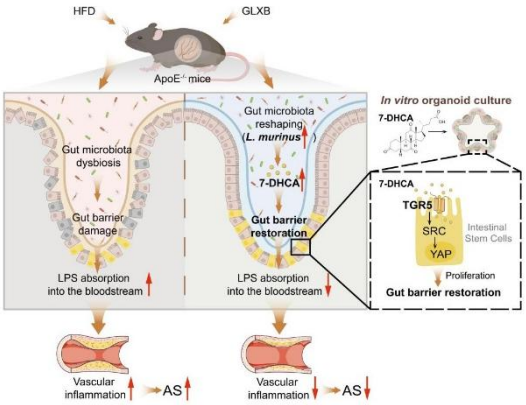
Introduction. Gut microbiota plays a crucial role in the development and progression of atherosclerosis (AS). The present study was initiated on the anti-atherosclerotic effect of the Gualou–Xiebai (GLXB) herb pair.

Aims. To explore the exact mechanisms underlying the beneficial effects of GLXB on AS.

Methods. ApoE$^{-/-}$ mice were fed a high-fat diet (HFD) to establish an AS model. Metagenomic sequencing and metabolomics were used to screen for the key strains and the differential metabolites. Key strains were then administered to AS mice via gavage. Finally, the proliferation of intestinal stem cells (ISCs) was observed using small intestinal organoids in vitro.



Results. Our findings identified Ligilactobacillus murinus (L. murinus) as a key GLXB-regulated strain and a major bile acid producer. Supplementation with live L. murinus significantly alleviated AS progression, improved dyslipidemia, reduced inflammation, and mitigated gut barrier damage in HFD-fed mice. Metabolomics identified bile acids as key differential metabolites following L. murinus supplementation. Furthermore, molecular docking revealed that multiple L. murinus-regulated bile acids can bind to the bile acid receptor G protein-coupled bile acid receptor 1 (GPBAR1, also called TGR5), with 7-dehydrocholic acid (7-DHCA) showing the strongest affinity. Consistently, L. murinus supplementation elevated serum 7-DHCA levels and up-regulated TGR5 mRNA expression. In small intestinal organoids, 7-DHCA supplementation significantly enhanced the mRNA expression of SRC, YAP, and their downstream target Ctgf, while increasing Lgr5 and occludin expression.

Discussion. These findings suggested that GLXB-enriched L. murinus alleviated AS in mice, potentially via 7-DHCA production and subsequent gut barrier repair.

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Hyperpolarization to catecholamines in coronary arteries

Prof Kim Dora

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Hyperpolarization to catecholamines in coronary arteries

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Introduction. Catecholamines released during the fight and flight response augment blood flow within the heart itself. Beta-adrenergic receptors are well known to be expressed and functional in the coronary microcirculation of many species. The mechanisms of relaxation have not been fully explored.

Aims. To establish whether catecholamines hyperpolarize vascular smooth muscle cells (VSMCs) in coronary resistance arteries.

Methods. VSMC membrane potential (Em) and arterial tension were simultaneously measured in rat isolated coronary septal arteries mounted for wire myography at 37 oC (Ng YYH et al, 2024). Agents were added to the chamber.

Results. In myogenically-active coronary arteries both noradrenaline and adrenaline (1 nmol/L to 10 µmol/L) stimulated concentration-dependent hyperpolarization of VSMCs (Emax Em change near 25 mV) and associated vasorelaxation (Emax near 100%). The hyperpolarization was abolished by the inhibitor of ATP-sensitive potassium channels glibenclamide (5 µmol/L) and remained unaffected by the inhibitor of inwardly rectifying potassium channels barium (30 µmol/L). While hyperpolarization was blocked, the vasorelaxation to noradrenaline remained unaffected in the presence of glibenclamide.

Discussion. Catecholamines are able to fully relax intramuscular coronary arteries independent of hyperpolarization. Nevertheless, the control of blood flow may be aided by cell-cell communication and conducted vasodilation, which relies on hyperpolarization.

Ng YYH et al (2024) Hypertension 4:764-775.

P441

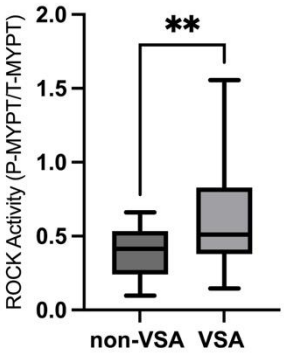
Rho-associated protein kinase activity in biobanked leucocytes of patients with vasospastic angina

Mr Alex Minopoulos

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Rho-associated protein kinase activity in biobanked leucocytes of patients with vasospastic angina

Alex Minopoulos[1,3], Rosanna Tavella[1,3], Benedetta Sallustio[2,3], David P Wilson[3], John F Beltrame[1,3]
Adelaide Medical School[1] and School of Pharmacy and Biomedicine[2], Adelaide University, Adelaide, SA, Australia; Basil Hetzel Institute, Central Adelaide Local Health Network[3], Adelaide, SA, Australia.



Introduction. Rho-associated protein kinase (ROCK) is a serine/threonine kinase that has a pathogenic role in coronary artery spasm, which is responsible for vasospastic angina (VSA). ROCK activation in fresh peripheral leucocyte samples has been used as a circulating biomarker for VSA.

Aims. To determine if stored leucocytes in the Coronary Angiogram Database of South Australia (CADOSA) biobank are viable for ROCK activity assay and if activity differs in those with/without confirmed VSA.

Methods. Patients undergoing provocative acetylcholine spasm testing for suspected VSA (n=47) had a blood sample drawn at the time of angiography, buffy coat was isolated and stored in RNALater at -80°C. Batch ROCK activity assessment was undertaken via protein extraction with trichloroacetic acid precipitation and quantified by western blotting using 4-20% stain-free gels, with total MYPT-1 and phospho-MYPT-1 (Thr853) antibodies. Total- and phospho-MYPT-1 densities were normalised to total protein using stain-free gels. ROCK activity was the ratio of normalised phospho: total-MYPT-1.

Results. Inducible coronary spasm was confirmed in 28 patients (VSA) and excluded in 19 (non-VSA), with biobank samples stored for 4-140 months. ROCK activity was measurable in all stored samples, with elevated levels in the VSA patients (0.62±0.3) compared to controls (non-VSA=0.40±0.2, $p < 0.05$ unpaired T-test, see figure). Within the VSA cohort, those treated with calcium channel blockers (CCB) had lower ROCK activity (No-CCB=0.78±0.4 vs. CCB=0.47±0.3, $p < 0.05$). There was no effect of sample storage time on overall ROCK activity (r^2: 0.00014, $p > 0.9$).

Discussion. These findings confirm that biobank stored samples can be utilised for ROCK activity assessment and similar to previous studies, are elevated levels in those with VSA compared to controls.

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Effects of vericiguat and verapamil on human internal mammary artery constrictor responses

Mr Alex Minopoulos

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Effects of vericiguat and verapamil on human internal mammary artery constrictor responses

Alex Minopoulos[1,3], Irene Stafford[1,3], Rosanna Tavella[1,3], Benedetta Sallustio[2,3], David P Wilson[3], John F Beltrame[1,3] Adelaide Medical School[1] and School of Pharmacy and Biomedicine[2], Adelaide University, Adelaide, SA, Australia; Basil Hetzel Institute, Central Adelaide Local Health Network[3], Adelaide, SA, Australia.

Introduction. Calcium channel blockers (e.g. verapamil) are the benchmark therapy for coronary artery spasm. Vericiguat is a novel, soluble guanylate cyclase stimulator that produces vasodilation independent of nitric oxide synthesis.

Aim. To assess vericiguat's (VG) and verapamil's (VER) effect on phenylephrine (PE) and endothelin-1 (ET-1) constrictor responses in human internal mammary artery (IMA) segments.

Methods. Remnant IMA segments from coronary artery bypass grafting patients were suspended in a wire myograph and subjected to PE concentration-response curves (0.001-300µM). Endothelial function was assessed using bradykinin (0.001-30µM) to determine intact (E+) or impaired (E-) status. Segments were then pre-treated with VG (1µM), VER (1µM) or vehicle and subjected to either a repeat PE (0.001-300µM) or an ET-1 concentration response curve (0.001-300nM). Two-way repeated measures ANOVA was used to compare baseline and treatment PE responses. Unpaired two-way ANOVA was used to compare vehicle and treatment ET-1 responses.

Results. VG decreased PE efficacy in E+ (100±14% vs. 81±17%, $p < 0.05$) and E- (110±8% vs. 64±4%, $p < 0.0005$) segments. VG decreased PE potency in E+ (-6.3±0.2M vs. -5.73±0.2M, $p < 0.005$) and E- (-5.91±0.16M vs. -5.36±0.12M, $p < 0.0005$) segments. VER decreased PE efficacy in E+ (108±10% vs. 67±8%, $p < 0.0005$) and E- (110±8.6% vs. 64.6±4%, $p < 0.0005$) segments. VER decreased PE potency in E+ (-6.11±0.2M vs. -5.35±0.05M, $p < 0.0005$) and E- (-6.07±0.19M vs. -5.36±0.19M, $p < 0.0005$) segments. VER significantly inhibited ET-1 E_{max} regardless of endothelial function (E-: VER 83±5% vs. vehicle 121±6%, $p <0.005$) and E+ (VER 78±4% vs. vehicle 115±10%, $p <0.05$) segments, with no effect on ET-1 EC_{50}. VG had no significant effect on ET-1 constrictor responses.

Discussion. VG was comparable to VER in reducing PE efficacy and potency, regardless of endothelium status. Although VG had no effect on ET-1 constrictor responses, we did not investigate potential synergy with verapamil. Our findings suggest VG may be effective as an anti-anginal agent in CVD therapy, particularly in cases of endothelial dysfunction, but also requires further investigation against ET-1 constrictor responses.

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Modelling ERBB2 R599C variant in Hypoplastic Left Heart Syndrome using hiPSC-derived EHTs

Miss Margarida Varela

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Modelling *ERBB2 R599C* variant in Hypoplastic Left Heart Syndrome using hiPSC-derived EHTs

Margarida Varela[1], Minna Ampuja[2], Emmi Helle[2,3], Virpi Talman[1,4]. DRP, Div of Pharmacol and Pharmacother, Fac of Pharm, Univ of Helsinki[1], Finland; STEMM, Fac of Med, Univ of Helsinki[2], Helsinki, Finland; New Children's Hosp, Paed Res Ctr, Helsinki Univ Hosp[3], Helsinki, Finland; Res Ctr for Integr Physiol and Pharmacol, Inst of Biomed, Fac of Med, Univ of Turku[4], Turku, Finland.

Introduction. Hypoplastic left heart syndrome (HLHS) is a rare congenital heart defect defined by underdevelopment of left-sided cardiac structures. Evidence indicates HLHS often has oligogenic or multifactorial origins, but its precise aetiology remains unclear, limiting targeted therapy development. We previously identified a rare *ERBB2 R599C* missense variant in three unrelated Finnish families with heart defects. To investigate the functional impact of this variant, we generated engineered heart tissues (EHTs) from human induced pluripotent stem cell–derived cardiomyocytes (hiPSC-CMs), providing a physiologically relevant platform to study disease mechanisms and potential therapeutic responses.

Aims. This study aims to (i) investigate intrinsic contractile abnormalities in HLHS-associated hiPSC-CMs carrying a rare ERBB2 variant, and (ii) evaluate the potential of EHTs as a model system for HLHS pathophysiology and preclinical drug testing.

Methods. As a pilot, hiPSC-CMs from one HLHS patient carrying a rare *ERBB2 R599C* variant and one healthy control were differentiated and used to generate strip-format EHTs. Contractile function was assessed by video-based analysis with MUSCLEMOTION to quantify beats per minute, peak-to-peak time, time-to-peak, and relative contraction amplitude. Experiments with additional hiPSC lines, including two HLHS variants, one healthy control and a CRISPR-Cas9 corrected isogenic line, are currently undergoing.

Results. Preliminary observations indicate faster maturation in controls, with higher beats per minute and shorter peak-to-peak intervals, whereas HLHS EHTs were more variable, showing delayed/limited maturation, reduced contractile performance, and in some constructs progressive loss of beating.

Discussion. These observations are consistent with contractile impairment associated with the *ERBB2 R599C* variant that we previously demonstrated in zebrafish, supporting the use of hiPSC-derived EHTs for HLHS variant modelling.

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Effect of acute ischemia on coronary arterial function

Dr Elizabeth A Forrester

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Effect of acute ischemia on coronary arterial function

Elizabeth A Forrester, JinHeng Lin, Kim Dora. Department of Pharmacology, University of Oxford, Oxford, UK

Introduction: Ischemic heart disease (IHD) is characterised by reduced myocardial perfusion due to impaired coronary blood flow, with coronary microvascular dysfunction (CMD) as a key contributor (Taqueti & Di Carli, 2018). During ischemia, metabolic byproducts such as hydrogen ions and lactic acid accumulate, which alter intracellular and extracellular pH and result in chronic intracellular acidification. Concurrently, levels of the potent vasodilator calcitonin gene-related peptide (CGRP) are found to significantly increase during coronary ischemia (Kumar et al, 2019). Hence, this study examines how ischemia-induced acidosis affects microvascular function.

Aim: To identify how changing pH to mimic acute ischemia affects coronary arterial function.

Methods: Isometric tension recordings were performed on left anterior descending (LAD) and septal coronary arteries from male Wistar Han rats. The effect of lowering intracellular pH on arterial function was determined as concentration-dependent responses to acetic acid (0.44 mmol/L – 6.99 mmol/L) and lactic acid (1.5 mmol/L – 17.1 mmol/L). The role of CGRP was investigated using the selective CGRP receptor antagonist BIBN-4096.

Results: From developed myogenic tone both acetic acid and lactic acid induced concentration-dependent relaxations in rat LAD and septal coronary arteries, which was attenuated by pre-incubation with BIBN-4096. This relaxation response was more potent in septal compared to LAD coronary arteries. Similar findings were observed in coronary arteries isolated from the right atrial appendage, left ventricle and anterior papillary muscles in both pig and human tissue samples.

Discussion: These findings indicate lowering extracellular pH induces vasorelaxation that could be mediated by CGRP.

Taqueti VR, Di Carli MF (2018) J Am Coll Cardiol 72:2625-2641.
Kumar A, Potts JD, DiPette DJ (2019) Front Physiol 10:821.

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Thromboprophylaxis in Multiple Myeloma Patients: a Systematic Review

Dr Giulia Mosini

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Thromboprophylaxis in Multiple Myeloma Patients: a Systematic Review
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Introduction. Thrombosis represents a frequent and serious complication in multiple myeloma (MM), significantly impacting morbidity, mortality, and therapeutic management. The incidence of venous thromboembolism (VTE) in MM varies between 10% and 20%, influenced by individual risk factors, treatment protocols, and patient characteristics. Although this risk is well recognized, the optimal thromboprophylaxis approach remains controversial and not yet clearly established.
Aims. To provide an updated overview of current evidence on thromboprophylaxis strategies in MM patients through a systematic review.
Methods. We are searching on PubMed, Medline, Embase, Cochrane Library, ClinicalTrials.gov, up to September 2025
Results. Preliminary evidence indicates that low molecular weight heparin (LMWH), direct-acting oral anticoagulants (DOAC) reduce thrombotic events compared to aspirin and are generally preferred in high-risk MM patients. Aspirin may be appropriate for patients at lower thrombotic risk.
Discussion. Given the lack of sufficient evidence to support practical and universally applicable guidelines, risk stratification is essential to identify the patients most likely to benefit from prophylaxis, thus enabling personalized therapeutic approaches.

Charalampous, C, et al. *Ann Hematol*. 2024;103(10):3881-3888
De Stefano, V, et al. *Haematologica.* 2022;107(11):2536-2547

P446

CardioLigand Atlas: Mapping the functional and transcriptional landscape of heart signalling

Assoc Prof Simon Foster

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

CardioLigand Atlas: Mapping the functional and transcriptional landscape of heart signalling

Janice D Reid[1,2]*, Simon R Foster[1,2,3]*, Rebecca L Fitzsimmons[1], Mary Lor[1], Griffen B[4], James E Hudson[1,2]*. QIMR Berghofer[1], Brisbane, QLD, Australia; Sch of Biomedical Sciences[2], University of Queensland, St Lucia, QLD, Australia; Dept of Pharmacol[3], Monash University, Clayton, VIC, Australia; Dynomics Pty Ltd[4], Brisbane, QLD, Australia.

Introduction. Cardiac ligands mediate cell-cell communication and control cardiac function. Multiple ligand-receptor systems (e.g. catecholamine-adrenoceptor interactions) have been extensively studied and are cardiac therapeutic targets. However, the full repertoire of ligands that regulate heart function and their mechanisms remain unknown.

Aims. To generate a CardioLigand atlas, by cataloguing the functional and transcriptional signatures for ligands that signal via receptors expressed in the heart and human cardiac organoids (hCOs).

Methods. A diverse library of 80 endogenous cardiac ligands and 10 synthetic agonists was curated to target receptors expressed in the human heart and multicellular hCOs (Pocock M et al, 2025). hCO contractile function, including active force, rate, activation (Ta50) and relaxation (Tr50) kinetics, was assessed 4 and 24 hours after ligand stimulation (n=5 hCO per ligand). Semi-automated single hCO RNA-seq was used to assess the transcriptional responses to all ligands. Barcoding of hCOs enabled direct correlation of individual hCO contractile function with transcriptional response.

Results. Cardiac ligands elicited varied functional responses in hCOs, including modulation of force (ranging from -14% to +87%) and relaxation time (-9 to +21%) relative to control hCOs at 24 h. hCO RNA-seq data revealed distinct ligand clusters, including inotropes, endothelin peptides, fibrotic factors, and inflammatory families. We identified cluster-specific contractile differences by overlaying hCO functional data, e.g. opposite contraction kinetics for inotrope (~10% decrease in Ta50) and endothelin clusters (30% increase in Ta50/18% increase in Tr50), despite shared increases in force and rate. Capitalising on the diverse dataset, we were able to "fingerprint" unique ligand-induced gene signatures in our transcriptome data. Using RNA-sequencing data from human heart failure with preserved ejection fraction biopsies, we identified a key inflammatory signature that segregates disease from normal function.

Discussion. This study represents the largest functional and transcriptional cardiac ligand-receptor perturbation dataset completed in a multicellular heart model. This enabled us to build a systems biology understanding of cardiac ligand signalling and apply this to fingerprint unique ligand signatures within complex *in vivo* samples in disease.

Pocock M et al (2025) Nat Cardiovasc Res. 4(7):821-840.

P447

IL18 provokes vascular dysfunction and anxiety in rats.

Prof Vladimir Matchkov

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

IL18 provokes vascular dysfunction and anxiety in rats.

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Introduction. Major depression and cardiovascular diseases have strong co-morbidity. Inflammation contributes to both disorders. We have reported that depression-like symptoms are associated with an upregulation of neuronal noradrenaline transporter (NET) [1], disbalance in endothelial signaling [2] and oxidative stress in the vascular wall [3]. We hypothesized that pro-inflammatory cytokines could contribute to vascular abnormalities in depression.

Aims. We aimed to characterize the cytokine profile in rats with chronic mild stress (CMS) induced depression-like symptoms, and test whether interleukin 18 (IL18) contributes to behavioural abnormalities and vascular dysfunction.

Methods. Wistar male rats were exposed to 8 weeks of CMS. Blood cytokine profile was analysed and correlated to stress susceptibility evaluated by sucrose consumption test. Non-stressed rats were treated with IL18 for 4-weeks, either i.n. (0.03 µg / kg) and i.p. (1 µg / kg) and exposed to several behaviour tests. Agonist-induced contractile and vasorelaxing responses of small mesenteric arteries were assessed in isometric myograph. The abundance and activities of endothelial relaxation pathway proteins were assessed with western blotting and proteomics.

Results. CMS elevated MIP-3α, TNFα, IL1a, IL5, IL17A and IL18. IL18 treatment induced anxiety behaviour but was not associated with anhedonia-like behaviour. Body weight and other physiological parameters were unchanged. IL18 shifted leftwards vascular noradrenaline-sensitivity, though this was partially masked by an upregulation of NET. An upregulated NO- and COX-dependent relaxations was counter-balanced by suppressed endothelium-dependent hyperpolarization response. IL18 elevated eNOS phosphorylation and COX2 abundance, but $K_{Ca}3.1$ was downregulated while $K_{Ca}2.3$ channel was unchanged. Proteomic profiling revealed changes consistent with elevated oxidative stress

Discussion. Chronic elevation in IL18 did not reproduce anhedonia but led to anxiety-related changes. IL18 induces abnormalities in peripheral small arteries previously seen in CMS rats with anhedonia-like symptoms.

[1] Bouzinova et al (2012) Psychosom Med 74(3):278-87.
[2] Bouzinova et al (2014) Psychosom Med 76(4):268-76
[3] Matchkov et al (2015) Am J Physiol 309(8):R814-23

P448

4-NO2-Propranolol Selectivity to 6-Nitrodopamine Receptors Compared to Propranolol, and 7-NO2-Propranolol

Ms Vivian Fuguhara

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

4-NO_2-Propranolol Selectivity to 6-Nitrodopamine Receptors Compared to Propranolol, and 7-NO_2-Propranolol

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Introduction. *In vitro* studies showed that (±)-4-NO_2-propranolol is a selective antagonist of 6-Nitrodopamine (6-ND), an endogenous positive chronotropic agent.

Aims. Compare the cardiovascular effect of (±)-Propranolol, (±)-4-NO_2-propranolol, and (±)-7-NO_2-propranolol *in vivo*.

Methods. Protocols were approved by the Ethics Committee for Animal Use of UNICAMP (Protocol No. 6576-1/2024). Adult male Wistar rats (300-400g) were divided in two groups: Control and L-NAME. The animals were initially sedated with isoflurane (5%, 1 min) and anesthetized with sodium thiopental (40 mg/kg, i.p.) and ketamine (70 mg/kg, i.p.). The right femoral vessels were cannulated with a polyethylene PE10 catheter and heparin was administered (600 UI/kg, s.c.). The artery catheter was coupled to a pressure transducer (MLT0699 Disposable BP Transducer). After stabilization the Control group received a bolus injection (30-40 µL) of (±)-Propranolol, (±)-4-NO_2-propranolol, (±)-7-NO_2-propranolol, or vehicle (saline). The L-NAME group received an i.v. bolus injection of Nω-nitro-L-arginine methyl ester (30 mg/kg), and after stabilization the animals received the bolus injection of the β-antagonists.

Results. In Control animals, a low dose of (±)-Propranolol (100 nmol/kg) and (±)-7-NO_2-propranolol (10 nmol/kg) initially presented reduction in the HR, and after 10 to 15 min, it started to go back to baseline levels. This pattern was observed in high doses of (±)-4-NO_2-propranolol (1 and 10 µmol/kg). On the other hand, high doses of (±)-Propranolol and (±)-7-NO_2-propranolol (1 and 10 µmol/kg) induced a reduction in the HR that was maintained for a long period after the drugs administration. In L-NAME treated animals, there was a decrease in the potency and efficacy of (±)-Propranolol and (±)-7-NO_2-propranolol negative chronotropic effect, and abolishment of this effect by a high dose of (±)-4-NO_2-propranolol (1 µmol/kg).

Discussion. The negative chronotropic effect of (±)-4-NO_2-propranolol and low doses of (±)-Propranolol and (±)-7-NO_2-propranolol induce a sympathomimetic reflex, which is not present in high doses of the last two. (±)-4-NO_2-propranolol is selective to 6-ND receptors, as indicated by the absence of its effect on the L-NAME treated animals and sympathomimetic reflex at all doses.

P449

Efficacy and safety of azilsartan/chlorthalidone versus telmisartan/chlorthalidone combination in hypertension; Randomized trial

Dr Bikash Ranjan Meher

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Efficacy and safety of azilsartan/chlorthalidone versus telmisartan/chlorthalidone combination in hypertension; Randomized trial

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Introduction. Hypertension is a chronic condition characterized by persistently elevated arterial pressure and its number is increasing across the world due to multiple reasons. Combination therapy is recommended if monotherapy do not respond to treatment. There is a paucity of study comparing combination therapy of azilsartan and chlorthalidone with that of telmisartan and chlorthalidone.

Aim. This study assessed the efficacy and safety of azilsartan and chlorthalidone combination versus telmisartan and chlorthalidone combination.

Methods. The study was a single centre, randomized, parallel design, open-label, active-controlled clinical trial. Hypertensive patients were randomized into azilsartan and chlorthalidone combination (test) group (n=46) and telmisartan and chlorthalidone combination (control) group (n=44). Blood pressure, serum urea and creatinine, serum lipid profile was evaluated at baseline. Patients were re-evaluated after 12 weeks of combination therapy of azilsartan 40 mg with chlorthalidone 12.5 mg once daily or telmisartan 40 mg with chlorthalidone 12.5 mg once daily.

Results. The study demonstrated that there was a significant reduction in systolic blood pressure (SBP) from baseline to 12 weeks' follow-up in both test group as well as control group. However, there was no statistically significant difference in change in SBP between test and control group at 12 weeks (-0.17 (95% CI, -6.63 to 6.28) mm Hg, p >0.05. The mean diastolic blood pressure (DBP) was reduced significantly in the test as well as the control group from baseline to 12 weeks, however, at 12 weeks of follow-up, there was no statistically significant difference in change in DBP between the test and control (2.37 (95% CI, -1.36 to 6.10) mmHg, p >0.05). Serum urea and creatinine concentrations were significantly lower in both groups at 12-week follow-up compared to baseline, there was no significant difference between the two groups (p>0.05) at week 12. A statistically significant reduction in total cholesterol, total triglycerides and VLDL was observed with test group(p<0.05) from baseline to week 12 but not with control group. Most reported adverse events (AEs) were headache and dizziness in both the group and were comparable.

Discussion. Blood pressure reduction in both the groups was comparable and there was no significant difference in TEAEs and renal parameters between two combinations. However, the AZL/CHL combination exhibited a favourable effect on lipid profiles.

P450

Does hyperglycaemic heart failure reflect inadequate Randle cycle-based homeostasis?

Dr Xiaojing Wang

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Does hyperglycaemic heart failure reflect inadequate Randle cycle-based homeostasis?

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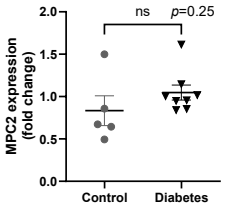

Introduction. Most organs are "metabolic omnivores", with flexibility of predominant metabolic pathways (the Randle cycle) largely reflecting relative availability of major metabolic substrates (glucose and fatty acids) to undergo oxidation within mitochondria via the Krebs cycle. However, severe hyperglycaemia is associated with mitochondrial energetic impairment despite supranormal glucose availability. This distortion of the expected Randle cycle-based activation of glucose utilization has previously been unexplained, limiting development of specific therapies for diabetic heart failure, which is usually subacute and life-threatening.

Aims. To determine the mechanisms underlying impaired glucose utilization in hyperglycemia, focusing on impaired activation of a transporter controlling transfer of the glucose metabolite pyruvate across the mitochondrial membrane (mitochondrial pyruvate carrier, MPC).

Methods. Comparisons were made between male diabetic rats (induced by diet/streptozotocin, n=8) and controls (n=5). The expression (via immunoblotting) and activity (via measurement of ^{14}C-pyruvate uptake into the mitochondria) of MPC were measured initially in rat liver, followed by pilot experiments in the heart.

Results. In diabetic rats, mean blood glucose levels were severely elevated (27.3±4.3 vs 9.1±0.4 mM in controls, $p<0.05$), and both systolic (LVEF) and diastolic LV function (E/E') assessed by echocardiography were significantly impaired (both $p<0.01$). MPC expression did not vary significantly between control and diabetic livers (Figure), in contrast with previous reports of carrier up-regulation in obese mouse model. Furthermore, MPC activity was virtually identical in control and diabetic hepatic mitochondria. Analogous experiments are in progress in myocardium.

Discussion. Despite development of considerable hyperglycaemia, rat hepatic mitochondria fail to establish a basis for incremental glucose utilization, resulting in impairment of the Randle cycle and provision of an energetic basis for the development of heart failure. Ongoing experiments will evaluate whether pharmacological stimulation of MPC activity is possible and test the Koch's Postulates regarding resultant amelioration of heart failure.

P451

Berberine-loaded nanoparticles for 5-fluorouracil-induced cardiotoxicity: A Comprehensive in vitro in vivo study

Prof Pooja Gupta

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Berberine-loaded nanoparticles for 5-fluorouracil-induced cardiotoxicity: A Comprehensive in vitro in vivo study

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Introduction. Chemotherapy-induced cardiotoxicity remains a significant limitation in cancer treatment, with limited preventive strategies available. Berberine, a natural isoquinoline alkaloid, exhibits antioxidant and anti-inflammatory properties but suffers from poor bioavailability and dose-dependent adverse effects.
Aims. To evaluate the cardioprotective efficacy of berberine-loaded solid lipid nanoparticles (Ber-SLNs) against 5-fluorouracil (5-FU)-induced cardiotoxicity.
Methods. Ber-SLNs were prepared using the solvent evaporation method and characterized for particle size, zeta potential, and drug entrapment efficiency. In vitro studies involved Caco-2 and H9c2 cell lines to assess cellular uptake and cardioprotective effects. In vivo studies were conducted on male Wistar rats divided into eight groups, receiving various treatments including 5-FU, berberine, and Ber-SLNs. Hemodynamic parameters, biochemical markers, and histopathological evaluations were performed.
Results. Ber-SLNs exhibited a mean particle size of 154.83 ± 9.3 nm with an entrapment efficiency of 53%. In vitro, Ber-SLNs significantly improved cell viability and reduced oxidative stress markers compared to free berberine. In vivo, Ber-SLNs ameliorated 5-FU-induced alterations in hemodynamic parameters and biochemical markers and improved histopathological outcomes.
Discussion. Ber-SLNs enhance the bioavailability and cardioprotective effects of berberine, offering a promising strategy to mitigate chemotherapy-induced cardiotoxicity.

P452

Cardioprotective effects of a Centella asiatica pentacyclic triterpene

Prof Kene Obikeze

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Cardioprotective effects of a Centella asiatica **pentacyclic triterpene**

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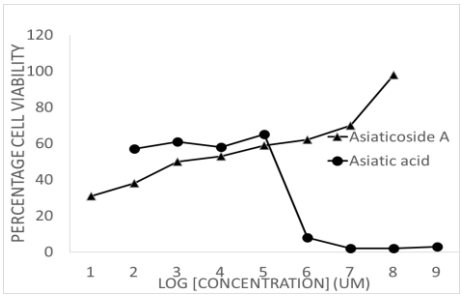


Introduction. Hypoxia-induced oxidative stress plays a role in the pathophysiology of many cardiovascular diseases.[1] Centella asiatica extracts have shown both antioxidant and cardio-protective effects. Pentacyclic triterpenes as the constituents of Centella asiatica extracts may be responsible for the cardio-protective effects.[2]

Aims. The study evaluated the effect of pentacyclic *C. asiatica* triterpenoids on the post-hypoxia cell viability of H9c2 cardiomyocytes.

Methods. Superoxide dismutase (SOD) activity and cell viability was determined in H9c2 cells incubated with select compounds, followed by Cobalt (ii) chloride-induced hypoxia.

Results. Concentration-dependent increases in SOD activity was observed in cell pre-treated with asiaticoside A, while increases in SOD activity was only observed with the highest dose of asiatic acid. Asiaticoside A produced a protective effect in pre-treated H9c2 cells after 48 hours following the induction of hypoxia, retaining 70% cell viability.

Discussion. The cardio-protective effect observed with asiaticoside A may be linked to its effect increasing SOD activity, thus preventing activation of the oxidative stress pathway.

1. Guzik & Touyz (2017) *Hypertension* 70(4):660-667
2. Bandopadhyay et al (2023) *J Cell. Molec. Med* 27(5):593-608

P453

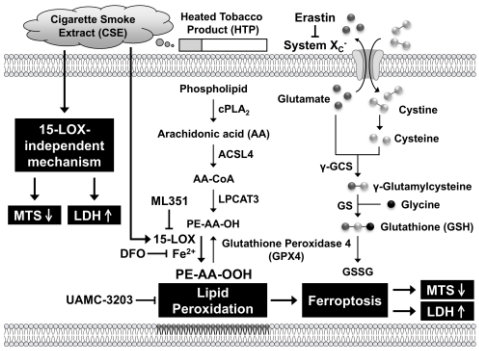
Cigarette smoke extract of heated tobacco products induces ferroptosis in A7r5 cells.

Prof Takahiro Horinouchi

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Cigarette smoke extract of heated tobacco products induces ferroptosis in A7r5 cells.

Takahiro Horinouchi[1], Ryosuke Shinkai[1], Yuichi Mazaki[2], Soichi Miwa[3]. Department of Pharmaceutical Sciences, School of Pharmacy at Narita, International University of Health and Welfare[1], Narita, Chiba, Japan; Department of Cellular Pharmacology, Graduate School of Medicine, Hokkaido University[2], Sapporo, Hokkaido, Japan; Toyooka General Hospital[3], Toyooka, Hyogo, Japan.



Introduction. Heated tobacco products (HTPs) are marketed worldwide as less harmful alternatives to combustible cigarettes. However, the cytotoxicity of HTPs to vascular smooth muscle cells is poorly understood.

Aims. The aim of this study is to clarify the mechanism of cytotoxicity induced by the cigarette smoke extract (CSE) of HTPs in vascular smooth muscle A7r5 cells.

Methods. The mainstream smoke of HTPs was generated according to the HTP-259-CTR smoking regime using analytical vaping machine LM5E (Körber Technologies GmbH). The gas phase of 80 puffs was bubbled into 5 mL of ice-cold FBS-free DMEM to prepare 100% CSE. The cytotoxicity of CSE to rat vascular smooth muscle A7r5 cells was evaluated by measuring mitochondrial metabolic activity (as MTS reduction activity) and leakage of the intracellular lactate dehydrogenase (LDH).

Results. CSE and erastin, the ferroptosis inducer, decreased mitochondrial metabolic activity and increased LDH leakage. The cytotoxic effects of erastin were almost completely inhibited by the radical-trapping antioxidant, UAMC-3203; iron chelator, deferoxamine (DFO); and selective 15-lipoxygenase (15-LOX) inhibitor, ML351. On the other hand, CSE-induced cell damage was partially attenuated by UAMC-3203, and ML351 but not by DFO.

Discussion. These results suggest that erastin induces ferroptosis via 15-LOX-mediated iron-dependent lipid peroxidation, whereas CSE causes 15-LOX-mediated lipid peroxidation-dependent ferroptosis and 15-LOX-independent cell damage.

P454

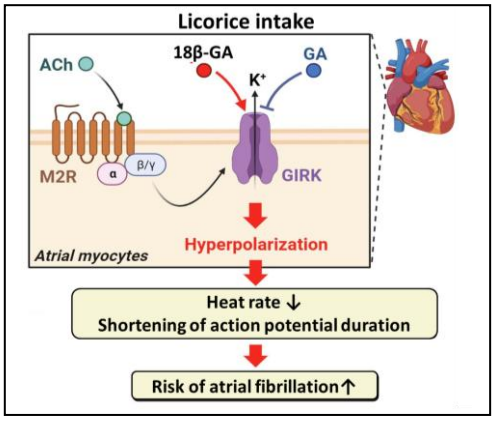
Identification of licorice metabolites as novel GIRK channel modulators regulating heart rate

Prof Tomoe Y Nakamura-Nishitani

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Identification of licorice metabolites as novel GIRK channel modulators regulating heart rate

I-Shan Chen, Jumpei Yasuda, Takuya Notomi, Tomoe Y Nakamura-Nishitani. Department of Pharmacology, Wakayama Medical University, Wakayama city, Japan.



Introduction. Licorice is a common food additive and is used in Chinese medicine. Excess licorice intake can trigger atrial fibrillation (AF), and AF patients possess constitutively activated G protein–gated inwardly rectifying K^+ (GIRK1–4) channels. Whether licorice directly modulates GIRK channel activity remains unknown.

Aim. To determine whether licorice metabolites alter atrial rhythm by modulating GIRK channel activity.

Methods. Two major licorice constituents—glycyrrhizic acid (GA) and its metabolite 18β-glycyrrhetinic acid (18β-GA)—were examined using two-electrode voltage-clamp recordings in *Xenopus* oocytes expressing cardiac-type GIRK channels. Site-directed mutagenesis and molecular docking identified structural determinants of drug action. The impact on spontaneous beating rate was assessed by motion analysis in cultured rat atrial myocytes.

Results. GA reduced GIRK currents, whereas 18β-GA enhanced them. Phosphatidylinositol 4,5-bisphosphate (PIP_2) was essential for 18β-GA–induced activation, while Gβγ coupling was not. Mutation of a cytoplasmic-pore glutamate residue abolished the 18β-GA effect, indicating its critical role in drug binding, and this was confirmed by molecular docking. In cardiomyocytes, 18β-GA suppressed spontaneous beating; this effect was reversed by the GIRK blocker tertiapin-Q.

Discussion. The licorice metabolite 18β-GA activates cardiac GIRK channels through a mechanism requiring PIP_2 and a key cytoplasmic glutamate residue. Activation of GIRK channels by 18β-GA reduces atrial contractility, providing a potential molecular basis for licorice-induced atrial arrhythmias.

Chan I-S (2024) Br J Pharamcol. 181(3):447-463

P455

Heated tobacco products induce cardiotoxicity through distinct calcium and metabolic mechanisms

Prof Tomoe Y Nakamura-Nishitani

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Heated tobacco products induce cardiotoxicity through distinct calcium and metabolic mechanisms

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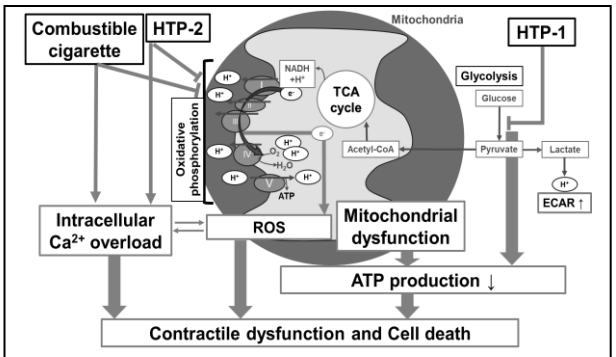
Introduction. Heated tobacco products (HTPs) are increasingly consumed because of their perceived reduced harm, yet their direct effects on cardiomyocytes remain poorly characterized.
Aim. To evaluate and compare the direct effects and underlying mechanisms of smoke extracts from combustible and HTP products on cardiomyocyte function.
Methods. Cigarette smoke extracts (CSEs) were prepared from combustible cigarettes (RF or Hi Lite) and two widely used HTPs (HTP-1: PloomX and HTP-2: IQOS). Primary rat cardiomyocytes and human iPSC-derived cardiomyocytes were exposed to these extracts.



Proposed mechanism of CSE-induced cardiotoxicity

Results. All CSEs reduced cell viability and contractility in a concentration- and time-dependent manner, with toxicity ranked RF > HTP-2 > HTP-1. RF and HTP-2 triggered excessive reactive oxygen species (ROS) generation and intracellular Ca^{2+} overload. While all CSEs impaired mitochondrial respiration and decreased ATP production; glycolytic compensation occurred only with RF and HTP-2, not HTP-1, indicating product-specific metabolic disruption. Acrolein, enriched in RF and HTP-2, emerged as a key cardiotoxic mediator.
Discussion. Both combustible cigarettes and HTPs exert direct cardiotoxic effects, but the mechanisms differ between products, particularly in abnormal Ca^{2+} handling and metabolic inhibition. These findings highlight potential cardiac risks of HTP use and underscore the need for product-specific risk assessment.

Matsumura S (2024) PLoS One 2;19(1):e0295737, Yasuda J et al (2025) J Pharmacol Sci 159: 94-104

P456

Pericyte modulation attenuates cardiac dysfunction and fibrosis in human cardiac organoids

Prof Xiaoying Wang

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Pericyte modulation attenuates cardiac dysfunction and fibrosis in human cardiac organoids

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Introduction. Heart failure (HF) is a major cause of death and illness worldwide. Current models don't fully replicate human heart function, leading to high failure rates in drug trials. Human cardiac organoids (hCOs) can better mimic heart tissue, but it still faces challenges. Many culture methods rely on extracellular matrices, limiting reproducibility and clinical use. Therefore, developing platforms that more closely match human physiology is urgently needed.

Aims. This study aims to develop a scaffold-free hCOs from human-induced pluripotent stem cells (hiPSCs). NE will simulate HF, and drug testing will be performed. The model will be evaluated for drug screening and HF research, providing a physiologically relevant, simple, and clinically translatable platform.

Methods. HCOs were generated from hiPSCs using two small-molecule induction factors in a scaffold-free culture system. Model characterization was performed using immunofluorescence staining, tissue clearing, microelectrode array recording, and single-cell RNA sequencing. NE was applied to induce HF-like phenotypes, and DSS and metoprolol were tested for drug responses. The molecular mechanisms underlying HF and drug effects were analyzed through sc-RNA sequencing.

Results. Scaffold-free hCOs were successfully generated using CHIR99021 and IWP-2. The organoids expressed key markers of cardiomyocytes, endothelial cells, and fibroblasts. NE treatment induced HF-like features, including reduced contractility and electrophysiological abnormalities. DSS and metoprolol partially restored cardiac function. Sc-RNA sequencing revealed NE-induced injury and identified a critical role for pericytes in microvascular regulation.

Discussion. This scaffold-free hCOs model efficiently mimic HF and supports drug evaluation with reduced cost and culture time. The findings highlight pericytes as key regulators of cardiac remodeling. Although the model lacks immune and neural components and shows limited maturation, further optimization may enhance its translational potential.

P458

Role of vascular endothelial ERK5 signaling in the development of aortic diseases

Mr Shuto Itokazu

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Role of vascular endothelial ERK5 signaling in the development of aortic diseases
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Introduction. Aortic dissection is life-threatening disease, yet no pharmacological prevention is established. ERK5 is activated in vascular endothelial cells by growth factors and laminar shear stress, exerting endothelial-protective effects via upregulation of eNOS and KLF2. Antiangiogenic agents targeting VEGF signaling upstream of ERK5 list arterial dissection as a serious adverse effect, and pitavastatin, an ERK5 activator, reduces aortic dissection incidence in a mouse model.
Aims. To investigate the role of endothelial ERK5 activation in aortic disease development.
Methods. In vivo models were generated in wild type (WT) and endothelial cell-specific ERK5 heterozygous knockout (ERK5EKO) mice: aortic aneurysm (AB: Ang II + BAPN) and dissection (LAB: L-NAME + Ang II + BAPN). Aneurysm was defined by max/min diameter ratio ≥1.5; dissection by Elastica van Gieson staining. Lung endothelial cells were isolated by CD31-positive selection. Cell proliferation (BrdU assay), mRNA expressions of eNOS, KLF2, iNOS, VCAM-1, and E-selectin (qPCR), and nitric oxide (NO) production (Griess method) were assessed.
Results. ERK5EKO endothelial cells showed reduced proliferation, decreased baseline eNOS expression, and attenuated pitavastatin-induced KLF2 upregulation vs. WT. Paradoxically, TNF-α-induced VCAM-1 and E-selectin expression was suppressed and iNOS expression was enhanced in ERK5EKO cells. Serum NOx tended to be elevated in ERK5EKO mice in LAB and Ang II-alone models. In vivo, blood pressure and incidence of aortic aneurysm or dissection did not differ significantly between WT and ERK5EKO.
Discussion. ERK5 deficiency reduced endothelial protective molecules (eNOS, KLF2) and cell proliferation, but induced compensatory mechanisms — enhanced iNOS-mediated NO production and suppressed adhesion molecule expression — that offset endothelial protection loss in vivo, leaving disease incidence unchanged. These findings suggest that endothelial ERK5 activity alone is insufficient to govern aortic disease development, and further studies are warranted.

P459

Roles of circular RNA in cardiac fibroblast

Ms Anna Jeong

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Roles of circular RNA in cardiac fibroblast

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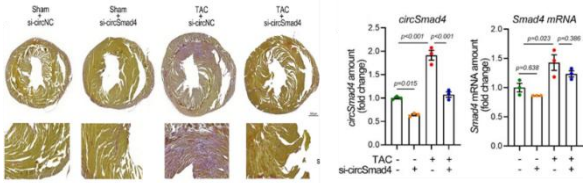


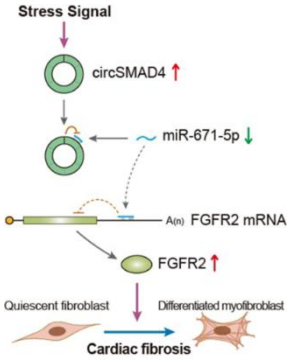
Introduction. Heart failure is associated with cardiac fibrosis through activation of quiescent fibroblasts, but the regulatory roles of circRNAs are not well defined.

Aims. To identify novel circRNAs that regulate cardiac fibrosis and cardiac remodeling.

Methods. *In vivo*: Mice underwent transverse aortic constriction (TAC) for 8 weeks, and an isoproterenol (ISP) infusion model was applied to evaluate the antifibrotic effects of si-circSMAD4. *In vitro*: Human cardiac fibroblasts were stimulated with TGF-β1 to validate circSMAD4 regulation.

Results. CircSMAD4 was upregulated by TAC and TGF-β1, and knockdown with si-circSMAD4 attenuated myofibroblast activation and significantly reduced fibrosis and remodeling at 8 weeks after TAC. Mechanistically, circSMAD4 sponged miR-671-5p, which normally destabilized FGFR2 mRNA and blocked its profibrotic effects.

Discussion. The circSMAD4–miR-671-5p–FGFR2 axis plays a key role in cardiac fibroblast differentiation and fibrosis, suggesting a potential therapeutic target for cardiac remodeling.



Jeong A (2023) Mol Ther Nucleic Acids 34:102071

P461

Effect of recombinant botrocetin and mutated botrocetin on the mouse platelet agglutination

Prof Kazunao Kondo

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Effect of recombinant botrocetin and mutated botrocetin on the mouse platelet agglutination

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Introduction. Botrocetin derived from snake venom binds to von Willebrand Factor (VWF) and induces platelet agglutination via glycoprotein (GP) Ib-binding in vitro as like antibiotic ristocetin. Recombinant mutant botrocetin (Argβ115Glu/Lysβ117Glu) binds to human VWF but it does not induce platelet agglutination, to the contrary it inhibits ristocetin-induced platelet agglutination.

Aims. We evaluate antithrombotic potency of mutated botrocetin in mouse and investigate its effect on the GP Ib-VWF axis.

Methods. Platelet-rich plasma (PRP) obtained from ICR male mice (6 months old) was stimulated by wildtype recombinant botrocetin (B0), two points mutated botrocetin (B2: Argβ115Glu/Lysβ117Glu) or three points mutated ones B3-1 (Gluβ18Arg in addition) and B3-2 (Aspβ62Lys in addition) at 0.5-3.0 μg/mL. Platelet agglutination was measured by light-transmission method and the result was described as maximal agglutination ratio (%max) and as Area Under the agglutination Curve (AUC).

Results. Both B0 and B2 similarly induced mouse platelet agglutination, in spite of a little difference in potency and agglutination pattern (maximal AUCs were 4,937±313 and 5,222±955, respectively. n=5 and 6). B3-1 and B3-2 did not induce agglutination up to 3.0 μg/mL (AUCs 674±306 and 74±19, respectively. n=6) as like human PRP.

Discussion. Three points mutated botrocetin revealed a possibility for platelet regulation via GPIb-VWF axis. We would like to further investigate whether B3s actually bind to VWF and inhibit platelet agglutination.

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DAA-1 Reduces PVAT Inflammation and Restores Arterial Dilation in Obesity

Mr Ashok Kumar Mandal

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

DAA-1 Reduces PVAT Inflammation and Restores Arterial Dilation in Obesity

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Introduction. Despite the proven role of Perivascular Adipose Tissue (PVAT) as an anti-inflammatory adipokine secretor and vascular reactivity regulator, no pharmacological interventions currently target both PVAT inflammation and vascular dysfunction simultaneously.
Aims. This study aimed to evaluate Des-Aspartate Angiotensin-I (DAA-1) as a potential therapeutic agent with dual benefit on obesity-induced PVAT inflammation and vascular dysfunction.
Methods. Obesity was induced in Sprague-Dawley rats using a 60% Kcal high-fat diet. Mesenteric artery vascular reactivity was assessed by wire myography in the presence and absence of PVAT. Proteomic profiling of mesenteric PVAT was performed using liquid chromatography-tandem mass spectrometry (LC-MS/MS) to investigate the effect of DAA-1.
Results. Pre-incubation of mesentery with DAA-1 showed a significant increase in vasodilation of HFD arteries in the presence of PVAT, from 33.81±4.835 to 63.09±3.700 (n=4-6) and from 41.64±2.093 to 74.34±3.872(n=4-6) in its absence. Notably, DAA-1 modulated inflamed HFD-derived PVAT, restoring its protective phenotype by enhancing adiponectin secretion, suppressing pro-inflammatory cytokines, and reducing endoplasmic reticulum oxidative stress, as revealed by proteomic analysis.
Discussion. DAA-1 markedly improved endothelial-dependent vasodilation in HFD mesenteric arteries both in the presence and absence of PVAT, supporting an endothelial mechanism of action consistent with previous reports. Importantly, DAA-1 restored the protective role of inflamed PVAT by modulating its secretory profile, as evidenced by increased adiponectin secretion and reduced expression of pro-inflammatory cytokines. This study provides the first evidence that DAA-1 simultaneously restores endothelial function and reprograms inflamed PVAT representing it as a novel dual targeting therapeutic for treating obesity-associated cardiovascular disorders.

Keywords: Des-aspartate angiotensin-I, Obesity, Perivascular adipose tissue, Proteomics, Vascular dysfunction

P463

Novel AT2-receptor agonist is anti-fibrotic in both acute and chronic disease models

Dr Yan Wang

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Novel AT2-receptor agonist is anti-fibrotic in both acute and chronic disease models

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Introduction. Targeting the angiotensin type 2 receptor (AT_2R) evokes protective effects in various organs. We recently developed a library of novel peptides that selectively targeted the AT_2R, with N-Ac-β-Pro^7-Trp^8-Ang III (N-Ac) demonstrating >147,000-fold AT2R/AT1R selectivity with >20 hours *in vitro* plasma stability.

Aims. To determine the protective effects of N-Ac in high salt diet (HSD)- and unilateral ureteral obstruction (UUO)-induced organ fibrosis, and identify its mechanisms of action using human kidney and cardiac cells.

Methods. Male FVB/N and AT_2R knockout (KO) mice were subjected to sham, UUO+saline or UUO+N-Ac (0.1mg/kg/day or 1mg/kg/day) treatment for 7 days (n=8/group). A separate group of mice were subjected to an 8-week model of HSD (5% NaCl)-induced cardiac and renal fibrosis. Mice were treated with N-Ac (0.1mg/kg/day) from weeks 5 to 8. Fibrotic and inflammatory markers were measured. Transforming growth factor (TGF)-β1 stimulated pSMAD3 levels were measured in both HK-2 cells and primary human cardiac fibroblasts (HCFs).

Results. N-Ac prevented UUO-induced renal fibrosis (from 4.3±0.2% to 2.8±0.2%) (picrosirius red staining), which was accompanied by reduced fibroblast proliferation (vimentin), myofibroblast differentiation (α-SMA) and TGF-β1 levels at both doses (all $P<0.05$ vs. UUO). Moreover, the UUO-induced elevation in matrix metalloproteinase (MMP)-9 to tissue inhibitor of metalloproteinase (TIMP)-1 ratio was inhibited by N-Ac ($P<0.05$ vs. UUO), which was associated with protected kidney tissue integrity. The renoprotective effects of N-Ac were abolished in AT_2R KO mice. In the HSD model, N-Ac reversed HSD-induced cardiac and renal fibrosis back to normal salt levels, which was associated with reduced myofibroblast differentiation. In contrast to the UUO model, N-Ac reduced cardiac TIMP-1 in the HSD model ($P<0.05$ vs HSD), without changing their levels in the kidney. In addition, N-Ac prevented cardiac and renal inflammation (p-IκB and F4/80) in both models. In HK-2 and HCFs, N-Ac inhibited TGF-β1-stimulated pSMAD3 by 40%.

Discussion. The novel AT_2R agonist, N-Ac, exerted anti-fibrotic effects in both heart and kidney via its ability to attenuate inflammation, the TGF-β1-pSMAD3 axis, and the balance between collagen-degrading MMPs and TIMP1. This study highlighted the therapeutic potential of targeting the AT_2R in both acute and chronic diseases.

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Cardiovascular risks in HIV patients on dolutegravir-based therapy in Ibadan, Nigeria

Dr Taiwo Omotoso

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Cardiovascular risks in HIV patients on dolutegravir-based therapy in Ibadan, Nigeria

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Introduction: Human immunodeficiency virus (HIV) infection is a significant infectious disease with a high social and economic burden in Nigeria and other low- and middle-income countries. The disease is associated with opportunistic infection(s), resulting in reduced quality of life before the introduction of integrase inhibitors. However, there is an increase in cardiovascular risk with this class of antiretroviral therapy. Aims: This study aims to assess the risk factors for CVD in patients newly diagnosed with HIV on dolutegravir-based combination antiretroviral therapy (DTG-based cART).

Methods: This prospective cohort study was conducted between July 2024 and March 2025 at the HIV clinic of Adeoyo Maternity Teaching Hospital, Yemetu, Ibadan. Sixty-nine (69) consenting PLWHs newly commenced on dolutegravir-based antiretroviral therapy (DTG-based cART) were recruited for the study. For each participant, sociodemographic and anthropometric measurements, as well as laboratory investigations, such as the lipid profile and ECG, were carried out at baseline and 6 months post-dolutegravir-based cART and recorded, to identify various cardiovascular risks among the participants. The patients were commenced on DTG-based cART and followed up for 6 months. Changes in body weight, body mass index (BMI), lipid profile, and electrocardiographic parameters were monitored and assessed using Friedman for continuous parameters, while Kendall's W was used for categorical parameters. The data collected were presented with a frequency table, charts, mean, median, standard deviation and inter-quartile range. Repeated-measures ANOVA, Friedman, Kendall's W, and Cochran Q test were used to asses for cardiovascular risk among participants over time at a 5% significance level.

Results:. The outcomes revealed statistically significant alterations in various physiological parameters. Specifically, post the DTG-based intervention, there were substantial increases observed in weight from a mean of 57.98 ± 13.29 kg at enrollment to 62.85 ± 14.01 kg at 6 months ($p < 0.001$). Similarly, body mass index (BMI) rose significantly from 21.90 ± 4.95 kg/m² at enrollment to 23.71 ± 5.03 kg/m² at 6 months ($p < 0.001$). Hip circumference increased significantly from 86.36 ± 10.88 cm to 95.32 ± 11.15 cm, and waist circumference from a median of 71.50 cm to 79.50 cm (both $p < 0.001$). There was a significant increase in total cholesterol (TC) levels, rising from a mean of 128.79 ± 27.28 mg/dL at enrollment to 148.28 ± 45.51 mg/dL at 6 months ($p = 0.001$). Triglycerides (TG) decreased from a median of 87.00 mg/dL to 35.00 mg/dL at 6 months ($p < 0.001$). High-density lipoprotein (HDL) levels rose significantly from a median of 53.00 mg/dL at enrollment to 70.00 mg/dL at 6 months ($p < 0.001$), while low-density lipoprotein (LDL) also increased significantly from 55.00 mg/dL to 76.00 mg/dL ($p = 0.002$). Systolic blood pressure also rose substantially from 114.72 ± 18.47 mmHg to 123.87 ± 17.10 mmHg ($p = 0.005$), while diastolic pressure and heart rate did not show significant changes. ECG showed sinus tachycardia dropped from 35.5% to 11.9%, a significant change ($p = 0.030$). Sinus arrhythmias were present in 23.0% of participants at enrollment and declined to 14.0% at 6 months. QTc prolongation (Bazett) rose from 83.3% to 87.5%. The calculated risk-benefit ratio was 0.136, which translated to one risk of obesity for every seven benefits of viral suppression.

Discussion: There was an increase in systolic blood pressure, body weight, waist and hip circumference, BMI, lipid profile, and QTc after the commencement of dolutegravir-based combination antiretroviral therapy among newly diagnosed HIV patients. These may confer cardiovascular risks in the long term. However, dolutegravir provided a low risk-benefit ratio, evidenced by a high level of effectiveness in achieving viral suppression with are relatively low associated risk of obesity.

P465

The comparison and role in cardiac AP of atrial and ventricular Ito

Prof Norbert Laszlo Jost

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

The comparison of the properties and role in cardiac action potential of the atrial and ventricular transient outward potassium current

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Introduction. Atrial fibrillation (AF) is a common and severe arrhythmia, which largely affects the quality of life. State of the art treatment of AF still relies heavily on pharmacological modalities. During development of new antiarrhythmic drugs for treating AF, dog AF models are used.

Aims. Therefore, the aim of present study is to investigate and compare the properties the transient outward (I_{to}), in isolated ventricular (VM) and atrial myocytes (AM) obtained from normal dogs.

Methods. Transmembrane ionic currents were recorded using the whole-cell configuration of the patch-clamp technique in single AM and VM isolated from dog hearts. Experiments were carried out at 37°C.

Results. A large I_{to} current was observed in dog AM in comparison with that of observed in VM. The current amplitude was 15,2±1,1pA/pF at 50 mV. The inactivation phase of the current was best fitted by two exponentials (τ_f: 11,2±1,2 ms, Amp_f: 10,4 ±0,84 pA; τ_f 116,1±8,2 ms, Amp_s: 3,7±0,5 pA/pF; n=10, test potential: 50 mV). The slow time constant of I_{to} inactivation found to be much slower compared to that measured in dog VM (14.2± 1,16 ms at 50 mV, n=12). The I_{to} current during the action potential plateau phase was measured as chromanol 293B (CRO, I_{to} blocker at high concentration) sensitive current in AM using an atrial action potential waveform for the command potential. It was found that I_{to} carries much larger outward current in the plateau phase of the atrial AP than that found in ventricular cells. The effects of I_{to} blockade on the AP repolarization were also investigated in dog AM by the standard microelectrode technique. The current was inhibited by application of 100 µM CRO. The drug increased the plateau potential but failed to lengthen the AP in atrial preparations. Application of another I_{to} blocker (4 mM 4-aminopyridine) resulted in similar outcome. However, the amplitude and kinetics of the slow phase of I_{to} inactivation implied a substantial I_{to} current during the plateau phase of the atrial AP, blockade of the current did not lengthen the AP in dog atrial muscle.

Discussion. Due to its slow inactivation kinetics the atrial I_{to} current may contribute to late repolarization in AM to a greater extent than has been shown in VM. Supported by grants from NKFIH, HUN-REN and University of Szeged.

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Cardiomyopathy patient-derived hiPSC-cardiomyocytes exhibit disease-specific features under baseline, hypertrophy, and drug exposure

Ms Saana Pohjavaara

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Cardiomyopathy patient-derived hiPSC-cardiomyocytes exhibit disease-specific features under baseline, hypertrophy, and drug exposure
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Introduction. Genetic cardiomyopathies result from pathogenic variants in various genes, most notably MYBPC3 truncations in hypertrophic cardiomyopathy (HCM) and LMNA missense mutations in dilated cardiomyopathy (DCM). Human-induced pluripotent stem cell-derived cardiomyocytes (hiPSC-CMs) with these mutations reproduce disease-specific phenotypes; however, how they affect cardiomyocyte function and responses to neurohormonal pro-hypertrophic stimuli or the GATA4-targeting compound 3i-1262 remains unclear.
Aims. We aimed to study gene and protein expression patterns, as well as the functionality of cardiomyopathy patient-derived hiPSC-CMs, under both baseline conditions and neurohormonal stimuli (endothelin-1; ET-1) in 2D and 3D platforms. Additionally, we aimed to investigate the effect of 3i-1262 on the phenotype.
Methods. We exposed patient-derived hiPSC-CMs to ET-1 to induce hypertrophy and to 3i-1262 to evaluate anti-hypertrophic effects. We analysed gene and protein expression using qPCR and Western blotting, respectively. High-content analysis was performed with immunofluorescence staining and the ImageXpress® Micro Confocal system. Functional analyses were carried out using 3D engineered heart tissues, with video recordings analysed in ImageJ.
Results. Patient-derived hiPSC-CMs exhibited disease-specific alterations at baseline, including changes in hypertrophic and sarcomeric gene expression and in cardiac troponin T protein levels. Over time, these cells exhibited functional differences, such as variations in apparent force, peak-to-peak time, and contraction amplitude. Their responses to hypertrophic stimulation and treatment with 3i-1262 also diverged from healthy controls at both molecular and functional levels.
Discussion. Cardiomyopathy patient-derived hiPSC-CMs offer a robust platform for modelling genetic cardiomyopathies, as demonstrated by disease-specific molecular and functional changes. Further research is necessary to clarify the mechanisms behind these phenotypes and the effects of endothelin-1 and 3i-1262**.**

P467

FOXC2 modulates aortic adventitia lymphatic drainage against atherosclerosis

Prof Hongfei Wu

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Modulating effective lymphatic drainage in aortic adventitia has anti-atherosclerotic effects: a new mechanism of FOXC2 to improve lymphatic endothelial cell inflammatory damage

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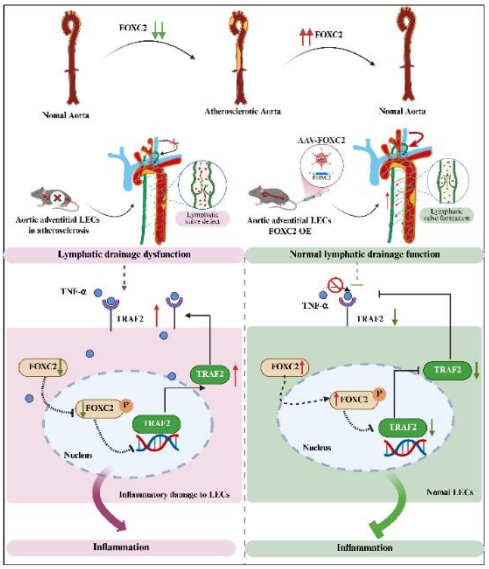

Introduction. Atherosclerosis is a chronic, multifactorial cardiovascular disease. Maintaining effective lymphatic drainage in the aortic adventitia is a key strategy for suppressing atherosclerosis. Disruption of lymphatic drainage, induced by inflammatory damage to lymphatic endothelial cells (LECs), plays an essential role in disease progression. However, the detailed regulatory mechanisms remain largely unknown.

Aims. our study aims to clarify the role of lymphatic drainage in atherosclerosis and uncover FOXC2 as a molecular regulator of this process.

Methods. We used Gene Expression Omnibus (GEO) database to predicted FOXC2 expression in atherosclerosis, and verified these results in ApoE$^{-/-}$ mice fed a high-fat diet and found that FOXC2 acts as a key regulator of lymphatic drainage, reducing inflammation in the vascular wall and attenuating plaque formation. To assess whether effective lymphatic drainage is necessary for FOXC2-mediated atherosclerosis regression, we surgically disrupted lymphatic drainage by ligating the left carotid artery (LCA) and removing the corresponding deep cervical lymph nodes. Evans Blue staining and near-infrared (NIR) imaging to measured lymphatic fluid transport within the aorta. Mechanistically, FOXC2 suppressed TRAF2 expression and disrupted the interaction between TNF-α and TRAF2, thereby alleviating inflammatory injury in LECs and restoring their function, which in turn enhanced lymphatic drainage.

Results. We observed that aortic lymphatic drainage function significantly impaired during atherosclerosis development. Notably, FOXC2 overexpression enhanced lymphatic transport and facilitated lesion regression. Mechanistically, increased FOXC2 expression in inflammation-damaged lymphatic endothelial cells (LECs) restored LEC function and improved lymphatic drainage capacity. Further analysis revealed the molecular pathways through which FOXC2 regulates lymphatic drainage.

Discussion. In summary, our study demonstrates for the first time that FOXC2 attenuates inflammatory injury in LECs and enhances lymphatic drainage by inhibiting the TNF-α–TRAF2 interaction. These findings reveal a novel mechanism by which FOXC2 promotes the clearance of immune cells and inflammatory mediators from the arterial wall, thereby mitigating atherosclerosis progression. Targeting FOXC2 may offer a new therapeutic strategy to restore lymphatic function, resolve chronic inflammation, and protect against cardiovascular disease

P468

Tunneling Nanotube–Mediated Mitochondrial Transfer as a Protective Mechanism Against Hypoxia-Induced Endothelial Dysfunction

Ms Yu Jeong Keum

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Tunneling Nanotube–Mediated Mitochondrial Transfer as a Protective Mechanism Against Hypoxia-Induced Endothelial Dysfunction
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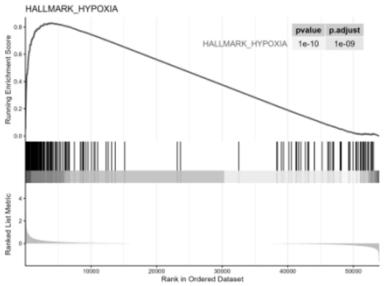

Introduction. Endothelial microenvironmental hypoxia disrupts mitochondrial function and impairs angiogenesis. While hypoxia-induced injury is well-documented, adaptive mechanisms preserving endothelial homeostasis remain unclear. Tunneling nanotubes (TNTs) facilitate intercellular transfer of functional organelles, notably mitochondria, to rescue damaged cells.

Aims. This study investigates whether hypoxic stress induces protective TNT formation and mitochondrial transfer in endothelial cells.

Methods. HUVECs were cultured under hypoxia-mimicking conditions. Confocal microscopy and live-cell imaging quantified TNT frequency. Healthy donor cells were labeled with Mito-Tracker and co-cultured with stressed recipients. Mitochondrial transfer, membrane potential, cell viability, and apoptosis were assessed via FACS, JC-1, CCK-8, and Annexin V/PI assays.

Results. Hypoxia significantly increased TNT frequency and complexity in HUVECs. Recipient cells receiving healthy mitochondria demonstrated restored membrane potential, enhanced viability, and reduced apoptosis, confirming the protective role of TNT-mediated mitochondrial transfer.

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Repurposing abatacept to combat pathological cardiac hypertrophy in an experimental rat model

Ms Vaishali Prajapati

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Repurposing abatacept to combat pathological cardiac hypertrophy in an experimental rat model

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Introduction. This study explores the role of Abatacept, a CTLA4-based drug often used in autoimmune diseases, in reducing heart enlargement (cardiac hypertrophy) caused by isoproterenol in male Wistar rats. Abatacept blocks T-cell activation, which may lower T-cell and macrophage activity in the heart and reduce inflammation-driven hypertrophy. Its protective effect was tested using heart function, tissue structure, biochemical, and molecular studies.

Aims. To evaluate whether Abatacept can prevent or reduce isoproterenol-induced cardiac hypertrophy by controlling immune and inflammatory responses

Methods. In this study male Wistar albino rats were divided into six groups (n=6): Group 1 Control (PBS administration); Group 2 disease control (ISO at 3 mg/Kg s.c. was induced to induce hypertrophy); Groups 3, 4, and 5 are experimental groups. Abatacept at doses of 2.5, 5, and 10 mg/kg were administered daily along with the dose of ISO at 3 mg/kg s.c. to induce hypertrophy. In Group 6 only abatacept was injected s.c. at 10 mg/kg dose each day. The experimental drug administration duration was 42 days to investigate the effect of abatacept in pathological Cardiac Hypertrophy. On day 43rd, all the rats were weighed and anaesthetised with sodium pentobarbital (60 mg/kg, i.p.). After hemodynamic assessments, the blood was collected and the heart was excised to investigate physiological parameters, cardiac injury markers, oxidant-antioxidant assessments, inflammation, immune cell infiltration, and apoptosis.

Results. Abatacept effectively reduced cardiac hypertrophy by stabilizing heart function. It showed positive effects on antioxidants, minimizing cardiac injury markers (CK-MB, LDH), histopathological evidence (H&E and MT staining), along decreased inflammatory cytokines and inflammation formation. Immunofluorescence staining of T-cell sub-populations was also assessed using co-staining and showed a dose-dependent reduction in activation of T cells. The analysis of anti-apoptotic, apoptotic, necrosis, autophagy, and inflammatory (MAPK/Nrf-2-HO1/Smad-Tgf-beta) supports the hypothesis of abatacept cardio-protective action.

Conclusions. Abatacept diminishes ISO-induced cardiac hypertrophy by inhibiting oxidative stress, inflammation, and infiltration, however, enhancing cardiac function and myocardium architecture. It could be a potential preventive drug for cardiac hypertrophy or for individuals at risk of developing it.

P470

Effect of simulated systolic pressure on apoptosis-related genes expression in rat VSMCs

Ms Rira Sato

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Effect of simulated systolic pressure on apoptosis-related genes expression in rat VSMCs

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Introduction. Mechanical stimuli to the vessel wall are classified as extension, shear stress, and pressure, with pressure in particular affecting vascular smooth muscle cells (VSMCs) directly. Vascular remodelling occurs when the balance between proliferation and apoptosis of VSMCs is disrupted. Factors that regulate apoptosis include B-cell lymphoma 2 (Bcl-2) and Bcl-xL, which are apoptosis inhibitory factors, and Bcl-2-related X protein (Bax), which is an apoptosis-promoting factor, and apoptosis is ultimately executed by activating caspase-3. Interleukin-1β (IL-1β) is also a bioactive substance involved in the function of blood vessels and influences apoptosis in various cells.

Aims. We aimed to compare the effects of pulsatile atmospheric pressure simulating systolic hypertension and IL-1β stimulation on the expression of apoptosis-related protein expression and apoptosis in rat cultured VSMCs.

Methods. VSMCs derived from the thoracic aortae of 6–7-week-old male Wistar Rats were utilized. The cells were cultured for 24 or 48 hours with IL-1β (3 ng/ml) stimulation or pulsatile atmospheric pressure of 80–160 mmHg (4 waves per minute). Protein and mRNA expression were evaluated using western blot analysis and RT-qPCR, respectively. Cell proliferation was assessed with the Cell Counting Kit-8 assay.

Results. IL-1β stimulation did not affect the Bax protein expression. However, it significantly increased Bcl-xL protein expression while significantly decreasing Bcl-2 protein expression. Pulsatile pressure simulating systolic hypertension had no effect on the expression of Bax, Bcl-xL, or Bcl-2 in the presence or absence of IL-1β. On the other hand, the pressure promoted cell proliferation regardless of the presence or absence of IL-1β.

Discussion. Pressure stress simulating systolic hypertension did not significantly affect the expression of apoptosis-related proteins in VSMCs, whereas IL-1β stimulation was found to differentially influence the expression of Bcl-xL and Bcl-2, both associated with anti-apoptotic activity.

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Vascular smooth muscle cell phenotypic switching promotes coronary artery plaque instability

Mr Jake Robertson

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Vascular smooth muscle cell phenotypic switching promotes coronary artery plaque instability
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Introduction. Myocardial infarction (MI) is the leading cause of death globally, primarily due to coronary artery atherosclerosis (CAA). CAA is characterized by plaque development from lipid accumulation, immune cell infiltration and vascular smooth muscle cell (VSMC) phenotype changes within the vessel wall. Up to 70% of MI's occur due to fibrous cap instability, a process for which the underlying mechanisms remain poorly understood.
Aims. Our aim was to identify key cell types involved in fibrous cap formation and degradation in human CAA. We hypothesized that collagen producing, fibrous cap-VSMCs phenotypically switch in late-disease to a macrophage-like phenotype - promoting plaque instability.
Methods. Eight cryopreserved human left anterior descending coronary artery samples with varying degrees of CAD progression were analysed. Single-cell RNA sequencing (scRNAseq) and spatial transcriptomics were performed on fixed samples using probe-based transcript targeting and subsequent sequencing. Detailed analysis, using the Seurat package in R, was conducted to assess cellular heterogeneity, localisation and interactions within each CAD sample.
Results. ScRNAseq of 32,481 cells identified nine major cell clusters, including endothelial cells, VSMCs, fibroblasts, macrophages, B cells, T cells, leukocytes, adipocytes, and neuronal cells. Five VSMC subtypes were identified: contractile, transitional, fibroblast-like, angiogenic, and macrophage-like. Gene ontology enrichment analysis revealed distinct biological processes in each VSMC subtype. Spatial analysis showed varying prevalence of VSMC subtypes across different stages of plaque progression. Fibroblast-like VSMCs were highly expressed in the fibrous cap of early disease, but not in the later stages. Further, Macrophage-like VSMC gene signatures were enriched within the fibrous cap of advanced plaques.
Discussion. This study provides new insights into mechanisms of VSMC heterogeneity in human CAD and highlights the phenotypic transition from fibroblast-like to macrophage-like VSMCs may drive plaque instability. Future studies should explore therapeutic targeting of these transitions to prevent MI.

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Circular RNAs regulate pathological angiogenesis

Assoc Prof Juhee Ryu

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Circular RNAs regulate pathological angiogenesis

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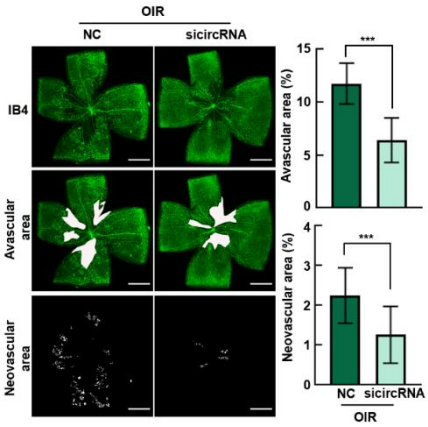

Introduction. Pathological retinal neovascularization (RNV) is a defining feature of major retinal vascular disorders, including retinopathy of prematurity, diabetic retinopathy, and age-related macular degeneration, and represents one of the principal causes of irreversible vision loss globally. Circular RNAs (circRNAs), produced through back-splicing events, have recently emerged as critical regulators implicated in diverse pathological processes. Nevertheless, the functional involvement and mechanistic contributions of circRNAs to RNV in retinal vascular diseases remain largely unexplored.

Aims. The present study sought to identify circular RNAs exhibiting differential expression and to clarify their underlying mechanisms in the regulation of pathological retinal angiogenesis.

Methods. Circular RNAs were profiled using RNA sequencing in a mouse model of oxygen-induced retinopathy. The expression patterns of candidate circRNAs were subsequently validated by quantitative polymerase chain reaction. Functional analyses, including assessments of cell proliferation and cell-cycle distribution, were performed in vitro following circRNA silencing. To investigate the in vivo impact of the selected circRNA on pathological angiogenesis, small interfering RNA was delivered by intravitreal injection in OIR mice. In addition, transcriptomic profiling combined with bioinformatic prediction was employed to identify potential downstream targets and associated signaling pathways.

Results. Among the circRNAs identified, the selected circRNA for further analysis was markedly upregulated on postnatal day 14, corresponding to the early phase of pathological angiogenesis. The selected circRNA exhibited resistance to exonuclease digestion and was predominantly localized in the cytoplasm under normoxic conditions, whereas it translocated to the nucleus in response to hypoxia. Silencing of the selected circRNA suppressed angiogenic activity and cellular proliferation and induced cell-cycle arrest in vitro. Furthermore, intravitreal administration of the selected circRNA small interfering RNA attenuated pathological neovascularization in vivo. Transcriptomic profiling following the selected circRNA knockdown revealed reduced expression of genes involved in cell-division–related processes.

Discussion. These findings indicate that the selected circRNA plays a regulatory role in pathological RNV. Given that this circRNA is conserved in humans, it may represent a potential early diagnostic biomarker and a promising therapeutic target for the treatment of RNV.

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Leucaena leucocephala seeds (LL) reduce heart injury by modulating key pathways

Dr Anil Kumar Sahu

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Leucaena leucocephala seeds (LL) reduce heart injury by modulating key pathways

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Introduction. Myocardial infarction (MI) occurs when blood supply to a part of the heart is reduced, causing ischemia and cell death. Paradoxically, therapeutic reperfusion can damage heart tissue through the production of reactive oxygen species (ROS), leading to oxidative stress. LL is a potent medicinal plant recognized for its antioxidant, anti-inflammatory, anti-apoptotic, and anti-diabetic properties. Aims: This study aimed to investigate the effects and underlying mechanisms of LL on myocardial ischemia-reperfusion (IR) injury models in rats.

Methods. Healthy adult male albino Wistar rats (n=40) were randomly assigned to five groups: sham (n=8), IR-control (n=8), LL-100+IR (n=8), LL-200+IR (n=8), and LL 200 per se (n=8). LL was administered orally daily for 28 days. On 29th day rats were anaesthetized using pentobarbitone sodium (60 mg/kg i.p) and ischemia was developed on 29th day by the occlusion of LAD coronary artery for 60 mins followed by reperfusion for 60 mins and simultaneously hemodynamic parameters were recorded. The rats were then sacrificed, heart was excised and further biochemical, inflammatory, morphological, and molecular studies were done. The statistics were determined by applying one-way ANOVA followed by Tukey-Kramer post hoc tests.

Results. Pretreatment with LL at a dose of 200 mg/kg significantly improved cardiac function, including ventricular function, as evidenced by +LV dp/dt (1377.57 ± 32.10 vs. 1566.76 ± 16.65 mm Hg/sec) ($P \leq 0.001$), -LV dp/dt (1208.81 ± 21.68 vs. 1172.49 ± 16.58 mm Hg/sec) ($P \leq 0.001$), and LVEDP. It also prevented the release of cardiac injury markers, i.e., CK-MB (672.28±36.99 VS. 515.00±17.32 U/L) ($P \leq 0.001$) and LDH (722.69±41.79 VS. 534.06±20.35 U/L) ($P \leq 0.001$) levels in serum, compared to the IR control group. Significant antioxidant properties were observed, as indicated by increased levels of GSH and SOD and a decrease in MDA. Histopathological analysis showed preserved morphological integrity. The TUNEL assay exhibited an anti-apoptotic effect and prevented DNA fragmentation. Also, inhibition of the MAP kinase and enhanced Nrf-2/HO-1 pathway were observed.

Discussion. LL shows protective effects against ischemia-reperfusion injury by modulating MAPK/Nrf-2/HO-1, and MAPK/NF-κBp65/TNF-α pathways, exhibiting anti-inflammatory, antioxidant, and anti-apoptotic properties, suggesting potential as a therapeutic agent for myocardial ischemia-reperfusion injury.

Verma VK et al (2020) Pharmacol Rep. 72(4):877-889.

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Simulated diastolic hypertension elevates cyclooxygenase-2 expression in rat vascular smooth muscle cells

Hiroki Sugiyama

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Simulated diastolic hypertension elevates cyclooxygenase-2 expression in rat vascular smooth muscle cells
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Introduction. Elevated diastolic blood pressure has been associated with increased cardiovascular risk in multiple reports, yet its specific role in the development of vascular pathology remains to be fully clarified. In vascular smooth muscle cells (VSMCs), stimulation with interleukin-1β (IL-1β) induces cyclooxygenase-2 (COX-2) expression via mitogen-activated protein kinase (MAPK) activation, leading to the production of vasodilatory prostanoids such as prostaglandin E_2 (PGE_2). Our previous study demonstrated that pulsatile pressure simulating systolic hypertension suppresses IL-1β-induced COX-2 expression in rat VSMCs.
Aims. This study aimed to investigate the effects of pulsatile pressure simulating diastolic hypertension on IL-1β-induced COX-2 expression and PGE_2 production in cultured VSMCs, in order to further clarify the pathophysiological mechanisms of diastolic hypertension.
Methods. VSMCs were isolated from the thoracic aorta of 6–7-week-old Wistar rats and cultured. Both primary and second-passage cells were used. Semi-confluent cells were stimulated with IL-1β (3 ng/mL) and exposed to pulsatile pressure (100–130 mmHg at 13 cycles/min) for a fixed duration. COX-2 protein and mRNA expression were assessed via Western blotting and RT-qPCR, respectively, and PGE_2 levels were quantified using ELISA.
Results. Twenty-four hours of pulsatile pressure significantly enhanced IL-1β-induced COX-2 mRNA and protein expression, as well as PGE_2 production. Additionally, pressure loading increased phosphorylation of extracellular signal-regulated kinase (ERK) and p38 MAPK 10 min post-IL-1β stimulation, without affecting c-Jun N-terminal kinase phosphorylation.
Discussion. Pulsatile pressure simulating diastolic hypertension augmented IL-1β-induced COX-2 expression and PGE_2 production. These findings suggest that pulsatile pressure may act as a mechanical amplifier of IL-1β signaling, selectively enhancing ERK and p38 MAPK phosphorylation in VSMCs. Future studies should focus on identifying the pressure-sensing mechanisms and delineating the associated signal transduction pathways.

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Adenosine Receptor Crosstalk: Functional Interplay of A1, A2A and A2B receptors

Mr Michael Sarhene

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Adenosine Receptor Crosstalk: Functional Interplay of A_1, A_{2A} and A_{2B} receptors

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Introduction: Adenosine receptors (A_1, A_{2A}, A_{2B} and A_3) are promising therapeutic targets for cardiovascular disease. While co-activation of A_1 and A_{2A}/A_{2B} can enhance cardiac protection (Urmaliya et al., 2009), the mechanisms underpinning these interactions require further investigation.
Aim: To evaluate whether heteromeric interactions between A_1R and A_{2A}R or A_{2B}R can influence A_1R pharmacology in HEK293 or FlpInCHO cells.
Methods: Radioligand binding, TRUPATH G protein BRET, calcium mobilization, and cAMP signaling assays were conducted to evaluate the influence of A_{2A}R and A_{2B}R ligands on A_1R pharmacology.
Results: A_{2B}R agonists (BAY 60-6583, MIPS3215) did not significantly influence A_1R binding affinity or A_1R-mediated Gαi activation. Similarly, cooperative interactions were not observed upon coincident activation of A_1R and A_{2B}R in calcium and cAMP assays. Interestingly, the A_{2A}R selective antagonist SCH58261 reduced A_1R agonist potency while increasing efficacy, indicating possible A_1R-A_{2A}R dimerization.
Discussion: This study indicates that A_1R pharmacology is not influenced by A_{2B}R activation in HEK293 or FlpInCHO cells. Conversely, interactions between A_1R and A_{2A}R are consistent with heterodimerization or shared signaling scaffolds. These findings underscore the context-dependent nature of GPCR crosstalk and suggest receptor-receptor interactions should be a consideration in adenosine-targeted drug discovery for cardiovascular diseases.

Urmaliya, V., et al. (2009) JCP 53:424-433

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Controversies on Statins health benefits and risk: Consensus is urgently needed

Dr Hundie Tesfaye

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Controversies on Statins health benefits and risk: Consensus is urgently needed

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Introduction. Cardiovascular disease (CVD) is the leading cause of death generally worldwide, while high plasma level of low-density lipoprotein (LDL) is considered one of the main risk factors for developing CVD. Statins are among the the most prescribed drugs aiming lipid lowering for millions worldwide.
Aims. Discuss the current controversy on statin health outcomes based on existing publications and generally declared belief that cholesterol concentrations should be lowest to reduce the risk of cardiovascular diseases.
Methods. Review of literatures complying with the topics, statins use benefits and hazards related and state of the art including patients compliance as well as using key-words statins and overall mortality and morbidity.
Results. Significant papers published since 1984 to June 2025 from intensively reviewed. Lipid lowering therapy has been the mainstay of cardiovascular risk reduction and prevention on the planet. Statin drugs have been shown to reduce serum cholesterol, but significant reduction in morbidity and mortality of cardiovascular disease or whether any such benefits are purely through lipid lowering or pleiotropic effects has yet to be fully understood. Despite the statin-therapy-mediated positive effects on cardiovascular events, patient compliance is often poor due statin-associated muscle symptoms (SAMS), which range from mild-to-moderate muscle pain to potentially life-threatening rhabdomyolysis. Mechanisms that underlie the pathogenesis of SAMS remain unclear, while recent findings suggest that statins are also associated with poor cognitive performance and diabetes.
Conclusions. There is a great deal of work to yet to be done to improve the state of the art, while avoiding simply advocating the baseless theory „the lowest is the best „in case of LDL. Researchers might think again, where to block the process of atherosclerosis rather than blood cholesterol levels alone. Overall, we have to take the statins health outcomes issue to scientific arena, not to irresponsible media networks confusing the public at large and patients in particular regarding devastation of patient- physician mutual trust.

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Electrophysiological characterization of pacing-induced maturation in Human iPSC-Derived Cardiomyocytes

Mr Ryushi Sato

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Electrophysiological characterization of pacing-induced maturation in Human iPSC-Derived Cardiomyocytes
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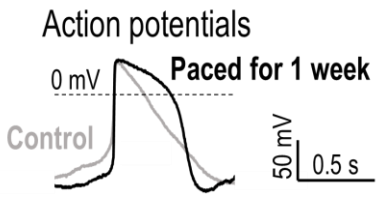

Introduction. Human induced pluripotent stem cell-derived cardiomyocytes (hiPS-CMs) hold significant promise for cardiac safety assessments in drug development. However, their immaturity poses a challenge in understanding pathophysiological mechanisms related to adult cardiac diseases.
Aims. This study focuses on the maturation of electrophysiological properties of hiPS-CMs using a bio-engineering technique through sustained electrical pacing.
Methods. Commercially available hiPS-CMs (iCell-CM[2], CDIJ, Fujifilm) were cultured to form 2D sheets on fibronectin-coated substrates. Electrical pacing (3.0 - 6.3 V/cm, 1 ms, 1 Hz) was applied for 1 week. Subsequently, cell sheets were enzymatically isolated, reseeded, and electrophysiological properties were investigated in patch-clamped myocytes.
Results. Pacing stimuli for 1 week significantly shifted the average maximum diastolic potential by 5.3 mV toward a more negative value and significantly prolonged action potential durations (APD_{50}) by 36% (control; n = 25, pacing; n = 34). In the voltage-clamp experiments, the pacing enhanced the I_{K1} currents and reduced the I_f currents. However, the L-type Ca^{2+} channel (LTCC) peak currents remained unchanged. Additionally, β-adrenergic stimulation with isoproterenol shifted the LTCC activation curve by 1.07 mV more in the pacing group compared to controls.
Discussion. These findings suggest improved electrophysiological maturity and enhanced drug responsiveness in human iPS cell-derived cardiomyocytes following sustained electrical pacing, supporting their utility in cardiac disease modeling and pharmacological testing.

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Mechanisms of inorganic phosphate-induced vascular calcification in human aortic smooth muscle cells

Dr Seungyeon Yeon

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Mechanisms of inorganic phosphate-induced vascular calcification in human aortic smooth muscle cells
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Introduction. Vascular calcification is associated with ageing, atherosclerosis and chronic kidney disease. It involves phenotypic modulation of vascular smooth muscle cells toward an osteogenic-like state, leading to calcium phosphate deposition. Elevated inorganic phosphate is a major driver of this process, but the associated molecular and pharmacological responses remain incompletely understood.
Aims. This study aimed to establish an inorganic phosphate/calcium-induced vascular calcification model in primary human aortic smooth muscle cells and characterise associated phenotypic, proteomic and pharmacological changes.
Methods. Primary human aortic smooth muscle cells were cultured under pro-calcifying conditions using inorganic phosphate and calcium chloride for up to 7 days. Cannabidiol was administered to assess its effect on calcification and phenotypic modulation. Calcium deposition was assessed using Alizarin Red S staining and cetylpyridinium chloride extraction, and cell viability was measured using the Alamar Blue assay. Expression of SM22α, smoothelin and RUNX2 was assessed by Western blotting. Label-free quantitative proteomics was used to investigate broader molecular changes.
Results. Inorganic phosphate and calcium chloride induced time-dependent calcification, accompanied by reduced cell viability at later time points. Calcification was associated with reduced contractile marker expression and increased osteogenic signalling, consistent with contractile-to-osteogenic phenotypic modulation. Proteomic analysis revealed extensive remodelling of cytoskeletal, extracellular matrix, metabolic and stress-response pathways. Cannabidiol further enhanced calcification-associated morphological changes and reduced SM22α expression, suggesting an influence on vascular smooth muscle cell phenotype under calcifying conditions.
Discussion. These findings demonstrate that inorganic phosphate and calcium chloride promote vascular calcification and phenotypic switching in primary human aortic smooth muscle cells. This model provides a translationally relevant platform for investigating vascular calcification mechanisms and pharmacological strategies targeting vascular smooth muscle cell phenotype.

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Effects of PUFAs and derivatives on human CB1 and CB2 receptors

Ms Atnaf A Abate

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Effects of PUFAs and derivatives on human CB1 and CB2 receptors

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Introduction. Polyunsaturated fatty acids (PUFAs) such as eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA), and gamma-linolenic acid (γ-LA) influence inflammation and neuronal signalling and are marketed as health supplements in defined ratios. PUFAs also serve as precursors for endocannabinoids, suggesting potential interactions with the endocannabinoid system (ECS). However, their role in modulating the ECS via CB1 and CB2 receptors are less well understood than classical endocannabinoids like anandamide (AEA) and 2-arachidonoylglycerol (2-AG).

Aim. To explore how PUFAs, their derivatives, and the 9:3:1 EPA:DHA:γ-LA ratio impact CB1 and CB2 activity.

Methodology. A membrane potential assay was performed in AtT-20 FlpIn TREx cells expressing hCB1/CB2 receptors with expression levels controlled by tetracycline. An empty vector control was also used. PUFAs and derivatives EC_{50} and E_{max} were compared to endocannabinoids and the operational model of agonism was used to determine ligand efficacy.

Results. The DHA metabolite docosahexaenoic ethanolamide (DHEA) activated CB1 receptors with pEC_{50} 5.22±0.1 and maximum response (E_{max}) 17±2%, while 2-AG, 2-AG ether, and AEA pEC_{50} were 6.29±0.47, 5.98±0.09, 5.79±0.13 and E_{max} were 32±3%, 38±3%, 33±3%, respectively. Efficacy (τ) in CB1 ranked 2-AG ether (9.0±1.9) and 2-AG (7.7±1.9) had similar efficacies, greater than AEA (5.5±1.9), and DHEA (1.8±0.8). DHEA did not affect CP55,940 (300nM) responses but its effect was abolished by pertussis toxin (PTX), indicating Gi/o protein involvement. At CB2, none of the PUFAs and derivatives had a response different from the control, while 2-AG had the highest E_{max} of 22±2% and τ of 5.7±1.5. At 30μM, some PUFA had effects which were altered by the selective blocker of KCNQ channels XE-991.

Discussion. Our results show that DHEA is a low efficacy and potency agonist of CB1, supporting previous claims that it is a weak agonist at rat CB1 (Paton et al., 2020). Most tested PUFAs and derivatives do not act on human CB1 and CB2 receptors but instead hyperpolarize AtT20 cells through receptor-independent mechanisms, suggesting alternative signalling pathways, possibly including KCNQ channel modulation. Further research is needed to explore these pathways

Paton KF et al (2020) Eur J Pain. 24:1990–1998.

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Microglia mitophagy endows resilience to stress induced cognitive rigidity

Miss Xinyu Zhou

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Microglia mitophagy endows resilience to stress induced cognitive rigidity

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Introduction. Dysfunctional autophagy in neural cells has been implicated as an early feature of neuropsychiatric vulnerability. Despite this association, the specific brain regions and cell types affected by autophagy abnormalities in these disorders, as well as the mechanisms underlying their dysregulation, remain poorly understood.

Aims. Here we investigated the neural code by monitoring autophagy dynamics in mice undergoing restraint stress to determine how sustained autophagy encodes resilience.

Methods. By performing in vivo two-photon fluorescence imaging to simultaneously track autophagy flux and neural activity patterns in stress-sensitive brain areas, we identified the autophagy-flux signature of susceptibility and resilience.

Results. Following exposure to environmental stress, mitochondrial autophagy was activated in microglia within the medial prefrontal cortex (mPFC) in resilient mice**.** By contrast, microglia were trapped in hyper-activation mode in susceptible mice, with autophagy impaired and mitochondria accumulating. Notably, this enhanced mitophagy appears to inhibit excessive synaptic phagocytosis by microglia, thereby counteracting the development of negative affective disorders. Preliminary findings suggest that the mitophagy receptor Bnip3l plays a crucial role in mediating this protective process. We hypothesize that microglia may prevent the degradation of Bnip3l by FBXL4 via activation of the P2X7 receptor, thus facilitating mitophagy.

Discussion. We propose that this mechanism acts as an intrinsic protective response against the impact of stress and suggest that boosting this pathway may prevent negative behavioral trajectories by restoring mitochondrial quality control.

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Meta-analysis of 5-HT3 Antagonists and Cannabidiol for Cisplatin-Induced Emesis in Suncus murinus

Ms Tao He

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Comparative Meta-analysis of 5-HT$_3$ Receptor Antagonists and Cannabidiol for Cisplatin-Induced Emesis in *Suncus murinus*

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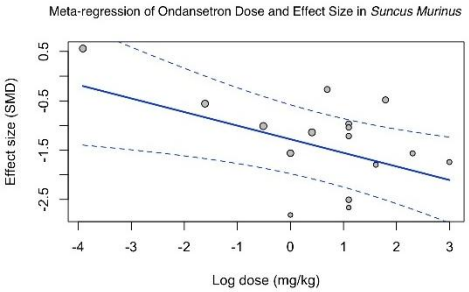

Introduction. Cisplatin-induced emesis is a significant adverse effect that limits chemotherapy tolerance. 5-HT$_3$ receptor antagonists and the cannabinoid, cannabidiol, are commonly used to attenuate emetic responses. However, quantitative comparative evidence among these compounds remains limited.

In this study, we conducted a random-effects meta-analysis followed by meta-regression analyses to estimate the anti-emetic efficacy of three 5-HT$_3$ receptor antagonists (ondansetron, granisetron, and tropisetron) and cannabidiol against cisplatin-induced emesis in *Suncus murinus*.

Aims. The meta-analysis aimed to compare the anti-emetic efficacy of 5-HT$_3$ receptor antagonists and cannabidiol and to determine whether 5-HT$_3$ receptor antagonists demonstrate superior efficacy in cisplatin-induced emesis.

Methods. A systematic search of published studies on cisplatin-induced emesis in *Suncus murinus* was performed, yielding forty relevant articles. Finally, we selected three 5-HT$_3$ receptor antagonists and cannabidiol, as they appeared most frequently across all studies. The emetic outcomes of cisplatin-induced emesis in the treatment groups with different doses and control groups were collected. The emetic outcomes included episodes, vomits, and combined retches and vomits (R+V). Studies that used other animal models, such as ferrets, or emesis not induced by cisplatin were excluded. Standardized mean differences (Hedges' g) were calculated for each independent comparison. Random-effects meta-analyses and meta-regression analyses were performed. Forest plots and meta-regression plots were generated using R 4.5.1. P-values < 0.05 were considered significant. Data were shown as mean ± SD.

Results. A total of 46 experimental comparisons (n = 377 animals) were included. Under the random-effects model, ondansetron significantly reduced cisplatin-induced emetic responses (SMD = −1.17, 95% CI −1.63 to −0.70, $p < 0.0001$; $I^2 = 41.1\%$), and the results of the meta-regression analysis suggested a dose–response relationship (coefficient = −0.34, p = 0.051). Significant decreases in emetic outcomes following treatment were found in tropisetron (SMD = −1.30, 95% CI −1.72 to −0.89, $p < 0.0001$) and granisetron (SMD = −1.11, 95% CI −1.44 to −0.78, p = 0.0003) groups, with extremely low heterogeneity ($I^2 = 0\%$). No significant pooled effect was observed for cannabidiol (SMD = −0.41, 95% CI −1.06 to 0.25, p = 0.20; $I^2 = 58.5\%$).

Discussion. This meta-analysis demonstrates that 5-HT$_3$ antagonists consistently and significantly decrease cisplatin-induced emesis in *Suncus murinus*, especially ondansetron, which showed evidence of dose-dependent effects. Conversely, cannabidiol failed to demonstrate a robust pooled effect in the analyzed studies.

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The effect of Sacubitril/Valsartan on mood and cognition among heart failure patients

Dr Raya Al Maskari

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

The effect of sacubitril/valsartan on mood and cognition among patients with heart failure

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Introduction. Heart failure with reduced ejection fraction (HFrEF) is associated not only with physical limitations but also with significant neuropsychological burden, including cognitive impairment, mood disturbances, and reduced quality of life. While sacubitril/valsartan has demonstrated cardiovascular benefits, its effects on cognitive and emotional functioning remain underexplored, particularly in Middle Eastern populations. This study aimed to evaluate the impact of sacubitril/valsartan on intellectual capacity, cognitive function and mood in patients with HFrEF using an idiographic longitudinal design.

Methods. This study was conducted in patients with HFrEF (≥ 18 years) selected to take sacubitril/valsartan to improve their clinical status. Participants were assessed at baseline and 3 months after the initiation of treatment. Assessments included the Al Khoudh Cognitive Test to evaluate cognitive domains, the PHQ-9 to assess depressive symptoms and Raven's Progressive Colored Matrices to screen for abstract reasoning and exclude intellectual disability.

Results. Following three months of treatment with sacubitril/valsartan, participants showed a significant improvement in left ventricular ejection fraction (LVEF) (P=0.043; Cohen's d=0.49), a significant reduction in depression severity (P= 0.025; r = 0.71) and an improvement in abstract reasoning (P=0.051; Cohen's d=0.36). On the other hand, participants did not demonstrate significant improvements in the cognitive subdomains assessed by the Al Khoudh Test. Among these subdomains, the largest improvement was observed with verbal fluency (P=0.057, r=0.406). One-way ANOVA showed that the improvement in LVEF was not significantly associated with the improvements in mood (F=0.0093, P=0.93, Partial η^2=0.0012), cognitive function (F=0.987, P=0.34, Partial η^2=0.076) or verbal fluency (F=0.597, P=0.46, Partial η^2 = 0.069).

Discussion. This study provides preliminary evidence that sacubitril/valsartan may yield improvements in mood, cognition and verbal fluency in patients with HFrEF. Notably, these psychological and cognitive changes were not attributed to the observed improvements in cardiac function. These findings underscore the need for further investigation into the psychosocial and neurocognitive benefits of sacubitril/valsartan in larger and more diverse populations.

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Therapeutic Drug Monitoring and pharmacogenetics: Towards personalized medicine in neuropsychopharmacology

Prof Rim Charfi

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Therapeutic Drug Monitoring and pharmacogenetics: Towards personalized medicine in neuropsychopharmacology

Safa Souissi[1,2], Syrine Ben Hammamia[1,2], Khouloud Ferchichi[1,2], Mouna Ben Sassi[1,2], Mouna Daldoul[1,2], Hanene El Jebari[1,2], Mohamed Zouari[1,2], Rim Charfi[1,2], Issam Salouage[1,2], Riadh Daghfous[1,2], Emna Gaies[1,2], Sameh Trabelsi[1,2]Department of Clinical Pharmacology, National Center Chalbi Belkahia of Pharmacovigilance[1], Tunis, Tunisia; Research Laboratory 'Pharmacologie Clinique et Expérimentale' LR16SP02[2], Tunis, Tunisia.

Introduction. Therapeutic drug monitoring (TDM) and pharmacogenetics (PGx) are considered reliable tools for personalizing drug prescriptions in neuropsychiatry. While TDM can help define a patient's metabolic phenotype, identify issues with drug adherence, or show the effects of certain drug-drug interactions, combining TDM and PGx is useful for optimizing therapy.

Aims. This brief overview is based on a synthesis of data from current literature addressing personalized medicine in neuropsychopharmacology.

Methods. Literature search was performed using databases including PubMed, ScienceDirect and using the following keywords: 'personalized medicine', 'therapeutic drug monitoring', 'pharmacogenetics' and 'neuropsychopharmacology'.

Results. Due to the widespread inappropriate use of TDM in neuropsychiatry, the Arbeitsgemeinschaft für Neuropsychopharmakologie und Pharmakopsychiatrie (AGNP) issued its first guidelines in 2004. These guidelines, which included recommendations for genotyping, were updated in 2011 to cover 128 drugs and were revised again in 2017. In these guidelines, the AGNP elaborated dose-related reference range and established specific indications for TDM. They also defined metabolite-to-parent compound ratios for some psychoactive drugs, such as clomipramine, fluoxetine or risperidone. For these drugs, TDM must include the quantification of active metabolites, as they actively contribute to the overall clinical effect (Hiemke C, et al. 2018). TDM is strongly recommended for typical (first-generation) antipsychotic drugs like haloperidol, and for atypical antipsychotics (second-generation) like amisulpride, clozapine, olanzapine, and risperidone. It is also strongly recommended for most tricyclic antidepressants (Hiemke C, et al. 2018). For benzodiazepines, anxiolytic and hypnotic effects are immediate, so treatment can be guided by clinical impression rather than by TDM. However, in certain cases, TDM may clarify whether a lack of response was due to drug abuse (which led to tolerance), or pharmacokinetic abnormalities (Hiemke C, et al. 2018). The guidelines also provide recommendations for when to combine TDM with pharmacogenetic tests, as the clinical importance of PGx in the pharmacokinetics and pharmacodynamics of psychoptropic drugs is increasingly recognised. The clinical relevance for CYP isoenzymes and P-glycoprotein (P-gp) has been demonstrated. For neuropsychopharmacological drugs, the most important isoenzymes are CYP1A2, CYP2B6, CYP2C8, CYP2C9, CYP2C19, CYP2D6, CYP2E1 and CYP3A4/5 (Zanger UM, et al. 2013). For antidepressant drugs that are substrates of P-gp, a genotype-dependent association with drug response has been found (Biernacka JM, et al. 2016). While UDP-glucuronosyltransferases also display genetic polymorphism, their clinical relevance in pharmacopsychiatry is currently unclear (Stingl JC, et al. 2014).

Discussion. Combining information from both TDM and genotyping should greatly facilitate the identification and appropriate management of individuals who are prone to excessively high or low plasma concentrations of psychotropic agents.

Biernacka JM, et al. The International SSRI Pharmacogenomics Consortium (ISPC): A genome-wide association study of antidepressant treatment response. Transl Psychiatry 2016

Hiemke C, et al. Consensus Guidelines for Therapeutic Drug Monitoring in Neuropsychopharmacology: Update 2017. Pharmacopsychiatry. 2018

Stingl JC, et al. Relevance of UDP-glucuronosyl transferase polymorphisms for drug dosing: A quantitative systematic review. Pharmacol Ther 2014

Zanger UM, et al. Cytochrome P450 enzymes in drug metabolism: Regulation of gene expression, enzyme activities, and impact of genetic variation. Pharmacol Ther 2013

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Therapeutic Drug Monitoring for Mood Stabilizers

Prof Rim Charfi

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Therapeutic Drug Monitoring for Mood Stabilizers

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Introduction. Therapeutic drug monitoring (TDM) is strongly recommended for mood stabilizing drugs like lithium, carbamazepine, lamotrigine and valproic acid, as therapeutic reference ranges and toxic levels were well defined.
Aims. This brief overview is based on a synthesis of current evidence and consensus recommendations on TDM for mood stabilizers.
Methods. Literature search was performed using databases including PubMed, ScienceDirect and using the following keywords: 'therapeutic drug monitoring', 'mood stabilizers' and 'neuropsychopharmacology'.
Results. TDM has been established as standard of care for lithium. The recommended plasma levels are 0.5-0.8 mmol/L for maintenance treatment, with concentrations up to 1.2 mmol/L being acceptable during acute treatment with lithium (Sharma S, et al. 2009). In contrast, while lamotrigine is often considered to have a superior safety profile compared to lithium for bipolar disorder, the Arbeitsgemeinschaft für Neuropsychopharmakologie und Pharmakopsychiatrie (AGNP) guidelines acknowledge that there are no established plasma level target range for lamotrigine's mood-stabilizing effects. Nonetheless, they do recommend TDM for lamotrigine and suggest a reference range of 1–6 µg/mL, further recommending concentrations above 3.25 µg/mL in patients with treatment-resistant depression (Kagawa S, et al. 2014). For carbamazepine, a therapeutic range of 4–10 µg/mL is recommended (Biernacka JM, et al. 2016), which is slightly narrower than that recommended in epilepsy (4–12 µg/mL). For valproic acid, the recommended plasma levels are 50–100 µg/mL, the same as what is suggested for monitoring its anticonvulsant effects. In certain patients, concentrations up to 120 µg/mL may also be tolerated during acute mania (Haymond J, et al. 2010).
Discussion. TDM for these mood stabilizing drugs is fundamental for optimizing clinical outcomes and minimizing adverse reactions in the management of mood disorders. Therefore, further clinical studies are warranted to refine therapeutic reference ranges of these drugs.

Biernacka JM, et al. The International SSRI Pharmacogenomics Consortium (ISPC): A genome-wide association study of antidepressant treatment response. Transl Psychiatry 2016
Haymond J, et al. Does valproic acid warrant therapeutic drug monitoring in bipolar affective disorder? Ther Drug Monit 2010
Kagawa S, et al. Relationship between plasma concentrations of lamotrigine and its early therapeutic effect of lamotrigine augmentation therapy in treatment-resistant depressive disorder. Ther Drug Monit 2014
Sharma S, et al. Therapeutic drug monitoring of lithium in patients with bipolar affective disorder: Experiences from a tertiary care hospital in India. Am J Ther 2009

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Pediatric neuropsychopharmacology: Addressing the challenges of Therapeutic Drug Monitoring

Prof Rim Charfi

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Pediatric neuropsychopharmacology: Addressing the challenges of Therapeutic Drug Monitoring
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Introduction. Therapeutic drug monitoring (TDM) is a critical tool for optimizing drug therapy in neuropsychopharmacology. However, the implementation of TDM in the pediatric population is challenging.
Aims. This brief overview is based on a synthesis of data from current literature addressing the challenges of TDM in pediatric neuropsychopharmacology.
Methods. Literature search was performed using databases including PubMed, ScienceDirect and using the following keywords: 'therapeutic drug monitoring', 'pediatrics' and 'neuropsychopharmacology'.
Results. Many neuropsychiatric drugs are not approved for use in children or adolescents, resulting in widespread off-label use and lack of standardized dosing and safety profiles. Consequently, TDM is often conducted using reference ranges extrapolated from adult studies, as pediatric-specific data correlating drug concentrations with therapeutic response or adverse drug reactions remains scarce (Hiemke C, et al. 2018). Nevertheless, several studies have demonstrated similar therapeutic reference ranges for children/adolescents and adults for drugs like sertraline (10–150 ng/mL) (Taurines R, et al. 2013) and aripiprazole (100–350 ng/mL) (Pozzi M, et al. 2016). Conversely, for most drugs like quetiapine, risperidone or clozapine, a significant interindividual variability in drug concentrations has been observed in pediatric patients. Preliminary evidence suggest that the therapeutic reference range for clozapine may be lower in children and adolescents compared to adults (Wohkittel C, et al. 2016). This variability stems from age-dependent changes in cytochrome P450 enzyme expression, as well as transporters and changes in body composition (Pichini S, et al. 2009). These developmental changes in pharmacokinetics suggest that dosing regimens in pediatrics cannot be directly extrapolated from data obtained in adults. Furthermore, preliminary TDM studies in pediatric neuropsychiatry have yielded divergent results, and there were inconsistencies in analytical assays and study designs across literature. This makes it challenging to standardize findings and accurately interpret concentration-response relationships. A final challenge is that sampling procedures for TDM are often invasive and inconvenient for pediatric patients.
Discussion. The relative lack of clinical trials in pediatric neuropsychopharmacology and the resultant off-label use of many drugs could lead to a higher risk of dosing errors and adverse drug reactions. Addressing these issues through standardized guidelines can make TDM a promising tool for personalizing drug therapy in this population.

Hiemke C, et al. Consensus Guidelines for Therapeutic Drug Monitoring in Neuropsychopharmacology: Update 2017. Pharmacopsychiatry. 2018
Pichini S, et al. Pharmacokinetics and therapeutic drug monitoring of psychotropic drugs in pediatrics. Ther Drug Monit 2009

Pozzi M, et al. Therapeutic drug monitoring of second-generation antipsychotics in pediatric patients: An observational study in real-life settings. Eur J Clin Pharmacol 2016
Taurines R, et al. The relation between dosage, serum concentrations, and clinical outcome in children and adolescents treated with sertraline: A naturalistic study. Ther Drug Monit 2013
Wohkittel C, et al. Relationship between clozapine dose, serum concentration, and clinical outcome in children and adolescents in clinical practice. J Neural Transm (Vienna) 2016

P489

Central venous catheter misplacement leading to inadvertent propofol administration

Prof Rim Charfi

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Central venous catheter misplacement leading to inadvertent propofol administration

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Introduction. Central venous catheters provide reliable vascular access for the administration of medications and parenteral nutrition. However, malposition of these catheters can lead to various complications, potentially resulting in significant morbidity, increased mortality, and higher healthcare costs (Kapadia CB, et al. 1988). Among severe complications, transverse sinus rupture is exceptionally rare and only scarcely reported in the literature.

Aims. We report a case of a patient who developed a severe complication related to central venous catheter malposition during a neurosurgical procedure, and we describe the potential neurotoxic effects associated with inadvertent propofol administration.

Methods. Pharmacological analysis of the extradural fluid was performed by the Clinical Pharmacology Department using high-performance liquid chromatography (HPLC).

Results. We report the case of a 75-year-old female patient who developed severe hemodynamic instability during resection of an intraventricular tumor, attributed to a central venous catheter malposition. A double-lumen catheter, inserted into the right subclavian vein under ultrasound guidance, was used for propofol infusion at 2–3 mg/kg/h. During tumor resection, the appearance of a whitish extradural fluid associated with significant bleeding raised suspicion of propofol extravasation secondary to catheter malposition, with probable injury to the transverse sinus. Immediate discontinuation of propofol administration via the central venous catheter and switching to a peripheral venous line resulted in rapid hemodynamic stabilization. Pharmacological analysis confirmed that the composition of the collected fluid corresponded to the intravenous fluids and medications administered through the catheter. The measured propofol concentration in the sample was 3.86 mg/mL.

Discussion. This case underscores the importance of verifying correct positioning of central venous catheters before administering medications, particularly agents such as propofol. The neurotoxic effects of propofol are thought to involve at least two mechanisms: mitochondrial dysfunction leading to neuroapoptosis, and disruption of the blood–brain barrier integrity (Kajimoto M, et al. 2014).

Kajimoto M, et al. Propofol compared with isoflurane inhibits mitochondrial metabolism in immature swine cerebral cortex. J Cereb Blood Flow Metab. 2014

Kapadia CB, et al. Delayed recognition of vascular complications caused by central venous catheters. J Clin Monit. 1988

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The influence of ligand-binding kinetics on the signalling bias of xanomeline

Ms Melitta Allen

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

The influence of ligand-binding kinetics on the signalling bias of xanomeline

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Introduction. G protein-coupled receptors (GPCRs) are highly dynamic proteins, adopting distinct conformations dependent upon bound ligands. The ability of different agonists to stabilise specific GPCR conformations can result in preferential activation of specific signalling pathways, termed biased agonism. Interestingly, the interpretation of bias can be influenced by ligand-binding kinetics and temporal regulation of signalling. Whilst the therapeutic potential of biased agonism is increasingly recognised, the biased profiles of clinical candidates are rarely assessed. An example of this is Cobenfy™, a first-in-class coformulation that was recently approved for the treatment of schizophrenia. Xanomeline, the active agent of Cobenfy™, is an M1/M4 muscarinic receptor (mAChR) agonist that is metabolised into potentially active derivative compounds such as xanomeline N-oxide and N-desmethyl xanomeline. Given the approval of Cobenfy™, it remains integral to characterise the activity of xanomeline and its metabolites at the mAChRs.
Aims. To characterise the potential biased profile of xanomeline and its metabolites (xanomeline N-oxide and N-desmethyl xanomeline) at the M1/M4 mAChRs.
Methods. Ligand-mediated M1/M4 mAChR activation was quantified in G protein activation, β-arrestin recruitment and downstream responses, such as calcium mobilisation and cyclic-AMP production. Subsequent biased factors were quantified compared to acetylcholine (endogenous ligand) and $G\alpha_{i1}$ protein pathway.
Results. Relative to acetylcholine, xanomeline and its metabolites demonstrated distinct signalling patters at the M1 and M4 mAChRs, suggesting the novel antipsychotic Cobenfy™ and its metabolites may act as biased agonists.
Discussion. The time-dependent alterations in the biased profile of xanomeline and its metabolites emphasises the necessity of acknowledging kinetics when designing and interpreting biased agonism. Collectively, this broadened understanding of how M1/M4 agonists interact with the mAChRs contributes to the growing understanding of the therapeutic activity of first-in-class antipsychotic xanomeline.

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High-dose long-term Ambroxol treatment in Lewy body disease - a case report

Prof Baiba Jansone

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

High-dose long-term Ambroxol treatment in Lewy body disease - a case report

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Introduction. High-dose Ambroxol (AMX) treatment has been proven to improve neuronal health in alpha-synucleinopathies, like Lewy body disease (LBD) (Erskine et al, 2025). LBD is one of the commonest neurodegenerative diseases, with markedly decreased life expectancy; therefore, real-life reports of long-term high-dose AMX use and effect on the natural course of the disease are critically important.
Aims. To report the safety and disease-modifying effect of long-term high-dose AMX treatment in LBD patient.
Methods. A case study was performed; a qualitative, clinically descriptive method was used to present and analyse medical data (anamnesis, clinical assessment, Moca test, laboratory and neuroradiological findings).
The study was performed in line with the Declaration of Helsinki and approved by the Ethics Committee of the University of Latvia. Full written informed consent was obtained from the participant.
Results. The patient (previously healthy GBA mutation carrier, with multiple risk factors and harbingers) was diagnosed with LBD at the age of 70. Treatment with AMX (orally up to 1.2 g daily) and antiparkinsonian medications (levodopum + benserazidum) was initiated. MoCA test repeatedly indicated mild cognitive impairment. At the three-year follow-up after the initial diagnosis, the patient reported a reduction in visual hallucinations, fluctuations, and improvement in motor symptoms. No any AMX side effects were detected. But within the next 6 months after the last comprehensive assessment, the disease progressed rapidly: the patient developed a sharp decline in cognition and self-care abilities, constant confusion and hallucinations, stiffness and inability to walk. AMX was discontinued. The patient deceased at the age of 73 with pressure injury-induced sepsis after 3,5 years of the diagnosis.
Discussion. AMX 1,2 g daily during 3 years was a safe, well-tolerated, and effective treatment for the initial stage of LBD; AMX slowed the progression of the LBD; AMX did not increase life expectancy in GBA mutation carrier. AMX treatment during the predementia stage for high-risk individuals remains a question for future studies.

Erskine, D., & Taylor, J. P. (2025). Mol. neurodegener, 20(1), 78.

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Unravelling the Biased Agonism of novel M1 and M4 mAChR agonists

Dr Vi Pham

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Unravelling the Biased Agonism of Novel M1 and M4 mAChR Agonists

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Introduction. The recent FDA approval of the atypical and biased antipsychotic xanomeline (Cobenfy™) has clinically validated M1 and M4 muscarinic acetylcholine receptors (mAChRs) as therapeutic targets for neuropsychiatric disorders. Compound 110 (C-110), a novel atypical agonist, binds to the M4 receptor in a mode comparable to xanomeline and demonstrated antipsychotic efficacy with minimal side effects in preclinical schizophrenia model (Wang J, 2022, Nat Commun 13:2855). In an effort to identify additional potential biased agonists with similar profiles across diverse signalling pathways, we synthetised and evaluated four analogues of C-110: MIPS4137, MIPS4139, MIPS4140 and MIPS4254.

Aims. To characterise the bias signalling profiles of C-110 analogues at the M1 and M4 mAChRs.

Methods. We quantified the transduction ratios, Log(τ/K_A), of all selected ligands across a range of G protein activation, GRK2 and βArrestin2 recruitment, receptor trafficking and second messenger signalling pathways.

Results. Relative to the endogenous agonist ACh and Gαi1/Gq activation, MIPS4254 displayed a significant 50-fold bias towards Gαs and 500-fold away from receptor internalisation (CAAX) at the M4 mAChR. At the M1 mAChR, MIPS4254 was significantly biased towards CAAX and away from pERK1/2. Additionally, MIPS 4140 showed no bias at the M4 receptor, but was biased towards GRK2 recruitment and CAAX at the M1 receptor.

Discussion. We identified several novel biased ligands towards distinct signalling pathways which are different from xanomeline and C-110 profiles. These compounds provide valuable chemical tools to assess the role of specific signalling pathways in mediating the therapeutic effects of M1/M4 agonists in animal models of schizophrenia and may help unlock the full therapeutic potential of the muscarinic receptors.

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Analysis of the impact of lipid flippase dysfunction on Alzheimer's disease pathology

Mr Atsuya Ikeda

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Analysis of the impact of lipid flippase dysfunction on Alzheimer's disease pathology

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Introduction. Amyloid β (Aβ) accumulates and aggregates in the brains of patients with Alzheimer's disease (AD), and it is believed that this contributes to the neurotoxicity and pathogenesis of AD (the amyloid hypothesis). However, developing AD therapeutics that target Aβ toxicity has proven challenging, highlighting the need to elucidate Aβ-independent mechanisms that can complement the amyloid hypothesis. Impaired vesicular transport in the early stages of AD has recently emerged as a promising new mechanism that could complement current AD pathogenesis hypotheses and be fundamental to disease onset. This pathology emerges prior to Aβ accumulation in the brains of patients and is implicated in metabolic alterations of the amyloid precursor protein (APP). Nevertheless, many aspects of this process remain unclear, including its molecular mechanisms. Nevertheless, many aspects of its molecular mechanisms remain unclear. Lipid flippases, composed of TMEM30A and P4-ATPase family proteins, regulate vesicular transport by forming asymmetric lipid bilayers. Our laboratory has demonstrated that reduced flippase activity caused by the interaction between the Aβ precursor βCTF and TMEM30A leads to impaired transport.
Aims. The aim of this study was to analyse in detail the impairment of vesicular transport and the metabolic changes of APP caused by altered lipid flippase activity, and to elucidate the mechanism and its relationship to the pathological state.
Methods. The expression of lipid flippase components was reduced via RNAi-mediated knockdown, after which levels of APP and its metabolites were analysed. Analysis of the impact on vesicular transport dysfunction is also underway.
Results. Reduced expression of lipid flippase components resulted in a decrease in full-length APP levels and an increase in extracellular Aβ.
Discussion. It has been suggested that reduced lipid flippase activity may regulate APP metabolism. Elucidating the molecular mechanisms underlying changes in APP metabolism and their association with vesicular transport dysfunction is expected to clarify the relationships between AD pathologies and lead to the development of novel AD therapies.

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The Role of Striatal and Hippocampal Neurocircuitry on Stroke Recovery

Assoc Prof Chrismawan Ardianto

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

The Modulation of Striatal and Hippocampal Neurocircuitry on Stroke Recovery by EPO

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Introduction. Ischemic stroke accounts for more than 80% of all stroke cases and leads to neuronal damage accompanied by motor and sensory deficits. Erythropoietin (EPO) has been widely recognized for its neuroprotective properties, and the melanocortin system has been implicated in neuroprotection following ischemic injury (Ponce et al, 2013; Spaccapelo et al, 2011).
Aims. This study aimed to investigate the effect of EPO on the melanocortin pathway in a mouse model of ischemic stroke.
Methods. Male mice were used. Ischemic stroke was induced by unilateral common carotid artery occlusion (UCCAO). EPO at doses of 5.000 and 10.000 IU/kg i.p. was administered 2 hours after induction. Motor and sensory function were assessed using ladder rung walking, narrow beam walking, and the adhesive removal tape test. MC4R mRNA expression in the dorsal striatum and hippocampus was measured.
Results. UCCAO induced significant motor and sensory impairments in mice. Treatment with EPO significantly improved motor and sensory performance. Stroke increases MC4R mRNA expression in the dorsal striatum, which was significantly suppressed by EPO treatment.
Discussion. The present study demonstrates that unilateral common carotid artery occlusion (UCCAO) induces ischemic stroke, which is dose-dependently improved by EPO. Increased MC4R expression after stroke may reflect a compensatory neuroprotective response, whereas its reduction following EPO treatment may indicate decreased neuronal damage and inflammation.

Ponce LL et al (2013) Pathophysiology 20:31–38.
Spaccapelo L et al (2011) Eur J Pharmacol 670:479–486.

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Dehydroepiandrosterone sulfate mediates spinal motor axon outgrowth via Znf179-dependent mechanisms

Prof Tzu-jen Kao

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Dehydroepiandrosterone sulfate mediates spinal motor axon outgrowth via Znf179-dependent mechanisms
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Introduction. Neurosteroids have gained more attention in pharmacology due to their modulatory effects on neuronal survival, plasticity, and regeneration. Dehydroepiandrosterone sulfate (DHEAS) is an endogenous neuroactive steroid reported to exert neurotrophic actions, yet the intracellular mediators responsible for its growth-promoting effects in neurons remain unclear.
Aims. This study aimed to characterize the pharmacological effects of DHEAS on axon outgrowth of spinal motor neurons and to determine whether the zinc finger protein Znf179 functions as a critical intracellular mediator of DHEAS-induced neuronal growth.
Methods. Lateral motor column (LMC) motor neurons of chick e5 lumbar spinal cords were analyzed using both in vitro and in vitro approaches. Neurons were treated with DHEAS, combined with either Znf179 overexpression or siRNA-mediated knockdown. Neurite outgrowth was quantified by average neurite length in cultured neurons, while axon outgrowth in vivo was assessed by measuring the length of GFP-labeled motor axons in dorsal and ventral trajectories.
Results. DHEAS treatment significantly enhanced neurite outgrowth in cultured spinal motor neurons. This pharmacological effect was markedly reduced by Znf179 knockdown, indicating that Znf179 is required for DHEAS-induced neuritogenesis. Znf179 overexpression alone mimicked the growth-promoting effect of DHEAS. In vivo, DHEAS increased spinal motor axon length without altering dorsoventral axon distribution, suggesting a selective effect on axon elongation rather than guidance. Importantly, suppression of Znf179 significantly attenuated DHEAS-enhanced axon outgrowth in both dorsal and ventral pathways, while GFP signal proportions remained unchanged.
Discussion. These findings identify Znf179 as a key intracellular effector mediating the pharmacological actions of DHEAS on motor neuron growth. The data suggest that DHEAS promotes neurite and axon elongation through a defined molecular pathway rather than nonspecific trophic stimulation. Targeting the DHEAS–Znf179 axis may represent a novel pharmacological strategy for enhancing motor neuron regeneration and functional recovery.

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Baicalin Ameliorates Prenatal Stress-Induced Depressive-Like Behavior in Offspring via Targeting Glucocorticoid Receptor

Dr Qian Zhou

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Baicalin Ameliorates Prenatal Stress-Induced Depressive-Like Behavior in Offspring via Targeting Glucocorticoid Receptor

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Introduction. Prenatal stress is a pivotal environmental risk factor for increased depression susceptibility in offspring, via impairing the placental glucocorticoid barrier and inducing neurodevelopmental disorders. Baicalin, a major active flavonoid in *Scutellaria baicalensis* Georgi, exerts potent antidepressant and neuroprotective effects, but its therapeutic efficacy and mechanisms against prenatal stress-induced offspring depression remain unclear.

Aims. This study aimed to investigate the therapeutic effects and mechanisms of baicalin on prenatal stress-induced depression-like behavior in offspring (mouse model), focusing on the glucocorticoid receptor (GR)-mediated pathway.

Methods. Pregnant mice underwent restraint stress (gestational day 12 to parturition) with concurrent baicalin administration (50, 100 mg/kg/day). At postnatal week 6, offspring depression-like behavior was evaluated via sucrose preference test (SPT), open field test (OFT), tail suspension test (TST), and forced swimming test (FST). Morphological (HE/Nissl/Golgi staining), biochemical (ELISA), and molecular assays (Western blotting, IHC/IF, molecular docking, siRNA silencing) were used to assess neuronal structure, hormone/neurofactor levels, and protein expression.

Results. Baicalin ameliorated depressive-like behaviors in prenatal stress-exposed offspring as reflected by SPT/OFT/TST/FST changes. Molecular and cellular assays confirmed GR is the direct functional target of baicalin. Baicalin upregulated GR expression in the placenta and hippocampus, restored 11β-hydroxysteroid dehydrogenase 1 (11β-HSD1)/11β-HSD2 balance, reversed hypothalamic-pituitary-adrenal (HPA) axis hyperactivity (reduced corticotropin-releasing hormone, adrenocorticotropic hormone, corticosterone), and elevated BDNF and 5-HT levels. Baicalin also restored hippocampal neuronal morphology, enhanced dendritic spine density, and upregulated doublecortin and postsynaptic density protein 95 expression, reversing neurodevelopmental impairment.

Discussion. Our findings demonstrate that baicalin ameliorates prenatal stress-induced depression-like behavior in offspring by directly targeting GR, protecting the placental glucocorticoid barrier, normalizing HPA axis and neurotrophic/serotonergic systems, and reversing hippocampal neurodevelopmental impairment. This study provides a novel potential strategy for preventing and treating prenatal stress-related neuropsychiatric disorder.

P497

Generation and characterization of conditional GRIM-19 knockout mice: implications for depression

Prof Seong Yun Kim

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Generation and characterization of conditional GRIM-19 knockout mice: implications for depression

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Introduction. Gene associated with retinoid-interferon-induced mortality-19 (GRIM-19) is a subunit of the mitochondrial respiratory chain complex I, required for mitochondrial ATP production. In a previous study, we showed that GRIM-19 was highly expressed in the immature and mature neurons in the granular cell layer but weakly expressed in the subgranular layer of the hippocampus, which is rich in neural stem and progenitor cells.
Aims. We generated conditional *GRIM-19* knockout mice to investigate the effect of GRIM-19 deficiency on the brain.
Methods. We conditionally knocked out *GRIM-19* in mature granule cells in the dentate gyrus of the hippocampus using the calcium/calmodulin-dependent protein kinase II alpha-Cre (*Camk2α-Cre*) system. The offspring of the *Camk2α-Cre*$^{+}$;*GRIM-19*$^{fl/+}$ x *Camk2α-Cre*$^{-}$;*GRIM-19*$^{fl/fl}$ combinations were divided into three groups based on the genotypic analysis results: control group (*Camk2α-Cre*$^{-}$;*GRIM-19*$^{fl/fl}$, C*amk2α-Cre*$^{-}$;*GRIM-19*$^{fl/+}$), heterozygous *GRIM-19* knockout group (*Camk2α-Cre*$^{+}$;*GRIM-19*$^{fl/+}$), and homozygous GRIM-19 knockout group (*Camk2α-Cre*$^{+}$;*GRIM-19*$^{fl/fl}$). When the mice were 5 weeks old, tamoxifen (100 mg/kg, 0.05 ml/10 g) was administered intraperitoneally to the three experimental groups for 5 days. The mice were sacrificed at 10 weeks of age and the experiments were performed.
Results. Western blot analysis revealed a significant decrease in GRIM-19 protein expression in the homozygous group compared to the control group. Fluorescent immunohistochemical staining of the dentate gyrus revealed a significant decrease in the expression of both GRIM-19 and calbindin, an adult neuronal marker, in the homozygous group. In the open-field test, the homozygous group showed a significant decrease in the time spent in the inner zone and the distance traveled compared to the control group, whereas these decreases were not observed in the heterozygous group, suggesting that the homozygous group exhibited depressive behavior.
Discussion. In this study, we demonstrated that *Camk2α*-specific *GRIM-19* conditional knockout mice exhibited reduced calbindin expression in the dentate gyrus as well as depression-related behaviors in adult mice, suggesting the possible involvement of GRIM-19 in the maturation of dentate granule cells and depression-related disorders.

P498

Polyherbal Formulation Mitigates MPTP-Induced Parkinson's Disease: Behavioral and Biochemical Insights

Prof Urmila Aswar

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Therapeutic Potential of a Polyherbal Formulation Against MPTP-Induced Parkinson's Disease: An Integrated Behavioral and Biochemical Study

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Introduction: Parkinson's disease (PD) is a progressive neurodegenerative disorder characterized by motor dysfunction and associated non-motor symptoms. The available treatments are very less with numerous side effects. There is a need to find treatment drug which is less toxic and effective. polyherbal formulations (PHF) were formulated by using hydroalcoholic extract of *Bacopa monnieri*, *Convolvulus prostrates*, *Asparagus racemosus,* and *Nigella sativa*. These plant extracts were selected on the basis of haloperidol induced catalepsy models in swiss albino mice. Similarly, *in-vitro* antioxidant activity was performed by the method of DPPH and ABTS assay. The chemical induced 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP) is most commonly used studied animal model for PD.

Aims: To investigate the effect of PHF on MPTP induced PD in C57BL/6 mice.

Methods: Female C57BL/6 mice (25-30g) were procured and administered with the MPTP (25mg/kg i.p.) for 5 days. These animals were classified into the six groups and treated with the vehicle, PHF 100, 150 & 200 mg/kg (p.o.) and standard bromocriptine 5 mg/kg (p.o.) for the 15 days. At the end of the treatment various behavioural parameters such as rota-rod, hanging wire, grip-strength, catalepsy and foot print analysis were carried out. Animals were sacrificed after 15 days brain was removed and used for the estimation of dopamine, 3, 4-dihydroxyphenylacetic acid (DOPAC), homovanillic acid (HVA) are major marker for the PD. Levels of ATP and oxidative stress marker were carried out. The brain tissue sample was also studied for the MAO-B enzyme inhibition activity. Histopathological examination using hematoxylin & eosin (H&E) and Nissl staining were performed to assess neuronal integrity and degeneration.

Results. Behavioral assessment confirmed that MPTP administration induced prominent Parkinsonian motor deficits. Treatment groups demonstrated significant improvement in these behavioral parameters compared to MPTP controls. Biochemical analysis indicated that levels of dopamine, DOPAC, and HVA were markedly higher in the treatment group, suggesting enhanced dopaminergic neurotransmission. ATP concentrations were also increased, reflecting better mitochondrial function. Oxidative stress analysis revealed lower MDA levels and increased SOD, CAT, and GSH activities in treatment groups, supporting a robust antioxidative effect versus MPTP controls. Additionally, brain samples from the treatment group showed evidence of reduced monoamine oxidase-B (MAO-B) enzyme activity. Histopathological studies substantiated these findings: H&E staining exhibited decreased neuronal loss and tissue damage, while Nissl staining indicated preserved neuronal morphology in the treated animals, as opposed to severe neurodegeneration in MPTP controls. Collectively, these results suggest that the treatment confers neuroprotection by restoring dopaminergic function, enhancing bioenergetics, and limiting oxidative damage.

Discussion. This study concludes that our formulation PHF may holds anti-parkinsonian property against MPTP induced Parkinson's disease in C57BL/6 mice.

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Lack of SARM1 inhibition by dapagliflozin in LPS-activated PBMCs

Assist Prof Hyounggyoon Yoo

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Lack of SARM1 inhibition by dapagliflozin in LPS-activated PBMCs

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Introduction. Sterile alpha and Toll/interleukin-1 receptor motif-containing 1 (SARM1) is a key inflammatory signal-activated enzyme that induces axon degeneration. Dapagliflozin has been recognized for its anti-inflammatory properties beyond its well-established role in glucose regulation.
Aims. We investigated the effect of dapagliflozin on SARM1 in human peripheral blood mononuclear cells (PBMCs) stimulated with lipopolysaccharide (LPS) to induce an inflammatory response.
Methods. Human peripheral blood mononuclear cells (PBMCs) from healthy volunteers were stimulated with lipopolysaccharide (LPS) (1 mg/L) for 24 hours to induce an inflammatory response. The cells were concurrently treated with dapagliflozin (200 μg/L), metformin (300 μmol/L), or sitagliptin (400 μg/L); these concentrations reflect actual blood levels. SARM1 and Glyceraldehyde 3-phosphate dehydrogenase (GAPDH) expression levels were analysed by Western blot to assess the effects of the treatments. Furthermore, the expression of key pro- and anti-inflammatory cytokines, including Interleukin (IL)-1, IL-10, IL-4, and IL-6, was measured by qPCR to compare the effects of metformin to the LPS-alone group.
Results. A comparison of SARM1/GAPDH ratios showed that dapagliflozin did not significantly inhibit SARM1 expression in LPS-stimulated PBMCs. Similarly, no significant changes in SARM1 expression were observed in the metformin or sitagliptin treatment groups. In contrast, metformin treatment led to a statistically significant reduction in the expression of several pro- and anti-inflammatory cytokines, including IL-1β, IL-4, IL-6, and IL-10.
Discussion. Our findings suggest that dapagliflozin did not inhibit SARM1, likely because the 24-hour LPS treatment induced an early inflammatory response not associated with SARM1 activation. Further research is therefore needed to explore the effects of dapagliflozin on SARM1 in a late inflammatory setting.

P500

Low functional efficacy of a highly G protein-biased MOP agonist in primates

Prof Mei-Chuan Ko

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Low functional efficacy of a highly G protein-biased MOP agonist in primates

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Introduction. SR-17018 was identified as a G protein-biased mu opioid peptide (MOP) receptor agonist with the highest bias factor and lacked MOP agonist-associated adverse effects in mice.
Aims. The aim of this study was to determine the functional profile of spinal and systemic delivery of SR-17018 in non-human primates (NHP).
Methods. In vivo effects of SR-17018 were compared with those of MOP agonists in different intrinsic efficacies, DAMGO, morphine, heroin, and buprenorphine, in a series of behavioral assays established in rhesus monkeys (*Macaca mutatta*) (n=4 per study endpoint). Nociceptive, itch-scratching, and operant behavior were measured by experimenters blinded to the dosing conditions.
Results. Following intrathecal administration, SR-17018 (30-300 ug), buprenorphine (3-10 ug), morphine (10-30 ug), and DAMGO (1-3 ug), dose-dependently attenuated capsaicin-induced thermal allodynia ($p < 0.05$). However, unlike DAMGO and morphine eliciting robust itch-scratching activities, intrathecal SR-17018 and buprenorphine only elicited mild scratching activities. In the intravenous drug self-administration assay, heroin (0.3-10 ug/kg/infusion) produced a higher reinforcing strength (abuse liability) as compared to lower reinforcing strengths by SR-17018 (3-30 ug/kg/infusion) and buprenorphine (1-10 ug/kg/infusion) in NHPs under the progressive-ratio (PR) schedule of reinforcement ($p < 0.05$).
Discussion. The intrathecal opioid-induced scratching and intravenous drug self-administration with the PR schedule of reinforcement have been documented to distinguish MOP receptor agonists with different intrinsic efficacies in NHPs. Our findings reveal that *in vivo* apparent low efficacy of SR-17018 is similar to that of a MOP *partial* agonist buprenorphine measured by the non-human primate behavioral assays with translation relevance. Such a low intrinsic efficacy explains its improved side-effect profile of a highly G protein-biased MOP agonist, SR-17018, in NHPs.

P501

Relationship between Treatment-Resistant Depressive-like Behaviors and Altered Purine Metabolism in Prenatal Stress.

Ms Kondo Aya

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Relationship between Treatment-Resistant Depressive-like Behaviors and Altered Purine Metabolism in Prenatal Stress

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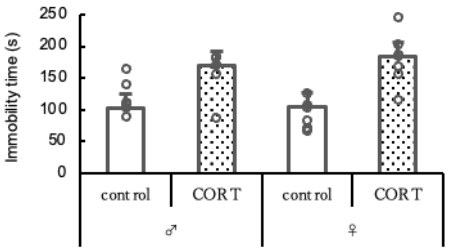

Introduction. Epidemiological studies have reported that children born to mothers who experienced stress during pregnancy are more likely to develop depression later in life. Moreover, such cases often show reduced responsiveness to treatment, suggesting that the underlying mechanisms may differ from those of adult-onset depression, but the details remain unclear.

Aims. Using a mouse model, we aimed to investigate the mechanisms by which maternal stress during pregnancy contributes to the development of depression-like phenotypes in offspring.

Methods. From gestational day 0 to birth, pregnant mice were provided with drinking water containing corticosterone (CORT; 40 μg/ml). In postnatal week 8, the open-field test, forced swim test, and social interaction test were conducted on the offspring to assess locomotor activity, depression-like behavior, and sociability. Antidepressant responsiveness was also evaluated in the forced swim test. After behavioural tests, brains were collected for molecular analyses.

Results. Offspring exposed to maternal CORT showed a significant increase in immobility time in the forced swim test, reduced time spent in the center area in the open field test, and decreased interest in conspecifics in the social interaction test. Fluoxetine and mirtazapine had no effect on immobility time, whereas ketamine significantly reduced it. Moreover, hippocampal expression of enzymes involved in purine metabolism was upregulated by ketamine.

Discussion. These findings indicate that prenatal CORT exposure induces depression-like, anxiety-like, and social deficits, which are resistant to classical antidepressants in offsprings. The observed upregulation of purine metabolic enzymes suggests enhanced purine turnover, and depletion of ATP as a neurotransmitter may underlie the emergence of depressive-like behaviours.

P502

Vagus nerve stimulation ameliorates cortical spreading depolarization via enhancement of glymphatic function

A/Prof Jiin-Cherng Yen

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Vagus nerve stimulation ameliorates cortical spreading depolarization via enhancement of glymphatic function

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Introduction. Vagus nerve stimulation (VNS) is approved for the treatment of migraine. Previous studies demonstrated that cervical VNS (cVNS), via activation of the nucleus tractus solitarii (NTS) pathway, could ameliorate KCl-induced cortical spreading depolarization (CSD), the well-known triggering mechanism of migraine aura, and neuroinflammatory responses. However, the effects of auricular VNS (aVNS) on CSD susceptibility and neuroinflammation and its underlying mechanisms in mice are still largely unknown. Furthermore, CSD could be associated with slowing of glymphatic system flow. To date, it is unclear whether aVNS could suppress CSD via enhancement of glymphatic function.

Aims. This study aimed to investigate the effects and its possible underlying mechanisms, especially focused on NTS-dependence and improvement of glymphatic function, of aVNS on CSD susceptibility and cortical neuroinflammation in mice.

Methods. Using a KCl-evoked CSD mouse model, this study examined the effects of aVNS on CSD frequency and CSD-induced cortical expression of cyclooxygenase-2 (COX-2). The contributions of NTS and glymphatic system to the effects of aVNS were verified by pharmacologic blockade of these two targets.

Results. Our results showed that aVNS could elicit a significant suppression of KCl-evoked CSD frequency and decrease in cortical COX-2 level. We further found aVNS significantly increased the number of c-Fos$^+$ neurons in the NTS. Moreover, the ameliorative effects of aVNS on CSD frequency and neuroinflammation could be inhibited by microinjections of lidocaine into the NTS. These findings substantiated the involvement of NTS-dependent mechanisms in the effects of aVNS. In addition, we also found aVNS could facilitate the function of cerebral glymphatic function as evidenced by early influx of cerebrospinal fluid with FITC-dextran tracer in aVNS group. Moreover, TGN020, an AQP4 channel inhibitor, could effectively reverse the ameliorative effects of aVNS on CSD frequency and COX-2 expression induced by KCl.

Discussion. We conclude that aVNS may ameliorate KCl-evoked CSD generation and COX-2 expression and enhance the glymphatic function via a NTS-dependent mechanism. However, the causal relationship between aVNS-enhanced glymphatic function and NTS-dependent mechanism requires further clarification.

P503

Orexin and BDNF gene polymorphisms in major depressive disorder in Indian cohort

Prof Reeta Kh

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Orexin and BDNF gene polymorphisms in major depressive disorder in Indian cohort

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Introduction. Major depressive disorder (MDD) is a complex psychiatric condition influenced by genetic and environmental factors. The orexinergic system and brain-derived neurotrophic factor (BDNF) pathways regulate mood, neuroplasticity and stress response. Genetic polymorphisms in these pathways have been implicated in MDD, though evidence across populations remains inconsistent.

Aims. This study aimed to examine the association of selected single nucleotide polymorphisms (SNPs) in orexin/hypocretin (rs2271933, rs10914456, rs4030470) and BDNF (rs6265, rs2653349, rs962369) genes with MDD in an Indian cohort, and to explore possible correlations with symptom severity and antidepressant response.

Methods. Patients with clinically diagnosed MDD (n=25) and age- and gender-matched healthy controls (n=25) were recruited. Genomic DNA was extracted, and SNPs in orexin receptor genes (HCRTR1, HCRTR2) and BDNF gene were genotyped using PCR-based assays and confirmed by Sanger sequencing. Genotype frequencies were compared between groups using Chi-Square/Fischer's exact test. Associations with clinical parameters were assessed using Spearman rank correlation.

Results. No significant differences in genotype distributions were observed between MDD patients and healthy controls. Similarly, no significant associations were identified with baseline severity or treatment outcomes.

Discussion. The absence of significant associations suggests that the analyzed orexin and BDNF variants may not play a major role in MDD susceptibility in this cohort. These findings contribute to important population-specific evidence, highlight the genetic heterogeneity of MDD and emphasize the need for larger, multi-ethnic studies.

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New multitarget FPR2/H2S ligands counterbalance the neuroimmune response in murine Alzheimer's model

Prof Agnieszka Basta - Kaim

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

New multitarget FPR2/H2S ligands counterbalance the neuroimmune response in murine Alzheimer's model
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Introduction. Chronic neuroinflammation play an important role in the onset and progression of neurodegenerative disorders, including Alzheimer's disease (AD). Formyl peptide receptor 2 (FPR2) is a key player in the resolution of inflammation (RoI) because it mediates the effects of several endogenous pro-resolving mediators. At the same time, hydrogen sulfide (H2S) is an endogenous gaseous transmitter with anti-inflammatory and pro-resolving properties.
Aims. Thus, we propose a new multitarget approach to address neuroinflammation and oxidative stress in neurodegenerative disorders by activating the FPR2 combined with the potentiation of H2S release. We prepared hybrid compounds and determined their pro-resolving ability in immune-activated primary microglial cell cultures from C57BL/6J (WT) and APPNL-F/NL-F knock-in mice (KI, animal model of AD). Next, we conducted age-dependent in vivo experiments using this AD model and age-matched WT animals.
Methods. Primary Microglial cells were prepared from the cortices of 1-2-day-old mouse brains. The cells were treated for 1 h with Fz9 (1 μM) and then stimulated for 24 h with LPS (100 ng/mL). We measured the cell death parameters (LDH assay), the secretion of NO by Griess reaction and the cytokines (IL-1β, IL-33, IL-18, IL-6, IL-10, IL-12, IL-4) production using ELISA kits. In in vivo study, the impact of the hybrid FPR2 agonist/H2S releaser treatment on the RoI parameters and cognitive properties (Water Morris test) was determined.
Results. Fz9 effectively normalized LPS-induced disturbances: increased LDH and NO release and pro-inflammatory cytokines (IL-1β, IL-6, IL-18) production. Moreover, a beneficial pro-cognitive effect of Fz9 administration and RoI-enhancing effect of this hybrid ligand in the brain structures in 18-month-old KI mice was noticeable.
Discussion. Our results indicate that the multitarget approach can be an innovative tool for developing new pro-resolving strategies in the treatment of brain disorders characterized by RoI deficits.
Supported by the grant number. 2021/43/B/NZ4/01133, National Science Centre, Poland (Task 1).

P505

Targeting Autotaxin-mediated phospholipid dysregulation to mitigate traumatic brain injury outcomes

Assoc Prof Chih Hao Yang

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Targeting Autotaxin-mediated phospholipid dysregulation to mitigate traumatic brain injury outcomes
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Introduction. Traumatic brain injury (TBI) triggers secondary injury cascades, including neuroinflammation, blood–brain barrier (BBB) disruption, and synaptic dysfunction, which contribute to long-term neurological deficits. Emerging evidence suggests that altered phospholipid metabolism is a central driver of these processes.
Aims. This study aimed to define the contribution of the Autotaxin (ATX)-lysophosphatidic acid pathway to TBI pathogenesis and evaluate its potential as a therapeutic target.
Methods. Bulk RNA sequencing was performed on brain tissue from experimental TBI models to identify dysregulated metabolic pathways. Genetic silencing of ATX and pharmacological inhibition with BI-2545, a potent BBB-penetrant ATX inhibitor, were used to assess the functional significance of ATX–LPA signalling. Outcome measures included LPA levels, neuroinflammatory responses, BBB integrity, and synaptic recovery.
Results. Transcriptomic profiling revealed significant enrichment of lipid metabolism–related pathways, with lysophospholipid processing consistently dysregulated across acute and subacute phases. ATX expression and LPA accumulation were markedly increased after TBI and correlated with microglial activation, vascular compromise, and synaptic deficits. Both genetic silencing of ATX and treatment with BI-2545 significantly reduced LPA accumulation, attenuated neuroinflammation, stabilized BBB integrity, and improved markers of synaptic function.
Discussion. These findings establish altered phospholipid metabolism as a defining feature of TBI and identify the ATX–LPA axis as a central driver of secondary injury. Genetic and pharmacological targeting of ATX provide convergent evidence for its role in TBI pathology, highlighting ATX inhibition with BI-2545 as a promising therapeutic approach to mitigate injury severity and improve neurological outcomes.

P506

5-HT_2A receptor activation enhances astrocyte survival through functional modulation of mitochondrial activity

Prof Mojca Krzan

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Starvation Induces Mitochondrial Biogenesis and Increases Respiratory Capacity in Primary Astrocytes, While 2,5-Dimethoxy-4-Iodoamphetamine (DOI) Enhances Survival Under Nutrient Deprivation

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Introduction. Astrocytes are central regulators of metabolic homeostasis in the central nervous system. Their capacity to buffer metabolic stress depends on their metabolic capacity. Activation of 5-HT_2A receptor signaling has been shown to be protective in cellular cultures. It has been established that astrocytes possess functional 5-HT_2A receptors but its role in astrocytic metabolic adaptation remains insufficiently researched.
Aim. To determine whether starvation alters mitochondrial capacity and biomass in primary astrocytes and to assess whether chronic exposure to 2,5-dimethoxy-4-iodoamphetamine (DOI) influences it further and enhances astrocyte survival under stress.
Methods. Primary cortical astrocytes from neonatal rats were cultured and exposed to glucose and serum deprivation to model metabolic stress. Cells were treated for 7 days with different concentrations of DOI. Mitochondrial biomass was quantified using fluorescence-based mitochondrial labeling and flow cytometry. Mitochondrial respiratory parameters were assessed using the Seahorse XF Mito Stress Test. Cell viability following starvation was measured using resazurin reduction assays. 5-HT_2A receptor mRNA expression was evaluated by RT-PCR. Statistical analysis was performed using one-way ANOVA ($p < 0.05$).
Results. Starvation induced a significant increase in mitochondrial capacity and biomass, indicating metabolic adaptation to nutrient deprivation. In contrast, chronic DOI treatment did not significantly alter mitochondrial mass under baseline conditions. However, DOI-treated astrocytes improved survival under stress with unchanged mitochondrial biomass. Cell viability increased from 9,88% ± 7,08% % (starved controls) to 40,70% ± 24,18% after DOI treatment. Seahorse analysis revealed an unchanged metabolic profile. RT-PCR confirmed the presence of 5-HT_2A receptor mRNA in cultured astrocytes. Further analysis revealed unchanged basal respiration and ATP-linked oxygen consumption following DOI treatment. RT-PCR confirmed the expression of 5-HT_2A receptor mRNA in primary astrocytes.
Conclusions. Starvation enhances mitochondrial biogenesis and respiratory capacity in primary astrocytes, reflecting intrinsic metabolic plasticity. Although DOI does not increase mitochondrial biomass, it improves cellular survival under nutrient deprivation and augments respiratory function. These findings indicate that 5-HT_2A receptor activation may enhance astrocytic stress resilience through functional modulation of mitochondrial activity rather than structural expansion.

P507

Propofol vs. Dexmedetomidine anesthesia on cognitive function in transfemoral aortic valve replacement

Prof Inmaculada Bellido Estevez

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Propofol vs. Dexmedetomidine anesthesia on cognitive function in transfemoral aortic valve replacement
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Introduction. Transfemoral aortic valve replacement (TAVR) involves replacing a defective aortic valve with a prosthetic valve deployed via a catheter introduced through the femoral artery under sedation in a sedated patient.
Aims. To compare the effect of sedation with propofol or dexmedetomidine on cognitive function in patients undergoing TAVR.
Methods. Prospective (before-after), randomized, double-blind clinical trial in patients undergoing TAVR with sedation with propofol or dexmedetomidine. Data were collected: age, sex, race, clinical data (personal history, comorbidities and procedures, ASA, NYHA congestive heart failure (CHF) classification, left ventricular ejection fraction (LVEF), perioperative and interventional data, sedation, and cognitive function status using the Mini-Mental State Examination (MMSE) to assess cognitive function (identifying potential problems with memory, orientation, comprehension, calculation, and executive functions) before and 48 hours after TAVR.
Results and Discussion. 71 patients were randomized to the propofol (n=34) and dexmedetomidine (n=37) groups. Patients in the propofol group received sedation with propofol (continuous intravenous infusion of 0.5–2.5 mg/kg/h). Patients in the dexmedetomidine group received sedation with dexmedetomidine (loading dose of 0.5 mg/kg for 10 minutes followed by a continuous intravenous infusion of 0.2–1.0 mg/kg/h). There were no statistically significant differences in MMSE scores between groups before TAVR ($p = 0.253$), but at 48 hours after TAVR, the MMSE showed a significantly lower incidence of neurocognitive recovery ($p = 0.005$) and, therefore, better cognitive outcomes in the dexmedetomidine group ($p = 0.022$) compared to the propofol group, indicating some degree of cognitive dysfunction after sedation.
Conclusion. Procedural sedation with dexmedetomidine in TAVR was associated with a significantly lower incidence of late neurocognitive recovery compared to propofol

P509

Systematic review of clinical guidance related to ketamine and esketamine for depression

Ms Kyung Min Kirsten Lee

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Systematic review of clinical guidance related to ketamine and esketamine for depression
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Introduction. Treatment-resistant depression (TRD) occurs in 30% of patients with existing major depressive disorder (MDD). Ketamine and esketamine have emerged as novel treatments for TRD. However, there are apparent inconsistencies in practice across jurisdictions.
Aims. To systematically review and appraise clinical practice guidelines (CPG) and consensus statements related to ketamine and esketamine for MDD, published 2019-2025.
Methods. Searches were conducted in MEDLINE, EMBASE, PsycINFO, Scopus, Web of Science and the Cochrane Library, supplemented by hand-searching of grey literature. Data on actionable statements (recommendations) within CPGs were extracted. Quality of CPGs and consensus statements was assessed using the Appraisal of Guidelines for REsearch & Evaluation II (AGREE II) and modified ACcurate COnsensus Reporting Document (ACCORD) checklist, respectively. Ketamine/esketamine recommendations within each CPG were mapped according to the WHO's Pharmacological Treatment of Mental Disorders in Primary Health Care.
Results. Ten CPGs and 11 consensus statements were included. Seventy-three ketamine/esketamine recommendations were identified within CPGs (n=3-28 per CPG). Most recommendations were related to prior initiation (n=50), particularly risk/benefit assessment. One recommendation in one CPG focused on post-treatment (e.g., discharge, discontinuation). The highest mean AGREE-II score was 82% for Domain 1 Scope and Purpose. Conversely, the lowest mean AGREE-II score was 46% for Domain 5 Applicability. For consensus statements, ACCORD Item Introduction 2 (aims and scope) received the most positive ratings, and Methods 5 (public/patient input) received the least positive ratings.
Discussion. Many CPG recommendations focused on the prior initiation step, but few on the post-prescribing stages. Few consensus statements involved public/patient input. Most CPGs and consensus statements described their aim and scope, but few addressed the values and preferences of clinicians and people living with MDD.

P510

A review of the olfactory bulbectomized rodent: an animal model of depression

Ms Niamh Burke

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

A review of the olfactory bulbectomized rodent as an animal model of depression

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Introduction. Evaluation of preclinical efficacy is a key stage in the drug development pipeline for novel therapeutics. In the case of antidepressant potential, one of the most enduring models is the olfactory bulbectomized (OB) rodent, A cluster of behavioural changes are observed, whose reversal is indicative of antidepressant potential.

Aims. This study involved conducting a systematic review of the OB rodent, followed by a meta-analysis of the principal behavioural changes seen in the model, and its use for screening antidepressant potential.

Methods. A protocol was created using the CAMARADES (Collaborative Approach to Meta-Analysis and Review of Animal Data from Experimental Studies) recommendations. Keywords were entered into Web of Science, Embase and PubMed databases conducted in the Summer of 2025, and the resultant papers filtered to identify those that would proceed for the systematic review, A meta-analysis was conducted on the most encountered behavioural tests, which required the calculation of the mean, standard deviation and group size values for the control (sham-operated) and OB groups from each study. The results are expressed as mean standardized difference (with 95% confidence intervals) and Z scores generated to determine significant differences, with $p<0.05$ deemed statistically significant.

Results. Of the initial 851 publications, 127 papers were selected for systematic review after criteria screening; 77% of studies used males, whilst 69% were conducted on rats. Antidepressant evaluation was the predominant purpose of the study (65% of studies), whilst a range of novel compounds (particularly those derived from natural products) have been examined. The 3 most encountered behavioural tests were the open field test (OFT), forced swim test (FST) and sucrose/saccharin preference test (SPT). Meta-analysis revealed a significant increase in locomotion in the OFT (1.53; 1.42, 1.64; $Z = 28.25$, $p<0.001$), increase in immobility time in the FST (0.96; 0.77, 1.15; $Z = 10.01$, $p<0.001$) and reduction in the SPT (-1.24; -1.45, -1.04; $Z = 11.89$, $p<0.001$). Considerable heterogeneity was observed in all behavioural tests, with I^2 >70%.

Discussion. Olfactory bulbectomy elicits robust behavioural changes, with attempts made at describing these as “depressive-like” in nature. The reductions seen in the sucrose/saccharin preference test are perhaps most relevant to the modelling of clinical depression. The model has been used for evaluating antidepressant potential of a number of compounds with novel mechanisms of action and continues to play a role as a preclinical assay.

P512

The non-transcriptional up-regulatory mechanisms of P-glycoprotein for acute cerebral ischemia therapy

Dr Juan Cen

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

The non-transcriptional up-regulatory mechanisms of P-glycoprotein for acute cerebral ischemia therapy

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Introduction. During the acute phase of cerebral ischemia, the upregulation of P-glycoprotein (P-gp) in the penumbra neurons significantly limits the clinical efficacy of neuroprotective agents which are P-gp substrates. We found that the increase of P-gp in neurons was remarkably rapid within an extremely short period of time. However, the underlying pathological mechanisms remain unclear, which greatly restricts drug development.
Aims. By elucidating the non-transcriptional regulatory mechanisms, we found that vesicles and tunnel nanotubes mediated the atute regulation of P-gp, and in this project the aim is to develop specific regulatory targets for P-gp and optimize the current therapeutic landscape for acute cerebral ischemia.
Methods. The transport pattern and regulatory pathway of P-gp in co-cultured microvascular endothelial cells and neurons were revealed by transwell and microorganism models in vitro, and the efficacy of neuroprotective agents after cerebral ischemia was validated by in vivo gene-modified animal models.
Results. 1. The P-gp could be transported from endothelial cells to neurons by non-contact intercellular vesicles and contact tunnel nanotubes during acute ischemia, which resulted in overexpression of P-gp in neurons and reduced drug efficacy. 2. The mechanism was related to the regulation of cytoskeletal proteins and the signal transduction of hypoxia-inducible factor. 3. Inhibition of tunnel nanotube formation through anti-hypoxia signaling can effectively reduce the expression of P-gp on neurons, thereby enhancing the therapeutic effects of neuroprotective agents such as nimodipine, which are P-gp substrates, in acute cerebral ischemia.
Discussion and conclusion. This study reveals the non-transcriptional regulatory mechanism of P-gp protein on neurons under ischemic stress, and the discovery of related regulatory targets may comprehensively improve the clinical efficacy of existing neuroprotective agents.

P513

Exploring the mood-enhancing potential of Mentha longifolia through network-pharmacology and molecular docking

Dr 'Makhotso Lekhooa

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Exploring the mood enhancing potential of *Mentha longifolia* through network pharmacology and molecular docking

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Introduction. Depression is a multifactorial neuropsychiatric disorder involving complex molecular pathways. Medicinal plants offer promising multi-target therapeutic agents for psycho-activity modulation due to their diverse array of bioactive compounds. In traditional healing practices, *M. longifolia* is used to manage conditions affecting the nervous system, gastrointestinal tract, and against pathogens. *M. longifolia* has naturally occurring compounds with potential neurological benefits however, the precise mechanisms of action through which it exerts its therapeutic effects remain to be fully elucidated.

Aims. The aim of the study was to fingerprint *M. Longifolia* and apply computational analysis to predict its possible pathways related to depression.

Methods. In this study, Liquid chromatography–mass spectrometry (LC-MS) was applied to fingerprint *M. longifolia.* Thereafter, network pharmacology combined with molecular docking was employed to investigate the potential antidepressant mechanisms of M. Longifolia based on the identified phytochemicals.

Results. Liquid chromatography–mass spectrometry (LC-MS) analysis identified 15 compounds. *M. longifolia* key targets such as DRD_4, DRD_3, GSK_3B, COMT, $GRIA_1$, and AKT_1 were mainly associated with dopaminergic synapse and neuroactive ligand–receptor interaction pathways. Compounds including baicalin, salvianolic acid A, and rosmarinic acid showed high binding affinities to DRD_3, COMT, and GSK_3B, in some cases surpassing the docking stability of fluoxetine (positive control), a clinically established antidepressant

Discussion. These results indicate that *M. longifolia* could exert potential antidepressant effects via multi-target modulation of neurotransmitter systems and neuro-inflammatory pathways. The observations in this study suggest possible mechanistic insights of *M. longifolia* into their traditional use for mental health and finds key targets and pathways for future experimental validation and the development of antidepressant drugs.

P514

From receptor heterogeneity to translational therapy: signaling-biased 5-HT6R modulation rescues cognition.

Prof Xiang-Nan Zhang

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

From receptor heterogeneity to translational therapy: signaling-biased 5-HT_6R modulation rescues cognition.
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Introduction. The 5-HT_6 receptor (5-HT_6R) is closely implicated in cognitive function. Antagonists targeting 5-HT_6R have shown therapeutic efficacy against cognitive deficits. However, preclinical studies indicate that 5-HT_6R antagonists carry a risk of inducing anxiety-like behaviors. This may reflect region-specific functional heterogeneity of 5-HT_6R, but the biological basis of this heterogeneity remains unclear.
Aims. Here we investigated the receptor's physiological functions and elucidated their mechanistic underpinnings to conduct a screen for signaling-selective 5-HT_6R antagonist.
Methods. By manipulating 5-HT_6R expression in cognition-associated, receptor-enriched brain areas, we revealed regionally distinct, function-specific heterogeneity of 5-HT_6R.
Results. In disease models of Alzheimer's disease and schizophrenia, 5-HT_6R mRNA and protein are elevated in the medial prefrontal cortex (mPFC) and dorsal CA1 (dCA1). Region-targeted neuronal overexpression of 5-HT_6R in the mPFC, but not in dCA1, precipitates cognitive deficits. Mechanistically, supraphysiological 5-HT_6R expression in mPFC neurons disrupts primary cilium morphology and function via a ciliary cAMP-PKA signaling axis, culminating in dysregulation of brain-derived neurotrophic factor (BDNF) expression. By contrast, the nucleus accumbens (NAc), which likewise exhibits abundant 5-HT_6R, appears to influence anxiety-related phenotypes through cAMP-PKA-independent mechanisms. We therefore posit that selective antagonism of the 5-HT_6R-cAMP-PKA signaling axis may ameliorate cognitive impairment while minimizing anxiogenic liability.
Discussion. This study aims to delineate the regionally discrete, function-specific roles of 5-HT_6R and to elucidate the underlying signaling -biased signaling mechanisms. We further aim to identify signaling -selective 5-HT_6R antagonists and to evaluate their therapeutic efficacy in preclinical models of cognitive impairment, alongside comprehensive assessments of long-term safety. By establishing a mechanistic framework for precision modulation of 5-HT_6R — shifting from broad receptor blockade to signaling -selective antagonism — we intend to inform the rational development and clinical translation of safer, more effective 5-HT_6R-targeted therapies.

P515

Lumbrokinase promotes learning and memory in chronic social defeat stress mouse model

Dr Vichuda Charoensaensuk

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Lumbrokinase promotes learning and memory in chronic social defeat stress mouse model

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Introduction. Lumbrokinase, a group of fibrinolytic enzymes, has been widely used to support cerebral and cerebrovascular health due to its specific fibrinolytic activity. In addition to this activity, lumbrokinase can also facilitate the proteolytic maturation of brain-derived neurotrophic factor (BDNF).
Aims. This study aimed to investigate the effects of lumbrokinase on chronic social defeat stress (CSDS)-induced learning and memory impairments in mice.
Methods. C57BL/6 mice underwent a CSDS paradigm for ten consecutive days to induce behavioral and cognitive impairments. Following CSDS, lumbrokinase was administered intranasally to the mice for 14 days. Novel object recognition was assessed, and hippocampal synaptic plasticity-related proteins were measured.
Results. CSDS reduced novel object discrimination in the novel object recognition test and decreased the expression of postsynaptic density protein 95 (PSD95) and synapsin1 in the hippocampus. Lumbrokinase treatment significantly improved novel object preference in CSDS mice and restored the levels of these proteins.
Discussion. CSDS impairs learning and memory and alters the expression of synaptic plasticity-related proteins in mice, consistent with previous findings that stress adversely affects hippocampal-dependent cognitive function. Specifically, CSDS reduced novel object discrimination and downregulated PSD95 and synapsin1, proteins critical for synaptic integrity and plasticity, thereby disrupting neuronal connectivity and cognitive performance. Importantly, this study further provides evidence that lumbrokinase mitigates CSDS-induced cognitive impairments and enhances the expression of PSD95 and synapsin1 in mice. Therefore, lumbrokinase shows promise as a potential therapeutic candidate for stress-related cognitive disorders. However, further investigations are needed to elucidate its mechanisms of action and assess its translational potential in clinical contexts.

P516

Australian guideline for MDMA-assisted psychotherapy in PTSD: What clinicians need to know

Dr Alene Yong

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Australian guideline for MDMA-assisted psychotherapy in PTSD: What clinicians need to know

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Introduction: In 2023, Australia became the first country to reschedule methylenedioxymethamphetamine (MDMA) and psilocybin to permit prescribing by authorised psychiatrists for post-traumatic stress disorder (PTSD) and treatment-resistant depression.

Aims: To describe the Australian Clinical Practice Guideline for the Appropriate Use of MDMA-assisted Psychotherapy (MDMA-AP) for PTSD and highlight the implications for clinicians.

Methods: The GRADE Evidence to Decision framework was used to develop recommendations and good practice statements. An 18-member multidisciplinary Guideline Development Group (including psychiatrists, psychologists, pharmacists, researchers, and lived experience representatives) worked collaboratively with 17 interest-holder organisations (professional societies, government agencies, peak organisations) and 20 expert advisors.

Results: The draft guideline included 4 Recommendations, 18 Good Practice Statements, and 11 Research Recommendations. For people living with PTSD, the draft Guideline conditionally recommends against the routine use of MDMAAP. If MDMA-AP is used, it should be limited to adults (≥18 years old) with PTSD symptoms for at least 6 months duration postdiagnosis, with moderate or severe PTSD symptoms in the past month (CAPS-5 total severity score ≥28), who have received an adequate trial of first-line evidence-based treatments, and who are not likely to be re-exposed to the index or other significant trauma during treatment.

Discussion: Individuals living with PTSD may weigh the risks and benefits of MDMA-AP differently based on their previous experience with other established treatments. The draft Guideline emphasises the critical role of shared decision-making and informed consent processes in providing trauma-informed, participatory, and culturally-responsive care.

P517

Elucidating differential pharmacology of psychedelics and their non-hallucinogenic analogs

Miss Hero Maera

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Elucidating differential pharmacology of psychedelics and their non-hallucinogenic analogs
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Introduction. Psychedelics have recently emerged as promising candidates for the treatment of neuropsychiatric disorders. However, their hallucinogenicity necessitates professionally supervised administration, making psychedelics an inaccessible treatment to most patients. Development of non-hallucinogenic analogs for therapeutic use relies on the ability to accurately predict hallucinogenic potential, but there is currently no reported way to perfectly predict hallucinogenicity in an in vitro screening assay, especially one which differentiates serotonin from psychedelics.
Aims. We sought to identify pharmacological parameters of 5-HT2A receptor (5-HT2AR) activation that may discriminate hallucinogens from their non-hallucinogenic analogs.
Methods. G protein activation, β-arrestin2 recruitment, and active state conformational change assays were used to derive the efficacy (E_{max}), potency (pEC50) and functional selectivity of 5 psychedelics and 6 non-hallucinogenic analogs. We further derived these parameters across a 60min signaling period to identify any kinetic effects.
Results. While no endpoint-derived pharmacological parameters differentiated psychedelics and their non-hallucinogenic analogs, kinetics-based analysis of β-arrestin2 recruitment revealed a distinct signaling feature of psychedelics that changed with respect to time. Non-hallucinogens, including 5-HT, did not exhibit this property. Though other pharmacological parameters did not discriminate hallucinogenicity, they revealed new insights into 5-HT2AR activation including pharmacophore-specific signaling features.
Discussion. This data identified kinetics of β-arrestin2 recruitment as the first pharmacological parameter capable of perfectly discriminating hallucinogenic 5-HT2AR agonists from non-hallucinogenic agonists, including serotonin. This may present kinetics of β-arrestin2 recruitment as a new tool for in vitro screening of newly synthesized analogs investigated for potential therapeutic use.

P518

Can B cell quantification assess Rituximab's safety and efficacy in CNS demyelination?

Dr Sayan Chatterjee

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Can quantitative monitoring of B Cells in Primary Demyelinating CNS Disorders evaluate safety and efficacy of Rituximab?

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Introduction. Rituximab (RTX), initially approved for various blood cancers, is now being used for the management of primary CNS demyelinating disorders.

Aims. The study aimed to quantify percentage of B cells in these patients receiving Rituximab (RTX) so as to establish a correlation, if any, between the degree of B-cell depletion and clinical response.

Methods. A prospective, observational study was conducted from December, 2019 in BIN with adult patients of either sex. The % B-cells in terms of CD20 and the clinical evaluation were done by Flow Cytometry and EDSS scores respectively. The %CD20 counts were measured at 2 and 24 weeks after baseline RTX, and subsequently RTX was administered if the %CD20 exceeded 1.5. Accordingly, at 24 weeks, based on %CD20, the patients were divided into two groups, Group 1 (n=7, %CD20≥1.5) and 2 (n=8, %CD20<1.5). Safety was evaluated by recording of treatment-emergent adverse effects.

Results. 15 patients were enrolled. The median (IQR) %CD20 and EDSS at baseline was 9.8 (5.6-18.8) and 8.0 (7.5-8.0) respectively. In Group 2, despite withholding RTX, patients remained asymptomatic, %CD20 remained <1.5 and EDSS showed a gradual decrease. 87% of the patients experienced at least one ADR, the median (IQR) ADRs per patient was 3 (0-3) and all 31 ADRs were infusion related with 100% recovery.

Discussion. RTX was relatively safe to use in these disorders, and monitoring its efficacy achieved via EDSS, with no additional benefits with %CD20 counts. As frequency of RTX administration was considerably decreased in Group 2, it could translate in cost reduction.

P519

Activation of spinal TLR7 contributes to the genesis of lupus-induced pain

A/Prof Han-Rong Weng

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Activation of spinal TLR7 contributes to the genesis of lupus-induced pain

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Introduction. Management of pain in patients with systemic lupus erythematosus (SLE) remains challenging due to the limited efficacy and safety of analgesics. The *Toll-like rece*ptor 7 (TLR7) plays a crucial role in the genesis of SLE.

Aims. To determine whether and how chronic pain in lupus mice is regulated by spinal TLR7 signalling pathway.

Methods. Adult female MRL/MpJ-fas^{lpr} (MRL/lpr) mice, a SLE mouse model, and MRL/MpJ (MRL control) mice aged between 10 to 16 weeks were used. Behavioral tests were used to evaluate pain sensitivity in the animals. Western blots were used to measure protein expressions of the investigated molecules while immunohistology techniques were used to identify cellular location of the TLR7. Electrophysiological patch Clamp recordings were used to define alternations in synaptic activities induced by TLR7 activation in the spinal dorsal horn.

Results. 1. MRL/lpr mice spontaneously exhibited thermal hypersensitivity, which starting at the age of 11 weeks and reached plateau between ages of 14 to 16 weeks. Concurrently, neuronal activity in the spinal dorsal horn was increased, evident by increased expressions of c-fos and p-ERK. These were accompanied by activation of microglia, production of IL-1β and IL-18. 2. TLR7 expression was elevated in spinal dorsal horn and present in microglia. 3. Intrathecal administration of the TLR7 antagonist attenuated the thermal hypersensitivity in MRL/lpr mice while administration of the TLR7 agonist induced thermal hypersensitivity in normal control mice. 4. Pharmacological activation of spinal TLR7 in normal control mice recapitulated molecular changes found in the spinal dorsal horn of MRL/lpr mice with thermal hyperalgesia. 5. Whole cell patch clamp recordings demonstrated that activation of TLR7 in the spinal cord results in increased glutamate release from presynaptic terminals and activity of postsynaptic glutamate receptors in the spinal dorsal horn.

Discussion. Our study indicates that abnormal activation of the TLR7 signaling pathway contributes to the development of chronic pain induced by SLE. Our findings highlight that targeting the TLR7 or downstream effectors may be a promising strategy to alleviate chronic pain induced by SLE.

Acknowledgement: This work was supported by NIH R01 grant (NS107569) awarded to H.R.W.

P520

p75NTR decrease during cardiovascular negative events associated with neurodegeneration in elderly females

A/Prof Javier Navarro-Zaragoza

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

p75NTR decrease during cardiovascular negative events associated with neurodegeneration in elderly females
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Introduction. Neurotrophins regulate neuronal growth, differentiation, and survival by binding to neurotrophins receptors (Trk) and the p75NTR-sortilin complex. In fact, the p75NTR receptor is known to control apoptosis. Furthermore, there is virtually no scientific literature on the role of neurotrophins and their receptors in the cardiovascular system, even though the multiple connections between the brain and the heart have been widely demonstrated. On the other hand, neurodegenerative disorders are more common in women and often affect the cardiovascular system, however, there is a lack of research conducted from a gender perspective on this topic.
Aims. The aim of this study was to quantify the expression of p75NTR and TrkA in the left ventricle of the heart at four different ages in *Octodon degus* from a gender perspective to find out if there are changes in older and senile adults that could explain the evolution of neurodegeneration.
Methods. This research was conducted with 40 octodons, divided by gender and, in turn, into four experimental groups according to age: young (6 months), adult (1 year), old (4–5 years) and senile (6–7 years). Octodon is a long-lived diurnal rodent identified as a potential tool in ageing research. Once sacrificed, the cardiac tissue was isolated, frozen and kept at −80°C until processing. P75NTR and TrkA receptor expression in the ventricular cardiac tissue of the octodons was quantified using Western Blot. The results were analysed using one-way ANOVA followed by a Tukey post-hoc test and Student's t-test, using GraphPadPrism 9.4.1 statistical software. Differences were considered significant if $p<0.05$.
Results. Our results showed a statistically significant decrease ($p<0.05$) in p75NTR expression in the left ventricle of senile females (SF) compared to senile males (SM). Furthermore, p75NTR expression in adult females increased compared to young females ($p<0.05$). No changes were observed in young females or older adult females. Furthermore, no changes were observed in males of any age. As for TrkA, an increase in its expression was observed in the left ventricle of older and senile adult females ($p<0.05$) compared to young and adult females. On the other hand, no changes were observed in males of any age. There were also no significant changes between males and females.
Discussion. Our results suggest differences between male and female octodons in the expression of p75NTR and TrkA depending on age, with a significant decrease in senile females in both cases, but also in older adults for TrkA. These results would imply a different regulation of the ageing process between the two sexes at the cardiac level. p75NTR regulates the apoptosis of erroneous neurotrophins, so a decrease in its expression could be related to the symptoms and would explain the negative effects characteristic of these diseases. Furthermore, as neurodegenerative diseases are more common in women, these results are particularly valuable, as they refer precisely to that sex. Our results suggest that both p75NTR and TrkA could be pharmacological targets against which new drugs specifically for females could be developed.

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Dual-Targeted Microglia-Specific Nanoparticles Delivering ROCK1 siRNA for Amyloid-β Clearance in Alzheimer's Disease

Prof Hao Wang

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Dual-Targeted Microglia-Specific Nanoparticles Delivering ROCK1 siRNA for Amyloid-β Clearance in Alzheimer's Disease

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Introduction. The pathogenesis of Alzheimer's disease (AD) is closely related to the dysfunction of microglia. Targeted restoration of microglial function is regarded as a promising strategy for intervening the pathology of AD. However, the current systemic siRNA delivery targeting microglia is limited by the poor permeability of the blood-brain barrier (BBB) and the non-specificity of cell uptake. Therefore, developing efficient microglia-specific drug delivery system represents a promising strategy for the treatment of AD.

Aims. In this study, novel ROCK1 siRNA-encapsulating lipid nanoparticles with enhanced BBB permeability and specific microglial endocytosis were developed with the aim of modulating microglia for AD therapy.

Methods. We synthesized lipid nanoparticles (NP-PS-Bo), where borneol (Bo) mimics the permeation effect of Chinese traditional "orifice-opening" medicine and phosphatidylserine (PS) guides microglia to engulf. *In vitro*, the delivery efficiency and lysosomal function recovery of siROCK1@NP-PS-Bo were verified using BBB model and BV2 cells. *In vivo*, its effects on Aβ lesion load and cognitive function were evaluated by systemic injection into APP/PS1 transgenic mice.

Results. The functionalization of Bo significantly enhanced the accumulation of nanoparticles in the mouse brain. The presentation of PS significantly increased the uptake rate of nanoparticles into microglia. Delivery of ROCK1 siRNA (siROCK1@NP-PS-Bo) into microglia achieved potent ROCK1 knockdown, and restored lysosomal proteins (LAMP1, cathepsin B) and degradative capacity. Systemic administration of siROCK1@NP-PS-Bo significantly reduced Aβ load in the brain and improved the spatial learning and recognition memory performance of APP/PS1 mice. RNA-seq and pathway inhibition experiments indicated that Bo effectively promotes BBB permeability by opening tight junctions and enhancing various endocytic and transport pathways, thereby achieving brain-targeted delivery.

Discussion. This study achieved precise editing of microglial genes through the synergistic effect of Bo enhancement of permeability and PS targeting. Specifically knocking down ROCK1 in microglia significantly alleviated Aβ pathology and restored cognitive function, validating the potential value of this strategy in the treatment of AD.

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Bilobalide improves brain vasculature homeostasis and cognition in AD mice

Prof Hao Wang

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Bilobalide improves brain vasculature homeostasis and cognition in AD mice

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Introduction. Cerebrovascular dysfunction is considered as an early pathological driver in the initiation and progression of Alzheimer's disease (AD). Effective vascular function-modulating drugs may provide a promising approach to modify AD progression.

Aims. This study aims to investigate the therapeutic effects of bilobalide (BB), a bioactive terpenoid in Ginkgo biloba extract, on brain vasculature and cognitive dysfunction in an AD mouse model and illustrate the underlying mechanism.

Methods. APP/PS1 transgenic mice were treated with BB via intragastric administration for 4 weeks. Cognitive performance was assessed through behavioral tests. Cerebral blood flow and vessel structure were evaluated using laser speckle and in vivo multi-photon imaging. Moreover, NVU integrity were assessed by multiple fluorescence. Single-cell RNA sequencing was performed to explore BB-induced transcriptomic remodeling of endothelial cells. Protein microarray, docking assay, and molecular dynamics simulation were employed to explore the downstream targets of BB. Endothelial cell-specific gene overexpression or knockdown strategies were used to verify the targets mediating the vascular and neuroprotective actions of BB.

Results. BB improved cerebrovascular structure, enhanced cerebral blood flow, and preserved NVU integrity. It also rescued cognitive dysfunction and attenuated AD-related neuropathological features. BB reduced hyperactive intercellular crosstalk among NVU components and increased the abundance of an endothelial cell cluster with decreased active β-catenin levels. Mechanistically, BB interacted with the CH domain of Dixdc1, suppressing its proteasomal degradation. Endothelial-specific overexpression of Dixdc1 partially recapitulated BB's protective effects on endothelial function, whereas endothelial-specific Dixdc1 knockdown abrogated BB's cerebrovascular protection.

Discussion. Our findings suggest that BB improves cognitive dysfunction in AD by restoring NVU integrity and cerebrovascular function through stabilizing Dixdc1 and upregulating Wnt/β-catenin pathway, highlighting the potential of BB as a therapeutic approach for AD.

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The function of Midnolin, a risk factor for Parkinson's disease, in mice

Dr Ayano Chiba

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

The function of Midnolin, a risk factor for Parkinson's disease, in mice

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Introduction. Parkinson's disease (PD) is a neurodegenerative disease resulting from the loss of dopaminergic neurons in the midbrain. We have previously reported that Midnolin (MIDN) is a genetic risk factor for PD. However, the mechanisms by which the copy number loss of *MIDN* genes increases the risk of PD remain unclear.
Aims. In this study, we aimed to examine the molecular function of MIDN *in vivo* by developing *Midn* knockout (KO) mouse lines.
Methods. We established two *Midn* KO mouse lines with 8 bp and 11 bp deletions, respectively, using CRISPR/Cas9-mediated genome editing. Cryosections of mouse brains were prepared and dopaminergic neurons were observed by immunostaining for tyrosine hydroxylase (TH). We recorded the spontaneous motor activity of 85-week-old mice in an open field.
Results. As *Midn* homozygous KO mice exhibited pre-weaning mortality, while *Midn* heterozygous KO mice (*Midn*$^{+/-}$ mice) survived, we examined the phenotype of the latter. TH-positive neurons in the substantia nigra compacta of the midbrain decreased in *Midn*$^{+/-}$ mice compared with wild-type (WT) mice at 8 and 26 weeks old. This reduction was more obvious in the 26-week-old mice. However, the spontaneous motor activity of 85-week-old *Midn*$^{+/-}$ mice at 85 weeks old was comparable with that of WT mice.
Discussion. Although *Midn* depletion induced a reduction in TH-positive neurons, it did not induce PD-like motor symptoms in mice in the normal condition. To examine the mechanism by which *Midn* depletion induces a reduction in TH-positive neurons, we plan to compare the expression of genes and proteins in the midbrain of *Midn*$^{+/-}$ mice with that of WT mice using RNA sequencing and proteome analyses.

P527

The role of dopaminergic agents in preclinical antipsychotic development: mouse model meta-analysis

Mrs Ha Thi-Viet Nguyen

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

A systematic review and meta-analysis of dopaminergic agents in mice as a tool in preclinical antipsychotic development

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Introduction. Schizophrenia is associated with a range of positive, negative and cognitive symptoms. Current antipsychotics mainly target dopamine and serotonin pathways, but many novel compounds fail clinically, raising concerns about the validity of preclinical models. One of the main preclinical approaches is the ability of drugs to attenuate the behavioural effects of dopaminergic agonists.

Aims. To evaluate the behavioural effects of dopaminergic agonists and to assess the quality of the studies conducted.

Methods. The protocol was registered in PROSPERO (CRD42024597179). A search was conducted using PubMed, Embase, Web of Science and PsycINFO (1994–2024), for studies using amphetamine (AMPH), apomorphine (APO) or methamphetamine (METH) and their effects on locomotor activity (LMA), pre-pulse inhibition (PPI) and other behavioural tests. Data on strain, sex, dose, route and outcomes were extracted. Standardised mean differences (SMDs, 95% CI) were calculated using RevMan software. Risk of bias was evaluated using the SYRCLE tool.

Results. 207 studies were included. C57BL/6 (50%) and Swiss-derived (34%) strains dominated; 76% used males only. LMA (61%) and PPI (32%) being the main behavioural endpoints. Intraperitoneal injections were most common (71%). AMPH was primarily used for LMA, with higher doses employed for PPI. APO was mainly used for PPI, whilst METH was less commonly employed. For LMA, large effect sizes were seen with AMPH (2.4, 1.98, 2.86, $p<0.001$) and METH (2.3, 1.69, 2.81, $p<0.001$). For PPI, a similar disruption was observed for all 3 drugs (AMPH = -1.0, -1.33, -0.66, $p<0.001$; METH = -1.2, -2.01, -0.32, $p<0.05$; APO = -1.2, -1.61, -0.84, $p<0.001$). There was considerable heterogeneity across the studies for both behavioural parameters ($I^2 = 84\%$ for LMA; 73% for PPI). With regards to quality, major risk of bias was noted for the randomisation, blinding and housing domains.

Discussion/Conclusion. Dopaminergic agonists consistently induce hyperlocomotion and pre-pulse inhibition deficits in mice, supporting their validity for modelling positive symptoms and sensorimotor gating deficits in schizophrenia. However, the substantial methodological heterogeneity and high risk of bias in many studies underscore the need for enhanced rigour and standardization in preclinical antipsychotic testing.

P528

Single target-dual therapy at M4 muscarinic receptors for the treatment of schizophrenia

Assoc Prof Celine Valant

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Single target-dual therapy at M4 muscarinic receptors for the treatment of schizophrenia

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Introduction. Since Sept. 2024, xanomeline, a muscarinic M_4 receptor (mAChR) agonist, has emerged as a first-in-class treatment for schizophrenia[1,2]. However, xanomeline's therapeutic utility is limited by significant peripheral off-target effects, primarily due to activation of M_2/M_3 mAChRs. Currently, these side effects are mitigated by co-formulating xanomeline with trospium, a peripherally restricted non-selective mAChR antagonist, which dampens gastrointestinal adverse effects. Here, we propose an alternative co-formulation strategy involving xanomeline and a highly selective M_4 positive allosteric modulator (PAM)[3,4]. We hypothesize that low-dose xanomeline alone would elicit minimal activation of both central (M_4) and peripheral (M_2/M_3) mAChRs. However, in the presence of a M_4 PAM, xanomeline's efficacy would be selectively amplified at central M_4 mAChRs, without potentiating activity at peripheral M_2/M_3 mAChRs. This highly targeted "single target-dual therapy" offers a more refined pharmacological approach, preserving the antipsychotic efficacy of xanomeline while circumventing peripheral side effects altogether.

Aims. To validate our proof-of-concept "single target-dual therapy" strategy through a broad range of methodologies.

Methods. We performed cell-based *in vitro* pharmacology, cryo Electron Microscopy (cryo-EM) structural determination, and utilised several *in vivo* models (incl. locomotor activity (LMA) and prepulse inhibition (PPI)).

Results. The cryo-EM structure of the M_4 mAChR bound to xanomeline and novel M_4 PAMs demonstrates co-binding of the two drugs. In all *in vitro* signalling pathways investigated, M_4 PAMs significantly enhance xanomeline agonist properties at both human and mouse M_4 mAChRs. In our *in vivo* models, we confirmed that M_4 PAMs can "boost" xanomeline's antipsychotic activity (LMA) and reversal of impaired gating mechanisms (PPI) in a synergistic manner, and that side effects remained minimal when only M_4 mAChR is engaged.

Conclusion. We demonstrated that co-administration of an M_4 mAChR preferring agonist and an M_4 PAM has the potential to become the next *best-in-class* antipsychotic medications for the treatment of schizophrenia.

[1] Kaul et al., JAMA Psychiatry 2024;81(8):749-756. [2] Liu at al., J Med Chem 2025;68(8):7932-7954; [3] Clinical trial ID: NCT05227690. [4] Tong et al., J Med Chem 2020;63(5):2411-2425.

P529

Exploring and targeting therapy-induced cellular senescence in medulloblastoma

Ms Charmaine Chng

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Exploring and targeting therapy-induced cellular senescence in medulloblastoma
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Introduction. Medulloblastoma is the most common malignant brain tumour in children, accounting for ~20% of paediatric brain cancers. Although chemotherapy is essential for treatment, its toxicity is associated with long-term morbidity and aggressive tumour recurrences. Emerging evidence implicates cellular senescence, a growth-arrest state triggered by DNA damage, in therapy resistance and disease relapse across multiple cancers. However, the role of therapy-induced senescence (TIS) in medulloblastoma remains poorly understood. If present, targeting senescent tumour cells may represent a strategy to enhance treatment outcomes. This study investigated whether standard-of-care medulloblastoma therapies induce cellular senescence in preclinical medulloblastoma models.
Methods. Four cell lines from molecular Group 3 (D341, MED-411) and Group 4 (CHLA-01, CHLA-01R) were treated with varying concentrations of vincristine or cisplatin for 24 h, followed by assessment of cell viability and analysis of senescence-associated biomarkers. Nuclear and cell area, SA-β-galactosidase activity, p21, p16, Lamin B1, γH2AX and EdU incorporation were assessed 7 and 14 days post-treatment using single-cell high-content fluorescence imaging. Senolytic agent ABT-263 was subsequently evaluated for its ability to enhance cell elimination following vincristine.
Results. Both chemotherapies induced heterogeneous senescence-associated phenotypes that varied across treatments, concentrations and cell lines. Although p16 and/or p21 expression increased and EdU decreased following treatment, Lamin B1, γH2AX and classical morphological features showed inconsistent responses across models. Multiparametric analyses identified distinct senescence-associated subpopulations and treatment-specific senescence-like profiles. Notably, combined vincristine and senolytic ABT-263 synergistically reduced D341 viability.
Discussion. These findings demonstrate that TIS in medulloblastoma cells is highly heterogeneous and context-dependent, providing preliminary support for exploring senolytic-chemotherapy combinations to enhance treatment responses. Ongoing studies will integrate flow cytometric isolation of senescence-associated cell populations with transcriptomic profiling in patient-derived models, organoids and orthotopic mouse models alongside evaluation of senotherapeutic strategies to further define the molecular characteristics, biological role and therapeutic relevance of TIS in medulloblastoma, with the aim of improving treatment outcomes and preventing tumour recurrence.

P530

J147 protects neuronal cells from endoplasmic reticulum stress by suppressing CHOP expression

Ms Tsugumi Tanaka

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

J147 protects neuronal cells from endoplasmic reticulum stress by suppressing CHOP expression

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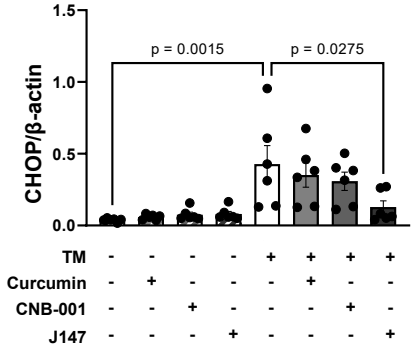
Introduction. Endoplasmic reticulum (ER) stress and oxidative stress are pivotal pathological features in the progression of various neurodegenerative diseases. The transcription factor C/EBP homologous protein (CHOP) is a key mediator of ER stress-induced cell death. Although curcumin and its derivatives J147 and CNB-001 have demonstrated protective effects against oxidative stress, their effects on ER stress–induced cell death remain unclear.

Aims. This study aimed to evaluate and compare the effects of curcumin, J147, and CNB-001 on ER stress–induced neuronal cell death, with a particular focus on CHOP expression.

Methods. We used the mouse hippocampal neuronal cell line HT22 cells to induce ER stress with tunicamycin (TM). Cell viability was quantified by MTT assay. Levels of ER stress markers, including ER chaperones and UPR-related signaling factors, were analyzed by RT-PCR for gene expression and Western blotting for protein expression.

Results. TM induced a concentration-dependent decrease in cell viability. While CNB-001 and curcumin showed no protective effect, J147 significantly suppressed the TM-induced cell death. J147 inhibited the TM-induced CHOP upregulation at both the mRNA and protein levels, whereas CNB-001 and curcumin had no effect on CHOP expression. In contrast, J147, CNB-001, and curcumin did not affect the TM-induced protein expression of ER chaperone proteins, including glucose-regulated protein (GRP) 78 and GRP94, or inositol-requiring enzyme (IRE) 1 pathway components, such as spliced X-box binding protein 1 (Xbp-1s) and phosphorylated IRE1 (p-IRE1).



Discussion. These results suggest that J147 protects neuronal cells from TM-induced death by suppressing CHOP expression at the transcriptional level. Given that J147 did not modulate Xbp-1s or p-IRE1, it likely inhibits CHOP through pathways independent of IRE1 signaling. This unique potency distinguishes J147 from curcumin, making it a promising therapeutic candidate.

P531

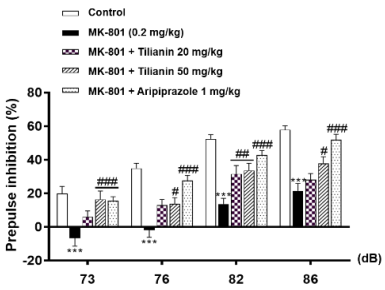
Dracocephalum moldavica and its compound tilianin ameliorate schizophrenia-like behaviors by inhibiting PDE10A

Ms Ye Eun Cho

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

***Dracocephalum moldavica* and its compound tilianin ameliorate schizophrenia-like behaviors by inhibiting PDE10A**

Ye Eun Cho[1], So-Yeon Kim[2], So-Young Cho[1], Su-Jung Lee[1], Ye-Won Lee[1], Young-Ju Do[1], Seon-Woo Lee[1], Na-Hyun Lee[1], Se Jin Park[1,2*]. [1]Dept of Food Biotechnol & Environm Sci, [2]Agric & Life Sci Res Inst, Kangwon Natl Univ, Chuncheon, ROK



Introduction. Schizophrenia is a complex psychiatric disorder characterized by positive, negative, and cognitive symptoms, with current antipsychotics offering limited efficacy for negative and cognitive deficits and causing notable side effects. PDE10A has been proposed as a promising non-dopaminergic target for antipsychotic development. However, PDE10A inhibitors have been hindered by concerns regarding efficacy and safety, underscoring the need for alternative approaches.

Aims. In this study, we investigated the antipsychotic-like potential of the ethanol extract of *D. moldavica* (EEDM) and its major compound, tilianin, using an MK-801-induced schizophrenia mouse model.

Methods. We carried out behavioral tests, HPLC analysis, molecular docking, enzyme assays, and Western blotting to evaluate the effects of EEDM and tilianin.

Results. HPLC analysis revealed tilianin (27.02 ± 0.01 mg/g) as the most abundant compound in EEDM. Molecular docking predicted stable binding of tilianin to the catalytic site of PDE10A, and this was supported by *in vitro* enzyme inhibition assays demonstrating concentration-dependent suppression by both EEDM (IC_{50} = 390.8 μg/mL) and tilianin (IC_{50} = 25.20 μM). EEDM and tilianin significantly ameliorated MK-801-induced hyperactivity, prepulse inhibition deficits, cognitive dysfunction, and social impairments. Tilianin modulated PDE10A downstream signalling, particularly the PKA-GSK3β-CREB pathway, in the prefrontal cortex.

Discussion. These findings suggest that tilianin exerts antipsychotic-like effects by inhibiting PDE10A and normalizing cAMP/PKA/CREB signaling, thereby enhancing synaptic plasticity and cognitive function.

Faden, J. and L. Citrome (2023) Medical Clinics 107(1): p. 61-72

P532

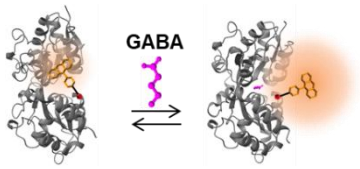
Structure-guided development of a high-performance hybrid-type fluorescent GABA sensor

Dr Kenji Takikawa

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

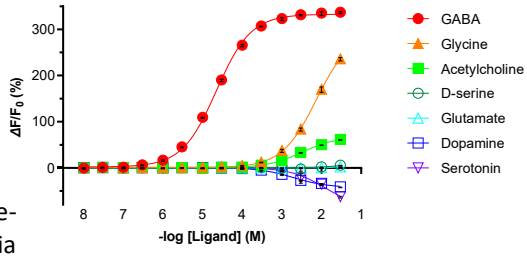
Structure-guided development of a high-performance hybrid-type fluorescent GABA sensor
Kenji Takikawa[1,2,3], Shigeyuki Namiki[1], Keitaro Umezawa[4], Daisuke Asanuma[1], Kenzo Hirose[1,5], Hiroshi Nishimune[2,6]. Dept. Pharmacol., Grad. Sch. Med., Univ. Tokyo[1], Bunkyo, Tokyo, Japan; Lab. Neurobiol. Aging, Tokyo Metro. Inst. Geriatr. Gerontol.[2], Itabashi, Tokyo, Japan; Div. Bioconv., Jichi Med. Univ.[3], Shimotsuke, Tochigi, Japan; Res. Team Mech. Aging, Tokyo Metro. Inst. Geriatr. Gerontol.[4], Itabashi, Tokyo, Japan; IRCN, Univ. Tokyo[5], Bunkyo, Tokyo, Japan; Dept. Appl. Biol. Sci., Tokyo Univ. Agric. Tech.[6], Fuchu, Tokyo, Japan.

Introduction. GABA is the major inhibitory neurotransmitter in the brain, and visualizing its dynamics requires fluorescent sensors with high sensitivity and rapid kinetics. The development of high-performance hybrid-type fluorescent sensors that couple ligand-binding proteins to synthetic fluorophores often requires labor-intensive random screening.



Aims. We aimed to develop a high-performance hybrid-type fluorescent GABA sensor through a structure-guided screening strategy to efficiently identify optimal dye-labeling sites.

Methods. We predicted the ligand-bound structure of the GABA-binding protein Pf622 using AlphaFold2. Based on the hypothesis that optimal labeling sites are located at cleft edges undergoing large conformational changes, we introduced single-cysteine mutations at these sites, labeled the variants with Janelia Fluor 585 (JF585), and quantified fluorescence responses.



Results. We identified a lead sensor, Pf622 G183C-JF585, which showed a large dynamic range (>300%), moderate affinity ($K_d \approx 22$ µM), and high selectivity, with rapid kinetics and robust pH stability. Using this sensor, we visualized electrically evoked endogenous GABA release in cultured striatal neurons.

Discussion. Pf622 G183C-JF585 is a powerful tool for dissecting GABAergic circuit dynamics. Our results validate this structure-guided strategy and provide an efficient route for developing future hybrid-type sensors.

P533

Muscarinic M4 receptor dominates Xanomeline's antipsychotic effects with essential M1 contribution

Dr Christopher Choy

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Muscarinic M_4 receptor dominates Xanomeline's antipsychotic effects with essential M_1 contribution

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Introduction. Current antipsychotics are largely ineffective for treating cognitive deficits observed in patients with schizophrenia, highlighting the unmet need for new therapeutics. Xanomeline (Cobenfy®), a muscarinic type 1 (M1) and type 4 (M4) receptors-preferring agonist, has shown promising clinical efficacy in positive and negative symptom domains[1].
Aims. This study aimed to determine if Xanomeline's therapeutic effects are mediated primarily through M4 receptor, using M4 receptor knockout (KO) mice, or selective positive allosteric modulators (PAMs) for M1 or M4 receptors.
Methods. Animal behavioural tests modelling schizophrenia-like symptoms were conducted in wildtype (C57Bl/6 background) and M4 knockout (KO) mice (n = 7 – 17/group), including open-field locomotor activity (LMA), prepulse inhibition (PPI) and paired associate learning (PAL). MK-801, an NMDA non-competitive blocker, MK-801, was used to induce hyperactivity, sensorimotor gating deficits and cognitive deficit.
Results. In LMA, Xanomeline (1 or 10mg/kg) significantly reversed MK-801 induced hyperactivity in the wildtype mice, whereas only the 10mg/kg dose was effective in M4KO mice. In PPI, Xanomeline dose-dependently rescued gating deficits in wildtype mice but had no effect in M4KO. In PAL, Xanomeline rescued the spatial memory deficit, while M1 or M4 PAMs alone were ineffective.
Discussion. These findings demonstrate that Xanomeline's efficacy involves differential engagement of M1 and M4 receptors across behavioural paradigms. M4 is essential for reversing hyperactivity and restoring sensorimotor gating function, while both M1 and M4 are required for spatial memory enhancement. The dual activation of M1 and M4 receptors appears critical for broad-spectrum therapeutic effects. Future studies should explore the underlying neural mechanisms that drive these nuanced receptor-specific contributions.

[1]Kaul et al (2024) Lancet 403(10422):160-170; Kaul et al (2024) JAMA Psychiatry 81(8):749-756

P534

Analysis of Lipid Flippase Dysfunction on Microglial Pathology in Alzheimer's Disease

Assoc Prof Nobumasa Takasugi

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Analysis of Lipid Flippase Dysfunction on Microglial Pathology in Alzheimer's Disease

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Introduction. Alzheimer's disease (AD) is a neurodegenerative disorder primarily characterized by progressive cognitive decline. The amyloid hypothesis, which posits that Aβ aggregates accumulate from the early stages of the disease and are a causative factor, is widely accepted. Indeed, antibody therapies targeting aggregated Aβ have begun to gain approval in various countries. However, at the time of AD diagnosis, multiple pathologies appear independent of amyloid pathology, making fundamental treatment difficult. Among these is microglial pathology, and reports of the involvement of many genetic risk factors for AD suggest its importance. We previously reported that reduced activity of lipid flippase (LF), which regulates lipid transport within lipid bilayers, represents a molecular mechanism for vesicular transport dysfunction, a pathological condition within neurons that complements the amyloid hypothesis (Kaneshiro et al., iScience 2022, Takasugi et al., Cells 2023). However, it remains unclear whether similar changes in LF activity occur in microglia during pathological states.
Aims. This study aimed to elucidate the contribution of LF activity changes in microglial pathology, focusing on the analysis of ATP8B4, the active center of LF, which has been identified as a novel genetic risk factor for AD.
Methods. We generated a highly specific antibody against ATP8B4 and established an ATP8B4 expression system harboring AD-associated mutations to analyze ATP8B4 properties. Furthermore, using BV-2 cells, a mouse-derived microglial-like cell line, we established knockout cells for LF-related factors, primarily ATP8B4. We then examined whether microglial functional changes were observed by measuring the expression changes via RNA sequencing (RNA-seq) and assessing the basal ability as microglia.
Results. It has been revealed that ATP8B4 mutations cause a loss of stability. We are currently analyzing the knockout cells and plan to report the results in this presentation.
Discussion. The loss of stability due to ATP8B4 mutations suggests that its loss of function may significantly impact the onset of AD, making knockout cells a promising model for studying AD.

P535

Transient overexpression of the neurotensin receptor in infant brain: radioautography studies

Prof Antoine Coquerel

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Transient overexpression of the neurotensin receptor in infant brain: radioautography studies.

Antoine Coquerel[1,2,3], Florence Chevallier-Hélas[1,4], François Pfaff[1,5], Emmanuelle Vaz[1,6], Jing Liu[1,7], Isabelle Dubuc[8]Radioanalysis Laboratory 76031 Rouen, France[1]; INSERM u1075 14000 Caen[2]; National Academy of Pharmacy, Paris, France[3]. Biology department, Le Havre Hospital Centre, 76600, France[4]; Biology Laboratory Le Havre 76600[5]; Pathology department, APHP Salpétrière, 75013 Paris, France[6]; University hospital Zhuhai, China[7]; Pharmacology Dpt, Rouen-Normandie University, France[8]

Introduction. The tridecapeptide Neurotensin (NT) exhibits pleiotropic effect in intestinal tract, cancer tissues and the central nervous system (dopamine modulation, analgesic and hypothermic effects, respiratory modulator).

Aims. Because the NT high affinity receptor (NTR1) is overexpressed in newborns and infants younger than 15 months (Zsürger et al., 1992) and NT was highly expressed in CSF and brainstem of infants who died of Sudden Infant Death Syndrome (SIDS), we investigated the NTR maturation in various brain regions including the cortex and brainstem.

Methods. Twelve brains and brainstems were collected during SIDS autopsies and stored at -80°C. Tissue sections of 20 µm were obtained using a cryostat and incubated in NaPOHx buffer (pH 7.4) at 4°C with 3H- or 125I-NT as labeled ligands. Radioautographies were obtained using Betamax films (Amersham) and the quantifications of NTR quantifications were calculated using a beta-imager and a micro-imager (Biospace Lab, Paris). Some tissue sections were also incubated with a fluorescent anti-Bcl-2 antibody.

Results. All images showed high levels of NTR, expression with a maximal binding in the youngest brains (5 weeks). In the cortex, large disparities were observed between different levels, from one antero-posterior location to another, but also between next circumvolutions. In the brainstem, some sections were consistently rich, as ventral tegmental area and substantia nigra were binding remains high in adult control brains. In midbrain sections, the periaqueductal gray was elevated during the 6 first months and in medulla oblongata the highest values were observed in olive complex (were low levels persisted in adults) as well as in the nucleus tractus solitarius and areas involved in cardio-respiratory controls, with peak values at 2 months. All regions with high NTR expression expressed Bcl-2, particularly in the brainstem.

Discussion. Transient overexpression of NTR is associated with the major anti-apoptotic factor Bcl-2. This could be related to the survival of conceived neurons. Because NT is a sedative peptide, its role in SIDS could be hypothesized.

Zsürger N et al., (1992): Brain Research. doi: 10.1016/0006-8993(92)91640-z.

P536

Bacillus coagulans ameliorates cognitive frailty in a sarcopenic obese mouse model

Dr Sayaka Takahashi

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Bacillus coagulans **ameliorates cognitive frailty in a sarcopenic obese mouse model**

Sayaka Takahashi[1], Keiichi Nakagawa[1], Wataru Nagata[1], Kayoko Kodama[1], Toshiaki Ishizuka[1] [1]Department of Pharmacology, National Defense Medical College, Tokorozawa, Saitama, Japan

Introduction Cognitive frailty is a condition characterized by the coexistence of sarcopenia and cognitive impairment. Chronic inflammation induced by age-related changes in gut microbiota may contribute to its progression. We have found that SAMP8 mice fed a high-fat, high-sucrose diet (HFHSD) serve as a useful model of sarcopenic obesity.

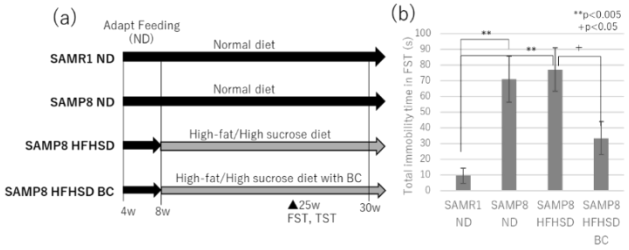

Figure 1 Effects of *Bacillus coagulans* (BC) on depressive-like behavior in HFHSD-fed SAMP8 mice.

Aims This study aimed to investigate whether the treatment with probiotic *Bacillus coagulans* ameliorates chronic inflammation and cognitive frailty in HFHSD-fed SAMP8 mice.

Methods Eight-week-old SAMP8 mice were fed HFHSD and administered *Bacillus coagulans* (2×10^8 CFU/mL) via drinking water until 30 weeks of age (Figure 1a). Depressive-like behavior was evaluated at 25 weeks using the forced swim test (FST) and tail suspension test (TST). Muscle mass and strength were assessed at 27 weeks using X-ray CT and the wire hang test. Brain and skeletal muscle tissues were examined by immunofluorescence staining. We also collected cecal contents and analyzed the levels of short-chain fatty acids.

Results *Bacillus coagulans* treatment significantly improved depressive-like behavior in HFHSD-fed SAMP8 mice (Figure 1b). In the prefrontal cortex and hippocampus, *Bacillus coagulans* suppressed the HFHSD-induced increase of Iba1 and CD68 expression. It also improved reduced muscle strength and muscle cross-sectional area, and PGC-1α expression level in skeletal muscle. Fecal levels of n-butyric acid, propionic acid, and acetic acid were not altered by *Bacillus coagulans* treatment.

Discussion These findings suggest that *Bacillus coagulans* treatment ameliorates cognitive frailty by suppressing microglial activation and restoring skeletal muscle PGC-1α expression in a sarcopenic obese mouse model.

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Pathophysiological roles of midnolin in Parkinson's disease

Prof Yutaro Obara

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Pathophysiological roles of midnolin in Parkinson's disease

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Introduction. Parkinson's disease (PD) is a common neurodegenerative disease, and the number of the patients with PD increases rapidly worldwide. Although more than 20 causal genes have been identified from patients with familial PD, the mechanism of onset of sporadic PD remains unclear.
Aims. We previously performed a genetic analysis in Yamagata (Japan) cohort and identified *Midnolin* (*MIDN*) as a genetic risk factor for PD. In this study, we attempted to clarify the pathophysiological roles of Midnolin in neuronal cells in detail.
Methods. We performed the genetic analysis in Yamagata and British cohorts by microarray. For cell-based experiments, we established *Midn*-knockout PC12 cells by CRISPR/Cas9 method and used them to clarify the molecular functions of MIDN.
Results. Sequential genetic analysis revealed that there was also a significant association between *MIDN* loss and PD risk in a large British cohort, and *MIDN* loss was very rare (0.066%) in a general population of Yamagata. Neurite outgrowth by NGF was largely inhibited in *MIDN*-knockout PC12 cells. Expression of neurofilament light chain (NEFL), a neuron-specific intermediate filament required for neurite outgrowth, was also suppressed. In addition, expression of Parkin ubiquitin ligase was also reduced in *Midn* knockout cells. We found that MIDN directly bound to EGR1 and enhanced its transcription activity, and *Nefl* expression required MIDN/EGR1 complex.
Discussion. *MIDN* is a confirmed genetic risk factor for PD and essential for maintenance of neuronal functions. Therefore, *MIDN* is a promising biomarker and target for the drug development. Further studies are necessary to examine PD-like phenotypes in KO mice and clinical symptoms in patients with *MIDN* loss.

P538

Complementarity of pharmacogenetics with therapeutic drug monitoring of antipsychotics and antidepressants

Dr Sylvain Couderc

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Complementarity of pharmacogenetics with therapeutic drug monitoring of antipsychotics and antidepressants Sylvain Couderc[1], Dorian Chastagner[1], Nicolas Picard[1]. University hospital center, Pharmacology and toxicology Laboratory[1], Limoges, France

Introduction. Therapeutic drug monitoring (TDM) and pharmacogenetics (PG) are two very useful tools to improve the clinical state of patients treated by antipsychotics or antidepressants[1]. PG tests can be proposed at the start of treatment in order to choose the drug that has the best probability to perform, or after TDM to explain a concentration (or a metabolite to parent ratio) not in the target interval (NTI), when there are no environmental explications (as medication interactions). They are complementary tools, requiring a correct use to enhance outcome.
Aims. To analyze the level of complementarity of TDM and PG in Limoges pharmacology and toxicology laboratory, for antidepressants or antipsychotics prescriptions.
Methods. Every dosage of antidepressants or antipsychotics, and PG analysis, from 2010 to 2024 in the pharmacology laboratory of Limoges University hospital, have been analysed. Venlafaxine and clozapine have been studied with further detail.
Results. 66 PG analysis in a psychiatric context with no TDM (64 samples from another geographical area) have been found. 43 patients had at least one antidepressants or antipsychotics monitoring and a PG analysis (0.52% of patients with TDM): It concerned 252 dosages, 13 different antidepressants and 9 different antipsychotics (22 different drugs); the most frequent drugs were clozapine and venlafaxine. The median interval between STP and PG was -16 days (159 dosages before PG, 6 the same day and 87 after). If considering dosages until 3 months before PG, between PG sample and PG results (median delay of 43 days) and until 3 months after PG results: percentages of NTI were respectively 74, 57 and 52. Regarding choice of genes, 2C8-9, UGT1A1, HTR2A or ABCB1 would have been sometimes included. Concerning venlafaxine and clozapine, PG showed interesting polymorphisms for 96% of the patients.
Discussion. PG was rarely associated with TDM (1 in 200 patients), mainly after abnormal TDM analysis and posology adjustment (spotlighting regularly interesting polymorphisms), not yet before drug instauration. PG with no TDM was exceptional, as samples from another geographical area could be associated with TDM from another laboratory.

[1]Eap et al (2021) World J Biol Psychiatry. 22(8):561-628

P539

Clozapine therapeutic drug monitoring: impact of trough and steady state non-respect

Dr Sylvain Couderc

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Clozapine therapeutic drug monitoring: impact of trough and steady state non-respect

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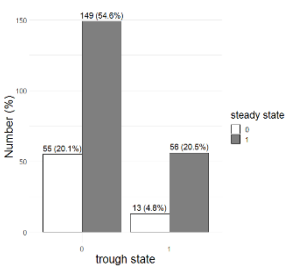

Introduction. For patients treated by clozapine, therapeutic drug monitoring based on the trough level is highly recommended, once a year ideally, with a target range of 350-600 µg/L[1] at steady-state. However, deviations from pre-dose sampling or steady-state conditions may affect measured concentrations and lead to misinterpretation.

Aims. To determine the prevalence of non-trough and non-steady-state samples in a large psychiatric hospital and estimate potential misinterpretation.

Methods. During the period 2019-2023, plasma clozapine concentrations were matched with drug prescription and administration data, after patients had consented and data been de-identified. Steady-state was assumed in cases when no dosing modifications occurred over the previous 72 hours; trough sampling was assumed when blood collection happened 0 and 2 hours before the highest daily dose. Precisely timed trough concentrations were extrapolated using the formula: $C_{estimated} = C_{measured} \times \exp(-(\ln 2/(t1/2))\Delta t)$.

Results. 333 patients and 114,438 clozapine administrations were included. Only 157 patients had at least one plasma measurement in the study period (451 samples). 273 samples were evaluable (clozapine-dosing history >2 days): 20.5% were actual trough at steady-state, 4.8% not at steady-state, 54.6% not trough and 20.1% not trough nor steady-state. The median difference between measured and calculated concentrations was +123 µg/L (IQC 33-224). For 55.6% of the samples, the interpretation of measured and extrapolated concentrations was identical; for 28.9% there was a risk to maintain underdosing, in 14.7% to decrease the dose unduly and in 0.8% to increase it unnecessarily. There were only discrepancies in 3.4% of measured concentrations above 1000 µg/L, presumed toxic.

Discussion. The proportion of precisely timed trough clozapine concentrations at steady-state was low. Misinterpretation was likely in 44.4% of them, highlighting the importance of time for therapeutic drug monitoring.

[1]Hiemke et al (2018) Pharmacopsychiatry. 51(1-02):9-62

P540

Analgesia via lipid raft disruption by cyclodextrin derivatives

Dr Éva Szőke

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Analgesia via lipid raft disruption by cyclodextrin derivatives

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Introduction. Transient Receptor Potential Ankyrin 1 (TRPA1) and Vanilloid 1 (TRPV1) are nonselective cation channels expressed on nociceptive sensory nerve terminals and primary sensory neurons, located in the lipid rafts of the membare. Their involvement in pain integration and inflammation is well described. We proved that cyclodextrin (CD) derivatives can deplete cholesterol from membrane and reduce receptor activation *in vitro.*
Aims Our aim was to investigate the effect of these lipid-protein interactions on TRPA1 and TRPV1 activation by *in silico* and to identify CD derivatives as analgesic with novel mechanisms of action.
Methods. We compared three different CD derivatives: RAMEB (3 mM), HPBCD (10 mM) and SBECD (10 mM). Analgesic effect of the compounds was evaluated in acute somatic chemonociception test induced by intraplantar injection of formalin (2.5 %, 10 µL) to the hind paw of mice. Nocifensive behavior was measured. Resiniferatoxin (RTX, 0.1 ug/mL, 10 uL, i.pl.)-induced acute thermal allodynia and mechanical hyperalgesia were measured by increasing temperature hot plate and dynamic plantar aesthesiometer, respectively. We examined the mechanism of action of RAMEB on TRPV1 by *in silico* modeling.
Results. CD pretreatment significantly reduced the duration of nocifensive behavior during the second phase of formalin-induced acute inflammatory pain, as well as RTX-induced mechanical hyperalgesia 30 and 90 minutes following RTX administration, however, thermal allodynia was not affected by CV pretreatment. We provided *in silico* evidence for mechanism of action of CDs.
Discussion. Based on our findings we conclude that the investigated CD derivatives are promising agents for exerting peripheral analgesia via a novel mechanism. Targeting the lipid rafts by cholesterol depletion might open future perspectives for the therapy of chronic inflammatory, neuropathic or cancer pain, acting at the periphery.
Support: TKP2021-EGA-16; TKP2021-EGA-13; RRF-2.3.1-21-2022-00015 (Pharmalab); ELKH-PTE, Hungarian Research Network (HUN-REN PTE Chronic Pain Research Group), Pécs, Hungary; NKFIH K 138936, ÚNKP-22-3-I-PTE-1616

P541

Efficacy of Probiotics in Older Patients with Depression: A Randomized Controlled Trial

Dr Saibal Das

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Efficacy of Probiotics in Older Patients with Depression: A Randomized Controlled Trial
Saibal Das[1,2], Prasun Chatterjee[3], Preeti Sinha[4], Rasika Panwar[3], Karishma Sundar Raju[4], Indranil Saha[1], Abhinaba Ghosh[5] (ICMR – NIRBI[1], Kolkata, India; Dept. of GPH, Karolinska Institutet[2], Stockholm, Sweden; Dept. of Geriatric Medicine, AIIMS[3], New Delhi, India; Dept. of Psychiatry, NIMHANS[4], Bengaluru, India; Tata Medical Centre[5], Kolkata, India)

Introduction: Recent evidence suggests probiotics may modulate the gut-brain axis, improving psychiatric outcomes via microbiota and neurotrophic factors.
Aims: To evaluate the efficacy of adjunct probiotic supplementation (*Lactobacillus helveticus* and *Bifidobacterium longum*) alongside standard care compared to placebo in older adults with moderate unipolar depression.
Methods: A randomized, double-blind, placebo-controlled trial was conducted at two Indian tertiary centers. Fifty-eight participants (≥60 years) with moderate depression were randomized 1:1 to receive daily probiotics or a placebo for 12 weeks, alongside standard antidepressant care. The primary outcome was depression response (≥50% Montgomery-Åsberg Depression Rating Scale [MADRS] score reduction). Secondary outcomes included anxiety General Anxiety Disorder 7-Item [GAD-7], cognition (Montreal Cognitive Assessment [MoCA]), quality of life (WHOQOL-BREF), serum brain-derived neurotropic factor (BDNF), and gut microbiota profile (trial registration: CTRI/2024/01/061173).
Results: At 12 weeks, significantly more participants in the probiotic group showed depression response (79.3%) versus placebo (41.4%) (p=0.002). Probiotics led to sustained and significant improvements at Weeks 6, 12, and 24, while placebo effects diminished by Week 24. Anxiety (GAD-7) scores improved significantly with probiotics at all time points, whereas placebo showed only modest gains, significant at Week 12. Cognitive function (MoCA) remained unchanged in both groups. Biologically, probiotics significantly increased serum BDNF levels (18.9 vs. 16.9 ng/mL, p=0.04) and markedly boosted fecal abundance of *L. helveticus* and *B. longum* (8–10-fold); these changes were absent with placebo. Probiotics significantly improved physical and psychological domains of QoL across all follow-ups, while the placebo showed limited or delayed improvements; environmental and social domains did not differ between groups. Regarding safety, mild gastrointestinal complaints occurred in seven probiotic participants.
Discussion: Probiotic supplementation showed promising antidepressant and anxiolytic effects in older adults, potentially mediated via gut microbiota modulation and neurotrophic enhancement. These findings support psychobiotic use as a safe, scalable adjunct in geriatric depression, particularly in low-resource settings.

P542

Investigating the potential of quercetin-loaded chitosan-coated lipid carriers for Alzheimer's management

Assoc Prof Yousra Nomeir

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Investigating the potential of quercetin-loaded chitosan-coated lipid carriers for Alzheimer's management in rats

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Introduction. Phytochemicals have surfaced as interesting possibilities for next-generation therapies aimed at neurological illnesses. Quercetin (QU) has demonstrated promise in mitigating depression and averting cognitive impairment. Nonetheless, its clinical efficacy is constrained by inadequate oral bioavailability and limited permeability through the blood-brain barrier (BBB). Alzheimer's disease (AD) is marked by advancing cognitive deterioration and oxidative neurodegeneration.
Aims. QU was encapsulated in chitosan-coated nanostructured lipid carriers (QU-CS-NLCs), creating an innovative nano-system to improve brain-targeted delivery and therapeutic effectiveness. QU-CS-NLCs demonstrated nanometric particle dimensions, sustained release properties, and structural integrity.
Methods. Fourier transform infrared (FT-IR) spectroscopy, differential scanning calorimetry (DSC), and X-ray diffraction (XRD), Superoxide Dismutase (SOD), Malondialdehyde (MDA), Reduced glutathione (GSH), Advanced Oxidation Protein Products (AOPP), Dopamine, Serotonin, and Acetylcholinesterase activity (AChE).
Results. QU-CS-NLCs demonstrated nanometric particle size, sustained-release characteristics, and structural integrity, as validated by FT-IR spectroscopy, DSC, and XRD analysis. Rats administered aluminum hydroxide displayed substantial cognitive deficits, but QU-CS-NLCs (20 mg/kg) notably decreased escape latency to 16.8 ± 2.4 seconds. The activity of acetylcholinesterase (AChE) was markedly diminished by QU-CS-NLCs to 24.5 ± 2.5, malondialdehyde (MDA) levels were normalized, and superoxide dismutase (SOD) activity increased from 4.1 ± 0.8 to 8.1 ± 0.9 U/mg. QU-CS-NLCs markedly elevated dopamine levels (135.4 ± 6.6) and serotonin levels (185.6 ± 9.1), while reducing AChE activity (24.5 ± 2.5). Histopathological analysis demonstrated reduced neuronal degeneration and amyloid accumulation.
Discussion. Quercetin nanoparticles have enhanced neuroprotective benefits in aluminum-induced Alzheimer’s rats relative to traditional therapies.

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Divergent Modulation of TrkB Signaling by LSD and Fluoxetine in vitro

Mr Oliver V Stoeckmann

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Divergent Modulation of TrkB Signaling by LSD and Fluoxetine in vitro Oliver V Stoeckmann[1,2], Matthias E Liechti[1,2], Deborah Rudin[1,2]. [1] Div Clin Pharmacol and Toxicol, DBM, Univ Hosp Basel, CH. [2] Div Clin Pharmacol and Toxicol, DPhS, Univ Basel, CH.

Introduction. Tropomyosin receptor kinase B (TrkB) and its natural agonist brain-derived neurotrophic factor (BDNF) play a key role in synaptic plasticity and neuronal survival. TrkB represents a promising target for neurological and psychiatric treatments. It is thought that antidepressants enhance BDNF signaling by binding near the transmembrane domain of TrkB (Cassarotto et al., 2021). Recent studies suggest that psychedelics like LSD may also promote BDNF signaling by stabilizing TrkB dimers (Moliner et al., 2023).

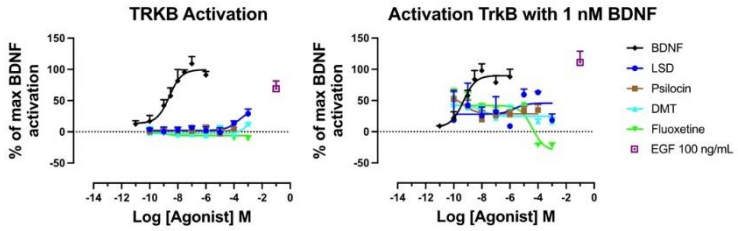

Figure 1. Comparison of BDNF-normalized activation of TrkB with psychedelics and an SSRI. EGF is a positive control for assay functionality.

Aims. This study aims to assess the potency of serotonergic psychedelics to activate TrkB in comparision with the antidepressant fluoxetine *in vitro*.

Methods. We used stably transduced cells expressing the human TrkB to quantify ERK phosphorylation to assess the activation potency of serotonergic psychedelics combined with and without BDNF.

Results. None of the tested serotonergic psychedelics activated TrkB when administered alone (left graph, Figure 1). However, in the presence of 1 nM BDNF (right graph, Figure 1), LSD amplified the effect of BDNF. In contrast, fluoxetine attenuated the effect of 1 nM BDNF.

Discussion. Our results suggest that LSD acts as a positive allosteric modulator at TrkB receptors, while fluoxetine behaves as a TrkB antagonist. Further studies are needed to elucidate the *in vivo* and human clinical impact of this modulatory effect of serotonergic psychedelics on TrkB activation.

P544

Polyinosinic:polycytidylic acid and PM2.5 exposure disrupts cognition and brain health in mice

Miss Alexia Defrancesco

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Polyinosinic:polycytidylic acid and PM2.5 exposure disrupts cognition and brain health in mice

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Introduction. Acute influenza and chronic PM2.5 exposure alone can induce neuroinflammation; however, their combined long-term effects on brain health are largely unknown, including oxidative stress, which is a critical factor in accelerating neuronal ageing and neuroinflammation leading to neuronal injury, glial activation, and synapse loss.

Aims. This study aimed to assess the impact of chronic daily PM2.5 exposure in combination with weekly Polyinosinic:polycytidylic acid (Poly:IC) administration on cognitive function and to examine changes in astrocytes, neurons and microglia within the hippocampus and cortex, as well as neuroinflammatory and oxidative stress markers.

Methods. Balb/c mice (male, 6 weeks old, n=12/group) received poly I:C (20µg/mouse/week, intranasal) or saline as a control weekly for 12 weeks to model yearly flu infection, with or without daily exposure to PM2.5 (10µg/mouse/day, intranasal). Mice underwent the elevated plus maze, novel object recognition test, and episodic memory test. Brain astrocytes (GFAP), neurons (NeuN) and microglia (IBA1) were assessed by immunohistochemistry. Neuroinflammation (TNF, IL6, IL18) and oxidative stress (NOX4, SOD2) markers were measured by rt-PCR.

Results. At weeks 4 and 12, there was a trend of increased anxiety in mice exposed to poly I:C and PM2.5. Short-term memory was reduced by 32% after 12 weeks of exposure to poly I:C, as well as a trend in decreased episodic memory in mice exposed to PM2.5 only and PM2.5 + poly I:C. Astrocyte and microglia numbers were increased, and neuronal numbers were decreased in the hippocampal CA1, CA2, CA3, and dentate gyrus, and cortex after PM2.5 and poly I:C exposure alone and in combination. Oxidative stress and neuroinflammation markers were increased in all treatment groups compared with the control.

Discussion. Chronic poly I:C and PM2.5 exposure increased neuronal injury in two key brain regions for learning and memory, the hippocampus and cortex. PM2.5 and poly I:C exposure alone and in combination increased both neuroinflammation and oxidative stress. Which may represent key mechanisms underlying anxiety and memory impairment found.

P545

TRPA1 receptors are involved in neurodegeneration associated with dementia

Prof Erika Pintér

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

TRPA1 receptors are involved in neurodegeneration associated with dementia

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Introduction: The Transient Receptor Potential Ankyrin 1 (TRPA1) KO mice exhibit reduced memory impairment in a model of senile dementia and attenuated loss of cholinergic fibers and cell bodies in a model of Alzheimer's disease (AD). We recently also showed that the central projection Edinger-Westphal area (EWcp) in the mouse is the site of strongest Trpa1 mRNA expression, localized in peptidergic, UCN1-containing neurons.
Aims: Considering that EW is affected by AD and TRPA1 is highly expressed here, we aimed to investigate the role of TRPA1 in the AD-related peptidergic neurons.
Methods: We examined the site-specific deletion of TRPA1 in urocortinergic EWcp neurons in an AD mouse model. We constructed an adeno-associated virus vector (AAV) carrying a Cre recombinase (Ucn-Cre-AAV) driven by a UCN1 promoter. The AAV vector was injected into the EW nucleus of stopflox-td-Tomato mice. Trpa1 mRNA expression was determined using RNA scope in situ hybridization, and urocortin protein was labeled using immunohistochemistry.
Results: We demonstrated that Ucn-Cre-AAV entered urocortinergic cells, where the promoter activated Cre recombinase and td Tomato, staining them red. Using the RNA-scope technique, complete co-localization was clearly visible in the sections, indicating that the virus is specific to urocortinergic cells expressing TRPA1.
Discussion: Based on histological evidence we conclude that our Ucn-Cre-AAV construct generated EW-specific conditional TRPA1 KO mice. These animals are suitable for studying the role of the TRPA1 receptor expressed in EWcp in mouse models of neurodegenerative diseases.

Research support: Supported by the Hungarian Brain Research Program (NAP3) 2022-2025, TKP2021-EGA-16, HUNREN.

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Neuroimaging evidence for central mechanisms of pain in difficult-to-treat rheumatoid arthritis

Prof Zsuzsanna Helyes

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Neuroimaging evidence for central mechanisms of pain in difficult-to-treat rheumatoid arthritis

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Introduction Despite therapeutic advances, 5–20% of rheumatoid arthritis (RA) patients remain difficult-to-treat (D2T), with persistent symptoms, most notably chronic pain. Altered central nociceptive processing and stress–depression–pain interactions are thought to play a major role.

Aims. To identify brain connectivity patterns related to pain in D2T RA using functional magnetic resonance imaging (fMRI).

Methods. 34 RA patients (21 D2T, 13 non-D2T) and 27 healthy controls (HCs) underwent two resting-state fMRI scans, with standardized painful heat stimulation applied in between (Siemens 3T Magnetom Prisma).

Results. Resting-state fMRI revealed altered connectivity patterns in RA compared to HCs. Intrinsic connectivity of the posterior cingulate cortex (PCC) was reduced in RA, most prominently in D2T patients. Following painful stimulation, connectivity within the default mode network (DMN) showed distinct changes: it decreased in HCs and non-D2T patients, while D2T patients maintained higher levels. Fractional amplitude of low-frequency fluctuations (fALFF) analysis showed reduced activity in several regions (lateral occipital cortex, lingual gyrus, caudate, middle frontal gyrus, medial prefrontal cortex, precentral gyrus, frontal pole) in RA compared to HCs. D2T patients exhibited the lowest fALFF in many of these regions, with further reductions compared to non-D2T patients, indicating more complex alterations in pain processing, behavior, and cognition.

Discussion. Resting-state fMRI revealed altered connectivity and activity in pain- and emotion-related networks in D2T RA. These results indicate that peripheral inflammation control alone may be insufficient and support personalized strategies addressing both immune and CNS mechanisms.

HUN-REN–PTE Chronic Pain Research Group (14017), OTKA K138046 and K131479, TKP2021-EGA-29, National Brain Research Program, Richter Gedeon PhD Scholarship (LGT)

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GPCR drug discovery using DNA encoded libraries: Identification of novel GPR88 ligands

Dr Natalie Diepenhorst

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

GPCR drug discovery using DNA encoded libraries: Identification of novel GPR88 ligands

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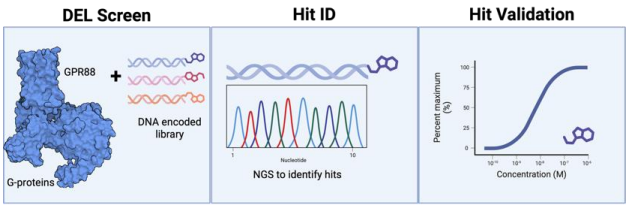

Introduction. GPR88, an orphan GPCR enriched in the striatum, regulates reward and cognition, and its agonism reduces alcohol self-administration, making it a promising therapeutic target for substance use disorders. However, previous small molecule drug discovery campaigns have failed to yield tractable leads, and published chemotypes lack drug-like properties.

Aims. We have leveraged our experience with GPR88 biochemistry collaborating with the Monash Fragment Platform (MFP) to perform a DNA-encoded library (DEL) screen to identify novel chemotypes for GPR88 drug development.

Methods. GPR88 with and without G-proteins was purified in detergent micelles for use in the HitGen DEL screen performed by the MFP. DEL hits were identified and triaged for synthesis based on their druglike properties and unique chemotypes. Synthesised hits were then validated using a cAMP assay testing for both agonist and antagonist behaviour of the compounds.

Results. This successful DEL screen identified several novel chemotypes for GPR88. Functional validation revealed a number of these displayed weak agonist properties in a cAMP assay and serve as a good starting point for future medicinal chemistry efforts.

Discussion. DEL screening for GPCRs is difficult due to the micelle/membrane embedded nature of this type of receptor. We leveraged our vast experience in GPR88 biochemistry with the DEL experience of the MFP to enable a successful screening campaign resulting in novel leads for the development of therapeutics targeting GPR88 as a novel means to treat substance use disorder.

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Cardiorespiratory effects of fentanyl combined with α2 adrenergic receptor agonists in rats

Ms Gorana Puzovic

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Cardiorespiratory effects of fentanyl combined with α_2 adrenergic receptor agonists in rats

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Introduction. Opioid use disorder remains a global public health crisis, with opioids, primarily fentanyl (FENT), accounting for the majority of the nearly 600,000 overdose deaths reported worldwide in 2019. Growing concern now centers on adulteration of opioids with α2 adrenergic receptor (α2AR) agonists such as xylazine and medetomidine (MED), veterinary anesthetics that depress cardiorespiratory function and cause sedation. Their presence in the drug supply complicates overdose management and challenges current reversal strategies.
Aims. To characterize interactions between, and reversal of, the cardiorespiratory effects of FENT + MED.
Methods. Male and female Sprague Dawley rats (n=10; 5m, 5f) were implanted with venous catheters to allow for drug delivery, and heart rate (HR), blood oxygenation (SpO_2), and respiratory rate (RR) were monitored with a collar-based pulse oximeter. Dose–response functions were determined for FENT (0.0056–0.56 mg/kg) and MED (0.0032–0.32 mg/kg). Drug interactions were evaluated using fixed-ratio mixtures (3:1, 1:1, 1:3) based on ED_{85} to reduce HR, and reversal was tested with naloxone (NAL) (1 mg/kg), atipamezole (ATI) (0.1–1 mg/kg), and their combination.
Results. FENT and MED each dose-dependently reduced HR, SpO_2, and RR $p<0.01$ for all), with the effects of FENT reversed by NAL (μ-opioid receptor antagonist; HR: $p<0.01$; SpO_2: $p<0.0001$) but not ATI (α2AR antagonist), whereas the effects of MED were reversed by ATI (HR and RR: $p<0.0001$) but not NAL. Mixtures of FENT and α2AR agonists exhibited largely additive interactions. Mixtures were less effectively reversed: NAL was slower and often caused rebound tachycardia/tachypnea, ATI was ineffective, and combinations of NAL+ATI improved SpO_2 recovery but also resulted in cardiovascular instability.
Discussion. Overall, this study applied rigorous quantitative approaches to define how FENT and MED interact to influence cardiorespiratory function, as well as to evaluate the extent to which these effects can be reversed by NAL and ATI. We found that FENT and MED induced changes were driven by activity at opioid and α2AR, respectively. When combined, the two drugs produced dose-dependent reductions in HR, SpO_2, and RR. Considering the growing presence of α2AR in the illicit opioid supply, these results emphasize the need to develop novel countermeasures and adjunctive interventions capable of reversing complex, multi-drug overdoses safely and effectively.

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AI-driven comprehensive behavioural profiling reveals multidimensional phenotypes in PTZ-induced epilepsy mouse model

Assoc Prof Takahisa Murata

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

AI-driven comprehensive behavioural profiling reveals multidimensional phenotypes in PTZ-induced epilepsy mouse model

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Introduction. Phenotypic analysis of animal behaviour—the most integrated and functional layer of biological information—remains limited in standardisation and quantitative depth. Conventional behavioural assessments still rely largely on visual observation and manual scoring, limiting objectivity, reproducibility, and translational relevance. This lack of standardised, data-rich behavioural evaluation represents a critical bottleneck in pharmacological, and toxicological research.
Aims. To overcome these limitations, we developed SHIGUSA, an artificial intelligence (AI)-based behavioural analysis platform that enables long-term, non-invasive, and unbiased monitoring of freely moving animals. Here, we applied SHIGUSA to characterise behavioural alterations in a pentylenetetrazole (PTZ)-induced epilepsy mouse model.
Methods. SHIGUSA automatically quantifies spontaneous locomotion and general behaviours—including feeding, drinking, exploration (rearing), scratching, and grooming—within standard home cages. Male C57BL/6J mice received intraperitoneal injections of PTZ (30 mg/kg) every other day for four administrations. Behaviour was recorded for one hour immediately after the final injection and analysed using deep learning-based behavioural classification. Multivariate behavioural parameters were temporally aligned to identify seizure-associated events.
Results. PTZ-administration significantly reduced locomotor activity and altered spatial distribution within the cage. Exploration and feeding were markedly suppressed immediately after PTZ treatment, whereas grooming behaviour increased. Importantly, interruptions in ongoing general behaviours coincided with the detection of freezing episodes, jerking movements, and clonic seizures. These findings indicate that SHIGUSA captures both subtle behavioural modulation and overt seizure-related motor events within a unified quantitative framework.
Discussion. SHIGUSA enables comprehensive and multidimensional quantification of drug-induced behavioural phenotypes. By shifting from observation-based assessment to standardised, data-driven behavioural analytics, this platform facilitates quantitative and reproducible phenotyping in pharmacological and toxicological research.

P550

Isoquercitrin–ligustrazine co-polymorph as a multi-target therapeutic candidate for Alzheimer's disease

Dr Lida Du

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Isoquercitrin–ligustrazine co-polymorph as a multi-target therapeutic candidate for Alzheimer's disease
Xueyan Long [1,2,#], Yilin Yang [1,2,#] , Yuan Zhou [3], Yifei Xie[4], Clara Xi Wang [5], Xinmei Xie[1], Hongquan Wang [6], Xiaobin Pang [1*], Zhaolin Gao [2*], Lida Du [2,7,*], School of Pharmacy, Henan University[1], Kaifeng, CHINA. Provincial Laboratory of Polymorphic Drugs[2], Zaozhuang, CHINA. Krieger School of Arts and Sciences, Johns Hopkins University[3], Baltimore, MD, USA. Institute of Materia Medica, Chinese Academy of Medical Sciences and Peking Union Medical College[4], Beijing, CHINA. School of Arts and Sciences, University of Pennsylvania[5], Philadelphia, PA, USA. Department of Neurology [6], Hohhot First Hospital, Hohhot, CHINA. Institute of Molecular Medicine & Innovative Pharmaceutics, Qingdao University [7], Qingdao, CHINA.

Introduction. Alzheimer's disease (AD) is a progressive neurodegenerative disorder characterized by amyloid-β (Aβ) deposition, neuroinflammation, and cognitive decline. Dysregulated microglial activation and maladaptive stress responses, including PERK pathway overactivation, contribute to disease progression. This study aimed to evaluate the therapeutic potential of the isoquercitrin–ligustrazine co-polymorph (ILCP), a phytochemical-based formulation with anti-inflammatory and metabolic regulatory properties, in an AD mouse model.
Methods. ApoE3/4 transgenic mice received daily oral ILCP (50–200 mg/kg) or vehicle for 4 weeks. Cognitive performance was assessed by behavioral tasks, including spatial and recognition memory. Neuropathological analyses included Aβ deposition, neuronal structure, apoptosis, microglial activation, cytokine expression, and PERK pathway activity.
Results. ILCP significantly improved learning and memory, reduced Aβ aggregation, and preserved neuronal morphology. These ILCP treatments also attenuated neuronal apoptosis, decreased pro-inflammatory cytokines, increased anti-inflammatory cytokines, and promoted microglial M1-to-M2 switching. Importantly, ILCP suppressed excessive PERK pathway activation, suggesting a reduction in maladaptive cellular stress responses associated with AD progression.
Discussion. ILCP demonstrates multi-target neuroprotective actions by modulating neuroinflammation, improving microglial function, reducing Aβ burden, and suppressing PERK pathway activation. These findings support ILCP as a promising phytochemical candidate for Alzheimer's disease therapy.

P551

TALDO1 links pentose phosphate pathway impairment to cognitive decline in Alzheimer's disease

Prof Yu Qiu

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

TALDO1 links pentose phosphate pathway impairment to cognitive decline in Alzheimer's disease

Xiaoyu Hu[1,†], Ying Yu[1,†], Jiabing Li[1], Juan Li[1], Hongzhuan Chen[1,2,*] and Yu Qiu[1,*]. Department of Pharmacology and Chemical Biology, Shanghai Jiao Tong University School of Medicine[1], Shanghai, China; Shanghai Frontiers Science Center of TCM Chemical Biology, Shanghai University of Traditional Chinese Medicine[2], Shanghai, China.

Introduction. Alzheimer's disease (AD) is a progressive neurodegenerative disorder characterized by cognitive decline and synaptic dysfunction. Increasing evidence suggests that impaired glucose utilization is a major contributor to AD pathogenesis. Neurons preferentially use glucose through the pentose phosphate pathway (PPP). In AD, the flux through the PPP is significantly reduced, however, the underlying mechanism is still elusive.
Aims. This study aims to elucidate how PPP was affected in AD and whether it contributed to the AD pathogenesis.
Methods. Proteomic analyses of temporal cortex synaptosomes from AD patients and controls were conducted to identify dysregulated pathways and significantly affected proteins. Functional studies were performed by knockdown or restoration of protein expression in primary cultured neurons, as well as in wild-type and 5×FAD mice. Untargeted metabolomics and biochemical, electrophysiological and behavioral assessments were performed.
Results. Proteomic analysis of synaptic compartments identified glucose metabolism as the most significantly dysregulated functional network in AD. Further, transaldolase 1 (TALDO1), a rate-limiting enzyme in the PPP, is identified as a key enzyme affected in AD. TALDO1 is markedly downregulated in the early-stage of AD. Downregulation of TALDO1 reduced glucose metabolism by inhibiting the PPP, TCA cycle and oxidative phosphorylation, causing broad metabolic collapse. Further analysis demonstrated that downregulation of TALDO1 depleted nicotinamide adenine dinucleotide phosphate and glutathione pools to weaken antioxidant defense, thus impairing mitochondria and reducing energy supply, which collectively drive synaptic dysfunction and cognitive decline. Conversely, restoration of TALDO1 expression in 5×FAD mice improves glucose uptake, mitigates oxidative stress, restores metabolic homeostasis, and rescues neuronal and cognitive functions.
Discussion. Downregulation of TALDO1, a critical enzyme for the PPP, could be a key driver of neuronal glucose metabolic dysfunction in AD. Our findings position TALDO1 as a primary pathogenic factor responsible for the impaired PPP observed in AD.

P552

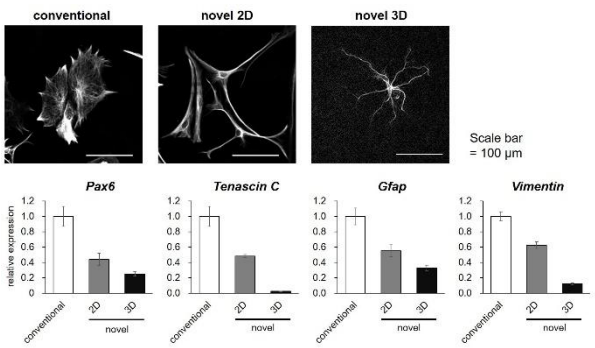
Morphological analyses of astrocytes cultured in two- and three-dimensional collagen matrices

Dr Ryota Eguchi

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Morphological analyses of astrocytes cultured in two- and three-dimensional collagen matrices

Ryota Eguchi, Hinako Kaji, Ken-ichi Otsuguro. Lab. Pharmacol., Fac. Vet. Med., Hokkaido Univ., Sapporo, Japan



Introduction. Astrocyte morphology is closely linked to its functions, including blood–brain barrier maintenance and synaptic modulation. Although cultured astrocytes are widely used to investigate astrocyte biology, astrocytes maintained under conventional culture conditions typically lack elaborate processes and display an immature or reactive phenotype, limiting their relevance to *in vivo* astrocyte function.

Aims. We investigated the two- (2D) and three-dimensional (3D) culture condition of astrocytes showing complex morphology similar to *in vivo*, and analyzed its morphology and gene expression.

Methods. Primary astrocytes were isolated from the mouse hippocampus and cultured either on collagen-coated plates (2D) or within collagen gels (3D) using a serum-free medium supplemented with epidermal growth factor and fibroblast growth factor 2. Astrocyte morphology was evaluated by glial fibrillary acidic protein (GFAP) immunostaining and quantified using SMorph. Gene expression was assessed by real-time PCR.

Results. Astrocytes cultured under the novel 2D condition showed a higher proportion of process formation compared with those cultured conventionally, while 3D-cultured astrocytes exhibited morphologies more similar to those observed *in vivo*. The novel conditions reduced the expression of astrocyte progenitor markers (*Pax6*, *Tenascin C*) and reactive astrocyte markers (*Gfap*, *Vimentin*). Additionally, the adrenoceptor agonist noradrenaline (1 µM) increased process number in astrocytes cultured under the novel 2D condition.

Discussion. These findings indicate that the novel culture conditions promote astrocyte process formation and suggest enhanced differentiation and maturation toward a quiescent state. This system enables detailed analysis of adrenoceptor-mediated astrocyte morphological changes and may be useful for investigating the relationship between astrocyte morphology and function.

P553

Anti-ferroptotic approach for mitigation of Amyloid beta toxicity associated with Alzheimer's disease.

Ms Sheikh Sana Nazir

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Anti-ferroptotic approach for mitigation of Amyloid beta toxicity associated with Alzheimer's disease.
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Introduction. Alzheimer's disease (AD) is a progressive neurodegenerative disorder affecting more than 50 million people worldwide. With amyloid cascade hypothesis being considered as predominant pathological hypothesis, new facets in its treatment need to be explored.
Aims. To identify the key targets and pathways involved in the action of lipid peroxidation inhibitor and iron chelator on Alzheimer's disease and to assess the role of above treatments in iron overload mice and Alzheimer's disease rat model.
Methods. Key targets and pathways involved in the action of lipid peroxidation inhibitor and iron chelator against AD were identified using network pharmacology followed by molecular docking and the effect of the above drug treatments was evaluated in Swiss albino mice whereby Iron-dextran was used to induce iron overload mice model and Aβ was used to develop AD rat model using stereotaxy. Key ferroptotic and AD related markers including downstream signalling pathways were evaluated.
Results. Network pharmacological analysis revealed targets such as ACHE, BCHE, AKT1, MAOA, MAOB as the targets that are acted upon by the lipid peroxidation inhibitor against AD, the targets are related to AD and would be further validated by molecular docking. Furthermore, iron-dextran induced neurodegeneration in Swiss-albino mice which was evaluated by H&E staining and Perl's Prussian staining of mice brain. Neurobehavioral studies such as Morris water maze and elevated plus maze test also indicated significant memory impairment in the iron overload group as compared to the control group. Iron-dextran treated mice had declined learning and memory abilities in water maze test as depicted by longer escape time to find the platform.
Discussion. Iron dextran administered intraperitoneally for 4 weeks lead to neurodegeneration in Swiss-albino mice and iron deposition in the mice brain as indicated by Perl's Prussian staining, H&E staining of brain samples indicated pyknosis of neuronal cells and neurodegeneration in the DG region of the hippocampus. Lipid peroxidation inhibitor and iron chelator may potentially prevent iron deposition and neurodegeneration in mice brain, which would further be validated by ELISA and rtPCR of key ferroptotic and AD related genes.

P554

Investigation of chronic DSS-treatment in a preclinical A53T Parkinson's disease model

Mr Harrison Ross

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Investigation of chronic DSS-treatment in a preclinical A53T Parkinson's disease model
Harrison Ross[1,2], Victoria Cogger[1,2], David Le Couteur[1], Nicholas Hunt[1,2], Jarrod Kennedy[1,2]. Biogerontology Laboratory, ANZAC Research Institute[1], Sydney Local Health District, Concord, NSW, Australia; School of Medical Sciences, Faculty of Medicine and Health, University of Sydney[2], Camperdown NSW, Australia.

Introduction. Parkinson's disease (PD) is a complex neurodegenerative condition with no disease-modifying therapies currently available. Gastrointestinal inflammation is an established hallmark of PD, with increasing evidence suggesting it may contribute to aberrant protein accumulation and peripheral immune dysfunction. Despite this, many commonly used preclinical models fail to replicate these features - potentially limiting their translational validity. As such, there is a need to evaluate models that integrate classical PD neuropathology alongside gastrointestinal inflammation to provide a more clinically relevant platform for assessing potential therapeutics for PD.
Aims. To investigate the impact of chronic DSS-induced intestinal inflammation on disease profile in an A53T preclinical Parkinsons disease model.
Methods. A53T mice were treated with 0.5% DSS via drinking water from 4-8 months to induce intestinal inflammation. Behavioral tests (novel objection recognition, grip strength, beam walk) were performed at 11 months, and mice were culled at 12 months of age for assessment of neuropathological hallmarks.
Results. By 12 months, 25% of the non-DSS treated cohort developed severe motor dysfunction whereas no mice in the DSS treated cohort developed such symptoms. No differences were observed in dopaminergic neuronal density and behavioural assessment readouts between genotype controls, non-DSS, and DSS-treated mice at 12-months of age.
Discussion. Preclinical models that reflect the full spectrum of disease are critical for improving the clinical translation of therapeutics in PD. Disease manifested in a portion of non-DSS treated A53T mice but was absent in the remaining non-DSS treated and DSS-treated cohorts. While unable to make a conclusive assessment on DSS-mediated disease progression, this result suggests that a single timepoint for evaluation of disease does not always provide the full resolution necessary to capture changes in disease profile. For cumulative models of disease with spontaneous progression, such as the A53T model, it would be prudent to include multiple cohorts across the course of disease to better understand disease progression as well as the impact of any potential interventions.

P555

Pharmacological modulation of stress-induced mechanical and thermal pain sensitisation via CX3CR1–NLRP3–IL-1 signalling

Dr Barbara Fülöp

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Pharmacological modulation of stress-induced mechanical and thermal pain sensitization via CX3CR1–NLRP3–IL-1 signaling

Barbrara Fülöp[1,2], Ágnes Király[1,2], Rebeka Petrák[1], Júlia Müller[1], Tünde Bíró-Sütő[1], Viktória Kormos[1], Katalin Rozmer[1], Ádám Dénes[5], Éva Borbély[1], Zsuzsanna Helyes[1,2,3,4].
Institute of Pharmacology and Pharmacotherapy, Faculty of Medicine & University of Pécs, Centre of Neurosciences[1], Pécs, Hungary; HUN-REN-PTE Chronic Pain Research Group[2], Pécs, Hungary; Eötvös Loránd Research Network, Chronic Pain Research Group[3] Pécs, Hungary; National Drug Research and Development Laboratory[4], Budapest, Hungary; "Momentum" Laboratory of Neuroimmunology, Institute of Experimental Medicine[5], Budapest, Hungary

Introduction. Chronic stress contributes to the development and worsening of pain syndromes, such as fibromyalgia, where current pharmacological treatments are unsatisfactory. Neuroinflammatory mechanisms, particularly microglial CX3C motif chemokine receptor 1 (CX3CR1) activation, NOD-, LRR- and pyrin domain-containing protein 3 (NLRP3) inflammasome activity and subsequent interleukine-1 (IL-1) release, have been implicated in the pathogenesis of stress- and neuropathy-related pain.
Aims. Based on our previous preclinical studies with knock-out animals, lack of CX3CR1, and IL-1 protected against chronic restraint stress (CRS)-induced pain, we tested whether pharmacological blockade of these targets alleviates stress-induced pain sensitisation.
Methods. Throughout the 2-week CRS protocol, mice received daily intraperitoneal administration of the CX3CR1 antagonist AZD8797, the NLRP3 inhibitor MCC950, the IL-1 receptor antagonist anakinra, or vehicle. Mechanical pain threshold and cold tolerance of the hind paw were assessed weekly.
Results. CRS induced approx. 20% decrease in mechanical threshold by the second week, which was prevented by AZD8797, MCC950 and anakinra. Stress-induced 70–80% drop of cold tolerance developed in the first week, which was significantly reduced only by chronic administration of anakinra.
Discussion. Our findings highlight that pharmacological inhibition of the CX3CR1–NLRP3–IL-1 pathway effectively attenuates mechanical pain sensitisation caused by chronic stress, supporting its potential as a novel therapeutic target in stress-related pain disorders.

P556

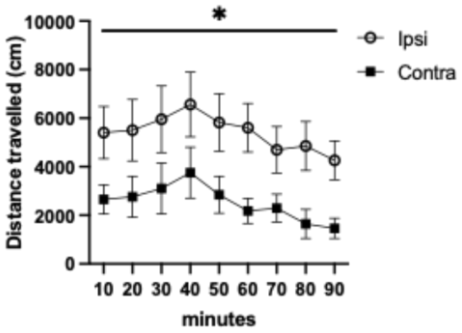
Methamphetamine acts at the lateral hypothalamus-substantia nigral pathway to regulate hyperlocomotion

Dr Teri Furlong

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026, 10:30 AM - 11:10 AM

Methamphetamine acts at the lateral hypothalamus-substantia nigral pathway to regulate hyperlocomotion

Asena Bingul[1], Sam Merlin[2], Simon Killcross[3], Teri Furlong[1], School of Biomedical Sciences, The University of New South Wales[1], NSW, Australia; School of Science, Western Sydney University[2], NSW, Australia; School of Psychology, The University of New South Wales[3], NSW, Australia.



Introduction. Locomotion is regulated by coordinated activity across brain regions including the substantia nigra (SN), a key dopaminergic centre for motor control, and the lateral hypothalamus (LH), which is involved in motivation and reward. However, the role of LH–SN interactions in specific aspects of motor behaviour remains unclear.

Aims. To determine whether the indirect dopamine agonist, methamphetamine, produces its locomotor effects via the LH-SN pathway.

Methods. Female rats (n=16) were used to functionally disconnect the LH and SN by intracranial infusion of a shRNA virus and a 6-hydroxydopamine toxin, respectively. An open field test was used to assess spontaneous locomotion and meth-induced hyperlocomotion.

Results. Contralateral targeting of the LH and SN did not disrupt motor coordination on the balance beam and rota rod compared to ipsilateral targeting (control group). Importantly, functional disconnection of the LH and SN significantly reduced spontaneous locomotor and meth-induced hyperlocomotion in the open-field test.

Discussion. Our findings suggest that the LH and SN interact to regulate spontaneous and meth-induced locomotion in rats, but not motor coordination, indicating this pathway contributes selectively to certain aspects of motor activity. These results refine our understanding of how distinct neural circuits control behaviour. They also suggest that methamphetamine exerts some of its effects via the LH, a region involved in motivation, addiction, and dopamine signalling. Thus, this study identifies the LH as a previously underappreciated contributor to meth-induced behavioural changes and highlights a neural pathway through which psychostimulants influence activity, with implications for disorders involving dopaminergic dysfunction such as addiction and Parkinson's disease.

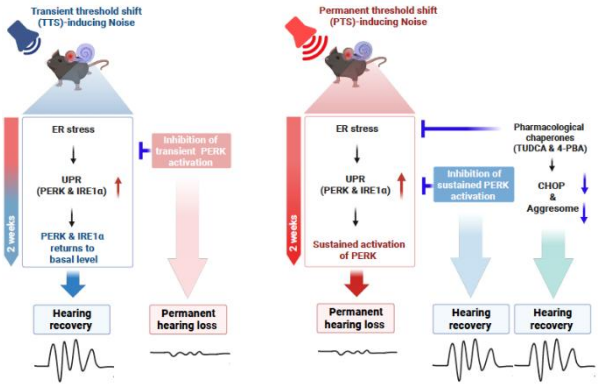
P557

Pharmacological chaperones mitigate noise-induced hearing loss by attenuating sustained PERK activation

Assoc Prof Heon Gee

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Pharmacological chaperones mitigate noise-induced hearing loss by attenuating sustained PERK activation
Heon Yung Gee[1], Ji Won Hong[1]. Department of Pharmacology[1], Seoul, Republic of Korea.



Introduction. Noise-induced hearing loss (NIHL) can present as either a temporary threshold shift (TTS) or a permanent threshold shift (PTS), depending on the intensity and duration of noise exposure. While cellular mechanisms such as oxidative stress, immune responses, and apoptosis are implicated in cochlear damage, the precise molecular events that distinguish recovery in TTS from the lack of recovery in PTS remain unclear.

Aims. This study aimed to elucidate the differential molecular mechanisms governing hearing recovery after TTS and the sustained damage in PTS, with a particular focus on the unfolded protein response (UPR) and its therapeutic implications in NIHL.

Methods. We established mouse models of TTS and PTS via controlled noise exposure and performed longitudinal transcriptomic profiling of the cochlea. Key components of the UPR, including the PERK pathway and downstream effectors, were examined. Pharmacological interventions involved administering a PERK inhibitor and chemical chaperones before and after noise exposure to assess their impact on hearing recovery.

Results. Noise exposure induced endoplasmic reticulum (ER) stress and activated the UPR in both TTS and PTS models. In TTS, PERK pathway activation was transient and returned to baseline levels, whereas in PTS, PERK signaling remained persistently elevated. The pro-apoptotic factor CHOP was selectively upregulated in hair cells following PTS. Inhibition of PERK signaling impaired hearing recovery after TTS, suggesting its essential role in cochlear repair. Conversely, suppression of sustained PERK activation or CHOP expression promoted partial recovery following PTS.

Discussion. Our findings identify PERK-mediated UPR signaling as a critical determinant of hearing outcomes following noise exposure. Transient activation of the PERK pathway supports recovery after TTS, while sustained activation and CHOP induction contribute to irreversible damage in PTS. Targeted modulation of the UPR may thus represent a promising therapeutic approach for the treatment and prevention of NIHL.

P558

DPP-4 Inhibitor Ameliorates the High-fat Diet Induced Cognitive Impairment in Mice

Dr Nikita Nirwan

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

DPP-4 Inhibitor Ameliorates the High-fat Diet Induced Cognitive Impairment in Mice

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Introduction. Worldwide, the diet consumed by humans is loaded with refined carbohydrates and saturated fats, leading to obesity and cognitive impairment. Hence, there is need to explore the treatment strategies which can improve cognitive function in adults.

Aims. In this study, we aimed to explore the anti-cognitive effect of DPP-4 inhibitor in high-fat diet or HFD (60% K cal) induced memory impairment in C57BL/6 mice.

Methods. Mice were fed with HFD for 18 weeks, followed by thr four weeks of oral treatment with DPP-4 inhibitor. Behavioral tests like novel object recognition and elevated plus maze was performed. Mice were euthanized, followed by serum collection and isolation of brain. Parameters such as tau protein, pro-inflammatory cytokines (TNF-alpha and IL-6), permeability of the blood brain barrier (BBB) and neuronal damage was observed.

Results and Discussion. HFD induced memory impairment was reversed with the treatment with DPP-4 inhibitor, as indicated by improvement in HFD impaired novel object recognition ability and increased number of entries in elevated plus maze. We found that DPP-4 inhibitor reduced tau accumulation in brain and lowered the serum level of TNF-alpha and IL-6. Histopathological images showed that HFD induced neuronal damage is also reversed by DPP-4 inhibitor use as indicated by neuronal scoring.

P559

Characterising the modulation of NMDA and AMPA receptors by GPR52

Miss Ishara Ranasinghe

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Characterising the modulation of NMDA and AMPA receptors by GPR52

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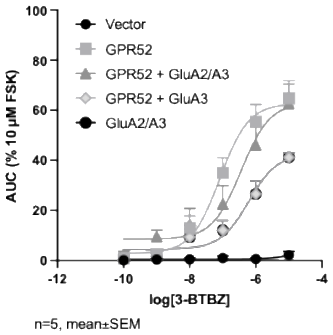
Introduction. Dysfunction of NMDA and AMPA receptors contributes to cognitive deficits in schizophrenia but is poorly addressed by current antipsychotics. GPR52, an orphan GPCR enriched in the striatum and cortex, modulates NMDA receptor-dependent GABA release (Nishiyama et al, 2017) and shows antipsychotic-like effects in mouse models (Nakahata et al, 2018).
Aims. Determine whether GPR52 regulates NMDA and AMPA receptor function and to characterise receptor expression in hiPSC-derived cortical neurons.
Methods. In HEK293T cells, GPR52 was co-expressed with NMDA or AMPA receptors and receptor activity assessed using calcium flux, sodium flux, and cAMP accumulation assays under conditions optimized to reduce NMDA and AMPA receptor-mediated excitotoxicity. In parallel, NMDA and AMPA receptor subunit expression was quantified in hiPSC-derived cortical neurons using qPCR, western blotting, and fluorescence imaging.



Results. We established reliable assays for NMDA and AMPA receptor activity in HEK293T cells co-expressing GPR52 and optimized conditions to minimize excitotoxicity and saw a reduction in cAMP accumulation when GPR52 is co-expressed with the GluA3 homomeric AMPA receptor (Figure 1). Developmental expression profiles of NMDA and AMPA receptor subunits were successfully mapped in hiPSC-derived cortical neurons, with preliminary data identifying expression by 21 days *in vitro*.
Discussion. These findings provide a platform to elucidate GPR52-mediated modulation of glutamatergic signalling and inform future studies in hiPSC-derived neurons.

[a]Nishiyama, K et al (2017) J Pharmacol Exp Ther, 363(2), 253–264
[b]Nakahata, T et al. (2018) Bioorg Med Chem, 26(8), 1598–1608.

P560

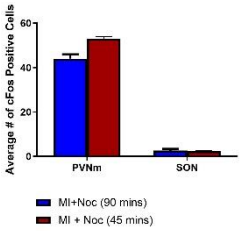
Forebrain cFos expression mediated by nociceptin (N/OFQ) in heart failure rats

Prof Helmut B Gottlieb

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Forebrain cFos expression mediated by nociceptin (N/OFQ) in heart failure rats

Helmut B Gottlieb[1], Jorge Medina[1], Serene Sarabia[1], Abraham Baistra[1], Anna Le[1], Saheli Shah[1], Jacob Zuniga[1], Riley Scott[1], and Jessica Bradley[2]. Pharmaceutical Sciences, UIW Feik School of Pharmacy[1], San Antonio, TX, United States; Department Name, UIW School of Osteopathic Medicine[2], San Antonio, TX, United States.



Introduction. ICV administration of the nociceptin/orphanin (N/OFQ) in conscious rats produces hypotension, bradycardia, decrease in renal sympathetic nerve activity and a free water diuresis (increase in urine excretion without concurrent increase in Na^+ excretion). These physiological effects typically peak at 45 minutes and return to baseline by 60 minutes. cFos is a well-established marker for neuronal activity, with peak expression occurring approximately 90 minutes post-stimulation. This study aims to determine whether changes in cFos expression are due to direct activation or compensatory mechanisms.

Aims. This study examined the changes in cFos expression in the paraventricular nucleus of the hypothalamus (PVN) and supraoptic nucleus (SON) following 45 minutes or 90 minutes ICV microinjection of N/OFQ.

Methods. Urine samples were collected during control (C, 15-min) and after ICV microinjection of saline vehicle (VEH, n=6) or N/OFQ. One group injected with N/OFQ was sacrificed at 45 minutes (10 μg; n= 6) and another at 90 minutes (10 μg; n= 6) post injection. Additional urine samples (every 15-mins) were collected after the ICV injection. The forebrain was processed for c-Fos using a commercially available antibody (Oncogene AB-5 raised in rabbit diluted 1:30,000) and oxytocin (CY3 anti-oxytocin raised in mouse diluted 1:1200).

Results. In VEH-treated animals, renal excretion of water and sodium was not altered. In contrast, N/OFQ produced marked diuresis with minimal alteration to sodium excretion rate. cFos expression was significantly elevated in the PVN parvocellular neurons of 45 minutes group as compared to the 90-minute group ($P<0.001$). There was also a decrease in cFos expression in the magnocellular PVN neurons of the 45-minute group. There were no changes to cFos expression in the SON.

Discussion. Together, central activation of opioid receptor like-1 by N/OFQ in the PVN appears to contribute to the cardiovascular and renal effects evoked by this agonist. Supported by NIH grant 5R16GM145433

P561

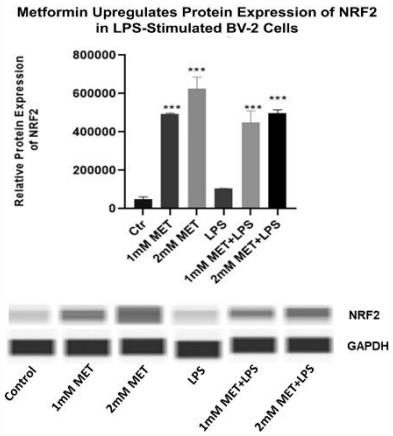
Metformin mitigates inflammation and oxidative stress in LPS-stimulated BV-2 microglia cells

Ms Sarah Reed

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Metformin mitigates inflammation and oxidative stress in LPS-stimulated BV-2 microglia cells

Sarah L. Reed[1], Equar Taka'[2], Karam F. A. Soliman'[3]. College of Pharmacy & Pharmaceutical Sciences (CoPPS), Florida A&M University[1,2,3], Tallahassee, FL, USA



Introduction. Metformin's neuroprotective side effects have been noted during treatment for Type 2 diabetes. Excessively stimulated microglia contribute to neuronal injury by releasing pro-inflammatory cytokines and reactive oxygen species (ROS). Metformin exerts anti-inflammatory effects by inhibiting mitochondrial complex I, reducing ROS generation, while simultaneously activating AMP-activated protein kinase (AMPK) to enhance the cell's antioxidant defenses.

Aims. We hypothesize that metformin provides neuroprotective properties by suppressing inflammation and oxidative stress through the suppression of Nrf2 activation and inflammatory pathways. We aim to investigate the effect of metformin as an anti-inflammatory and antioxidative agent in lipopolysaccharide (LPS)-stimulated BV-2 microglia cells and demonstrate that the effect is through activation of Nrf2/ARE cytoprotective pathways.

Methods. Our methods involve stimulating BV-2 microglia cells for 1 hr with 1µg/mL LPS. We treated the cells for 24 hours as a control, with LPS only, 2 mmol/L, and 2 mmol/L + LPS Metformin concentrations. This study uses PrimePCR array, Western blotting, and ELISA to determine the protein expression of anti-inflammatory and pro-inflammatory cytokines.

Results. Metformin significantly downregulated the expression of mRNA for IL-1β and CCL2 (MCP-1). Metformin also significantly increased the expression of mRNA of Akt1, Smad3, Hmox1, Mapk3, NF-κB2, and IL-10. The Western blot results also revealed that metformin significantly increased the protein expression of Nrf2.

Discussion. These findings suggest that metformin is not only beneficial for the treatment of Type 2 Diabetes but also has therapeutic potential to prevent or slow the progression of neurodegenerative diseases by reducing oxidative stress and neuroinflammation.

P562

TQHXD regulates complement pathway in vascular dementia

Mr Jiuyang Zhang

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Study on the Mechanism of Tongqiao Huoxue Decoction Regulating the C1q/C3-CR3 Complement Signaling Pathway to Inhibit Excessive Synaptic Pruning and Improve Cognitive Function in Vascular Dementia Rats

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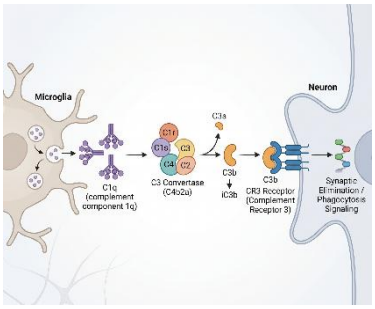

Introduction. Vascular dementia (VD), a prevalent cognitive impairment, is marked by synaptic damage from excessive microglial pruning via the C1q/C3-CR3 pathway (C1q labeling → C3 deposition → CR3-mediated phagocytosis). Tongqiao Huoxue Decoction (TQHXD), a classic TCM formula for resolving blood stasis, improves VD-related cognitive and synaptic deficits, but its molecular targets remain unclear.

Aims. Clarify TQHXD's regulatory effects on the C1q/C3-CR3 pathway, synaptic structure, and cognitive function in VD models, and verify its intervention in C1q overexpression-induced pathological activation.

Methods. In vivo: BCCAO VD rats (including C1q overexpression subgroup) were treated with TQHXD or donepezil; cognitive function, cerebral perfusion, synaptic ultrastructure, and key proteins were assessed. In vitro: OGD/R-induced HT22-BV2 co-cultures (with C1q overexpression) were treated with TQHXD-containing CSF; cell viability, phagocytosis, and protein interactions were detected.

Results. TQHXD dose-dependently enhanced cognitive performance and cerebral blood flow, mitigated hippocampal injury, preserved synaptic integrity, upregulated SYN/PSD95, and downregulated C1q/C3-CR3 axis components and microglial activation. C1q overexpression fully reversed these protective effects in both models.

Discussion. TQHXD targets C1q to inhibit the C1q/C3-CR3 pathway, suppressing aberrant synaptic pruning and rescuing VD cognition. Integrating TCM blood stasis theory with modern complement biology, validated via C1q overexpression reverse verification, this study identifies C1q as TQHXD's key target, providing novel mechanistic evidence for TCM's complement-targeted VD therapy.

Li, Jiacheng et al. (2024) Phytomedicine 135 : 156166.Germany: Elsevier GmbH

P563

Glutathione Modulates the TRPM2 Cation Channel to Mitigate Parkinsonism-Induced Ferroptosis Neurodegeneration

Dr Elif Guzel

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Glutathione Modulates the TRPM2 Cation Channel to Mitigate Parkinsonism-Induced Ferroptosis Neurodegeneration

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Introduction. Parkinson's disease (PD) is the most prevalent neurodegenerative disorder, with aberrant iron metabolism leading to ferroptosis through glutathione (GSH) depletion and excessive calcium influx contributing to disease pathogenesis. The TRPM2 cation channel is implicated in neurodegenerative signalling, yet its role in parkinsonism-induced ferroptosis remains poorly defined.

Aims. This study investigated the function of TRPM2 and the potential neuroprotective efficacy of exogenous GSH in mediating ferroptosis within a parkinsonism model.

Methods. Human SH-SY5Y dopaminergic cells were exposed to the toxin 1-methyl-4-phenylpyridinium (MPP) and the ferroptosis inducer erastin (Erst). Experimental groups were treated with GSH, the TRPM2 blocker ACA, or the anti-ferroptotic agent Ferrostatin-1 (Ferr1). Whole-cell patch-clamp electrophysiology was utilized to measure TRPM2 current densities, while laser scan confocal microscopy visualized fluctuations in cytosolic calcium (c[Ca]c), iron (c[Fe]c), and zinc (c[Zn]c). Biochemical assays quantified mitochondrial dysfunction, ROS, lipid peroxidation (LPO), and glutathione peroxidase (GSH-Px) activity.

Results. Exposure to MPP and Erst significantly upregulated TRPM2 current densities and triggered a pathological intracellular overload of Ca, Fe, and Zn. This ion imbalance exacerbated mitochondrial dysfunction, elevated ROS generation, and increased LPO, while concurrently depleting endogenous GSH and GSH-Px. Crucially, administration of GSH, ACA, or Ferr1 effectively suppressed TRPM2 activation and ion accumulation, restored the oxidant/antioxidant balance, and prevented neuronal death.

Discussion. These findings establish TRPM2 activation as a critical signalling nexus linking parkinsonism-induced oxidative stress to ferroptosis. Consequently, targeting the TRPM2 pathway via GSH modulation represents a promising therapeutic paradigm for preserving neuronal integrity in PD.

P564

AI-based behavioral analysis of metabolic dysfunction-associated steatohepatitis mouse model

Mr Naoaki Sakamoto

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

AI-based behavioral analysis of metabolic dysfunction-associated steatohepatitis mouse model
Naoaki Sakamoto[1], Takamasa Numano[2], Yui Kobayashi[3], Ryunosuke Shirai[2], Masahiro Fukuda[3], Maria Osaki[3], Keisuke Omori[3], Taichi Yamamoto[2], Takahisa Murata[1,3,4]. Animal Radiology, The University of Tokyo[1], Tokyo, Japan; Central Institute for Experimental Medicine and Life Science[2], Kanagawa, Japan; Food and Animal Systemics, The University of Tokyo[3], Tokyo, Japan; Veterinary Pharmacology, The University of Tokyo[4], Tokyo, Japan.

Introduction. Metabolic dysfunction could lead to pruritus and/or psychiatric symptoms. However, whether and how metabolic dysfunction in experimental animal models affects their behavior remain elusive.
Aims. This study aimed to investigate behavioral changes of a dysfunction-associated steatohepatitis (MASH) mouse model for 24 hours.
Methods. Male C57BL/6 mice had ad libitum access to choline-deficient methionine-defined high fat diet (HFD) from 6 weeks old. The model establishment was confirmed by plasma levels of aspartate aminotransferase (AST) and alanine aminotransferase (ALT) and histological evaluation of livers. Their behavior was recorded for 24 hours at 8, 10, 12, 14 weeks and analyzed with artificial intelligence-based animal behavior analysis system, SHIGUSA.
Results. HFD-fed mice showed the elevated plasma level of AST and ALT at 8, 10, 12, 14 weeks. Fatty change was observed in liver at 14 weeks in HFD-fed mice. We observed lower travelled distances and the frequency/duration of rearing behavior during night at 10, 12, 14 weeks in HFD-fed mice. The frequency/duration of eating were decreased during day and night in HFD-fed mice, whereas the duration of drinking was increased especially during day. HFD-fed mice preferred to drink during periods not associated with eating. The frequency of grooming was increased in HFD-fed mice at 10, 12, 14 weeks, while that of scratching was increased during day at 14 weeks.
Discussion. The imbalance between food and water intake suggests that mice exhibited excessive thirst due to metabolic dysfunction. The increase in the frequency of grooming and scratching behavior might reflect that mice felt stress/anxiety and pruritus, respectively. These findings suggests that experimental mouse models could be utilized to analyze the pathogenesis of pruritus and/or psychiatric symptoms associated with metabolic dysfunction.

P565

Setmelanotide activates MC4R via distinct signalling pathways in a tissue-specific manner

Assist Prof Maha Hammad

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Setmelanotide activates MC4R via distinct signalling pathways in a tissue-specific manner

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Introduction. Melanocortin 4 receptor (MC4R) has a well-established role in regulating appetite, food intake and energy homeostasis. Therefore, MC4R has been a promising target for the treatment of metabolic disorders. However, animal studies reported serious cardiovascular side effects with the many tested MC4R ligands. Therefore, despite the positive effects on body weight and food intake, these side effects delayed the progress towards a therapeutic ligand until the development of setmelanotide. Setmelanotide is an MC4R agonist currently approved for weight loss in obese adults and children with mutations in components of the leptin-melanocortin pathway. This study aims to compare the signalling and functional aspects of the physiological MC4R agonist, α-MSH (alpha-melanocyte-stimulating hormone) with Setmelanotide. We hypothesize that setmelanotide can activate MC4R through different signalling pathways compared to MSH in a tissue-dependent manner.
Methods. Several cell lines including HEK293-MC4R, GT1-7 Hypothalamic cells and human skeletal muscle cells (SKMCs) are utilized in the functional analysis of MC4R-actiavted pathways upon stimulating with α-MSH or setmelanotide. Multiple signalling pathways will be studied including cAMP activation and ERK1/2 phosphorylation. Glucose uptake and insulin signalling markers are also assessed to determine the effect of MC4R activation on glucose homeostasis. In addition, glucose uptake is measured in db/db mice treated with either MSH or setmelanotide.
Results. Our data shows that setmelanotide has a higher potency for cAMP formation and a weaker effect on ERK1/2 phosphorylation when compared to α-MSH indicating functional selectivity in HEK293-MC4R cells. When GT1-7 and SKMCs were studied, both MSH and Setmelanotide activated the ERK1/2 pathways similarly. However, a differential effect is observed between setmelanotide and MSH when glucose uptake was evaluated.
Discussion. Taken together, our study provides important insights into the diversity of MC4R signalling pathways depending on the ligands and tissues being studied. It also demonstrates its role in regulating glucose homeostasis. This will facilitate the development of personalized drugs for metabolic disorders via refining MC4R agonists.

P566

Liensinine improves cognitive dysfunction behavior via restoring neurotransmitters and microbial remodeling

Prof Lifeng Han

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Liensinine improves cognitive dysfunction behavior via restoring neurotransmitters and microbial remodeling in CD mice

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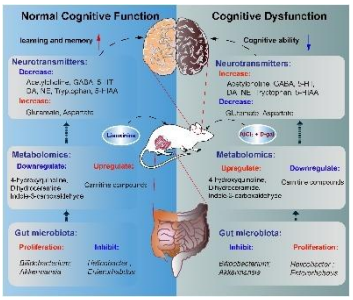

Introduction: Cognitive dysfunction (CD) lacks effective therapies. Liensinine from lotus plumule shows neuroprotective potential, but mechanisms remain unclear. The gut-brain axis is implicated. This study investigates if liensinine alleviates CD by restoring neurotransmitters and remodeling gut microbiota and metabolism.

Aims: To evaluate liensinine's therapeutic effects in a D-gal/$AlCl_3$-induced CD mouse model and elucidate mechanisms via behavioral tests, histopathology, neurotransmitter analysis, fecal metabolomics, and 16S rRNA sequencing.

Methods: Male C57BL/6J mice received D-gal (120 mg/kg, i.p.) and $AlCl_3$ (20 mg/kg, i.g.) for 91 days. Liensinine (25-75 mg/kg) or donepezil was given for the final 5 weeks. Assessments included Morris water maze, H&E/Nissl staining, immunohistochemistry (Aβ, p-Tau, NeuN), ELISA, UHPLC-MS (neurotransmitters & metabolomics), and 16S rRNA sequencing.

Results: Liensinine improved learning/memory, reduced Aβ/p-Tau, restored Nissl bodies, and increased $NeuN^+$ neurons. It reversed neurotransmitter imbalances (↓glutamate/aspartate, ↑5-HT, dopamine, GABA, ACh). Metabolomics identified 25 altered metabolites: upregulated carnitines, downregulated dihydroceramide, 4-hydroxyquinoline, indole-3-carboxaldehyde (sphingolipid, histidine, arachidonic acid pathways). Liensinine increased α-diversity, promoted beneficial bacteria (*Bifidobacterium*, *Akkermansia*), and reduced harmful ones (*Helicobacter*, *Enterorhabdus*). Spearman correlation linked microbiota changes to metabolic improvements.

Discussion: Liensinine ameliorates CD via multi-target mechanisms: restoring neurotransmitters, modulating sphingolipid/histidine/arachidonic acid metabolism, and remodeling gut microbiota (increasing probiotics, suppressing pathogens). These findings support the gut-brain axis as a key therapeutic pathway and highlight liensinine's potential as a nutraceutical for CD.

P567

Exploring medicinal plants for morphine de-addiction

Mrs Zahra Hashemi

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Exploring medicinal plants for morphine de-addiction

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Introduction. Prolonged use of morphine leads to severe withdrawal symptoms, intense cravings, and increased tolerance, perpetuating a cycle of dependency. It produces euphoria, analgesia, and anxiolysis, but its high potential for substance use disorder poses significant clinical challenge. Current treatment options are often limited in efficacy and associated with adverse side effects, highlighting urgent need for novel and safer therapeutic strategies.

Aims. This research aims to explore therapeutic potential of CAM in treatment of OUD, specifically focusing on efficacy of ethanol extracts and key phytochemicals derived from *Delphinium denudatum* (Dd) and *Myristica fragrans* (Mf). The goal is to evaluate their ability to modulate addiction-related pathways, alleviate withdrawal symptoms, reduce cravings, and target neurotransmitter systems involved in morphine dependency.

Methods. Ethanol extracts of Dd and Mf, as well as isolated phytochemicals are being investigated in preclinical models of morphine addiction. Research involves *in vitro* and *in vivo* studies designed to assess effects of these compounds on withdrawal symptomatology and key neurotransmitter systems. Advanced phytochemical isolation and characterization techniques are employed to identify and quantify constituents responsible for observed effects.

Results. Preliminary findings indicate that the studied phytochemicals can significantly reduce withdrawal symptoms and decrease morphine-induced craving in animal models. Evidence suggests that these compounds modulate neurotransmitter systems implicated in addiction, potentially through multi-target mechanisms involving dopaminergic and cholinergic receptors. Early characterization of the extracts has revealed promising bioactive profiles, although further detailed analysis and validation are ongoing.

Discussion. Use of plant-based, multi-targeted interventions represents promising avenue for developing safer and more effective treatment strategies for OUD. Preliminary results support therapeutic potential of Dd and Mf, suggesting their role in attenuating key aspects of morphine dependency. Continued isolation and characterization of bioactive compounds are critical for advancing these findings toward clinical applications. These efforts contribute to bridging gap in current OUD treatment by offering complementary therapeutic options.

P568

Australian prescriber trends and evidence for efficacy of cannabinoids for anxiety treatment.

Prof Roselyn Rose'Meyer

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Australian prescriber trends and evidence for efficacy of cannabinoids for anxiety treatment.
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Introduction. While pharmacological and psychological interventions remain standard treatments for anxiety, they have limitations such as side effects, dependence, and variable efficacy. Medicinal cannabis has gained attention as an alternative therapy, but its clinical utility remains debated due to inconsistent findings and regulatory challenges. In 2021, the Australian Government approved the Special Access Scheme which permits prescribers (including nurse practitioners) to prescribe medicinal cannabis products for individual patients on a case-by-case basis.
Aims. To examine the Therapeutics Goods Administration (TGA) Medicinal Cannabis Authorised Prescriber Scheme website to ascertain trends in application approvals for the treatment of anxiety with respect to demographics and cannabis products prescribed and to review published randomised placebo-controlled trials (RCT) to determine the efficacy of medicinal cannabis products for the treatment of anxiety.
Methods. Data from the TGA website for the SAS-B application pathway for approved health practitioners was extracted and prescribing outcomes determined for medicinal cannabis products used in the treatment of anxiety with respect to age, gender, state of residence and products prescribed. Published RCTs were sourced from various medical databases, including PubMed and Google Scholar.
Results. The age range for the highest number of TGA approved cannabis products for the treatment of anxiety was for the 18-44 year age group (73.53%) with males the most approved gender (59.36%). Tetrahydrocannabinol (Category 5, >98%) based dosage forms were the most commonly approved medicinal cannabis products, in the form of dried herbs, closely followed by oral liquid. A review of 16 RCTs reported that cannabidiol-dominant formulations showed potential in reducing the symptoms of anxiety.
Discussion. In Australia, TGA approvals for medicinal cannabis applications for the treatment of anxiety mainly comprises tetrahydrocannabinol-based products. However, nearly all of the published RCTs used cannabidiol based compounds for their treatment groups. In these reports, heterogeneity in RCT study design, sample sizes, tests for anxiety and cannabis formulations also limits the generalisability of findings.

P569

Axonal retrograde neuroprotective effects of apoE-containing lipoproteins in rat retinal ganglion cells

Assoc Prof Hideki Hayashi

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Axonal retrograde neuroprotective effects of apoE-containing lipoproteins in rat retinal ganglion cells

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Introduction. Low density lipoprotein receptor-related protein 1 (LRP1), a member of the low-density lipoprotein receptor family, is a multifunctional receptor involved in endocytosis and signal transduction. LRP1 is abundantly expressed in peripheral tissues as well as the central nervous system. In previous studies with primary cultured retinal ganglion cells, we showed that apolipoprotein (apo) E-containing lipoproteins (E-LPs) activate intracellular signaling through LRP1, providing neuroprotection against glutamate-induced neurodegeneration. This clarified the neuroprotective roles of E-LP and LRP1.

Aims. We aim to clarify the mechanism by which ELP exerts its neuroprotective effects via LRP1, specifically whether this occurs near the cell body or in the distal axon, and how it is initiated.

Methods. In this study, we used a compartmented culture method that allows the cell bodies and the distal axons of neurons to be cultured in different environments to investigate the neuroprotective mechanism induced by LRP1 stimulation. We induced neurodegeneration by adding glutamate to the cell body compartment (containing cell bodies/proximal axons) and evaluated nuclear condensation/fragmentation by fluorescence staining after 24 hours.

Results. Our results revealed that adding E-LPs to either the cell body or axon compartment protected against glutamate-induced neurodegeneration triggered in the cell body compartment. However, lipoproteins containing apoJ or apoA1 did not exhibit a protective effect under the same conditions. Furthermore, the neuroprotective effect of E-LP remained unchanged when its lipid composition was modified by adding cholesterol, sphingomyelin, and phosphatidylethanolamine to a phosphatidylcholine base. Additionally, E-LP treatment applied to the distal axon two hours after glutamate stimulation near the cell body exerted a neuroprotective effect. Furthermore, suppression of LRP1 expression by LRP1 siRNA reduced the neuroprotective effect.

Discussion. These findings suggest that LRP1, when expressed on the distal axons of retinal ganglion cells, can exert a retrograde neuroprotective effect upon stimulation by E-LPs.

P571

Down-regulation of TRPM2 contributes to TLR4-mediated microglial activation and memory impairment

Prof Juan Li

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Down-regulation of TRPM2 contributes to TLR4-mediated microglial activation and memory impairment

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Introduction. Toll-like receptor 4 (TLR4)-mediated microglial neuroinflammation plays an important role in the pathology of neurodegenerative diseases such as Alzheimer's disease (AD). Evidence shows that transient receptor potential melastatin 2 (TRPM2) channels regulate microglial function. The present study was aimed to explore the involvement of TRPM2 in TLR4-mediated microglial activation and memory impairment.

Methods. BV-2 microglial cells were stimulated with lipopolysaccharide (LPS). Cytokine production and activation of signaling pathway were detected by enzyme-linked immunosorbent assay (ELISA), real-time PCR or Western blot. Microglial migration was assessed with scratch wound-healing assay. Learning and memory function was evaluated with Morris water maze test in mice receiving systematic injection of LPS and mice subjected to conditional knock-out of microglial Trpm2.

Results. LPS-caused microglial activation was accompanied with decreased TRPM2 mRNA and protein levels, which were dependent on the TLR4-c-Jun NH2-terminal kinase (JNK) pathway. Enhancement of TRPM2 function or expression attenuated LPS-induced microglial activation. Conversely, suppression of TRPM2 function or expression aggravated the LPS-caused microglial inflammatory responses. Additionally, LPS decreased microglial Sirtuin 6 (SIRT6) protein levels, an effect mediated by the TLR4-JNK pathway. Functional activation of SIRT6 with UBCS039 attenuated the LPS-caused microglial activation and down-regulation of microglial TRPM2 expression. *In vivo*, the LPS-caused neuroinflammation and cognitive impairment were accompanied with the alteration of TLR4-JNK-SIRT6 pathway and reduction of microglial TRPM2 expression in mouse brain. Additionally, microglial TRPM2 expression declined in the brain of an AD mouse model. Selective microglial knock-down of TRPM2 aggravated the LPS-caused neuroinflammation and cognitive deficits in mice.

Discussion. These results suggest that TRPM2 channels exert an anti-inflammatory role in TLR4-triggered microglial activation and cognitive deficits. The impairment of microglial TRPM2 expression, mediated by the JNK-SIRT6 pathway, may contribute to neuroinflammation elicited by the TLR4 signaling. Thus, TRPM2 may represent a novel molecular target for anti-inflammatory therapy of neurodegenerative diseases such as AD.

P572

Psychedelics elicit their effects by 5-HT2A receptor-mediated Gi signalling

Prof Zhenhua Shao

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Psychedelics elicit their effects by 5-HT2A receptor-mediated Gi signalling

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Introduction. Psychedelics are undergoing a renaissance as potential therapy for psychiatric disorders, with more than 200 clinical trials being studied across several countries. However, the precise mechanisms by which these drugs bring about benefits and the potential clinical risks are not yet fully understood.
Aims. The serotonin 2A receptor (5-HT2AR) was reported to be a Gq-coupled receptor and the primary interoceptive target of psychedelics. Here we compared psychedelics and their non-hallucinogenic analogues (nHAs) using in vitro and in vivo approaches, finding that 5-HT2AR-mediated non-canonical Gi signalling is essential for hallucinogenic effect.
Methods. In combination with different function assays, we further presented five cryo-electron microscopy structures of 5-HT2AR–Gi/Gq in complex with psychedelics or nHAs.
Results. Structural analysis and pharmacological investigation revealed that a special contact between nHAs with 5-HT2AR mediated the signalling bias. Building on this insight, we identified a 2,5-dimethoxy-4-iodoamphetamine derivative, DOI-NBOMe, which exhibits potent and selective Gq-biased activity, and demonstrates promising therapeutic effects in mouse models without hallucinogenic effect
Discussion. Our finding uncovers the functional mechanisms underlying the Gi signalling mediated by 5-HT2AR and provides valuable insights for designing psychedelic-based drugs with minimized risk from hallucinogenic effects.

P574

Investigating the Efficacy of Cannabis-Derived Compounds for Treatment of Parkinson's Disease

Mr Eric Okrah

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Investigating the Efficacy of Cannabis-Derived Compounds for Treatment of Parkinson's Disease

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Introduction: Parkinson's disease (PD) is a neurodegenerative disorder characterized by death of dopaminergic neurons in the substantia nigra and the accumulation of protein aggregates called Lewy bodies. Although PD primarily affects the brain, its pathology is systemic, with manifestations in peripheral non-neural tissues such as blood and skin. Despite recent preclinical advances proposing therapeutic approaches, there is no cure, and current treatments are ineffective long-term. Cannabinoids have emerged as promising therapeutic agents due to their antioxidant, neuroprotective, anxiolytic, analgesic and anti-inflammatory properties. Accumulating evidence suggest cannabinoids mitigate PD symptoms by modulating signalling pathways, but exact mechanisms remain poorly defined. Our laboratory detected mitochondrial dysfunction and calcium signalling abnormalities in PD blood-derived cell lines.

Aims: This study aimed to investigate the therapeutic potential and efficacy of cannabidiol (CBD) and its propyl analogue cannabidivarin (CBDV) on mitochondrial function and calcium signalling in PD patient-derived cells.

Methods: Immortalised lymphoblastoid cell lines (LCLs) from PD (n = 35) and healthy controls (n = 22) were treated for 24 hours with 10-20 µM CBD, 10-20 µM CBDV, or a 1:1 combination of 10-20 µM CBD and 10–20 µM CBDV dissolved in 0.1% DMSO. Untreated controls were included for PD and healthy groups. Following treatment, mitochondrial energy production and cytosolic calcium signalling were assessed using fluorescence-plate-based measurements to evaluate cannabinoid therapeutic efficacy.

Results: In our LCLs, we observed elevated ATP levels and increased calcium signaling in PD compared to healthy controls. CBD treatment (20 µM) rescued elevated mitochondrial energy production in PD lines by reducing ATP steady-state levels to those observed in healthy controls. The increase in mitochondrial energy production in PD was not due to increased mitochondrial mass, and other parameters of mitochondrial function remained unaltered. CBD also did not alter mitochondrial mass, suggesting the balance between biogenesis and degradation was unaltered. Mitochondrial membrane potential, reactive oxygen species production, and removal were unaffected. CBD treatment (10 µM and 20 µM) also rescued elevated cytosolic calcium levels in PD cell lines. CBDV produced similar, though less pronounced, effects.

P575

Cannabidiol and Cannabidivarin restore dysregulated calcium signaling in Parkinson's disease

Mr Eric Okrah

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Cannabidiol and Cannabidivarin Restore Dysregulated Calcium Signaling via G protein-coupled platelet-activating factor receptor as a Therapeutic Strategy for Parkinson's Disease Eric A. Okrah[1,2], Claire Allan[1], Monika S. Doblin[2*] and Sarah J. Annesley[1,2*] [1]Department of MAPP, LTU, Bundoora, Vic 3086, Australia; [2]Australian Research Council Research Hub for Medicinal Agriculture, Bundoora, Vic 3086, Australia

Introduction: Parkinson's disease (PD) is a neurodegenerative disorder with evolving layers of complexity. It is characterized by motor features of parkinsonism associated Lewy bodies and death of dopaminergic neurons in the substantia nigra. Although PD predominantly affects the brain, Its pathology is systemic and manifest in blood and skin. There is no cure and current treatments are ineffective long-term. Cannabinoids show therapeutic potential because of their antioxidant, neuroprotective, anxiolytic, analgesic and anti-inflammatory properties. Dysregulated calcium signalling is a central contributor to pathology, and our laboratory has detected abnormalities in calcium signaling in blood-derived cell lines from PD patients.
Aims: This study aimed to investigate the therapeutic potential and efficacy of cannabidiol (CBD) and its propyl analogue cannabidivarin (CBDV) on calcium signalling.
Methods Immortalised lymphoblastoid cell lines (LCLs) derived from individuals diagnosed with PD and healthy controls, basal cytosolic calcium [Ca^{2+}] levels were measured prior to stimulation with an agonist platelet activating factor (PAF), the maximum cytosolic [Ca^{2+}] response magnitude was measured and time to reach maximum [Ca^{2+}] after PAF stimulation. Following treatment, LCLs were treated for 24 hours with 10-20 µM CBD, 10-20 µM CBDV, or a 1:1 combination of these two cannabinoids, all dissolved in 0.1% dimethyl sulfoxide (DMSO). Untreated control groups were included for both PD and healthy controls.
Results: In our LCLs, we observed elevated calcium signaling in PD compared to healthy controls. CBD treatment (10 µM and 20 µM) restored elevated cytosolic calcium [Ca^{2+}] levels in PD cell lines via the G protein-coupled platelet-activating factor receptor (PAFR) by reducing response magnitude. CBDV produced similar, though less pronounced, effects.

P576

Neuroprotective effects of mangiferin potentiated with nNOS inhibitor in 6-OHDA induced Parkinsonism

Prof Rishi Pal

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Neuroprotective effects of mangiferin potentiated with nNOS inhibitor in 6-OHDA induced Parkinsonism

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Introduction. Nitric oxide (NO), generated by nitric oxide synthase enzymes (NOS), has an important role in maintaining synapse plasticity, neuro-modulation, and other physiological functions in the brain. NO thus generated also has a key role in formation of reactive oxygen and reactive nitrite species and subsequent neuronal damage due to sustained oxidative stress. Due to its property of ROS and RNOS generation, NO plays a significant role in Parkinson's disease (PD) pathogenesis. Mangiferin is a polyphenolic compound traditionally used for its antioxidant, anti-inflammatory and now as specific NF-κB inhibitor properties.

Aims. Therefore, the current study was designed to evaluated neuroprotective effects of mangiferin alone and in combination with nNOS inhibitor 7-nitro-indazole (7-NI) in 6-OHDA induced animal model of Parkinson's disease in rats.

Methods. The study utilized male Wistar rats weighing 200–250 g (56 rats; n = 8/group). On day "0" stereotaxic surgery of rats was done to induce 6-hydroxydopamine (6-OHDA) lesioning in rats. Coordinates for substantia nigra were anteroposterior-2 mm, mediolateral-5 mm and dorsoventral-8.2 mm. After 14 days, those rats which show at least 210 contralateral rotations after administration of apomorphine (0.5 mg/kg sc.) were selected for the study and were given treatment with mangiferin alone and in combination with 7-NI 10 mg/kg was done from days 14 to day 42 for specific group for 28 days. On day 42, rats were subjected to behavioral studies, and their brains were taken out after euthanasia under sodium pentobarbitone (80 mg/kg, i.p) to perform biochemical and molecular studies.

Results. Treatment with mangiferin and 7-NI significantly increases locomotor parameters in 6-OHDA lesioned rats. Treatment with mangiferin 45 µg and 7-NI (10 mg/kg) alone and in combination, significantly ($P<0.05$ all parameters) reduces oxidative stress markers, SOD, CAT, MDA and NOx along with significant ($p<0.01$) decrease in concentration of pro-inflammatory cytokines, TNF-α and NF-kB, cyclooxygenase-2, total nitrite (NOx) and FOS-B concentration in brain homogenate. Results of this study suggest that treatment with 7-NI 10 mg/kg further enhances anti-inflammatory and anti-parkinsonism activity of mangiferin owing to its property of inhibiting nNOS mediated FOS-B signaling and thereby inhibiting mRNA formation of TNF-α and IL-6 levels.

Discussion. The polyphenolic antioxidant plant product, mangifern shows neuroprotective effects in 6-OHDA induced Parkinsonism symptoms in a dose dependent manner. This may be due to protecting dopaminergic neuronal damage in the brain. The neurobehavioral changes are found protected by mangiferin and is associated with molecular changes in pro-inflammatory cytokines, COX-2, NOx and FOS-B concentration in brain. This suggests that the oxidative stress caused by the neurotoxin, 6-OHDA is responsible for these behavioural, locomotor, and molecular changes. When manigiferin combined with the neuronal NOS inhibitor, 7-nitroindazole, the protective effects of manigiferin increased many folds in all parameters. Results suggest that NO play a significant role in 6-OHDA induced Parkinsonism. In future, mangiferin along with NO modulators may be used as promising drugs for the treatment of Parkinson's disease disorder and other neurodegenerative diseases.

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P577

Role of autophagy modulators on behavioral and molecular changes in Parkinson's disease

Prof Rishi Pal

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Role of autophagy modulators on behavioral and molecular changes in Parkinson's disease

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Introduction. Parkinson's disease (PD) is neuromuscular ailment that affect both motor or non motor deficits. It is characterised by dopamenergic (DA) neoron loss, lewey body dysfunction. One of the primary pathogenic mechanisms of PD development is autophagy deregulation. The role of autophagy is controversial in PD. Therefore, the current study is designed to evaluate the regulatory role of autophagy in dopamenergic neuronal damage in relation to behavioural and molecular changes in PD.
Aim. Present study focuses on the involvement of non-apoptotic dopaminergic neurons cell death (autophagy & necroptosis) in MPTP-induced Parkinson's mice and their modulation by using pharmacological autophagy inhibitor and inducer.
Method. To establish the contribution of autophagy in PD model, acute dose of MPTP (15mg/kg× 4 times a day at 2 hr. Interval) was administered in BALB/c mice i.p (18-20 week old and 30-35 g) to induce dopaminergic neuron degeneration after institutional animal ethics committee (IAEC) approval (88/IAEC/2017). [1] The treatment of the autophagy inducer (Niclosamine 5-10 mg/kg, i.p.) and autophagy inhibitor (Chloroquine 8-16 mg/kg, i.p.) was administered in PD mice for 14 days. [2] On on day 14, mice were assessed for behavioural elevated plus maze (EPM) & open field (OF) tests as well as for motor coordination using rota rod apparatus. Animals were sacrificed under anaesthesia (pentobarbitone sodium 80 mg/kg, i.p). Their brains were removed and substantia nigra par compacta (SnPc) region were isolated. The dopamine level in striatal brain tissue was assessed using HPLC technique. Thereafter, DAB staining on mice brain (SnPc) tissue section at different time point assessed for pathological changes using haematoxylin & eosin staining was performed to evaluate the tyrosine hydroxylase level (TH) level and morphological changes. Autophagy markers LC-3B estimation and Baclin-1 expression were assessed by immunofluorescence and immunoblotting techniques.
Results. PD mice shows marked significant ($P<0.001$) reduction in behavioural parameters in EPM and OF tests as well as motor coordination dysfunction in rota rod apparatus, which is associated with significant reduction in dopamine levels ($P<0.01$). Significant morphological damage in dopaminergic neurons was assessed by H & E staining and tyrosine hydroxylase (TH) enzyme levels. Effect of chloroquine (autopgy inhibitor) showed protective effects in the pathogenesis of PD as evidenced by the reversal behavioural test parameters and dopamine levels as compared to MPTP treated animals. Role of niclosamide (autophagy inducer) on PD pathogenesis was assessed and in present study it is demonstrated the relationship between autophagy induction or inhibition and shown similar results in progression of Parkinson's disease. The dose dependent effect of autophagy inhibitor (chloroquine) and autophagy inducer (niclosamide) was observed in PD animal model. Most significant effect was observed at chloroquine (8 mg/kg) that rescues and restores the TH positive DA neurons in SNpc of PD mice brain and significantly diminishes LC-3B and Beclin-1 expression in PD mice.
Discussion. Present study suggests that that niclosamide shows less protective response in comparison to chloroquine in terms of restoration of TH positive DA neurons in SnPc of mice brain. Interestingly chloroquine maintains upregulation of LC-3B and Beclin-1 expression in PD mice as compared with niclosamide. We can conclude that dopaminergic neuronal damage may be mediated through autophagy-mechanisms and chloroquine may be use to suppressed neuronal damage in PD.
Key words: Parkinson's disease, Autophagy, Chloroquine, Niclosamide, MPTP, Baclin gene

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P578

Dynamics of Receptor Tyrosine Kinase Signalling

Assist Prof Chloe Peach

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Dynamics of Receptor Tyrosine Kinase Signalling

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Introduction. Receptor Tyrosine Kinases (RTKs) are a family of receptors which dimerise in response to growth factors. Phosphorylation of intracellular tyrosine residues triggers adaptor protein recruitment, leading to cell proliferation and survival. As well as roles in embryonic development and adulthood, RTKs are key to various pathologies. Compared to other receptor families, however, there are limited approaches to study their real-time pharmacology.

Aims. We aimed to establish sensitive assays to monitor upstream RTK activation for three key RTKs – the epidermal growth factor receptor (EGFR), insulin receptor (InsR) and tropomyosin receptor kinase B (TrkB).

Methods. To monitor RTK dimerisation, EGFR, InsR or TrkB were tagged with a NanoLuciferase (NanoLuc) for bioluminescence resonance energy transfer (BRET). This acts as a donor for their respective fluorophore-tagged RTK monomer (Venus, SnapTag). To monitor the adaptor protein recruitment, RTKs were then tagged on their carboxy-terminus with NanoLuc, acting as a donor for RFP-tagged phospholipase Cγ (PLCγ). For both assays, BRET was monitored upon addition of heparin-binding EGF (HB-EGF), insulin or brain-derived neurotrophic factor (BDNF).

Results. HB-EGF, insulin and BDNF induced a concentration-dependent increase in BRET between monomers of EGFR, InsR or TrkB, respectively. There was also a rapid concentration-dependent increase in BRET upon recruitment of PLCγ to InsR-NanoLuc, EGFR-NanoLuc or TrkB-NanoLuc. For EGFR and InsR, ligands had a higher potency with respect to PLCγ recruitment compared to upstream RTK dimerisation (see Table).

	Dimerisation	Recruitment
HB-EGF (EGFR)	8.27 ± 0.07 (5)	9.41 ± 0.15 (5)
Insulin (InsR)	7.46 ± 0.17 (5)	8.50 ± 0.12 (8)
BDNF (TrkB)	8.72 ± 0.24 (5)	8.54 ± 0.18 (6)

Discussion. Akin to widely used G protein recruitment assays, approaches were established to monitor the signalling kinetics of EGFR, InsR and TrkB – tools that could be applied to pharmacological studies across the RTK family.

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P579

Mental health consequences of the Covid-19 pandemic on young people in Serbia

Dr Bojana B. Petrović

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Mental health consequences of the Covid-19 pandemic on young people in Serbia

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Introduction. COVID-19 represents a systemic, potentially severe, and life-threatening disease caused by SARS-CoV-2 infection. The ongoing pandemic poses a serious threat to global public health, with more than 700 million reported cases and over 7 million deaths across 230 countries. However, COVID-19 has affected not only physical health but also mental health (Wang et al, 2021), as a result of family loss, unemployment, and enforced changes in everyday life, including social distancing and distance learning.

Aims. The aim of our study was to determine the impact and consequences of the COVID-19 pandemic on the mental health of young people aged 19–30 years.

Methods. Mental health status was assessed using the Depression Anxiety Stress Scale-21 (DASS-21), developed by Lovibond and Lovibond (1995).

Results. A total of 556 respondents (429 women and 127 men), aged 19–30 years, participated in the study. Among them, 49.80% had been infected with COVID-19, while 88.78% reported that a family member had contracted the virus. In addition, about one-fifth of respondents (19.92%) experienced the death of a close relative as a consequence of the disease. The findings further revealed that stress-related symptoms were the most prevalent, affecting 40.47% of respondents, followed by anxiety disorders in 38.10% and depression in 30.95%.

Discussion. These findings were particularly evident among respondents who reported the death of a family member, with mental health disorders reaching rates of up to 60%. The results of this study are consistent with those of similar investigations, which consistently demonstrate the detrimental impact of the COVID-19 pandemic on the mental health of young people. Nevertheless, the full scope and long-term intensity of the potential mental health consequences of COVID-19 will be more accurately elucidated through future longitudinal research.

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P580

Spatiotemporal dynamics analysis of synaptic adhesion molecules in synaptogenesis by single-molecule imaging

Mr Kodai Sasaki

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Spatiotemporal dynamics analysis of synaptic adhesion molecules in synaptogenesis by single-molecule imaging

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Introduction. Synaptogenesis involves sequential steps of synaptic contact, protein assembly, and differentiation, each requiring specific molecular interactions. Synaptic adhesion molecules (SAMs), such as neurexin and neuroligin, are critical for synaptic contacts, but their precise contributions in early synaptogenesis remain unclear. Molecular dynamics analyses in mature synapses have revealed new insights into synaptic organization using single-particle tracking (SPT), yet technical challenges, including insufficient expression of tagged protein and limited fluorescent spot numbers in narrow neurites, limit its application to early stages. We established a novel SPT platform combining rapid protein expression using Sindbis viral vectors with the DeQODE labeling method, developed in our lab. The DeQODE method employs a reversible ligand-tag interaction, in which non-fluorescent ligands turn fluorescent upon binding to the DeQODE tag. This reversibility allows bleached ligands to be replaced by unbleached ones, sustaining the number of fluorescent spots. Using this platform, we analyzed the dynamics of neurexin, a presynaptic SAM.

Aims. We aimed to elucidate the dynamics of SAM in synaptogenesis through single-molecule fluorescent imaging.

Methods. Rat hippocampal neurons were cultured for 7 days to model early development. DeQODE-tagged neurexin was rapidly expressed via Sindbis viral vectors. Ligands were applied at an appropriate concentration to enable single-molecule imaging. Images were recorded at several time points within 7 days. The dynamics were quantified by the diffusion coefficient (D). Deletion mutants lacking either the intra- or extracellular domain (ICD/ECD) were analyzed.

Results. The D of neurexin was typically centered around 0.1 μm²/s. Particles with D of less than 0.01 μm²/s were defined as immobile. The proportion of immobile particles was significantly reduced in neurexin-ΔECD compared with wild type (WT), suggesting that ECD contributes to neurexin immobilization. In contrast, the immobile proportion of neurexin-ΔICD was increased only at day 1 in vitro compared with WT.

Discussion. Previous studies have shown ECD interacts with postsynaptic SAM, while ICD associates with presynaptic scaffolds. Our findings suggest interactions mediated by ECD are essential to regulate neurexin dynamics, while ICD may be important at the earliest stages of synapse assembly. Future studies combining our SPT platform with the identification of synaptic sites will provide novel insights into the molecular mechanisms underlying synaptic assembly.

P582

Roles of MerTK and LRP1 in Efferocytosis by Retinal Pigment Epithelial Cells

Ms Hinami Sashi

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Roles of MerTK and LRP1 in Efferocytosis by Retinal Pigment Epithelial Cells

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Introduction. Retinitis pigmentosa (RP) is a hereditary disease and one of the leading causes of visual impairment in Japan. One of its causative genes is MerTK, a receptor tyrosine kinase expressed in retinal pigment epithelial (RPE) cells. Mutations in MerTK impair efferocytosis of photoreceptor outer segments by RPE cells, leading to photoreceptor death due to disrupted homeostasis. In macrophages, the lipoprotein receptor LRP1, which is co-expressed with MerTK, has been reported to contribute to efferocytosis of cancer cells, making LRP1 a target of interest for cancer therapy. However, the role of LRP1 in RPE cells remains unclear.
Aims. Therefore, this study investigated whether LRP1 contributes to efferocytosis in RPE cells.
Methods. Human retinal pigment epithelial cell line ARPE-19 cells were used, and LRP1 and MerTK were knocked down individually or in combination using siRNA. Apoptosis was induced in mouse neuroblastoma Neuro2a cells using staurosporine. After labeling with the pH-dependent fluorescent indicator pHrodo, the cells were co-cultured with ARPE-19 cells to analyze efferocytosis by ARPE-19 cells.
Results. Single knockdown of MerTK or LRP1 in ARPE-19 cells inhibited efferocytosis by 54% and 50%, respectively. Double knockdown of MerTK and LRP1 inhibited efferocytosis by 50%, showing no statistically significant difference compared to single knockdown. Furthermore, immunofluorescence staining analysis of MerTK and LRP1 localization changes during efferocytosis revealed accumulation of both proteins around efferocytosed cells. Additionally, examination of the effect of receptor-associated protein (RAP), an LRP1 binding inhibitor, on efferocytosis showed no significant change by RAP.
Discussion. Thus, this study demonstrated that LRP1 in RPE cells does not bind directly to apoptotic cells but contributes indirectly to efferocytosis via MerTK. Future studies will involve detailed analyses of LRP1 function in the efferocytosis of RPE cells to explore its potential as a novel therapeutic target for RP.

P583

Fingolimod reverses scopolamine-induced spatial memory loss

Mr Gorka Pereira Castelo

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Fingolimod reverses scopolamine-induced spatial memory loss

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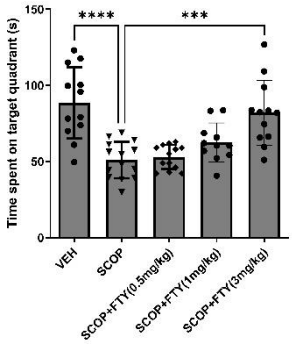

Introduction. Cognitive decline is a hallmark of dementia, and muscarinic antagonism in rodents provides a model of spatial memory impairment. Fingolimod (FTY720), an approved therapy for multiple sclerosis that modulates the sphingosine 1-phosphate pathway, promotes neuroprotection and may counteract scopolamine-induced deficits by enhancing synaptic plasticity and cellular survival.

Aims. Assess whether fingolimod could revert scopolamine-induced spatial memory impairments.

Methods. Spatial memory was tested in the Barnes Maze with groups of at least 10 rats. Animals underwent habituation, acquisition (four trials/day for four days, 15-min inter-trial intervals, max 3 min per trial), and a probe trial (3 min free exploration). Treatments were daily doses of fingolimod (0.5, 1, 3 mg/kg) given 1 h before testing, plus a single scopolamine dose (2 mg/kg) 30 min before the probe. Acquisition measured speed, latency, and distance; probe measured time in each quadrant.

Results. The scopolamine treated group (SCOP) spent less time in the target quadrant compared to vehicle group (VEH) (51.03±3.21 s, n=14 vs 88.64±6.79 s, n=12, ****p≤0.0001), confirming memory impairment. This deficit was reversed by fingolimod at 3 mg/kg (FTY3mg/kg) (82.02±6.20 s, n=12, ***p≤0.001). SCOP animals distributed their time evenly across quadrants, while fingolimod-treated groups showed a preference for the target quadrant, with SCOP+FTY3mg/kg displaying the strongest effect (p≤0.0001). Fingolimod at 3 mg/kg also reduced speed during acquisition compared to controls (p=0.02).

Discussion. Fingolimod mitigated scopolamine-induced spatial memory deficits through modulation of the sphingosine 1-phosphate pathway, enhancing synaptic plasticity and cellular survival. In this way, fingolimod acts as a palliative mechanism, counterbalancing the functional impairment caused by scopolamine.

P584

TRPM2 Blockade Reduces Inflammation and Improves Motor Deficits in LPS-induced PD mice

A/Prof Jui-Hu Shih

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

TRPM2 Blockade Reduces Inflammation and Improves Motor Deficits in LPS-induced PD mice

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Introduction. Parkinson's disease (PD) features dopaminergic neurodegeneration accompanied by chronic microglial activation. TRPM2, a Ca^{2+}-permeable, ROS-sensitive cation channel highly expressed in microglia, amplifies inflammasome and NF-κB signaling. N-(p-amylcinnamoyl) anthranilic acid (ACA) inhibits TRPM2 and phospholipase A2 (PLA2), offering a strategy to curb neuroinflammation.

Aims. To evaluate whether ACA mitigates microglia-driven neuroinflammation and preserves dopaminergic integrity and motor performance in an LPS-induced PD mouse model.

Methods. Male C57BL/6 mice received bilateral intrastriatal LPS (20 μg total) or saline, followed by daily intraperitoneal ACA (25 mg/kg) or vehicle for 13 days. Motor outcomes were assessed using rota-rod, pole-climbing, and beam-walking tests on prespecified days. Striatal dopamine transporter availability was quantified by [^{18}F]FE-PE2I PET, and immunohistochemistry evaluated Iba1, TNF-α, IL-1β, COX-2, and tyrosine hydroxylase (TH). Statistics used ANOVA/Kruskal–Wallis with appropriate post hoc tests (two-tailed, $\alpha=0.05$).

Results. LPS induced marked motor impairment versus sham across assays. ACA + LPS significantly improved rota-rod latency over 4 weeks (vs LPS, $p<0.0001$), reduced bradykinesia on the pole test ($p<0.001$), and limited beam-walking slowing ($p<0.05$). LPS lowered striatal [^{18}F]FE-PE2I standardized uptake values; ACA showed a higher mean SUV than LPS (trend toward preservation). TH immunoreactivity declined with LPS and was higher with ACA co-treatment. ACA significantly reduced LPS-evoked microglial activation (Iba1 area, $p<0.001$) and lowered TNF-α, IL-1β, and COX-2 expression (all $p<0.001$).

Discussion. ACA attenuated microglia-mediated neuroinflammation and preserved motor function and dopaminergic markers in LPS-challenged mice. Consistent with previous studies employing 6-OHDA-induced PD mouse models[&], our findings support TRPM2/PLA2 modulation as a promising therapeutic strategy for inflammation-driven Parkinson's disease pathology, while highlighting the importance of dose optimization and safety evaluation prior to clinical translation.

[&] Ferreira AF et al (2024) Exp Neurol 377:114780.

P585

The NLRP3 inflammasome inhibitor, MCC950, evokes dose-dependent pain relief in CIPN-rats

Prof Maree Smith

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

The NLRP3 inflammasome inhibitor, MCC950, evokes dose-dependent pain relief in CIPN-rats

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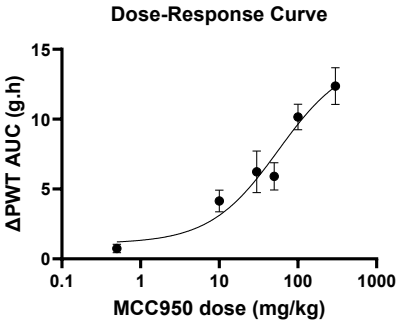
Introduction. Chemotherapy induced peripheral neuropathy (CIPN) is a type of neuropathic pain that affects up to 90% of patients who receive chemotherapy drugs. Analgesic/adjuvant medications recommended to alleviate CIPN often lack efficacy and so there is a large unmet medical need for novel analgesics for treating CIPN adequately.



Aims. To assess the analgesic efficacy of the NLRP3 inflammasome inhibitor, MCC950, for the relief of CIPN in a rat model.

Methods. CIPN was induced in Sprague-Dawley rats using cisplatin (12 mg/kg cumulative dosage) as 4 divided doses at weekly intervals. CIPN rats exhibiting hindpaw hypersensitivity received single oral doses of MCC950 (10-300 mg/kg), pregabalin (30 mg/kg) or vehicle and relief of hindpaw hypersensitivity was assessed using calibrated von Frey filaments applied to the hindpaws pre-dose and at multiple time-points up to 4h post-dose, by a tester blinded to treatment group.

Results. Single doses of MCC950 evoked dose-dependent relief of hindpaw hypersensitivity in CIPN-rats and there were no discernible adverse behavioural effects. The mean ED_{50} (95% confidence intervals) was 56.2 (21.8-150.7) mg/kg. The time of peak effect was 2-3 h and the duration of action was ~3 h. MCC950 at 100 mg/kg was approximately equipotent with pregabalin at 30 mg/kg.

Discussion. Our findings extend those of others that showed a single i.p. dose of MCC950 at 10 mg/kg evoked partial pain relief in a mouse model of CIPN induced with the chemotherapy agent, paclitaxel (Martinez-Martel et al. 2025). Our findings suggest that NLRP3 inhibitors have potential to be developed as novel treatments for the relief of CIPN.

Martinez-Martel I et al (2025) Antioxidants 14:143

P586

Sumatriptan alleviates amphetamine-induced hyperactivity via a 5-HT1A–P2X7 receptor interaction

Prof Beáta Sperlágh

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Sumatriptan alleviates amphetamine-induced hyperactivity via a 5-HT1A–P2X7 receptor interaction
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Introduction. Sumatriptan (SUMA), is a 5-HT1B/1D receptor agonist used for migraine.
Aims. Given epidemiological links between migraine and bipolar disorder and evidence implicating purinergic P2X7 receptors (P2X7R) in psychostimulant responses, we tested whether SUMA modulates amphetamine (AMPH)-induced behavioural and neurochemical changes. We have also explored whether specific serotonergic receptor subtypes and P2X7R mediate these effects.
Methods. Locomotor activity was assessed in wild-type (WT) and P2X7R knockout (P2X7KO) mice after amphetamine with or without sumatriptan. Pharmacological interventions included the 5-HT1A partial agonist buspirone (BUSP), the 5-HT1B/1D antagonist GR127935, and the P2X7R antagonist JNJ-47965567. Striatal [^{3}H]dopamine ([^{3}H]DA) and [^{3}H]serotonin ([^{3}H]5-HT) release were measured in striatal slices. Neuronal activation was evaluated by c-Fos immunohistochemistry. Soluble P2X7 protein levels in plasma and striatum were quantified by ELISA.
Results. SUMA reduced AMPH-induced hyperlocomotion, striatal c-Fos induction, and AMPH-evoked monoamine release in WT mice, effects that were absent in P2X7KO animals. GR127935 did not affect behavioural or neurochemical effects of sumatriptan, whereas buspirone antagonised them, implicating 5-HT1A mediation. Pharmacological P2X7R blockade with JNJ-47965567 mimicked the effects of sumatriptan. ELISA measurements revealed no significant changes in total P2X7 protein in plasma or striatal homogenates across treatment groups, suggesting functional modulation rather than altered receptor abundance.
Discussion. Sumatriptan attenuates AMPH-induced hyperactivity through a 5-HT1A receptor–dependent mechanism that requires functional P2X7R signalling. These findings identify a previously unrecognised 5-HT1A–P2X7R interaction in the regulation of psychostimulant responses and may support to utilize sumatriptan as a novel therapeutic strategy for mania-like behavioural states.

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in vivo CaV3 block is antinociceptive in a chemotherapy-induced neuropathy mouse model.

Prof Gary Stephens

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

***In vivo* Ca_V3 T-type calcium current block improves pain-like behaviours in a mouse model of chronic chemotherapy-induced peripheral neuropathy.**

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Introduction. Approximately 30% of cancer survivors suffer from chronic pain (Brown et al, 2014). Chemotherapy-induced peripheral neuropathy (CIPN) can develop from chemotherapeutics such as paclitaxel (PTX), causing prolonged tactile and thermal allodynia. Low-voltage-activated Ca_V3 channels are upregulated in preclinical studies of PTX-induced CIPN (Tomita et al, 2019).

Aims. This study aims to elucidate the role of Ca_V3 on CIPN-like behaviours in young and aged mice of both sexes, by *in vivo* block with selective Ca_V3 family inhibitor TTA-P2.

Methods. Aged (15-month-old) and young adult (10-weeks-old) male and female C57BL6 mice received a regimen of 4 ip PTX injections (4 mg/kg) over 8 days (Maiarú et al, 2018). Mice were then injected with ip TTA-P2 or vehicle during pain development and again at the peak of pain-like behaviours. Injections were carried out under 2% isoflurane using an induction chamber.

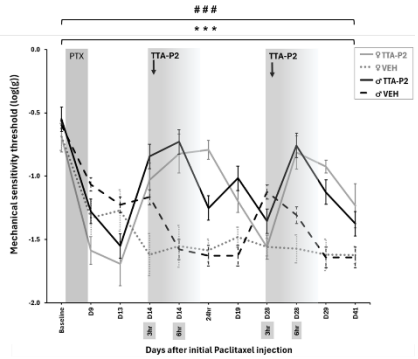

Figure 1 Lines show mean ± SEM, (n = 3,3 females and 4,3 males). ANOVA results comparing treatment groups indicated by *** = females ### = males; $p < 0.001$

Results. In aged mice, TTA-P2 improved mechanical hypersensitivity (3-way ANOVA: factor 'treatment', p=0.00035, 'sex' p=0.099), with a longer-lasting antinociceptive effect when given during development of PTX-induced pain (Figure 1). TTA-P2 was more effective at improving cold hypersensitivity in aged females than aged males (3-way ANOVA: factor 'treatment' p= 0.033, 'sex' p= 0.047).

Discussion. Our data suggest that Ca_V3 channels are involved in CIPN development in a time- and sex-dependent manner. No effective analgesic strategies currently exist for CIPN and the inclusion of sex and age as variables in preclinical research are vital to advancing understanding of this debilitating neuropathy.

Brown, M.R.D., et al (2014) Br J Pain **8**(4): p.139-153, Maiarù, M., et al. (2018) Pain **159**(7): p. 1224-1234, Tomita, S., et al. (2019) Toxicology **413**: p. 33-39.

P588

Development and application of gut microbiome scores to characterize major depressive disorder

Ms Yujing Weng

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Development and application of gut microbiome scores to characterize major depressive disorder
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Introduction. Major depressive disorder (MDD) has been linked to alterations in the gut microbiome. However, translating high-dimensional microbial profiles into clinically useful biomarkers remains challenging due to limited quantitative approaches.
Aims. We aimed to convert complex microbial features into quantitative gut microbiome scores (GMS) for MDD risk prediction and to integrate GMS with clinical variables to model disease severity and cognitive function.
Methods. Genus-level gut microbiome profiles were generated using 16S rRNA sequencing in individuals with MDD (n=76) and healthy controls (n=73). Five GMS were developed using different strategies. Differential-taxa–based scores were derived from Analysis of Compositions of Microbiomes with Bias Correction (ANCOM-BC) and Linear Discriminant Analysis Effect Size (LEfSe). A community-wide dysbiosis distance score was calculated using Bray–Curtis dissimilarity. Penalized regression–based scores were constructed using Ridge and Least Absolute Shrinkage and Selection Operator (LASSO) methods. To evaluate clinical relevance, linear and logistic regression models were built to examine GMS alone and in combination with clinical variables for predicting symptom severity and cognitive function.
Results. Several GMS significantly differed between MDD and controls and demonstrated good discriminatory performance. Representative examples included regression-based scores (GMS_Ridge, AUC=0.891) and differential-taxa–based scores (GMS_LEfSe, AUC=0.887). Integrating GMS with clinical variables improved model performance for Continuous Performance Test (CPT) outcomes. Notably, GMS_Dysbiosis was significantly inversely associated with CPT performance, with higher dysbiosis-related scores linked to poorer cognitive function.
Discussion. This study presents a quantitative framework for translating gut microbiome data into clinically meaningful scores for risk prediction and outcome assessment. Integrating GMS with clinical variables may further enhance model performance and interpretability, highlighting their potential utility in future translational and clinical research.

P589

2-deoxy-d-glucose modulates GPI and BDNF/Trk-B pathways in drug-resistant epilepsy

A/Prof Ajay Prakash

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

2-deoxy-d-glucose modulates GPI and BDNF/Trk-B pathways in drug-resistant epilepsy
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Introduction. About thirty percent of people with epilepsy have drug-resistant epilepsy (DRE). The underlying mechanisms are multifactorial, involving neuroinflammation, altered drug distribution, and upregulation of neurotrophic signalling pathways such as Tropomyosin receptor kinase B (Trk-B).
Aims. This study investigates the therapeutic potential of 2-deoxy-D-glucose (2-DG), a glycolytic inhibitor, in reducing seizure activity and associated comorbidities in a Pentylenetetrazol PTZ-induced DRE model, with a specific focus on the Brain Derived Neurotropic Factor (BDNF/Trk-B) signalling pathway.
Methods. Molecular docking studies were performed to evaluate interactions of 2-DG-6-phosphate with glucose-6-phosphate isomerase. In vivo, PTZ-kindled rats were treated with 2-DG (150 mg/kg) and assessed for seizure severity (Racine scale), behavioural outcomes (anxiety, motor coordination, cognition), cytokine levels (ELISA), BDNF/Trk-B mRNA expression (RT-PCR), and histopathological changes.
Results. 2-DG demonstrated stable binding to Glucose-6-phosphate isomerase GPI, supporting its role in glycolytic inhibition. In vivo, 2-DG significantly reduced seizure severity and improved behavioural outcomes. Pro-inflammatory cytokine levels decreased, and hippocampal BDNF and Trk-B mRNA were downregulated. Histopathology confirmed reduced neuronal damage in treated animals.
Discussion. These findings highlight the multifaceted therapeutic potential of 2-DG in drug-resistant epilepsy, mediated through metabolic modulation, anti-inflammatory action, and inhibition of the BDNF/Trk-B pathway, supporting its potential as a promising adjunctive therapy for pharmaco-resistant seizures.

P590

Effect of Chronic Unpredictable Stress on M cells in Peyer's patches

Stefany Alamilla Cuellar

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Effect of Chronic Unpredictable Stress on M cells in Peyer's patches.

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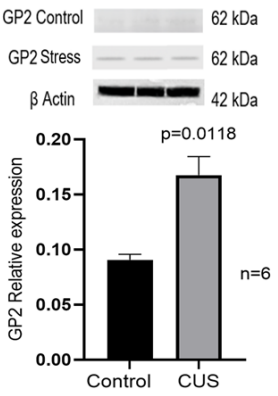
Introduction. Mucosal surfaces act as the first line of immune defense through specialized lymphoid tissues like Peyer's patches, where M cells sample luminal antigens. These cells trigger immune responses or tolerance and serve as entry points for pathogens (In-Park et al, 2023). Chronic stress may alter their expression, distribution, and function, impacting mucosal immunity responses (Alotiby, 2024).

Aims. To determine the expression and distribution of M cells in the gut-associated lymphoid tissue of BALB/c mice subjected to Chronic Unpredictable Stress (CUS). To assess the effectiveness of the applied stress protocol through the determination of plasma corticosterone concentrations.

Methods. A model of chronic unpredictable stress in female BALB/c. Plasmatic corticosterone levels were measured using a commercial Enzyme Linked Immunosorbent Assay kit. M cells in Peyer's patches were identified and quantified by immunohistochemistry for GP2. Activation and differentiation state was assessed by analyzing GP2 and TNFAIP2 protein expression through immunoblotting.

Results. Chronic unpredictable stress significantly increased plasma corticosterone levels in BALB/c mice. Higher expression of GP2 ($p=0.0118$, $t=4.393$) and TNFAIP2 ($p=0.001$, $t=8.542$) and increased numbers of M cells were observed in Peyer's patches compared to controls.



Discussion. Chronic unpredictable stress modulates gut mucosal immunity by increasing M cell expression, differentiation, and activation rates in Peyer's patches follicle-associated epithelium. However, further studies are needed to determine whether the outcome heightens susceptibility to infections or improve resistance to infections.

In-Park J et al. (2023). Tissue Eng Regen Med. 20(3):341-353.
Alotiby A. (2024). J Clin Med 13(21):6394.

P591

Targeting MLCK1 uncouples immune checkpoint inhibitor-induced colitis from anti-tumour immunity

Prof Li Zuo

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Targeting MLCK1 uncouples immune checkpoint inhibitor-induced colitis from anti-tumour immunity

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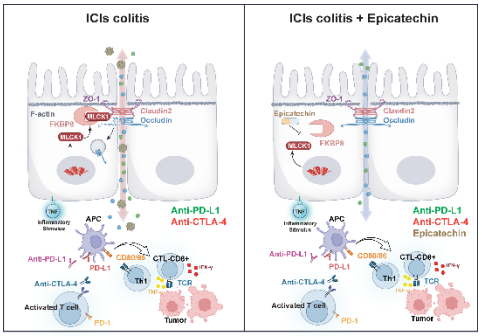

Introduction. Immune checkpoint inhibitors (ICIs) have revolutionized oncology, yet their utility is limited by immune-related adverse events, particularly colitis. Identifying targets that mitigate intestinal toxicity without dampening anti-tumor efficacy is a clinical priority.

Aims. To define the role of myosin light chain kinase 1 (MLCK1) in ICI-mediated colitis and evaluate its potential as a pharmacological target.

Methods. We employed a translational framework integrating clinical scRNA-seq and spatial transcriptomics with a wild mouse microbiota (WildR) model. Mechanisms were explored using organoid-immune cell co-cultures and tumor-bearing (Melanoma/MC38) models. Molecular interactions were validated via SPR and MST.

Results. ICI treatment triggers the MLCK1-mediated "leak pathway," compromising tight junction integrity in both patients and WildR mice. This barrier dysfunction is driven by TNF secreted from activated $CD4^+$ and $CD8^+$ T cells. Genetic ablation of MLCK1 preserved barrier structure and ameliorated colitis. Importantly, a pharmacological screen identified Epicatechin as a novel inhibitor that disrupts the MLCK1-FKBP8 interaction, preventing MLCK1 recruitment to the perijunctional actomyosin ring. In vivo, Epicatechin mitigated ICI-induced colitis while fully maintaining the anti-tumor potency of immunotherapy.

Discussion. MLCK1-dependent barrier regulation is fundamental to ICI-colitis pathogenesis. By pharmacologically uncoupling intestinal toxicity from systemic anti-tumor immunity, this study identifies MLCK1 as a high-value therapeutic target. This "barrier-restoration" strategy offers a paradigm shift beyond broad immunosuppression to enhance the safety of cancer immunotherapy.

P592

MRGPRX2 activation by compound 48/80 stimulates β-defensin release from bladder urothelial cells

Assoc Prof Lu Liu

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

MRGPRX2 activation by compound 48/80 stimulates β-defensin release from bladder urothelial cells

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Introduction. Urinary tract infections, predominantly caused by uropathogenic *Escherichia coli* (UPEC), are among the most common bacterial infections worldwide. Mas-related G protein-coupled receptors (MRGPRs), particularly MRGPRX2, and antimicrobial peptides such as β-defensins have been implicated in mucosal immune responses. However, their roles in bladder immunity remain poorly defined.

Aims. We have previously shown that MRGPRX2 is primarily expressed in the bladder urothelium. Although UPEC causes significant damage to urothelial integrity, no significant changes in MRGPRX2 expression were observed. This study aimed to determine whether β-defensin 1 and 3 (BD-1 and BD-3) release from bladder urothelial cells is modulated under UPEC infection and/or following MRGPRX2 activation.

Methods. Human urothelial RT4 and UROtsa cells were either infected with UPEC or treated with the MRGPRX2 agonist compound 48/80 (C48/80; 50 or 100 μg/mL) for 3 or 6 hours. BD-1 and BD-3 protein levels were quantified using ELISA, and mRNA expression was analysed by RT-PCR.

Results. Basal BD-1 levels in RT4 cells were approximately 20 pg/mL and were nearly undetectable in UROtsa cells. Treatment with C48/80 significantly increased BD-1 levels to 150–200 pg/mL, representing approximately 3-fold and 35-fold increases in RT4 and UROtsa cells, respectively (**$p < 0.01$, one-way ANOVA). Similarly, BD-3 levels were almost undetectable at baseline but increased to 730–970 pg/mL following C48/80 treatment in both cell lines (***$p < 0.001$). However, mRNA expression levels of BD-1 and BD-3 were reduced following C48/80 treatment (*$p < 0.05$). UPEC infection decreased defensin protein secretion but did not significantly affect mRNA expression levels.

Discussion. The reduction in defensin protein following UPEC infection suggests complex interactions within the innate immune response to UPEC infection. Although mRNA expression of BD-1 and BD-3 was reduced by C48/80 treatment, C48/80 markedly enhanced BD-1 and BD-3 protein release in both RT4 and UROtsa cells. These findings provide insight into the interaction between MRGPRX2 and β-defensins and suggest that MRGPRX2 may play a role in modulating bladder immune responses during infection.

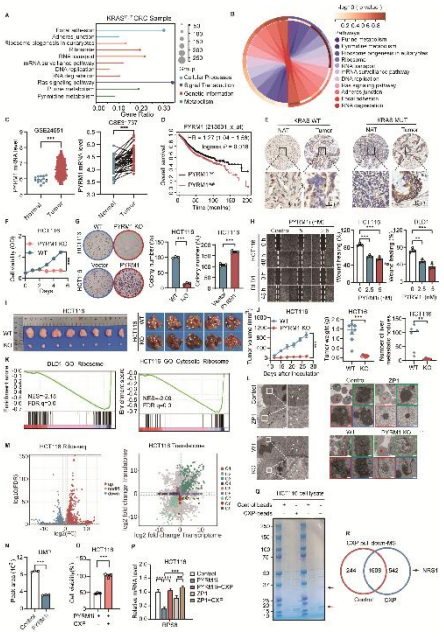
P594

NRS1 senses PYRM1-ribosome axis as therapeutic vulnerability in KRAS-mutant colorectal cancer

Dr Yinglan Zhao

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

NRS1 senses PYRM1-ribosome axis as therapeutic vulnerability in KRAS-mutant colorectal cancer
Yue Zhou[1,2], Lei Tao[1], Jing Xu[1], Yinglan Zhao[1,*].*Corresponding author. Department of Biotherapy, Cancer Center and State Key Laboratory of Biotherapy, West China Hospital, Sichuan University[1], Chengdu, China; Department of Pharmacy, Institute of Metabolic Diseases and Pharmacotherapy, West China Hospital, Sichuan University [2], Chengdu, China;



Introduction. KRAS-mutant colorectal cancer ($KRAS^{MUT}$ CRC) lacks effective targeted therapeutic strategies, identifying its key regulator is imperative for precision intervention. Our study revealed that pyrimidine metabolic enzyme-1 (PYRM1) is markedly upregulated in $KRAS^{MUT}$ CRC and negatively correlates with patient survival, indicating its potential role as a pivotal regulator of the ribosome biogenesis.

Aims. To elucidate how the CXP sensor NRS1 mediates the PYRM1-ribosome axis to govern $KRAS^{MUT}$ CRC progression and to explore its potential as a targetable vulnerability.

Methods. Functional and mechanistic studies were conducted using Ribo-seq, CXP affinity pull-down-MS, LiP-MS, SPR, and 4D label-free proteomics to map the metabolic and translational landscapes.

Results. PYRM1 inhibition depletes pyrimidine nucleotides, suppresses ribosome biogenesis, reduces translation of pro-survival mRNAs, and triggers ribosome stalling. NRS1 acts as a primary metabolic sensor that directly binds CXP, mediating this sensor-dependent regulation and suppressing $KRAS^{MUT}$ CRC growth. This sensor-mediated axis establishes a direct link between nucleotide metabolism and translational reprogramming in $KRAS^{MUT}$ CRC cells.

Discussion. These findings identify NRS1 as a pivotal metabolic sensor and a hallmark of metabolic reprogramming in $KRAS^{MUT}$ CRC. Targeting this sensor-mediated axis offers a novel strategy to overcome therapeutic challenges in $KRAS^{MUT}$ CRC.

P593

Colchicine as a Promising Candidate Therapeutic Agent for Liver Fibrosis

Prof Kikuko Amagase

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Colchicine as a Promising Candidate Therapeutic Agent for Liver Fibrosis

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Introduction. Chronic liver diseases, including metabolic dysfunction-associated liver disease (MASLD), cause ongoing inflammation that leads to liver fibrosis. As fibrosis progresses, it can develop into hepatocellular carcinoma and cirrhosis. Currently, there are no effective drugs available for treating liver fibrosis, emphasizing the urgent need to develop targeted therapies.

Aims. To investigate potential therapeutic candidates for liver fibrosis, we used a mouse model of liver fibrosis induced by a choline-deficient, methionine-restricted high-fat diet (CDAHFD).

Methods. Male C57BL/6 mice were fed a CDAHFD for 6 weeks to induce liver fibrosis. Colchicine (0.1 mg/kg) was administered orally once daily for 3 weeks to mice fed a CDAHFD. Twenty-four hours after the final treatment with colchicine treatment, the mice were euthanized with carbon dioxide, the livers were removed, and the tissues were fixed in formalin. Liver tissue was prepared as paraffin sections and stained with hematoxylin and eosin, as well as picrosirius red. Real-time PCR was used to assess the mRNA expression levels of fibrosis-related markers.

Results. Liver tissue from CDAHFD-induced liver fibrosis model mice exhibited enlarged lipid droplets and infiltration of inflammatory cells. Additionally, clear collagen deposition was detected through picrosirius red staining. Three-week colchicine treatment in CDAHFD-fed animals reduced lipid droplets, inflammation, and showed a tendency to decrease collagen deposition based on histological observations. The mRNA expression of Col1A1, a marker of fibrosis, tended to increase in the CDAHFD diet group and was about six times higher than in the normal diet group. Colchicine treatment in CDAHFD-fed mice suppressed the increase in Col1A1 mRNA observed in the vehicle group. Additionally, TNF-α mRNA levels were significantly higher in CDAHFD-fed mice compared to those on the normal diet.

Discussion. We speculated that colchicine might reduce liver fibrosis by suppressing fibroblast proliferation because it blocks microtubule polymerization by binding to tubulin and preventing cell division. Our preclinical results emphasize the potential of colchicine as a treatment for liver fibrosis.

P595

Predicting Gastrointestinal Side Effects of Common Food Supplements using Deep Learning Approach

Dr Yuen Hang Julia Liu

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Predicting Gastrointestinal Side Effects of Common Food Supplements using Deep Learning Approach

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Introduction. Food supplements are often unregulated products, resulting in limited public awareness of their potential side effects. In 2024, an online drug database was launched at www.gutrhythm.com"www.gutrhythm.com, capturing the effects of over 300 drugs on gut electrophysiology, along with side effect prediction models. Recently, new datasets encompassing food supplements were introduced.

Aims. To predict the potential of gastrointestinal side effects of common food supplements available on the market

Methods. The deep learning model trained on GIPADD was used to predict new datasets from over 30 food supplements tested *ex-vivo* on gut tissues of the vomit-capable animal model, *Suncus murinus*, at biologically active doses.

Results. Prediction results indicate a potential high risk of diarrhea from bromelain and lecithin, and vomiting from indole-3-carbinol, aligning with real-life observations.

Discussion. The prediction results indicate a potential risk of gastrointestinal side effects from certain food supplements lacking warning labels, emphasizing the need for ongoing safety monitoring. The prediction model can serve as a rapid screening tool for these risks.

Funding. Technology Start-up Support Scheme for Universities 25-26, ITC (TSU25MED15)

	Nausea	*Vomiting*	*Diarrhoea*	*Constipation*
α-Lipoic Acid	0.88	0.55	0.67	0.60
B12 Vitamins	0.85	0.78	0.68	0.65
Betaine chloride	0.71	0.35	0.55	0.42
Bromelain	0.70	0.66	0.92	0.57
Chromium picolinate	0.81	0.84	0.80	0.67
Curcumin	0.88	0.69	0.77	0.64
Docosahexaenoic acid	0.83	0.83	0.84	0.77
Folic acid	0.79	0.69	0.82	0.47
Indole-3-carbinol	0.77	0.91	0.84	0.77
Lecithin	0.72	0.74	0.94	0.67
L-Lysine	0.87	0.52	0.67	0.57
L-Theanine	0.84	0.52	0.54	0.49
Taurine	0.78	0.32	0.56	0.38
L-ascorbic acid	0.74	0.36	0.56	0.63
Calcitriol	0.44	0.41	0.52	0.65

P596

Differential role of lactoferrin transcript variants in prostate cancer development

Prof Sun Sik Bae

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Differential role of lactoferrin transcript variants in prostate cancer development

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Introduction. Lactoferrin (LTF) is a gene that exhibits varied expression across multiple types of cancers, notably showing high expression in prostate adenocarcinoma. The LTF gene produces several transcript variants, including LTF-1 and LTF-2, which have distinct structural features. However, little is known about distinct function of LTF transcript variants in cancer biology.

Aims. This study aims to elucidate the distinct biological roles of the LTF transcript variants in prostate cancer progression.

Methods. The study utilized prostate cancer cell line models (knockdown and overexpression), in vivo mouse xenografts, and analyses of intracellular iron (Fe2+, Fe3+) and reactive oxygen species (ROS) levels.

Results. Advanced prostate cancer cells (PC3 and C4-2) exhibited significantly higher baseline LTF expression than LNCaP cells. Notably, LTF-1 was primarily found in the cytosol and secreted into the extracellular space, whereas LTF-2 was predominantly localized to the nucleus. The targeted knockdown of LTF-2 markedly inhibited cell proliferation and colony formation. In contrast, the knockdown of LTF-1 did not produce these significant tumor-suppressive effects. Knockdown of LTF-2 disrupted iron homeostasis by increasing intracellular Fe2+ levels. This disruption led to elevated ROS accumulation and significantly increased cell sensitivity to FINO2-induced ferroptosis. Overexpression of LTF-2 effectively reversed these effects, suppressing ferroptosis. In xenograft models, silencing LTF-2 significantly reduced both tumor weight and volume compared to the control and LTF-1 knockdown groups. Clinically, elevated LTF expression was prominent in CRPC tissues and was significantly associated with poorer overall survival and shorter progression-free survival in patients with high LTF expression.

Discussion. The data strongly indicate that the nuclear variant LTF-2, rather than the LTF-1, acts as a primary oncogenic driver in prostate cancer. LTF-2 plays a critical role as a ferroptosis suppressor by regulating intracellular iron metabolism (Fe2+/Fe3+ balance) and preventing the toxic accumulation of ROS. Therefore, targeting the LTF-2 variant or its downstream iron metabolism pathways would presents a promising therapeutic strategy to re-sensitize highly malignant prostate cancer cells to ferroptotic cell death.

P597

Dietary Sulforaphane Decreases Fecal Calprotectin Level in Patients with Ulcerative Colitis.

Prof Akinori Yanaka

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Dietary Sulforaphane Decreases Fecal Calprotectin Level in Patients with Ulcerative Colitis.

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University of Tsukuba Hospital[2], Hitachi, Japan. Tsukuba GI Endoscopy Clinic[3], Tsukuba, Japan.

Introduction. Ulcerative Colitis (UC), known to be caused by chronic oxidative stress, have recently been increasing in Japan, as recent Westernization of dietary habit. Sulforaphane (SFN), rich in broccoli sprouts (BS), has been shown to enhance anti-oxidant activity by up-regulating nrf2-mediated antioxidant enzymes. We have previously shown that dietary intake of SFN-rich broccoli sprouts mitigates *H.pylori*-induced gastritis by inhibiting *H.pylori* activity.
Aims. In this study, we examined if dietary SFN affect intestinal microflora and mitigates colonic inflammation in mesalazine-treated human UC patients.
Methods. Twenty-eight subjects with mild UC patients treated with mesalazine were assigned to either the SFN-rich broccoli sprouts (BS) group (n=14) or the SFN-free alfalfa sprouts (AS) group (n=14) and were requested to take 20 g daily of raw BS or AS for 8 weeks, respectively, BS contains 4.4 mg/g sulforaphane glucosinolate (SGS), a precursor of SFN, while AS contains no SGS. Stool samples were obtained just before and after the 8 weeks treatment with sprouts. In this study, levels of fecal calprotectin were measured as the quantitative indices of colonic inflammation. We also analyzed intestinal microflora using terminal restriction fragment length polymorphism flora analysis.
Results. Treatment with BS, but not with AS decreased level of fecal calprotectin, accompanied by an increase in the fecal component of *clostridium IV and XIVa*, which has been reported to enhance butyrate production.
Discussion & Conclusion Since treatment with only the sulforaphane-rich BS increased butyrate producing gut microbiota, and mitigates colonic inflammation in UC patients, the present results suggest that dietary approach with sulforaphane rich BS mitigates colonic inflammation in human UC patients. Our data further indicate that the protective effects of sulforaphane-rich BS on UC appear to be induced not only by up-regulation of antioxidant enzymes, but also by the increase in mucosal protective butyrate production induced by intestinal microbiota.

P598

Assessing ultra-processed food effects on energy metabolism in THLE-2 liver cells

Dr Mark Berry

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Assessing ultra-processed food effects on energy metabolism in THLE-2 liver cells

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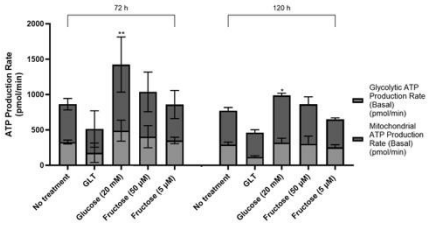

Introduction. Diets high in ultra-processed foods (UPF) are increasingly linked to metabolic disorders including obesity and type-2 diabetes. These conditions can impair liver function due to its central role in glucose and lipid metabolism. Fructose, common in UPF, is primarily metabolized in the liver, to glycolytic and fatty acid intermediates. This, however, bypasses glycolytic regulation whilst promoting fatty acid and triglyceride synthesis. Fructose has also been shown to promote oxidative stress, insulin resistance and hepatic lipogenesis; however, the molecular mechanisms remain poorly understood.

Aims. To determine the effects of fructose, glucose and fatty acid exposure on the metabolic profile of THLE-2 liver cells. **Methods**. A Seahorse™ XFe24 Analyzer (Agilent, Santa Clara, USA) was used to assess real-time, live cell, glycolytic and mitochondrial adenosine triphosphate (ATP) production by THLE-2 cells in response to various nutrient states. Exposure to high glucose (20 mM), fructose (5 and 50 ∝M) and glucolipotoxicity ((GLT) as a positive control comparator) for 0 – 120 h were explored. Following treatment, 10,000 viable cells were seeded into a Seahorse™ 24-well plate for metabolic analysis. Statistical variances were determined via one-way ANOVA with Dunnet's post-hoc tests.

Results. No significant differences were observed in mitochondrial or glycolytic ATP production rates at time points less than or including 24 h. High glucose significantly increased mitochondrial ATP production, without affecting glycolytic ATP production, at 72 and 120 h, whereas fructose treatment had no effect. Treatments administered only during analysis did not affect ATP production indicating effects are due to chronic regulation of metabolic pathways. **Conclusions.** High fructose exposure does not elicit the same metabolic response in THLE-2 cells as high glucose or GLT, suggesting fructose may influence hepatic metabolism via fatty acid oxidation rather than directly enhancing glycolysis via fructose metabolites. Comparison of high glucose to GLT confirms previous findings that GLT effects observed are due to the presence of fatty acids. Future work will specifically examine palmitate oxidation and mitochondrial reactive oxygen species tolerance in response to high fructose.

P599

Probiotic improves CHB patients's gut microbiota: a randomized, double-blind, placebo-controlled trial

Prof Jianfei Long

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Probiotic improves CHB patients's gut microbiota: a randomized, double-blind, placebo-controlled trial

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Introduction. Chronic hepatitis B (CHB) is a global epidemic caused by hepatitis B virus (HBV) and can even lead to hepatocellular carcinoma. Tenofovir alafenamide (TAF), a first-line antiviral therapy for CHB, effectively suppresses viral replication and delays disease progression. However, long-term TAF treatment has been shown to alter gut microbiota composition and may induce dyslipidemia in some patients, thereby increasing metabolic risk.

Aims. To investigate a rationally designed probiotic consortium aimed at modulating the gut-liver axis in CHB patients receiving TAF treatment.

Methods. In this 12-week randomized double-blind trial, 84 CHB patients receiving TAF monotherapy were assigned to probiotics (*Bifidobacterium animalis* subsp. lactis BLa80, *Bifidobacterium longum* subsp. longum BL21, *Lacticaseibacillus rhamnosus* LRa05; 3×10^{10}CFU per day, n=42) or placebo (Dextrin, n=42). Primary outcomes included lipid profiles (non-HDL-C, LDL-C) and gut microbiota composition (16S rRNA sequencing). Secondary outcomes included liver function tests and the Gastrointestinal Symptom Rating Scale (GSRS).

Results. The probiotic group showed stabilization of atherogenic lipids compared to placebo: Microbiota analysis revealed strain-specific modulation with enrichment of Parabacteroides (2.1-fold compared to baseline, p = 0.018) and suppression of Erysipelotrichaceae_UCG-003 (58% reduction, p=0.024). Probiotics significantly improved gastrointestinal symptoms (GSRS reduction: 4.2 vs. 0.8 points, p = 0.013) without affecting visceral fat or α-diversity indices. Besides, non-HDL-C (Δ = 0 mmol/L vs. +0.3 mmol/L [10.3% increase], p = 0.032) and LDL-C (Δ = 0 mmol/L vs. +0.1 mmol/L [3.7% increase], p = 0.041).

Discussion. Probiotic supplementation prevents TAF-induced lipid abnormalities by remodeling the gut microbiota, independent of any change in overall microbial diversity. This precise microbial intervention is a promising adjunct therapy for the metabolic management of CHB patients treated long-term with TAF.

P600

Low-dose Nafamostat ameliorates Methotrexate-induced mucositis and modulates gut neurotransmitter activity

Dr Takahiro Yamamoto

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Low-dose Nafamostat ameliorates Methotrexate-induced mucositis and modulates gut neurotransmitter activity

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Introduction. One of the major side effects of anti-cancer chemotherapy is mucosal injury in the gastrointestinal tracts. 5-Hydroxytryptamine (5-HT) is critically involved in intestinal injury due to its role as a paracrine messenger, neurotransmitter, and inflammatory mediator. Nafamostat mesylate (nafamostat), a potent and specific serine protease inhibitor, has been reported to have a therapeutic effect on several types of gastrointestinal inflammation including experimental colitis.

Aims. This study aimed to evaluate the protective effects of nafamostat on methotrexate (MTX)-induced intestinal mucositis and its influence on 5-HT and substance P dynamics in a rat model.

Methods. Nine-week-old male Wistar rats were administered intraperitoneal MTX (12.5 mg/kg/day) for 4 consecutive days. Nafamostat was concurrently administered subcutaneously at doses of 1, 3, or 10 mg/kg/day. Body weight was monitored daily. Jejunal tissues were collected 96 hours after the initial MTX injection. Histological analysis was performed to assess villus morphology. mRNA expression was evaluated by real-time PCR and protein expression by western blotting. Tryptophan hydroxylase (TPH) activity was measured enzymatically, and 5-HT contents were measured using HPLC-ECD.

Results. Nafamostat at 1 mg/kg, but not or 10 mg/kg, significantly attenuated MTX-induced body weight loss and villus atrophy. Furthermore, nafamostat at 1 mg/kg suppressed the upregulation of pro-inflammatory cytokines and cyclooxygenase-2 mRNA expression, reduced jejunal 5-HT levels and TPH activity, and decreased the number of substance P-positive cells.

Discussion. These findings demonstrate that low-dose nafamostat mitigates MTX-induced intestinal mucosal damage and modulates key neurotransmitter pathways. Nafamostat may represent a promising adjunctive therapy for preventing mucositis and associated adverse effects during cancer chemotherapy.

P601

TGFβRI degradation via molecular glue-mediated Caveolin-1 stabilization to suppress metastasis

Prof Xiuping Chen

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

TGFβRI degradation via molecular glue-mediated Caveolin-1 stabilization to suppress metastasis

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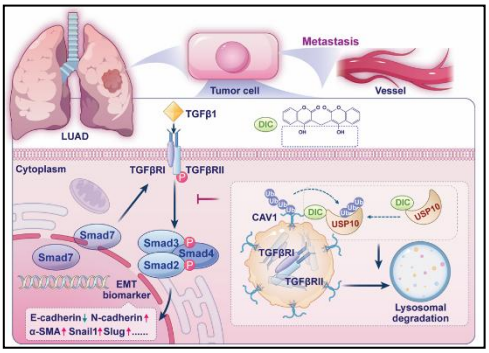
Introduction. Metastasis remains the principal cause of cancer-related mortality, yet effective therapeutic strategies to combat it remain limited. TGF-β receptor I (TGFβRI) drive metastatic progression by inducing epithelial-mesenchymal transition (EMT). Molecular glues represent a paradigm shift in drug discovery.
Aims. To redefine the mechanism of the oral anticoagulant dicoumarol (DIC) and evaluate its potential as a novel, anti-metastatic molecular glue.
Methods. Metastasis was evaluated in vivo using a zebrafish xenograft model. In vitro biochemical and cellular assays (western blot, immunofluorescence, qPCR, co-IP) assessed EMT markers and canonical TGF-β/SMAD pathway. Protein stability, trafficking, and ubiquitination were examined via cycloheximide chase, lipid raft fractionation, and ubiquitination assays. Direct target engagement of DIC was identified by LC-MS/MS and validated by CETSA and DARTS, with function confirmed through structure-activity relationship studies.
Results. DIC suppressed lung cancer metastasis in zebrafish xenograft model and reversed TGFβ1-induced EMT by blocking Smad2/3 phosphorylation without altering TGFβRI/II kinase activity. DIC acted as a direct molecular glue, binding and stabilizing Caveolin-1 (CAV1). Mechanistically, DIC bridged CAV1 and the deubiquitinase USP10, inhibiting CAV1 ubiquitination. This stabilized CAV1 escorted TGFβRI into lipid rafts for lysosomal degradation. The hydroxyl group of DIC was critical for this glue function.
Discussion. The findings reveal that repurposing DIC as a molecular glue suppresses lung cancer metastasis through the USP10–CAV1–TGFβRI axis. This work not only elucidates a previously unrecognized model of molecular glue action but also proposes a promising precision therapeutic strategy against metastasis.



This study was supported by the Science and Technology Development Fund, Macau SAR (0021/2025/RIB1).

P602

Midnolin Deficiency Suppresses Proliferation but Enhances Migration in Ovarian Cancer Cells

Assist Prof Mikako Nagashima

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Midnolin Deficiency Suppresses Proliferation but Enhances Migration in Ovarian Cancer Cells

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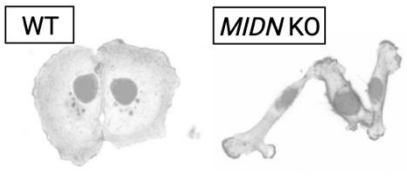

Introduction. Ovarian cancer is one of the deadliest gynecological malignancies, with a five-year relative survival rate of only 40% to 50%. Midnolin (MIDN), which is broadly expressed with low tissue specificity in adult humans, has been reported to regulate transcription factor activity in neuronal cells and is required for the rapid, ubiquitin-independent degradation of immediate early gene (IEG) transcripts. Since IEGs contribute to tumor growth and invasion, MIDN may play a critical role in ovarian cancer progression.
Aims. This study aimed to elucidate how MIDN regulates tumor progression in ovarian cancer.
Methods. We established *MIDN* knockout (KO) SKOV3 human ovarian cancer cells using CRISPR/Cas9. We quantified proliferation, colony formation, and migration/invasion; assessed IEG expression at the mRNA and protein levels; and performed RNA sequencing.
Results. Compared to wild-type (WT) cells, *MIDN* KO cells exhibited significantly reduced proliferation and colony formation, despite increased migration. RNA sequencing revealed altered IEG expression, including increased *FOS* and decreased *EGR1*. This was consistent at the protein levels. *JUN* mRNA levels remained unchanged, but JUN protein levels increased in *MIDN* KO cells.
Discussion. *MIDN* deficiency induced reduced proliferation together with enhanced motility, suggesting its involvement in the proliferation–migration trade-off in ovarian cancer. These effects are likely mediated through IEG regulation. However, it remains to be determined whether MIDN controls IEGs solely via degradation or also through modulation of their functional activity. These opposing phenotypes are currently being validated in vivo using a nude mouse xenograft model.

P603

A macrophage-HSC receptor axis drives liver fibrosis through direct FOLR2-TGFβRII engagement

Prof Xingxin Wu

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

A macrophage-HSC receptor axis drives liver fibrosis through direct FOLR2-TGFβRII engagement
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Introduction. Liver fibrosis lacks effective therapies targeting core fibrogenic signalling. Although macrophage-hepatic stellate cell (HSC) crosstalk drives fibrosis, the mechanism of direct intercellular signalling remains unclear.
Aims. To determine whether macrophage-expressed FOLR2 mediates direct pro-fibrotic signalling to HSCs and assess its therapeutic potential.
Methods. Patient transcriptomics, spatial and single-cell analyses were integrated with functional studies in *Folr2* knockout mice and contact-dependent macrophage-HSC co-culture systems. TurboID proximity labeling and biochemical assays defined receptor interactions. Pharmacologic disruption was assessed using fraxinellone.
Results. FOLR2 expression correlated with fibrosis severity. *Folr2* deletion reduced collagen deposition and HSC activation in vivo. Spatial analyses showed FOLR2^{+} macrophages localize adjacent to activated HSCs. Mechanistically, macrophage FOLR2 directly binds TGFβ receptor II on neighbouring HSCs, sustaining contact-dependent TGF-β signalling. Fraxinellone disrupted this interaction and attenuated fibrosis in a FOLR2-dependent manner.
Discussion. These findings identify a previously unrecognized intercellular receptor axis sustaining fibrogenesis and establish FOLR2 as a tractable therapeutic target.

P604

ANGPTL8-mediated inflammation and lipid dysregulation in HHcy-induced CKD

Assoc Prof Yi Fu

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

ANGPTL8-mediated inflammation and lipid dysregulation in HHcy-induced CKD
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Introduction Hyperhomocysteinemia (HHcy) contributes to chronic kidney disease (CKD) by inducing glomerular endothelial injury through inflammation and lipid dysregulation, yet targeted treatments are unavailable.
Aims This study aimed to determine the mechanism of ANGPTL8 pathway in HHcy-induced CKD.
Methods HHcy models were established to assess ANGPTL8 expression and endothelial function. Interventions targeting ANGPTL8/p65/JAML and lactylation modification via RNA-seq, lipidomics, Co-IP and mutagenesis confirmed the pathogenic mechanism.
Results ANGPTL8 was upregulated in HHcy models. It promoted p65 phosphorylation and nuclear translocation, increasing JAML transcription. JAML enhanced HSP90AB1 lactylation at K350, which facilitated SREBP1 maturation and lipid accumulation. Silencing ANGPTL8, JAML, or inhibiting p65 alleviated lipotoxicity and inflammation, improving renal function.
Discussion The ANGPTL8/p65/JAML axis promotes glomerular injury in HHcy by linking inflammation to SREBP1-driven lipid synthesis via lactylation. ANGPTL8 represents a promising therapeutic target for CKD.

P605

Mechanosensitive Piezo1 channels in interstitial cells of Cajal regulate ileal contractions

Ms Makoto Nakao

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Mechanosensitive Piezo1 channels in interstitial cells of Cajal regulate ileal contractions

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Introduction. Gastrointestinal (GI) smooth muscle contractility is modulated by mechanical stretch from luminal contents, potentially via mechanosensitive ion channels (Kirber *et al.*, 1988). However, the molecular identity and physiological impact of these channels on GI motility remain unclear.
Aims. To elucidate the roles of Piezo1, a mechanosensitive nonselective cationic channel (Coste *et al.*, 2010), in regulating ileal smooth muscle contraction.
Methods. Longitudinal tension of mouse ileal segments was recorded isometrically. Piezo1 expression was examined by whole-mount immunofluorescence staining.
Results. The Piezo1 inhibitor GsMTx-4 (10 μM) suppressed spontaneous contractions in the ileal segments from ddY mice, whereas the activator Yoda1 (10 μM) enhanced them. Tetrodotoxin (1 μM) had minimal effects on Yoda1-induced enhancement of spontaneous contractions. In contrast, Yoda1-induced contractions were almost abolished in the preparations from W/W^V mutant mice lacking interstitial cells of Cajal in the myenteric plexus (ICC-MY) of the ileum. To examine the role of Piezo1 channels in ICC-MY, ICC-specific Piezo1 knockout ($Piezo1^{ICC}$ KO) mice were generated by crossing Kit^{Cre} mice (expressing Cre recombinase in ICC) with $Piezo1^{flox/flox}$ mice. Immunohistochemistry confirmed the expression of Piezo1 in ileal ICC-MY of control mice and its deletion in the $Piezo1^{ICC}$ KO mice. Furthermore, Yoda1-induced contractions were almost abolished in the ileal segments from the $Piezo1^{ICC}$ KO mice. Stretch stimulation enhanced spontaneous contractions in the control preparations but had little effect in the $Piezo1^{ICC}$ KO preparations.
Discussion. Our findings suggest that Piezo1 channels expressed in ICC-MY mediate stretch-induced enhancement of smooth muscle contractions in the mouse ileum.

Coste B et al. (2010) *Science* 330: 55-60
Kirber MT et al. (1988) *Pflügers Arch* 412: 339-345

P606

Developing simplified insulin-like peptide 5 (INSL5) analogues as colon motility regulators

Mr Hongkang Wu

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Developing simplified insulin-like peptide 5 (INSL5) analogues as colon motility regulators
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Introduction. Insulin-like peptide 5 (INSL5) is produced exclusively by colonic L-cells and is the endogenous ligand for relaxin family peptide receptor 4 (RXFP4). This receptor-ligand axis plays a key role in regulating gut motility, particularly colorectal propulsion, and is therefore a promising therapeutic target for colon motility disorders such as constipation. Constipation is highly prevalent, especially in older adults and in people with neurological conditions, where current therapies can be ineffective or poorly tolerated. However, translation of native INSL5 is constrained by complex chemical manufacture, with reported overall synthetic yields of only ~0.8%, motivating the development of more accessible yet potent RXFP4 agonists.
Aims. To design and synthesise simplified INSL5 mimetics with improved manufacturability, and to evaluate their RXFP4 binding and functional activity *in vitro*, with progression of leading candidates to *in vivo* constipation models.
Methods. A series of simplified INSL5 analogues were rationally designed and chemically synthesised. Biological activity was assessed in RXFP4-expressing cell lines. Receptor affinity was quantified using competition binding assays, and agonist function was determined using cyclic adenosine monophosphate (cAMP) accumulation assays. The most promising candidates were progressed to *in vivo* evaluation in a opioid-induced constipation model in mice.
Results. We developed novel single-chain INSL5 mimetics that preserved RXFP4 agonist activity. A lead analogue combined robust synthetic accessibility with high RXFP4 affinity (apparent binding affinity ~1 nM). In functional assays, this compound acted as an RXFP4 agonist with an EC_{50} of ~9 nM in cAMP signalling, supporting its prioritisation for further preclinical assessment.
Discussion. These results demonstrate that INSL5 activity can be retained within simplified, single-chain scaffolds, providing a practical strategy to overcome the manufacturability barriers of native INSL5 while maintaining strong RXFP4 engagement. The lead mimetic represents both a valuable pharmacological tool to interrogate RXFP4-driven gut motility and a promising starting point for constipation therapeutics.

P607

Vanilla Stem Extract Modulates Autophagy and Transcriptome in Pancreatic Ductal Adenocarcinoma Cells

Assist Prof Yuan-Shuo Hsueh

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Vanilla stem extract modulates autophagy and transcriptome in pancreatic ductal adenocarcinoma cells

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Introduction. Pancreatic ductal adenocarcinoma (PDAC) is among the deadliest solid tumors and shows limited responsiveness to current systemic therapies. Natural products represent an important source of anticancer agents, yet their molecular actions in PDAC remain insufficiently characterized.
Aims. This study investigated the antitumor effects of an ethanol extract from *Vanilla planifolia* stems (VAS) in PDAC cells and explored the transcriptomic networks underlying its cytotoxic activity.
Methods. The antitumor effects of VAS were evaluated using cell viability and clonogenic assays in human PDAC cell lines. Autophagy induction was assessed by MAP1LC3 processing and pharmacological inhibition. Global gene expression changes were analyzed by RNA sequencing, followed by pathway enrichment, protein–protein interaction network analysis, and qPCR validation of selected hub genes.
Results. VAS significantly inhibited PDAC cell proliferation while exerting minimal effects on non-malignant pancreatic epithelial cells. VAS treatment induced robust autophagy, which functionally contributed to reduced cell viability. Transcriptomic analysis revealed widespread gene expression reprogramming, with significant enrichment of pathways related to autophagy, lysosomal activity, ribosome function, and cell cycle control. Network analysis identified clusters of downregulated genes associated with tumor progression and inflammatory signaling, as well as upregulated genes involved in stress responses, apoptosis, and autophagy regulation. These transcriptional changes were consistently validated across PDAC cell models.
Discussion. These findings indicate that VAS exerts multifaceted antitumor effects in PDAC through the induction of autophagy and coordinated transcriptomic remodeling. The modulation of oncogenic, stress-responsive, and cell death–related gene networks supports the potential of VAS as a promising source for developing novel therapeutic strategies against PDAC.

P608

GRK2 inhibition: an effective strategy against development of acute kidney injury

Assoc Prof Chun Wang

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

GRK2 inhibition: an effective strategy against development of acute kidney injury

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Introduction. G-protein-coupled receptor kinases (GRKs) play important role in tissue injury. However, its function in acute kidney injury (AKI) is unknown.
Aims. The present study was conducted to disclose the role of GRKs in the development of AKI.
Methods. Phenotypic alteration in GRKs family members was systematically assessed through analyses of tissues and urine samples from AKI patients, combined with investigations of those from experimental murine AKI models and vitro cellular systems as well. AKI models were constructed in GRK2+/- mice and GRK2 conditional knockdown mice, and severity of the disease and protective effect of GRK2 inhibitors were assessed. Kinase activity experiment and GRK2 K220R mutation were used to reveal the molecular mechanism of GRK2 regulating NADPH oxidase-4 (NOX4).
Results. Increased expression of GRK2, but not the other GRKs was confirmed in the samples from AKI patients, AKI mice and cell lines. Knockdown of GRK2 down-regulated NOX4 expression, and repressed NOX4 mediated reactive oxygen species (ROS) release, oxidative stress and endoplasmic reticulum (ER) stress, preventing Lipopolysaccharide (LPS), iohexol, cisplatin and ischemia-reperfusion induced renal tubular epithelial cells (RTECs) death and loss of renal function, respectively. GRK2 inhibitors CP-25 and paroxetine effectively improved LPS and iohexol induced kidney injury by ameliorating renal pathology, inhibiting inflammatory response, oxidative stress and ER stress, and decreasing renal cell apoptosis. Further investigation revealed that GRK2 directly interacts with NOX4 in mitochondria, endoplasmic reticulum, and cytosol of RTECs. GRK2 phosphorylates NOX4 to potentiate its ability to mediate oxidative stress, whereas GRK2 K220R mutant (abolishing enzymatic activity of GRK2) significantly suppressed this regulatory process.
Discussion. GRK2 is abnormally up-regulated and plays an important role in AKI development by phosphorylated regulating NOX4 and inhibiting ROS release, oxidative stress and ER stress. Pharmacological inhibition of GRK2 activity is effective in ameliorating AKI.

P609

miR-212-3p regulates the MAPK/ERK signaling via FGF7 in acquired oxaliplatin-resistant colorectal cancer

Prof Liang-Yi Hung

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

miR-212-3p regulates the MAPK/ERK signaling axis via FGF7 in acquired oxaliplatin-resistant colorectal cancer (CRC)

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Introduction. Acquired resistance to oxaliplatin-based chemotherapy (e.g., FOLFOX) is a major hurdle in the treatment of colorectal cancer (CRC), often leading to recurrence and poor prognosis. The MAPK/ERK pathway is a key driver of this resistance; however, the upstream regulatory mechanisms, particularly involving the FGF/FGFR axis and microRNA networks, remain unclear.

Aims. This study aims to elucidate the biological function of miR-212-3p in modulating the ERK pathway and its consequent impact on chemoresistance and the tumor microenvironment.

Methods. We utilized human CRC cell lines (HCT116, LoVo, SW480) and generated their corresponding oxaliplatin-resistant strains (oxaR#9, LoVoR, SW480R). Bioinformatic analyses (TargetScan, KM-plot) were used to identify ERK-associated miRNAs and to evaluate their clinical prognostic significance. Gene and protein expression were assessed by qPCR and Western blot, respectively; cell viability was measured using CCK-8 to monitor drug response.

Results. Oxaliplatin-resistant CRC cells exhibit hyperactivated ERK signaling. Pharmacological inhibition of this pathway with the MEK inhibitor Trametinib effectively restored oxaliplatin sensitivity, inhibited cell proliferation, and suppressed DUSP4 expression, a downstream ERK pathway marker that is upregulated in resistant cells. Mechanistically, we identified miR-212-3p as a critical negative regulator of the ERK pathway. miR-212-3p was significantly downregulated in oxaliplatin-resistant cell lines, and clinical data analysis revealed that low miR-212-3p expression correlates with poor patient outcomes. Conversely, overexpression of miR-212-3p decreased *MAPK1* mRNA levels and inhibited ERK activity. We further identified FGF7 as a direct target of miR-212-3p; FGF7 was upregulated in resistant cells, inversely correlating with miR-212-3p levels. The upregulation of FGF7 not only sustains ERK activation but is also associated with altered macrophage expression in the tumor microenvironment.

Discussion. We characterize a novel regulatory axis where the downregulation of miR-212-3p promotes oxaliplatin resistance by unleashing FGF7-mediated ERK hyperactivation. These findings suggest that the miR-212-3p/FGF7 axis serves as a crucial mechanism of chemoresistance and highlight the therapeutic potential of targeting this pathway or using ERK inhibitors such as Trametinib to improve clinical outcomes in CRC.

P610

Cholinergic contractions in detrusor muscle of mouse model of bladder outlet obstruction

Prof Toshihiro Unno

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Cholinergic contractions in detrusor muscle of mouse model of bladder outlet obstruction

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Introduction. Overactive bladder (OAB) is characterized by urinary urgency, frequency, nocturia, and urge incontinence. Enhanced cholinergic contractions have been reported in OAB (Banks et al., 2005); however, the relationship between intracellular Ca^{2+} dynamics and contractile force in pathological conditions remains unclear.

Aims. This study aimed to elucidate the mechanisms underlying enhanced cholinergic contractions in OAB by simultaneously analysing carbachol-induced contractile responses and changes in intracellular Ca^{2+} concentration in bladder smooth muscle from a mouse model of bladder outlet obstruction (BOO).

Methods. A BOO model was established in mice by partial urethral obstruction. Bladder smooth muscle strips were excised, and isometric contractions induced by the muscarinic receptor agonist carbachol (0.3–10 μM) were recorded. Intracellular Ca^{2+} concentrations were measured simultaneously using fura-PE3 fluorescence. The involvement of the Rho kinase pathway was evaluated using the Rho kinase inhibitor Y-27632 (3 μM).

Results. Bladder weight was significantly increased in the BOO group compared with sham controls. Carbachol induced a transient contraction followed by a sustained phase in both groups; however, maximal contractile tension was significantly greater in the BOO group. Despite this enhancement, carbachol-induced increases in intracellular Ca^{2+} concentration did not differ between BOO and sham groups. Treatment with Y-27632 markedly suppressed carbachol-induced contractions in both groups and abolished the difference in contractile tension between them.

Discussion. These findings indicate that enhanced cholinergic contractions contribute to the pathophysiology of OAB. The increased contractile response in the BOO model is attributable not to elevated intracellular Ca^{2+} levels but to Ca^{2+} sensitization of the contractile apparatus mediated by the Rho kinase pathway.

Banks CLF et al. (2005) BJU Int97: 372-378

P614

Optimal control of irinotecan-induced emesis in Suncus murinus: impact on treatment guidelines

Prof John Rudd

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Optimal control of irinotecan-induced emesis in *Suncus murinus*: potential impact on treatment guidelines

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Introduction. The recommended clinical guidelines for the control of chemotherapy-induced nausea and emesis are based on a classification scheme heavily centred on risk, rather than on mechanisms.
Aims. To establish if irinotecan-induced emesis involves the abdominal vagi and brainstem and if a control of emesis by palonosetron + dexamethasone regimens can be improved by olanzapine.
Methods. Male *Suncus murinus* were used. Bilateral abdominal vagotomy was performed 7-days before, or antiemetics were administered 1 h prior to the administration of irinotecan (75 mg/kg, i.p.). Animal behaviour was recorded as previously described (Tu et al., 2021).
Results. Irinotecan induced emesis over a 3-day period, with the early 4-h response being highly susceptible to vagotomy. Palonosetron (0.01 mg/kg, p.o.) reduced acute emesis by 57.3 % but dexamethasone (0.3 mg/kg, s.c.) and olanzapine (1 mg/kg, s.c.) and scopolamine (10 mg/kg, i.p.) alone were ineffective. However, the triple combination of palonosetron, dexamethasone and olanzapine reduced emesis by 90.2 %. Palonosetron also antagonised the irinotecan-induced c-Fos expression in the area postrema, nucleus tractus solitarius, but not hypothalamus. An end-of-experiment assessment of 25-neurochemicals and 9-neurotansmitter ratio metrics indicated that irinotecan had disrupted serotonin metabolism.
Discussion. The protective effect of palonosetron and vagotomy and the pattern of c-Fos expression in the brainstem and plasma metabolomics suggests that 5-HT and 5-HT_3 receptors in the periphery have a major involvement in the emesis induced by irinotecan. We previously showed that aprepitant was not particularly effective alone but was useful combined with palonosetron and olanzapine (Rudd et al., 2024). Here we demonstrate that the triple regimen of palonosetron, dexamethasone and olanzapine may also offer an option for the improved control of emesis.

Rudd et al (2024) In Pharmacology 2024, https://bpspubs.onlinelibrary.wiley.com/doi/10.1111/bph.17399
Tu et al (2021) Frontiers in Pharmacology, 12, 746053

P615

Triiodothyronine promotes liver regeneration in 70% partially hepatectomized rats in vivo

Prof Mitsutoshi Kimura

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Triiodothyronine promotes liver regeneration in 70% partially hepatectomized rats *in vivo*

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Introduction. Triiodothyronine (T_3) is a thyroid hormone known to regulate metabolism and growth. Its actions promote gene expression through complex formation with nuclear receptors. Our laboratory has previously demonstrated that T_3 stimulates the proliferation of primary cultured hepatocytes.
Aims. In this study, we examined whether the proliferative effect of T_3 could be applied to liver regeneration by assessing its actions in partially hepatectomized rats.
Methods. Male Wistar rats underwent 70% partial hepatectomy (PHx) as described by Higgins and Anderson, using 1.5–5% isoflurane inhalation anesthesia. T_3 (0.5 mg/kg, i.p.) was administered to the PHx animals. After a defined recovery period, the remnant liver was excised and weighed. Paraffin-embedded sections were prepared, and hepatocyte DNA synthesis was evaluated by 5-bromo-2'-deoxyuridine (BrdU) immunostaining.
Results. Rats treated with T_3 and thyroxine (T_4) exhibited approximately 1.4- and 1.2-fold increases, respectively, in the liver weight (LW) to body weight (BW) ratio compared with vehicle-treated controls on days 2 and 3 after PHx. By day 7, the LW/BW ratio of T_3-treated rats had returned to pre-resection levels. Consistently, the BrdU-labeling index in regenerating liver was significantly higher in T_3-treated rats than in controls on day 1. In contrast, reverse triiodothyronine (rT_3) did not significantly alter either the LW/BW ratio or the BrdU- labeling index compared with controls. Serum transaminase activities (alanine aminotransferase and aspartate aminotransferase) rose sharply on day 1 and declined to near pre-operative levels by day 5 in vehicle-treated rats. Both T_3 and T_4 significantly reduced serum transaminase activities on days 2 and 3 compared with controls, with T_3 exerting more pronounced effects than T_4.
Discussion. These findings demonstrate that, among thyroid hormones, T_3 exerts the strongest effects in promoting both liver mass regeneration and functional recovery following liver injury.

P616

Investigating Promising Molecules in the MASLD/MASH Pipeline

Prof Davor Štimac

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Investigating Promising Molecules in the MASLD/MASH Pipeline: Comprehensive Analysis of Ongoing Clinical Trials and the Future of Treatment

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Introduction. Metabolic dysfunction-associated steatotic liver disease (MASLD) and metabolic dysfunction-associated steatohepatitis (MASH) have emerged as major global health concerns. These conditions not only contribute significantly to liver-related morbidity and mortality but also exacerbate cardiometabolic risks, underscoring the urgent need for effective therapeutic interventions.
Aims. This scoping review aims to provide a comprehensive overview of the molecules currently in development.
Methods. On 5th February 2026, two independent reviewers (A.B. and D.Š.) systematically searched ClinicalTrials.gov using the following search strategy: MASLD/MASH and related terms (NAFLD and NASH) in adult (18–64 years) and older adult (65+ years) populations, limited to interventional studies in Early Phase 1, Phase 1, 2, or 3, with study start dates on or after 01/01/2021. Data extracted from eligible trials included NCT Number, Study Title, Study URL, Study Status, Brief Summary, Conditions, Interventions, Primary and Secondary Outcome Measures, Sponsor, Sex, Age, Phases, Enrollment, Funder Type, Study Type, Study Design, Other IDs, Start Date, Completion Date, and Locations.
Results. Eight studies met the inclusion criteria; however, one trial (NCT06692283, investigating denifanstat) was withdrawn prior to enrollment, leaving seven studies for further analysis. These comprised two Phase 1 trials assessing menopause hormone replacement therapy (NCT06704516) and ALN-PNP (NCT05648214) in MASLD, two Phase 2 trials evaluating DR10624 in MASLD and MetALD (NCT07024212) and ALN-HSD in adults with MASH and heightened genetic risk (NCT05519475), and three Phase 3 trials investigating pegozafermin in MASH with compensated cirrhosis (NCT06419374) and fibrosis (NCT06318169), as well as efruxifermin in MASLD/MASH (NCT06161571). Detailed trial characteristics are provided in Supplementary Table 1. The identified pipeline molecules, their mechanisms of action, and emerging clinical data will be discussed extensively.
Discussion. The evolving landscape of therapeutic development for MASLD and MASH reflects significant progress, with multiple promising agents advancing through clinical phases, particularly those targeting metabolic and fibrotic pathways.

P617

Effect of Ninjin'yoeitou on chemotherapy agents-induced mucositis in mice

Ms Yui Kitazawa

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Effect of Ninjin'yoeitou on chemotherapy agents-induced mucositis in mice

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Introduction. Chemotherapy agents cause severe diarrhea by damaging the intestinal mucosa, despite their effectiveness in cancer treatment. This side effect can potentially lead to the discontinuation of anticancer therapy. Therefore, it is important to develop preventive and therapeutic approaches for anticancer agent-induced intestinal mucositis.

Aims. The purpose of this study was to examine the potential of Ninjin'yoeito as a prophylactic agent against chemotherapy-induced enteritis.

Methods. Male C57BL/6N mice were treated intraperitoneally with irinotecan once daily for 4 days. Ninjin'yoeito was administered in drinking water for 6 days from the start of treatment. Body weight and fecal consistency were monitored. Seventy-two hours after the final irinotecan dose, mice were euthanized and small intestines collected for histopathology. Ileal myeloperoxidase activity was measured, Nrf2 and HO-1 mRNA expression analyzed by real-time PCR, and oxidative stress assessed by thiobarbituric acid assay.

Results. When irinotecan was administered intraperitoneally once daily for 4 days to mice, body weight loss was observed; however, no diarrhea occurred. Pathological examination showed histological changes in the ileum, including shortened villi, vacuolation, and cell hypertrophy. Co-administration of Ninjin'yoeito prevented irinotecan-induced weight loss but did not alter fecal consistency. Ninjin'yoeito treatment significantly suppressed the shortening of villi and decrease of crypts in the ileum. Myeloperoxidase activity increased in the irinotecan-only group but was lower in mice given Ninjin'yoeito. Irinotecan significantly reduced Nrf2 and HO-1 mRNA levels and tended to increase thiobarbituric acid values. In contrast, Ninjin'yoeito did not significantly influence the changes in Nrf2, HO-1, and thiobarbituric acid values induced by irinotecan.

Discussion. This study demonstrated that Ninjin'yoeito protects against irinotecan-induced mucositis, possibly through its anti-inflammatory effects, and highlights its potential as a promising therapeutic candidate.

P618

Identification of Tyrosine Phenol-Lyase Inhibitors from Compound Library and TCM via MALDI-TOF

Mr Kuo-feng Tseng

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Identification of Tyrosine Phenol-Lyase Inhibitors from Compound Library and TCM via MALDI-TOF

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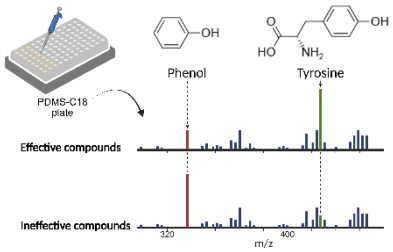

Introduction. Tyrosine phenol-lyase (TPL) mediates the catalyzation of the substrate L-tyrosine into phenol, which is a critical gut microbiota-derived metabolite. This enzymatic pathway represents a primary source of phenolic protein-bound uremic toxins (PBUTs), which are critically linked to the progression of chronic kidney disease (CKD). Consequently, identifying potent TPL inhibitors represents a vital therapeutic strategy for mitigating uremic toxicity.

Aims. This study aims to identify TPL inhibitors from natural product library and traditional Chinese medicine (TCM) extracts.

Methods. The compound candidates were identified through virtual screening with high binding affinity for the TPL active site and from crude extracts of TCM. Compound candidates and crude extracts of TCM was individually added into the mixture of tyrosine and TPL. To increase the hydrophobicity of phenol for its detectability on MALDI-TOF, the reaction mixtures were further derivatized with dansyl chloride (DnsCl) into dansylated tyrosine and phenol. By comparing the peak ratio of dansylated tyrosine and phenol, the inhibitory ability of the compound toward TPL can be rapidly evaluated.

Results. A database of 400 compounds was used to identify potential inhibitors via virtual screening; two were subsequently verified by molecular dynamics (MD) simulations and MALDI-TOF analysis. Furthermore, 80 extracts from clinically used TCM formulas were also screened using MALDI-TOF, and one of them was found to have potential TPL inhibitory activity.

Discussion. This study identifies two potent compounds and one TCM extract with significant TPL inhibitory activity, offering promising lead candidates for drug development. The active compounds of TCM extract will be further identified, and *in vivo* experiments will be performed to evaluate their inhibition efficacy in animal models.

P619

Effects of dimethylsulfoxide on phasic contractile activity of the bladder mucosa

Dr Donna Sellers

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Effects of dimethylsulfoxide on phasic contractile activity of the bladder mucosa

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Introduction. Dimethylsulfoxide (DMSO) is a common treatment for interstitial cystitis/Bladder pain syndrome (IC/BPS), where it is instilled into the lumen of the bladder (Li et al., 2025). It's mechanism of action is unknown, but it is administered intravesically (instilled into the bladder) and thus has close contract with the bladder mucosa.

Aim. The aim of this study was to investigate the effects of DMSO on contractile activity of porcine bladder mucosa.

Methods. Isolated strips of porcine bladder mucosa were set up under 1-2g tension in gassed Krebs-bicarbonate solution at 37℃ and isometric developed tension recorded. Contractile activity of tissues was recorded during a 30 min incubation with DMSO (25%) and during recovery after washout. Data are presented as mean±sem values.

Results. Isolated strips of pig mucosa developed spontaneous, phasic contractile activity with a frequency of 3.16±0.23 cycles/min and an amplitude of 0.58±0.10g (n=13). DMSO (25%) abolished spontaneous contractile activity within 9 minutes of application and it also reduced the basal tension developed by the tissues by 49.1±9.4% (n=5). After 30 mins incubation, tissues were washed and the contractile activity recovered to control levels by 12.6±2.9 mins. In separate experiments, responses to carbachol (10µM) were obtained in the absence and presence of DMSO. In control tissues, carbachol (10µM) increased the frequency of contractions by 59.3±10.1% and increased the basal tension by 4.36±0.91g (n=4). However, In the presence of DMSO, responses to carbachol (10µM) were abolished.

Discussion. The results indicate that DMSO has a large depressant effect on the bladder mucosa, inhibiting phasic contractions and causing a relaxation of the tissues. It also depresses responses to muscarinic stimulation. However these effects were readily reversed once the DMSO was removed and tissues recovered completely. It therefore seems unlikely that the prolonged beneficial effects of DMSO observed in IC/BPS patients are due to effects on the bladder mucosa contractility.

Li et al. (2025) The Efficacy and Safety of Dimethyl Sulfoxide Into the Bladder for the Treatment of Interstitial Cystitis/Bladder Pain Syndrome: A Systematic Review and Meta-Analysis. Neurourol Urodyn 44(5):1036-1046.

P620

Effects of Pravastatin on Hepatic Fibrosis in Mice

Ms Chihiro Kubota

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Effects of Pravastatin on Hepatic Fibrosis in Mice

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Introduction. Hepatic steatosis refers to the accumulation of triglycerides in the liver, and when it is of non-alcoholic origin, it is termed metabolic dysfunction-associated fatty liver disease (MAFLD). Chronic liver diseases, including MAFLD and viral hepatitis, induce hepatic fibrosis as a common pathological feature due to persistent inflammation. Progression of hepatic fibrosis is known to lead to cirrhosis and hepatocellular carcinoma. Since no antifibrotic drugs are currently available in Japan, the development of effective therapies is urgently needed.
Aims. This study aimed to investigate the effects of pravastatin in a mouse model of hepatic fibrosis induced by carbon tetrachloride.
Methods. Male C57BL/6N mice were used. Pravastatin (10 mg/kg) was given orally once daily from weeks 8 to 10 of carbon tetrachloride (CCl_4) treatment. Mice were euthanized the day after the final dose, and blood and liver samples were collected. Serum was used for AST and ALT measurements. Liver tissues were paraffin-embedded for histology (hematoxylin–eosin staining) and collagen deposition (picrosirius red staining). Hepatic mRNA expression of Col1α1 and α-SMA was measured using RT–PCR.
Results. Serum AST and ALT levels were significantly increased by CCl_4 treatment but decreased with pravastatin co-administration. Liver weight was increased by CCl_4 and tended to decrease with pravastatin. Regenerative nodules and inflammatory infiltration observed in CCl_4-treated livers tended to improve with pravastatin. Picrosirius red staining showed collagen deposition in CCl_4-treated livers; however, pravastatin did not significantly reduce collagen accumulation. Col1A1 mRNA expression was increased ~20-fold in CCl_4-treated livers compared with normal tissue and was reduced to 10-fold by pravastatin. α-SMA mRNA expression was also significantly increased by CCl_4 and significantly suppressed by pravastatin.
Discussion. Pravastatin reduced CCl_4-induced increases in serum AST and ALT, suggesting improved liver function. It also suppressed fibrosis marker mRNA expression, indicating a potential antifibrotic effect.

P621

Sepsis model mice show altered intestinal 5-HT synthesis and metabolism.

Mr Ayata Kuroda

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Sepsis model mice show altered intestinal 5-HT synthesis and metabolism.

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Introduction. Sepsis is characterized by organ dysfunction due to infectious diseases and is a direct cause of death in critically ill patients in the intensive care area, and developing measures to control sepsis is one of the important medical issues. In recent years, the involvement of 5-hydroxytryptamine (5-HT) in the progression of sepsis has been suggested. More than 90% of 5-HT is produced in enterochromaffin cells of the small intestine via tryptophan hydroxylase 1 (TPH1). The released 5-HT is taken up by the serotonin transporter (SERT) into peripheral cells and metabolized to 5-hydroxyindoleacetic acid (5-HIAA) by monoamine oxidase-A (MAO-A).
Aims. In this study, we analyzed the fluctuations in protein expression related to the enhancement of 5-HT synthesis and metabolism during the progression of sepsis induced by cecal ligation and puncture (CLP).
Methods. CLP was performed on 11-week-old male BALB/c mice, and jejunal tissue was collected at 3, 6, 12, 24, and 48 hours post-procedure. mRNA expression was analyzed by real-time RT-PCR. Protein expression was analyzed by western blot and immunohistochemistry. 5-HT and 5-HIAA contents were measured by HPLC-ECD.
Results. While 5-HT levels transiently increased at 24 hours following CLP, 5-HIAA levels were already significantly elevated as early as 3 hours post-CLP. TPH1 mRNA expression peaked transiently at 12 hours, accompanied by an increasing trend in the number of anti-TPH antibody-positive cells. SERT expression also tended to increase, reaching peak at 12 hours. MAO-A protein expression significantly increased at 12 hours, whereas MAO enzymatic activity showed a sustained and significant decrease beyond 12 hours after CLP.
Discussion. These findings suggest that dysregulation of 5-HT synthesis and metabolism may play a pivotal role in the pathophysiology of sepsis. Furthermore, this serotonergic shift could serve as a potential therapeutic target, providing a rationale for the development of novel pharmacological interventions based on 5-HT modulation in sepsis treatment.

P622

Tumor Metabolite–Derived Lactate Induces LCN2 Expression and Drives Bladder Cancer Progression

Dr Yu-Cheng Lee

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Tumor Metabolite–Derived Lactate Induces LCN2 Expression and Drives Bladder Cancer Progression

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Introduction. Bladder cancer is the seventh most common cancer worldwide. About 70% of patients present with non-muscle invasive bladder cancer (NMIBC), which is usually treatable; however, most of these cases eventually relapse and progress to muscle-invasive bladder cancer (MIBC), a metastatic disease associated with poor prognosis. The "Warburg effect" describes tumor metabolic reprogramming that drives aerobic glycolysis and excessive lactate accumulation. Recent studies highlight the role of tumor-derived lactate in shaping the tumor microenvironment (TME). Lactate-induced acidic TME contributes to immunosuppression, maintenance of cancer stemness, drug resistance, and tumor progression.

Aims. Mimic the lactate-rich tumor microenvironment using exogenous lactate treatment in bladder cancer cells. Identify lactate-responsive genes and pathways contributing to bladder cancer progression. Elucidate the role of lipocalin-2 (LCN2) as a key mediator of lactate-driven malignancy.

Methods. Exogenous lactate treatment was applied to bladder cancer cell lines to simulate a lactate-rich TME. RNA sequencing (RNA-seq) was performed to identify differential gene expression. Candidate gene (LCN2) was validated by molecular assays (qPCR, Western blot, functional assays). Mechanistic studies were conducted to assess the contribution of LCN2 to cell proliferation, stemness, and progression.

Results. RNA-seq analysis revealed that LCN2 expression was significantly induced in bladder cancer cells exposed to lactate. Lactate treatment enhanced malignant phenotypes, including proliferation, stemness, and resistance. Functional assays demonstrated that silencing LCN2 abrogated these lactate-induced effects.

Discussion. Our findings indicate that tumor metabolite–derived lactate plays a pivotal role in bladder cancer progression by inducing LCN2 expression. This highlights a novel mechanism by which lactate-rich TME fosters tumor aggressiveness. Targeting the lactate–LCN2 axis may provide therapeutic opportunities to counteract tumor progression, relapse, and resistance in bladder cancer.

P624

Clerodendrum capitatum Extract: Antidiarrheal Efficacy Via M3R, αR and μOR Modulation

Dr Martha N Ofokansi

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

***Clerodendrum capitatum* Extract: Antidiarrheal Efficacy Via M3R, αR and μOR Modulation**

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Introduction. *Clerodendrum capitatum* (Willd) Schumach & Thonn. (Verbenaceae), an African perennial undershrub, is traditionally used for various ailments. Its use for the treatment of diarrhoea has continued without scientific validation.

Aim. This study was aimed to evaluate the antidiarrheal properties of leaf extract of *Clerodendrum capitatum* (CCE) in rodents and its possible antidiarrheal mechanism(s).

Methods. The LD_{50} of CCE was determined using Lorke's method of acute toxicity testing. A total of 14 out of the identified compounds in GCMS analysis, along with two reference ligands (9EC, a tiotropium analogue, and BF0, a morphinan derivative) were selected for molecular docking studies against muscarinic 3 receptor (M3R) and mu-opiod receptor (μOR). Adult rats caged in six groups (n=5) orally received distilled water (10 ml/kg) as negative control, CCE (100, 200 and 400 mg/kg), Atropine (1 mg/kg) and loperamide (5 mg/kg) as positive control. The models employed were castor-oil induced diarrhoea, castor-oil induced enteropooling and charcoal meal intestinal transit time. The probable mechanisms of antidiarrheal activities were investigated using the isolated rabbit jejunum. The change in the rhythmic contraction of the tissue following pre-treatment for 2 min with various agonists (acetylcholine, adrenaline) and antagonists (atropine, prazosin, yohimbine, and propranolol) of both cholinergic and adrenergic receptors before administration of CCE was observed and recorded.

Results and discussion. *In silico*, some of the test compounds outperformed the co crystallized compounds on M3R and μOR. These receptors are well-established therapeutic targets in gastrointestinal pharmacology. Compounds 4 and 12 are potential leads for M3R. They have superior binding energy and consistent pose stability than the co-crystalized ligand. For μOR, Compound 3, offered stronger binding and a more stable pose. *In vivo,* CCE significantly ($p<0.05$) prolonged the time of diarrhoea onset and decreased the frequency of wet stooling in treated rats in castor oil model. It also significantly ($p<0.05$) impeded the transit of charcoal meal in the GIT. *In vitro*, it caused blockades of intrinsic rhythmic contraction, Ach-induced contraction and re-establishment of rhythmic contraction after adrenalin, prazosin and propranolol pre-treatment in isolated rabbit jejunum. The LD50 revealed is above 5g/kg. These data suggest that CCE extract possesses antidiarrheal and spasmolytic activities via modulation of the studied receptors. These findings provide a foundation for further validation and support a multi-target screening approach in designing new antidiarrheal agents.

P625

Involvement of α7 Nicotinic Acetylcholine Receptor in the Pathogenesis of DSS-Induced Colitis

Mr Shota Oyama

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Involvement of α7 Nicotinic Acetylcholine Receptor in the Pathogenesis of DSS-Induced Colitis

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Introduction. Ulcerative colitis (UC), a form of inflammatory bowel disease (IBD), is a refractory disease with unknown etiology and pathogenesis, and no curative therapy has yet been established. Therefore, elucidation of the underlying mechanisms and the development of novel therapeutic strategies are urgently required. Although smoking is a major risk factor for various diseases, it has paradoxically been reported to ameliorate symptoms in patients with UC. This effect is suggested to involve the cholinergic anti-inflammatory pathway mediated by the α7 nicotinic acetylcholine receptor (α7nAChR). α7nAChR regulates the release of inflammatory cytokines from macrophages and is considered to play an important role in the pathogenesis of colitis.
Aims. In this study, we investigated the effects of the α7nAChR agonist on the pathogenesis of a mouse model of ulcerative colitis.
Methods. Male C57BL/6N mice were given 3% dextran sulfate sodium (DSS) in drinking water ad libitum for 7 days to induce a UC model. PNU-282987 (PNU; α7nAChR agonist) was administered intraperitoneally once daily. Body weight and fecal condition were monitored, and colon tissue samples were collected 24 hours after the final administration.
Results. DSS administration for 7 days caused progressive body weight loss and severe diarrhea with bloody stools in mice. PNU treatment ameliorated DSS-induced weight loss and fecal deterioration. Myeloperoxidase activity in colon tissues was significantly elevated in the DSS group compared with controls, and this increase tended to be suppressed by PNU. Histological analysis with hematoxylin–eosin staining revealed that PNU attenuated mucosal damage and crypt loss observed in DSS-treated mice. Immunofluorescence staining showed that DSS increased α7nAChR expression, which was reduced by PNU administration.
Discussion. Taken together, these findings suggest that α7nAChR activation plays a crucial role in suppressing inflammation in UC, highlighting its potential as a novel therapeutic target for the treatment of inflammatory bowel disease.

P626

EGCG attenuates lipogenesis with limited autophagy restoration in MASLD-induced mice

Dr Mahardian Rahmadi

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

EGCG attenuates lipogenesis with limited autophagy restoration in MASLD-induced mice

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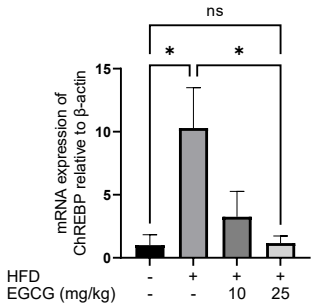
Introduction. Metabolic-dysfunction associated steatotic liver disease (MASLD) is defined by triglyceride (Tg) accumulation in hepatocytes.
Aims. This study examined the effect of epigallocatechin gallate (EGCG) on MASLD progression in high-fat diet (HFD)-fed mice.
Methods. Twenty-eight male mice were assigned to four groups: normal diet, HFD, HFD + EGCG 10 mg/kg BW, and HFD + EGCG 25 mg/kg BW. HFD (45% beef tallow) was given for 56 days. EGCG was administered ip during the final 14 days. Body weight and food intake were monitored daily. Liver tissues were examined by histopathology and RT-qPCR.



Results. HFD and EGCG groups showed lower body weight than control mice, with similar calorie-adjusted intake. HFD induced steatosis, ballooning, and inflammation. Expression of ChREBP was increased and ULK1 was decreased in HFD mice versus controls. EGCG dose dependently reduced ChREBP mRNA, but did not restore ULK1 expression.
Discussion. Reduced body weight in HFD-fed mice is consistent with ketogenic diet findings (O'Neill & Raggi, 2020). EGCG lowers body weight via brown adipose tissue activation (Zhou et al, 2018). Sucrose-derived glucose activates ChREBP, promoting lipogenic gene expression and Tg accumulation (Abdul-Wahed et al, 2017). HFD impairs autophagy by reducing ULK1 activation (Khambu et al, 2018).

Abdul-Wahed A et al (2017) Cell Metab 26:324–341.
Khambu B et al (2018) Liver Res 2:112–119.
O'Neill B et al (2020) Atherosclerosis 292:119–126.
Zhou S et al (2018) Front Endocrinol (Lausanne) 9:748.

P627

Valsartan-Loaded Nanocarriers Target Inflammation and Oxidative Stress in Experimental Diabetic Rats

Dr Hanan A. Rizk

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Valsartan-Loaded Nanocarriers Target Inflammation and Oxidative Stress in Experimental Diabetic Rats
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Introduction. Diabetes-induced liver damage is a significant complication of hyperglycemia, which results in oxidative stress, inflammation, and fibrosis. Conventional treatment strategies remain limited, necessitating novel therapeutic approaches.
Aims. This study evaluates the hepatoprotective effects of valsartan-loaded self-nanoemulsifying drug delivery system (SNEDDS) in streptozotocin (STZ)-induced hyperglycemic rats, by focusing on oxidative stress modulation, inflammatory cytokine suppression, and metabolic regulation.
Methods. Male Sprague-Dawley rats were divided into six groups: control, STZ-induced diabetic model, and treatment diabetic groups receiving valsartan (Val) or valsartan/hydrochlorothiazide (Val/HCT) in either SNEDDS-loaded liquisolid tablets or directly compressed tablets. Liver function, oxidative stress biomarkers, lipid profiles, histopathological changes, and gene expression levels of NF-κB, TGF-β, and Nrf2 were assessed.
Results. Val and Val/HCT-loaded-SNEDDS significantly reduced fasting blood glucose, serum ALT levels, and pro-inflammatory cytokines (NF-κB and IL-1). They also enhanced antioxidant defenses by increasing hepatic glutathione levels (34-39%) while reducing malondialdehyde (36-39%) and nitric oxide (50%). Histopathological analysis confirmed improved liver architecture with diminished inflammatory cell infiltration and fibrosis. Gene expression analysis revealed a downregulation of TGF-β and NF-κB, alongside an upregulation of Nrf2, indicating reduced fibrogenesis and oxidative stress response.
Conclusion. Val-loaded SNEDDS effectively mitigates STZ-induced hepatotoxicity. This hepatoprotective effect is due to blocking the angiotensin II type 1 receptor (AT1R) which leads to inhibition of TGF-β, and other TGF-β mediated inflammatory markers such as NF-κB and IL-1. This nanoformulation presents a promising therapeutic strategy for diabetes-associated liver injury, warranting further investigation for clinical applications.

P628

Invasive AhR by TPL2 Drives Tumor-Associated Macrophage Polarization and Metastasis via IFITM2

Prof Meei-Ling Sheu

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Invasive AhR by TPL2 Drives Tumor-Associated Macrophage Polarization and Metastasis via IFITM2

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Introduction. Previously we found that TPL2 (Therapeutic Targeting Tumor Progression Locus-2) regulate epithelial-mesenchymal transition (EMT), but how these factors convert to metastatic players in the tumor microenvironment (TME) is not fully understood.
Aims. To elucidate the mechanism behind immune cellular plasticity in cancer plays a central role in multiple phases of metastasis.
Methods. The clinical importance of TPL2 was analyzed by heatmap analysis, a KM plot, and immunohistochemistry in advance gastric cancer (GC) patients. Immunoprecipitation, LC-MS/MS, kinase assay, and site-directed mutagenesis were performed for the interaction and phosphorylation. An orthotic mouse model, three-dimensional cell cultures, microarray analysis, co-culture with monocytes, and chromatin immunoprecipitation assays were used to elucidate the function of phosphorylated Aryl hydrocarbon receptor (AhR) in metastasis of TME.
Results. The phosphorylated AhR at Ser36 by TPL2 acquires the reprogramming ability to excite the invasive traits in cancer and influence immune cell plasticity. This invasive form of p-AhR upregulates the expression of IL1b, IL6, and VEGFA by direct activation, recruiting monocytes and enhancing the polarization of Tumor-associated M2 macrophages (TAMs). In invasive gastric cancer with AhR, IFITM2 is the most highly expressed through the activation of the STING pathway, which enhances AhR-mediated signaling. Clinically, higher expression of AhR, TPL2, and IFITM2 is inversely correlated with the survival rate of advanced gastric cancer patients, providing a promising therapeutic strategy for the treatment of GC.
Discussion. AhR-based therapy would be a potential to fight against cancer for GC to reduce TAM polarization, immune escape, and metastasis, by AhR functions as a genetic reprogramming factor reinforcing GC malignancy in the TME.

Iain A et al (2014) Nature Reviews Cancer, pages 801–814
Bin Yan et al (2018) Cell Death & Disease, pages 490.

P629

Loss of HIF-1α-mediated metabolic responses by VDR-overexpressed block gastric cancer peritoneal metastasis

Prof Meei-ling Sheu

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Loss of HIF-1α-mediated metabolic responses by VDR-overexpressed block gastric cancer peritoneal metastasis

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Introduction. Hypoxia is a hallmark of the solid tumor microenvironment (TME), leading to stabilization of hypoxia-inducible factor-1α (HIF-1α), which dimerizes with constitutively expressed HIF-1β to regulate metabolic reprogramming as an adaptive response. Previous studies have shown that the vitamin D receptor (VDR; 1,25-dihydroxyvitamin D_3 receptor), a ligand-dependent transcription factor involved in metabolic regulation and endoplasmic reticulum (ER) stress, interacts with peroxisome proliferator-activated receptor delta (PPARδ/PPARD) to influence mitochondrial biogenesis in cancer cells.

Aims. To examine whether loss of HIF-1α-mediated metabolic responses by VDR-overexpressed block gastric cancer peritoneal metastasis.

Methods. We employed genetic manipulation (PPARD knockdown and overexpression), hypoxic cell culture, and serial metabolomics analysis to investigate the role of VDR in regulating HIF-1α stability, glycolytic metabolism, and BNIP3-mediated autophagy in gastric cancer cells.

Results. VDR overexpression impedes HIF-1α accumulation in hypoxic gastric cancer cells and subsequently suppresses hypoxia-inducible expression of glucose transporter 1 (GLUT1) and key glycolytic enzymes, including hexokinase 2 (HK2), pyruvate dehydrogenase kinase 1 (PDK1), and lactate dehydrogenase A (LDHA). Mechanistically, HIF-1α dysregulation in VDR-overexpressing cells was associated with inhibition of PPARD. Knockdown of PPARD blocked HIF-1α accumulation and reduced the expression of glycolytic enzymes, whereas PPARD upregulation in VDR-overexpressing cells restored HIF-1α stabilization. Serial metabolomics analysis further revealed that hypoxia increased the levels of glycolytic and pentose phosphate pathway (PPP) metabolites in control cells, while these elevations were markedly attenuated in VDR-overexpressing cells. Notably, hypoxic exposure elevated amino acid levels, reflecting a shift toward catabolic metabolism; these increases were more pronounced in control cells than in VDR-overexpressing cells. In parallel, hypoxia activated BNIP3 (BCL2 interacting protein 3)–mediated autophagy in control cells, and PPARD was found to play an essential role in this autophagy activation.

Discussion. These results indicate that VDR overexpression disrupts PPARD-mediated HIF-1α stabilization, thereby impairing metabolic reprogramming and autophagy under hypoxia, and highlight the VDR–PPARD–HIF-1α axis as a potential therapeutic target for preventing gastric cancer progression and peritoneal metastasis

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Involvement of TRPM4 channels in cholinergic contractions in mouse prostate gland

Prof Toshihiro Unno

Wednesday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Involvement of TRPM4 channels in cholinergic contractions in mouse prostate gland

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Introduction. Benign prostatic hyperplasia (BPH) causes lower urinary tract symptoms and is often associated with overactive bladder (OAB). Although α_1-adrenoceptor antagonists and muscarinic receptor antagonists are widely used to treat BPH and OAB, respectively, their clinical utility is limited by adverse effects. Therefore, alternative therapeutic targets that regulate prostatic and bladder smooth muscle tone are needed. Transient receptor potential melastatin 4 (TRPM4) channels are expressed in the prostate gland, and we have previously demonstrated that these channels are involved in prostate adrenergic contractions (Pimpjong et al., 2023). However, the role of TRPM4 channels in cholinergic contractions, which cooperate with adrenergic nerves to regulate prostatic excitability, remains unclear.
Aims. The aim of this study was to investigate the involvement of TRPM4 channels in cholinergic contractile responses of the mouse prostate gland using selective TRPM4 channel inhibitors.
Methods. Isometric contractile responses were recorded from mouse ventral prostate strips. Contractions were evoked by electrical field stimulation of intrinsic cholinergic nerves, or by exogenously applied carbachol (CCh).
Results. TRPM4 channel inhibitors, 9-phenanthrol and NBA, significantly inhibited cholinergic nerve–evoked contractions in the prostate gland. Similar inhibitory effects were also observed in CCh-induced contractions.
Discussion. We previously demonstrated that TRPM4 channels contribute to cholinergic contractions in mouse urinary bladder (Alom et al., 2019). The present findings extend this concept by showing that TRPM4 channels are also involved in cholinergic contractions in the mouse prostate gland. Collectively, these results suggest that TRPM4 channels play a significant role in the neural regulation of urogenital smooth muscle contractility and may represent a promising therapeutic target for BPH and associated OAB.

Pimpjong K et al. (2023) J Vet Med Sci, 85: 705–714
Alom F et al. (2019) J Vet Med Sci, 81: 217–228

P631

Ameliorative effect of curcumin on paclitaxel-induced constipation in mice

Dr Dong Wang

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Ameliorative effect of curcumin on paclitaxel-induced constipation in mice

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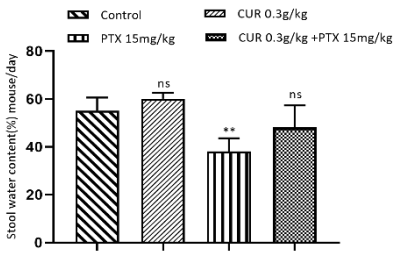

Introduction. Constipation is a prevalent gastrointestinal complication of paclitaxel (PTX) chemotherapy. Curcumin (CUR), a natural polyphenol, is reported to alleviate constipation, yet its efficacy against PTX-induced constipation remains unclear. This study explores CUR's potential protective role, providing experimental evidence to optimize PTX regimens and reduce chemotherapy-associated constipation.

Aims. This study explores CUR's protective effect against PTX-induced constipation in mice, verifying its regulatory role by assessing symptom alleviation via modulated fecal and gastrointestinal motility indices.

Methods. Mice were randomized into 4 groups: Control, CUR (0.3 g/kg/d), PTX (15 mg/kg/2d), CUR+PTX. Monitored indices included food/water intake, fecal pellet number, wet/dry weight, fecal water content, small intestinal propulsive rate and total gastrointestinal transit time. Statistical significance was set at $p < 0.05$.

Results. Compared with the control group, the PTX group exhibited significant reductions in fecal pellet number, wet/dry weight, fecal water content, small intestinal propulsive rate, and food/water intake ($P<0.05$), as well as a marked prolongation in total gastrointestinal transit time ($P<0.05$). These abnormal indicators were significantly reversed in the CUR+PTX group ($P<0.05$), whereas no significant differences were found in all detected indicators between the CUR monotherapy group and the control group.

Discussion. This study confirms that CUR can alleviate PTX induced constipation. Limitations include undefined optimal CUR dose and unclear molecular targets. Future research should clarify CUR's mechanisms and validate its clinical efficacy to enhance PTX chemotherapy safety.

Tu X et al (2023) Front Microbiol 14:127455

P632

Syndecan-4: a novel mediator of liver fibrosis

Dr Xiaoping Wu

Wednesday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Syndecan-4: a novel mediator of liver fibrosis
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Introduction. Metabolic dysfunction-associated steatohepatitis (MASH)-associated liver fibrosis remains a major clinical challenge. Current anti-fibrotic strategies often target pathways with broad physiological functions and may therefore cause substantial adverse effects. Emerging evidence suggests that disruption of membrane homeostasis in hepatic stellate cells (HSCs) increases their responsiveness to pro-fibrotic stimuli.
Aims. This study aimed to identify novel regulators of HSC membrane homeostasis involved in the development of MASH-associated liver fibrosis.
Methods. Candidate regulators were identified through integrated analysis of mouse and human liver bulk RNA sequencing datasets together with mouse liver single-cell RNA sequencing data. The pathobiological role of selected candidates was further examined in the human activated HSC line LX-2.
Results. In the choline-deficient, amino acid-defined, high-fat diet (CDAHFD)-induced mouse model of liver fibrosis, syndecan-4 (SDC4), a cell-surface proteoglycan, was identified as one of the top 20 differentially expressed genes and was markedly downregulated. Reduced SDC4 expression was further confirmed in human liver bulk RNA sequencing data from patients with established MASH. Single-cell RNA sequencing analysis of mouse liver showed that SDC4 was downregulated across major hepatic cell populations, with the most prominent reduction observed in HSCs. In parallel, expression of the SDC4 sheddases (MMP7, MMP9 and MMP14) was increased, suggesting enhanced hepatic SDC4 shedding under MASH conditions. In vitro, SDC4 expression was significantly reduced in LX-2 cells after stimulation with transforming growth factor-β1 (TGF-β1). Moreover, silencing of SDC4 in LX-2 cells significantly increased cell viability and proliferation.
Discussion. These findings suggest that loss of SDC4 contributes to the pathogenic activation of HSCs and promotes liver fibrogenesis. SDC4 may therefore represent a novel regulator of HSC membrane homeostasis and a potential therapeutic target in MASH-associated liver fibrosis.

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Euphorbia factor L1-induced ferroptosis through IGF2BP3-mediated energy metabolism reprogramming in intestine

Ms Peichun Ye

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

Euphorbia factor L1-induced ferroptosis through IGF2BP3-mediated energy metabolism reprogramming in intestine

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Objectives. Euphorbia semen, a toxic traditional Chinese medicine documented in the Chinese Pharmacopoeia, has raised significant safety concerns due to its intestinal toxicity manifested as severe diarrhea and potential circulatory collapse at high doses. Euphorbia factor L1 (EFL1), identified as the principal toxic constituent, remains undercharacterized in terms of its intestinal toxicological mechanisms. This study aims to elucidate EFL1's enterotoxic mechanisms using human intestinal cells and coelomic model organism Caenorhabditis elegans.

Materials and Methods. Human intestinal cells and Caenorhabditis elegans were exposed to EFL1. Potential targets were predicted using PharmMapper, and validated by m6A MeRIP-seq and proteomics. The interaction between EFL1 and the m6A recognition protein IGF2BP3 was characterized in vitro and in silico. The intestinal permeability, lipid oxidation damage, transport channel, mitochondrial structure and function, and ferroptosis were detected by molecular biology techniques and simulation predictions.

Results. EFL1 directly bound to and downregulated IGF2BP3, reducing global mRNA m6A modification levels. This epigenetic change accelerated the degradation of mRNAs in the AMPK/SIRT1/PGC-1α pathway, crucial for energy metabolism. Consequently, ATP depletion occurred, disrupting water and ion transport homeostasis. Intracellular Ca^{2+} overload ensued, triggering an oxidation-antioxidation imbalance, lipid peroxidation, and mitochondrial structural/functional damage. Concurrent Fe^{2+} accumulation inhibited the GPX4/FTH1/ACSL4 axis of the ferroptosis pathway. Ultimately, EFL1 compromised intestinal barrier integrity by disrupting intercellular tight junctions and the F-actin cytoskeleton.

Conclusion. EFL1 induced intestinal toxicity by directly targeting IGF2BP3. This interaction destabilized AMPK/SIRT1/PGC-1α pathway mRNAs via reduced m6A modification, and induced metabolic reprogramming, ferroptosis, and loss of barrier integrity in intestinal cells and Caenorhabditis elegans.

Keywords. Euphobiasteroid; Intestinal toxicity; Energy metabolism reprogramming; Ferroptosis; Permeability.

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The intestinal toxicity of gelsenicine on the model organism Caenorhabditis elegans

Ms Peichun Ye

Wednesday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 15, 2026

The intestinal toxicity of gelsenicine on the model organism Caenorhabditis elegans
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Objectives. Gelsemium elegans Benth., a toxic Loganiaceae vine, has medicinal properties but poses high toxicity risks, with gelsenicine as a main toxic component. This study investigated intestinal toxicity and mechanisms of gelsenicine using Caenorhabditis elegan (C. elegans).
Materials and Methods. C. elegans were exposed to gelsenicine, then the growth and locomotion were assessed. The targets of gelsenicine were predicted by PharmMapper, and mRNA-seq was performed for verification. The intestinal permeability, ROS generation, and lipofuscin accumulation were detected. The fluorescence intensities of GFP-labeled proteins of oxidative stress and unfolded protein reaction (UPR) were quantified.
Results. After treatment of gelsenicine in C. elegans, the lifespan, body length and width were inhibited, as well as the locomotion behavior. A total of 221 targets were predicted by PharmMapper, and 731 differentially expressed genes were screened by mRNA-seq. GO and KEGG enrichment terms mainly included redox process and transmembrane transport. The blue dye was leaked from the intestinal lumen into the intestinal cells and body cavity, along with the abnormal mRNAs expression of gem-4, hmp-1, fil-2, and pho-1, which regulated the intestinal development. Intestinal ROS and lipofuscin were up-regulated, and sod-2 and isp-1 expressions were down-regulated. Multiple proteins in SKN-1/DAF-16 pathway can be stably bound with gelsenicine in predictive model. The SKN-1::GFP was up-regulated, and nuclear translocation of DAF-16::GFP was abnormal. The UPRER biomarker of HSP-4::GFP was down-regulated.
Conclusion. The intestinal permeability of C. elegans was increased following gelsenicine treatment, and the toxicological mechanisms were related to intestinal development disorder, SKN-1/DAF-16 pathway-mediated oxidative and antioxidant imbalance, and abnormal unfolded protein reactions.

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The protective effect of orlistat against cisplatin-induced acute kidney injury

Prof Xiuping Chen

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

The protective effect of orlistat against cisplatin-induced acute kidney injury

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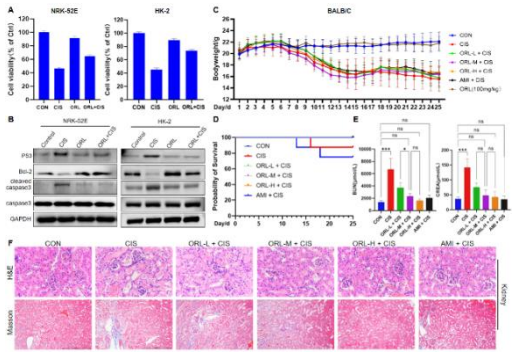

Introduction. Cisplatin, a first-line chemotherapy drug, is widely used for its potent and broad-spectrum anticancer activity. However, approximately 30% of patients treated with cisplatin develop acute kidney injury (AKI) or chronic kidney disease (CKD), which compromises cancer treatment outcomes. Orlistat, an FDA-approved anti-obesity drug, reduces dietary fat absorption by inhibiting gastrointestinal lipases. In our study, we demonstrate that orlistat alleviates cisplatin nephrotoxicity without compromising cisplatin's anticancer efficacy

Aims. To evaluate the dose–response, optimal timing and mechanism of orlistat against cisplatin AKI, providing a readily translatable nephroprotective strategy.

Methods. Using *in vitro* models on renal tubular epithelial cells (NRK-52E, HK-2 and PTEC) and an *in vivo* mouse AKI model (Balb/c or C57BL/6 mice with different dosage of cisplatin) to evaluate orlistat's renoprotective effects through MTT assay, Western blotting, Immunofluorescence, Serum creatinine and BUN, H&E staining, etc.

Results. Pretreatment with orlistat reversed cell death, ROS overproduction, mitochondrial apoptosis, ER stress, and MAPK pathway activation induced by cisplatin. It reduced BUN and CREA levels, prolonged survival, and attenuated histopathological damage on animal model. With those results, orlistat did not interfere with cisplatin's antitumor activity.

Discussion. Orlistat not only attenuates cisplatin-induced apoptosis, ROS generation, ER stress, and the MAPK pathway in kidneys and renal tubular cell lines but also maintains the antitumor effect of cisplatin in tumor tissue in vivo. It offers a promising adjunctive strategy for chemotherapy patients.

This study was supported by the Science and Technology Development Fund, Macau SAR (0021/2025/RIB1).

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QSAR modelling strategies for the hazard assessment of petroleum UVCB substances

Dr Slade Matthews

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

QSAR modelling strategies for the hazard assessment of petroleum UVCB substances
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Introduction. Common chemical entities such as petroleum products, botanical extracts, and resins have large numbers of constituents whose identities and concentrations fluctuate with source material and manufacture (Prussia et al, 2024). These entities, 'substances of unknown or variable composition, complex reaction products and biological materials' (UVCBs) evade precise structural representation. This limits the ability of federal regulators like AICIS to use quantitative structure-activity relationship (QSAR) models in UVCB hazard assessment required for public safety.
Aims. This project aims to develop an end-to-end QSAR modelling workflow that predicts a range of toxicity endpoints from the complex structural information of multiconstituent petroleum UVCB substances.
Methods. A literature review of international regulatory requirements for UVCB nomenclature and current methods of encoding UVCB substance data was completed. Structural information for a dataset of 141 petroleum UVCBs (House et al, 2020) has been collated from ECHA CHEM and will be encoded using the novel *uvcbfile* format. Markush structures and associated constituent fingerprints will be generated from these files and paired with their parent UVCBs' bioactivity data to train a QSAR model. The performance of the model on unseen petroleum UVCBs will be assessed and compared with their existing manufacturing classifications and toxicity assay endpoints.
Results. The *uvcbfile* format has been developed using a JSON-based structure to encode five levels of constituent structural representation (Lai et al, 2022; Clark et al, 2019). Petroleum UVCB bioactivity data (House et al, 2020, 2022) has been collected and a workflow for augmenting structural information from ECHA CHEM has been developed.
Discussion. It is expected that the trained QSAR model will identify key constituents of different petroleum substances that are predictive of their hazard class. Once finalised, this methodology should also be applicable to other UVCBs.

Clark et al (2019) J Cheminform 11:33; House et al (2020) ALTEX 1:123-137; House et al (2022) ALTEX 3:388-404; Lai et al (2022) Environ Sci Technol 56:7448-7466; Prussia et al (2024) Front Toxicol 6:1452838.

P637

A study on effect of TML in drug identification among ICU nurses

Dr Shouvik Choudhury

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

A study on effect of TML in drug identification among ICU nurses

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Introduction: Medication errors are more difficult to tackle in special situations like during use of Look alike, Sound alike (LASA) drugs. Specially in critical care settings, due to complex and fast paced work atmosphere, it becomes difficult to correctly identify correct medicines by label identification. Tall man lettering (TML) is a well established approach to prevent label misidentification in LASA drugs by capitalizing a distinct portion of drug name (Lohmeyer et al 2022). Institute for Safe Medication Practices (ISMP), FDA and other bodies have surveyed and recommended using TML in LASA drug labels (Grissinger et al 2012). In India, though huge numbers of medicines are used daily, very little research has been done n impact and issues related to LASA drugs (Neelakantan et al 2024).

Aim: To evaluate the effect of TLM in drug identification and assess the error rate among ICU nurses using LASA drugs.

Method: This was a randomized in situ study done at a tertiary care centre in eastern India. Total 24 ICU nurses with comparable baseline features (age group, work experience, visual acuity, and educational qualification) were selected and randomized in two groups. Total 100 syringes were labeled (50 with TML and 50 with non-TML) and divided into sets of 10 syringes. LASA drug pairs were used in all sets. Identification of correct syringe, error rate, time to find, revisits were all analyzed comparing between TML and non-TML coded labels.

Result: TML coded syringe shown statistically significant low error rate from 8.3% (10 out of 120) to 1.67% (p=0.03). Further result was better in using TML in mid to end position of drug name rather than in first. Post experiment enquiry revealed that 42% were familiar with TML coding and 62.5% opined TML would help reducing medication error. In most cases correct drug was selected in both groups, indicating better efficiency of the working staffs.

Discussion: TML coded labels were found to be better in reducing medication errors in LASA drugs by changing the visual attention of critical care nurses. Larger follow up studies are recommended to add more to this finding.

Lohmeyer Q et al (2023). BMJ Qual Saf.;32(1):26-33
Neelakantan M et al (2024). Lancet Reg Health Southeast Asia;26:100425
Grissinger M (2012) P T.;37(3):132-148

P638

Poisoning Related Admissions to Intensive Therapy Unit in a Small Island State

Prof Janet Mifsud

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Poisoning Related Admissions to the Intensive Therapy Unit at the General Teaching Hospital in a Small Island State

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Introduction. Studies worldwide have shown a trend toward an increase in number of Intensive Therapy Unit (ITU) admissions due to intentional and unintentional poisoning. However, there is a paucity of publications about the characteristics and demographics of these patients.

Aims. The aim of this study was to conduct a fully anonymized retrospective analysis of patients admitted to the ITU at the Mater Dei Hospital, the general teaching hospital in Malta, a small island state, with poisoning related issues and to identify emerging admission patterns and assess the progress and outcome of such patients.

Methods. A detailed retrospective observational study from anonymized patient records was conducted following relevant ethics and data protections approval. The data of all patients admitted to the ITU over 18 years of age for any poisoning related issues from the 1st of January 2015 to the 31st of December 2021 were analyzed. Medical information collected included the nature of drug toxicity or overdose, including reason for admission to ITU, management in ITU, length of stay in ITU and outcome of patient.

Results. A total of 3,394 adult patients were admitted to the ITU during the period studied. From these admissions, 252 were related to poisoning. The age of patients ranged from 18 to 87 years, with a median age of 39.5 years. Gender distribution showed 94 females (37.3%) and 158 males (62.7%). The study identified seven most frequently involved causes of poisonings: recreational drugs (19.9%), sedatives (13.9%), antidepressants (11.3%), antipsychotics (11.3%), alcohol (10.7%), analgesics (6.9%) and antihypertensives (4.6%). Patient survival rate was 97.6%. It was also observed that elderly patients over 60 years old with comorbidities experienced a longer duration of stay in the ITU compared to younger patients (>5 days vs 1-2 days).

Discussion. This study, being the first of its kind in Malta, provides key insights into the critical issue of poisoning-related admissions to the intensive therapy unit in small island state. The results of this study highlight the necessity for further research in this field in order to ensure better patient care and patient outcomes.

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Effect of ethanol extract of Hymenodictyon floribundum on biochemical parameters in rats

Mr Rabi'u Nuhu Danraka

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Effect of ethanol extract of *Hymenodictyon floribundum* on biochemical parameters in rats

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Introduction. Plants are frequently employed for a variety of purposes without their possible negative effects being carefully considered. According to reports, Hymenodictyon floribundum has been used to cure several illnesses, including diabetes.
Aim. The study aimed at investigating the toxicity profile of ethanol leaf extract of *Hymenodictyon floribundum* (ELEHF) in Wistar rats.
Method. The oral median lethal dose (LD_{50}) was determined using a standard method. Rats were grouped into four groups with seven each; all administrations were daily and through the oral route. Group I received 1 ml/kg of distilled water (DW) while groups II, III, and IV received 250, 500, and 1,000 mg/kg of ELEHF, respectively, for 90 days. Rats were observed for symptoms of toxicity, and weekly body weights were recorded. On day 91, rats were euthanized using diethyl ether, and blood samples were collected for biochemical Parameters.
Result and Discussion. The LD_{50} of *Hymenodictyon floribundum* was estimated to be greater than 5,000 mg/kg. In the 13-week study, there was a significant increase ($p > 0.05$) in body weight in weeks 1,4,8, and 13 across all dose ranges. The lipid profile for albumin at 1000 mg/kg and the liver at 250 mg/kg and 500 mg/kg showed a significant increase ($p > 0.05$), although there was no statistically significant difference in liver function.
Conclusion. Although ELEHF is generally non-toxic, care should be taken, particularly when using higher dosages.

Effect of 13-Week Daily Oral Administration of Ethanol Leaf Extract of *Hymenodictyon floribundum* on Liver Function Parameters of Female Rats

Treatment (mg/kg)	ALT (U/L)	AST (U/L)	ALP (U/L)	TP (g/dL)	ALB (g/dL)
DW 1 mL/kg	13.00±1.57	14.71±2.75	23.02±1.22	19.33±0.87	2.77±0.08
ELHF 250	7.86±0.63[a]	10.43±0.57	16.98±2.80	15.17±1.03	3.87±0.14[b]
ELHF 500	12.80±1.39	12.60±1.47	23.30±2.82	18.00±1.61	3.98±0.26[b]
ELHF 1000	6.80±0.49[b]	8.60±0.68	35.40±4.36	15.08±1.21	2.96±0.35

Values are expressed as Mean ± S.E.M., [a] = $p<0.05$, [b] = $p<0.01$ as compared to DW group – One way ANOVA followed by Bonferroni post hoc test, n = 5, DW = Distilled water, ELHF = Ethanol Leaf Extract of *Hymenodictyon floribundum*

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Do improved labelling requirements reduce reported adverse reactions? The case of andrographis/echinacea

Dr Ian Musgrave

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Do improved labelling requirements reduce reported adverse reactions? The case of *andrographis/echinacea*
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Introduction. Herbal medicines containing *Andrographis paniculata* and *Echinacea*, used to treat cold symptoms, have increased in popularity. These medicines can elicit hypersensitivity adverse drug reactions (ADRs), such as anaphylaxis, in susceptible individuals. In Dec-2019 the Therapeutic Goods Administration (TGA) legislated new warning labels for *andrographis* and *echinacea* containing medicines, to be in place by May-2020.
Aims. To determine the effectiveness of these new warning labels in ADR prevention in the context of COVID-19 and influenza-like illnesses
Methods. Data from the TGA Database of Adverse Event Notifications (DAEN) was exported to Excel. Reports from 2015-2024 with hypersensitivity symptoms, defined by the Brown Scale[1], were included (n=513). ADR reports of glucosamine and chondroitin were used as a control since their usage should not have increased during COVID (n=25). Data was analysed alongside Australian influenza and COVID statistics from Our World in Data and sales data of Andographis/Echinacea from IQVIA.
Results. Five years before legislation change in May 2020, there was an average of 2.3 ADRs reported per month, compared to 7.3 per month after legislation, revealing an increase in hypersensitivity ADRs despite legislation changes. The ADR rates were not constant but formed distinct peaks that mostly correlated with both preceding increases in sales of *Andographis/Echinacea* and influenza-like illnesses with a lag phase. *Andographis/Echinacea* use was not particularly associated with COVID. Average ADR reports for glucosamine and chondroitin remain stable.
Discussion. Despite the TGA's new warning label requirements, spread of influenza-like illnesses is associated with an increase in *andrographis* and *echinacea* hypersensitivity ADRs. Awareness of COVID-19 may also have an effect. This indicates the need for a review of TGA warning label sizing and placement, and to further educate the public of possible ADRs associated with *andrographis* and *echinacea* use.

[1] Brown, S. G. J Allergy Clin Immunol, 114, 317-6, 2004
Acknowledgement: IQVIA for provision of complementary medicine sales data for Australia

P641

Prospective hERG blocker triage via docking and semiempirical QM rescoring

Dr Davy Guan

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Prospective hERG blocker triage via docking and semiempirical QM rescoring

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Introduction. Drug-induced hERG (IKr) block prolongs QT and raises torsades risk leading to early *in silico* triage being encouraged alongside ICH S7B/E14 practices. Cryo-EM structures with bound blockers delineate a tractable cavity governed by Y652/F656 aromatics and conserved waters, enabling structure-based modelling beyond ligand-only QSAR.

Aims. We aim to test whether docking followed by SQM2.20 rescoring improves rank-ordering of hERG blockers over docking alone and to benchmark against ligand-based machine-learning baselines.

Methods. Reference ligands and candidates are docked into blocker-bound and state-matched hERG models (e.g., astemizole-bound), retaining K+ and key waters. Top poses are rescored via SQM2.20 (PM6-D3H4X with implicit solvation and an entropic proxy), sampling protomer/tautomer variants and multiple poses. Performance is quantified by enrichment, ROC/PR-AUC and rank correlations**.**

Results. Interim comparisons of docking, docking+SQM2.20 and ML (RF/XGBoost) on held-out sets will be reported, together with sensitivity to protonation, pose and channel state. Prespecified success criteria include ΔSpearman $\rho \geq 0.15$ over docking and PR-AUC ≥ 0.70 on the reference panel.

Discussion. Combining structure-informed docking with quantum-mechanical rescoring aims to provide a mechanistic, reproducible triage that complements regulatory assays. High-confidence series will be escalated to explicit-solvent FEP for confirmation.

International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use. (2022). E14/S7B Q&As, (ICH E14/S7B). Retrieved from https://database.ich.org/sites/default/files/E14-S7B_Qas_Step4_2022_0221.pdf

RCSB PDB: 7CN1 (hERG–astemizole)

P643

Prestin and otolin-1 as markers of cisplatin-induced ototoxicity in cervical cancer patients

Prof Pooja Gupta

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Prestin and otolin-1 as markers of cisplatin-induced ototoxicity in cervical cancer patients

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Introduction. Cisplatin causes ototoxicity, which is usually irreversible by the time it is detected, suggesting need for early biomarkers.

Aims. To evaluate prestin and otolin-1 as potential biomarkers for early diagnosis of chemotherapy-induced ototoxicity.

Methods. Change in serum prestin and otolin-1 levels after four weeks of cisplatin was noted in adult treatment-naïve, cervical cancer patients who were prescribed cisplatin; and compared with age-matched apparently healthy volunteers. Audiological assessment (pure tone audiometry (PTA), caloric stimulation and skew deviation) was done at 4 weeks.

Results. Of the 78 patients screened, 41 were enrolled along with 41 healthy volunteers. At baseline, prestin was lower (8.51 (1.23,16.65) ng/ml) while otolin-1 was higher (720 (305.75,1120.00) pg/ml) in patients compared to healthy volunteers (10.54 (2.44-24.75) ng/ml and 650 (203-5850) pg/ml respectively). The prestin and otolin-1 levels reduced after four weeks but the difference was not significantly significant ($p>0.05$). In the patients with hearing loss (PTA), the prestin levels were higher. The threshold value of 9 ng/ml of serum prestin may be associated with early signs of hearing loss in patients receiving cisplatin chemotherapy.

Discussion. Overall, the serum level of both the proteins decreased after four weeks of cisplatin use. However, the patients with hearing loss were noted to have higher prestin levels, suggesting the use of prestin as a potential biomarker for drug induced ototoxicity.

P644

Low-dose glyphosate alters NK1R expression and substance P innervation in porcine uterus

Assoc Prof Katarzyna Palus

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Low-dose glyphosate alters NK1R expression and substance P innervation in porcine uterus

Katarzyna Palus[1], Aleksandra Karpiesiuk [1], Barbara Jana[2] & Karolina Wołodko[2]. Dept of Clinical Physiology, Faculty of Veterinary Medicine, University of Warmia and Mazury in Olsztyn[1], Olsztyn, Poland; Institute of Animal Reproduction and Food Research of the Polish Academy of Sciences in Olsztyn[2], Olsztyn, Poland

Introduction. Glyphosate-based herbicides (GBHs) are widespread environmental contaminants suspected of endocrine-disrupting effects on reproductive tissues. Although GBH exposure has been linked to uterine structural changes, its impact on the uterine tachykinin system—particularly substance P (SP) and neurokinin-1 receptor (NK1R)—remains unclear in pigs.

Aims. This study aimed to determine whether oral exposure to glyphosate modifies the localization and expression of NK1R and the density of SP-immunoreactive nerve fibres in the uterine wall of sexually immature pigs.

Methods. Fifteen sexually immature gilts were randomly assigned to three groups (n = 5 per group): control (placebo), E1 (0.05 mg/kg of glyphosate per day; theoretical maximum daily intake (TMDI) in Europe), and E2 (0.5 mg/kg of glyphosate per day; acceptable daily intake (ADI) in Europe). Treatments were administered orally in gelatine capsules for 28 days during morning feeding. NK1R localization and SP-IR nerve fibre density was assessed by immunofluorescence, and NK1R protein levels were measured by Western blot.

Results. NK1R immunoreactivity was detected in the endometrium, including the luminal epithelium, lamina propria and uterine glands, as well as in the myometrium in both the circular and longitudinal muscle layers in all groups. Glyphosate exposure increased NK1R protein expression, particularly at the higher dose. Elevated NK1R levels were observed in the uterine body at both doses and in the horns only at the higher dose. The density of SP-immunoreactive nerve fibres per microscopic field of view was higher in glyphosate-exposed animals than in controls. This increase was observed in both uterine regions and was most pronounced in the E2 group.

Discussion. Oral exposure to environmentally relevant glyphosate doses enhances NK1R expression and sensory innervation in the porcine uterus, indicating activation of the uterine tachykinin system. These changes may represent local stress or inflammatory responses and could contribute to previously reported uterine dysfunction following GBH exposure.

P645

Defluorination of fluorobeta-alanine as a possible mechanism of 5-fluorouracil induced cardiotoxicity

Prof Nuala Helsby

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Defluorination of fluorobeta-alanine as a possible mechanism of 5-fluorouracil induced cardiotoxicity
Nuala Helsby, Shreeya Bhardwaj, Sihan Wang, Adrian Blaser, Kathryn Burns, Malcolm Tingle, Nicky Lawrence. School of Medical Sciences, University of Auckland, Auckland, New Zealand.

Introduction. About 5% of patients receiving the anticancer drug 5-fluorouracil experience severe chest pain or myocardial infarction. It is assumed that this is due to the formation of fluoroacetate which inhibits aconitase and perturbs the mitochondrial Kreb's cycle. The major circulating metabolite of 5-fluorouracil is fluorobeta-alanine (FBAL). It has previously been demonstrated that rat liver AGXT2 enzyme can defluorinate FBAL to release free fluoride ion (Porter, 1995). Our hypothesis is that the generation of fluoride ion, not fluoroacetate formation, is the likely cause of 5-fluorouracil induced cardiotoxicity.
Aims. To assess the ability of human liver to defluorinate FBAL, initiate characterisation of FBAL metabolites and to compare this profile with excreted biotransformation products in cancer patients.
Methods. The *in vitro* hepatic metabolism of FBAL (in rat and human homogenates) was investigated and rate of fluoride release quantified using ion-specific potentiometry. ^{19}F-NMR (400 mHz, 26000 scans) with comparison to authentic standards, was used to characterise the metabolic fate of FBAL. Patient (n=9) urine samples were analyzed for these biotransformation products and fluoride ion excretion.
Results. *In vitro* metabolism of FBAL resulted in release of fluoride (V_{max} 0.54 µmol/h/mg) in rat. This was lower in human liver and increased on fortification with glutathione. Metabolite signals (δ -112.4, -113.0 and -113.1 ppm), easily distinguishable from the FBAL substrate (δ -112.8 ppm) were observed. However, the -113.0 ppm signal was absent in the patient samples. Fluoroacetate (-142.45 ppm) was not observed. Following initiation of a 5-FU infusion the 0-3 h post-dose fluoride excretion was 3.7 ± 2.0 mg F^-/g Cr, this was >2-fold higher than baseline (pre-dose) values.
Discussion. These initial results suggest that FBAL is not extensively metabolised to fluoroacetate, however fluoride ion formation was observed. Clinical investigations are ongoing to determine possible relationships between extent of fluoride ion formation and cardiotoxicity.

Porter DJ (1995) Biochemical Pharmacology, 50: 1475-1484.

P647

Hyodeoxycholic acid ameliorates tacrolimus-induced diabetes by modulating the FXR-FGF15 axis

Dr Nan Hu

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Hyodeoxycholic acid ameliorates tacrolimus-induced diabetes by modulating the FXR-FGF15 axis

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Introduction. Tacrolimus (TAC)-induced diabetes mellitus (DM) is a condition associated with abnormal glucose metabolism caused by the immunosuppressant TAC, and it is also related to intestinal microbiota disorder and reduced bile acid levels.

Aims. This study aimed to investigate the ameliorative effect and underlying mechanism of hyodeoxycholic acid (HDCA) on TAC-induced DM.

Methods. First, antibiotics were used to deplete the intestinal microbiota in TAC-induced DM rats, further confirming the critical role of the intestinal microbiota and bile acids in the development of TAC-induced DM. Antibiotic treatment significantly reduced the bile salt hydrolase (BSH)-active gut microbiota (including Bacteroides and Lactobacillus), disrupting the serum bile acid pool and exacerbating diabetic symptoms, presumably by altering the gut microbiota–bile acid axis. Subsequently, oral administration of HDCA (100 mg/kg) to TAC-induced diabetic rats was carried out to evaluate its ameliorative effect. Assessments were made of glycolipid metabolism indices, targeted bile acid omics, protein expression of FXR and TGR5, serum and ileum levels of GLP and FGF15, and mRNA levels of CYP7A1, CYP27A1, CYP7B1, CYP8B1, FGFR4, CREB1 and PGC-1α.

Results. Results showed that HDCA administration significantly improved glucose tolerance in TAC-induced diabetic rats and markedly altered the bile acid profile. Specifically, it reduced the 12-OH/Non-12-OH BAs ratio in serum and feces, which was associated with downregulated hepatic CYP7A1 and upregulated CYP7B1 expression. Additionally, HDCA suppressed GLP-1 secretion from enteroendocrine cells, decreased serum and ileal FGF15 levels, and reduced ileal FXR as well as hepatic CREB and PGC-1α expression.

Discussion. Collectively, these findings indicate that HDCA exerts a significant ameliorative effect on TAC-induced diabetes by regulating metabolic enzymes and altering bile acid profiles. The underlying mechanism involves inhibition of the enterohepatic FXR - FGF15 axis, reduced GLP-1 secretion, and suppression of hepatic gluconeogenesis.

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Retrospective Analysis of Tocilizumab Safety and Efficacy for Thyroid Eye Disease

Dr Zhihui Song

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Retrospective Analysis of Tocilizumab Safety and Efficacy for Thyroid Eye Disease

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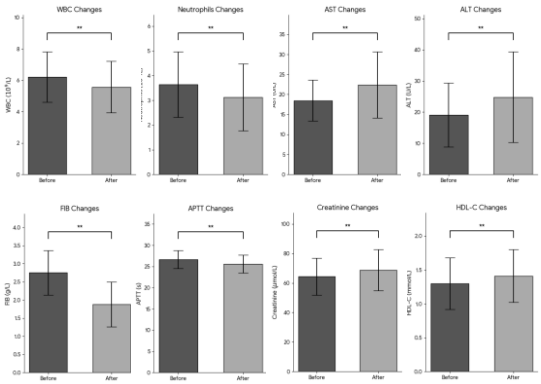

Introduction. Thyroid eye disease (TED) often requires potent immunomodulation. Tocilizumab (TCZ), an IL-6 receptor antagonist, is a promising second-line therapy for patients refractory or intolerant to glucocorticoids..

Aims. To evaluate the efficacy and safety of TCZ in TED, identifying risk factors for hematological and hepatic adverse events.

Methods. Retrospective study of 199 TED patients (Jan 2023-Aug 2025). Clinical Activity Scores (CAS), TRAb titers, and laboratory parameters (CBC, liver enzymes, coagulation) were analyzed pre- and post-TCZ treatment.

Results. In 199 patients, TCZ significantly reduced CAS and TRAb ($P < 0.001$). Safety analysis showed neutropenia (12.06%) and mild ALT/AST elevations (4-6%). Significantly, 71.86% developed hypofibrinogenemia (<2.0 g/L);24.62% were severe (<1.5 g/L). Independent risk factors for severe hypofibrinogenemia included lower baseline fibrinogen (OR=0.37, P=0.001), higher body weight (OR=1.05, P=0.001), and lower prothrombin time (OR=0.45, P=0.008). No serious adverse events occurred.

Discussion. TCZ effectively reduces orbital inflammation and pathogenic antibodies in TED, regardless of prior steroid response. While generally safe, the high prevalence of TCZ-induced hypofibrinogenemia necessitates rigorous monitoring of coagulation, especially in high-risk patients (higher weight/low baseline fibrinogen) or those facing surgery, to mitigate bleeding risks..

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Waterproof Cosmetics Usage and Potential Fluorinated Compound Exposure Among Indonesian Females

Prof Cimi Ilmiawati

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Waterproof Cosmetics Usage and Potential Fluorinated Compound Exposure Among Indonesian Females
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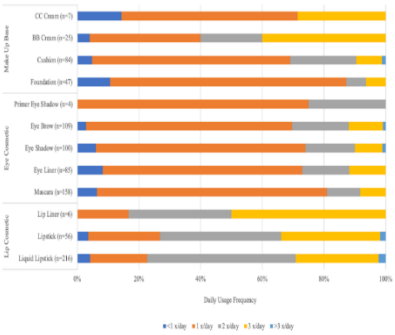
Introduction. Waterproof lip cosmetics are an innovation of the growing cosmetics market, the products favored by women as the target market for their enduring qualities. However, research has found that the waterproof feature is obtained by adding fluorinated compounds. These compounds have been identified in human serum with potential systemic impacts.
Aims. The objective of this study was to explore the usage pattern of waterproof cosmetics among Indonesian women of reproductive age.
Methods. The research was conducted from October to December 2023 involving 334 participants, including 101 secondary school students, 127 university students, and 106 bank employees across 20 municipalities from three different provinces in Indonesia. The products surveyed were grouped into three main types, which were lip, eye, and makeup base cosmetics. Data were collected through an online survey using a multilevel response questionnaire covering demographic information, product usage frequency, and brand names.
Results. Results revealed the three cosmetic types were widely used among women of reproductive age, with similar usage frequency across different cosmetics. Most participants reported using the products 1-5 times/week or more than 5 times/week, with 1x/day usage for most of the eye and makeup base cosmetics, and 2x/day for the lip cosmetics. Analysis of the ingredient lists indicated the presence of compounds suspected to be the source of fluorinated compounds.
Discussion. Waterproof cosmetics were widely and frequently used among Indonesian women of reproductive age. Given that fluorinated compounds are often added to achieve waterproof properties, the frequent use of these products raises concerns about potential systemic exposure. Ingredient analysis indicated the presence of suspected fluorinated compound carriers in many surveyed items, suggesting that daily cosmetic practices may represent an overlooked exposure pathway. These findings highlight the need for consumer awareness, regulatory monitoring, and further studies linking cosmetic formulations with biomonitoring data to clarify health risks.



Daily use frequency of waterproof

P652

Establishment and Safety Assessment of Micro- and Nanoplastics Libraries 8: Environmental Relevance

Prof Yasuo Tsutsumi

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Establishment and Safety Assessment of Micro- and Nanoplastics Libraries 8: Environmental Relevance

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Introduction. Plastic waste leakage is a global issue highlighted in the SDGs, and increasing attention has been paid to the potential health effects of microplastics (MPs, <5 mm) and nanoplastics (NPs, <1 µm). These particles have been detected in multiple human tissues, indicating unavoidable exposure. However, most toxicological studies use idealized spherical particles, which do not reflect the diversity of environmental MNPs. To address this gap, we developed an environmentally relevant MNPs library incorporating realistic physicochemical properties.

Aims. This study aimed to characterize the physicochemical properties of our MNPs library and assess its similarity to environmental samples. We also evaluated cellular responses to these particles, focusing on the influence of surface degradation and particle size on toxicity.

Methods. PE, PS, PP, PVC, and PET were selected and prepared into sphere, fragment, and fiber-like MNPs. Surface-oxidized MNPs were generated using vacuum ultraviolet (VUV) irradiation to simulate environmental aging. Particle properties were characterized by attenuated total reflectance infrared spectroscopy and scanning electron microscopy. Cytotoxicity was assessed using A549, THP-1, and Caco-2 cells by the MTT assay.

Results. VUV irradiation induced surface oxidation, forming hydroxy and carbonyl groups. The library comprises more than 100 particle types with heterogeneity comparable to environmental MNPs. Surface-oxidized MNPs showed greater cytotoxicity than pristine particles in all cell lines in a dose-dependent manner. NPs induced stronger cellular responses than MPs.

Discussion. We established an environmentally relevant MNPs library and demonstrated that surface aging significantly enhances MNP toxicity. These findings emphasize the importance of considering realistic particle properties in safety assessments. This library provides a standardized platform for toxicological studies and is available for collaborative research (Contact: Yuya Haga at haga-y@phs.osaka-u.ac.jp).

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Novel Seahorse assay of isolated renal tubules uncovers doxorubicin-induced mitochondrial dysfunction

Assist Prof Abe Koki

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Novel Seahorse assay of isolated renal tubules uncovers doxorubicin-induced mitochondrial dysfunction

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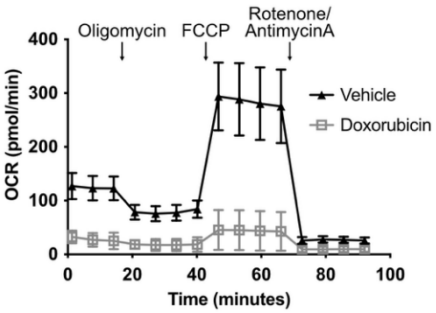

Introduction. Doxorubicin is a widely used anticancer drug with well-known cardiotoxicity, but the chronic effects on renal tubules remain unclear. Mitochondrial dysfunction underlies drug-induced nephrotoxicity; however, Seahorse assays remain largely restricted to cell lines, with no established protocol for freshly isolated renal tubules.

Aims. We aimed to establish a Seahorse assay for freshly isolated renal tubules and evaluate the impact of doxorubicin on tubular mitochondrial respiration.

Methods. Eleven-week-old male C57BL/6J mice received intraperitoneal doxorubicin (8.0 mg/kg) or vehicle once weekly for four weeks. One week after the final dose, the kidneys were harvested, minced, and digested with collagenase IV. After one minute of sedimentation, supernatants were filtered, washed, and resuspended in Seahorse XF DMEM assay medium. Tubules were seeded onto Cell-Tak-precoated XF96 plates, equilibrated for 1 hour, and assayed with medium containing glucose, pyruvate, and glutamine. Oxygen consumption rates (OCR) were measured following sequential injections of oligomycin, FCCP, and a Rotenone/Antimycin A mixture, with values normalized to protein content.

Results. Mice treated with doxorubicin showed significant weight loss but survived for five weeks. Isolated tubules from controls demonstrated robust OCR increases by FCCP, whereas tubules from doxorubicin-treated mice exhibited reduced maximal OCR, indicating impaired mitochondrial respiratory capacity.

Discussion. We established a Seahorse assay of freshly isolated renal tubules and demonstrated that chronic doxorubicin exposure impairs tubular mitochondrial function, providing a physiologically relevant ex vivo system for evaluating drug-induced kidney injury.

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Functional Toxicity Profiling of Hepatobiliary Organoids Assisted by Machine Learning

Dr Qian Zhou

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Functional Toxicity Profiling of Hepatobiliary Organoids Assisted by Machine Learning
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Introduction. The application of hepatobiliary organoids (HBO) models in drug metabolism research remains constrained by limitations in size, culture scale, and functional maturity. The absence of well-defined tissue layering and morphological features hampers morphological analysis and standardized evaluation, thereby limiting methodological robustness and experimental reproducibility.
Aims. To address these bottlenecks, this study aims to establish a HBO culture system based on hiPSCs, generating models that more closely approximate the in vivo hepatobiliary state at both structural and functional levels.
Methods. In this study, hiPSCs were induced to differentiate into HBO under dynamic culture conditions. The structural and functional characteristics of the HBO were systematically evaluated using IF staining, fluorescent probe–based assays, and RT-qPCR. Based on clinically reported adverse drug reactions, several representative compounds were selected to treat HBO. In addition, machine learning–based approaches were applied to analyze HBO imaging features, enabling assessment of developmental status and drug-induced morphological alterations.
Results. Under dynamic culture conditions, HBO with well-defined internal vascular- and bile duct–like structures were successfully generated. Functionally, these HBO exhibited robust drug-metabolizing capacity, including the activity of multiple phase I and phase II enzymes, and demonstrated relatively intact bile acid transport function. Following drug exposure, functional indicators rarely evaluated in HBO studies, such as GGT and HO, also exhibited significant responses, suggesting metabolic response profiles more closely resembling those of human liver tissue. Further machine learning–based analysis effectively distinguished HBO at different developmental stages and sensitively detected drug-induced injury.
Discussion. This study established a high-throughput hepatobiliary toxicity screening model centered on overall functional integrity. Through multidimensional functional validation and integrated analysis of functional and morphological changes following drug exposure, combined with a machine learning–driven high-content imaging assessment strategy, this system demonstrated strong developmental consistency and methodological robustness.

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Drug drug interactions affecting blood tacrolimus levels in renal transplant patients

Prof Jayanthi M

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Drug drug interactions affecting blood tacrolimus levels in renal transplant patients

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Introduction The use of tacrolimus in post-renal transplant patients is challenging due to concomitant administration of drugs and particularly steroid dose modifications with potential for drug interactions, leading to risks of nephrotoxicity or graft rejection.

Aims To identify the concomitant drugs affecting blood concentrations of tacrolimus and to study the impact of corticosteroid tapering on blood tacrolimus levels in post-renal transplant patients.

Methods. The records of 80 renal transplant patients on tacrolimus were used to collect relevant data including concomitantly administered drugs, from immediate post-transplant to completion of corticosteroid tapering. Mixed-effects regression and Kruskal-Wallis test were used to evaluate impact of individual drugs and tacrolimus weight-adjusted daily dose on dose-normalized tacrolimus levels respectively.

Results. Significant drug interactions were observed with corticosteroids (regression coefficient = -0.02, $p < 0.05$) and amlodipine (regression coefficient = 0.48, $p < 0.05$). Patients with liver diseases and diabetes mellitus showed elevated dose-normalized tacrolimus levels. Tacrolimus dose needed to achieve target blood levels was significantly higher in the case of an increased dose of corticosteroids ($p<0.001$) and the median dose-normalized tacrolimus levels was significantly higher with a decreased dose of corticosteroids ($p<0.05$)

Discussion. Corticosteroids and amlodipine influenced tacrolimus pharmacokinetics in renal transplant patients. Amlodipine is a CYP3A4 inhibitor and can decrease metabolism of tacrolimus (Krasulova et al 2017). With increase in dose of corticosteroid, the median dose-normalized tacrolimus levels have been reported to increase (Anglicheau et al, 2003), thus emphasizing the importance of TDM in tacrolimus dosing.

Parameter	Low dose pred group	Intermediate dose pred group	High dose pred group	P value
Dose-normalized tacrolimus levels (ng/ml per mg/day)	1.36±1.18 (≃8 ng/ml)	1.15±1.17 (≃9 ng/ml)	1.04±0.92 (≃9.6 ng/ml)	0.03
Tacrolimus daily dose (mg/kg/day)	0.12 ± 0.13	0.14 ± 0.10	0.16 ± 0.12	<0.001

Anglicheau D et al Nephrol Dial Transplant (2003) 18 :2409-14.
Krasulova K et al (2017) Molecules 22(11):1879

P661

Medication safety awareness among Indonesian older adults: findings from a KAP survey

Dr Gestina Aliska

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Determinants of Medication Safety Behavior among Older Adults: Insights from a Knowledge, Attitude, and Practice (KAP) Study

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Introduction. Older adults are particularly vulnerable to medication-related problems due to polypharmacy, physiological decline, and limited health literacy. Understanding their knowledge, attitudes, and practices (KAP) is essential to inform community-based interventions.
Aims. To describe KAP regarding medication safety and examine whether age, education, and medication use are associated with safer practices among older adults.
Methods. A cross-sectional survey was conducted among 31 older adults in a district in Padang, Indonesia. A structured KAP questionnaire was used. KAP scores were calculated, with the median value as a cut-off for good versus poor KAP. Associations between education and KAP were assessed using Chi-square, while correlations between the number of medications, knowledge, and practice were tested using Spearman's correlation.
Results. The mean age was 65.8 ± 5.7 years; 77.4% were female. Overall, 51.6% had good KAP. Older adults with good KAP were significantly older (68 vs 63 years, p = 0.021). Participants with lower education (no formal schooling) were more common in the good KAP group, while those with secondary or higher education were more frequent in the poor KAP group, though not statistically significant (p = 0.213). Gender distribution and number of medications were similar across groups. Correlation analyses between medication use and practice, and between knowledge and practice, were inconclusive due to limited variability.
Discussion. More than half of older adults demonstrated good KAP on medication safety. Higher age was associated with better KAP, while higher education and medication use were not. These findings highlight the complexity of medication behaviours in older adults and underscore the need for culturally tailored interventions to improve medication safety.

Mekonnen A, Redley B, Crawford K, Jones S, de Courten B, Manias E. Associations between hyper-polypharmacy and potentially inappropriate prescribing with clinical and functional outcomes in older adults. Expert Opin Drug Saf. 2022;21(7):985-994. doi: 10.1080/14740338.2022.2044786.
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P662

Antimicrobial prescribing patterns in ICU evaluated with costs to guide stewardship.

Prof Sanjay Khattri

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Antimicrobial prescribing patterns in ICU evaluated with costs to guide stewardship.

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Introduction. Antimicrobial agents (AMAs) are widely prescribed in ICUs due to the critical condition of patients, invasive interventions, and high rates of hospital-acquired infections. However, inappropriate or excessive use increases healthcare costs and contributes to antimicrobial resistance. Data from Indian ICUs on utilization and cost remain scarce.
Aims. To evaluate the prescribing pattern, consumption rate, and cost of AMAs in a medical ICU, and to identify clinical predictors of multiple antimicrobial use.
Methods. A prospective cross-sectional study was conducted over three months in a 12-bedded ICU at a tertiary hospital. A total of 101 patients receiving at least one antimicrobial were included. Drug utilization was assessed using the WHO ATC/DDD system, and treatment costs were calculated. Predictors of antimicrobial prescribing were analyzed through logistic regression.
Results. Patients had a mean ICU stay of 7.11 days, with 42.6% mortality. On average, 2.65 AMAs were per prescription, corresponding to 296.64 DDD per 100 patient-days. The most frequently used drugs were piperacillin-tazobactam, metronidazole, meropenem, fluconazole, and colistin. Antimicrobials accounted for nearly 89% of total drug expenditure, with meropenem contributing the highest share. The mean antimicrobial cost per patient was INR 25,827. AMA use and costs were significantly higher among ventilated patients, those with nosocomial infections, and those with APACHE-II scores >15. The number of antimicrobials prescribed per day was independently influenced by the patient's APACHE-II score at admission and the occurrence of nosocomial infections.
Discussion.AMA utilization and cost in this ICU were markedly higher than reported in previous Indian studies. The findings emphasize the urgent need for antimicrobial stewardship, prescribing restrictions, and routine audits to promote rational use and reduce resistance.

P663

Heparin-associated osteoporosis: comparing unfractionated and low molecular weight heparins using real-world Data

Assoc Prof Hesham Al-Sallami

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Heparin-associated osteoporosis: comparing unfractionated and low molecular weight heparins using real-world Data

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Introduction. Heparins use are associated with decrease in bone mineral density, particularly with prolonged exposure. While the effects of unfractionated heparin (UFH) are well documented, less is known about the comparative bone safety of low molecular weight heparins (LMWHs), including enoxaparin (ENX), dalteparin (DLT), and fondaparinux (FDX).
Aims. This study evaluated whether UFH is more strongly associated with adverse bone outcomes: osteopenia, osteoporosis, and osteoporotic fractures, than LMWHs, using data from the FDA Adverse Event Reporting System (FAERS).
Methods. A retrospective pharmacovigilance analysis was conducted using OpenVigil 2.1, which compiles de-duplicated FAERS reports from Q1 2004 onwards. Drug–event combinations were assessed using Evans' disproportionality criteria: ≥3 case reports, proportional reporting ratio (PRR) ≥2, chi-square ≥4, and the lower bound of the 95% confidence interval for the reporting odds ratio (ROR) >1.
Results. Among 176 included reports, osteoporosis was most frequently reported, particularly with ENX (n=62) and DLT (n=27), followed by UFH (n=27). FDX–osteoporosis was the only combination to meet all signal detection thresholds. DLT–osteoporosis met the chi-square and ROR criteria but not the PRR criterion. UFH–osteoporosis had a high chi-square but subthreshold PRR and ROR. ENX exhibited the weakest signal profile.
Discussion. FDX showed a statistically supported signal for osteoporosis. However, confounding factors such as co-medications, selective reporting, and database limitations, including the exclusion of pre-2004 reports, may affect interpretation. Adequately powered and appropriately stratified prospective studies are needed to determine the validity of these associations.

P664

Nationwide trends in fentanyl prescribing and risk factors for high-dose use

Ms SuJin Kim

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Nationwide trends in fentanyl prescribing and risk factors for high-dose use
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Introduction. Due to growing concerns about misuse associated with the increasing prescription of fentanyl, analyzing its usage patterns and prescribing trends is crucial from a public health perspective.
Aims. This study analyzes prescribing trends of transdermal (TDF) and oral transmucosal fentanyl (OTF) from 2018 to 2024 and identifies risk factors for high-dose prescriptions.
Methods. This study analyzed prescribing patterns of fentanyl by formulation, year, and age group using HIRA data from 2018 to 2024 and evaluated risk factors associated with high-dose fentanyl use based on dosage levels.
Results. Between 2018 and 2024, among a total of 891,053 patients, 850,404 (95.4 %) were prescribed TDF and 168,237 (18.9 %) received OTF. Among TDF users, 64.1 % were prescribed the medication for non-cancer pain, with the highest proportion observed in patients in their 60s (25.9 %) and 70s (27.3 %). In contrast, 84.7 % of OTF prescriptions were for cancer-related pain, with similarly high prescribing rates in patients in their 60s (27.2 %) and 70s (23.0 %). Both formulations showed substantial declines in prescriptions between 2018 and 2024, with reductions of 45.2 % and 42.0 %, respectively. During the study period, the average prescribed dose was 45.4 Morphine milligram equivalents (MME)/day, corresponding to Level 2, and the average prescription duration was 14.5 days, indicating that short-term prescriptions were most common. Logistic regression analysis revealed that males had significantly higher odds of receiving Level 4 prescriptions compared to females (OR = 1.357, 95 % CI: 1.307–1.410). In addition, patients covered by medical aid had higher odds of receiving Level 4 prescriptions compared to those with national health insurance (OR = 1.536, 95 % CI: 1.443–1.635). In addition, concomitant use of benzodiazepines (OR = 1.357, 95 % CI: 1.305–1.411), antipsychotics (OR = 1.746, 95 % CI: 1.681–1.814), and Z-drugs (OR = 1.281, 95 % CI: 1.233–1.331) was significantly associated with increased likelihood of receiving high-dose (Level 4) fentanyl prescriptions.
Discussion. The marked decline in fentanyl prescriptions from 2018 to 2024 reflects a shift toward more cautious opioid use. TDF were mainly used for non-cancer pain, OTF for cancer pain, with moderate doses and short-term durations being common. High-dose fentanyl use was associated with male sex, medical aid, and concomitant use of benzodiazepines, antipsychotics, Z-drugs.

P665

Quality of Life and Treatment Satisfaction Among Type 2 Diabetes Patients

Assist Prof Khushboo Bisht Bisht

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Quality of Life and Treatment Satisfaction Among Type 2 Diabetes Patients

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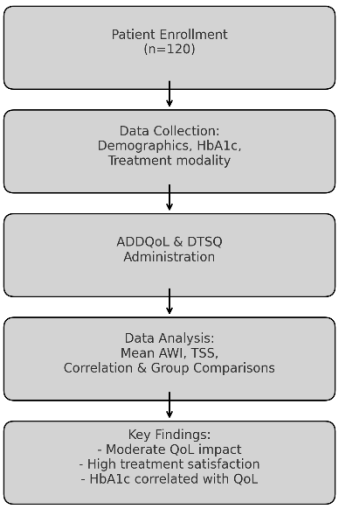
Introduction. Type 2 Diabetes Mellitus (T2DM) is a chronic metabolic condition with significant psychosocial impact. Patient-reported outcomes such as the Audit of Diabetes-Dependent Quality of Life (ADDQoL) and the Diabetes Treatment Satisfaction Questionnaire (DTSQ) provide valuable insight into the burden of diabetes and satisfaction with therapy.

Aims. To assess diabetes-specific quality of life (QoL) and treatment satisfaction in patients with T2DM and explore their association with clinical variables.

Methods. A cross-sectional observational study was conducted in the endocrinology outpatient department of a tertiary care teaching hospital. Adults (≥18 years) with T2DM for ≥6 months were enrolled (n = 120). Sociodemographic data, diabetes duration, and HbA1c were recorded. Participants completed the ADDQoL and DTSQ questionnaires. Weighted impact scores (WIS) and treatment satisfaction scores (TSS) were computed. Associations between scores and clinical variables were analyzed using t-test/ANOVA and Pearson correlation.



Results. Of 120 participants, 65 (54.2%) were male; mean age was 54.7 ± 9.3 years, mean diabetes duration 8.2 ± 5.6 years, and mean HbA1c 8.1 ± 1.2%. Mean ADDQoL average weighted impact score (AWI) was −2.1 ± 1.0, indicating a moderate negative impact. The most affected domains were freedom to eat (−3.1 ± 1.2), physical activity (−2.8 ± 1.3), and future health (−2.7 ± 1.1). Mean DTSQ treatment satisfaction score was 28.3 ± 4.5 (range 0–36). Participants reporting frequent hyperglycemia had significantly lower TSS (26.1 ± 4.3 vs 29.5 ± 3.9, $p = 0.01$). AWI negatively correlated with HbA1c ($r = −0.34$, $p < 0.001$).

Discussion. T2DM moderately impairs quality of life despite high treatment satisfaction. Dietary restrictions, physical activity limitations, and concerns about future health were the most affected domains. Integration of patient-reported outcomes in routine practice can help identify individuals requiring additional psychosocial and therapeutic support.

P667

Comparison of topical cyclosporine and diquafosol for dry eye disease: a meta-analysis

Dr Hua-Ching Chang

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Comparison of topical cyclosporine and diquafosol for dry eye disease: a meta-analysis
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Introduction. Dry eye disease (DED) is a common condition, and both cyclosporine A (CsA) and diquafosol (DQS) are established treatments that act via distinct mechanisms. However, their comparative clinical efficacy remains uncertain.
Aims. This study aimed to compare the clinical efficacy of CsA and DQS in improving outcomes for patients with DED.
Methods. A systematic review was conducted across PubMed, Embase, Cochrane Library, and Web of Science for studies published prior to July 13, 2025. Eligible studies included randomized controlled trials (RCTs) and non-RCTs comparing the clinical efficacy of CsA and DQS in treating DED. The primary outcomes were changes in subjective and objective ocular examination results for DED. Subgroup analyses were conducted according to follow-up durations. A random-effects model was employed for meta-analysis.
Results. A total of six studies (three RCTs and three non-RCTs) ultimately included in the meta-analysis. These studies analyzed 724 patients, with 367 receiving CsA and 357 receiving DQS. Pooled results revealed no significant differences in corneal staining scores or conjunctival staining scores between the two treatment groups. Furthermore, no significant differences in pooled estimates for improvement in tear production (Schirmer test) or tear stability (tear break-up time) were observed between the two groups. Subgroup analyses stratified by 1- and 3-month follow-up periods yielded consistent results. However, DQS treatment yielded greater improvement in Ocular Surface Disease Index (OSDI) than did CsA treatment (mean difference = 3.413; 95% confidence interval = 0.700 to 6.126; P = .014).
Discussion. This meta-analysis demonstrated that CsA and DQS did not differ significantly in their efficacy in improving most objective clinical indices for DED over 1-3 months of treatment. However, DQS demonstrated greater improvement in subjective patient-reported outcomes. Future randomized controlled trials should investigate the long-term efficacy of these treatments.

P668

A systematic review of real-world outcomes of immunotherapy in renal cell carcinoma

Ms Gwyneth Leung

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

A systematic review of real-world outcomes of immunotherapy in renal cell carcinoma
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Introduction. Immune checkpoint inhibitor (ICI)-based regimens are the standard first-line therapy for advanced renal cell carcinoma (RCC). Randomized controlled trials (RCTs) demonstrate efficacy, but strict eligibility criteria limit generalisability to routine practice. Real-world evidence (RWE) is needed to assess effectiveness and safety in broader patient populations.
Aims. To systematically synthesise comparative real-world evidence on the efficacy and safety of ICI-based regimens in patients with advanced RCC.
Methods. A systematic search of MEDLINE, Embase, and Scopus was conducted from database inception to January 21, 2026, in accordance with the PRISMA guidelines. Cohort studies comparing ICI-based regimens in advanced RCC with at least one active comparator were included. Due to the clinical and methodological heterogeneity across all studies, findings were synthesised narratively.
Results. Fifty-eight retrospective cohort studies (35,215 patients) were included. ICI and tyrosine kinase inhibitor (TKI) combinations were associated with improved survival outcomes, particularly progression-free survival, compared to dual ICI therapy or TKI monotherapy. Evidence comparing dual ICI therapy with TKI monotherapy was inconsistent. Safety data was limited as most studies used unadjusted descriptive analyses.
Discussion. RWE suggests that ICI-TKI combinations are associated with better survival outcomes in advanced RCC. Heterogeneity and methodological limitations, particularly in safety reporting, limit definitive interpretation. More high-quality real-world evidence is needed to substantiate these findings. Clinicians should interpret RWE cautiously and individualise treatment decisions according to patient risk stratification, comorbidities, and therapeutic goals.

P669

Impact of physician-pharmacologist–led reviews on polypharmacy outcomes

Prof Andres F Zuluaga

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Impact of physician-pharmacologist–led reviews on polypharmacy outcomes

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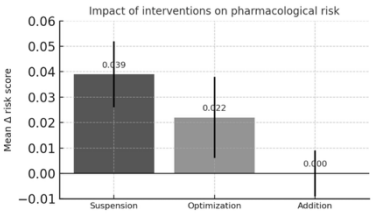

Introduction. Ambulatory polypharmacy requires structured physician-pharmacologist–led reviews to optimize therapy, reduce risk, and improve outcomes. However, the relative impact of different interventions and their longitudinal effect on pharmacological risk remain poorly described in real-world cohorts.

Aims. To assess clinical compensation rates, intervention patterns, and changes in pharmacological risk across structured reviews in a university health program.

Methods. Prospective, observational study of 535 outpatients (mean age 69.1±0.6 years; 351 women, 65.6%) undergoing 802 consultations in 2025. Interventions were classified as suspension, addition, or optimization. Pharmacological risk was scored from 1 (null) to 4 (excessive polypharmacy ≥10 drugs). Outcomes included changes in risk (Wilcoxon, Mann–Whitney tests) and compensation status.

Results. Clinical compensation was achieved in 662/802 (82.5%) consultations. Risk distribution shifted modestly, from score 3 predominance (538 patients) to fewer score 4 cases post-intervention (165→156). Mean risk decreased from 3.06±0.02 to 3.04±0.02 (Wilcoxon P=0.008). Suspension (n=363) produced the greatest improvement (Δrisk 0.039±0.013 vs 0.002±0.009 without suspension, P=0.0097). Optimization showed a small non-significant effect, while additions were neutral. Longitudinally, deprescribing drove sustained safety gains, whereas persistence in high-risk scores reflected therapeutic indispensability.

Discussion. Physician-pharmacologist–led reviews achieved high compensation rates and modest but significant reductions in pharmacological risk, with suspension emerging as the cornerstone intervention. Longitudinal analyses confirmed that iterative reviews and targeted deprescribing are essential to mitigate risk in multimorbid ambulatory patients.

P670

Guideline-directed medical therapy for treatment of heart failure with reduced ejection fraction

Dr Jorge Machado-alba

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Guideline-directed medical therapy for treatment of heart failure with reduced ejection fraction
Luis Daniel Reyes-Espinosa[2], Nahún Alejandro Giraldo-Corrales[2], Daniela Garcia-Pineda[2], Natalia Patiño-Garcia[2], Luis Fernando Valladales-Restrepo[1,2,], Jorge Enrique Machado-Alba[1]. [1]Grupo de Investigación en Farmacoepidemiología y Farmacovigilancia, Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia. [2]Grupo de Investigación Biomedicina, Facultad de Medicina, Fundación Universitaria Autónoma de las Américas, Pereira, Colombia.

Introduction. Heart failure with reduced left ventricular ejection fraction (HFrEF) is associated with high morbidity and mortality. Guideline-directed medical therapy (GDMT) can improve patient prognosis.
Aims. to determine the GDMT and target doses for a group of patients with HFrEF.
Methods. An observational study of patients diagnosed with HFrEF. The type and number of drugs and doses were identified according to the GDMT (American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines). In-hospital follow-up of clinical and outpatient records was carried out six months after dispensing drugs.
Results. A total of 264 patients were identified, with an average age of 71.8±12.9 years, and 66.3% were men. The average left ventricular ejection fraction (LVEF) was 28.4±8.1%. The use of 4-drug GDMT at admission was 20.5%, that at discharge was 53.8%, and that at six months was 55.8%. A new diagnosis of heart failure (aOR:0.42; CI95%:0.19–0.96), LVEF ≥25% (aOR:0.47; CI95%:0.23–0.95) and glomerular filtration rate (GFR) <30 ml/min/1.73 m2 (aOR:0.13; 95%CI:0.03–0.48) were associated with a lower probability of receiving 4-drug GDMT at discharge. The target doses of β-blockers (BBs) and renin–angiotensin system inhibitors (RASIs) at discharge (4.6% and 17.4%, respectively) and at six months (17.4% and 20.8%, respectively) were very low.
Discussion. Management with 4-drug GDMT was rare, especially for patients with a de novo diagnosis of heart failure, with a lower GFR and better LVEF. The target doses of GDMT were not reached by the majority of patients at discharge or at 6 months.

P671

Characterization of Pharmacotherapeutic Follow-up Service in low-middle income country. A cross-sectional study

Dr Jorge Machado-alba

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Characterization of a Pharmacotherapeutic Follow-up Service in a low-middle income country. A cross-sectional study

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Introduction. Pharmacotherapeutic Follow-up Service (PFS) identify and resolve negative results associated with medication (NRMs) by detecting drug-related problems (DRPs).
Aims. To describe the characteristics of an PFS program in Colombia.
Methods. This was a cross-sectional study of patients treated through PFS based on the Dader Method. DRPs, NRMs and interventions performed on patients were identified. Descriptive analysis and binary logistic regression were performed considering the presence of DRPs as a dependent variable ($p<0.05$).
Results. A total of 18,563 patients were identified, with an average age of 64.8±14.9 years, and 66.3% were women. The most common chronic diseases were hypertension (54.3%), diabetes mellitus (29.2%) and rheumatoid arthritis (25.9%). The average number of medications/patient was 5.0±4.1. DRPs were documented for 60.8% of patients (1.6 DRPs/patient), mainly due to drug interactions (25.4%). NRMs were present for 60.0% of the patients (42.0% predominantly related to safety). The most common intervention was patient education (50.9%), and NRMs were resolved for 31.1% of patients who had two or more consultations. Patients over 65 years of age (aOR:1.20; 95%CI:1.06-1.36), those from Bogotá-Cundinamarca (aOR:1.62; 95%CI:1.52-1.73), those with ≥ 10 drugs (aOR:1.21; 95%CI:1.07-1.36) and those treated with anticoagulants (aOR:1.91; 95%CI:1.70-2.14) were more likely to present DRPs.
Discussion. DRPs were identified very frequently, with drug interactions being the most prevalent problem. Increased age, increased number of prescribed medications and receiving anticoagulants, were related to presenting with DRPs. Safety-related NRMs were common, education was the predominant intervention, and one-third of NRMs were resolved.

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Use of type 2 sodium/glucose/cotransporter inhibitors in heart failure: A real-world study

Dr Jorge Machado-alba

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Use of type 2 sodium/glucose cotransporter inhibitors in heart failure: A real-world study

Luis Fernando Valladales-Restrepo[1,2,3], Daniela Torrente-López[2], Carlos Manuel Bedoya-Toro[3], María Fernanda Lerma-Barco[3], Ana Sofia Franco-Carvajal[3],Jorge Enrique Machado-Alba[1]. [1]Grupo de Investigación en Farmacoepidemiología y Farmacovigilancia, Universidad Tecnológica de Pereira-Audifarma S.A, Pereira, Colombia. [2]Grupo de Investigación Biomedicina, Facultad de Medicina, Fundación Universitaria Autónoma de las Américas, Pereira, Colombia.

Introduction. Use of sodium-glucose cotransporter-2 inhibitors (SGLT2is) in the treatment of heart failure improves patient outcomes.
Aims. To determine the use of SGLT2is in patients with heart failure with and without diabetes mellitus in Colombia.
Methods. The use of SGLT2is in patients with heart failure between July-2022 and June-2023, followed for one year was evaluated. The indications, adherence, persistence of use and safety of SGLT2is were analyzed. Descriptive, bivariate and multivariate analyses were performed.
Results. A total of 500 patients were selected, with a mean age of 70.8±12.8 years and 53.0% men; 57.2% started management with dapagliflozin. SGLT2Is were most frequently used for heart failure with a reduced ejection fraction (HFrEF) and New York Heart Association (NYHA) classification of II or III (41.0%). A total of 32.8% of patients had concomitant diabetes mellitus. The drug adherence rate was 80.9±16.4%, and 71.8% of the patients reported persistent SGLT2i use for one year. Hospitalizations were less common during SGLT2i treatment than in the previous year (12.2% vs. 24.4%; p<0.001). Having a Charlson comorbidity index ≥3 increased the probability of persistence of SGLT2i use at one year (OR:4.56; 95%CI:1.46–14.27), whereas coming from Bogotá–Cundinamarca region reduced the probability (OR:0.59; 95%CI:0.35–0.98).
Discussion. SGLT2is were used according to clinical practice guideline recommendations. SGLT2i use predominated in patients with HFrEF and in those with a high comorbidity burden. There were fewer hospitalizations during SGLT2i treatment. Adherence and persistence were similar to or even better than those reported in other real-world evidence studies.

P673

Factors affecting medication use among elderly with hypertension: insights from urban Indonesia

Dr Riana Rahmawati

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Factors affecting medication use among elderly with hypertension: insights from urban Indonesia

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Introduction. Hypertension is one of the most prevalent chronic diseases among the elderly (Lien et al, 2025), requiring long-term medication adherence to prevent complications (Poulter et al, 2020).
Aims. This study aimed to identify factors associated with medication use among elderly patients with hypertension in an urban village in Yogyakarta.
Methods. A cross-sectional survey was conducted among elderly patients diagnosed with hypertension. Data were collected on gender, age, education, income, occupation, comorbidities (diabetes mellitus, heart disease, hypercholesterolemia), history of hospitalization, and participation in elderly health posts (*posyandu*). Medication use was compared across these characteristics using chi-square tests.
Results. A total of 434 elderly patients with hypertension were included in this study. Medication use was significantly associated with occupation (p=0.019); elderly who were still working had higher rates of medication use compared with those not working or housewives. Participation in elderly health post (*posyandu)* was strongly associated with medication use (p<0.001). Clinical factors were also significant, with higher medication use among hypertensive elderly with comorbid diabetes mellitus (p=0.002), heart disease (p=0.037), and a history of hospitalization (p=0.026). By contrast, no significant associations were found for gender (p=0.550), age group (p=0.333), education (p=0.255), income status (p=0.189), or comorbid hypercholesterolemia (p=0.194).
Discussion. This study shows that medication use among elderly with hypertension is more strongly influenced by social and clinical factors than by sociodemographic background. The higher adherence observed among those still working, active in *posyandu*, with comorbid diabetes or heart disease, and with prior hospitalizations underscores the importance of strengthening community-based programs and integrating comorbidity management to support long-term hypertension control in the elderly.

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Poulter NR et al (2020). Medication adherence in hypertension. J. Hypertens, 38(4), 579-587.

P674

Budget Impact Analysis of Biosimilar Adoption in Colorectal Cancer Treatment

Prof Svjetlana Loga-Zec

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Budget Impact Analysis of Biosimilar Adoption in Colorectal Cancer Treatment

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Introduction. Colorectal cancer (CRC) is among the most common malignancies globally, with increasing incidence in developing countries due to lifestyle changes and aging populations. The introduction of biosimilar medicines represents an important health policy strategy for cost containment while maintaining therapeutic standards. Analysis of treatment coverage and expenditure trends provides essential evidence for policy and reimbursement decision-making
Aims. The study aimed to show differences in the costs of colorectal cancer treatment between the use of originator drugs and biosimilars.
Methods. A retrospective–prospective, comparative analysis was conducted using data obtained from the IMS (Intercontinental Marketing Service) database. The utilization of originator and biosimilar bevacizumab in CRC therapy was analyzed over a five-year period (January 2020–December 2024).
Results. During the pre-biosimilar period (2020–mid-2022), treatment relied exclusively on the originator biologic, covering 691 patients, with total expenditure exceeding €13.8 million and an average monthly cost per patient of €608.17. Following biosimilar introduction in 2022, treatment coverage increased to 1,169 patients. Despite increased utilization, overall expenditure remained stable at approximately €13.4 million. The average cost per patient decreased to €329.64, indicating improved allocative efficiency and expanded access within a fixed oncology budget.
Keywords. colorectal cancer, bevacizumab, pharmacoeconomic

P675

To compare efficacy of montelukast-levocetirizine versus montelukast-bilastine in allergic rhinitis patients

Prof Rakesh Dixit

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

To compare efficacy of montelukast-levocetirizine versus montelukast-bilastine in allergic rhinitis patients

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Introduction. Allergic rhinitis (AR) significantly impairs quality of life and imposes economic burdens, particularly in resource-limited settings such as India. Montelukast combined with second-generation antihistamines like levocetirizine or bilastine is commonly prescribed, yet comparative cost-effectiveness data between these combinations are scarce.

Aims. To determine and compare the cost-effectiveness of montelukast-levocetirizine versus montelukast-bilastine fixed-dose combinations (FDCs) in managing allergic rhinitis patients.

Methods. This prospective observational study enrolled 60 patients with AR, divided equally into Group A (montelukast + levocetirizine) and Group B (montelukast + bilastine). Treatment duration was 28 days. Cost data were collected via a market survey of ten brands per combination to calculate average 28-day therapy costs. Cost-effectiveness was assessed by calculating the cost per unit reduction in Total Nasal Symptom Score (TNSS), the primary clinical efficacy parameter.

Results. The mean 28-day treatment cost was lower in the montelukast-levocetirizine group compared to the montelukast-bilastine group. Similarly, the cost-effectiveness ratio (cost per unit reduction in TNSS) was more favourable in the montelukast-levocetirizine group. However, statistical analysis revealed no significant difference in either treatment cost or cost-effectiveness between the two groups.

Discussion. Both montelukast-levocetirizine and montelukast-bilastine combinations are economically comparable in the short-term treatment of allergic rhinitis. Although montelukast-levocetirizine demonstrated a numerically lower cost and cost-effectiveness ratio, this difference was not statistically significant. These findings support flexibility in selecting either combination based on clinical suitability, patient preference, and drug availability within the Indian healthcare context**.**

P676

Methods used to evaluate adherence to antihypertensive drug treatment

A/Prof Olivian Stovicek

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Methods used to evaluate adherence to antihypertensive drug treatment

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Introduction. Adherence to antihypertensive medication is a critical factor in managing hypertension and preventing associated complications, including stroke and other cardiovascular diseases. Despite its importance, adherence rates vary significantly across different populations and are influenced by multiple factors.
Aims. This paper aims to explore the prevalence of adherence to antihypertensive medication and the patient-related behavioral factors influencing treatment adherence.
Methods. A systematic search was conducted in PubMed, ResearchGate, Google Scholar, and Embase databases, using the following terms: ((Hypertension [MeSH Terms] OR Blood Pressure [MeSH Terms])) AND ((Patient Adherence [MeSH Terms] OR Patient Non-adherence [MeSH Terms] OR Patient Compliance OR Patient Non-compliance)) AND ((Medication Adherence [MeSH Terms] OR Medication Non-adherence [MeSH Terms]) AND prevalence. Eligible studies assessing adherence to antihypertensive therapy were reviewed.
Results. Several methods were used for the assessment of adherence in hypertensive patients in the selected articles. Most of the studies used the original or modified Morisky Medication Adherence Scale with 8 or 4 items (MMAS-8 or MMAS-4) and personal interviews. There were considerable variations across countries and populations in the reported prevalence of high, moderate, low adherence, and complete non-adherence to the treatment plan.
Discussion. The comparison of adherence rates across different regions revealed significant disparities in compliance with antihypertensive treatment. These results underscore the importance of a pharmacoepidemiological approach in analyzing patient behaviors related to treatment. Therefore, tailored, population-specific strategies are needed to improve adherence and reduce the burden of hypertension-related complications. Enhancing adherence through targeted interventions that address modifiable behavioral factors represents a cost-effective strategy to optimize blood pressure control and prevent cardiovascular complications at the population level.

P677

Real-world psychiatric adverse events associated with bictegravir and darunavir/cobicistat regimens: FAERS study

Dr Nagalakshmi Narasimha Swamy

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Real-world psychiatric adverse events associated with bictegravir and darunavir/cobicistat regimens: a FAERS study

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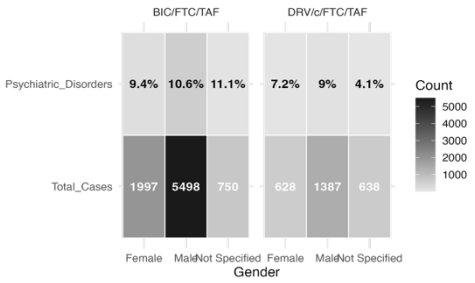
Introduction. Neuropsychiatric adverse drug reactions have emerged as clinically relevant concerns with modern antiretroviral therapy, particularly integrase strand transfer inhibitor–based regimens. Real-world post-marketing data may better capture these effects than randomized clinical trials.
Aims. To characterize and compare psychiatric adverse event reporting associated with bictegravir-containing regimens and darunavir/cobicistat-based regimens using the FDA Adverse Event Reporting System (FAERS).
Methods. A retrospective pharmacovigilance study was conducted using the FAERS Dashboard (2017–2025). Psychiatric ADR proportions between bictegravir- and darunavir/cobicistat-based regimens were compared using chi-square testing with risk difference estimation.
Results. Among 10,898 ADR reports, psychiatric disorders were more frequently reported with BIC/FTC/TAF than with DRV/c/FTC/TAF (10.3% vs 7.4%; $\chi^2 = 19.6$, $p < 0.001$), with an absolute risk difference of 1.6%. Adult males aged 18–64 years predominated. Insomnia, anxiety, and depression were common to both regimens, while abnormal dreams and suicidal ideation were more frequently reported with bictegravir-containing therapy.
Discussion. Psychiatric adverse event reporting was modestly but significantly higher with bictegravir-containing regimens, with an absolute risk difference of 1.6% compared with darunavir/cobicistat therapy. This pattern may reflect enhanced central nervous system exposure, reinforcing the importance of vigilant neuropsychiatric assessment in clinical practice.



P678

Real-world outcomes of pembrolizumab monotherapy in metastatic non-small cell lung cancer

Mr Chin Hang Yiu

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Real-world outcomes of pembrolizumab monotherapy in metastatic non-small cell lung cancer

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Introduction. Lung cancer remains the leading cause of cancer-related mortality globally. While immune checkpoint inhibitors (ICIs) are the standard of care for metastatic non-small cell lung cancer (NSCLC), real-world data from Australia are limited.

Aims. To evaluate real-world outcomes of pembrolizumab monotherapy in metastatic NSCLC.

Methods. A population-based cohort study was conducted using national Pharmaceutical Benefits Scheme and National Death Index data, accessed via the Australian Bureau of Statistics DataLab. Adults initiating pembrolizumab monotherapy for metastatic NSCLC (2017–2022) were included. Overall survival (OS) and time to treatment discontinuation (TTD) were assessed using Kaplan–Meier analyses and multivariate Cox regressions. Immune-related adverse events (irAEs) were inferred from incident corticosteroid and levothyroxine prescriptions. Subgroup analyses were performed by age (18–64 and ≥ 65) and sex.

Results. Among 4,334 patients, median OS was 13.2 months. Younger patients had longer OS than those ≥ 65 (17.9 vs. 12.4 months; adjusted hazard ratio [aHR] 1.29, 95% confidence interval [CI]: 1.18–1.41). Females had longer OS than males (14.8 vs. 12.1 months; aHR 0.89, 95% CI: 0.83–0.96). TTD did not differ significantly by age or sex. Incident corticosteroid and levothyroxine use occurred in 19.1% and 8.0% of patients, respectively, with higher levothyroxine use in females (9.8% vs. 6.7%, P<0.001).

Discussion. In this real-world study, survival outcomes with pembrolizumab were shorter than those reported in clinical trials. Observed differences by age and sex in survival and irAE proxies suggest potential biological variation in treatment response and toxicity. These findings highlight the need for integrated clinical data to support personalised use and inform treatment strategies that improve outcomes across diverse populations.

P679

The importance of clinical pharmacological judgment by pharmacists for medication safety

Ms Suzune Otsuka

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

The importance of clinical pharmacological judgment by pharmacists for medication safety
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Introduction. In 2017, WHO launched the Third Global Patient Safety Challenge “Medication Without Harm”, aiming to halve severe preventable medication-related harm. In Japan, pharmacists are legally required to query prescribers when prescription content is unclear or potentially inappropriate, contributing to patient safety. However, eliminating medication errors remains challenging, emphasizing the need to identify underlying issues and effective strategies.
Aims. To analyze the characteristics of pharmacist queries and medication errors, and to identify strategies to improve medication safety through both digital technologies and clinical pharmacological judgment.
Methods. Using weekly reports from the Department of Pharmacy, Gunma University Hospital, we retrospectively analyzed information on medication-related incidents reported by pharmacists and pharmacist queries made during dispensing and on wards between September 1, 2024, and August 31, 2025.
Results. A total of 162 incidents were analyzed, with dispensing errors (46%) and input/technical errors in drug compounding (30%) accounting for most. Errors requiring pharmacological expertise accounted for 25 cases (15%), including insufficient understanding of patient condition or treatment plan (n = 8) and lack of specialized knowledge (n = 6). Of these 25, only 6 (24%) were potentially preventable through automatic checks. In contrast, 552 cases were prevented by pharmacist interventions. Prevention was 76% for prescriptions inconsistent with required treatment intervals or abnormal laboratory values, or contraindications due to allergies, disease–drug or drug–drug interactions.
Discussion. Digital tools can reduce dispensing and input errors, whereas cases requiring patient-specific interpretation remain less preventable digitally (24%), underscoring the importance of clinical pharmacological judgment by pharmacists. This study suggests that minimizing medication error requires a dual approach: (1) systematic reduction of simple errors through digitalization and (2) strengthening pharmacists’ ability to evaluate patient-specific risks through clinical pharmacological judgment.

P680

Medicines safety in heart failure virtual wards: a qualitative study

Dr Ali Hosin

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Medicines safety in heart failure virtual wards: a qualitative study

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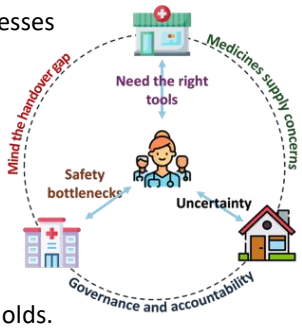
Introduction: Heart Failure Virtual Wards (HF VWs) are expanding across the UK[1] to deliver hospital-level care at home, including high-risk therapies such as intravenous diuretics. Evidence on medicines safety in this model remains limited.

Aims: To explore healthcare professionals' experiences of medication-related processes and risks in HF VWs.

Methods: Semi-structured interviews were conducted with 15 healthcare professionals working in HF VWs across the UK and Ireland. Interviews were transcribed verbatim and analysed using reflexive thematic analysis.[2]



Results: Six medicines safety-related themes were developed:

1) The dilemma of governance and accountability: unclear risk ownership across organisations and concerns about remote decision-making.
2) Rapid optimisation needs the right tools: specialist-led, rapid medication titration depended on reliable monitoring equipment and clear escalation thresholds.
3) Safety bottlenecks: delayed blood results and limited access to point-of-care testing (POCT) reduced confidence in VW safety.
4) The handover gap: Shared records mitigated risk, but IT problems impacted continuity.
5) Medicines supply concerns: delays between prescribing decisions and medicines reaching home.
6) Uncertainty of home-based administration: challenges in confirming correct administration at home (dose/time taken, documentation) and reliance on carers.

Discussion: Medicines safety in HF VWs reflects a tension between rapid specialist-led optimisation and reduced control in home-based care. Participants described variable governance, monitoring limitations, supply delays and documentation ambiguity across sites. Strengthened accountability structures, interoperable records, reliable supply pathways and access to POCT may improve safety. Further work is needed to quantify medication-related harms in HF VWs, which may be achieved using electronic health records and safety reporting data.

[1]Department of Health and Social Care (2025) Fit for the future: 10 Year Health Plan for England
[2]Braun and Clarke (2006) 'Using thematic analysis in psychology', Qualitative Research in Psychology, 3(2), pp. 77–101

P681

Treatment patterns and clinical characteristics of pancreatic cancer in East Asia

Mr Ping Lin Tsai

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Treatment patterns and clinical characteristics of pancreatic cancer in East Asia
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Introduction. Management of pancreatic cancer (PC) in East Asian populations is distinct due to the clinical significance of oral fluoropyrimidines like TS-1. However, real-world data comparing TS-1-based regimens to other strategies within East Asian clinical settings remain essential for optimizing multidisciplinary care.
Aims. To evaluate treatment patterns and clinical characteristics of PC patients in an East Asian cohort from Taiwan, focusing on the integration of TS-1 and surgical outcomes.
Methods. This prospective cohort study analyzed 532 East Asian PC patients (n=532, 2021–2025). A custom rule-based algorithm defined therapy lines based on changes in cytotoxic composition or treatment gaps exceeding 60 days. Clinical profiles and overall survival (OS) were compared across groups stratified by TS-1 usage status.
Results. First-line therapy was predominantly gemcitabine-based combinations (76.9%). The most frequently administered specific regimen was the triplet of gemcitabine, oxaliplatin, and TS-1 (39.1%), followed by gemcitabine plus nab-paclitaxel (19.9%) and the triplet of gemcitabine, nab-paclitaxel, and TS-1 (17.9%). Clinical profiling showed that TS-1 users (n=344) were significantly less likely to present with stage IV disease (38.4% vs 83.0%, P<0.001). Surgical intervention patterns differed significantly between groups (P<0.001). TS-1 users had a higher proportion of pancreatic surgery (44.2% vs 13.8%), particularly regarding procedures performed after the initiation of chemotherapy (41.3% vs 10.6%). Survival analysis demonstrated that TS-1 users achieved a significantly longer median OS of 17.4 months (95% CI: 15.0–21.2) compared to 12.1 months (95% CI: 9.1–13.5) in non-users (P<0.001).
Discussion. Custom treatment logic effectively quantifies the multidisciplinary landscape in East Asia. The distinct clinical profiles and superior survival associated with TS-1-based strategies highlight its pivotal role as a core component for induction and conversion therapy in regional pancreatic cancer management.

P682

Authority to Access: Rituximab dispensing at St. Vincent's Hospital after PBS changes

Dr Mitchel Hurlbert

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Authority to Access: Rituximab dispensing trends at St. Vincent's Hospital Sydney after PBS unrestricted listing

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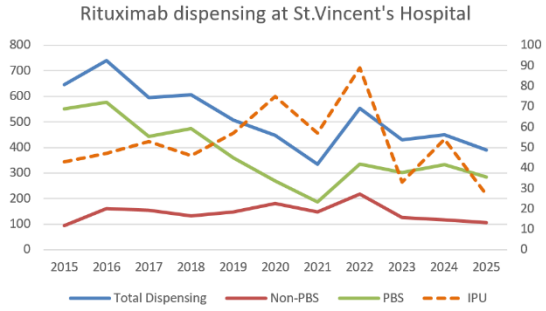

Introduction. Rituximab, an anti-CD20 monoclonal antibody that has more than 350 off label uses reported in Australia (O'Connor et al., 2013). Biosimilars entered the Australian market in 2019, and in 2021 the Pharmaceutical Benefits Scheme (PBS) lifted restrictions on its use. Prior to these changes came into effect in 2022, rituximab was accessed for off-label and non-PBS listed indications via individual patient use (IPU) applications.

Aims. We aim to quantify changes in rituximab dispensing rates and associated hospital expenditure at St.Vincent's Hospital, Sydney from 2015-2025. Additionally, we seek to categorize the most common indications for its use and requesting specialties.

Methods. A descriptive analysis was performed on dispensing rates and hospital expenditure.

Results. A total of 498 rituximab IPUs across 132 conditions were identified. Lung transplant antibody mediated rejection (AMR) was the most common off-label indication (125/498; 25.1%), followed by cardiac transplant AMR (23; 4.6%) and non-Hodgkin's lymphoma (21; 4.2%). Haematology accounted for 23.3% of IPUs (116/498) and represented the largest share of PBS-indicated use, while lung transplant was the highest overall IPU user (128/498; 25.7%). Following biosimilar (Riximyo) introduction, the cost of 500 mg rituximab fell from $2,144.29 in 2015 to $523.89 in 2019 (−75.6%) and to $247.22 in 2025 (−88.5% vs 2015).

Discussion. Lung transplant services were the largest users of off-label rituximab at St Vincent's over the past decade, though use has declined in recent years, likely reflecting policy changes and newer biologics for antibody-mediated rejection. In contrast, haematology use aligns more closely with PBS-approved indications and standardised regimens, while transplant programs drive institutionally approved prescribing. Over this period, the cost of rituximab has fallen substantially, improving affordability despite ongoing off-label demand.

O'Connor K, Liddle C. Prospective data collection of off-label use of rituximab in Australian public hospitals. Intern Med J. 2013 Aug;43(8):863-70. doi: 10.1111/imj.12206. PMID: 23735074.

P683

Prevalence of Self-medication and Determinants of Malaria Treatment Choice among Maternal Caregivers

Prof Iribhogbe Osede Ignis

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Prevalence of Self-medication and Determinants of Malaria Treatment Choice among Maternal Caregivers

Iribhogbe Osede Ignis[1] Odoya Ebube Manfred[2] Pharmacology & Therapeutics, Ambrose Alli University[1] Ekpoma, Edo State, Nigeria. Department of Zoology, Ambrose Alli University[2] Ekpoma, Edo State, Nigeria

Introduction. Self-medication is a worrisome practice in sub-Saharan Africa including Nigeria. This has increased the burden of adverse drug reactions and antimicrobial drug resistance.
Aims. The study is designed to determine the prevalence of the practice among mothers who provide care for children less than 5 years of age and identify factors that influences their healthcare-seeking behaviour for malaria.
Methods. Structured questionnaires were used to elicit data which was analyzed using statistical software package for social sciences-version 20.
Results. Self-medication was a prevalent practice among maternal caregivers (42.7%) in Nigeria with Artemether/Lumefantrine combination responsible for the majority of the adverse effects experienced. The high cost of healthcare services borne by mothers due to out-of-pocket payments for treatment in health facilities was the most predominant reason for the practice (24.7%). Parenteral medications (68%) were the most preferred drugs for self-medication with the main determinant of choice of treatment being the experience of malaria during the raining season ($x^2 = 4.86$, df=2, p=0.027).
Discussion. The practice of self-medication is prevalent because there are no strict government regulation against self-prescription of antimicrobial agents in Nigeria. However, this has the dual effect of reducing malaria morbidity and mortality on one hand and increasing the emergence of drug resistance on the other hand.

P684

Understanding Prescription and Use Practices of Domperidone: A Cross-Sectional Survey from Pakistan

Dr Amber Palla

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Understanding Prescription and Use Practices of Domperidone: A Cross-Sectional Multi-center Survey from Pakistan

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Introduction. Domperidone is a widely used antiemetic known for its cardiotoxic risks. In Pakistan, where Domperidone remains easily accessible, limited evidence exists regarding awareness and adherence to these recommendations.

Aims. To evaluate the knowledge, attitudes, and practices of physicians and pharmacists regarding the safe use of Domperidone and exploring consumers' awareness and patterns of self-medication.

Methods. A cross-sectional survey was conducted among 362 physicians, 95 pharmacists, and 394 consumers at three tertiary care hospitals in Karachi, Pakistan using structured, self-administered questionnaires. (ERC:2024-10082-30040).

Results. Among physicians, 85% reported prescribing Domperidone, yet mean knowledge scores were low (2.69 ± 1.43 out of 6; 45% of the maximum). 25% and 61% of respondents reported never considering a patient's history of cardiovascular disease and co-prescribed medications, respectively. Among pharmacists, 39% frequently dispensed Domperidone without prescriptions, and only 24% routinely counseled patients on potential risks. Pharmacists who stayed updated on safety alerts demonstrated higher knowledge ($p = 0.006$), though this did not consistently translate to safer dispensing practices. Among consumers, 45% self-medicated Domperidone, often for unapproved indications such as diarrhea or abdominal discomfort. Higher education levels were significantly associated with self-medication (OR 8.32, $p = 0.002$), reflecting greater likelihood of unsupervised use.

Discussion. The findings demonstrate gaps in knowledge and inconsistent self-reported application of Domperidone safety guidelines among healthcare providers. High rates of self-medication and use for unapproved indications among consumers further reflect limited public awareness of associated risks. These results highlight the need to strengthen dissemination of Domperidone safety recommendations and improve understanding of appropriate use.

P686

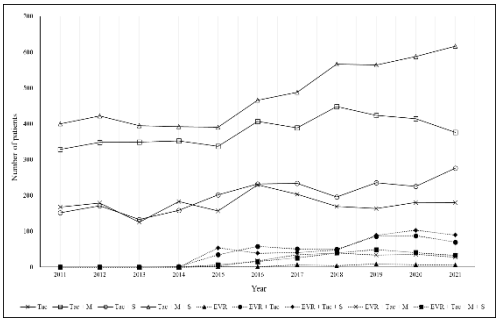
Trends in Immunosuppressant Utilization Among Liver Transplant Recipients in Korea

Mr Sangmin Park

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Trends in Immunosuppressant Utilization Among Liver Transplant Recipients in Korea: A Nationwide Time-Series, Cross-Sectional Analysis of the Korea Health Insurance Review and Assessment Service Database (2011-2021)

Sangmin Park[1], Seung-Hyeon Cha[2], Seoyeon Wi[3], Jinseub Hwang[3], Yun-Kyoung Song[1*]. College of Pharmacy, The Catholic University of Korea[1], Bucheon, Gyeonggi-do, Republic of Korea; College of Pharmacy, Daegu Catholic University[2], Gyeongsangbuk-do, Republic of Korea; Department of Statistics, Daegu University[3], Gyeongsangbuk-do, Republic of Korea



Introduction. Long-term outcomes after liver transplantation (LT) have remained plateaued, and consensus on optimal maintenance immunosuppression remains limited with respect to both clinical efficacy and cost-effectiveness.

Aims. To characterize national trends in maintenance immunosuppressive regimens among Korean LT recipients, with the goal of informing regimen optimization.

Methods. A nationwide, claims-based study using the Korea Health Insurance Review and Assessment Service (HIRA) database was conducted. Adults who underwent first LT between 2011 and 2021 were identified. Maintenance regimens were classified by drug combinations. Trends were evaluated annually and compared between recipients ever exposed to everolimus (EVR) and those without EVR exposure.

Results. In the non-EVR group, the most common regimen was tacrolimus (TAC) + mycophenolate (MMF) + corticosteroid triple therapy (63.09%); its use declined over time, as did TAC + corticosteroid dual therapy. By contrast, TAC + MMF dual therapy and TAC monotherapy increased. In the EVR-exposed group, EVR + TAC dual therapy was most prevalent (34.34%) and increased over time, as did EVR monotherapy, while triple- and quadruple-agent regimens containing EVR decreased.

Discussion. Among Korean LT recipients, practice patterns have shifted away from triple-agent maintenance toward dual therapy or monotherapy. The dominant regimens were TAC + MMF + corticosteroid in the non-EVR group and EVR + TAC in the EVR group. These evolving patterns likely reflect attempts to balance rejection prophylaxis with toxicity and cost; comparative effectiveness analyses of outcomes are warranted.

P687

Personal Experience of Working within the Indian ADR Monitoring System

Prof Syed Ziaur Rahman

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Personal Experience of Working within the Indian ADR Monitoring System

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Introduction. Adverse Drug Reaction (ADR) monitoring is an essential component of pharmacovigilance aimed at ensuring patient safety and improving drug use practices. The Pharmacovigilance Programme of India (PvPI) provides a structured system for ADR detection, reporting, and assessment across healthcare settings. Despite its established framework, operational challenges and the role of individual healthcare professionals remain critical in its effective functioning.

Aims. This presentation aims to share my personal experience of working within the Indian ADR Monitoring System, highlighting practical insights into ADR reporting processes, challenges encountered, and key lessons learned. The goal is to provide actionable information for enhancing ADR monitoring practices and increasing participation from healthcare professionals.

Methods. The experience is based on active involvement in setting up and managing an AMC, including hands-on participation in data collection, causality assessment, and the use of PvPI digital tools and reporting forms. Interaction with healthcare professionals was integral to promoting ADR awareness and facilitating accurate reporting. Regular coordination with the national PvPI database was maintained to ensure timely and appropriate data submission.

Results. Through systematic data collection and regular sensitization workshops, the reporting of ADRs improved significantly over time. The practical challenges encountered included under-reporting by healthcare providers, difficulties in causality assessment, and technical issues related to digital reporting platforms. Success stories include identifying several significant ADRs, contributing to regulatory actions, and increased staff engagement in pharmacovigilance activities.

Discussion. My experience underscores the critical role of dedicated personnel, awareness programs, and interdepartmental coordination in strengthening ADR monitoring practices. The practical insights highlight the need for continued education, simplified reporting processes, and enhanced technical support. Strengthening these aspects can improve the overall quality of pharmacovigilance in India and enhance patient safety outcomes.

P688

TyG index ≥ 8.88 is comparable to obesity in predicting incident gout

Assoc Prof Sungkweon Cho

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

TyG index ≥ 8.88 is comparable to obesity in predicting incident gout: A Population-Based Cohort Study in UK

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Introduction. The triglyceride-glucose (TyG) index, calculated from triglyceride and glucose, has emerged as a practical and reliable surrogate marker of insulin resistance. Given the established causal relationship between insulin resistance and hyperuricemia, and the need for practical tools to identify individuals at high risk for gout, we hypothesized that the TyG index could serve as an effective predictor of incident gout.
Aims. This study aimed to evaluate whether the triglyceride–glucose (TyG) index predicts incident gout and to quantify its population impact compared with established modifiable risk factors.
Methods. A prospective analysis was performed in 282 949 White participants of the UK Biobank (mean ± SD age 57.7 ± 7.9 years; 58 % women) who were free of gout at baseline (2006–2010). The TyG index was calculated as ln [fasting triglycerides (mg dL^{-1}) × fasting glucose (mg dL^{-1})/2]. Incident gout through May 2017 was ascertained from hospital, primary-care and death records. Hazard ratios (HRs) were estimated with Cox models adjusted for demographic, lifestyle and clinical covariates, with additional adjustment for baseline serum urate. Discrimination was assessed by receiver-operating-characteristic analysis; optimal thresholds were derived with Youden's J. Population attributable fractions (PAF) were calculated for TyG index, obesity and other modifiable factors.
Discussion. The TyG index independently predicts incident gout and explains roughly one-fifth of cases at the population level—on par with obesity. Because it uses ubiquitous laboratory tests, the TyG index is a pragmatic tool for identifying metabolically driven gout risk, especially among hyperuricemic patients, and underscores insulin resistance as a key preventive target.

P689

Patterns of deprescribing by frailty in older inpatients: A multicentre cohort study

Dr Noriko Sato

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Patterns of deprescribing by frailty in older inpatients: A multicentre cohort study
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Introduction. Frailty and polypharmacy are common in older adults. Deprescribing is recommended to reduce potentially inappropriate medications (PIMs), but deprescribing patterns by frailty in older inpatients remain unclear.
Aims. To examine deprescribing patterns during hospitalisation according to frailty status, including the most commonly deprescribed drug classes, and to evaluate patient and healthcare factors associated with deprescribing.
Methods. This retrospective multicentre cohort study included adults aged ≥65 years admitted to six public hospitals in New South Wales, Australia (January 2022-July 2023). Patients with length of stay <24 hours or who died during hospitalisation were excluded. Frailty was assessed using the electronic Frailty Index for Acute Hospitals (FI), comprising 54 items. Deprescribing was defined as cessation or dose reduction of any medication at discharge compared to admission. Multivariable logistic regression was used to identify factors associated with deprescribing.
Results. Of 31047 patients (median age 79.8 [IQR 73.3-86.4], 51.8% female, median FI 0.18 [IQR 0.11-0.27]), 66.0% had at least one medication deprescribed. Deprescribing prevalence increased with frailty, from 49.9% (least frail, FI<0.1) to 87.2% (most frail, FI≥0.5). At the ATC 3rd level, the most frequently deprescribed drug classes among those prescribed were antithrombotics (9862/45942, 22%), beta-lactam antibacterials (9325/12655, 74%), other beta-lactam antibacterials (6809/9073, 75%), insulins (5852/17654, 33%), and other analgesics/antipyretics (5713/25914, 22%). For Beers-listed PIMs, insulins (539/1175, 30%), antidepressants (240/1308, 18%), cardiac glycosides (231/1130, 20%), blood glucose-lowering drugs (226/1101, 21%) and anxiolytics (274/542, 51%) were commonly deprescribed. Multivariate analysis showed that higher frailty was significantly associated with deprescribing of any medication (FI≥0.5 vs <0.1 as reference: OR3.50, 95%CI [2.50-4.90]) and Beers-listed PIMs (OR3.56 [2.14-5.92]). Longer length of stay (LOS≥10days: OR2.91 [2.69-3.14]), higher Charlson Comorbidity Index (CCI≥3: OR1.20 [1.10-1.30]), and admission to cardiology (OR1.30 [1.16-1.46]) and general medicine (OR1.35 [1.22-1.48]) vs geriatric medicine were also associated with deprescribing of any medication. Similar associations were observed for Beers-listed PIMs.
Discussion. Higher frailty is associated with greater deprescribing. This reflects existing clinical attention to medication optimisation in frail patients, suggesting less frail patients may benefit more from deprescribing interventions.

P690

Pembrolizumab-Associated Myocarditis and the Complex Role of Corticosteroids: A Pharmacovigilance Study

Mrs Liganda Endo Mahata

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Pembrolizumab-Associated Myocarditis and the Complex Role of Corticosteroids: A Pharmacovigilance Study

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Introduction. Immune checkpoint inhibitors (ICIs) have improved cancer survival. Nonetheless, they are associated with rare but possibly fatal immune-related adverse events, such as myocarditis. Currently, there are no established recommendations for the management of myocarditis induced by immune checkpoint inhibitors (ICI). Corticosteroids remain the empirical mainstay of treatment despite ongoing controversy regarding their efficacy in reducing mortality

Aims This study assessed the association between corticosteroid co-reporting and pembrolizumab-related myocarditis using disproportionality analysis of FDA Adverse Event Reporting System (FAERS) data from 2014 to 2025.

Methods. We calculated Reporting Odds Ratios (RORs) for myocarditis linked to pembrolizumab, including analyses of RORs when pembrolizumab was given with corticosteroids and by specific corticosteroid types.

Results. A strong disproportionality signal was identified between pembrolizumab and myocarditis, with a Reporting Odds Ratio (ROR) of 55.84 (95% CI: 52.91–58.92). This signal was attenuated when pembrolizumab was administered alongside corticosteroids, resulting in an ROR of 44.89 (95% CI: 36.45–55.29). Conversely, a markedly stronger signal was observed in the subgroup of patients who received methylprednisolone, with an ROR of 164.25 (95% CI 120.06–224.70).

Discussion. These contradictory signals raise fundamental questions about the role of methylprednisolone. The extreme ROR spike suggests a hypothesis of inadequate therapeutic mitigation, wherein the potential pro-fibrotic and pro-arrhythmic effects of the drug may not be fully offset by its anti-inflammatory benefits in severe myocarditis. This finding from FAERS reveals a critical knowledge gap. While not establishing causality, this signal underscores the urgent need to validate these findings in a larger global database, like the WHO's VigiBase, and to design prospective studies to clarify the risk-benefit balance of each corticosteroid.

P691

Two timepoints, one pain: Trends in self-medication for acute dental pain (2003–2025)

A/Prof Ivana Šutej

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Two timepoints, one pain: Trends in self-medication for acute dental pain (2003–2025)

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Introduction. Analgesic self-medication before emergency dental visits influences pain at presentation and subsequent prescribing.

Aims. We compared pre-visit analgesic use, reported pain, and working diagnoses at two timepoints, twenty-two years apart, within a single urban service.

Methods. Cross-sectional surveys were conducted in the Emergency Dental Service, Health Center Zagreb–Center in 2003 (n=100) and 2025 (n=527). Participants completed an anonymous 18-item questionnaire (Likert 1–5), categorized pain intensity and VAS. Ethics: 003-01/25-05/03. Group differences were assessed with χ^2 and Kruskal–Wallis tests (Bonferroni corrections); logistic and ordinal regressions explored factors associated with analgesic use and pain intensity..

Results. In 2003 diagnoses were serous pulpitis (33%), periapical osteitis (20%), purulent pulpitis (11%), pulp gangrene (8%). In 2025, osteitis predominated (38.5%), followed by acute pulpitis (11.4%), periapical abscess (8.5%), periodontal abscess (7.4%), pericoronitis (4.6%), traumatic dental injuries (3.8%) and post-extraction complications (3.0%). Pain intensity shifted: severe pain decreased from 68% (2003) to 59.0% (311/527) in 2025; moderate increased from 19% to 30.6% (161/527); mild from 13% to 10.4% (55/527). Pre-visit analgesics declined from 98% (2003) to 78.6% in 2025. In 2003, commonly reported agents were diclofenac (38%), ibuprofen (12%), paracetamol (10%), acetylsalicylic acid (9%) and ketoprofen (4%). In 2025, NSAIDs were first-choice in 87.2% of users; within NSAID users: ibuprofen 83.4%, ketoprofen 9.7%, naproxen 4.7%, diclofenac 1.1%, dexketoprofen 0.8% and indometacin 0.3%. Paracetamol accounted for 8.5% of first-choice use..

Discussion. Community use now aligns more closely with evidence-based recommendations, but timing and adequacy of dosing appear suboptimal. Education and triage should prioritize appropriate NSAID use (when not contraindicated) and rapid definitive intervention.

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Is there Difference in the Odds of Neuropsychiatric Adverse Events between Fluoroquinolones?

Dr Eunice Pak

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Is there Difference in the Odds of Neuropsychiatric Adverse Events between Fluoroquinolones?

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Introduction. Neuropsychiatric side effects are a well-recognised class effect of fluoroquinolones, with an incidence of 1-4.4% (Xie W-L. et al, 2024). A good understanding on the inter-variability between different fluoroquinolones and their risks of developing neuropsychiatric side effects is imperative to aid clinicians making therapeutic decisions.

Aims. To compare the odds ratio of neuropsychiatric adverse events of four commonly used fluoroquinolones: ciprofloxacin, levofloxacin, moxifloxacin and ofloxacin to amoxicillin in the period between 2020- 2024.

Methods. Data on the total number of prescriptions for these fluoroquinolones and amoxicillin from all NHS England GP practices were retrieved using Open Prescribing database; the number of neurological, psychiatric and non-neuropsychiatric side effects were gathered using the MHRA Interactive Drug Analysis Profile. The odds ratio of neuropsychiatric adverse events for each fluoroquinolone: amoxicillin was calculated.

Results. The odds ratio is in the order ciprofloxacin < ofloxacin < levofloxacin < moxifloxacin (Table 1).

Medication	Total number prescribed	Total neurological events (fatal)	Total psychiatric events (fatal)	Total adverse events	Odds of adverse event	Odds ratio	95% CI
Amoxicillin	35599673	421 (8)	165 (0)	594	0.000016686	1	
Ciprofloxacin	1966054	548 (1)	360 (3)	912	0.000464089	28	25-31
Ofloxacin	219513	132 (0)	101 (0)	233	0.001062568	64	55-74
Levofloxacin	127930	129 (1)	71 (0)	201	0.001573644	94	80-111
Moxifloxacin	18051	59 (1)	23 (0)	83	0.004619323	277	220-348

Table 1

Discussion. While neuropsychiatric adverse events are a class effect of fluoroquinolones, the risk varies substantially between agents, with ciprofloxacin carrying the lowest and moxifloxacin carrying the highest relative odds compared with amoxicillin. Clinicians should consider these agent-specific risks when prescribing. The same methodology, including the use of QSAR prediction models, can be used to determine and predict the odds of adverse events of other classes of medication.

Xie W-L et al (2024) Frontiers in pharmacology 15:1435923

P693

Machine learning reveals cardiac risks of PXR agonists in FAERS

Prof Yoshihiro Uesawa

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Machine learning reveals cardiac risks of PXR agonists in FAERS

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Introduction. Pregnane X receptor (PXR) is a ligand-activated nuclear receptor that regulates drug metabolism and other physiological processes. Excessive PXR activation has been implicated in drug–drug interactions and toxicities, but its overall contribution to patient-related adverse events remains unclear. A broader evaluation of clinical adverse outcomes associated with PXR activation is warranted.

Aims. This study aimed to develop a predictive model of PXR agonist activity and apply it on a large pharmacovigilance database to identify candidate agonist drugs. We sought to clarify the association between predicted PXR agonists and reported adverse events, thereby assessing the clinical safety impact of PXR activation.

Methods. A classification model was constructed using 336 molecular descriptors of known PXR agonists from the Tox21 dataset with LightGBM. To avoid overfitting and reliably evaluate generalization performance, nested cross-validation—widely regarded as equivalent to external validation—was applied. Model performance was evaluated using sensitivity, specificity, balanced accuracy, Matthews correlation coefficient (MCC), and area under the ROC curve (AUC).

Results. Nested cross-validation demonstrated robust performance with a sensitivity of 0.8386, a specificity of 0.8069, balanced accuracy of 0.8228, an MCC of 0.5630, and an AUC of 0.8962. At the optimized cutoff value (0.2194), the model identified 1,322 of 5,523 FAERS-listed drugs as potential PXR agonists. Disproportionality analysis of ≈18 million FAERS case reports revealed significant enrichment of cardiac adverse event signals among predicted PXR agonists, with no disproportionate reporting of hepatic adverse events.

Discussion. The results suggest that PXR activation may contribute to cardiovascular risks, highlighting a novel safety concern. The integration of in silico modeling with large-scale pharmacovigilance data represents a powerful approach to uncover receptor-mediated safety signals. Early screening of drug candidates for PXR agonist activity could enhance drug safety by enabling proactive identification of potential cardiovascular risks.

Yamada S, Uesawa Y. Int J Mol Sci. 2025 Aug 6;26(15):7630.

P694

Safety signals of lecanemab among antithrombotic users: a FAERS disproportionality analysis (2023–2025)

Mr Junki Hong

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Safety signals of lecanemab among antithrombotic users: a FAERS disproportionality analysis (2023–2025)
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Introduction Lecanemab is an anti-amyloid β protofibril monoclonal antibody approved for the treatment of early Alzheimer's disease. The FDA-approved prescribing information notes a potential increased risk of hemorrhage with concomitant antithrombotic use. Although a recent disproportionality analysis examined lecanemab-associated adverse events through 2024, updated signal analyses incorporating the latest post-marketing data on the risk of concomitant antithrombotic use remain limited.
Aims Using the U.S. Food and Drug Administration Adverse Event Reporting System (FAERS), this study aimed to evaluate whether lecanemab is associated with increased reporting of adverse events among reports with concomitant antithrombotic use, compared with antithrombotic use without lecanemab, and to characterize the temporal onset patterns of key safety events.
Methods FAERS reports from 2023Q1 to 2025Q4 were analyzed. Reports listing antithrombotics were identified and stratified by the presence or absence of concomitant lecanemab as a primary suspect drug. Disproportionality analyses were performed comparing antithrombotic reports with lecanemab versus those without lecanemab, using the reporting odds ratio (ROR) and proportional reporting ratio (PRR). A positive signal was defined when the lower bound of the 95% CI of ROR exceeded 1, and PRR ≥ 2 with $\chi^2 \geq 4$. Weibull shape parameter (β) analysis was conducted for infusion-related reaction and cerebral hemorrhage to characterize temporal onset patterns.
Results Ten preferred terms met signal detection criteria. Cerebral hemorrhage showed the strongest clinically relevant signal (N = 14; ROR 10.59, 95% CI 6.15–18.27; PRR 9.93, 95% CI 5.98–16.50), followed by cerebral infarction (N = 6; ROR 9.81, 95% CI 4.34–22.16; PRR 9.55, 95% CI 4.33–21.06). Weibull analysis revealed that cerebral hemorrhage showed a random failure pattern (β = 1.06, 95% CI 0.84–1.34; median onset 112 days), suggesting a constant risk throughout the treatment period.
Discussion Concomitant use of lecanemab with antithrombotics was associated with disproportionality signals for cerebrovascular events, including cerebral hemorrhage and cerebral infarction. The random failure pattern for cerebral hemorrhage suggests a constant risk throughout treatment, supporting sustained monitoring. These findings should be interpreted cautiously, as disproportionality analyses reflect reporting behavior rather than true incidence.

P696

Non-adherence and medication beliefs among patients with type 2 diabetes

Assoc Prof Kumud Chapagain

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Non-adherence and medication beliefs among patients with type 2 diabetes

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Introduction. Non-adherence to pharmacotherapy is a major barrier to optimal management of type 2 diabetes mellitus (T2DM). Understanding its prevalence and its association with patients' beliefs about medicines is essential to improve outcomes.
Aims. To determine the prevalence of non-adherence using the pill count method and explore medication-related beliefs among T2DM patients at BPKIHS, Dharan.
Methods. A cross-sectional study was conducted from September 2021 to August 2023 among 550 T2DM patients on oral hypoglycemic agents for ≥2 months. Patients with cognitive or physical impairments, mental health conditions, or on insulin therapy were excluded. Adherence was assessed using the pill count method (<20% pills missed = adherent; 20–100% = non-adherent). Medication beliefs were assessed using the Beliefs about Medicines Questionnaire (BMQ). Data were analyzed with Stata BE 17.
Results. Of 550 participants (53.2% males; mean age 57.3±10.5 years), non-adherence was 34%, with primary non-adherence 27.8% and secondary non-adherence 72.2%. Metformin was most prescribed (43.7%), followed by thiazolidinediones (20.3%) and sulfonylureas (18.7%). Highest medication belief scores were observed for "health depends on medicines" (81.3%), "concerned about long-term effects" (76.1%), and "fear of dependency" (51.2%). Higher harm and concern scores were associated with non-adherence ($p<0.01$). Participants with higher harm scores were 50% less likely to adhere (PR 0.50; 95% CI 0.32–0.78), those with greater concerns 42% less likely (PR 0.58; 95% CI 0.39–0.86), while a higher necessity–concern differential increased adherence 2.6-fold (PR 2.60; 95% CI 1.28–5.30).
Discussion. Non-adherence to oral hypoglycemic therapy is common. Beliefs about medication harm and concern, along with a higher necessity–concern differential, are key predictors of adherence.

Table 1. Medication beliefs among participants (n=550)

Belief dimension	% of participants
Health depends on medicines	81.3
Concerned about long-term effects	76.1
Fear of dependency	51.2

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P697

ST2 (IL-33 receptor): a potential host-directed therapeutic target in severe leptospirosis

Dr Kalani Mithunika Alahapperuma Wijesinghage

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

ST2 (IL-33 receptor): a potential host-directed therapeutic target in severe leptospirosis

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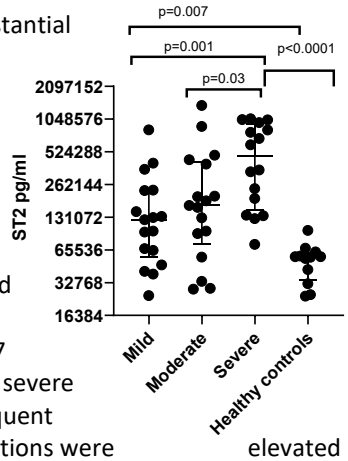
Introduction. Leptospirosis is a neglected tropical disease associated with substantial mortality. Despite the recognized role of immune mechanisms in disease severity, current treatment relies mainly on antibiotics, which may be insufficient in severe disease.

Aims. To explore the immunopathogenesis of leptospirosis and potential host-directed therapeutic targets in severe leptospirosis.

Methods. Sixty-two patients with laboratory-confirmed leptospirosis were enrolled in a prospective study at the National Hospital Galle, Sri Lanka. Clinical data were collected, and serum immunological markers were quantified using Luminex and ELISA.



Results. Eighteen (29.0%) patients had mild disease (no organ involvement), 17 (27.4%) had moderate disease (single-organ involvement), and 27 (43.5%) had severe disease (multiorgan involvement). Acute kidney injury (50%) was the most frequent complication, followed by myocarditis (38.7%) and septic shock. ST2 concentrations were elevated across all severity categories compared with healthy controls, with the highest levels in severe disease ($p < 0.0001$). ST2 levels increased with disease severity and were significantly higher in severe leptospirosis compared with mild and moderate disease ($p = 0.001$ and $p = 0.03$, respectively). ST2 levels were higher early in the illness (days 3-5) than later (days 7-10) ($p < 0.0001$). Among patients with moderate and severe disease, median ST2 concentrations were higher in those with myocarditis (426,155 pg/mL; n = 24) compared with those without myocarditis (194,126 pg/mL; n = 20), although the difference was not statistically significant ($p = 0.1$). Compared with mild disease, significantly higher ST2 concentrations were observed in patients with myocarditis ($p = 0.03$), but not in those without myocarditis.

Discussion. ST2 is elevated in severe infections and is an established prognostic biomarker in heart failure. As the IL-33/ST2 pathway is amenable to pharmacological modulation, these findings support ST2 as both a potential biomarker and host-directed therapeutic target in severe leptospirosis.

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In vivo pharmacodynamics of ceftaroline plus ampicillin against enterococci

Prof Andres Zuluaga

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

In vivo pharmacodynamics of ceftaroline plus ampicillin against enterococci

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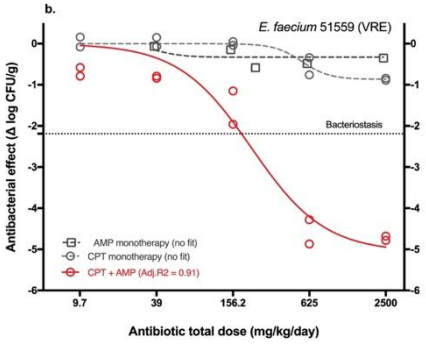
Introduction. Vancomycin-resistant enterococci (VRE) pose a major therapeutic challenge. Ceftaroline (CPT) has activity against *E. faecalis* but limited efficacy against *E. faecium*. Combination with ampicillin (AMP) may enhance antibacterial effect.

Aims. To assess the in vivo PK/PD of CPT alone and with AMP against vancomycin-susceptible (VS) and resistant (VR) *E. faecalis* and *E. faecium*.

Methods. Neutropenic mice were infected with VS and VR strains and treated with CPT (2.4–2500 mg/kg/day) or CPT+AMP. Dose–response data were analysed with Hill's model to determine Emax, ED50, and slope (N). PK/PD indices were expressed as fT>MIC.



Results. CPT and AMP monotherapies were ineffective against VR *E. faecium*, but CPT+AMP was highly bactericidal (Emax = 5.05±0.54 $\log_{10}$ CFU/g). In VR *E. faecalis*, CPT+AMP reduced ED50 >90% compared with CPT alone (0.40 vs. 190 mg/kg/day; P<0.0001). For VS strains, bacteriostasis required 47% fT>MIC, while 68–74% was needed for bactericidal activity.

Discussion. The CPT+AMP combination showed synergism against VR *E. faecium* and potentiation in *E. faecalis*, supporting its potential as a treatment option for multidrug-resistant enterococcal infections.

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P700

Determinants of Medication Safety Behavior among Older Adults: Insights from a Knowledge, Attitude, and Practice (KAP) Study

Dr Gestina Aliska

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Determinants of Medication Safety Behavior among Older Adults: Insights from a Knowledge, Attitude, and Practice (KAP) Study

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Introduction. Older adults are particularly vulnerable to medication-related problems due to polypharmacy, physiological decline, and limited health literacy. Understanding their knowledge, attitudes, and practices (KAP) is essential to inform community-based interventions.

Aims. To describe KAP regarding medication safety and examine whether age, education, and medication use are associated with safer practices among older adults.

Methods. A cross-sectional survey was conducted among 31 older adults in a district in Padang, Indonesia. A structured KAP questionnaire was used. KAP scores were calculated, with the median value as a cut-off for good versus poor KAP. Associations between education and KAP were assessed using Chi-square, while correlations between the number of medications, knowledge, and practice were tested using Spearman's correlation.

Results. The mean age was 65.8 ± 5.7 years; 77.4% were female. Overall, 51.6% had good KAP. Older adults with good KAP were significantly older (68 vs 63 years, p = 0.021). Participants with lower education (no formal schooling) were more common in the good KAP group, while those with secondary or higher education were more frequent in the poor KAP group, though not statistically significant (p = 0.213). Gender distribution and number of medications were similar across groups. Correlation analyses between medication use and practice, and between knowledge and practice, were inconclusive due to limited variability.

Discussion. More than half of older adults demonstrated good KAP on medication safety. Higher age was associated with better KAP, while higher education and medication use were not. These findings highlight the complexity of medication behaviours in older adults and underscore the need for culturally tailored interventions to improve medication safety.

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P701

Clinical profile and expression of resistance-associated genes of multidrug-resistant Pseudomonas aeruginosa in a referral hospital

Dr Gestina Aliska

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Clinical profile and expression of resistance-associated genes of multidrug-resistant *Pseudomonas aeruginosa* in a referral hospital

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Introduction. Pseudomonas aeruginosa is a major nosocomial pathogen characterized by high levels of antimicrobial resistance. Understanding the genetic basis of resistance in clinical isolates is essential for infection control and therapeutic optimization.

Aims. To determine the clinical outcome and resistance-associated gene expression of multidrug-resistant (MDR) P. aeruginosa isolated from patients in a referral hospital.

Methods. This cross-sectional study analyzed 31 *P. aeruginosa* isolates from adult patients at Dr. M. Djamil Hospital, Padang, between May and September 2024. Isolates were mainly obtained from sputum, with additional samples from blood, urine, and wound swabs. Antimicrobial susceptibility testing was performed using the VITEK® 2 system. Genomic DNA was extracted and subjected to PCR amplification targeting resistance genes (AmpC, MexA, NfxB, OprM, OprD). Clinical data included ICU admission, mortality, and length of hospital stay.

Results. Of 31 isolates, 23 were non-MDR and 8 (25.8%) were MDR. Patients with MDR isolates were older, predominantly male, had a history of ICU admission, and had longer hospital stays. Genetic analysis demonstrated that the *AmpC*, *MexA*, and *Nfx* genes were expressed in all isolates within the MDR and >90% in the non-MDR group. The *OprD* gene exhibited higher expression levels in the MDR-PA group compared to the non-MDR group. Conversely, the *OprM* gene showed the opposite pattern, with higher expression observed in the non-MDR group. High resistance rates were observed against ciprofloxacin (32.3%), ceftazidime (32.3%), and meropenem (29.0%).

Discussion. The widespread expression of resistance genes across both MDR and non-MDR isolates suggests that phenotypic resistance is driven by complex mechanisms beyond gene presence alone. Strengthened antimicrobial stewardship and integration of molecular diagnostics are urgently needed to optimize patient care.

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Organisms, Resistance, and Antimicrobial Efficacy in Urinary Tract Infection: A Systematic Review

Dr Saibal Das

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Organisms, Resistance, and Antimicrobial Efficacy in Urinary Tract Infection: A Systematic Review
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Introduction: Urinary tract infections (UTIs) remain a leading infectious disease burden in India, with increasing antimicrobial resistance (AMR) limiting treatment success.
Aim: This systematic review and meta-analysis were conducted to synthesize evidence on causative organisms, their antimicrobial resistance patterns, and comparative efficacy of different antimicrobials in urinary tract infections in India.
Methods: PubMed, Embase, Cochrane CENTRAL, and Scopus were searched (2000–2025). Observational studies and randomized controlled trials (RCTs) were included. Random-effects models were used to generate pooled estimates and heterogeneity measures (I^2 statistics). The outcomes were: burden of UTI, causative organisms, and their resistance patterns (observational studies); and clinical cure rate, composite cure rate, and bacteriological eradication rate (RCTs; relative risk [RR]) (PROSPERO registration: CRD42025635131 and CRD42025635146).
Results: A total of 250 observational studies (n=88,801) and 9 RCTs (n=914) were included. Most of the studies showed a moderate risk of bias. The pooled prevalence of UTIs was 32% (95% CI: 28–35%; I^2=98.9%). *Escherichia coli* remained the dominant pathogen [52% (95% CI: 48–55; I^2=96.4%)], followed by *Klebsiella* spp. (15%), *Pseudomonas aeruginosa* (8%), and *Staphylococcus aureus* (7%). Fluoroquinolone resistance in *E. coli* and *Klebsiella* increased from ~40% in the early 2000s to >85% by 2024. Cephalosporin resistance surpassed 70% nationwide, largely driven by extended-spectrum beta-lactamase production. Carbapenem resistance, negligible from 2000 to 2010, has risen to 15–30% in intensive care and catheter-associated UTIs. Aminoglycoside resistance increased from ~20% to 50% in hospital-acquired infections. In contrast, nitrofurantoin (10–25% resistance) and fosfomycin (5–20% resistance) retained good activity across community and hospital settings. Clinical cure (RR: 1.12, 95% CI: 0.94–1.32; I^2=12%), composite cure (RR: 1.08, 95% CI: 0.92–1.26; I^2=45.6%), and bacteriological eradication (RR: 1.05, 95% CI: 0.82–1.33; I^2=39%) favored ceftriaxone-sulbactam-EDTA and nitrofurantoin.
Discussion: UTIs in India show stable prevalence but alarming AMR trends. Nitrofurantoin, fosfomycin, and ceftriaxone-sulbactam-EDTA remain effective, highlighting the urgent need for region-specific stewardship and surveillance.

P705

Systematic approach to the role of endocannabinoid system in sepsis microvascular dysfunction

Dr Emanuel F. Matias

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Systematic approach to the role of endocannabinoid system in sepsis microvascular dysfunction
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Introduction. The endocannabinoid system is a promising therapeutic target in immune and inflammatory diseases. Sepsis, a life-threatening syndrome of dysregulated host response to infection, leads to endothelial injury, microvascular dysfunction, and multiorgan failure. While endocannabinoids regulate vascular and immune pathways, their role in sepsis pathophysiology and potential as therapeutic targets remain insufficiently investigated.
Aims. Define the interplay between endocannabinoid signalling and microvascular dysfunction in sepsis.
Methods. Systematic review conducted across PubMed, Scopus, and Web of Science databases. Eligible studies included experimental sepsis models evaluating interventions targeting endocannabinoid signaling, with quantitative assessments of microvascular or platelet function. Methodological quality and risk of bias were appraised.
Results. Eleven studies met inclusion criteria: nine in vivo rodent sepsis models and two in vitro investigations with human endothelial or platelet cells. Most targeted the CB2 receptor (n=9). CB2 activation consistently reduced leukocyte–endothelial interactions and adhesion, suggesting anti-inflammatory and microvascular-protective effects. Combined CB1/CB2 modulation lowered VEGF production and showed anti-angiogenic activity. CB1 modulation alone showed variable effects on vascular contractility and vasomotor tone.
Discussion. Modulating the endocannabinoid system—particularly via CB2 receptor activation—appears to mitigate key features of sepsis-associated microvascular dysfunction and represents a promising adjunctive therapeutic strategy. Rigorous clinical studies are warranted to validate translational relevance, optimize receptor-specific interventions, and determine safety and efficacy in human sepsis.

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P706

Correlation of antimicrobial prescribing with microbiology-confirmed organisms in ICU patients

Prof Rakesh Dixit

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Correlation of antimicrobial prescribing with microbiology-confirmed organisms in ICU patients
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Introduction. Antimicrobial therapy in Intensive Care Units (ICUs) is frequently initiated empirically due to the severity of infections and diagnostic delays. However, inappropriate empirical prescribing can foster antimicrobial resistance. Correlating antimicrobial use with microbiology-confirmed organisms helps assess appropriateness of therapy and guides stewardship interventions.
Aim. To correlate antimicrobial drugs prescribed in ICU patients with organisms confirmed through microbiology reports.
Methods. A prospective observational study was conducted over one year in ICUs of King George's Medical University, Lucknow. Seventy-five patients receiving antimicrobials were enrolled, of which 32 had culture-positive infections. Data on antimicrobials prescribed were correlated with organisms isolated from microbiology reports.
Results. Among 32 culture-positive patients, Gram-negative pathogens predominated. Klebsiella pneumoniae (31.3%) and Acinetobacter baumannii (25%) were the most frequent isolates, followed by Pseudomonas aeruginosa (18.8%) and Escherichia coli (12.5%). Gram-positive isolates included Staphylococcus aureus (6.3%) and Enterococcus spp. (6.3%). Empirical prescribing was dominated by beta-lactams and carbapenems, with piperacillin-tazobactam and meropenem most frequently used. Correlation analysis revealed partial alignment between prescribed drugs and culture sensitivity results. In many cases, broad-spectrum therapy continued despite availability of narrower options, and de-escalation rates remained suboptimal.
Discussion. The findings demonstrate a predominance of multidrug-resistant Gram-negative organisms in ICU infections. Although empirical use of broad-spectrum antimicrobials ensured initial coverage, adherence to culture-guided de-escalation was limited. Strengthening antimicrobial stewardship, promoting routine microbiology testing, and implementing antibiogram-driven protocols are essential to enhance targeted therapy, minimize resistance, and optimize patient outcomes.

P707

Studies on malaria in Nigeria: 2-knowledge about transmission, symptoms, diagnosis and treatment

Prof Helen Kwanashie

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Studies on malaria in Nigeria: 2-knowledge about transmission, symptoms, diagnosis and treatment
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Introduction. Malaria remains a major public health concern in Nigeria (NCDC, 2022; WHO, 2023). Adequate knowledge about malaria is crucial for developing targeted interventions to improve malaria control and prevention.
Aims. To assess: (1) general knowledge about malaria transmission, symptoms, diagnosis, and treatment among Nigerian residents, (2) knowledge about vulnerable population groups as well as sources of information.
Methods. A cross-sectional descriptive survey was conducted among 409 respondents from across Nigeria. The respondents were mostly female, in their 20s and 30s, married, with secondary and tertiary education. A structured questionnaire was used to collect the data and descriptive statistics was employed for analysis.
Results. Almost all the respondents (98.3%) reported previous personal or non-personal infections with malaria parasites, and mosquitoes were correctly identified by 98.8% as the causative vector. Commonly recognized symptoms included fever (16.0%), chills (14.5%), and fatigue (14.3%). Most respondents knew about effective diagnostic methods such as Rapid Diagnostic Tests (27.6%) and microscopy (25.8%). Most respondents also correctly identified Artemisinin Combination Therapies (49.6%)-especially Artemether-Lumefantrine (18.2%) and Artesunate-Amodiaquine (12.7%) as best practices for treatment. Under-5 children (92.4%), pregnant women (91.0%), persons with sickle cell disorder (44.5%), were most often identified as vulnerable groups, especially by women. Sources of information were both traditional and digital. Average self-rated knowledge score was 3.54 on a scale of 5.00 max.
Discussion. Respondents showed generally high awareness about malaria and correctly identified major vulnerable groups. However, gaps remain in knowledge of less common symptoms and newer treatment protocols. Public health campaigns should reinforce knowledge through trusted channels while integrating digital and community-based media. This research output provides important information about strategies to reduce malaria's significant health burden in Nigeria, although a more extensive study is recommended.

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WHO. Nigeria: Health Profile. (2023). https://www.who.int/countries/nga

P708

NAT2 acetylation status and toxicity in tuberculosis treatment: systematic review and meta-analysis

Dr Giulia Mosini

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

NAT2 acetylation status and toxicity in tuberculosis treatment: systematic review and meta-analysis
Stefania Cheli[1], Alessandro Torre[2], Marco Schiuma[2], Sofia Dinegro[1], Giulia Mosini[1], Ilaria Mariani[1], Vera Battini[1], Carla Carnovale[1], Andrea Gori[2], Spinello Antinori[2], Sonia Radice[1], Emilio Clementi[1,3] (1) ICPS, Pharmacovigilance & Clinical Research, Department of Biomedical and Clinical Sciences, University Hospital L. Sacco, ASST Fatebenefratelli Sacco, Università degli Studi di Milano, Italy (2) Infectious Diseases Department, ASST Fatebenefratelli Sacco University Hospital, Milan, Italy (3) Scientific Institute, IRCCS E. Medea, Bosisio Parini, LC, Italy

Introduction. Anti-tuberculosis treatment can lead to severe adverse drug reactions (ADRs), most notably hepatotoxicity. Variants of the N-acetyltransferase 2 (NAT2) gene may increase the risk of experiencing such toxicity events.
Aims. To provide a comprehensive evaluation of the most recent evidence on the association between NAT2 variants and anti-tuberculosis drug-related toxicity.
Methods. A systematic review and meta-analysis. We are searching for studies in Medline, PubMed, EMBASE, Cochrane Reviews, and Web of Science through September of 2025. Meta-analyses will be conducted to gather estimates of the association between the acetylator's status and ATDH.
Results. Preliminary evidence from the included studies suggests that the slow and intermediate NAT2 acetylators show increased susceptibility to hepatotoxicity compared with rapid acetylators. Moreover, early indications point to more consistent findings across different populations, with several large multi-center studies helping to reduce heterogeneity and reinforce the robustness of the association.
Discussion. Although analyses are ongoing, the accumulating evidence supports the clinical relevance of NAT2 acetylator status as a pharmacogenetic risk factor for ATDH.

Schiuma M. *Int J Mol Sci*. 2025;26(8):3881.
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P709

Causality and Risk Factors in Antitubercular Drug-Induced Liver Injury

Dr Giulia Mosini

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Causality and Risk Factors in Antitubercular Drug-Induced Liver Injury

Stefania Cheli[1], Ilaria Mariani[1], Sofia Dinegro[1], Giulia Mosini[1], Alessandro Torre[2], Marco Schiuma[2], Vera Battini[1], Carla Carnovale[1], Andrea Gori[2], Spinello Antinori[2], Sonia Radice[1], Emilio Clementi[1,3] (1) ICPS, Pharmacovigilance & Clinical Research, Department of Biomedical and Clinical Sciences, University Hospital L. Sacco, ASST Fatebenefratelli Sacco, Università degli Studi di Milano, Italy (2) Infectious Diseases Department, ASST Fatebenefratelli Sacco University Hospital, Milan, Italy (3) Scientific Institute, IRCCS E. Medea, Bosisio Parini, LC, Italy

Introduction. Antitubercular drug-induced liver injury (AT-DILI) is a complex hepatoxicity influenced by host and genetic factors. The RUCAM system provides a structured score to estimate the likelihood of drug causality. Using established criteria and causality assessment methods, risk factors for AT-DILI were investigated in a multiethnic cohort. **Aims**. We aimed to determine the causality and risk factors associated with AT-DILI.
Methods. We conducted a retrospective observational study on tuberculosis patients treated at Luigi Sacco Hospital, Milan, Italy. Causality of AT-DILI was assessed using the RUCAM system, and risk factors were analysed using linear regression. **Results.** Among 127 tuberculosis patients, 28 (22%) developed hepatotoxicity. According to RUCAM, 17 (61%) were hepatocellular and 11 (39%) mixed/cholestatic. Rifampicin, isoniazid, and pyrazinamide were identified as possible causes of DILI. Time to onset averaged 12 days for rifampicin, 33.5 days for isoniazid, and 13 days for pyrazinamide; rifampicin-related cases were mostly “possible,” while isoniazid- and pyrazinamide-related cases were predominantly “probable,” with few “highly probable.” Low BMI (<18.5) was the only independent risk factor in both univariate and multivariate analyses. **Discussion.** AT-DILI occurred in 22% of patients, with hepatocellular injury being the most frequent pattern. Rifampicin, isoniazid, and pyrazinamide were all implicated as possible causes, while low BMI emerged as the only independent risk factor. These findings emphasize that, although RUCAM is essential for assessing drug causality, patient characteristics such as BMI should also be considered to optimise the stratification of risk and management of AT-DILI.

Schiuma M. *Int J Mol Sci*. 2025;26(8):3881.
Cheli S. *Clin Infect Dis*. 2025;81(1):145-152
LiverTox: Clinical and Research Information on Drug-Induced Liver Injury. (2019, May 4).

P710

Adverse Effects of Monoclonal Antibodies in Covid-19 Patients: A Meta-analysis

Prof Kwee Choy Koh

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Adverse Effects of Monoclonal Antibodies in Patients with COVID-19: A Meta-Analysis

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Introduction. The discovery of monoclonal antibodies (mAbs) was an important milestone in the management of the COVID-19 pandemic, where, multiple mAbs were granted approval through the Emergency Use Authorisation (EUA). One main concern regarding mAbs is their safety profile.

Aims. To evaluate the safety of mAbs used in the treatment of COVID-19 patients from long-term observational studies.

Methods. This study was registered with Prospero. Participants were PCR-confirmed COVID-19 patients of all ages, gender, and disease severities who received treatment including mAbs. Control groups received alternative WHO-approved treatments, standard of care (SoC) or placebo. Adverse events were measured across organ systems, namely hepatoxicity, renal toxicity, haematological toxicity, immune-related and infusion-reactions. COVIDENCE, R software meta package, Rev Man Web and GRADEpro software were utilised for data-analyses. New-castle Ottawa scale was used for methodological quality assessment and GRADE for certainty of evidence.

Results. A total of 61 observational studies with 24173 participants from 22 different countries was included in this study. Majority of the studies (n=41) included tocilizumab (TCZ) in the treatment of patients. Overall pooled analysis showed an increase in ALT values post-treatment with mAbs (day 4 versus day 0), mainly in TCZ group (MD (mean difference) = 30.35; 95% CI 9.81-50.89). The similar increase was observed in day 7 versus day 0 with (MD = 25.67; 95% CI -4.29-55.62) as well. Increased incidence of elevated ALT (≥3 upper limit of normal) was observed in mAb groups compared to SoC or other treatments (RR (risk ratio) = 1.31; 95% CI 0.92-1.87, p=0.14). A significant increase in risk of fungal infection was observed in the mAbs arm compared to comparator arms with (RR = 1.82; 95% CI 1.26-2.63,). Overall certainty of evidence ranged from low to very low for most of the outcomes.

Discussion. Our review demonstrated that TCZ use is most likely the cause an elevated ALT levels, which could lead to a higher risk of hepatoxicity. The incidence may vary with the severity of disease condition, patient's co-morbidities, and concurrent administration of other hepatotoxic medications. Regular and close monitoring of hepatic enzymes is recommended, especially for patients receiving tocilizumab therapy.

P711

Molecular analysis of pncA gene mutations in Isoniazid mono-resistant tuberculosis patients

Dr Mirunalini Ravichandran

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Molecular analysis of *pncA* gene mutations in Isoniazid mono-resistant tuberculosis patients

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Introduction. Isoniazid (INH) mono-resistant tuberculosis (TB) presents a growing concern due to its potential progression to multidrug-resistant TB and poor treatment outcomes. Although *katG* and *inhA* mutations are established contributors to INH resistance, evidence suggests that *pncA* gene alterations are typically associated with pyrazinamide resistance, another first-line drug associated with poor outcomes (Che Y et al, 2021).
Aims. This study aimed to estimate the *pncA* mutations in patients with isoniazid non-resistant tuberculosis from Puducherry, India and their association with clinical characteristics and treatment outcomes.
Methods. This cross-sectional study included sputum samples from 90 patients diagnosed with INH mono-resistant TB. Demographic and clinical data were extracted from the National Tuberculosis Registry. Sputum samples were decontaminated and cultured via the Mycobacterium Growth Indicator Tube (MGIT) method. From the subculture, the DNA was extracted and PCR amplification of the *pncA* gene using specific primers was done. The amplicons were subjected to targeted sequencing and analysed using Bio Edit software compared with the Mycobacterium tuberculosis H37Rv reference genome. The association of this gene with the treatment outcome was done by following up with the patients till the end of the regimen.
Results. Of the 90 clinical INH-TB isolates analysed, *pncA* gene mutations were identified in 21 cases (23.3%). Some mutations were located at known *pncA* mutational hotspots, while others appeared in less commonly affected regions. This included both significant and non-significant mutations in the *pncA* gene. No association was found between the mutations and the treatment outcomes of the subjects.
Discussion. This study elucidates the presence of *pncA* mutations in isolates from isoniazid mono-resistant tuberculosis patients. The findings explain the need for expanded molecular screening and support the integration of *pncA* analysis in routine diagnostic workflows.

Che Y et al (2021) BMC Infect Dis 21:605.

P712

ROS-mediated effects and resistance development of farnesyltransferase inhibitors

Mr Marian Klose

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

ROS-mediated effects and resistance development of farnesyltransferase inhibitors

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Introduction. Antimicrobial resistance is rising globally. Drug repurposing offers pragmatic options, and farnesyltransferase inhibitors (FTIs) show antibacterial activity against gram-positive and, to some extent, gram-negative pathogens [1,2]. However, the antibacterial mechanism of FTIs remains unresolved.
Aims. Reactive oxygen species (ROS) have been implicated in antibiotic action and resistance development [3]. Our aim is to quantify ROS dynamics during FTI exposure and relate redox perturbations to killing kinetics and resistance emergence, testing whether ROS act as primary effectors or amplifiers of envelope stress.
Methods. Models included methicillin-susceptible (MSSA) and -resistant *Staphylococcus aureus* (MRSA) and *Bacillus subtilis*. Susceptibility testing followed CLSI guidelines. Intracellular ROS were measured by DCFH-DA; *sodA* expression by qPCR. ROS involvement was probed by co-incubation with N-acetylcysteine (NAC). Membrane potential and envelope stress were monitored using $DiOC_2(3)$ and NPN/SYTOX Green uptake, respectively.
Results. Our data indicate compound-specific ROS responses in MSSA/MRSA. In DCFH-DA assays, tipifarnib yields higher ROS readouts than lonafarnib, whereas lonafarnib remains below DMSO controls during the first 3 h. In the same runs, sub-MIC colistin elicits a pronounced ROS increase. Co-incubation with NAC attenuates tipifarnib-associated effects more than those seen with lonafarnib. In cell-free conditions, tipifarnib accelerates conversion of DCFH to DCF. Colistin co-administration with FTIs shows synergy against *Staphylococcus aureus*.
Discussion. FTIs elicit distinct ROS patterns: tipifarnib produces higher, NAC-reversible signals than lonafarnib, consistent with ROS acting as amplifiers of envelope stress. These differences are highly relevant for resistance considerations, given reports that antibiotic-induced ROS can influence resistance—also in gram-positive bacteria exposed to colistin [4]—although targeted experiments are still required before inferring compound-specific impacts.

[1] Weber et al., 2019 (PMID: 34917041). [2] Klose et al., 2025 (PMID: 40911556). [3] Dwyer et al., 2009 (PMID: 19647477). [4] Choi et al., 2020 (PMID: 32041713)

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Capsule faecal microbiota transplantation for intestinal multidrug-resistant organisms' eradication: FORCE trial

Dr Igor Rubinić

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Capsule faecal microbiota transplantation for intestinal multidrug-resistant organisms' eradication: FORCE trial

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Introduction. Antimicrobial resistance is a major global health threat. Intestinal colonization with multidrug-resistant organisms (MDRO) increases infection risk and facilitates transmission. Current decolonization strategies lack proven efficacy and safety. Faecal microbiota transplantation (FMT) using lyophilized stool in capsule form is a promising approach, but randomized trial data are scarce.

Aims. To evaluate the efficacy and safety of oral lyophilized FMT capsules for intestinal MDRO decolonization in adults.

Methods. This randomized, double-blind, placebo-controlled trial will enroll 48 adults with confirmed intestinal MDRO colonization, including ESBL-producing *Enterobacterales*, carbapenem-resistant *Enterobacterales*, and vancomycin-resistant enterococci. Participants will be randomized 1:1 to receive FMT capsules derived from healthy screened donors or placebo, and followed for 180 days across four study visits. The primary outcome is complete MDRO decolonization, defined as negative stool or rectal swab culture on day 180. Secondary outcomes include time to decolonization, recurrence rates, and safety endpoints, with adverse events systematically recorded. Microbiological analyses will be performed in an accredited laboratory, and statistical analyses will follow the intention-to-treat principle.

Results. Recruitment is ongoing; trial results will be presented. Trial registration: ClinicalTrials.gov (NCT07106580).

Discussion. This trial will provide high-quality evidence on the efficacy and safety of lyophilized capsule-based FMT as a practical and patient-friendly strategy for MDRO decolonization. If effective, this approach could reduce MDRO-related infections, improve patient outcomes, and support antimicrobial resistance containment efforts.

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Results of microbiological monitoring conducted in the haematology department.

Dr Olga Sivakova

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Results of microbiological monitoring conducted in the haematology department in patients with lower respiratory tract infection in 2024.

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Introduction. As a result of the microbiological monitoring conducted in the haematology department, the structure of the leading microflora, the sensitivity spectrum of the isolated microorganisms were determined, the main problems influencing the monitoring results and ways to solve them were identified.

Aims. Reduction of hospital stay and treatment costs for patients with lower respiratory tract infections through targeted antibiotic therapy taking into account microbiological monitoring data.

Serial number	Name of microorganism	Absolute numbers	%
1	Klebsiella pneumoniae	297	30,15
2	Acinetobacter baumanii	148	15,06
4	Proteus mirabilis	58	5,90
5	Pseudomonas aeruginosa	54	5,49
6	Escherichia coli	48	4,88
7	Staphylococcus aureus	40	4,07
8	Opportunistic pathogens	340	34,45

Methods. A retrospective analysis of data from microbiological studies of sputum from patients with lower respiratory tract infections in the haematology department in 2024 was conducted.

Results. In 2024, the haematology department conducted 1902 microbiological studies, including 985 sputum studies (51.74%). The spectrum of microorganisms isolated in the haematology department is presented in the table. More than 20% of the isolated microorganisms belong to the group of opportunistic pathogens, are part of the microflora of the mucous membranes and human skin, which may be a consequence of a violation of the preanalytical stage. Among the clinically significant strains, the leading positions in the structure of microflora are occupied by Klebsiella pneumoniae (30.15%), Acinetobacter baumanii (15.06%), Proteus mirabilis (5.90%).

Discussion. Antimicrobial chemotherapy of patients with lower respiratory tract infections in the haematology department should be targeted and prescribed after familiarization with the results of microbiological studies. It is necessary to train medical personnel in the rules for collecting material for microbiological research in order to minimize errors in the data obtained.

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Optimizing Antibiotic Use: The Role of Clinical Pharmacologists

Dr Ivana Cegec

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Optimizing Antibiotic Use: The Role of Clinical Pharmacologists

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Introduction. Antimicrobial resistance (AMR) is a critical global public health challenge, identified as one of the leading threats to human health. In 2019, bacterial AMR was directly associated with an estimated 1.27 million deaths worldwide and contributed to an additional 4.95 million deaths. The global community also faces a crisis in both the antibiotic development pipeline and equitable access to effective antimicrobials.

Aims. Addressing AMR in clinical practice requires robust surveillance of antimicrobial resistance patterns and the implementation of antimicrobial stewardship programs. At the University Hospital Center Zagreb, clinical pharmacologists are primarily responsible for implementing antibiotic stewardship initiatives.

Methods. To evaluate the effectiveness of these interventions, we conducted a retrospective review of clinical pharmacologists' consultations on infections in hospitalized patients from January 1, 2024, to July 1, 2024.

Results. A total of 241 clinical pharmacologist findings were analyzed which included the six-month period. Of these, 90% reffered to hospital-acquired infections. Of these cases, 49% involved multidrug-resistant (MDR) infections, 12.9% were non-MDR infections, and 38.2% had unknown causative agents. Among all pathogens, gram-negative bacteria were responsible for 20.7% of cases, including Pseudomonas aeruginosa (51.8%), carbapenemase-producing organisms (28.6%), and Acinetobacter species (19.6%). Gram-positive bacteria accounted for 19.9% of cases, with methicillin-resistant Staphylococcus aureus and vancomycin-resistant Enterococcus comprising 20.4%. Mixed flora was identified in 18.3% of cases, while 41.1% of infections involved unidentified or unclassified as gram-positive or negative pathogen. Empiric antibiotic therapy initiated by ward physicians predominantly included meropenem (49.8%) and vancomycin (43.2%), followed by piperacillin/tazobactam in 19.5% of cases. Clinical pharmacologists intervened with de-escalation recommendations in 28.7% of cases. Of these, 30.4% of patients were discharged without antimicrobial therapy, and 26.1% were discharged with ciprofloxacin. The primary cause for de-escalation were laboratory and clinical improvement (91.3%), discharge planning (63.8%), and microbiological findings (23.2%).

Discussion. Our findings indicate frequent empiric overuse of broad-spectrum antibiotics, particularly meropenem and vancomycin, by ward physicians, which further contributes for the development of resistance in our institution. This underscores the need for earlier and more active involvement of clinical pharmacologists in antimicrobial prescribing decisions.

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The feasibility of implementing saliva-based therapeutic drug monitoring in patients with tuberculosis

Mrs Nisa Maria

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

The feasibility of implementing saliva-based therapeutic drug monitoring in patients with tuberculosis
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Introduction. Utilising saliva as a matrix for therapeutic drug monitoring (TDM) offers a patient-friendly and simple sampling method, which increases the feasibility of TDM for patients with tuberculosis (TB), including high-burden, resource-limited countries.
Aims. This systematic review aims to update the potential and feasibility of implementing saliva-based TDM for patients with tuberculosis.
Methods. The PRISMA guidelines were followed to ensure transparency, rigor, and reproducibility in the systematic review process. Articles were searched from three databases including Medline, Embase, and Web of Science. The final search was completed on February 6, 2026. Original research articles that reported the implementation of saliva-based TDM in patients with TB or in healthy volunteers receiving TB drugs were included.

Results. 18 studies were included in this review. Saliva for use in TDM has been investigated for both first-line and second-line TB drugs. Multiple studies reported saliva/plasma ratios for isoniazid (0.14-0.95), rifampicin (0.1-0.31), levofloxacin (0.69-0.92), and linezolid (0.81-1.27). Only one study reported the saliva/plasma ratio for pyrazinamide (0.61), clarithromycin (1.30), and moxifloxacin (0.89). Amikacin concentrations were not detectable in saliva.
Discussion. Variation in saliva/plasma ratios between studies may be attributed to differences in methodology including a lack of information on critical aspects of the collection process such as saliva pH and flow. A standardised approach needs to be developed accounting for critical measurement variables. Further studies are needed to establish saliva-based exposure thresholds for each TB drug to provide guidance for implementation in clinical settings.

P718

Eravacycline versus polymyxin B for carbapenem-resistant Gram-negative pneumonia

Dr Chunsu Liang

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Eravacycline versus polymyxin B for carbapenem-resistant Gram-negative pneumonia

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Introduction. Carbapenem-resistant Gram-negative bacteria (CRO) cause high-morbidity pneumonia in ICUs, with limited treatment options. Comparative data on eravacycline *vs* polymyxin B for CRO pneumonia remain scarce, especially in critically ill patients.

Aims. To compare the clinical outcomes (28-day all-cause mortality, clinical failure rate, ICU-free days) and safety of eravacycline *vs* polymyxin B in ICU patients with CRO pneumonia.

Methods. This single-center retrospective observational study included ICU patients (≥18 years) with CRO pneumonia (HAP/VAP) treated with eravacycline or polymyxin B (≥48h) at PUMCH from May 2018 to December 2024. Exclusions: <18 years, treatment <48h, non-CRO (non-CRAB/CRKP) infections. Propensity score matching (PSM) balanced baseline characteristics (renal disease, APACHE II score, mechanical ventilation duration). Primary outcome: 28-day all-cause mortality. Secondary outcomes: clinical failure rate, 28-day ICU-free days (survivors). Statistics: t-test/Mann-Whitney U test (continuous variables), chi-square/Fisher's exact test (categorical variables), Kaplan-Meier (survival), Cox regression (treatment duration impact).

Results. Initial 165 patients were screened; 112 (eravacycline: 37, polymyxin B:75) were analyzed pre-PSM, and 46 (23 per group) post-PSM. Post-PSM: 28-day all-cause mortality was 8.7% (eravacycline) *vs* 26.1% (polymyxin B; P=0.243); clinical failure rate was 26.1% *vs* 43.5% (P=0.353); 28-day ICU-free days were 14.0±11.05 *vs* 6.94±8.39 days (P=0.036). Safety: polymyxin B had 14.7% adverse events (AE; acute kidney injury:5.3%, neurotoxicity:5.3%); eravacycline had 13.5% AE (hepatotoxicity:5.4%, coagulation dysfunction:5.4%). Treatment duration independently reduced mortality (adjusted HR=0.72, 95% CI 0.54–0.96, P=0.027).

Discussion. Eravacycline showed comparable 28-day mortality and clinical failure rate to polymyxin B but significantly more ICU-free days, likely due to superior pulmonary tissue penetration (6-fold higher epithelial lining fluid concentration *vs* plasma). Its safety profile (lower nephrotoxicity) makes it suitable for patients with renal comorbidities. Limitations: retrospective design, single-center, small PSM sample. Conclusions: Eravacycline is a viable alternative to polymyxin B for ICU patients with CRO pneumonia, especially those at renal injury risk. Larger multicenter RCTs are needed to confirm findings.

P719

Pharmacokinetic differences between marmosets and humans for antitubercular drug regimen dose rationale

Dr Umberto Villani

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Implications of pharmacokinetic differences between marmosets and humans for the dose rationale of antitubercular drug regimens.

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Introduction. A new non-human primate species, the common marmoset (*Callithrix jacchus*), has emerged as a promising preclinical TB model due to its tractability and ability to replicate key pathological features of human disease (Via et al., 2013), however interspecies PK differences have not been fully characterised.
Aims. Here we evaluate the implications of differences between marmosets and humans for the dose rationale of an antitubercular drug regimen with isoniazid(H), rifampicin (R), pyrazinamide (Z) and ethambutol (E).
Methods. Pharmacokinetic data were obtained from 24 marmosets administered intravenous and oral doses HRZE. All experiments were approved by the NIAID Animal Care and Use Committee. Nonlinear mixed-effects modelling (NONMEM v7.5) was used to characterise the disposition characteristics of these drugs along with estimates of interindividual variability. Extrapolation principles were then applied in conjunction with allometric scaling to predict exposure in a virtual patient population (N=100) and assess how it compares to the currently recommended dosing regimen, assuming similar PKPD relationships across species. All simulations were conducted using R/ RStudio (version 1.4.1106). AUC, CL and V were derived as measures of systemic exposure and disposition to compare extrapolation results with clinical pharmacokinetic data.
Results. Comparison of PK parameters between marmosets and humans showed interspecies differences across compounds. Allometric scaling of clearance provided estimates showing large deviations in disposition parameters. Systemic exposures were accordingly higher in marmosets at equivalent mg/kg doses in humans.
Discussion. High interindividual variability and interspecies differences in drug disposition highlight the need for careful dose selection and further refinement of extrapolation strategies if non-human primates are to be used in antitubercular drug research.

Via LE et al (2013) Infect Immun 81(8):2909–2919; Beal S et al (2009) NONMEM's User's Guides. ICON Development Solutions; R Core Team (2016) R Foundation for Statistical Computing, Vienna. Available at: https://www.R-project.org/

P720

Palatability of gummy formulations of calcium acetate in healthy volunteers and patients

Ms Nonoka Aoki

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Palatability of gummy formulations of calcium acetate in healthy volunteers and patients

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Introduction. Phosphate binder therapy is a cornerstone in the management of hyperphosphatemia among patients undergoing hemodialysis. However, non-adherence to such therapy remains a frequent challenge. Gummy formulations are considered a patient-friendly dosage form, because they do not require water for administration and can be easily chewed. A gummy formulation containing calcium acetate, a phosphate binder, may improve medication adherence.

Aims. The aim of this study was to develop a calcium acetate gummy formulation (CA-G) and to evaluate its palatability in both healthy volunteers and patients undergoing hemodialysis.

Methods. Calcium acetate powder and organoleptic masking agents (flavors and sweeteners) were added to a mixture of gelatin, hydrogenated maltose starch syrup, and D-sorbitol solution. The mixture was dispensed into plastic molds (containing 250 mg of calcium acetate per 3.5 g of formulation) using a syringe and then cooled to prepare the CA-G. Four differently flavored CA-Gs (yuzu, Darjeeling tea, lemon, and apple) were prepared. In a gustatory sensation test conducted in healthy volunteers, 24 individuals (8 males and 16 females, aged 20–61 years) evaluated the palatability of the CA-Gs using a 100-mm visual analog scale (VAS). In addition, nine patients undergoing hemodialysis (6 males and 3 females, aged 42–84 years) assessed the palatability of the CA-G using a 5-point scale. Changes in serum phosphorus levels in these patients were also obtained based on their medical records.

Results. The calcium acetate content in the CA-G was 97.2% of the intended amount in the formulation. The VAS scores for the palatability of flavored CA-Gs ranged from 63 to 71 and were significantly higher than that of the CA-G without organoleptic masking agents (VAS score: 42). Most patients (75–100%) rated flavored CA-Gs as having good palatability (≥3 on the 5-point scale). Serum phosphorus levels significantly decreased after the intake of CA-Gs.

Discussion. The flavored CA-Gs developed in this study demonstrated good palatability and were well accepted by patients. These CA-Gs may be considered a promising option to improve medication adherence.

P721

CircSMAD2 Regulates Hepatic Stellate Cells Metabolic and Fibrosis via the miR-145/ZEB2 Axis

Prof Lei Zhang

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

CircSMAD2 Regulates Hepatic Stellate Cells Metabolic and Fibrosis via the miR-145/ZEB2 Axis
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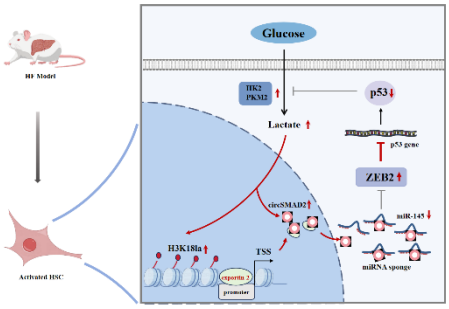

Introduction. Aerobic glycolysis is the metabolic phenotype of activated HSCs, and lactate is an inevitable product of the glycolytic metabolic pathway. Although there has been a large amount of rescarch focusing on circular RNAs (circRNAs) in hepatic fibrosis (HF), few studies have focused specifically in the mechanistic link between lactate signaling and circRNA regulation.
Aims. The aim of this study was to identified differentially expressed circRNAs in lactate-stimulated HSCs and the functions of circRNAs during HF.
Methods. In this study, CircRNA and miRNA expression profiles combined with immunoprecipitation assays, dual-luciferase reporter assays, qRT-PCR, western blot and FISH confirmed the relationship between lactate and circRNA.
Results. Through circRNA sequencing, we identified circSMAD2 as significantly upregulated in activated HSCs, with predominant cytoplasmic localization. Lactate-induced histone H3 lysine 18 lactylation (H3K18la) promotes Exportin-2 transcription and facilitates the nuclear export of circSMAD2. In the cytoplasm, by sponging miR-145, circSMAD2 disrupts the miR-145/ZEB2 axis, activating p53-dependent glycolytic reprogramming in HSCs to exacerbate HF.
Discussion. These findings reveal a novel lactate-responsive epigenetic and post-transcriptional regulatory mechanism whereby circSMAD2 promotes HSCs activation and contributes to liver fibrosis.

P723

Effectiveness of hybrid offline-online exercise on medication reduction in older diabetic adults

Dr Xiangyun Liu

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Effectiveness of hybrid offline-online exercise on medication reduction in older diabetic adults
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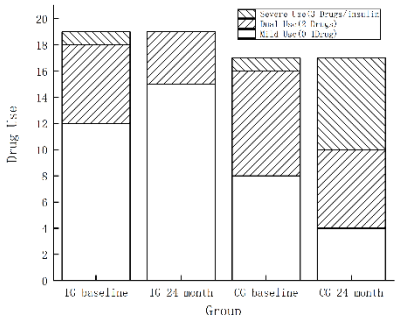

Introduction. Polypharmacy is a major challenge in the management of Type 2 Diabetes Mellitus (T2DM) among older adults. While lifestyle modifications are the cornerstone of treatment, few studies have evaluated whether a long-term, digitally supported hybrid intervention can effectively facilitate medication reduction.
Aims. To evaluate the effectiveness of a hybrid intervention—combining offline and online exercise with digital supervision—specifically on reducing hypoglycemic medication usage in older T2DM patients (aged 60–70).
Methods. Forty T2DM patients in Yangpu, Shanghai, were randomized into intervention (IG) or control (CG) groups. The IG received 6 months of combined aerobic and resistance training followed by 18 months of online guidance, while the CG maintained usual care. Medication usage was evaluated at baseline and 24 months. Thirty-six participants (IG=19, CG=17) completed the study.
Results. No significant differences in medication structure between groups at baseline (P>0.05) . The CG exhibited a trend of medication escalation: cases of triple-drug therapy increased from 1 to 5, and insulin usage rose from 0 to 2 cases after intervention. Conversely, the IG showed a reduction in medication burden: triple-drug therapy decreased from 1 to 0, and dual-drug therapy decreased from 6 to 4 cases. The IG demonstrated a significantly higher probability of reducing medication usage compared to the CG, with a Relative Risk (RR) of 7.82.
Discussion. This hybrid offline-online intervention effectively reversed the trend of escalating medication requirements typical in T2DM progression. The results suggest that sustained, digitally monitored lifestyle management is a potent non-pharmacological strategy for reducing medication dependence and associated risks in the elderly population.

P724

Knowledge, Attitude, and Practices on Antibiotic Resistance Among Indian Population: Online Survey

Dr Hemanth Kumar Boyina

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Knowledge, Attitude, and Practices on Antibiotic Resistance Among Indian Population: Online Survey

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Introduction. Antimicrobial resistance (AMR) is a severe worldwide health issue that compromises the effective management of infectious diseases. It arises when microorganisms develop resistance mechanisms owing to the selective pressure that occurs as a result of the misuse of antimicrobials. Self-medication, taking incomplete courses, and access to non-prescription antibiotics hasten this process. Although awareness is on the rise, irrational use of antibiotics is still prevalent, especially in developing countries.
Aims. To assess knowledge, attitude, and practices (KAP) on the use of antibiotics and antimicrobial resistance knowledge among the general population and to determine discrepancies between knowledge and behavior.
Methods. An online survey was conducted using a questionnaire-based survey in the form of a questionnaire, which was a cross-sectional survey conducted for 30 days, i.e., from March 24 to April 24, 2026. The sample size was 230 participants aged 18 years and above, recruited using convenience sampling in Punjab, Himachal Pradesh, and other urban areas. The questionnaire evaluated the demographic variables and KAP parameters. The data were compared with the descriptive statistics and divided into the scores of knowledge, attitude, and practice. Data was analysed descriptively using Microsoft Excel and GraphPad Prism.
Results. Most of the participants were between 18 and 30 years of age, and gender distribution was equal; most of the participants were of higher educational status. The level of awareness on antibiotics was good (>95%), with the majority of the respondents getting their role in bacterial infections right. Nevertheless, there were still misconceptions, especially when it came to their application in viral diseases. The attitudes were generally correct, and the majority of the participants acknowledged that AMR is a significant public health concern and advocated the use of antibiotics as prescriptions. Conversely, the best practice was poor. A significant percentage of them mentioned self-medication, early withdrawal of treatment, missing a dose, and taking the remaining antibiotics. Prescription-free, easy access to antibiotics was generally reported. The net effect is that there is sufficient knowledge and positive attitudes, but irregular and, in many cases, inappropriate practices.
Discussion. There is a definite gap in knowledge and behavior, as noted in the study. Although the level of awareness and the attitude towards the use of antibiotics are, in most cases, positive, they are not always reflected in logical behavior. Such a disconnection is probably affected by the availability of antibiotics, regulatory constraints, and habituality. The results are consistent with previous research that suggests awareness is not enough to effect behavior change. The mitigation of AMR needs multifaceted approaches, such as educating society specifically, tighter control over antibiotic prescriptions, and enhanced antimicrobial stewardship. Patient counselling and monitoring: H.C.P.s, especially pharmacists, play a significant role in encouraging proper use of antibiotics by counselling patients.

P726

Study on awareness and medication safety assessment regarding High Alert Medications (HAM)

Dr Shouvik Choudhury

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Study on awareness and medication safety assessment regarding High Alert Medications (HAM)
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Introduction: High alert medications (HAM) are crucial for use in critical care settings (Aradhya et al, 2023). Though not commonest cause of medication error (ME),but HAM carry highest risk of causing injury when misused according to Institute for Safe Medication Practices (ISMP) (Chakraborty et al,2022). 27-72% ME involves HAM globally, consisting 11-33% of all medicines analyzed (Menzes et al,2024). In India still awareness of HAM is not widespread.
Aim: To evaluate the awareness regarding HAM among HCPs working in critical care settings and to assess the incidents of HAM related ME there during study period.
Method: Cross sectional, online pre-validated questionnaire based study was conducted among critical care HCPs in a tertiary care hospital in Eastern India containing multiple open and closed ended questions. HAM (ISMP 2024 list of HAM in acute care setting used) related MEs were assessed among ICU patients by interviewing patients, interacting with HCP and analyzing medical records. Error types, rate, cause, outcome were analyzed among the MEs.
Result: 108 responses (88 nurses, 20 doctors) were recorded with mostly from 25-39 years age group and female preponderance (87%). 96.3% could differentiate ADR from ME and 61.1% knew about HAM (though 42.2% only identify HAM). Most respondents believe and also practice drug history taking (85.2%), reconciliation (63%), referring to literature (61.1%), double checking of dose (85.2%), using fresh syringe (74.1%). Though worryingly, 16.8% do not report ME, 17.2% have habit of leaving loaded syringes, 27.3% leave needle improperly. Among patients with use of 10.75± 5.22 drugs per day, 32 ME occurred during study period with error rate of 124.1/1000 patient days. Incomplete prescription and wrong frequency of administration were common causes.
Discussion: Majority of respondents have good awareness regarding HAM and its consequences. Few improvements are required in practice of safe medicine. Multiple contributing factors lead to HAM related ME in critical care and need to be rectified. Awareness regarding HAM and of dealing with them appropriately is required for safe practice.

Chakraborty et al (2022) Curr Drug Saf.;17(4):375-381./Aradhya PJ et al (2023) Indian J Crit Care Med;27(12):917-922./Menses et al (2024) Exploratory Research in Clinical and Social Pharmacy. 17. 100551.

P727

Community Screening in Karachi: QRISK3, PCE, and FRS Compared with CAC

Dr Amber Palla

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Community-Based Comparison of QRISK3, PCE, and FRS with Coronary Calcium

Amber Hanif Palla, Asad Saulat Fatimi, Aimun Shakir, Syeda Sadia Fatima, Unab I. Khan, Salim Virani

Background. Cardiovascular disease (CVD) is the leading cause of premature death worldwide, with South Asian populations disproportionately affected. In Pakistan, there is limited evidence on the accuracy of commonly used risk calculators. Tools such as QRISK3, pooled cohort equations (PCE), and Framingham Risk Score (FRS) are widely applied globally but have not been validated in local populations. Coronary artery calcium (CAC) scoring provides a non-invasive gold standard for assessing subclinical atherosclerosis. This study compared these calculators with CAC scores in a community-based sample from Karachi.

Methods. A cross-sectional observational study was conducted from January to December 2023 (ERC# 2023-7639-23957). Adults aged 31–74 years without known CVD were recruited through community outreach. Demographic, anthropometric, and biochemical parameters were recorded, and metabolic syndrome (MetS) status was determined. Ten-year CVD risk estimates were calculated using QRISK3, PCE, and FRS. CAC scores were obtained for all participants. Statistical analyses included correlation coefficients, chi-square tests, ANOVA, and non-parametric comparisons. Participants are being prospectively followed for cardiovascular events, though only baseline data are presented here.

Results. A total of 110 participants were enrolled (71 males, 39 females), with mean age 50.7±9.6 years and BMI 29.4±5.2 kg/m^2; obesity prevalence was 64% and MetS 75.5%. CAC scores were 0 in 41%, 1–100 in 36%, and >100 in 23%. CAC correlated moderately with QRISK3 ($r=0.462$, $p<0.01$), PCE ($r=0.408$, $p<0.01$), and FRS ($r=0.358$, $p<0.01$). QRISK3 classified 23.6% of participants as high risk, compared with 21.8% by FRS and only 10.1% by PCE. Among those with CAC >100, QRISK3 correctly identified 65% as high risk, while PCE identified fewer than half. Diabetic and MetS-positive participants had significantly higher BMI, cholesterol, and CAC burden ($p<0.05$).

Conclusion. Among Karachi community participants, QRISK3 demonstrated stronger alignment with CAC scores and identified more high-risk individuals than FRS or PCE. Coupled with MetS assessment, QRISK3 may enhance early detection of high-risk individuals. Ongoing longitudinal follow-up will validate these findings against observed cardiovascular events.

P728

To evaluate QOL of montelukast-levocetirizine versus montelukast-bilastine in allergic rhinitis patients

Prof Rakesh Dixit

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

To evaluate QOL of montelukast-levocetirizine versus montelukast-bilastine in allergic rhinitis patients

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Introduction. Allergic rhinitis (AR) significantly impairs the quality of life (QoL) of affected patients due to symptoms like nasal congestion and rhinorrhoea, which adversely affect sleep and daily functioning. Although combination therapies of montelukast with antihistamines are widely used, direct comparative data regarding their impact on QoL remain limited.
Aims. This study aimed to evaluate and compare the impact of montelukast-levocetirizine versus montelukast-bilastine combination therapies on the quality of life in patients diagnosed with allergic rhinitis.
Methods. A prospective observational study included 60 patients with allergic rhinitis, evenly divided into two groups receiving either montelukast-levocetirizine or montelukast-bilastine once daily for 28 days. Quality of life was assessed at baseline, 14th and 28 days using the WHO-Five Well-Being Index (WHO-5).
Results. Both treatment groups demonstrated significant improvements in WHO-5 scores. The montelukast-levocetirizine group and the montelukast-bilastine group showed similar improvements, and the difference between them was not statistically significant, indicating that both regimens were comparable in enhancing patient quality of life.
Discussion. The results suggest that both montelukast combined with levocetirizine and montelukast combined with bilastine significantly improve quality of life in patients with allergic rhinitis, with no significant difference between them. Given bilastine non-sedative profile, it may provide advantages for certain patients, but overall QoL improvement is similar. These findings support using either combination based on patient preference, tolerability, and clinical context

P729

Adverse drug reactions associated with antimicrobial therapy in ICU patients

Prof Rakesh Dixit

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Correlation of antimicrobial prescribing with microbiology-confirmed organisms in ICU patients

Shubham Biswas[1], Rakesh Kumar Dixit[1]. Debendra Suman, Dept of Pharmacol, King George's Med Univ[1], Lucknow, India

Introduction. Antimicrobial therapy in Intensive Care Units (ICUs) is frequently initiated empirically due to the severity of infections and diagnostic delays. However, inappropriate empirical prescribing can foster antimicrobial resistance. Correlating antimicrobial use with microbiology-confirmed organisms helps assess appropriateness of therapy and guides stewardship interventions.
Aim. To correlate antimicrobial drugs prescribed in ICU patients with organisms confirmed through microbiology reports.
Methods. A prospective observational study was conducted over one year in ICUs of King George's Medical University, Lucknow. Seventy-five patients receiving antimicrobials were enrolled, of which 32 had culture-positive infections. Data on antimicrobials prescribed were correlated with organisms isolated from microbiology reports.
Results. Among 32 culture-positive patients, Gram-negative pathogens predominated. Klebsiella pneumoniae (31.3%) and Acinetobacter baumannii (25%) were the most frequent isolates, followed by Pseudomonas aeruginosa (18.8%) and Escherichia coli (12.5%). Gram-positive isolates included Staphylococcus aureus (6.3%) and Enterococcus spp. (6.3%). Empirical prescribing was dominated by beta-lactams and carbapenems, with piperacillin-tazobactam and meropenem most frequently used. Correlation analysis revealed partial alignment between prescribed drugs and culture sensitivity results. In many cases, broad-spectrum therapy continued despite availability of narrower options, and de-escalation rates remained suboptimal.
Discussion. The findings demonstrate a predominance of multidrug-resistant Gram-negative organisms in ICU infections. Although empirical use of broad-spectrum antimicrobials ensured initial coverage, adherence to culture-guided de-escalation was limited. Strengthening antimicrobial stewardship, promoting routine microbiology testing, and implementing antibiogram-driven protocols are essential to enhance targeted therapy, minimize resistance, and optimize patient outcomes.

P730

Efficacy and safety of apremilast versus methotrexate in oral lichen planus

Dr Mowdharani PS

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Efficacy and safety of apremilast versus methotrexate in oral lichen planus

Mowdharani PS[1], Monalisa Jena[1], Biswanath Behera[2], Ajaya K. Sahoo[1], Madhusmita Sethy[3]. Dept of Pharmacol[1], All India Inst of Med Sciences, Bhubaneswar, OD, India. Dept of Dermat[2], All India Inst of Med Sciences, Bhubaneswar, OD, India. Dept of Path[3], All India Inst of Med Sciences, Bhubaneswar, OD, India.

Introduction. Oral lichen planus (OLP) is a chronic immune-mediated inflammatory disorder of the oral mucosa that significantly impairs quality of life. Although systemic corticosteroids remain the mainstay of treatment, their long-term use is limited by adverse effects and frequent relapses, necessitating effective steroid-sparing therapies. Both methotrexate and apremilast have demonstrated benefit in OLP; however, head-to-head comparative data are scarce. This study compares their efficacy and safety when used as add-on therapy to oral prednisolone.

Aims. To evaluate the efficacy and safety of add-on apremilast versus add-on methotrexate in patients with oral lichen planus receiving oral prednisolone.

Methods. In this randomized, open-label, parallel-group add-on trial (NCT06260904), eligible OLP patients were allocated to prednisolone plus apremilast or prednisolone plus methotrexate (n = 34 per arm). Efficacy outcomes included pain visual analogue scale (VAS), Physician Global Assessment (PGA), Oral Disease Severity Score (ODSS), Oral Health-Related Quality of Life (OHRQL), and serum interleukin-6 (IL-6). Clinical assessments were performed at baseline, 8 weeks, and 12 weeks; IL-6 levels were measured at baseline and week 12. Treatment-emergent adverse events were recorded.

Results. Baseline characteristics were comparable between groups, except for a higher proportion of females in the apremilast arm. Pain VAS scores decreased significantly over time in both groups ($p < 0.001$), with a significant intergroup difference at 12 weeks favoring apremilast ($p = 0.012$). ODSS and OHRQL scores showed significant improvement over time ($p < 0.001$), with ODSS demonstrating significant between-group differences at 8 and 12 weeks in favor of apremilast. The overall PGA responder rate was 35.6%. Serum IL-6 levels declined significantly in both groups without a significant intergroup difference. Adverse event profiles were comparable.

Discussion. Both apremilast and methotrexate are effective and well-tolerated steroid add-on therapies for OLP. Apremilast demonstrated superior clinical improvement in selected efficacy domains, suggesting a potential advantage as a steroid-sparing option in routine clinical practice.

P731

To assess the safety of montelukast-levocetirizine versus montelukast-bilastine in allergic rhinitis patients

Prof Rakesh Dixit

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

To assess the safety of montelukast-levocetirizine versus montelukast-bilastine in allergic rhinitis patients

Debendra Suman[1], Rakesh K Dixit[1]. Subham Biswas Dept of Pharmacol, King George's Med Univ[1], Lucknow, U.P, India

Introduction. Allergic rhinitis (AR) is a prevalent chronic inflammatory condition causing significant morbidity and impacting quality of life. Combination therapies involving leukotriene receptor antagonists and second-generation antihistamines, such as montelukast with levocetirizine or bilastine, are widely used. While both combinations have demonstrated efficacy, comparative safety data remain limited.
Aims. This study aimed to assess and compare the safety profiles of montelukast-levocetirizine and montelukast-bilastine combinations in patients with allergic rhinitis.
Methods. A prospective, observational study was conducted involving 60 patients diagnosed with AR, allocated into two groups: Group A receiving montelukast (10 mg) plus levocetirizine (5 mg) and Group B receiving montelukast (10 mg) plus bilastine (20 mg). Adverse drug reactions (ADRs) were monitored over 28 days. Severity was graded using Hartwig's scale and causality assessed by WHO-UMC criteria. Statistical comparison of ADR incidence between groups was performed.
Results. ADRs were reported in 8 patients in Group A and 6 patients in Group B, with no statistically significant difference. Common ADRs included drowsiness, dry mouth, sleep disturbances, and fatigue, predominantly mild to moderate in severity. Causality assessment classified most ADRs as probable. No serious adverse events were recorded, and both combinations were generally well tolerated.
Discussion. The findings indicate that montelukast-levocetirizine and montelukast-bilastine combinations have comparable safety profiles in allergic rhinitis management. The slightly lower ADR incidence with montelukast-bilastine may relate to bilastine non-sedating pharmacological properties; however, this was not statistically significant. Both combinations are safe options, allowing clinicians flexibility in therapeutic choice based on patient tolerance and preference.

P732

To Find Out Prescribing Among Patients with Type 2 Diabetes Mellitus and Hypertension

Dr Seema Mishra

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

To Find Out Prescribing Among Patients with Type 2 Diabetes Mellitus and Hypertension

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Introduction. The co-occurrence of Type 2 Diabetes Mellitus (T2DM) and hypertension is a growing public health concern in India. Effective management requires careful consideration of prescribing indicators, pharmacoeconomic implications, and therapeutic adherence. A thorough understanding of these factors can guide policymakers, healthcare professionals, and researchers toward more efficient and cost-effective treatment strategies
Aim. To find out prescribing patterns among type 2 diabetes mellitus patients suffering from hypertension.
Methods. A prospective observational study was conducted in the medical OPD of Rama Medical College, Kanpur, over one year. 156 patients receiving antidiabetic treatment with antihypertensive treatment were monitored. All the prescriptions were critically assessed for rational therapeutics.
Results. Drug interactions-prone medications were found in 36.3% of prescriptions. Out of these dangerous and irrational prescriptions, there were 4.6%. ADRs were observed in 18.7% of patients. The most frequent ADRs and cutaneous reactions (9%). causality assessment.
Discussion. The findings confirm that patients with hypertension and diabetes must be treated cautiously. The clinicians should be advised to be aware of the drug interactions leading to worsening of clinical conditions. For this, more and more therapeutic audits must be advised.

P733

Evaluation of types and frequency of antimicrobial drugs prescribed in the ICU

Dr Seema Mishra

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Evaluation of types and frequency of antimicrobial drugs prescribed in the ICU

Shubham Biswas[1], Rakesh Kumar Dixit[1]. Debendra Suman, +*Seema Mishra, Dept of Pharmacol, King George's Med Univ[1], Lucknow, India and *Rama Medical College Kanpur

Introduction. Because of the high frequency of potentially fatal infections, antimicrobial medications are frequently used in intensive care units (ICUs). Antimicrobial resistance (AMR) is a result of the overuse or irrational use of broad-spectrum antibiotics. Thus, it is crucial to keep an eye on prescribing trends in intensive care units to guarantee responsible medication use and direct antimicrobial stewardship initiatives.
Aim. to assess the kinds and quantity of antimicrobial medications administered to intensive care unit patients at a Northern Indian tertiary care facility. Techniques. Over the course of a year, a prospective observational study was carried out in the intensive care units of King George's Medical University in Lucknow. Included were 75 patients undergoing antimicrobial treatment. Information was gathered about demographic characteristics, the kinds of antibiotics that were prescribed, and how often they were used. Prescriptions were grouped by individual medication and antimicrobial class.
Methods. A prospective observational study was conducted in the ICUs of King George's Medical University, Lucknow, over one year. A total of 75 patients receiving antimicrobial therapy were included. Data were collected on demographic parameters, types of antimicrobials prescribed, and their frequency of use. Prescriptions were categorized according to antimicrobial class and individual drugs.
Results. The most commonly prescribed class of antibiotics was beta-lactams (41.3%), followed by glycopeptides (14.7%) and carbapenems (22.7%). The most often used medications were meropenem (18.7%) and piperacillin-tazobactam (20%), which reflected their empirical preference in cases of severe infections. Nearly two-thirds of patients received two or more antimicrobials at the same time, indicating the prevalence of combination therapy. There was little culture-guided de-escalation; empirical therapy was more common.
Discussion. The study shows that broad-spectrum beta-lactams and carbapenems are frequently prescribed in intensive care units. Even though these drugs are essential for empirical treatment, their widespread use raises questions regarding the development of multidrug resistance. There is room for improvement in antimicrobial stewardship when de-escalation is limited. The results underscore the importance of local antibiogram-driven protocols and culture-based prescribing to optimize antibiotic use in intensive care units.

P734

Adverse Drug Reactions Associated with Antihypertensive Drugs and Their Reporting

Dr Seema Mishra

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Adverse Drug Reactions Associated with Antihypertensive Drugs and Their Reporting Through Pharmacovigilance in India

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Introduction. Hypertension is a global health concern, and its management primarily involves the use of antihypertensive drugs. These medications, although effective in controlling blood pressure, are not without adverse drug reactions (ADRs). In India, where hypertension prevalence is rising, pharmacovigilance plays a critical role in identifying, managing, and reporting these ADRs to ensure patient safety.
Aim. To record and report adverse drug reactions associated with antihypertensive drugs
Methods. A prospective observational study was conducted in Rama Medical College, Kanpur, over one year. 205 patients receiving hypertensive therapy were monitored. ADRs were identified clinically, documented using standard case report forms, and assessed for severity (Hartwig Scale) and causality (WHO-UMC).
Results. ADRs were observed in 11.4% of patients. The most frequent ADRs were gastrointestinal disturbances (6.7%), and cutaneous reactions (4%). Thiazides were the leading class associated with ADRs (40%), followed by ACE inhibitors (26.7%) and Beta blockers (20%). Severe ADRs included acute kidney injury with vancomycin and meropenem. Most ADRs were moderate in severity and categorized as “probable” by causality assessment.
Discussion. The findings confirm that antihypertensive treatment needs to be monitored closely. This can enhance drug safety, promote rational use, and minimize risks in hypertensive patients.

P735

Compare efficacy of montelukast-levocetirizine versus montelukast-bilastine in allergic rhinitis patients

Dr Seema Mishra

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Compare efficacy of montelukast-levocetirizine versus montelukast-bilastine in allergic rhinitis patients

Debendra Suman[1], Rakesh K Dixit[1]. Subham Biswas, Seema Mishra*, Dept of Pharmacology l, King George's Med Univ[1], Lucknow, U.P, India and *Rama Medical College Kanpur

Introduction. Allergic rhinitis (AR) is a common IgE-mediated inflammatory condition of the nasal mucosa, leading to symptoms such as sneezing, congestion, rhinorrhoea, and itching, which significantly impair quality of life. Combination therapy with leukotriene receptor antagonists and second-generation antihistamines offers broader symptom control by targeting both histamine and leukotriene-mediated pathways. Montelukast-levocetirizine is widely prescribed, while montelukast-bilastine is a newer, non-sedating alternative. However, head-to-head evidence comparing their efficacy remains limited.

Aims. To compare the efficacy of montelukast-levocetirizine and montelukast-bilastine combinations in patients with allergic rhinitis.

Methods. This prospective, observational study enrolled patients diagnosed with allergic rhinitis at a tertiary care centre. Participants were allocated to either montelukast-levocetirizine (Group A) or montelukast-bilastine (Group B) for four weeks. Efficacy was measured using change in Total Nasal Symptom Score (TNSS) from baseline to follow-up. Data were analysed using appropriate statistical tests, with $p < 0.05$ considered significant.

Results. Both groups showed significant reductions in TNSS from baseline, indicating improvement in nasal congestion, rhinorrhoea, sneezing, and itching. The mean TNSS reduction was slightly greater in the montelukast-bilastine group, though the difference was not statistically significant ($p > 0.05$). Both combinations demonstrated rapid symptom control within the first week, with progressive improvement throughout the study period.

Discussion. Montelukast-levocetirizine and montelukast-bilastine combinations were found to be equally effective in alleviating AR symptoms, with no significant difference in TNSS improvement. Montelukast-bilastine may offer a tolerability advantage due to its non-sedating profile. These findings suggest that either combination can be effectively used in routine AR management, with the choice guided by patient preference and tolerability

P736

Medication Adherence and Therapeutic Outcomes of Disulfiram in Alcohol Use Disorder

Dr Seema Mishra

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Medication Adherence and Therapeutic Outcomes of Disulfiram in Alcohol Use Disorder: A Prospective, Observational Study

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Introduction. Alcohol Use Disorder (AUD) is a chronic relapsing condition, and while disulfiram remains an effective deterrent therapy, its success is largely dependent on adherence. Evidence suggests that better adherence is directly linked to improved treatment outcomes. This article, derived from a larger thesis, focuses on two parameters—adherence assessed by the Medication Adherence Rating Scale (MARS) and therapeutic outcomes measured using the Alcohol Use Disorders Identification Test (AUDIT)—to evaluate the clinical effectiveness of disulfiram in AUD.

Aims. The study aimed to evaluate adherence and therapeutic outcomes of disulfiram in patients with alcohol use disorder (AUD) who are receiving disulfiram therapy

Methods. The present prospective observational study was carried out over a period of one year in the Psychiatry OPD at King George's Medical University, Lucknow. Ninety-one patients aged 18–60 years, diagnosed with Alcohol Use Disorder (AUD) as per DSM-5 criteria and prescribed disulfiram 250 mg daily, were enrolled after informed consent. Adherence was assessed using the Medication Adherence Rating Scale (MARS) and therapeutic outcomes were evaluated using the Alcohol Use Disorders Identification Test (AUDIT) at baseline, 4 weeks, and 8 weeks. Statistical analysis included the Wilcoxon signed-rank test and Pearson correlation, with $p<0.05$ considered significant.

Results. At 4 weeks, the mean MARS score was 3.57 ± 0.85, which increased significantly to 5.55 ± 1.18 at 8 weeks ($p<0.001$). Mean AUDIT scores showed a progressive decline from 28.18 ± 4.49 at baseline to 25.19 ± 4.52 at 4 weeks and 22.80 ± 4.70 at 8 weeks, with all reductions significant ($p<0.001$). Correlation analysis revealed no significant association between adherence and AUDIT scores at 8 weeks ($r = –0.083$, $p = 0.436$).

Discussion. Disulfiram therapy significantly improved medication adherence and reduced alcohol use severity in patients with Alcohol Use Disorder. However, adherence and therapeutic outcomes did not show a direct correlation at eight weeks, indicating that additional psychosocial support may be essential to sustain recovery.

P737

Increasing tramadol utilization without regulatory control among non-cancer out patients

Mr SeHoon Oh

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Increasing tramadol utilization without regulatory control among non-cancer out patients

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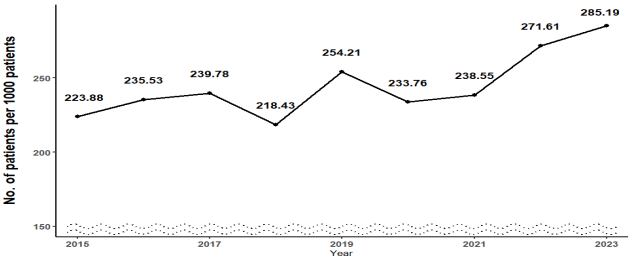

Introduction. Tramadol is prescribed for moderate pain management; however, concerns regarding its long-term safety and appropriateness remain. Marked variations in prescribing patterns exist across countries yet analyses of long-term use in Korea are limited.

Aims. This study aimed to evaluate trends in tramadol prescribing in Korea (2015-2023), examine associations with comorbid conditions, and compare national patterns with those observed in France and Germany.

Methods. Using claims data from the Korean Health Insurance Review and Assessment Service (HIRA), we calculated tramadol prescription rates per 1,000 population from 2015 to 2023. Logistic regression analyses were performed to assess associations between long-term use and selected comorbidities.

Results. In Korea, tramadol prescribing showed a continuous upward trend, exceeding 200 prescriptions per 1,000 population and reaching the highest level in 2023. In contrast, previous studies (Hedenmalm et al, 2019) indicate that rates in France peaked around 50–60 per 1,000, while Germany reported fewer than 10 per 1,000, both showing a decline after 2010. Logistic regression suggested correlations with osteoporosis (OR (Odds Ratio) = 1.437, CI = 1.377–1.500), spondylitis (OR = 1.225, CI = 1.136–1.322), and polyarthropathies (OR = 1.153, CI = 1.096–1.214), indicating possible links with these chronic musculoskeletal conditions.

Discussion. Tramadol prescribing in Korea has risen continuously, surpassing 200 prescriptions per 1,000 population in 2023—over ten times higher than levels in Germany and several-fold greater than France. This stark discrepancy highlights Korea as an outlier in global prescribing trends, while the observed links with chronic musculoskeletal conditions underscore the urgent need for stricter clinical monitoring and policy interventions.

Hedenmalm K, Slattery J, Skibicka-Stepien I, et al (2019) Eur J Clin Pharmacol 75:707-716

P738

Bibliometric analysis of knowledge brokers in healthcare: a role for pharmacists?

Ms Annie ML Ea

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Bibliometric analysis of knowledge brokers in healthcare: a role for pharmacists?
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Introduction. There is an emerging interest in using knowledge brokers to implement clinical practice guidelines. Knowledge brokers are intermediaries who help move knowledge from those who create it (e.g. researchers) to those who use it (e.g. healthcare professionals).
Aims. The objective was to explore uptake of 'knowledge brokers' by characterising the trends and patterns of use of the term 'knowledge broker' in healthcare.
Methods. Web of Science, Scopus, MEDLINE, Embase and CINAHL were searched for publications with the term 'knowledge broker' in the title or abstract. Publications which involved a healthcare setting or service, involved healthcare professionals or discussed a health topic were included. Bibliometric analysis was conducted using performance analysis and co-word analysis with network visualisation. Descriptive statistics were used to describe temporal and geographic distribution of publications, total publications by author and publication types.
Results. Overall, 299 publications were included. The term 'knowledge broker' has existed in healthcare since 1994. Almost three-quarters (n=219) of publications were published in the last decade. The term originated in the United States and was used in 6 continents by 2021. In total, 108 publications (36%) had a first author with a Canadian affiliation. Only 10 (3%) publications were randomised controlled trials. Keyword analysis revealed emergence of the term in practice settings such as public health, residential aged care, paediatric care and primary care. Keywords in publications included 'knowledge translation' (96 occurrences), 'evidence' (77 occurrences), 'practice' (44 occurrences), 'research' (32 occurrences) and 'implementation' (24 occurrences).
Discussion. Emergence of the term 'knowledge broker' across a range of practice settings is consistent with awareness of the need for evidence implementation strategies. Innovative workforce models may provide an opportunity for pharmacists to act as knowledge brokers to improve uptake of clinical practice guidelines. There is a need for randomised controlled trial evidence on their effectiveness as an implementation strategy and clear descriptions of knowledge broker-led activities most associated with success.

P741

Molecular Docking and Anti-Hyperglycemic Effect of a New Series of Schiff Base Imine Molecules

Dr Arlene M Taylor

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

AI-assisted weak-spot detection and protocol governance in pharmacology

Arlene M Taylor, PRAISES, Australia.

Introduction. Pharmacology guidance evolves rapidly, yet comprehensive guideline updates remain slow and unwieldy. Evidence from population health programs shows that concise, standardised protocols with audit and feedback deliver faster outcome improvements than static guideline documents. Advances in analytics and large language models (LLMs) now enable continuous detection of practice "weak spots" and generation of targeted micro-updates without rewriting entire guidelines.

Aims. To design and evaluate an AI-assisted workflow that: (i) identifies pharmacology practice gaps across therapeutic domains; (ii) generates concise, citation-linked protocol micro-updates under safety guardrails; and (iii) operates within a pragmatic governance model for living guidance.

Methods. Multi-domain feasibility pilots used de-identified EHR dashboards, pharmacovigilance signals, utilisation trends, and high-grade evidence sources (CPIC/DPWG, WHO/ICH). Analytics combined gap detection (eg. uncontrolled readings, PGx-actionable prescribing, monitoring lapses) with an LLM + rules engine producing ≤120-word edits with mandatory citations. Guardrails included blocklists, dose-calculation checks, and contraindication constraints. Governance involved (simulated) quarterly expert panel review using predefined criteria (clarity, evidence strength, safety, implementability, and alignment with purpose). Result generative pilot simulations were based on published, real-world data, maximising outcome applicability.

Results. Pilot simulation identified reproducible weak-spots; low DPYD testing before fluoropyrimidines, persistent CYP2C19–clopidogrel mismatches, and suboptimal opioid tapering. The engine produced concise, citation-linked protocol edits with structured monitoring checklists. Expert panels (AI simulated) rated >80% of proposals as clear and >90% as evidence-aligned; median signal-to-decision cycle was 21 days (simulated). Operational risks (data quality, over-triggering) were mitigated by thresholds, PROGRESS-Plus equity flags, and safety guardrails.

Discussion. An AI-augmented weak-spot workflow with transparent governance can reconcile simplicity with precision. By targeting only lagging areas, health systems can maintain concise, standardised protocols that continuously incorporate high-value pharmacology and pharmacogenomics actions. A stepped-wedge evaluation is planned to assess effects on prescribing safety and timeliness of optimal therapy.

P742

National action plans on medication safety in Sri Lanka: comparison and Implementation

Prof Priyadarshani Galappatthy

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

National action plans on medication safety in Sri Lanka: Comparison and implementation

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Introduction. Sri Lanka launched a five- year national action plan on medication safety in 2021, developed on the World Health Organization (WHO) third Global Patient Safety Challenge: *Medication Without Harm* framework. An updated action plan was developed in 2025.

Domains	**Activities in each plan**		**Sub-activities in each plan**		**KPIs in each plan**		**Implementation score by 2025 (%)**
	2021	**2026**	**2021**	**2026**	**2021**	**2026**	**2021 plan**
Patients and the public	4	4	14	21	13	19	9/30 (30)
Medicines as products	7	9	20	37	18	49	28/40 (70)
Healthcare professionals	16	11	41	28	34	32	39/82 (47)
Systems and practices	16	17	46	48	26	49	38/90 (42)
Total	43	41	121	134	81	149	114/242 (47)

Aims. To compare the 2021 and 2025 action plans and to assess the progress of implementation of 2021 action plan

Methods. The same process of multi-stakeholder consultation adopted for 2021 plan was carried out over 4 consultative meetings coordinated by the Patient Safety and Accreditation Bureau (PSAB), the former Directorate, Healthcare Quality and Safety, Ministry of Health and supported by WHO. Both plans were developed focussing on the 3 key action areas and on the four domains of the WHO Challenge and considering country priorities. The implementation of each sub activity was scored 0-2 on the degree of progress. (0-Not started, 1-partial implementation, 2 -full implementation)

Results. The number of activities, sub activities, key performance indicators (KPIs) and scores achieved on each domain is given in the Table. Many activities are at different stages of implementation. New activities included focussed on addressing recent safety concerns such as medicines shortages and substandard and falsified medicines.

Discussion. The 2021 medication safety national action plan achieved near 50% implementation in 5 years. The 2026 -2030 action plan has included emerging and current safety concerns identified in Sri Lanka.

P743

Prevalence of analgesic use for relieving acute pain in the oral cavity

Ms Lara Vranić

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Prevalence of analgesic use for relieving acute pain in the oral cavity

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Introduction. Acute dental pain, often impairing daily life, is frequently self-managed with analgesics before emergency visits, influencing pain at presentation and prescribing.
Aim. To investigate the prevalence, patterns, and safety of analgesic use among patients presenting with acute dental pain in an emergency setting.
Methods. A cross-sectional survey was conducted between April and July 2025 at the Emergency Dental Service, Health Center Zagreb – Center. A total of 527 patients (median age 36 years) completed a structured questionnaire addressing analgesic use, dosage, sources, consultation practices, side effects, and awareness of non-pharmacological methods. Clinical diagnoses and pain intensity were recorded by attending dentists.
Results. Self-medication was highly prevalent, with 78.6% of patients reporting analgesic use prior to their visit. NSAIDs, particularly ibuprofen, were the predominant choice (83.4% of NSAID users). Nearly one-fifth (18.3%) of participants exceeded recommended dosages, and 10.2% reported adverse effects, most frequently gastrointestinal discomfort. Overdose was significantly associated with reliance on home medicine reserves, failure to read instructions, shorter perceived duration of drug effect, and dissatisfaction with pain relief. Older age also increased the likelihood of exceeding safe doses. Adverse effects were more common among patients with higher pain intensity and those who never consulted healthcare professionals.
Discussion. Self-medication with analgesics for acute dental pain is widespread, with NSAIDs overwhelmingly favored. However, unsafe practices including overdose and insufficient awareness of risks pose significant concerns. Enhanced patient education, pharmacist and physician involvement, and promotion of safe non-pharmacological strategies are needed to optimize pain management and reduce risks in dental emergencies.

P745

Different physical activities on medication reduction among diabetic patients with exercise habits

Ms Liuqian Wang

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Different physical activities on medication reduction among diabetic patients with exercise habits

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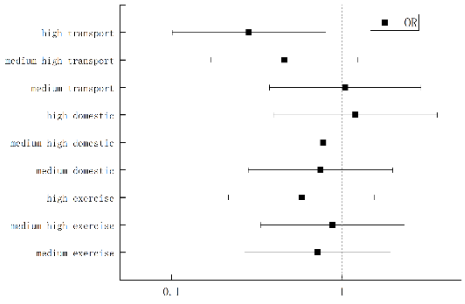

Introduction. Regular exercise is a cornerstone of type 2 diabetes (T2DM) management. However, for elderly patients who already have a long-term exercise routines, the specific impact of different physical activity (PA) on medication reduction remains unstudied.

Aims. To investigate the association between four specific Physical activities (work, transportation, domestic and exercise) and medication reduction among elderly patients with type-2 diabetes.

Methods. Participants were recruited from four districts in Shanghai. Inclusion criteria required a clinical diagnosis of T2DM and a documented history of regular exercise for over two years. The international Physical Activity Questionnaire (IPAQ) was used to assess different types of physical activity (measured in met*min/week). Logistic regression analyzed the correlation between specific PA types and medication outcomes.

Results. A total of 132 patients were successfully recruited (sex ratio 1:1.28, mean age 63.360±3.410 years). As the majority of the elderly population was retired, work activity was recorded as zero for most participants and thus considered of marginal relevance in the final analysis. After adjusting potential confounders including age, gender, and BMI, multivariable logistic regression analysis shows no significantly associations between medication reduction and domestic, work, or exercise PA. Notably, high transportation activity (>2,079 met*min/week) was significantly associated with a 72% reduction in medication usage (OR=0.284, 95% CI [0.101, 0.804] , *P=0.009).*

Discussion. For active elderly diabetic patients already meeting exercise guidelines, simply increasing exercise intensity may limit benefits. Instead, shifting activity composition towards active transportation activity(e.g., cycling, walking) utilizes fragmented time effectively and is strongly linked to reduced medication reliance. Clinicians should encourage ‘Green Transportation’ as a specific life style intervention.

P746

Yoga Intervention and Immune Response in Healthcare Professionals: A Pilot Study

A/Prof Shazia Hasan

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Yoga intervention and immune response in healthcare professionals: a pilot study

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Background. The COVID-19 pandemic posed significant mental and physical challenges for healthcare professionals (HCPs), leading to increased stress and potential immune dysregulation. Yoga practice, has been suggested to enhance immunity and alleviate stress. This pilot study aimed to assess the impact of yoga intervention on immune markers, stress levels, and quality of life among HCPs actively working during the pandemic.

Methodology. A single-center, open label randomized controlled pilot study was conducted at tertiary care centre, with 36 participants. Physicians were randomly assigned to either a yoga intervention group (n=18) or a control group (n=18). The intervention included guided online yoga sessions for 12 weeks. Immunological markers (IL-6, IL-12, CRP, INF-gamma, TNF-alpha) were measured using ELISA at baseline and post-intervention. Stress levels and quality of life were assessed using the WHO-BREF questionnaire. Statistical analysis was performed Microsoft excel M365 software, employing t-tests.

Results. Significant improvements were observed in immune markers, particularly a reduction in IL-12 (p=0.0165) and CRP (p=0.001), alongside a marked increase in INF-gamma (p=0.001) in the yoga group. BMI significantly improved (p=0.0194), though stress levels and most quality-of-life domains remained unchanged, except for
social relationships (p=0.0279). Correlation analysis suggested a strong relationship between BMI reduction and immune modulation.

Conclusion. Yoga intervention demonstrated potential benefits in modulating immunological markers and improving BMI among physicians. While stress reduction was not significant, enhanced social relationships and immune function suggest yoga as a complementary approach for HCPs well-being during high-stress periods. Further large-scale studies are recommended to validate these findings.

Keywords: Yoga, Immune Markers, COVID-19, Health Care Professionals

P748

Safety, pharmacokinetics and Pharmacology of Mocravimod in Healthy Participants

Dr Dymphy Huntjens

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Safety, pharmacokinetics and Pharmacology of Mocravimod in Healthy Participants
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Background. Mocravimod (KRP203) is a selective sphingosine-1-phosphate (S1P) receptor modulator in development as maintenance therapy for patients undergoing allogeneic hematopoietic cell transplantation (HCT). Two Phase 1 studies evaluated the safety, tolerability, pharmacokinetics (PK), and pharmacodynamics (PD) of mocravimod in healthy participants.
Methods. A first-in-human, randomized, double-blind, placebo-controlled single ascending dose (SAD) study enrolled 136 subjects receiving single oral doses of 0.01–40 mg of mocravimod or placebo, including a food-effect cohort receiving 3 mg mocravimod. A randomized, double-blind, placebo-controlled multiple ascending dose (MAD) study enrolled 60 subjects receiving once-daily doses of 0.3–3.0 mg for 14 days or 2.0 mg for 28 days. Assessments included adverse events (AEs), PK sampling for determination of mocravimod and its phosphate metabolite, and PD endpoints including absolute lymphocyte count (ALC).
Results. Mocravimod showed slow absorption (median T_{max} 6–16 h), extensive distribution, and long terminal half-lives (~90–140 h). Exposure was approximately dose proportional (≥2 mg), with ~6-fold accumulation to near steady state by Day 14. Food had a minimal impact on exposure. Mocravimod induced robust, dose-dependent ALC reductions (~74–83% at 1.2–3.0 mg mocravimod), with recovery after treatment was stopped. Mocravimod was generally well tolerated, with no deaths or serious adverse events. AEs were mostly mild or moderate; the most common were headache, dizziness, and fatigue.
Conclusions. Single oral doses up to 40 mg mocravimod and repeated once-daily oral dosing up to 3.0 mg (14 days) or 2.0 mg (28 days) mocravimod were safe and well tolerated, with predictable PK and reversible ALC reductions in peripheral blood. These results support further development of mocravimod for immunomodulation allo-T cells after allogeneic HCT.

P749

Reducing major drug–drug interactions via structured medication reviews

Prof Andres F Zuluaga

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Reducing major drug–drug interactions via structured medication reviews

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Introduction. Major drug–drug interactions (DDIs) are a key preventable cause of harm in polypharmacy. Physician-pharmacologist–led medication reviews may reduce this risk, although recent Cochrane reviews note uncertainty about whether such interventions consistently yield clinically significant benefits (Cole et al, 2023).
Aims. To evaluate the prevalence and resolution of major DDIs, stratified by polypharmacy category, in a university health cohort.
Methods. We conducted a prospective, observational cohort study of 535 outpatients undergoing 802 consultations in 2025. Polypharmacy was classified as moderate (≥5 medications) or excessive (≥10). Major DDIs were identified using standardized software. Interventions included suspension, addition, or optimization of therapy. Clinical and pharmacological risk outcomes were recorded in real time and later analyzed.
Results. The cohort had a mean age of 69.1±0.6 years (range 15–98), with 351 women (65.6%) and 184 men (34.4%). A total of 453 major DDIs were identified at baseline. Patients with excessive polypharmacy presented significantly more major DDIs than those with moderate polypharmacy (mean 1.43±0.12 vs 0.66±0.07 per patient, Mann–Whitney $P<0.001$). Suspension of medications resolved 175/453 (38.6%) major DDIs, while optimization addressed a smaller proportion. The remaining 278 (61.4%) persisted, largely due to therapeutic indispensability or absence of safer alternatives. Clinical compensation was achieved in 662/802 (82.5%) consultations.
Discussion. Major DDIs were strongly associated with excessive polypharmacy. Although only one-third were resolved, structured reviews provided partial mitigation and high clinical compensation. These results align with prior evidence on the link between polypharmacy and DDI burden (Guthrie et al, 2015) and support structured medication reviews as an effective safety strategy.

Guthrie B., et al. (2015) BMC Med 13, 74.
Cole J.A., et. al. (2023). Cochrane Database of Systematic Reviews, Issue 10.

P750

Rationality of Antimicrobial Prescriptions from a Point-Prevalence Survey Using AmRAT tool

Prof Shilpa Kaore

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Rationality of Antimicrobial Prescriptions from a Point-Prevalence Survey Using AmRAT tool

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Introduction. Antimicrobial stewardship in resource-limited settings needs timely, actionable data. Point-prevalence survey offers a rapid cross-sectional snapshot of prescribing to guide local stewardship.
Aims. To evaluate the rationality of antimicrobial use patterns, indications, and prescription appropriateness using the AmRAT 2.0 tool.
Methods. A point-prevalence survey of inpatients was conducted to capture demographics, clinical indications, prescribing intent, antimicrobial agents, and culture practices. Each prescription was assessed for appropriateness using AmRAT 2.0 against the latest ICMR guidelines. Data were analyzed descriptively and stratified by indication, diagnostic category, and acquisition.
Results. Of the 311 patients analysed, 90% received empirical antibiotic therapy. One-third (33%) were prescribed a second antibiotic, with 85% of those decisions based on clinical judgment rather than microbiological evidence. Using the AmRAT tool, 62 prescriptions (19.93%) were identified as irrational. The most frequently implicated agents included amoxicillin–β-lactamase inhibitor (9%), cefuroxime (8%), ceftriaxone (8%), and cefixime (6%). Irrational prescribing was most commonly associated with gastrointestinal infections (47%) and soft tissue/bone-joint infections (24%). In the GI, OBGY, UTI, and CVS categories, irrational use was largely driven by prophylactic intent. In contrast, empirical prescribing dominated in SSTBJ, ENT, and respiratory cases. CNS infections showed a mixed pattern, with occasional reliance on laboratory data. Prescriptions for HAIs accounted for 4.7% of cases, while community-acquired infections represented 27.1%. The predominance of Prophylaxis-driven irrational use highlights the need for targeted stewardship intervention.
Discussion. Although most prescriptions were appropriate, the high reliance on empirical therapy, frequent prophylactic use, and nearly 20% irrational prescribing reveal gaps in evidence-based practice. Inappropriate use was concentrated in GI and OBGY prophylaxis, with amoxicillin–β-lactamase inhibitor, cefuroxime, ceftriaxone, and cefixime being most often misused. These insights reinforce the need for frequent point-prevalence surveys, culture-driven prescribing, local antibiogram utilization, and focused education towards prescribing practices and strengthening of antimicrobial stewardship to reduce avoidable antibiotic use in hospital settings.

P751

Assessment of awareness regarding Look-alike, Sound-alike (LASA) drugs and medication error

Dr Arpita Maitra

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Assessment of awareness regarding Look-alike, Sound-alike (LASA) drugs and medication error

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Introduction: Medication error (ME) is a leading cause of harm in patients. It is preventable adverse effect of care whether or not it is evident as harmful to the patient. ME is responsible for 5% to 41.3% of all hospital admissions and 22% readmissions after discharge (Tariq RA et al, 2022). Indian studies showed prevalence rates 15.34% to 76% (Bhutada A et al, 2020). These errors can happen from prescribing, dispensing to administering at any stage. ME due to Look-alike Sound-alike drugs (LASA) is pretty high and awareness is essential (Munshi R et al. 2019). Look-alike medicines appear visually the same with respect to packaging, shape, colour and/or size, while sound-alike medicines are similar in the phonetics of their names, doses and/or strengths.
Aim: To assess the degree of awareness among health care providers (HCP) working in critical care settings
Method: This was a cross-sectional, online pre-validated questionnaire based study done among critical care HCPs in a tertiary care hospital in Eastern India containing multiple open and closed ended questions.
Result: Total 118 responses were analyzed (86 nurses and 32 doctors) with mostly from 25-39 age group and female preponderance (72.88%). 96.3% could differentiate ADR from ME and 51.9% knew about LASA drugs. 61.9% faced two similar names commonly dopamine/dobutamine, hydralazine/hydroxyzine etc. 79.6% faced confusion to differentiate Inj epinephrine and ephedrine:53.7% had brand name confusion. Worryingly, 74.1% failed to identify 1mg vs 5mg Warfarin strips and 57.2% had problem to find Inj adrenaline vial. 66.7% opined confusion in administering LASA drugs and 33.3% encountered ME. Verbal orders (81.5%), illegible writing (72.2%), high workload (69.9%) were found to be common causes of LASA related ME. Tallman lettering, computerized prescriptions, automated dispensing cabinets, separate LASA storage, colour coding, awareness training were common answers for rectification.
Discussion: Majority of respondents has good awareness regarding different LASA related questions and most of them faced difficulties. LASA related ME possess high risk in critical care setting and measures need to be taken.

Tariq RA et al (2023),Starpearls Publishing/Bhutada A et al (2020), Indian J Crit Care Med;24(9):753-754
Munshi RPet al(2019) Int J Basic Clin Pharmacol;8(8):1771-1775

P752

Antibacterial prescribing patterns and early reassessment practices in a Portuguese tertiary hospital

Dr Emanuel F. Matias

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Antibacterial prescribing patterns and early reassessment practices in a Portuguese tertiary hospital

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Introduction. Inappropriate empirical prescribing of antibacterials (ATB) in acute care settings contributes to antimicrobial resistance (AMR), a major global health threat.
Aims. To characterize empirical prescribing patterns, therapy reassessment, and antimicrobial stewardship targets.
Methods. Retrospective observational study of 218 patients admitted to the Internal Medicine Department from January to December 2024. Data on ATB exposure, indication and modification were analysed.
Results. Of 129 patients exposed to ATB, 82% were started empirically in the emergency department (ED). Median treatment duration was short (2 days), with rapid reassessment (1 day to suspension/switch) after admission to the ward. Therapy was discontinued in 40.3% of cases (no clear indication), switched in 13.2%, and maintained in only 27.9%. Modification was disproportionally higher with ceftriaxone (34.4%). Of 35 patients started on ceftriaxone in the ED, 48.6% discontinued after reassessment (no clear indication), and 45.7% switched to other ATB deemed more appropriate. In 6 patients, ceftriaxone was prescribed for community-acquired pneumonia (CAP), of which 5 were subsequently switched (1 maintained due to IgE-mediated allergy to amoxicillin).
Discussion. The frequent empirical use of ceftriaxone, particularly in suspected CAP, noncompliant with national and international guidance, is a clear actionable target for antimicrobial stewardship. Despite recent progresses in this field, and known higher risk of AMR with third-generation cephalosporins, practical posology (single daily dose, no renal function adjustment) and wide spectrum favour the use in ED. Early reassessment and frequent discontinuation demonstrate appropriate stewardship, but there is still a need for targeted interventions in acute care settings.

Palos et al (2026). Measuring Antimicrobial Prescribing Quality and Driving Behavioral Change: A Call to Action Against Antimicrobial Resistance. Acta Med Port.
Van Besien RF et al (2022). Ceftriaxone resistance and adequacy of initial antibiotic therapy in community onset bacterial pneumonia. Medicine (Baltimore). 20;101(20):e29159.

P753

Palatability and tolerability of polaprezinc foam formulation for oral mucositis in patients

Ms Momoka Okamura

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Palatability and tolerability of polaprezinc foam formulation for oral mucositis in patients.
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Introduction. Oral mucositis is a common adverse effect of cancer therapy. While drug-containing mouthwashes are frequently recommended, they may induce pain and present a risk of choking or aspiration. Due to their physical characteristics, foam formulations with active pharmaceutical ingredients are considered advantageous for treating oral mucositis. These formulations can reduce discomfort and aspiration risk while providing prolonged retention in the oral cavity. Polaprezinc (PZ) oral rinse has been reported as potentially effective in preventing oral mucositis.
Aims. We aimed to prepare a foam formulation containing PZ and evaluate its palatability and tolerability in patients undergoing chemotherapy for cancer.
Methods. The PZ foam formulation was prepared in a hospital setting. Patients undergoing chemotherapy for cancer (n = 10, mean age: 59.3 years) used the formulation six times per day for 2–3 weeks and subsequently evaluated its palatability and preference using a visual analogue scale (VAS) and a five-point scale, respectively. In the case group (patients receiving the PZ foam formulation) and a case-matched control group (n = 20), gastrointestinal symptoms and laboratory data were collected from medical records.
Results. The mean (± SD) VAS score for overall palatability of the PZ foam formulation was 71.6 (± 17.9). VAS scores for smoothness and hardness showed little inter-individual variability, with values of 85.9 (± 9.5) and 14.3 (± 8.2), respectively, whereas scores for adhesiveness and taste varied more widely, at 38.4 (± 28.6) and 68.6 (± 26.9), respectively. Seventy percent of patients rated the formulation as either "very preferable" or "preferable." The incidence of gastrointestinal symptoms and abnormal laboratory values was similar between the two groups.
Discussion. The PZ foam formulation, prepared as an in-hospital preparation, appeared to be acceptable in terms of palatability and tolerability in patients undergoing cancer chemotherapy. These findings indicate that foam formulations may have potential as an alternative approach for the prevention and management of oral mucositis.

P755

Randomized trial assessing efficacy and safety of multiple apremilast doses in psoriasis

Dr Surjit Singh

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Randomized trial assessing efficacy and safety of multiple apremilast doses in psoriasis
Surjit Singh[1], Anil Budania[2], Abhishek Anil[1], Aswini Saravanan[1], Isha Yadav[1], Pradeep Dwivedi[1], Shoban Babu Varthya[1], Sneha Ambwani[1]. [1]Department of Pharmacology, All India Institute of Medical Sciences, Jodhpur-342005, Rajasthan, India. [2]Department of Dermatology, Venereology and Leprology, All India Institute of Medical Sciences, Jodhpur-342005, Rajasthan, India.

Introduction. Apremilast has proven to be effective against psoriasis, has many side effects at the standard dose of 30mg, impacting adherence. Hence, we aimed to compare the lower doses (10mg and 20mg) to the 30mg apremilast dose.
Aims. Primary objectives were to compare Psoriasis Area and Severity Index (PASI) 75 response and adverse events between apremilast 30mg vs 20mg, and 30mg vs 10mg from baseline to 16th week.
Methods. In this randomized, active-controlled trial, 124 patients with mild to moderate psoriasis were randomized (1:1:1 ratio) to apremilast 10mg, 20mg, or 30mg twice daily for 16 weeks. Efficacy parameters were evaluated at 16th week, and safety was monitored every two weeks.
Results. At week 16, PASI 75 response was comparable between apremilast 30mg (31.7%) and 20mg (28.6%) (p=0.756), but significantly higher than 10mg (9.8%) (p=0.014). Similarly, apremilast 30mg and 20mg demonstrated comparable static physician global assessment 0/1 responses (39% vs. 31%, p=0.441), whereas 30mg significantly outperformed 10mg (12.2%, p=0.005). Common adverse events observed in all groups were nausea and headache. Apremilast 30mg exhibited significantly more adverse events than 20mg (p=0.023) and 10mg (p=0.001).
Discussion. Apremilast 20mg demonstrated comparable efficacy with significantly fewer side effects than 30mg dose in mild to moderate psoriasis. This is supported by Kavanaugh et al. where apremilast 20mg demonstrated significantly higher PASI 75 response similar to apremilast 30mg against placebo in psoriatic arthritis. (Kavanaugh et al 2014). Apremilast 10mg showed no significant improvement in efficacy compared to the 30mg dose.

Kavanaugh A et al (2014) Ann Rheum Dis. 73(6):1020–6.

P756

A Systematic review and Meta-analysis of stem cell therapy for Osteoarthritis patients

Dr Surjit Singh

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

A Systematic review and Meta-analysis of stem cell therapy for Osteoarthritis patients

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Introduction. Osteoarthritis (OA) is one of the leading causes of chronic pain and disability worldwide, primarily affecting weight-bearing joints. Stem cells (SCs) have gained attention for their potential regenerative properties; however, the clinical trial outcomes remain inconsistent.
Aim. To evaluate the existing literature for the efficacy and safety of SC therapy for osteoarthritis patients.
Methods. Systematically searched four databases (Cochrane CENTRAL, PubMed, EMBASE and Web of Science) from inception to September 2023 for randomized controlled trials (RCTs) assessing the efficacy and safety of SC therapy in OA patients. Cochrane revised risk of bias (v2.0) tool was used to evaluate quality of trials. Forest plots were synthesized using RevMan 5.4 and R software. Funnel plot and egger's regression for reporting bias, and Grading of Recommendations, Assessment, Development and Evaluation (GRADE) framework for evidence quality were utilized.
Results. Out of 2159 studies screened, 40 studies with 2260 participants were included in the study. Stem cell therapy significantly reduced pain in OA patients as compared to control group as assessed by visual analogue scale at 12 months of therapy [Standardized Mean Difference (SMD)= -2.41 (95% CI= -3.38 to -1.45), I^2= 95%, 11 studies, 676 participants, moderate certainty of evidence]. Subgrouping failed to resolve statistical heterogeneity. Results remained consistent with Bayesian sensitivity analysis and leave-one-out meta-analysis. Western Ontario and McMaster Universities Arthritis Index (WOMAC) overall score and Knee injury and Osteoarthritis Outcome Score (KOOS) pain score at 12 months significantly favoured SC therapy than control group, [SMD= -0.74 [95% CI= -1.10 to -0.37, I^2= 78%, 12 studies, 718 participants, low certainty of evidence] and [Mean Difference (MD)= 16.42 [95% CI= 3.56 to 29.27, I^2= 89%, 7 studies, 341 participants, very low certainty of evidence], respectively. There were no major safety concerns. Most studies were at low risk of bias, and funnel plots showed no evidence of reporting bias.
Discussion. Stem cell therapy has shown significant improvement in both subjective and objective outcomes, with low to moderate quality evidence. Further research, including large double-blind RCTs with objective outcomes and diverse stem cell types, may strengthen confidence in the effect estimate or potentially alter the conclusions.

P757

Randomized Controlled Study of Efficacy and Safety of Saroglitazar in Diabetes Mellitus

Dr Surjit Singh

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Randomized Controlled Study of Efficacy and Safety of Saroglitazar in Diabetes Mellitus
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Introduction. Saroglitazar, a dual PPAR α/γ agonist, is approved as an adjunctive therapy with metformin for Type 2 Diabetes Mellitus (T2DM).
Aims. To evaluate the efficacy and safety of Saroglitazar compared to placebo in patients with T2DM.
Methods. A randomized, placebo-controlled, open-label trial enrolled 55 T2DM patients, allocated in a 1:1 ratio to receive either Saroglitazar 4 mg (n=28) or placebo (n=27). All participants were concurrently treated with metformin 500 mg twice daily and vildagliptin 50 mg. Data expressed as Mean ± Standard Deviation or percentages.
Results. Baseline characteristics were similar between groups. Saroglitazar demonstrated significant improvements compared to placebo in HbA1c (-1.12 ± 0.78 vs. 0.029 ± 0.79, p=<0.001), Fasting Plasma Glucose (-33.14 ± 38.36 vs. -0.74 ± 52.46, p=0.011), triglycerides (-84.82 ± 63.71 vs. 1.44 ± 41.0, p=<0.001), LDL cholesterol (-39.25 ± 27.06 vs. 2.7 ± 39.14, p=<0.001), HDL cholesterol (17.25 ± 8.91 vs. -0.659 ± 7.82, p=<0.001), HOMA-IR (-1.2 ± 1.72 vs. -0.26 ± 1.65, p=0.044), and HOMA-beta cell function (17.71 ± 28.83 vs. -11.13 ± 35.38, p=0.002). Additionally, Saroglitazar significantly improved Diabetes Quality of Life scores (-4.82 ± 5.22 vs. -0.96 ± 2.1, p=0.001) and reduced the percentage of patients with metabolic syndrome (-57% vs. 14.8%, p=<0.001).
Discussion. Saroglitazar exhibited statistically significant improvements in HbA1c, lipid profile, HOMA indices, and metabolic syndrome parameters (based on original, revised, and modified NCEP ATP III criteria). The adverse event profile was comparable between groups. These findings align with prior studies by Jain et al. (2019) and Pai et al. (2014). Thus, Saroglitazar is recommended as an effective adjunctive therapy with metformin for T2DM management.

Pai V et al (2014) J Diabetes Sci Technol. 8:132-41.
Jain N et al (2019) Sci Rep. 9:19017.

P758

Assessment of Drug-Drug Interactions in ICU Patients at a tertiary care hospital

Dr Pramod Kumar Manjhi

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Assessment of Drug-Drug Interactions in Intensive Care Unit Patients at a tertiary care hospital
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Introduction. Drug-Drug Interactions (DDIs) pose a significant risk in clinical settings, particularly in Intensive Care Units (ICUs), where critically ill patients often receive multiple medications simultaneously.
Aims. To assess the prevalence, types, and clinical implications of drug-drug interactions (DDIs) among patients admitted to the intensive care unit (ICU).
Methods. An analysis of prescription records of ICU patients at AIIMS Patna was conducted to identify potential drug–drug interactions (DDIs), using the Drug Interactions Checker tool from the UpToDate database. The study period spanned from March 7, 2025, to July 28, 2025.
Results. A total of 97 patients were included in the study, with ages ranging from 15 to 87 years. The patient consisted of 52 (53.1%) males and 45 (45.9%) females. During the course of hospitalization, 87 patients (89.7%) were identified to have experienced at least one drug–drug interaction (DDI). A cumulative total of 300 DDIs were documented, with the number of interactions per patient ranging from 0 to 47. Based on risk rating categories, the distribution was as follows: Category C (monitor therapy), 57.7%; Category D (consider therapy modification), 16.4%; and Category X (avoid combination), 3.1%. In terms of severity, the interactions were classified as minor in 73 cases (25.2%), moderate in 206 cases (71%), and major in 10 cases (3.4%). Regarding reliability of the interaction data, the majority were rated as intermediate to low reliability (n = 186, 64.1%), followed by intermediate (n = 68, 23.4%), highest (n = 22, 7.5%), lowest (n = 8, 2.7%), and high intermediate (n = 6, 2.1%).
Discussion. The findings of this study indicate a high prevalence of DDIs among ICU patients; however, the majority of these interactions were of limited clinical significance. Continuous monitoring of drug interactions by the intensive care unit team is essential to optimize therapeutic outcomes, minimize adverse effects, reduce the duration of hospitalization, and ultimately lower healthcare costs.

Wagh BR, Godbole DD, Deshmukh SS, Iyer S, Deshpande PR. Identification and Assessment of Potential Drug-Drug Interactions in Intensive Care Unit Patients. Indian J Crit Care Med. 2019 Apr;23(4):170-174. doi: 10.5005/jp-journals-10071-23147. PMID: 31130787; PMCID: PMC6521822.

P761

Antibiotic prescribing for cellulitis in the absence of penicillin-cephalosporin cross-reactivity alerts

Mr Milan Sundermann

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Antibiotic prescribing for cellulitis in the absence of penicillin-cephalosporin cross-reactivity alerts

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Introduction. Cephalosporins are often avoided in patients with penicillin adverse drug reaction (ADR) labels. Our institution's electronic medication management system is set up not to generate cross-reactive alerts for penicillin and cephalosporin ADR labels. Penicillins and cephalosporins are preferred treatments for cellulitis.
Aims. To describe penicillin, cephalosporin, and non-penicillin, non-cephalosporin (NPNC) prescribing for inpatients with cellulitis in the presence/absence of penicillin and/or cephalosporin ADR labels.
Methods. Index cellulitis admissions were included during 2017-2024 with penicillin and/or cephalosporin ADR labels and at least one penicillin, cephalosporin, or NPNC administered. Index admissions were categorised according to presence/absence of labels to penicillins and/or cephalosporins. Penicillin, cephalosporin, and NPNC prescribing was compared between groups with and without labels using odds ratios (OR).
Results. Of 8,374 index admissions, 7,567 had no penicillin/cephalosporin labels, 729 had penicillin-only labels, 42 had cephalosporin-only labels, and 36 had both labels. Inpatients with penicillin labels were significantly more likely (OR 13.07; 95% CI, 11.05–15.45) to be prescribed cephalosporins than those without labels. There were no differences in penicillin prescribing between those with cephalosporin labels and those without labels (OR 1.04; 95% CI, 0.44–2.47). Inpatients with penicillin and/or cephalosporin labels were 6 to 52 times more likely to receive NPNC antibiotics than those without labels.
Discussion. Absence of cross-reactivity alerts was associated with increased cephalosporin use for cellulitis in inpatients with penicillin ADR labels, sparing NPNC antibiotics that may be less effective. Removal of cross-reactivity alerts may be effective for increasing cephalosporin prescribing for inpatients with penicillin ADR labels.

P762

Medication data collection in Frailty Intervention Through Specific Therapies (FITTEST) trial participants

Ms Temitope E Afolabi

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Medication data collection in Frailty Intervention Through Specific Therapies (FITTEST) trial participants
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Introduction. Ensuring the validity of remotely collected medication data from clinical trial participants' is essential for accurately translating research findings into clinical practice, particularly among older people with polypharmacy.
Aims. To assess feasibility and validity of a structured approach for remotely collecting medication data in older people.
Methods. Informed by literature and investigators' expertise, a data collection tool was developed using Microsoft Excel, to facilitate remote medication data collection for participants in the FITTEST trial. All participants engaged in structured telephone interviews with a clinical pharmacist. A subset also participated in follow-up video calls to validate the initial self-reported medication list against the 'brown bag' method for clinical trials. Data collected included medication name, dose, frequency, indication, interview duration, data completeness, call completion rate and number of call attempts per participant. Medication regimen complexity index (MRCI), frailty status, medication adherence (using Morisky Green Levine Scale (MGLS-4)) and Drug Burden Index (DBI) were calculated for participants.
Results. Preliminary findings focused on feasibility measures. Medication data from the first twelve FITTEST trial participants were included in this pilot. Mean participant age was 77 years, 67% (n=8) were female and 83% (n=10) were mildly frail (FI <0.2). Feasibility: 86% of scheduled calls were completed; 92% of participants were reached on the first call attempt; mean interview duration was 33mins. All medication data fields were completed during calls, except for certain generic and brand names (due to confusion between generic versus brand names) and strengths of certain over-the-counter medications. Medication measures: 83% (n=10) of participants were on ≥5 regular medications; 42% (n=5) had a DBI>0; MRCI scores ranged from 5 to 43.5; Majority (n=8, 67%) scored 1-2 on the MGLS-4 suggesting moderate levels of medication adherence. Remaining participants (n=4, 33%) scored 0 (high adherence) on the MGLS-4.
Discussion. Preliminary findings suggest a structured phone interview is feasible to remotely collect data and calculate medication-related metrics in older people. Analysis of the methodological validity against the gold standard for medication data collection in clinical trials, clinician-observed 'brown bag' is ongoing and will be reported in future work.

P763

Deprescribing resolves moderate interactions in ambulatory polypharmacy

Prof Andres F Zuluaga

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Deprescribing resolves moderate interactions in ambulatory polypharmacy

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Introduction. Moderate drug–drug interactions (DDIs) are frequent in ambulatory polypharmacy and contribute to preventable morbidity. Physician-pharmacologist–led medication reviews aim to reduce this burden, though their clinical impact remains debated (Cole, 2023).

Polypharmacy	Mean moderate DDIs ± SEM	n (consultations)
Low (<5)	5.30 ± 0.28	369
Moderate (5–9)	3.90 ± 0.40	118
Excessive (≥10)	4.52 ± 0.28	315

Aims. To describe the prevalence, resolution, and clinical impact of moderate DDIs in an ambulatory cohort.
Methods. We prospectively analyzed 535 outpatients (mean age 69.1±0.6 years; 351 women, 65.6%) across 802 consultations in 2025. Polypharmacy was categorized as null (score 1), low (2–4 drugs, score 2), moderate (5–9 drugs, score 3), or excessive (≥10 drugs, score 4), based on reconciled prescriptions. Moderate DDIs were identified using standardized software. Interventions were classified as suspension, addition, or optimization. Outcomes included resolution rates and pharmacological risk change.
Results. A total of 3,840 moderate DDIs were identified. Suspension resolved 560 (14.6%) interactions, with optimization accounting for an additional subset (179 consultations). Deprescribing was associated with a greater reduction in pharmacological risk (mean delta 0.039±0.013, n=363) compared with no deprescribing (0.002±0.009, n=439; Mann–Whitney P=0.0097) Analysis by polypharmacy category revealed a non-linear distribution of interactions, emphasizing the role of therapeutic composition rather than drug count alone (Table).
Discussion. In this ambulatory cohort, moderate DDIs were common and not strictly proportional to drug count, reflecting the influence of therapeutic composition. Deprescribing provided measurable safety gains, supporting structured reviews as a pragmatic strategy for rational pharmacotherapy.

Cole J.A., et. al. (2023). Cochrane Database of Systematic Reviews, Issue 10.

P764

Competing risks of death and cognitive decline: GLP-1 analogues versus DPP-4 inhibitors

Dr Vera Battini

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Competing risks of death and cognitive decline: GLP-1 analogues versus DPP-4 inhibitors

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Introduction. Type 2 diabetes is a chronic condition associated with an increased risk of cognitive decline. The choice of medication, particularly the use of dipeptidyl peptidase-4 inhibitors (DPP-4i) versus glucagon-like peptide-1 analogues (GLP-1a), may influence this risk, especially in older patients.
Aims. We compared DPP-4i and GLP-1a on a composite outcome of death or cognitive decline, then analysed each event separately to clarify their effects on aging and cognition, supporting treatment decisions in elderly patients.
Methods. In a cohort of patients aged 65 years or older from Southern Italy, the first prescription of DPP-4i and GLP-1a was used as the index date, and the occurrence of cognitive decline was explored over a follow-up of 5 years. The causal impact on the risk of cognitive decline from GLP-1a vs DPP-4i was explored considering a causal model for time-to-cognitive decline, accounting for the competing action of death.
Results. Results are reported using sub-distribution hazard ratio (SDHR) and Relative Risk (RR). Patients treated with GLP-1a showed a markedly lower risk of cognitive decline compared to those on DPP-4i (SDHR [95% CI] = 0.52 [0.17, 1.56]; RR at 2 years = 0.51 and at 4 years = 0.52). As cases reporting cognitive decline were few, confidence intervals were wide. GLP-1a also reduced the risk of death without cognitive decline in the early years (at 2 years, SDHR [95% CI] = 0.51 [0.27, 0.95]; RR = 0.44), while this advantage attenuated with longer follow-up (at 4 years, SDHR [95% CI] = 1.12 [0.61, 2.01]; RR = 0.68).
Discussion. GLP-1a may reduce the risk of cognitive decline compared to DPP-4i in older diabetic patients during the first years of treatment.

P765

Gut Microbiota-Immune Associations in Aging and Polygonatum odoratum's Regulatory Role

Assoc Prof Xin Zhao

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Gut Microbiota-Immune Associations in Aging and *Polygonatum odoratum*'s Regulatory Role

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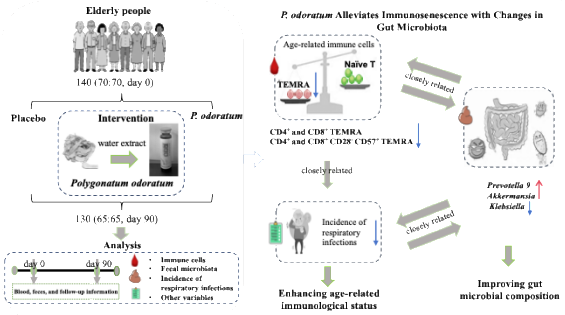

Introduction. Aging is accompanied by disruption of immune system and gut microbiota, which leads to increased susceptibility to age-related diseases and infections. *Polygonatum odoratum* is a traditional Chinese herbal medicine frequently administered to the elderly for its lung-moistening and tonic effects.

Aims. To characterize the relationship between gut microbiota and immune cells in a community-dwelling elderly population and evaluate the effect of *P. odoratum* intervening in this axis.

Methods. A total of 140 independently living elderly individuals aged 60 and above were recruit in (UMIN Clinical Trials Registry Identifier: UMIN000052572). The randomized, double-blinded study including *P. odoratum* and placebo groups was performed for 90 days' intervention. Immune cell subsets in peripheral blood were determined by flow cytometry, while microbial diversity from fecal samples was evaluated by 16S rRNA sequencing.

Results. Baseline correlation analysis revealed that alterations in gut microbiota were predominantly associated with T cell subsets. Specifically, *Akkermansia* showed a significant negative correlation with age related TEMRA cells, and a significant positive correlation with Naïve $CD4^+$ T cells. After 90-day *P. odoratum* intervention, the numbers of TEMRA, $CD28^-$ $CD57^+$ TEMRA cells in peripheral blood of the elderly were decreased. The abundances of *Prevotella* 9 and *Akkermansia* were increased, and the relative abundances of *Klebsiella* in the gut microbiota were significantly decreased. Correlation analysis indicated that the alteration of gut microbiota after *P. odoratum* intervention was related to improving immune and reducing the incidence of respiratory infections.

Discussion. This study demonstrates significant correlations exist between immunosenescence in T-cell compartments and gut microbial composition, suggesting a potential interplay between microbial health and immune aging.

P766

Usefulness of early Nirmatrelvir assay to adjust PAXLOVID dosage in COVID-19

Prof Antoine Coquerel

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Usefulness of early Nirmatrelvir assay to adjust PAXLOVID dosage in COVID-19

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Introduction. A 86 Y.O. woman who had a chronic obstructive bronchopulmonary disease needed an anti-SARS-CoV2 drug despite having received 4 injections of anti-COVID-19 vaccine. She had also allergic asthma, arthrosis, and a Horton disease (prednisone: 5 mg/day). Her liver and renal functions were normal (Cockroft GFR 62 mL/min/1.73m²).

Aims: Because she contracted SARS-CoV2 (PCR +) and her respiratory state decompensated, PAXLOVID® (300 mg Nirmatrelvir + 100 mg Ritonavir x2/day) was prescribed, with respect to the FDA, EMA and French recommendations,

Methods: At 24 h after the treatment initiation she had intense nausea and refused food and medications. We stopped them for 48h and assayed the residual concentration of Nirmatrelvir with a UPCL-MS/MS method [2]. After an informed consent, we reintroduced the usual drugs and proposed a half-dose PAXLOVID trial for 4 days.

Results: During this second phase of treatment the tolerance was good and the respiratory function improved fast. The diurnal oxygen requirement disappeared 8 days after the end of the treatment. The result of Nirmatrevir assay came back few days later. The level was 284 ng/mL at H48 while the usual therapeutic values are 800 and 200 ng/ml at respectively 12 and 24 post-administration at D1. We mentioned the adverse effect and the secondary good evolution to the regional pharmacovigilance centre.

Discussion: The literature remains poor concerning the possibilities of drug dose adjustment, excepted in case of renal impairment. In fact, the PK changes induced by ritonavir (inducing blockades of CYP and transporters) are individually highly variable from an individual to another [3]. We recommend an assay of Nirmatrelvir 12 or 24 h after PAXLOVID induction if a fast is assay available and in case of intolerance related to probable overdose we propose to stop 1 or 2 days and to reintroduce the drug at half-dose especially in patients with high risks of adverse effects.

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P767

Drug-drug Interactions in Elderly Patients Admitted to Cardiology Intensive Care Unit

Dr Mert Kaşkal

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Drug-drug Interactions in Elderly Patients Admitted to Cardiology Intensive Care Unit
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Background. Older adults admitted to cardiac intensive care units (CICUs) often receive complex, multi-drug regimens, making them vulnerable to clinically important drug–drug interactions (DDIs). Real-world data from single centers can help quantify the burden and severity of DDIs and inform safer prescribing in high-acuity settings.
Methods. We conducted a retrospective, single-center study in Istanbul including consecutive adults aged ≥65 years admitted to the cardiology ICU from January to December 2024. Medication lists were reviewed, and potential DDIs were assessed using the Lexicomp® (UpToDate) interaction checker and its standard risk ratings: C ("monitor therapy"), D ("consider therapy modification"), and X ("avoid combination"). The primary outcome was the proportion of patients with at least one potential DDI in each risk category.
Results. A total of 116 (median age: 74; min-max (65-95)) patients were included in the study. Using the Lexicomp risk framework, 111/116 patients (95.7%) had at least one category C DDI, 31/116 (26.7%) had at least one category D DDI, and 1/116 (0.9 %) had at least one category X DDI. Among category D potential DDIs, the ticagrelor–aspirin combination was frequently observed due to its increased bleeding risk. In category X, we identified one interaction: alteplase with enoxaparin (risk of excessive bleeding).
Conclusion. The potential DDIs were highly prevalent, with nearly all patients requiring at least monitoring (category C), more than one in four requiring consideration of therapy modification (category D), and only one patient exposed to combinations that should be avoided (category X). These findings emphasize the importance of routine DDI screening and clinical review in CICUs to mitigate risks, particularly in elderly populations.

P768

Plasma proteomic-derived theratypes to guide precision medicine: Statins in the UK biobank

Mr Kevin Winardi

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Plasma proteomic-derived theratypes to guide precision medicine: A study of statins in the UK biobank

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Introduction. Precision medicine aims to identify and stratify patients who benefit from a pharmacotherapy and those who may experience toxic effects, reducing the reliance on trial-and-error. Circulating plasma proteins provide a molecular snapshot of a person's current health status, which can capture disease, drugs, lifestyle, and environmental factors. This provides an avenue for proteome-informed patient stratification for drug response, termed theratype.

Aims. Investigating statins in the UK biobank, we aim to identify theratype groups (T) using the circulating plasma proteins at baseline and compare their sociodemographic and clinical characteristics and statin-related outcomes.

Methods. Data from UK biobank participants with plasma proteomics data was analysed. Statin users at baseline and propensity score matched non-users (1:1 ratio) formed the study cohort. Gaussian mixed model-based clustering was performed on principal component-reduced feature space of the statin user proteome data. Baseline characteristics were compared between non-users and users, and between theratypes. Statin-related longitudinal outcomes were analysed using Cox analysis. Differential expression analysis and network analysis were conducted to characterise molecular differences.

Results. The cohort consists of 4,614 statin users and 4,614 matched non-users. The most common statin used is simvastatin (n=3,344; 72.47%). Proteome-based clustering identified 8 statin theratypes. Patients with kidney dysfunction were distinctly clustered (T5), whilst differences in sex distribution were seen in other theratypes (T1, 2, 3, 4, and 8) . Statin use at baseline was associated with lower risk of all-cause mortality over 18 years compared to non-users (HR: 0.87; 95%CI: 0.79, 0.95). T2 (HR: 0.68; 95%CI: 0.58, 0.80) and T4 (HR: 0.68; 95%CI: 0.55, 0.82) were associated with reduced risk, whereas T5 (HR: 2.41; 95%CI: 1.91, 3.05) with increased risk of all-cause mortality. Among the 610 proteins differentially expressed (adjusted $p < 0.01$; fold change >±1.30), insulin like growth factor binding protein 4 (Igfbp4) level was strongly upregulated in T5 compared to the other theratypes.

Discussion. Plasma proteome could be a potential tool to stratify statin users' risk of adverse outcomes. Aligning with canonical clinical research, the proteome clustering is primarily driven by disease status and sex, among others.

P769

Redefining prescribing: from supply order to treatment plan

A/Prof Matthew P Doogue

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Redefining prescribing: from supply order to treatment plan

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Introduction. Prescribing is legally defined and regulated as a single act, an order to supply a medicine. This definition reflects mid-20th century practice, where a short course of a single medicine was determined in one health encounter and recorded in three lines of a prescription. Contemporary patients have a lifetime relationship with a health system and a lifetime of medicines use to manage. The regulatory and conceptual framework has not kept pace.

Aims. To propose a revised conceptual model of prescribing that distinguishes the treatment plan from the supply order, and to examine its implications for clinical practice, regulation, scopes of practice, and digital health systems.

Methods. We analysed treatment as a continuous lifelong process. Clinical scenarios were mapped to patient encounters, clinical workflows and external guidance. The tasks to manage medicines use were decomposed into distinct functions: planning and agreeing and treatment, ordering supply, administering doses, monitoring response, and clinical review.

Results. Current frameworks conflate two fundamentally different things: the treatment plan — a living agreement between the patient and the health system to manage medicines, with defined monitoring and review — and the supply order, an instruction to dispense or administer a product. Consider a patient with hypertension, type 2 diabetes, and heart failure with reduced ejection fraction. The treatment plan involves a complex, evolving regimen with dose titration, effect monitoring, and periodic reassessment of goals. Supply orders are a daughter function, generated as needed at intervals that only sometimes coincide with clinical review. Good practice guides, legislation, and digital systems each use the word prescribing with different meanings, compounding the confusion.

Discussion. For each patient, the treatment plan for medicines use is a living agreement between the patient and the health system. One treatment plan, shared across services, captures indications, medication regimen, monitoring, and review. Patient goals underpin the plan. Over a lifetime, patients take many medicines changing over time across many interactions with multidisciplinary teams. Paper records constrained this information to a single format. Digital systems can integrate complex information and adapt it to context, service, and user. Reframing around the treatment plan shifts the focus from clinician task to patient need.

P770

Medication use and frailty in older adults with and without dementia

Dr Noriko Sato

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Medication use and frailty in older adults with and without dementia

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Introduction. Frailty and polypharmacy (≥5 medications) are common in older adults with dementia, but their relationship and impact on clinical outcomes remain poorly understood.
Aims. To measure a Frailty Index (FI) in older adults with and without dementia using routinely collected hospital data; to investigate the association between dementia diagnosis, medication use, and FI; and to evaluate the ability of the FI to predict in-hospital mortality, long hospital stays, and 28-day readmission.
Methods. This retrospective study included adults aged ≥65 years at their first admission to six public hospitals in NSW, Australia, between June 2022 and June 2023. Dementia diagnosis was identified using ICD-10-AM codes and dementia medications (cholinesterase inhibitors or memantine) prescribed. The FI was calculated from 54 items across multiple domains in the eMR for patients with ≥30 recorded items. Associations of medication use and dementia diagnosis with the FI were evaluated using Gamma regression, adjusting for age, gender, and the number of medications prescribed during admission. Predictive performance for in-hospital mortality, long hospital stay (≥10 days), and 28-day readmission was evaluated using ROC-AUC, PR-AUC, and calibration plot.
Results. The FI was calculated for 23,220 of 28,281 patients (82%), including 2,666 (11%) with dementia. Frailty (FI ≥0.25) was present in 75% of patients with dementia vs 29% without. During hospitalisation, 26% patients with dementia received at least one dementia medication, and 0.8% received two. The most frequently prescribed medication for dementia was donepezil (66%), followed by rivastigmine (18%). The median number of medications at admission in patients with dementia (7, IQR 3-10) was higher in those without (6, IQR 2-10), and medication counts increased with frailty in both groups. Dementia and medication count were significantly associated with FI (p<0.001). There was also a significant interaction of FI with age and dementia (p<0.001). Long hospital stay occurred in 42% with dementia vs 23% without, and in-hospital mortality in 9% vs 4%; 28-day readmission was similar (10% vs 11%).
Discussion. Frailty was higher at all ages in people with dementia than without. People with dementia and frailty received more medications than those without. These findings highlight the need for frailty assessment and management, including medication review, in people with dementia.

P771

Enhancing Pain Medication Management through Patient Decision Aids: A Scoping Review

Dr Aili V Langford

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Enhancing Pain Medication Management through Patient Decision Aids: A Scoping Review
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Introduction. Analgesics are widely used for pain management; however, patients may find it difficult to weigh the potential benefits and risks in light of their individual clinical circumstances, goals, and preferences. This challenge may be especially pronounced for older adults, who often experience polypharmacy and multimorbidity. Patient Decision Aids (PtDAs) can improve knowledge and engagement in health decisions, yet the nature, content and quality of PtDAs for pain medication management have not been systematically evaluated.
Aims. To identify and appraise PtDAs for pain medication management and evidence of their evaluation.
Methods. A systematic search was conducted across four databases, eight decision aid repositories, and Google. Screening and data extraction were performed in duplicate, capturing target conditions, decision options, format, and outcomes. PtDAs were appraised using the International Patient Decision Aid Standards instrument (IPDASi).
Results. Thirty-nine PtDAs and 17 evaluation studies were included. PtDAs most commonly addressed osteoarthritis (49%) and back pain (21%), with nonsteroidal anti-inflammatory drugs (77%), corticosteroid injections (74%), and paracetamol (56%) the most frequently included medications. Although all PtDAs included medication-related content (e.g., role in therapy), information on safety, effectiveness, and cost were often limited, with most PtDAs emphasising non-pharmacological strategies (e.g., exercise, surgery) as the primary decision. The majority of PtDAs met IPDASi qualifying criteria, however, few achieved higher certification standards due to inconsistent reporting of outcome probabilities and limited evidence transparency. Despite this, evaluation studies generally reported improved knowledge and reduced decisional conflict following PtDA use. Medication-related outcomes were rarely reported.
Discussion. There was substantial variability in PtDA content and format, though core principles of balanced information, transparency, and patient-centred functionality appeared universally important. PtDA certification rates could be strengthened through simple measures such as citing evidence and reporting publication dates. Future research should assess whether higher-quality PtDAs can better support shared decision-making in pain management and guide appropriate analgesic use, particularly for high-risk medicines, across the continuum of care.

P772

Co-designing resources to support urinary incontinence medication management for people with dementia

Ms Nileshni Fernando

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Co-designing resources to support urinary incontinence medication management for people with dementia

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Introduction. Urinary incontinence (UI) is a distressing and stigmatised condition that can impact quality of life for any individual, including individuals living with dementia. Over one third of individuals are prescribed medications to manage symptoms. However, commonly used medications – particularly anticholinergics – are associated with risks. There are no resources to support decision-making regarding use of medication for UI for people with dementia.

Aims. To codesign evidence-based resources to support decision making regarding the safe and effective prescribing, monitoring and deprescribing of medications for the management of UI for people with dementia.

Methods: Semi-structured interviews (n = 31) were conducted with a maximum variation sample of people living with dementia, carers and healthcare professionals to explore experiences, information needs and current resource gaps. Interviews were thematically analysed to inform development of resources in collaboration with a project advisory group. Draft resources were further refined through workshops/interviews with people with dementia (n = 4), carers (n = 4), and healthcare professionals (n = 8). A systematic review of randomised controlled trials evaluating the effectiveness of medications for UI in people living with dementia was also conducted.

Results: The interviews revealed inconsistent approaches to medication management of UI, perceived or actual gaps in healthcare professional knowledge about medication options, variable uptake of shared decision making, and limited information available to consumers about medication management of UI. Two resources were created: (1) 10 Guiding Principles to support the safe and appropriate use of medication for the management of UI in people living with dementia (a consumer version and a healthcare professional version) and (2) an evidence summary table on safety and efficacy of UI medications in people living with dementia. Workshop/interview participants reported that the resources were easy to understand, relevant and filled a clear gap. Healthcare professionals emphasized the importance of shared decision making and person-centred care throughout the Guiding Principles and consumers suggested adding question prompts to help start conversations with healthcare professionals.

Discussion. The co-designed resources are designed to empower consumers and healthcare professionals to engage in shared decision making to ensure safe use of medications and person-centred care in the management of UI.

P773

Carvedilol increases the plasma concentrations of midazolam and simvastatin in humans

Dr Jani Katajapuhjo

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Carvedilol increases the plasma concentrations of midazolam and simvastatin in humans

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Introduction. The beta blocker carvedilol and nonsteroidal anti-inflammatory drug diclofenac have been in clinical use for decades. Yet, their cytochrome P450 (CYP) inhibitory potential has not been fully evaluated. Recently, carvedilol and the major metabolite of diclofenac, diclofenac acyl-β-D-glucuronide, were identified as mechanism-based inhibitors of CYP3A *in vitro* (Kahma et al, 2024), suggesting a risk of drug interactions with CYP3A substrates.

Aims. This study aimed to elucidate the clinical inhibitory effects of carvedilol and diclofenac on seven CYP enzymes.

Methods. In a randomized, open-label, cross-over clinical trial, 12 healthy subjects ingested either placebo or a single dose of carvedilol 50 mg, or diclofenac 50 mg three times per day for three days. On study days, participants received a cocktail of CYP index drugs: caffeine/1A2, bupropion/2B6, repaglinide/2C8, flurbiprofen/2C9, omeprazole/2C19, dextromethorphan/2D6, midazolam/3A4 and simvastatin/3A4. Venous blood samples were drawn until 23 hours postdose, and the concentrations of index drugs and their metabolites were quantified with LC-MS-MS.

Results. Carvedilol increased the concentrations of the CYP3A4 index drugs, but diclofenac had no significant effect on any of the CYP indices. Carvedilol increased the peak serum concentration (C_{max}) and $AUC_{0\text{-}23h}$ of simvastatin 2.0-fold (90%CI: 1.5-2.7) and 1.8-fold (90%CI: 1.4-2.2), respectively (P<0.001), and increased the $AUC_{0\text{-}23h}$ of simvastatin acid 1.4-fold (90%CI: 1.1-1.8; P<0.05). Carvedilol also increased the C_{max} and $AUC_{0\text{-}23h}$ values of midazolam 1.3-fold (90%CI: 1.2-1.5) and 1.5-fold (90%CI: 1.2-1.7), respectively (P<0.001).

Discussion. In agreement with previous *in vitro* findings, a 50 mg dose of carvedilol raised the concentrations of midazolam and simvastatin, consistent with inhibition of CYP3A4. This interaction risk should be taken into account during concomitant use of carvedilol and sensitive CYP3A substrates. In turn, diclofenac is unlikely to cause any clinically significant CYP-mediated drug-drug interactions.

Kahma H et al (2024) Eur J Pharm Sci 198:106735

P774

Aged Care On-site Pharmacists in Australian aged care homes: activities, perceptions, opportunities

Prof Janet Sluggett

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Aged Care On-site Pharmacists in Australian aged care homes: activities, perceptions, and opportunities
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Introduction. The Aged Care On-site Pharmacist (ACOP) program is a new Australian Government-subsidised initiative to embed pharmacists on-site in residential aged care homes (RACHs) to support quality use of medicines. Little is known about the experiences of ACOPs following the launch of this initiative in July 2024.
Aims. To explore activities undertaken by ACOPs, and perceived barriers and enablers to their roles.
Methods. A cross-sectional, anonymous online survey was undertaken during August-November 2025. ACOPs working for ≥1 month in Australian RACHs could participate. The survey included multiple-choice, Likert-scale and open-ended questions. Quantitative data were summarised descriptively. Open-ended responses were analysed using an inductive reflexive thematic approach.
Results. 40 ACOPs from 61 RACHs (representing 20% of Australian RACHs with an ACOP) completed the survey. Medicines reviews were commonly performed, with a median of 50% of ACOP's time dedicated to this activity, followed by communication with residents/families (15%), and education, governance, and other activities (all 10%). Most respondents were very satisfied (n=19, 47.5%) or satisfied (n=16, 40%) with their role. Enablers included a supportive organisational culture, collaborative working relationships, and opportunities to interact with other ACOPs. Barriers encountered by ACOPs included limited clarity and awareness of their role, and challenges with remuneration and access to clinical records.
Discussion. ACOPs are largely satisfied with their role although variability in the types of activities performed was noted. Findings can inform strategies to support the broader implementation of this new care model and resources to assist ACOPs to support quality use of medicines in RACHs.

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Characteristics of adverse drug withdrawal reactions following gabapentinoid deprescribing: A systematic review

Ms Yujoung Joung

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Characteristics of adverse drug withdrawal reactions following gabapentinoid deprescribing: A systematic review

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Introduction. Barriers to gabapentinoid deprescribing include clinician and consumer concerns about adverse drug withdrawal reactions (ADWRs). Better understanding of these reactions is needed to guide safe deprescribing.

Aims. To synthesise evidence on the characteristics of ADWRs associated with gabapentinoids including signs/symptoms, severity, onset, and duration.

Methods. Five databases including MEDLINE, Embase, PsycInfo, Cochrane Library, and Scopus were searched up to 24 February 2025. The review was conducted in accordance with PRISMA guidelines. Two reviewers independently performed screening, data extraction, and quality assessment. A narrative synthesis was conducted.

Results. A total of 5,358 records were identified, of which 54 studies met inclusion criteria including 9 randomised controlled trials, 3 pre-post studies, 1 cross sectional study, 1 pharmacovigilance study, 34 case reports, and 6 case series. ADWR signs and symptoms were classified into five categories: behavioural (n=33 studies), neurological/sensory (n=31), neuropsychiatric/cognitive (n=29), autonomic/physical (n=28) and gastrointestinal (n=13). Among these, behavioural symptoms were the most frequently reported, including agitation, insomnia, and restlessness. Most reactions were mild to moderate, although severe outcomes such as status epilepticus, suicide attempts, and ICU admissions were identified in 4 patients. The onset of ADWRs ranged from immediate to 2 months post-deprescribing, and the duration ranged from immediate resolution to 6.5 months.

Discussion. Despite the predominant inclusion of case reports, this review describes a wide range of ADWRs associated with gabapentinoids, including rare but severe cases. These findings underscore the importance of optimising prevention, early detection and management of ADWRs. This review may aid in developing monitoring protocols and resources to support clinicians and consumers. To minimise the risks of deprescribing, further high-quality research is needed to inform clinical practice guidelines.

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Incidence of adverse drug withdrawal reactions following gabapentinoid deprescribing: A systematic review

Miss Elizabeth Gong

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Incidence of adverse drug withdrawal reactions following gabapentinoid deprescribing: A systematic review
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Introduction. Limited knowledge on the occurrence and consequences of gabapentinoid adverse drug withdrawal reactions (ADWRs) remains a barrier to deprescribing in clinical practice. Identifying the incidence of gabapentinoid ADWRs can support clinician and consumer clinician and consumer awareness of potential risks associated with deprescribing.
Aims. To synthesise evidence on the incidence of ADWRs following gabapentinoid deprescribing.
Methods. MEDLINE, Embase, PsycInfo, Cochrane Library, and Scopus databases were searched up to 24 February 2025. Independent duplicate screening, data extraction, and methodological quality assessment were conducted, followed by a narrative synthesis. Original research reporting the incidence of ADWRs following gabapentinoid (gabapentin, pregabalin, mirogabalin) deprescribing were included.
Results. A total of 5,358 records were identified, of which 14 studies met the inclusion criteria: 9 randomised controlled trials (RCTs), 3 uncontrolled pre-post studies, 1 cross sectional study and 1 pharmacovigilance study. Six RCTs employed the Physician Withdrawal Checklist (PWC) to assess ADWRs. Of those, 5 studies reported a significant difference in PWC scores in the gabapentinoid discontinuation group compared to placebo discontinuation or change from baseline, while 1 found no difference. Four RCTs reported ADWR incidence, ranging from 0-47%. All 3 uncontrolled pre-post studies and the cross sectional study reported a 0% incidence. The pharmacovigilance study reported a 33% incidence of ADWRs following discontinuation. Two studies involved abrupt discontinuation, 9 employed gradual tapering, 2 included both approaches, and 1 study did not specify.
Discussion. Despite growing evidence, there is considerable variability in the reported incidence of gabapentinoid ADWRs. Further research is required to determine the influence of gabapentinoid type, dose, duration, and deprescribing strategy. These findings may inform the future development of appropriate tapering regimens and clinical management approaches to support safe gabapentinoid deprescribing in clinical practice.

P779

Deprescribing cholinesterase inhibitors and memantine: What global evidence tells us

Dr Michelle (Mun Chieng) Tan

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Deprescribing cholinesterase inhibitors and memantine: What global evidence tells us

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Introduction. Cholinesterase inhibitors (ChEIs) and memantine currently remain the primary symptomatic treatments for dementia. While these medications may offer modest benefits in cognition, function, and behaviour, they are not disease-modifying and carry potential risks, particularly with prolonged use. There is a need for clear evidence-based deprescribing guidance to support the appropriate use of these medications.

Aims. To evaluate the outcomes of withdrawal of ChEIs and/or memantine compared with continuation to inform the development of deprescribing recommendations for inclusion in the update of Australia's National Dementia Clinical Practice Guidelines (CPG) 2026. We conducted an updated systematic review of deprescribing of ChEIs/memantine.

Methods. We systematically searched CENTRAL (Ovid), MEDLINE and Embase databases (July 2016–2025), supplemented by hand-searching. We uniquely include both randomised controlled trials (RCTs) and non-randomised studies of interventions (NRSIs) to balance the strengths and limitations of diverse evidence sources and clinical relevance. For inclusion in the new CPG, additional criteria and an algorithm were explicitly designed to determine the appropriateness of including NRSIs. Risk of bias was assessed using the latest Cochrane RoB and ROBINS-I v2 tools.

Results. Our new search identified 3,039 records, with 74 full texts reviewed and 10 studies included. In the original 2016 systematic review, 5,787 records were screened, 265 full texts assessed and 50 studies included. Therefore, a total of 60 eligible studies were identified (11 RCTs and 49 NRSIs). Applying our NRSI eligibility criteria and algorithm developed, 30 studies (11 RCTs and 19 NRSIs) were retained. The most common reasons for excluding NRSIs are being at critical risk of bias, mainly due to inadequate comparators and unaddressed confounding.

Discussion. This systematic review represents the most comprehensive and up-to-date global evidence on deprescribing ChEIs/memantine and will inform the development of recommendations for the updated Dementia CPG. These recommendations will support the appropriate deprescribing of ChEIs/memantine. The innovative method of determining eligibility of NRSIs will maximise the utilisation of available evidence to inform deprescribing recommendations, while ensuring methodological robustness and quality of the evidence.

P780

Advancing gynecological therapeutics with QSP Model: applications for GnRH antagonist

Prof Sungpil Han

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Advancing gynecological therapeutics with QSP Model: applications for GnRH antagonist

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Introduction. Merigolix represents a novel oral nonpeptide GnRH antagonist currently under clinical development for the treatment of endometriosis and uterine fibroids. The development of GnRH antagonists for gynecological therapeutics requires comprehensive understanding of their pharmacological effects on the complex hormonal feedback mechanisms governing the menstrual cycle. Quantitative Systems Pharmacology (QSP) modeling offers a mechanistic approach to elucidate the intricate dynamics of the hypothalamic-pituitary-ovarian (HPO) axis and predict therapeutic responses to hormonal interventions. Such mechanistic modeling is essential for advancing our understanding of drug-induced hormonal modulation and optimizing therapeutic regimens for estrogen-dependent disorders.
Aims. This study aimed to construct a mechanistic QSP model of the human menstrual cycle to simulate the dynamics of luteinizing hormone (LH), follicle-stimulating hormone (FSH), and estradiol (E2) following merigolix administration. Specifically, we sought to integrate previously developed population pharmacokinetic parameters from phase I clinical data with pharmacodynamic effects on GnRH receptor inhibition within a deterministic QSP framework, enabling prediction of dose-dependent hormonal suppression and elucidation of the pharmacological mechanisms underlying merigolix action.
Methods. A deterministic QSP model framework without delay equations was developed to represent the HPO axis, employing a streamlined approach with fewer differential equations and parameters while maintaining physiological relevance. Population pharmacokinetic parameters previously developed from phase I clinical data were integrated with pharmacodynamic effects on GnRH receptor inhibition. The model framework was designed to capture intricate hormonal feedback loops and ovarian follicular development characteristic of the menstrual cycle. Merigolix-specific pharmacokinetic parameters and pharmacodynamic effects on GnRH receptor inhibition were incorporated into this mechanistic model. All simulations were conducted using the mrgsolve package in R, enabling efficient exploration of dose-response relationships and hormonal dynamics.
Results. The developed QSP model successfully reproduced the characteristic cyclic patterns of LH, FSH, and E2 observed in healthy premenopausal women, validating the model's ability to represent normal menstrual cycle physiology. Model simulations predicted dose-dependent hormonal suppression induced by merigolix, clearly demonstrating its pharmacological effects on LH, FSH, and E2 suppression within the context of menstrual cycle dynamics. The integrated pharmacokinetic-pharmacodynamic framework effectively elucidated the mechanism of GnRH receptor antagonism and its downstream effects on gonadotropin and estradiol regulation.
Discussion. This QSP modeling approach provides essential mechanistic insights into the pharmacological actions of merigolix on the HPO axis, significantly enhancing our understanding of GnRH antagonist pharmacodynamics. The successful integration of pharmacokinetic-pharmacodynamic relationships within a mechanistic systems model demonstrates the value of QSP approaches in gynecological therapeutic development. These findings facilitate informed dose optimization and therapeutic regimen design for clinical management of estrogen-dependent disorders, offering a robust framework for translating mechanistic understanding into clinical application. The streamlined modeling approach employed here, utilizing fewer parameters while maintaining physiological relevance, presents a practical tool for advancing the development of GnRH antagonists and related hormonal therapeutics.

P783

Safety, tolerability, pharmacokinetics, pharmacodynamics of HRS-1893 (cardiac myosin inhibitor) in healthy subjects

Prof Yang Lin

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Safety, tolerability, pharmacokinetics, pharmacodynamics of HRS-1893 (a cardiac myosin inhibitor) in healthy subjects

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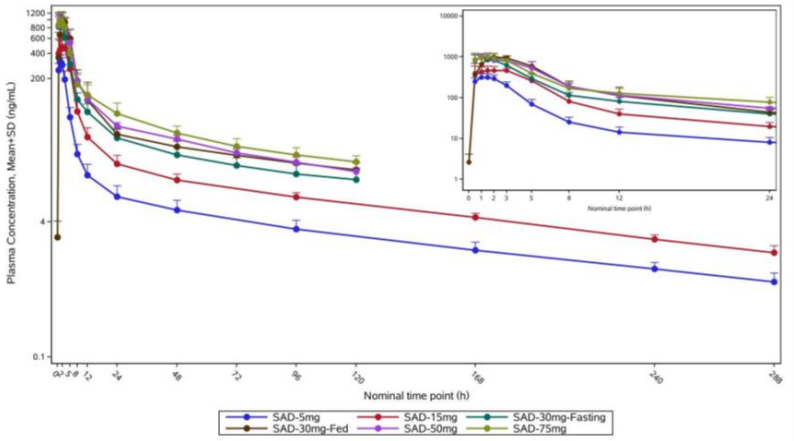

Introduction. Hypertrophic cardiomyopathy (HCM) is a common heritable cardiac disease featuring left ventricular hypertrophy. HRS-1893 (also known as BHB-1893) is a novel, selective inhibitor of cardiac myosin.

Aims. This first-in-human study assessed the safety, tolerability, pharmacokinetics (PK), and pharmacodynamics (PD) of HRS-1893.

Methods. This was a randomized, double-blind, placebo- controlled study evaluating oral HRS-1893 in 76 healthy Chinese subjects. The study comprised three parts: a single-dose study (5, 15, 30, 50, or 75 mg), a food-effect study (30 mg), and a multiple-doses study (10, 20, or 40 mg twice daily for 14 days).

Results. HRS-1893 was well-tolerated within the dose range explored. HRS-1893 plasma exposure was correlated with modest reduction in left ventricular ejection fraction (LVEF). Exposure increased in a less-than-dose-proportional manner with dose escalation. Absorption of HRS-1893 was independent of food intake. Steady-state exposures were observed near Day 8 following multiple-dose administration and accumulation ratios ranged between 1.8 and 2.6.

Discussion. These pharmacokineticdata support the further development of HRS-1893 in patients with HCM.

P784

Study of add-on dapsone versus methotrexate in bullous pemphigoid: randomized controlled trial

Dr Monalisa Jena

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Study of add-on dapsone versus methotrexate in bullous pemphigoid: randomized controlled trial

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Background. Bullous Pemphigoid (BP) is the most common autoimmune blistering disorder in the elderly, with increasing incidence after 60 years of age. It presents with itchy blisters and erosions, significantly affecting the quality of life. The disease is associated with autoantibodies directed against BP180 and BP230 antigens. While systemic steroids are the mainstay of treatment, their side effects necessitate safer steroid-sparing agents.
Method. This was a randomized, open-label, active-controlled clinical trial (NCT05984381). conducted at AIIMS Bhubaneswar from August 2023 to March 2025. Eligible adult patients with moderate-to-severe bullous pemphigoid were randomized to receive low-dose prednisolone with either methotrexate or dapsone for 16 weeks. BPDAI, DLQI, and serum BP180 levels were assessed at baseline, 8, and 16 weeks. Safety, remission rates, steroid burden, and adverse events were also evaluated.
Results. Both groups were comparable at baseline with no significant differences in demographic or clinical parameters. Over 16 weeks, there was a significant reduction in BPDAI scores within both groups ($p < 0.0001$), though intergroup differences at each time point were not statistically significant. The remission rate was 87.5% in the control group and 75% in the test group ($p = 0.26$). The test group showed a significantly greater reduction in flare frequency ($p < 0.01$), while cumulative steroid doses and time to flare were similar between groups. DLQI scores improved significantly in both groups ($p < 0.001$) with no intergroup difference. Serum BP180 and IgE levels decreased significantly within groups. Both treatments were well tolerated with no significant difference in adverse events.
Conclusion. Methotrexate, comparable to dapsone, as an adjunct to oral steroids, was effective and well-tolerated in treating moderate-to-severe bullous pemphigoid. Methotrexate showed added benefits in reducing flare frequency and serum IgE, suggesting its potential role as a steroid-sparing option with long-term disease control in patients with BP.
Key words: Bullous Pemphigoid , autoimmune blistering disorder, BP180, Methotrexate, Dapsone, Prednisolone

P785

Antidiabetic effect of Psidium guajava leaf extract- a randomized double-blind placebo-controlled trial

Dr Harivenkatesh Natarajan

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Antidiabetic effect of *Psidium guajava* leaf extract- a randomized double-blind placebo-controlled trial

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Introduction. The prevalence of type-2 diabetes mellitus (T2DM) is rising globally. Despite their effectiveness, currently available anti-diabetic drugs are associated with a range of adverse effects, from hypoglycaemia to malignancies, which limit their long-term use. Therefore, there is an unmet need for therapies with improved efficacy and fewer side effects. *Psidium guajava* (PG) leaf extract has demonstrated promising anti-hyperglycaemic effects in various preclinical studies. However, there is a lack of sufficient human data to support its use in clinical practice.

Aims. To evaluate the efficacy and safety of PG leaf extract as an add-on treatment in improving glycaemic parameters in patients with T2DM.

Methods. This is a randomized, double-blind, parallel-arm, placebo-controlled trial conducted at a tertiary care referral hospital in South India. A total of 150 patients with T2DM attending the diabetes clinic were randomly assigned in a 1:1 ratio to receive either PG leaf aqueous extract or placebo at a dose of 600 mg thrice daily for three months, as an add-on to standard therapy. The primary outcome was change in HbA1c from baseline at the end of three months. Secondary outcomes included changes in fasting blood glucose, insulin, HOMA-IR, adiponectin, hs-CRP, total oxidant and antioxidant status from baseline to three months.

Results. Of the 150 participants recruited, 128 completed the study per protocol. PG leaf extract significantly reduced HbA1c compared to placebo (mean change from baseline: -1.01 vs. -0.20; mean difference -0.81, 95% CI (-1.28, -0.34); p<0.001). Significant reductions in serum insulin (-1.6 vs. +1.8 µIU/mL; p=0.04), HOMA-IR (-1.0 vs. +0.3; p=0.032), and total oxidative stress (-10.1 vs. +1.7 U/mL; p=0.032), along with significant increase in adiponectin (+1.02 vs. -7.41 µg/mL; p=0.042) and total antioxidant status (+0.06 vs. -0.05 U/mL; p=0.008), were observed with PG leaf extract compared to placebo. The most common adverse event reported in the PG group was constipation (9.2% vs. 4.1%).

Discussion. This study demonstrates that PG leaf extract has significant anti-diabetic potential, as evidenced by improvements in HbA1c and other glycaemic and metabolic parameters, with a favourable safety profile.

P786

Influence of smartphone application-based intervention on medication adherence– a randomized controlled trial

Dr Harivenkatesh Natarajan

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Influence of smartphone application-based intervention on medication adherence– a randomized controlled trial

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Introduction. The global burden of non-communicable diseases is increasing rapidly. Despite the availability of effective therapies, medication non-adherence remains a significant barrier to optimal disease management, particularly in chronic conditions such as diabetes, hypertension, and cancer. Non-adherence rates in these populations range between 30% and 50%.

Aims. To evaluate the efficacy of a smartphone application-based intervention in improving medication adherence among patients with chronic diseases, specifically diabetes, hypertension, and cancer.

Methods. This study enrolled 130 patients with diabetes and/or hypertension, and 130 patients with cancer. Participants were randomized in a 1:1 ratio to receive either usual care and counselling or usual care and counselling plus medication reminders through a newly developed smartphone application (*DawaReminder*) designed by the study team. Medication adherence was assessed using Adherence Percentage (AP) and the Medication Adherence Rating Scale (MARS) at baseline and after three months of intervention. In patients with diabetes/hypertension, HbA1c, systolic blood pressure (SBP), and diastolic blood pressure (DBP) were also recorded at both time points.

Results. Of the 260 participants enrolled, 123 patients with diabetes/hypertension and 125 cancer patients completed the study and were included in the final analysis. In the diabetes/hypertension cohort, the change in MARS score (mean ± SD) was significantly greater in the intervention group compared to the control group (3.39 ± 1.19 vs. 1.67 ± 1.49; P<0.001), as was AP (94.43 ± 6.96% vs. 84.79 ± 9.66%; P<0.001). Mean reductions in HbA1c (-0.84 ± 0.38% vs. -0.31 ± 0.40%; P<0.001), SBP (-12.1 ± 6.9 vs. -6.4 ± 5.4 mmHg; P<0.001), and DBP (-7.1 ± 4.4 vs. -3.0 ± 3.0 mmHg; P<0.001) were also significantly greater in the intervention group. Among cancer patients, AP (97.15% vs. 93.69%; P<0.001) and MARS scores after 3 months (9.67 vs. 9.10; P<0.001) were significantly higher in the intervention group.

Discussion. The *DawaReminder* smartphone application significantly improved medication adherence among patients with diabetes, hypertension, and cancer. These findings support the integration of smartphone-based digital health tools into the routine management of chronic diseases.

P787

Lipid-lowering & anti-inflammatory, of statin–ezetimibe and bempedoic acid–ezetimibe in dyslipidemics

Assist Prof Ved Prakash

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Lipid-lowering & anti-inflammatory, of statin–ezetimibe and bempedoic acid–ezetimibe in dyslipidemics
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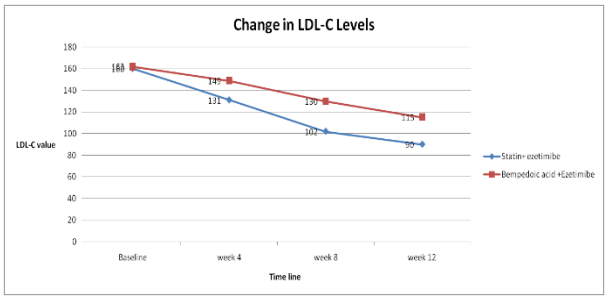

Introduction. Dyslipidemia is a substantial risk factor for cardiovascular disease, largely in the Indian population with wider disemination of atherogenic dyslipidemia and metabolic syndrome. Statins remain the frontline therapy, while Ezetimibe and newer non-statin agents such as Bempedoic acid offer additional lipid-lowering effects, particularly in patients intolerant or inadequately controlled on statins. Limited data exist comparing statins, bempedoic acid, and their combinations with ezetimibe in the North Indian population.
Aim. To evaluate the safety and efficacy of Statin + Ezetimibe versus Bempedoic acid + Ezetimibe in dyslipidemic patients at a tertiary care center in North India, with focus on lipid profile parameters, hs-CRP, and HbA1c over 12 weeks.
Methods. A prospective, randomized, parallel-group study was conducted on 120 patients with dyslipidemia, divided into two groups (n=60 each): Group A: Statin(10mg) + Ezetimibe(10mg) vs Group B: Bempedoic acid(180mg) + Ezetimibe(10mg). Parameters measured at baseline, 4, 8, and 12 weeks included lipid profile (TC, LDL-C, HDL-C, TG), hs-CRP, and hba1c. Safety was assessed by adverse event monitoring and liver/renal function tests.
Results. Both the groups groups demonstrated significant reductions in LDL-C and total cholesterol by week 12 ($p<0.001$). Statin + Ezetimibe achieved the greatest LDL-C reduction (~50%), while Bempedoic acid + Ezetimibe showed moderate but clinically meaningful reduction (~30–35%). Hs-CRP decreased significantly in both statin and Bempedoic acid groups, suggesting anti-inflammatory efficacy. Hba1c remained stable across both groups, with no significant glycemic worsening. Safety profile was favorable in all groups, with fewer muscle-related adverse effects reported in the Bempedoic acid arm compared to statins.
Conclusions. In the North Indian dyslipidemic population, both Statin + Ezetimibe and Bempedoic acid + Ezetimibe were effective and well-tolerated. Statins achieved superior LDL-C lowering, while Bempedoic acid provided an alternative for patients with statin intolerance, with additional hs-CRP reduction and metabolic neutrality. These findings support the role of Bempedoic acid as an emerging non-statin therapy in Indian clinical practice.

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P788

Reduced serum urate despite unchanged allopurinol dosing in gout patients commencing dialysis

Ms Noha Kamel

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Reduced serum urate concentrations despite unchanged allopurinol dosing in gout patients commencing dialysis

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Introduction. Acute gout causes significant morbidity in patients receiving dialysis. Although both oxypurinol (allopurinol's active metabolite) and urate are dialysable, it is unclear if target serum urate concentrations (<0.36 mmol/L) are achieved in these patients.
Aims. To evaluate allopurinol dosing practices and serum urate concentrations in patients with gout on dialysis.
Methods. Adults prescribed allopurinol, receiving dialysis between 1/6/2019 and 30/6/2024, with serum urate concentrations documented were included. Clinical data was collected longitudinally (one year before commencing dialysis to study end) including demographics, dialysis modality, allopurinol dosing, and serum urate concentrations. Serum urate concentrations collected during acute inflammation (e.g. sepsis or peritonitis) were excluded.
Results. Forty-nine patients (21 haemodialysis (HD) and 28 peritoneal dialysis (PD)) were included. Most HD patients received thrice-weekly haemodiafiltration (62%) with high flux dialysers (86%), while 57% of PD patients received automated PD. Allopurinol doses ranged from 25-300 mg daily (mode 100 mg daily). The dose of allopurinol remained unchanged in 94% (46/49) of patients after commencing dialysis. Serum urate concentrations were collected interdialytic before HD sessions(19/21 patients) or during continuous PD (16/28 patients). At 8 (0.07-48) months after commencing dialysis, the median serum urate concentrations decreased compared to pre-dialysis (HD: 0.53 mmol/L versus 0.3 mmol/L, p=0.006; PD: 0.53 mmol/L versus 0.31 mmol/L, p<0.001). More frequent HD sessions and continuous PD were associated with lower serum urate concentrations. Most HD (71%, 15/21) and PD (79%, 22/28) patients had ≥ one serum urate concentration within target throughout the dialysis vintage.
Discussion. Serum urate concentrations decreased post-dialysis without altering the dose of allopurinol, confirming that dialysis enhances urate clearance. Further research is required to assess whether allopurinol dose reductions or deprescribing is possible in patients receiving dialysis whilst maintaining target urate concentrations.

P789

Challenges in identification and adjudication of adverse drug withdrawal events

Dr Emily Reeve

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Challenges in identification and adjudication of adverse drug withdrawal events
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Introduction. Fear of adverse drug withdrawal events (ADWEs) is a significant barrier to deprescribing in practice. There is limited evidence on the incidence of ADWEs, in part due to limited methodological guidance and approaches that use routinely collected data to generate evidence about ADWEs on a population scale.
Aims. To explore the challenges with adjudication of potential ADWEs identified in routinely collected data.
Methods. Pairs of likely discontinuations (algorithmic approach which combined text string searches of clinical documentation and medication order data) and potential ADWEs (diagnosis and procedure codes and clinical parameters) were identified. Approaches were tailored to specific drug groups: oral hypoglycemics, statins, antihypertensives, bladder antimuscarinics, and anticoagulants/anti-platelet agents. Identified records of older adults (65+) were then manually adjudicated to confirm discontinuations and ADWEs. Qualitative content analysis was applied to adjudication notes to identify challenges to ADWE identification.
Results. 294 potential ADWEs were identified and adjudicated. 210 (71%) were assessed as doubtful, 61 (21%) as possible, 21 (7%) as probable, and 2 (<1%) as definite. We identified five themes: terminology (symptoms were present before and after discontinuation, e.g. bladder antimuscarinic stopped due to inefficacy), intent (the event was the intent/purpose of discontinuation, e.g. increased blood pressure in an individual with hypotension), causal inference (complex patients with other factors that could have caused the event), timeframe (event may represent progression of disease rather than an ADWE) and acute contraindications (where the medication was temporarily held to prevent an adverse drug event).
Discussion. Few of the identified events were determined to be probable or definite ADWEs. An algorithmic approach was able to be developed to identify possible ADWEs in routinely collected data, however, adjudication was extremely complex. Further research is needed to develop adjudication methods with working definitions for ADWEs and these may need to be drug class specific.

P790

Knowledge of primary healthcare practitioners on medication-related oral complications: a scoping review

Dr Lisa Kouladjian O'Donnell

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Exploration of the knowledge, attitudes and behaviours of primary healthcare practitioners on medication-related oral complications in older adults: a scoping review

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Introduction. Older adults with polypharmacy (concurrent use of ≥5 medications), are at risk of systemic and oral health complications. Medication-related oral adverse events (AEs) such as xerostomia, mucositis and medication-related osteonecrosis of the jaw (MRONJ) have been well documented to impair nutrition, exacerbate systemic conditions, and reduce quality of life. However, little is known about the knowledge, attitudes and behaviours of primary healthcare practitioners (PHCs) when considering prescribing or deprescribing medications, and its subsequent impact on both oral and systemic health of older adults.
Aims. To conduct a scoping review to explore PHCs knowledge, attitudes and behaviours towards medication-related oral AEs in older adults with polypharmacy.
Methods. The Joanna Briggs Institute methodology for scoping reviews was used, reported using PRISMA-ScR and registered on Open Science Framework. Database searches were performed in MEDLINE, Embase, Scopus and Web of Science. Two reviewers independently screened, extracted and coded studies to the Theoretical Domains Framework (TDF) to identify behavioural determinants and barriers. Thematic analyses were conducted using NVivo 15.
Results. The database search identified 1780 studies, which were screened, and 29 studies were included in this review. Eleven of the fourteen TDF domains were identified, revealing large knowledge gaps about medication-related oral AEs, limited interpersonal collaboration, and numerous environmental and setting barriers. MRONJ (n = 14/29) and xerostomia (n = 12/29) were the most recognised medication-related oral adverse events across all studies. Awareness about AEs was generally superficial and oral health considerations were rarely integrated into clinical decision making.
Discussion. PHCs acknowledged AEs of polypharmacy on oral health, but felt they lacked knowledge, confidence and structural support to address these issues. The deferral of perceived responsibility, lack of interprofessional communication, and professional boundaries further prevented PHC action against AEs.

P791

Bradford Hill-based systematic review of ageing and polypharmacy on frailty progression

Mr Subindra Thapa

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Bradford Hill-based systematic review of ageing and polypharmacy on frailty progression
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Introduction. Frailty is a common and complex condition in older adults, often associated with ageing and medication use, particularly polypharmacy. While these associations are frequently reported in the literature, their independent causal roles remain unclear due to confounding factors and limited interventional evidence.
Aim. To assess whether ageing and polypharmacy independently cause frailty progression, using the Bradford Hill Criteria for epidemiological causation.
Methods. A systematic review was conducted following PRISMA guidelines, searching MEDLINE, EMBASE, and CENTRAL without restrictions on date or study design. Studies were selected based on predefined inclusion criteria and assessed for quality using the Joanna Briggs Institute (JBI) critical appraisal tool. Where appropriate, meta-analyses were performed in RStudio, adjusting for minimum age and polypharmacy to reduce confounding bias. The Bradford Hill Criteria were then applied to evaluate independent causal relationships.
Results. Data from 105 moderate to high-quality studies were extracted and synthesized. Eight of the nine Bradford Hill principles supported a strong, independent causal link between ageing, polypharmacy, and frailty progression. Strength of association, consistency, biological gradient, temporality, experiment, plausibility, coherence, and analogy were all satisfied. Specificity was not fully met, as frailty is influenced by multiple factors beyond ageing and polypharmacy.
Discussion. This review provides strong evidence that both ageing and polypharmacy independently contribute to frailty progression. Despite the limited availability of randomised controlled trials in older populations, the Bradford Hill framework offers a robust method for evaluating causality. These findings highlight the importance of considering both age-related changes and medication burden in strategies to prevent or mitigate frailty, and they offer a foundation for future research and clinical interventions.

P792

Association between prescribed medications and delirium: pharmacological insights from the DeliA study

Prof Petra Thürmann

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Association between prescribed medications and delirium: pharmacological insights from the DeliA study
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Introduction: Delirium is an underdiagnosed geriatric syndrome associated with increased morbidity and mortality, possibly associated with polypharmacy, the intake of anticholinergics, sedatives and potentially inappropriate medications (PIM).
Aims: We investigated the association between these pharmacological risk factors and the occurrence of delirium in nursing home residents (NHR).
Methods: In this multicenter cross-sectional study NRH (aged ≥65 years) were screened for delirium using 4 'A's test (4AT). The Drug Burden Index (DBI) was used to quantify anticholinergic and sedative burden, PIM were evaluated using the PRISCUS 2.0 list, polypharmacy was defined as ≥ 5 medications. Following univariate logistic regression analyses (ULR), multivariate logistic regressions (MLR) including age, sex, diagnosed dementia and residential period were conducted.
Results: Among 413 NHR delirium (4AT ≥ 4) was present in 17.7%. A high DBI and intake of at least one neuroleptic were significantly associated with delirium in both ULR (DBI: OR= 1.47; 95% CI 1.09–1.98; p = 0.019; neuroleptics: OR = 2.70; 95% CI 1.93–3.76; p < 0.001) and MLR (DBI: AOR = 1.44; 95% CI 1.11–1.86; p = 0.012, neuroleptics: AOR =2.21; 95%CI 1.50–3.25, p < 0.001). The use of ≥ 2 PIM showed a significant association only in the ULR (OR = 2.22; 95% CI 1.15–4.27; p = 0.025).
Discussion: The significant association between DBI and the occurrence of delirium highlights the importance of systematic medication reviews to mitigate the risk of delirium. Neuroleptics, while sometimes used to manage delirium symptoms, may also contribute to delirium, warranting cautious prescribing.

P793

Adverse Drug and Withdrawal Events: Associations Between Medication Changes and Hospital Admissions

Prof Petra Thürmann

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Adverse Drug and Withdrawal Events: Associations Between Medication Changes and Hospital Admissions

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Introduction: Polypharmacy represents a major risk factor for drug-related complications and hospital admissions (HA). Deprescribing strategies aim to reduce unnecessary or potentially harmful medications; however, they carry the risk of adverse drug withdrawal events (ADWEs).
Aims: The aim of this retrospective analysis of the COFRAIL study (1) is to assess the likelihood of HA due to ADWEs or adverse drug events (ADEs).
Methods: The COFRAIL study was a cluster RCT with 623 frail outpatients (≥70 years) with polypharmacy (≥5 drugs/day where deprescribing was conducted in the intervention group. For this analysis, HA diagnoses and current or deprescribed medications were analysed retrospectively in order to detect possible associations between drugs or drug withdrawals and ADEs or ADWEs, respectively. ADEs and ADWEs were assessed by medical professionals using the WHO-UMC system (2) and Naranjo score (3), conceptually adapted to capture also ADWEs.
Results: In 183 patients, 281 HA were documented. With the Naranjo score and WHO-UMC method, 163 and 84 ADEs, and 117 and 14 ADWEs, respectively, were identified. Cardiac medications, especially diuretics, RAAS inhibitors and β-blockers were frequently associated with both ADEs (48.1% of all ADEs) and ADWEs (68.2% of all ADWEs). Analgesics were often linked to ADEs (29.5%) with no ADWEs, while ADWEs occurred after deprescribing of antidiabetics and PPIs (each 9.1%).
Conclusion: In conclusion, ADWEs appear to occur less frequently than ADEs pointing out the need to reduce drug burden especially in older patients. Nevertheless, ADWEs should be considered in the context of deprescribing.

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P797

Beneath the Surface – subcutaneous drug delivery in infancy

Ms Megan Clark

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Beneath the Surface – subcutaneous drug delivery in infancy
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Introduction. The subcutaneous (sc) route is rarely used for neonates (particularly preterm neonates) due to limited sc tissue stores and altered vascularity. It does, however, have benefits including avoiding need for secure intravenous (iv) access and enabling home administration. Furthermore, for certain parenteral medications it offers a superior PK profile compared with iv dosing, with more sustained drug exposure due to rate-limiting absorption from the subcutaneous depot. Enoxaparin, a low molecular weight heparin, is one such medication, and is given sc to preterm infants.
Aims. To quantitate the absorption, distribution and elimination of enoxaparin following sc administration to infants.
Methods. Enoxaparin dose and anti-Xa concentration data were extracted from pathology and the electronic medical record for patients meeting inclusion criteria between 2014 and 2024.
The PKPD relationship will be assessed using non-linear mixed effects modelling (NONMEM®) to systematically quantitate the relationship between dose and concentration, including impact of covariate relationships such as postnatal age, body size and organ function or impairment.
Results. Forty-six (46) infants received a total of 2604 inpatient administered enoxaparin doses. Of these infants, 54% were premature (gestational age < 37 weeks) at birth, 37% received their first dose during the neonatal period (postnatal age < 28 days), and 48% received their first dose at postmenstrual age < 44 weeks. The median weight at the first dose was 4.03 kg (range: 1.36-9.6). Interim pharmacometric analysis supports a 1 compartment model, with further work ongoing to determine the best covariate model for this population.
Discussion. This study of enoxaparin PK includes a higher proportion of premature infants than previously published, and includes sc administration in early neonatal life. The proposed analysis will increase precision in sc dosing in premature neonates and will aid novel drug trials in neonates and infants for dose identification and optimisation.

P798

Population pharmacokinetics of high-dose methotrexate with pharmacogenomics for outcomes in acute leukemia

Dr Niveditha K

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Population pharmacokinetics of high-dose methotrexate with incorporation of pharmacogenomics for clinical outcomes and adverse effects in acute lymphoblastic leukemia

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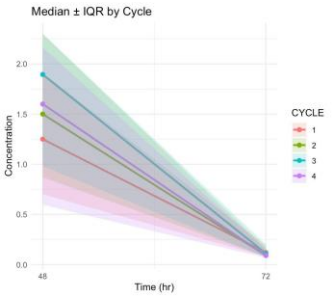

Introduction. High-dose methotrexate (HDMTX) is integral to consolidation therapy in acute lymphoblastic leukemia (ALL), yet marked interindividual pharmacokinetic variability influences treatment response and toxicity. Therapeutic drug monitoring (TDM) guides leucovorin rescue; however, pharmacogenomic contributors to exposure variability require further characterization.

Aims. To characterize the population pharmacokinetics of HDMTX and evaluate the impact of selected single nucleotide polymorphisms (SNPs) on methotrexate exposure, adverse events, and clinical outcomes in ALL.

Methods. Patients with ALL receiving HDMTX under a modified BFM-90 protocol were prospectively studied. Plasma methotrexate concentrations were quantified at 48 and 72 hours using validated LC–MS/MS methodology. Population pharmacokinetic parameters were assessed, and exposure thresholds (≥1 µmol/L at 48 hours) were correlated with toxicity and clinical response. Genotyping for MTHFR C677T, SLCO1B1 rs10841753, and SLC19A1 80G>A was performed to evaluate pharmacogenomic associations.

Results. Substantial interpatient variability in HDMTX exposure was observed. Higher plasma concentrations at 48 hours were associated with increased incidence of adverse effects and requirement for intensified leucovorin rescue. Variants in MTHFR C677T and SLCO1B1 were significantly associated with delayed methotrexate clearance and elevated plasma levels. Figure 1 demonstrates the distribution of plasma methotrexate concentrations at 48 and 72 hours and their association with genotype status, highlighting exposure differences between variant and wild-type alleles.

Discussion. Integration of population pharmacokinetics with pharmacogenomic profiling explains clinically relevant variability in HDMTX exposure. Incorporating SNP-based risk stratification alongside TDM may enhance individualized dosing, reduce toxicity, and improve therapeutic outcomes. These findings support a precision medicine framework for optimizing HDMTX therapy in ALL.

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P799

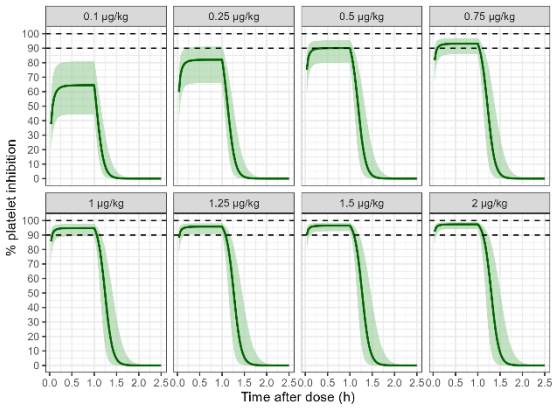
Extrapolation of cangrelor efficacy and dose rationale for infants and children

Pietro Laddomada

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Extrapolation of cangrelor efficacy and dose rationale for infants and children Pietro Laddomada[1,2], Alessandro Di Deo[1,2], Oscar Della Pasqua[1,2], Clinical Pharmacology & Therapeutics Group[1], University College London, London, UK. Department Name, Consiglio Nazionale delle Ricerche (CNR), Rome, Italy.

Introduction. Cangrelor is a direct and reversible P2Y12 receptor antagonist that inhibits platelet activation and aggregation, currently approved in adults undergoing percutaneous coronary intervention.
Aims. To characterise the PKPD relationship of cangrelor and provide a basis for extrapolating efficacy from adults to infants and children, as well as defining the dose rationale in these populations.
Methods. Phase I data in healthy adults in conjunction with allometric principles were used to extrapolate the PK in children and infants. Emax and indirect response models from in vitro experiment were used to describe the onset, maintenance and offset of the effect on platelet aggregation. The final model has been used to simulate treatment response in children following administration of different dosing regimens (1h IV infusion of 0.1 up to 2.0 µg/kg/min).
Results. A weight-banded regimen is proposed for infants and older children, taking into account platelet counts at baseline.
Discussion. This study represents an initial attempt to extrapolate the efficacy of cangrelor from adults to children by integrating PK and PKPD data from various sources. Our results suggest that a dose rationale can be defined for operative settings in infants and children under the assumption of comparable PKPD relationships across the different age groups. In addition, discrepancies between in vitro and in vivo data are caused by experimental protocol conditions, which can be incorporated as covariates to describe and predict the aggregometry response in children based on in vitro data.



P800

Dose Optimisation of Anakinra in Preterm Neonates using Mechanistic Population Pharmacokinetic Approaches

Miss Jia Li

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Dose Optimisation of Anakinra in Preterm Neonates using Mechanistic Population Pharmacokinetic Approaches

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Introduction. Anakinra, an interleukin-1 receptor antagonist, is a promising candidate for use in preterm neonates to prevent or treat inflammation-driven morbidities, including bronchopulmonary dysplasia and diffuse white matter injury. However, the pharmacokinetics (PK) of anakinra have never been characterized in preterm neonates, who undergo rapid physiological changes in organ size, perfusion & function, limiting evidence-based treatment.

Aims. To develop a population PK model of anakinra in preterm neonates to inform optimal dosing strategies, accounting for age-related physiological changes.

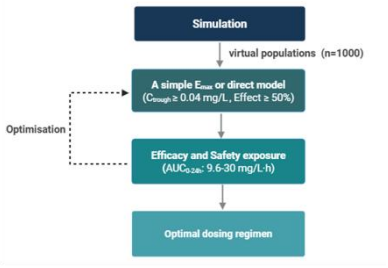

Figure 1. Simulation workflow

Methods. A population PK model using a nonlinear mixed-effect model was developed from blood concentration, clinical and demographic data collected in the Anakinra Pilot trial (NCT05280340). In this Phase I/IIa trial, anakinra was administered intravenously across a 21-day period to preterm neonates (24-28 weeks gestational age). An optimal dosing regimen was then developed using simulations from the final covariate model, which incorporated a direct effect model (E_{max}, IC_{50}) for efficacy, and target exposure ($AUC_{0\text{-}24h}$) range for efficacy and safety (**Figure 1**).

Results. A one-compartment model with linear elimination incorporating a baseline model for endogenous IL-1Ra concentrations best described the data. Allometric scaling applied to clearance (CL) and volume of distribution (V), with maturation included on CL. Estimated CL and V were 3.97 L/h/70kg and 28.9 L/70kg. At birth, CL was ~45% of the maximal postnatal values, achieving 100% by day 10 postnatal age (PNA). The optimal dosing regimen for efficacy and safety identified via simulation was 0.6 mg/kg 12 hourly at birth, 0.8 mg/kg 12 hourly on PNA day 1, 1.0 mg/kg 12 hourly from PNA days 2 to 3 and 1.15 mg/kg 12 hourly from day 4 onward.

Discussion. The population PK model for anakinra provides a critical understanding of small therapeutic protein PK in premature neonates, as well as a dosing strategy to guide further Phase II and III clinical trials.

P802

Paediatric clinical research in India: progress, safeguards and priorities

Prof C.M. Kamaal

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Paediatric clinical research in India: progress, safeguards and priorities

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Introduction. With one of the world's largest and most diverse paediatric populations, India offers unparalleled opportunity to generate generalizable evidence across age bands, regions, and disease patterns—making it especially suitable for paediatric trials. Recent reforms—mandatory prospective trial registration, clearer approval timelines, and stronger ethics oversight for child participants—aim to improve safety, transparency, and study quality. Harnessing this scale responsibly, and pushing for broad national involvement and international collaboration, can accelerate evidence generation and improve paediatric health care in India and worldwide.

Aims. To (1) summarise current enablers for high-quality paediatric trials in India; (2) identify persistent gaps that affect medication safety and efficacy evidence; and (3) propose practical priorities for 2026–2030.

Methods. Narrative synthesis of Indian regulatory and ethics updates (2018–2025), public market/operations data, and exemplar sponsor/CRO announcements relevant to India's paediatric trial capacity. Themes were grouped as governance, capability, and opportunity.

Results. Governance: Since 1 April 2018, prospective registration of all studies in CTRI is enforced, improving transparency and discouraging selective reporting. The New Drugs and Clinical Trials Rules, 2019 clarified review timelines, mandated ethics committee registration, strengthened safety reporting/compensation, and provided guidance on post-trial access, building trust for paediatric participation. Ethics: National guidance details assent/consent processes tailored to age and vulnerability, reinforcing child-specific safeguards. Capability: India's trials ecosystem has expanded with global sponsors/CROs and hospital networks, supported by accredited labs and digital trial tools; interest in earlier-phase and vaccine studies is rising. Opportunity: A large, diverse paediatric population and growing site capacity position India for multi-centre paediatric pharmacology work. Priority disease areas include infectious diseases, respiratory/allergy, oncology, and metabolic disorders. Limited paediatric-trained clinical pharmacologists/investigators at scale; variable adoption of assent best-practice; challenges with child-friendly formulations; and data/IT heterogeneity across sites.

Discussion. India now offers a regulated, scalable platform for paediatric medication studies. We propose three priorities: (1) a national paediatric clinical pharmacology training and GCP upskilling programme; (2) a multi-centre paediatric trial network using standardised eCRFs and safety monitoring; and (3) linkage of CTRI registration to outcomes dashboards to accelerate evidence for dosing, efficacy, and safety. These steps can convert policy gains into measurable improvements in paediatric therapeutics and support global collaborations at scale.

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P803

A clinical pharmacology overview of some anaesthetic drugs in a children's emergency department

A/Prof Ioan Magyar

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

A clinical pharmacology overview of some anaesthetic drugs in a children's emergency department

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Introduction. The use of intravenous anaesthetic drugs is not an easy task especially in children and infants. In our days we are encountering a major challenge regard to the pattern of paediatric emergency situations. This is due to an increase of prevalence of severe traumatic injuries in children brought to our emergency department.

Aim. Our study is focused on which of the i.v. anaesthetic drugs could be more suitable in emergency management of children with critical and even life-threatening conditions. In many cases of children with seizures, head trauma, burns on the large body surface area we need a significant degree of analgesia, sedation or anaesthesia.

Methods. We analysed 48 children brought to our emergency department in the last eighteen months for serious clinical conditions and in some cases even life-threatening condition. The use of anaesthetic drugs were accordingly to needs of antiseizure effect, sedation, analgesia or even i.v. anaesthesia. All children received one of the following i.v. anaesthetic agents: midazolam 0.05-0.1 mg/kg, ketamine 1-2 mg/kg, and fentanyl 1-2 mcg/kg.

Results. More than 77% (37) of children were treated for severe pain due to complex bone fracture (52.1%). They received fentanyl 1-2 mcg/kg i.v. or ketamine 1-2 mg/kg i.v. to obtain a high degree of analgesia. Almost 70.80% (34) of have x ray investigations and 35.40% (14) CT scan. For those who have CT scan procedures we provided midazolam i.v. in 0.05-1,0 mg/kg regimen. Most notable is the significant percent of children under 24 months of life, 25% (12) of overall 48 children.

Discussion. The main anaesthetic drugs suitable for analgesia, sedation, anticonvulsant activity or even anaesthesia in children are: benzodiazepines, ketamine, and fentanyl. Benzodiazepines induce hypnosis, anxiolysis, sedation, and amnesia, and have anticonvulsant activity. Ketamine rapidly induces general anesthesia that lasts for 15-30 min when given at 1-3 mg/kg i.v. Fentanyl is an effective agent to provide pain relief, analgesia, and sedation for painful procedures.

P804

Towards Model-Informed Precision Dosing : Population Pharmacokinetics of Gentamicin in Malaysian NICU

Dr Suzana Mustafa

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Towards Model-Informed Precision Dosing: Population Pharmacokinetics (PopPk) of Gentamicin in Malaysian NICU

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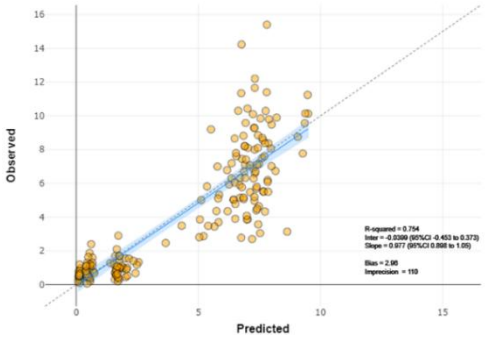
Introduction. Significant differences in the pharmacokinetic characteristics of gentamicin among neonates have been
observed across different patient populations. Most existing PopPK models for gentamicin in neonates are based on data from Caucasian populations, whose pharmacokinetics differ from other ethnic groups.

Aims. A population-specific pharmacokinetic model for the Malaysian neonatal population is essential to improve estimation and accuracy.

Methods. Gentamicin PopPK was developed using Pmetrics with 232 routine steady-state trough and peak TDM observations from 116 neonates in the NICU. Model performance was assessed by comparing observed versus predicted concentrations (population and individual) and by examining weighted residual error plots. Accuracy and robustness were evaluated using numerical predictive checks (NPCs), while accuracy and precision were quantified by mean prediction error and root mean squared error (RMSE). A Bland-Altman plot was used to assess agreement and precision between predicted and observed concentrations.



Results. Gentamicin pharmacokinetics in neonates during the first week of life were best described by a one-compartment model with first-order absorption. Weighted residuals were evenly distributed across the concentration and time ranges, and the model provided accurate peak and trough concentration estimates.

Discussion. A population pharmacokinetic model describing gentamicin pharmacokinetics in Malaysian neonates was successfully developed. The model accurately characterizes gentamicin pharmacokinetics in neonates treated in the NICU, providing a valuable tool for clinical pharmacokinetic estimation in this population.

P805

Bayesian virtual trials enable precision paediatric dosing across multiple drug classes

Prof Catherine Sherwin

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Bayesian virtual trials enable precision paediatric dosing across multiple drug classes

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Introduction. Paediatric dosing is highly variable due to age-dependent PK, interindividual differences, and limitations of TDM. Therapies such as antibiotics, antiepileptics, immunosuppressants, and oncology agents require individualisation to balance efficacy and toxicity.
Aims. To refine precision dosing using virtual trials, Bayesian forecasting, and optimal design across multiple drug classes.
Methods. A NONMEM (v7.4) population PK model simulated a virtual paediatric cohort with renal function, clearance maturation, and weight scaling. Monte Carlo simulations estimated PTA for multiple drug classes. Optimal design was used with PopED (R v0.7.0), and PFIM (R v7.0; R ≥ 4.0.0) was employed for validation via D-criterion algorithms. Designs identified informative sampling schedules. Bayesian forecasting was compared with TDM, and virtual trials were simulated to assess first-in-child dosing.
Results. Bayesian forecasting increased PTA from 60–70% with TDM to 80–90%, reducing exposure CV by 20–30%. Antibiotics achieved target exposure in 80–90% of cases, with fewer instances of above-threshold values. Antiepileptics showed more than 70% fewer subtherapeutic exposures and reduced phenytoin accumulation. Immunosuppressants had more time in the tacrolimus range with narrower variability. Oncology agents showed 10–20% higher target attainment and fewer dose-limiting exposures. Optimal designs cut blood draws by 30–50% while preserving precision.
Discussion. Virtual trials, Bayesian forecasting, and optimal design improve paediatric precision dosing, enhancing safety, efficacy, and trial efficiency. This model-informed framework offers scalable strategies from neonates to adolescents and highlights the translational role of pharmacometric modelling in drug development and regulatory science.

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P806

Tocilizumab's Clinical Effectiveness in Systemic Juvenile Arthritis Patients: A Case Series Study

Ms Nokwanda Nhlanzeko Ngcobo

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Tocilizumab's Clinical Effectiveness in Systemic Juvenile Arthritis Patients: A Case Series Study
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Introduction. Systemic juvenile idiopathic arthritis (sJIA) is a rare, severe subtype of JIA, accounting for 10–20% of cases, and is characterised by systemic inflammation, fever, rash, and arthritis. Management is particularly difficult in resource-limited settings such as KwaZulu-Natal (KZN), where access to biologics like tocilizumab depends on Pharmacy and Therapeutics Committee (PTC) approval. Evidence of treatment effectiveness in these contexts remains scarce.
Aim. To investigate the potential effectiveness of tocilizumab in managing sJIA at a tertiary hospital in KZN.
Methods. A retrospective case series at Inkosi Albert Luthuli Central Hospital reviewed MediTech™ records of patients treated with tocilizumab on a named-patient basis, with ethical approval obtained from the University of KwaZulu-Natal and relevant authorities.
Results. Two paediatric systemic JIA cases from KZN highlight both challenges and outcomes with tocilizumab (400 mg monthly) therapy. Concomitant therapy included sulphasalazine, prednisone, folic acid, and methotrexate. Case A, a 6-year-old boy, remained clinically stable and symptom-free despite treatment interruptions, showing improved haematological parameters, though with lingering academic difficulties requiring neurodevelopmental review. Case B, another 6-year-old male with musculoskeletal deformities and a complex disease course, experienced relapse after therapy disruption but improved with reintroduced combination therapy, including tocilizumab 370 mg, prednisone, cyclosporin, and folic acid. He regained appetite, mobility, and school activity, although chronic synovitis and elevated C-reactive protein persisted.
Discussion. These cases highlight the challenges of managing sJIA in resource-limited settings, where access to biologics like tocilizumab requires nonformulary approval. Tocilizumab showed clinical effectiveness, with Case A demonstrating rapid improvement, while Case B had a more complex course with persistent joint damage despite functional gains. The outcomes illustrate disease heterogeneity, the importance of continuous therapy, and risks of treatment interruption. Overall, tocilizumab appears to be a promising option for paediatric sJIA in KZN, highlighting the need for long-term monitoring and further cost-effectiveness research.

P807

Systematic Review: Effects of SGLT2-Inh. on UTI Incidence in Patients with T2DM

Assoc Prof Abraham Simatupang

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Effect of SGLT2 Inhibitors on UTI Incidence in Patients with T2DM. Systematic Review

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Introduction. Sodium Glucose Transporter 2 Inhibitors (SGLT-2i) are FDA-approved drugs for lowering blood glucose levels in T2DM patients, offering additional benefits such as reducing cardiovascular events and slowing the progression of chronic kidney disease. However, the use of SGLT-2i has also been associated with a potential risk of urinary tract infections (UTI).
Aims. This study aimed to evaluate the effect of SGLT-2 inhibitor use on the incidence of UTI in patients with T2DM.
Methods. This was a quantitative systematic review study. Systematic literature searches covering the years 2014–2025 were carried out using scientific databases such as PubMed, Cochrane Library, Scopus, and Google Scholar. Following a thorough selection procedure that included duplication removal, title/abstract relevance, and inclusion/exclusion criteria, 19 of the 952 initially found articles satisfied the requirements for additional analysis utilizing Review Manager 5.4 software.

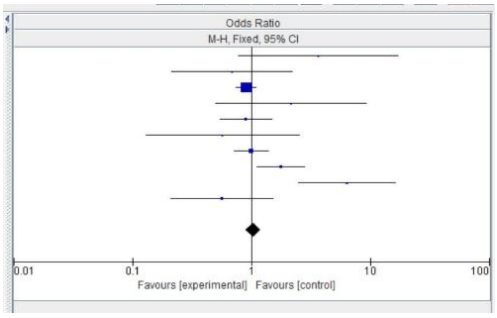

Figure 2. Forest plot

Results. The meta-analysis of the 19 studies revealed no statistically significant difference between the SGLT-2 inhibitor user group and the control group regarding the incidence of UTI. The aggregate odds ratio (OR) was 0.99 (95% CI: 0.96 – 1.02) with a p-value of 0.59.
Discussion. The use of SGLT-2 inhibitors is not significantly associated with an increased or decreased risk of UTI incidence. Nevertheless, factors such as female gender and initial duration of use (12-24 weeks) may influence UTI incidence in certain individuals.

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P808

First dose monitoring of busulfan is not reliable to predict cumulative exposure.

Dr Hundie Tesfaye

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

First dose monitoring of busulfan is not reliable to predict cumulative exposure.

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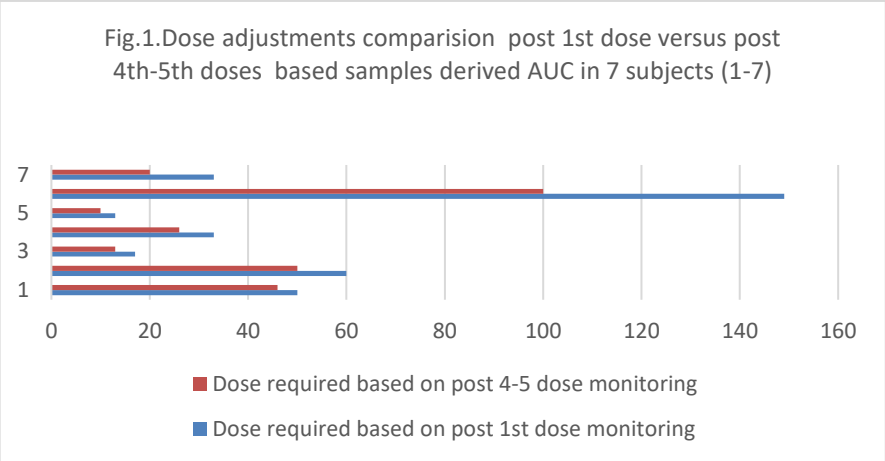

Fig.1.Dose adjustments comparision post 1st dose versus post 4th-5th doses based samples derived AUC in 7 subjects (1-7)

Introduction. One of the significant progress in human medicine is hematopoietic stem cell transplantation (HSCT). Pre-transplantation conditioning therapy is a rigorous step, where cytotoxic agents like busulfan are widely used. However, busulfan-containing protocol is not without challenges, because under exposure or over exposure can influence overall outcomes.

Aims. The objective of this contribution is to demonstrate that the use of first dose for cumulative exposure prediction of busulfan is not reliable indicating the vital necessity of further monitoring of exposure in-between doses especially in pediatric patients expressing significant variability

Methods. Seven pediatric patients, who used the first dose of mg/kg defined busulfan doses /6hr as conditioning therapy were included. Six serial blood samples were collected in all subjects to determine plasma concentrations and resulting area under the curve (AUC). LC/MS was used for busulfan plasma level determination and doses were adjusted based AUC calculated from 6 blood samples collected at 0 ,15 min, 30 min, 3hr, 4hr and 6hr after first dose and trough , immediately after 2hour infusion , 2 and 4 hours post infusion of the fifth dose respectively. AUC was calculated using trapezoidal rule aiming recommended cumulative AUC 78-101 mg/L*hr.

Results. All patients needed less dose by 8-40 % (median 24%) than predicted based on first dose monitoring. Steady state concentrations were reliable and enough to predict target exposure based on post forth dose monitoring (Fig1.), indicating that concentrations immediately after the first dose may mislead dose adjustment.

Conclusions. High variability in pharmacokinetic parameters were evident, with significant difference between first dose predication and post forth dose prediction for cumulative AUC target achievement. The clearance overestimated during the first dose is finally shifting towards drug accumulation after multiple doses suggesting later monitoring for better safety and efficacy. Although being preliminary with only limited number of patients our results clearly indicate necessity of monitoring later than relying on first dose test results.

P809

Vital necessity of therapeutic drug monitoring in patients on busulfan conditioning therapy

Dr Hundie Tesfaye

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Vital necessity of therapeutic drug monitoring in patients on busulfan conditioning therapy

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Introduction. : Busulfan, a drug used in conditioning therapy prior to hematopoietic stem cell transplantation (HSCT) in children**.** The drug pharmacokinetics varies in patients, while the optimum cumulative exposure has been defined; there is still different dosing interval protocols across centres in the paediatric population. It is however, evident that a higher plasma AUC is associated with a high-risk of regimen-related toxicity, while low busulfan plasma levels are associated with a higher risk of graft rejection and disease relapse.
Aims. To demonstrate extremely different busulfan pharmacokinetics with the same dose and same diagnosis.
Methods. Samples from two patients, one male and one female, who were scheduled, undergo busulfan-conditioning therapy before HSCT for the same diagnosis of high-risk neuroblastoma (HR-NBL) at the same dose of 19 mg /6hr, in 2hours infusion, while both children had 17.5 kg actual body weight. Plasma samples for therapeutic drug monitoring purpose have been collected, before the fifth dose (trough), 2, 4, and 6 hr. from beginning of the fifth infusion according to the local sampling protocol were analyzed immediately by LC-MS method.
Results. Area under the curve **(**AUC) of the drug in the female patient was slightly low and achieved better target after dose adjustment to 25mg while AUC in the male child was far from the target (too low) needing significant escalation of the dose up to 43mg i.e., the same initial dose has been changed by adding 31% in the female child versus 126% approximately in the male child, although role of gender in Bu PK in this case is not well elucidated.
Discussion. : Variability of Bu PK is well known among individuals due different factors including genetics, age and body weight among others. Nevertheless, since body weight of the patients in these cases was the same, the only underlying factor may be genetics, although the role of gender difference is not excluded despite lacking reports of its significance to influence PK of busulfan. Nevertheless, these results strongly indicate again the vital importance of therapeutic drug monitoring specially in paediatric patients on high dose busulfan conditioning therapy due the fact there is no one-size-fits-all approach for managing drug exposure individually.

P810

Placental and lactational transfer of mirtazapine in perinatal women

Dr Shusuke Ozawa

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Placental and lactational transfer of mirtazapine in perinatal women
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Introduction. Perinatal depression has been associated with adverse outcomes, including an increased risk of maternal suicide. Mirtazapine, a noradrenergic and specific serotonergic antidepressant (NaSSA), is commonly used for the treatment of depression. The safety data for the use of mirtazapine in pregnant and breastfeeding women are limited. The placental and lactational transfer of NaSSAs including mirtazapine remains unknown.
Aims. This study aimed to investigate the placental and lactational transfer of mirtazapine and to assess neonatal outcomes following fetal exposure and lactation.
Methods. Five women receiving mirtazapine for the treatment of depression during pregnancy and breastfeeding were enrolled. Maternal venous blood, cord blood, and breast milk levels of mirtazapine were measured by LC-MS/MS method. The cord-to-maternal blood (C/M) ratio and relative infant dose (RID) were calculated, with RID defined as the ratio of the infant dose via breast milk to the maternal dose. Neonatal outcomes were assessed at birth and followed up to 1 month after delivery. All data are presented as median (IQR).
Results. The median maternal age was 33 (IQR, 31–40) years. The median maternal dose of mirtazapine was 15.0 (IQR, 15.0–22.5) mg. The median maternal serum level of mirtazapine was 16.9 (IQR, 9.3–27.7) ng/mL, and the median umbilical cord blood level was 4.15 (3.52–7.58) ng/mL, yielding a median C/M ratio of 0.31 (0.23–0.40). The median milk level of mirtazapine was 17.6 (IQR, 7.4–30.0) ng/mL, resulting in a median RID of 1.16% (0.41–1.92%). Despite maternal mirtazapine exposure during pregnancy and lactation, no neonatal abstinence syndrome, congenital abnormalities, or neurological complications were observed in the neonates up to 1 month after delivery.
Discussion. Mirtazapine exhibited limited placental transfer, likely due to its high plasma protein binding. The RID of mirtazapine was below 10%, suggesting minimal infant exposure via breastfeeding. These findings provide important safety data for mirtazapine use during the perinatal period.

P811

Safety Analysis of SMA Therapies Using EudraVigilance Spontaneous Adverse Drug Reaction Reports

Prof Dinko Vitezić

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Body-Guarding Drug Safety: Post-Marketing Analysis and Trend Evaluation of Spinal Muscular Atrophy Therapies Using Spontaneous Adverse Drug Reaction Reports from EudraVigilance

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Introduction. As therapies for spinal muscular atrophy (SMA) expand, post-marketing pharmacovigilance is essential to ensure long-term safety and distinguish true adverse drug reactions (ADRs) from disease progression.

Aims. To evaluate the post-marketing safety profiles of nusinersen, onasemnogene abeparvovec (OA), and risdiplam using spontaneous ADR reports from EudraVigilance (EV).

Methods. Data on suspected ADRs were retrieved from EV via adrreports.eu, covering each drug's approval period in the European Economic Area. ADR reports were analyzed descriptively in Excel, and reporting odds ratios (RORs) with 95% confidence intervals were calculated, highlighting signals with lower 95% CI limits above 1. Additional analyses assessed overall ADR reporting trends alongside specific reactions: post-lumbar puncture syndrome (nusinersen), liver toxicity and elevated troponin (OA), and respiratory and gastrointestinal reactions (risdiplam). Joinpoint regression (version 5.2.0) was used to estimate annual percent changes and identify significant trend segments.

Results. A total of 3,196, 806, and 956 individual case safety reports were identified for nusinersen, OA, and risdiplam, respectively. Key ADRs with significantly elevated RORs included post-lumbar puncture syndrome (11%) for nusinersen, pyrexia (23%) for OA, and pneumonia (9%) for risdiplam. OA showed notable prevalence of hepatotoxicity, while risdiplam was mainly linked to gastrointestinal and respiratory events. ADR reporting trends differed by therapy: nusinersen rose initially then declined after 2019; OA increased steadily but slowed; risdiplam showed a consistent upward trend.

Discussion. Our findings reaffirm established ADRs and underscore the necessity of contextualizing reports within disease progression. Divergent ADR reporting trends indicate a stabilizing safety profile for nusinersen, contrasted with potential emerging signals for risdiplam and OA, highlighting the need for continued post-marketing surveillance.

P812

ABCB1 C3435T Polymorphism in Indonesian Acute Coronary Syndrome Patients

Dr Gestina Aliska

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

ABCB1 C3435T polymorphism in Indonesian acute coronary syndrome patients

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Introduction. Acute coronary syndrome (ACS) outcomes vary despite guideline-based antiplatelet therapy. ABCB1 encodes P-glycoprotein, an efflux transporter that may influence intestinal absorption and bioavailability of P2Y12 inhibitors. Indonesian pharmacogenomic data on ABCB1 C3435T (rs1045642) and in-hospital outcomes remain limited.
Aims. To determine genotype and allele frequencies of ABCB1 C3435T and to describe hospital length of stay (LOS) and in-hospital mortality according to genotype among Indonesian ACS patients.
Methods. A cross-sectional analysis was conducted among ACS patients treated at tertiary referral hospitals in Indonesia. Patients received standard-of-care antiplatelet therapy; clopidogrel was used in 16/64 (25.0%), while most patients received ticagrelor-based P2Y12 inhibitor therapy. Genotyping of ABCB1 C3435T (rs1045642) was performed using PCR-based methods. Genotype and allele frequencies were calculated by direct counting. LOS and in-hospital mortality were summarized overall and stratified by genotype.
Results. A total of 64 ACS patients were successfully genotyped. The cohort had a mean age of 57.5 ± 9.7 years (median 58; IQR 51–65) and was predominantly male (51/64, 79.7%). ACS presentations included STEMI 42 (65.6%), UAP 13 (20.3%), NSTEMI 7 (10.9%), and other 2 (3.1%). ABCB1 genotype distribution was CC 22 (34.4%), CT 34 (53.1%), and TT 8 (12.5%). Allele frequencies were C 60.9% (78/128) and T 39.1% (50/128). Overall LOS was 4.80 ± 2.26 days (median 4.0; IQR 3.0–5.2). Mean LOS by genotype was 4.73 ± 1.93 (CC), 4.97 ± 2.53 (CT), and 4.25 ± 1.98 (TT) days. In-hospital mortality occurred in 5/64 (7.8%), with genotype-specific rates of 1/22 (4.5%) in CC, 3/34 (8.8%) in CT, and 1/8 (12.5%) in TT.
Discussion. ABCB1 C3435T polymorphism was common in Indonesian ACS patients, with predominance of the CT genotype and the C allele. Descriptive differences in LOS and in-hospital mortality across genotypes suggest potential clinical relevance of transporter-related pharmacogenomic variability under contemporary ACS care where potent P2Y12 inhibitors are frequently used. Larger cohorts and analyses stratified by P2Y12 inhibitor type are warranted to clarify whether ABCB1 C3435T contributes to outcome variability and to support feasible pharmacogenomic implementation in resource-limited settings.

Simon T, Verstuyft C, Mary-Krause M, et al. Genetic determinants of response to clopidogrel and cardiovascular events. N Engl J Med. 2009;360:363–375.
Su J, Xu J, Li X, et al. ABCB1 C3435T polymorphism and response to clopidogrel treatment: a meta-analysis. PLoS One. 2012;7:e46366.
Byrne RA, Rossello X, Coughlan JJ, et al. 2023 ESC Guidelines for the management of acute coronary syndromes. Eur Heart J. 2023;44(38):3720–3826.

P813

Cardiovascular readmissions following percutaneous coronary intervention in patients prescribed clopidogrel.

Miss Nell L. Hudson

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Cardiovascular readmissions following percutaneous coronary intervention in patients prescribed clopidogrel.
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Introduction. Dual antiplatelet therapy (DAPT) with aspirin and clopidogrel is commonly prescribed following a percutaneous coronary intervention (PCI) to reduce recurrent ischaemic events. Clopidogrel effectiveness varies considerably between individuals, with carriers of *CYP2C19* loss of function (LOF) alleles exhibiting reduced active metabolite formation and diminished antiplatelet effects. This is associated with an increased risk of recurrent cardiovascular events following PCI, with carriers of LOF alleles being two-folds more likely to experience a major cardiovascular event (MACE) than non-carries.
Aims. To determine the incidence of cardiovascular-related hospital readmissions within 12 months of a PCI among patients prescribed clopidogrel.
Methods. A retrospective review of electronic medical records was conducted for patients who underwent a PCI at a large tertiary Australian hospital and were discharged on clopidogrel between 01/06/2023 – 26/09/2024. Cardiovascular-related hospital readmissions (MACE, stent thrombosis, or revascularisation) within 12 months of the index PCI were identified. Descriptive analyses summarised readmission frequency, reason for readmission, length of hospital stay, and antiplatelet therapy modifications. *CYP2C19* status was not assessed.
Result. Among patients prescribed clopidogrel following PCI (N = 474), 4% (19/474) experienced at least one MACE-related hospital readmission within 12 months. Of these, 53% (10/19) were due to heart failure. No cases of stent thrombosis or revascularisation were identified. The median length of hospital stay was five days (IQR 11.5-3.5). Most patients (95%, 18/19) were continued on clopidogrel at discharge, whilst 5% (1/19) ceased DAPT. A further 1% (7/474) of patients experienced a second MACE readmission. Of these, 43% (3/7) were still prescribed clopidogrel.
Discussion. MACE was the leading cause of cardiovascular-related readmissions among patients prescribed clopidogrel following a PCI. This could reflect reduced clopidogrel effectiveness, potentially due to *CYP2C19* LOF alleles. These findings may support further investigation into the need for *CYP2C19*-guided antiplatelet therapy to reduce MACE readmissions and improve clinical outcomes following PCI.

P814

Pharmacogenetic variability and clinical recommendations in a randomized trial for SSRI antidepressants

Dr Shubham Atal

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Pharmacogenetic variability and clinical recommendations in a randomized trial for SSRI antidepressants
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Introduction. Genetic polymorphisms in CYP2D6 and CYP2C19 significantly affect SSRI metabolism and clinical outcomes. Systematic data from Indian populations remain limited, especially in the context of prospective randomized pharmacogenetic (PGx) trials.
Aims. To describe allele, genotype, and predicted metabolizer phenotype distributions in depressed patients, and to summarize PGx recommendations provided in the intervention arm.
Methods. DNA samples from 205 adults with newly diagnosed major depressive disorder enrolled in a double-blind randomized trial were genotyped for CYP2D6 and CYP2C19 variants, including copy number variations. Genotypes were translated to metabolizer phenotypes according to guidelines. In the PGx arm (n=102), actionable recommendations were issued to treating psychiatrists.
Results. CYP2D6 variants included *2A (49.5%), *2 (33.9%), *4 (9.7%), *3 (6.5%), and gene deletions (*5, 4.6%). CYP2C19 variants included *2 (34.4%), *17 (18.6%), and *3 (1.7%). Predicted CYP2D6 phenotypes were normal metabolizers (55.1%), intermediate metabolizers (37.1%), poor metabolizers (2.4%), and ultrarapid metabolizers (5.4%). For CYP2C19, phenotypes were intermediate metabolizers (41.9%), normal metabolizers (28.8%), poor metabolizers (13.3%), rapid metabolizers (13.6%), and ultrarapid metabolizers (2.4%). In the PGx arm, 82/102 patients (80.4%) received at least one recommendation. Across 120 recommendations, the most frequent were lower starting dose and slower titration (34.2%) and reduced maintenance dosing (31.7%) for CYP2D6 and CYP2C19 intermediates respectively. Additional advice included alternative drug selection for CYP2D6 ultrarapid metabolizers (5.0%) and dose reductions/alternatives for CYP2D6 poor metabolizers (2.5%).
Discussion. This study provides one of the first systematic descriptions of CYP2D6 and CYP2C19 variability in Indian patients with depression, demonstrating high frequencies of intermediate metabolizer phenotypes and frequent need for PGx-based prescribing adjustments. The predominance of dose-reduction and titration-related recommendations highlights the clinical relevance of PGx integration in optimizing SSRI therapy.

P815

Paediatric Pharmacogenomics Implementation: A Systematic Review of Barriers, Enablers and Education Strategies

Ms Dhrita Khatri

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Paediatric Pharmacogenomics Implementation: A Systematic Review of Barriers, Enablers and Education Strategies
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Introduction. Pharmacogenomics (PGx) has the potential to improve medication safety and effectiveness in paediatric practice; however, implementation remains limited. Education is frequently cited as a key enabler, yet synthesis of educational gaps, barriers, enablers, and strategies supporting PGx implementation in paediatric practice is limited.
Aim. To systematically review educational gaps, barriers, and enablers to PGx implementation in paediatric clinical practice and examine educational strategies used to support implementation.
Methods. This PRISMA-guided systematic review searched Medline, Embase, and Web of Science (2015–2025). Eligible studies focused on paediatric health care professional's knowledge, attitudes, and PGx education or implementation interventions. Two reviewers independently conducted screening, quality appraisal using the Mixed Methods Appraisal Tool and data extraction guided by the RISE2 Genomics reporting checklist. Barriers and enablers were deductively mapped to the Capability, Opportunity, Motivation–Behaviour (COM-B) framework.
Results. Of 1,728 records screened, 23 studies met inclusion criteria. Educational interventions commonly improved clinician capability, particularly PGx knowledge and confidence. However, implementation was frequently constrained by opportunity and motivation barriers, including lack of decision-support tools, funding limitations, and poor workflow integration. Key enablers included multidisciplinary engagement and stakeholder involvement.
Discussion. PGx education in paediatric practice primarily improves knowledge and confidence but often fails to address behavioural and system-level barriers to implementation. COM-B mapping highlights the need for education that addresses clinical utility and workflow integration. Future PGx initiatives should adopt theory-informed, contextually embedded strategies to support sustainable uptake.

P816

Urinary uracil as a biomarker of dihydropyrimidine dehydrogenase phenotype in cancer patients

Miss Sihan Wang

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Urinary uracil as a biomarker of dihydropyrimidine dehydrogenase phenotype in cancer patients
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Introduction. 5-fluorouracil (5-FU) can cause life-threatening toxicity due to dihydropyrimidine dehydrogenase (DPD) enzyme deficiency. DPD metabolises uracil, and measurement of endogenous uracil in plasma is recommended by the European Medicines Agency for pretherapeutic screening of DPD deficiency. The enzymatic conversion of uracil into dihydrouracil (DHU) and uracil formation from precursor uridine in blood cells results in post-collection stability issues.
Aims. To establish an assay in a convenience "spot' urine sample as an alternative approach.
Methods. A LC-MS method was developed to quantify uracil, DHU, uridine and pseudouridine in a urine aliquot (10 µL) after simple 'dilute and shoot'. The assay was validated to FDA guidelines. Urine samples collected from two cancer patient cohorts (total n=202) prior to receiving 5-FU-based chemotherapy were analysed to assess assay performance and associations with 5-FU-related toxicity.
Results. The assay was accurate, precise and reproducible for quantification of DHU (0.05–1 µg/mL), uracil and uridine (0.05–2 µg/mL) and also pseudouridine (0.5–20 µg/mL) with $r^2 > 0.99$. All analytes were stable in urine, with no significant degradation at examined temperatures and timepoints. Concentrations of each analyte were comparable between cohorts. Median (IQR) concentrations of urinary uracil were 2.86 (2.08–5.37) and 3.19 (2.16–4.37); DHU were 3.38 (2.32–4.34) and 3.07 (2.67–4.01) µmol/mmol Cr, respectively. Uracil and the metabolic ratio Uracil/DHU showed a significant non-Gaussian distribution ($p < 0.001$), identifying both fast and slow DPD metabolisers. There were no differences in Uracil or DHU/Uracil ratios between cases (≥ grade 3 gastrointestinal toxicity) and non-cases in cohort 1 (n = 36). However, significant differences were noted using either the plasma-to-urine ratio of uracil ($p = 0.02$), or the eGFR-normalised ratio of total other pyrimidines to DHU ($p = 0.003$). A logistic regression model incorporating both the comprehensive metabolic ratio and eGFR as explanatory variables predicted cases with 77.8% sensitivity and 86.4% specificity. Analysis of cohort 2 (n = 166) for associations with toxicity is ongoing.
Discussion. Urine-based measurement of selected endogenous pyrimidines may provide a stable, non-invasive alternative to plasma uracil testing. This urinary uracil test may provide a novel and practical strategy to predict severe 5-FU toxicity and enhance treatment safety.

P817

Pharmacogenomics of levodopa in Parkinson's disease: Current evidence

Prof Rim Charfi

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Pharmacogenomics of levodopa in Parkinson's disease: Current evidence

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Introduction. Parkinson's disease (PD), the second most common neurodegenerative disorder, is primarily treated with levodopa, while emerging evidence supports the role of PG in personalizing therapy.
Aims. This brief overview is based on a synthesis of current literature examining the most studied pharmacogenetic polymorphisms involved in interindividual variability in response to levodopa in PD.
Methods. Literature search was performed using databases including PubMed, ScienceDirect and using the following keywords: 'Parkinson's disease', 'pharmacogenetics' and 'pharmacogenomics'.
Results. Most studies are focused on the PG of levodopa, particularly on polymorphisms affecting the *catechol-O-methyltransferase (COMT)*, the dopamine transporter (DAT) encoded by *SLC6A3*, and dopamine receptor genes such as *DRD2*. These variants have been associated with interindividual variability in therapeutic response to levodopa, as well as susceptibility to adverse effects. The most studied COMT polymorphism is rs4680, which leads to reduced enzymatic activity in carriers of the Met allele. Consequently, patients with lower COMT activity may exhibit higher central dopamine availability and may require lower levodopa doses (Vuletić V, et al. 2021). In addition, polymorphisms in *Synaptic vesicle glycoprotein* 2C such as rs30196, and in SLC6A3 have also been associated with requirement of lower doses (Vuletić V, et al. 2021). Regarding levodopa-induced adverse effects, dyskinesia risk has been associated with reduced COMT activity, the DRD2 rs1800497 polymorphism, and VNTR polymorphisms in SLC6A3, with the rs393795 variant in SLC6A3 further linked to later dyskinesia onset; DRD2 rs1800497 has additionally been associated with an increased risk of delayed visual hallucinations (Liu JS, et al. 2023)
Discussion. Pharmacogenomic data on anti-Parkinsonian drugs beyond levodopa remain limited and heterogeneous, underscoring the need for prospective randomized controlled clinical trials.

Liu JS, et al. Pharmacogenomics-a New Frontier for Individualized Treatment of Parkinson's Disease. Curr Neuropharmacol. 2023

Vuletić V, et al. A Systematic Review of Parkinson's Disease Pharmacogenomics: Is There Time for Translation into the Clinics? International Journal of Molecular Sciences. 2021

P818

Consumer insights on their preferences for information to support pharmacogenomic testing decision-making

Ms Ruby Soueid

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Consumer insights on their preferences for information to support pharmacogenomic testing decision-making
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Introduction. Pharmacogenomic (PGx)-guided antiplatelet prescribing has the potential to reduce recurrent ischaemic events following percutaneous coronary intervention. However, implementation in Australia remains limited. Consent to test obligates healthcare professionals (HCPs) to adequately educate consumers. Involving consumers in the design of information support requires understanding of their preferences and perceived needs.
Aims. To explore consumer perspectives, knowledge and informational needs on PGx-guided antiplatelet prescribing to inform the development of consumer-facing resources that support informed decision-making.
Methods. Semi-structured interviews were conducted with consumers (n=7) to explore their awareness, attitudes, and informational needs related to PGx-guided antiplatelet prescribing. De-identified verbatim transcripts were analysed thematically using an inductive approach.
Results. Only two of the seven consumers were aware of PGx prior to the interview, both due to previous personal experience with testing. Participants received a brief, standardised explanation of PGx testing. Following this, they expressed strong willingness to adopt testing, particularly *"if it's a simple procedure and safe"*. The perspectives of the participants on PGx were shaped by factors such as emotional context (e.g., "*I was worried about clotting", "I was concerned about… getting a brain bleed")*, prior healthcare experiences (e.g., medication switching, previous PGx testing), trust in HCPs and varying levels of health literacy. Their preferences for information centred on understanding of the purpose and clinical relevance of PGx, benefits and limitations, practical aspects of testing (e.g., process and cost), data use and privacy and result interpretation. The participants highlighted concerns included potential clinical risks, uncertainty around test accuracy and utility, burden of testing, and fears regarding privacy and misuse.
Discussion. Participants in our study demonstrated low baseline awareness of PGx, highlighting the need to account for limited prior knowledge when developing consumer-facing information to support decision-making about PGx-guided antiplatelet prescribing. Consent decisions are made within emotionally charged clinical contexts, where factors such as fear and prior healthcare experiences may influence decision-making, alongise informational needs. These findings are currently informing the development of consumer informational resources.

P819

A Single-Centre Analysis of Non-Routine Pharmacogenomic Consultations: Clinical Pharmacologists' Perspective and Interventions

Dr Sandra Knežević

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

A Single-Centre Analysis of Non-Routine Pharmacogenomic Consultations: Clinical Pharmacologists' Perspective and Interventions

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Introduction. As the results of pharmacogenetic (PG) studies are increasingly translated into clinical practice, the goal of personalising therapy across different patient groups is becoming more achievable. Our work aimed to explore to what extent pharmacogenetics has already been utilised in routine clinical care, with a focus on identifying real-world triggers for testing and highlighting the role of the clinical pharmacologist in guiding individualised treatment.
Aims. The aim of this work was to characterise the application and clinical impact of pharmacogenetic testing in challenging, non-routine cases referred to a tertiary clinical pharmacology clinic.
Methods. A retrospective survey of PG consultation was carried out, at the Department of Clinical Pharmacology, Clinical Hospital Centre Rijeka, from September 1, 2024, to September 1, 2025.
Results. Among 27 patients, the median age was 52 years (mean 45.2), 63% were female (N=17). Ten patients had a previously completed PG testing, of which 4 revealed altered profiles. In the remaining 17 patients, PG testing was advised; 9/17 (52.9%) underwent testing, with recommendations provided in 8 (88.9%) cases, including dose adjustment, drug substitution, or closer monitoring. The median number of drugs per patient was 6 (2-16). Medication groups most frequently associated with PG-related recommendations included: psychotropic medication (37.04%), anticoagulant drugs (11.11%), statins (7.41%), multiple (various drug groups) (7.41%), antineoplastic therapy (7.41%), antihypertensive drugs (7.41%).
Discussion. In this clinical cohort, PG testing was variably applied, most often in the context of psychotropic agents and anticoagulants. These medication groups typically reflect complicated titration needs and the presence of multiple comorbidities, underlining their role as common triggers for PG consideration in real-world practice. This study underlines the important role of the clinical pharmacologist in the individualisation of therapy, particularly in complex patients where PG information can guide safer and more effective prescribing.

P820

Global incorporation of pharmacogenomics guidelines: mapping and strategic framework

Dr Arlene M Taylor

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Global incorporation of pharmacogenomics guidelines: mapping and strategic framework
Arlene M Taylor, PRAISES, Australia.

Introduction. High-certainty pharmacogenomic (PGx) recommendations exist for multiple gene–drug pairs, yet incorporation into national and specialty clinical practice guidelines (CPGs) remains inconsistent, contributing to variation in access to precision prescribing.
Aims: To systematically map the incorporation of CPIC/DPWG recommendations into national/specialty clinical CPGs worldwide and to propose a strategic framework that accelerates harmonised, implementable adoption with decision-support and laboratory reporting integration.
Methods. Mixed-methods systematic review (2010–2025) of MEDLINE, Embase, guideline repositories (GIN, WHO, NICE, PAHO), and specialty society sites was performed. Eligibility determinants included national/society CPGs providing drug therapy recommendations where PGx is relevant. Extraction included wording strength, gene–drug pairs, citation/adoption of CPIC/DPWG, clinical decision support (CDS) triggers, lab reporting standards, and reimbursement signals. Synthesis via descriptive mapping by country income level, gap typology, and implementation levers mapped to ADOLOPMENT, CFIR, and COM-B was combined with quality considerations (assessed against AGREE II for guideline process reporting and equity lens using PROGRESS-Plus).
Results. From >3,000 records, >100 CPGs across 35 countries met criteria. Strong, relatively standardised incorporation was observed for HLA-B*57:01/abacavir, DPYD/fluoropyrimidines, and CYP2C19/clopidogrel. Incorporation of thiopurines, warfarin, and antidepressants was patchy. Recurrent gaps included ambiguous wording, lack of mandated lab phrasing, and missing CDS hooks in e-prescribing systems. Facilitators were explicit evidence grading, linkage to formularies and order sets, and reimbursement enablers for testing.
Discussion. These results trigger a proposed harmonisation framework with four elements; (1) a minimum PGx content schema for all CPGs (If genotype X, order Y, dose Z, monitor Q), (2) standardised laboratory reporting language and phenotype translation, (3) CDS integration patterns (interruptive vs passive alerts, pre-emptive vs reactive testing); and (4) adoption pathways for LMICs via ADOLOPMENT with formulary-compatible protocols. Embedding PGx into modular/living, updateable protocols/order sets/CPGs (with CDS tool integration) will shorten time-to-translation and improve equity.

P821

Clinical, transcriptional, and genomic predictors of 5-fluorouracil exposure in cancer patients

Ms Elizabeth Cui

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Clinical, transcriptional, and genomic predictors of 5-fluorouracil exposure in cancer patients

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Introduction. 5-fluorouracil (5-FU) remains among the most widely used cancer drugs; however, 5-FU dose individualization to achieve optimal efficacy while minimizing toxicity remains complex due to its narrow therapeutic index and high interpatient variability. Understanding the factors associated with 5-FU exposure (i.e. AUC) is crucial to improve treatment outcomes and tolerability. Many variables contribute to 5-FU AUC including drug dose, age, sex, dihydropyrimidine dehydrogenase (DPD, gene *DPYD*) activity, and *miR27A* regulation. DPD is the rate-limiting enzyme in 5-FU catabolism and its pharmacogenetic impact to 5-FU toxicity is well known. *MiR27A* is a regulator of DPD activity; common *miR27A* variant rs895819 has been linked to increased risk of 5-FU toxicity.

Aims. To assess factors age, sex, 5-FU dose, and *DPYD* and *miR27A* expression and genotype for association with 5-FU AUC in a prospective cohort of 29 5-FU-treated cancer patients.

Methods. AUCs were determined from plasma steady-state 5-FU concentrations (C_{ss}) measured by LC-MS/MS. DNA extracted from whole blood was used to determine *DPYD* and *miR27A* genotype by Sanger sequencing. RNA from whole blood was used to quantify *DPYD* mRNA and *miR27A* expression levels.

Results. Independently, 5-FU AUC correlated with 5-FU dose (R^2=0.150, p=0.038) but did not correlate with age (R^2=0.001, p=0.869), *DPYD* mRNA (R^2=0.006, p=0.693) or *miR27A* expression levels (R^2=0.015, p=0.527). No significant difference in AUC was observed between males and females (p=0.108), or between *miR27A* rs895819 wildtype and variant carriers (p=0.340). A multiple linear regression model with covariates age, sex, 5-FU dose, relative *DPYD* mRNA and *miR27A* expression explained 30.51% of the variability in AUC, however only 5-FU dose showed significance (p=0.026). Additionally, sequencing identified 3 rare missense *DPYD* SNVs that have not been previously reported in the context of 5-FU outcomes, but functional characterization is needed.

Discussion. Consistent with previous literature, 5-FU AUC correlated with dose in this cohort, however AUC did not correlate with age, sex, *DPYD* mRNA or *miR27A* expression or genotype. Overall, this study highlights the complexity of 5-FU exposure; larger studies with toxicity data and functional characterization of *DPYD* variants are required to more fully confirm the clinical relevance of such covariates and to better predict 5-FU associated efficacy and toxicity.

P823

Development of a physiologically-based pharmacokinetic model for precision dosing of 5-fluorouracil

Ms Julia Rosenqvist

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Development of a physiologically-based pharmacokinetic model for precision dosing of 5-fluorouracil

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Introduction. Up to 30% of patients using 5-fluorouracil (5-FU) experience severe drug-induced toxicity. The toxicity can be partly explained by reduced function genetic variants in the *DPYD* gene encoding dihydropyrimidine dehydrogenase (DPD), which converts the drug into inactive metabolites.
Aims. We aimed to develop a physiologically-based pharmacokinetic (PBPK) model for 5-FU to better understand how *DPYD* variants affect 5-FU concentrations, and to find optimal doses for patients with decreased enzyme activity.
Methods. A PBPK model was developed and verified (steps 1 and 2) for 5-FU and its two consecutive inactive metabolites in Simcyp. To this end, average pharmacokinetic data from the literature (n = 10 and 8 studies in steps 1 and 2, respectively) and individual concentration data from breast cancer patients (n = 75 and 74 individuals in steps 1 and 2, respectively) in an observational prospective clinical trial were used. In a final exploratory step (3), the model was used to estimate optimal dose reductions for patients with decreased DPD activity.
Results. The model accurately described 5-FU pharmacokinetics as all predicted area under the curve and maximum concentration values were within 2-fold of the observed values in literature (steps 1-2). Additionally, 92% (step 1) and 89% (step 2) of the predicted concentrations of the observational clinical trial patients were within 2-fold of the observed values. Finally, in step 3, the model showed that breast cancer patients with a 50% or 75% remaining DPD activity might require smaller dose reductions than suggested by current guidelines: only 25% and 12.5% dose reductions might be sufficient to achieve similar drug concentrations as patients not carrying *DPYD* variants.
Discussion. Our PBPK model indicates that current dosing guidelines for patients carrying *DPYD* variants might result in suboptimal 5-FU concentrations. Clinical trials are warranted to investigate the effects of dose reductions for 5-FU in *DPYD* variant carriers.

P824

Knowledge, Attitude, and Practices on Antibiotic Resistance Among Indian Population: Online Survey

Dr Hemanth Kumar Boyina

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Knowledge, Attitude, and Practices on Antibiotic Resistance Among Indian Population: Online Survey
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Introduction. Antimicrobial resistance (AMR) is a severe worldwide health issue that compromises the effective management of infectious diseases. It arises when microorganisms develop resistance mechanisms owing to the selective pressure that occurs as a result of the misuse of antimicrobials. Self-medication, taking incomplete courses, and access to non-prescription antibiotics hasten this process. Although awareness is on the rise, irrational use of antibiotics is still prevalent, especially in developing countries.
Aims. To assess knowledge, attitude, and practices (KAP) on the use of antibiotics and antimicrobial resistance knowledge among the general population and to determine discrepancies between knowledge and behavior.
Methods. An online survey was conducted using a questionnaire-based survey in the form of a questionnaire, which was a cross-sectional survey conducted for 30 days, i.e., from March 24 to April 24, 2026. The sample size was 230 participants aged 18 years and above, recruited using convenience sampling in Punjab, Himachal Pradesh, and other urban areas. The questionnaire evaluated the demographic variables and KAP parameters. The data were compared with the descriptive statistics and divided into the scores of knowledge, attitude, and practice. Data was analysed descriptively using Microsoft Excel and GraphPad Prism.
Results. Most of the participants were between 18 and 30 years of age, and gender distribution was equal; most of the participants were of higher educational status. The level of awareness on antibiotics was good (>95%), with the majority of the respondents getting their role in bacterial infections right. Nevertheless, there were still misconceptions, especially when it came to their application in viral diseases. The attitudes were generally correct, and the majority of the participants acknowledged that AMR is a significant public health concern and advocated the use of antibiotics as prescriptions. Conversely, the best practice was poor. A significant percentage of them mentioned self-medication, early withdrawal of treatment, missing a dose, and taking the remaining antibiotics. Prescription-free, easy access to antibiotics was generally reported. The net effect is that there is sufficient knowledge and positive attitudes, but irregular and, in many cases, inappropriate practices.
Discussion. There is a definite gap in knowledge and behavior, as noted in the study. Although the level of awareness and the attitude towards the use of antibiotics are, in most cases, positive, they are not always reflected in logical behavior. Such a disconnection is probably affected by the availability of antibiotics, regulatory constraints, and habituality. The results are consistent with previous research that suggests awareness is not enough to effect behavior change. The mitigation of AMR needs multifaceted approaches, such as educating society specifically, tighter control over antibiotic prescriptions, and enhanced antimicrobial stewardship. Patient counselling and monitoring: H.C.P.s, especially pharmacists, play a significant role in encouraging proper use of antibiotics by counselling patients.

P825

Enterolactone Inhibits the Progression of Epithelial Ovarian Cancer through Multi-Target Regulation

Assoc Prof Huidi Liu

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Enterolactone (ENL) Inhibits the Progression of Epithelial Ovarian Cancer through Multi - Target Regulation

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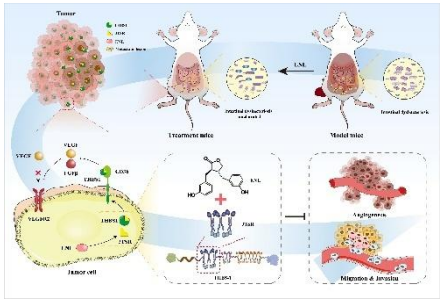

Introduction. Epithelial ovarian cancer (EOC) has poor prognosis, driven by gut-ovary axis imbalance. Chemotherapy exacerbates microbiota dysbiosis causing drug resistance, while microbial metabolite ENL exhibits direct anti-tumor activity and microbiota-mediated immunomodulation.

Aims. This study aims to systematically explore the anti-tumor pharmacological effects of ENL in EOC. It focuses on elucidating the molecular mechanism by which ENL inhibits tumor angiogenesis by targeting the THBS1-3TSR domain and evaluates the synergistic value of ENL combined with gemcitabine (Gem) in improving dysbacteriosis and enhancing chemotherapy sensitivity. It also clarifies the bidirectional regulatory effect of ENL on the "gut-ovary axis" during EOC progression, providing a theoretical basis for the development of novel integrated treatment strategies.

Methods. CCK-8/Transwell/angiogenesis/zebrafish models were used to detect the effects of ENL on the proliferation, migration, invasion and anti-angiogenesis of EOC cells; WB/IHC were used to analyze pathways such as Akt-Bax; xenograft/allograft models were used to verify the tumor inhibitory effect; the combination of metagenomics and metabolomics was used to analyze the interaction between microbiota and metabolites.

Results. ENL inhibits the proliferation, migration, invasion and angiogenesis of EOC cells, and induces apoptosis by targeting THBS1-3TSR. When combined with Gem, it has a synergistic effect, significantly alleviates intestinal flora imbalance, and achieves high - efficiency and low - toxicity treatment by improving the balance of the gut - ovary axis.

Discussion. ENL targets THBS1-3TSR to inhibit angiogenesis and tumor growth. When combined with Gem, it reverses by chemotherapy resistance improving the intestinal-ovarian axis microbiota balance and providing a new paradigm for the integrated treatment of EOC. This discovery suggests that ENL is expected to be used as a natural drug for the combination therapy of EOC, especially suitable for patients who need long-term maintenance treatment.

Huidi Liu. BJP, 2026,183(5):1153-1170/ Huidi Liu. BJP, 2026, https://doi.org/10.1111/bph.70327/
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P826

Model-based assessment of the kinetics of coproporphyrin I (CPI)in a Dose-Escalation Study

Dr Sadikalmahdi Abdella

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Model-based assessment of the kinetics of coproporphyrin I (CPI)in a Dose-Escalation Study

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Introduction. Organic anion transporting polypeptides (OATPs) play a critical role in hepatic drug uptake and elimination. GDC-X inhibits OATP1B in vitro, raising the risk of clinical DDIs with OATP1B substrates. Coproporphyrin I (CPI) is an endogenous biomarker for OATP1B.

Aims. This analysis aimed to predict the magnitude of clinical DDIs between GDC-X and rosuvastatin (an OATP1B probe substrate) using a CPI-informed modelling approach.

Methods. Data was obtained from a study with four dose groups (200 mg, 400 mg, 800 mg, and 1200 mg) of GDC-X. CPI data were utilised to estimate the in vivo Ki of GDC-X against OATP1Bs using NONMEM, incorporating previously predicted portal vein concentrations of GDC-X from Simcyp. Visual predictive checks and goodness-of-fit plots were generated. The estimated Ki value was incorporated into a previously developed PBPK model in Simcyp to predict the DDI between GDC-X and Rosuvastatin.

Results. At the steady-state concentration of GDC-X, CPI concentrations increased across all dose groups compared to pre-dose level. The mean CPI concentration in plasma increased from 0.79 (±0.23) ng/ml at baseline to 1.47 ± 0.16 ng/mL at steady state. The in vivo unbound Ki, OATP1B for GDC-X was about 0.188 µM, approximately fivefold lower than the in vitro (1.05 µM). The predicted CPI concentrations matched the observed concentrations. The predicted CPI Cmax ratio and rosuvastatin AUCR at 1200mg were: 1.8 and 1.5, respectively. Rosuvastatin AUCR increased with the dose. No significant DDI at 200 mg and a weak interaction (AUCR <2) was observed at the other doses.

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P827

Association of NUDT15 C415T polymorphisms with Azathioprine induced adverse effects in Indians

Dr Reka Deva

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Association of NUDT15 C415T polymorphisms with Azathioprine induced adverse effects in Indians

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Introduction. Azathioprine (AZA) an effective immunosuppressant and has a narrow therapeutic index with potentially life-threatening adverse effects which are related to factors like genetic polymorphism that lead to interindividual variations. The association between *NUDT15* polymorphisms with AZA induced adverse effects clearly elucidated in the South Indian population.

Aims. To evaluate the relationship between single nucleotide polymorphisms of *NUDT15(C415T)* with AZA induced adverse effects in the south Indian population.

Methods. This cross-sectional study was performed in 120 patients from the departments of dermatology and medical gastroenterology who were on AZA therapy. The written informed consent was obtained and 5 ml venous blood was withdrawn from each participant. DNA was extracted and quantified. Genotyping done by real time – Polymerase Chain Reaction.

Results. The study's frequencies of C/C, C/T and T/T genotypes of rs116855232 *NUDT15* were 81.7%, 15.8% and 2.5%, respectively. The allele frequencies were 89.6% (C) and 10.4% (T). A significant association between the genotypes of rs116855232 *NUDT15* and the occurrence of adverse effects to AZA with (AOR, 20.88; 95% CI, 5.47 to 79.6; $p<0.001$) after adjusting for other variables.

Discussion. In this study, a significant association found between myelosuppression and *NUDT15 C415T* genetic polymorphisms in South Indian patients on AZA therapy was found. The information of this study reveals that testing of *NUDT15 C415T* polymorphisms in the South Indian population will predict the occurrence of hematological toxicity.

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P828

Heterogeneity of Commercial Pharmacogenomic Panel Testing in Australia: Implications for Clinical Implementation

Miss Georgia A Tonkin

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Heterogeneity of Commercial Pharmacogenomic Panel Testing in Australia: Implications for Clinical Implementation
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Introduction. Pharmacogenomic (PGx) testing promotes medication optimisation by understanding an individual's drug response. Recognised as a key facilitator of personalised medicine, PGx panel testing is gaining interest from Australian consumers and healthcare providers, driving the expansion of testing services. However, variability between panels may influence clinical interpretation, comparability of results, and downstream prescribing decisions.
Aims. To compare the characteristics and offerings of commercially available PGx panel testing in Australia and assess the extent of alignment with evidence-based pharmacogene recommendations.
Methods. Australian commercial testing services providing PGx panel tests were examined. Panel characteristics including cost, turnaround time, gene and allele coverage, and technical details (e.g. methodology and sample) were compared. Information was obtained from publicly available sources and verified via direct communication (e.g., email).
Results. Eight services offered a combined 19 PGx panels, including pathology laboratories (n=3), specialised PGx companies (n=3), and genetics services (n=2). The number of genes per panel ranged from 3 to 40 (median 10 genes). Costs ranged from AUD$95 to AUD$595 (median AUD$195), with turnaround times ranging from 3 to 35 business days (median 9.5 days). Sampling methods included buccal swabs (n=1), EDTA blood (n=3), or both (n=3) and genotyping platforms included Agena MassARRAY (n=4) and next generation screening (n=2). Core pharmacogenes with strong clinical evidence (e.g., Association for Molecular Pathology (AMP) Tier I/II alleles, ClinPGx summary annotation levels 1-2), including *CYP2C19*, *CYP2D6*, *CYP2C9*, *and SLCO1B1*, were consistently included (n=9, 8, 8, and 8, respectively) whereas transporter and exploratory genes were inconsistently tested.
Discussion. The observed heterogeneity between commercially available PGx panels in Australia is notable despite the availability of evidence-based guidance to support standardisation. This variability may affect the comparability and interpretation of PGx results, potentially affecting prescribing decisions and equity of care. Greater alignment with AMP tier recommendations and ClinPGx guidance may enhance transparency, consistency, and clinical confidence, supporting more reliable integration of PGx panel testing into routine clinical practice.

P829

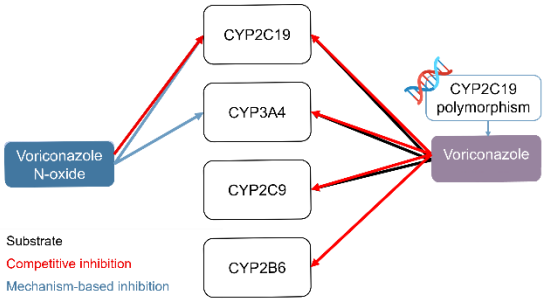
A Physiologically Based Pharmacokinetic Model of Voriconazole Integrating CYP inhibition

Dr Yoonjin Kim

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

A Physiologically Based Pharmacokinetic Model of Voriconazole Integrating CYP inhibition
Yoonjin Kim[1], SeungHwan Lee[1]. Dept of Clin Pharmacol and Therapeutics, Seoul Natl Univ Coll Med & Hosp[1], Seoul, Republic of Korea

Introduction. Voriconazole exhibits nonlinear pharmacokinetics with substantial interindividual variability, complicating dose optimization within its narrow therapeutic window.
Aims. This study aimed to develop a physiologically based pharmacokinetic (PBPK) model of voriconazole and its N-oxide metabolite, incorporating competitive and mechanism-based cytochrome P450 (CYP) inhibition to characterize dose- and time-dependent pharmacokinetics and drug–drug interaction (DDI) potential.
Methods. Model development was based on *in vitro* data and publicly available information, and refined using observed clinical data. The model was verified using clinical data following intravenous and oral administration across CYP2C19 phenotypes by confirming that simulated-to-observed area under the concentration–time curve (AUC) and maximum plasma concentration (C_{max}) ratios were within 0.5–2.0. DDI assessment used index substrates for CYP2B6, CYP3A4, and CYP2C9/2C19, with acceptance defined as AUC and C_{max} ratios within 0.8–1.25.
Results. Drug absorption was described using the ADAM model, and distribution was characterized using a full PBPK framework. Voriconazole metabolism was captured using Michaelis–Menten kinetics for CYP2C19, CYP3A4, and CYP2C9. Voriconazole acted as a competitive inhibitor of CYP2B6, CYP2C9, CYP2C19, and CYP3A4, while its N-oxide metabolite acted as a competitive inhibitor of CYP2C19 and a mechanism-based inhibitor of CYP2C19 and CYP3A4. The model adequately reproduced nonlinear and CYP2C19 genotype-dependent pharmacokinetics, and DDI predictions were generally within predefined acceptance criteria.



Discussion. The voriconazole PBPK model reliably describes nonlinear and CYP2C19 genotype-dependent pharmacokinetics, and provides a quantitative framework to support individualized dosing and DDI risk assessment in clinical settings.

P830

Sex-specific associations between blood copper and motor progression in Parkinson's disease

Mr Hong-Wen Wang

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Sex-specific associations between blood copper and motor progression in Parkinson's disease

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Introduction. Parkinson's disease (PD) is a progressive neurodegenerative disorder influenced by genetic and environmental factors and characterized by heterogeneous motor progression with sex differences. Copper homeostasis is essential for neuronal function and is regulated by sex and genetic variation. However, the role of copper in sex-specific motor progression remains unclear.
Aims. To evaluate the association between systemic copper status and motor progression in PD, assess sex-specific effects, and explore potential causal relationships.
Methods. Sixty patients with PD were recruited at National Cheng Kung University Hospital. Baseline serum copper was measured, and motor impairment was assessed using the Movement Disorder Society–Unified Parkinson's Disease Rating Scale part III (MDS-UPDRS III). Motor progression was estimated from MDS-UPDRS III residuals adjusted for PD duration. Multivariable regression analyses were adjusted for sex and PD duration, followed by sex-stratified analyses. Two-sample Mendelian randomization (MR) was performed to evaluate the causal effect of genetically proxied blood copper on motor progression.
Results. The mean serum copper level was 117.6±18.6 μg/dL (mean±SD) and was higher in females than in males (P=0.003). Serum copper was positively associated with PD duration (P=0.028). After adjustment for sex and PD duration, higher copper levels were negatively associated with Hoehn and Yahr (HY) stage (OR=0.97, P=0.041) and MDS-UPDRS III (β=−0.28, P=0.018). Significant associations were observed only in females, who showed lower HY stage (OR=0.94, P=0.020), lower MDS-UPDRS III (β=−0.62, P=0.003), and slower motor progression (β=−0.54, P=0.005). MR consistently supported a negative causal association between blood copper and motor progression, with the inverse-variance weighted method showing a significant negative effect (β=−0.645, P=0.004).
Discussion. Higher serum copper levels were associated with slower motor progression in PD, particularly in females, with genetic evidence supporting a negative causal relationship. Systemic copper status may serve as a biomarker of disease resilience and a potential target for sex-specific therapeutic strategies.

P831

Accurate prediction of genotype and phenotype among CYP2D6 copy number variation carriers

Ms Kathleen Glavin

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Accurate prediction of genotype and phenotype among *CYP2D6* copy number variation carriers

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Introduction. Cytochrome P450 2D6 (CYP2D6; *CYP2D6*) is a highly polymorphic drug-metabolizing enzyme also well known for copy number as well as structural variations. Its activity can be predicted by genotyping but quantifying the effect of copy number variation (CNV) can be complex, expensive and time-consuming, and applied methods are not standardized. However, phenotyping CYP2D6 activity using the diet-derived biomarker of CYP2D6 activity (solanidine and its metabolite M414), when used in combination with *CYP2D6* genotyping has the potential to better predict true CYP2D6 activity.

Aims. We sought to reassess *CYP2D6* CNV in our cohort of patients on tamoxifen therapy (N=1,029; Medwid et al, 2024) utilizing additional technologies including MLPA coupled to observed solanidine metabolite ratios.

Methods. Previously, metabolizer status and activity score (AS) were determined by TaqMan assays and copy number analysis using amplification ratios. For expanded genotyping, we employed TaqMan Genotyper software tracings and MLPA assays for those who harbor *CYP2D6**4, *41, and *10 variants and have increased copy number (N=32).

Previous AS	N	Ln(M414/ solanidine) ±SD
0.25	3	1.25±0.71
1	1	2.30
2	12	2.00±0.56
2.25	16	1.98±0.41
Expanded AS		
0.25	3	1.25±0.71
0.75	1	2.30
1	11	1.98±0.58
1.25	1	1.30
1.5	10	1.96±0.41
2	1	2.21
2.25	4	2.04±0.14
3.25	1	2.62

Results. Expanded testing that included MLPA resulted in revised *CYP2D6* genotypes in 25 patients, with 24 having their activity score altered (see table), where 14 previous normal metabolizers were recategorized as intermediate (N=13) or ultrarapid (N=1). Of 11 patients genotyped as *10/*1x2, ten patients were updated to *10x2/*1, and of 12 patients genotyped as *4/*1x2, nine were updated to *1/*4x2. Expanded genotyping activity scores better predict M414/solanidine ratios (R^2 = 0.37).

Discussion. Addition of technologies such as MLPA resulted in a more accurate prediction of *CYP2D6* copy number particularly when coupled to solanidine metabolism as a circulating biomarker of CYP2D6 activity.

Medwid et al (2024) Clin Pharmacol Ther 116:1269-1277

P834

P2Y12 inhibitor prescribing patterns following percutaneous coronary intervention: is CYP2C19 testing valuable?

Ms Josephine Hughes

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

P2Y12 inhibitor prescribing patterns following percutaneous coronary intervention: is CYP2C19 testing valuable?

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Introduction. CYP2C19-guided clopidogrel therapy in patients following percutaneous coronary intervention (PCI) reduces recurrent ischaemic events (Ingraham et al, 2023). Given clopidogrel is second-line therapy, with ticagrelor and prasugrel being first-line, it is unclear if prescribing is sufficient to warrant a CYP2C19 genotyping service.

Aims. To identify current P2Y12 inhibitor prescribing patterns in patients post PCI and assess switches in antiplatelet therapy amongst patients with a previous myocardial infarction.

Methods. Medical records of patients receiving a PCI for cardiovascular disease at a large Australian hospital between 01/06/2023 – 01/06/2025 and were commenced or continued on dual antiplatelet therapy (DAPT) at discharge were reviewed. Clinical data collected included PCI indication, DAPT prescribed, patient demographics, concomitant medications and medical history. Relative risk ratios were calculated for certain comparisons.

Results. Patients (n = 680) were predominantly male (76%, 518/680) with a mean age of 67 (12.6) years. Clopidogrel was more commonly prescribed (72%, 491/680) than ticagrelor (28%, 189/680). No patients were prescribed prasugrel. Clopidogrel was prescribed in a higher proportion to those 65 and over (82%, 343/418) and to those taking concomitant anticoagulants (81%, 61/75). ST-segment elevation myocardial infarction (STEMI) patients were 3.4 times more likely (95% CI 2.77 to 4.23) to be prescribed ticagrelor compared to clopidogrel. Twenty-two patients (3%, 22/680) had a myocardial infarction in the preceding 12 months to their PCI. Of these, thirteen (59%, 13/22) remained on clopidogrel, seven remained on ticagrelor (32%, 7/22), and two were switched from aspirin only or aspirin and ticagrelor to DAPT with clopidogrel (9%, 2/22).

Discussion. Although clopidogrel is considered second-line therapy, it remains the preferred P2Y12 inhibitor, particularly in older patients and/or those on anticoagulants. Only in patients who had a STEMI-indicated PCI (i.e. more high-risk) was ticagrelor preferred. Recurrent cardiovascular events within 12 months did not lead to switching from clopidogrel. These findings suggests that a CYP2C19 genotyping service to guide antiplatelet therapy is of value.

Ingraham BS et al (2023) JACC Cardiovasc Interv 16:816-825.

P835

Personalized Medicine: Regulatory Implementation in Cuba

Dr Diadelis Remirez

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Personalized Medicine: Regulatory Implementation in Cuba

Diadelis Remirez, PhD, National Centre for State Quality Control of Drugs and Medical Devices in Cuba.

Introduction. Pharmacogenomics as a science has advanced significantly in the last 5 years. It helps identify interindividual variability in the response to medications (toxicity and effectiveness). This information will make it possible to individualize therapy with the goal of maximizing effectiveness and minimizing risks.
Objectives. The objective of this presentation is to present the bases for the regulatory implementation of this science in Cuba, characterizing the pharmacogenomic information on medications registered in the country in terms of pharmacotherapeutic groups, biomarkers, and the section of the data sheet that contains this information.
Methods. The study was conducted using the Table of Pharmacogenomic Biomarkers in Drug Labeling from FDA as a reference, characterizing medications registered in Cuba that possess genomic biomarkers, their therapeutic anatomical group, and including this information in the product's data sheet.
Results**.** Based on a table of the FDA, the 73 medications registered in Cuba out of the 350 published by the FDA were characterized. Of these, the majority belong to the ATC for antineoplastic and psychiatric medications. Of these, 25 have adverse reactions with a potential risk to patients.
Discussion. This information is very useful for healthcare providers to assess the risk impact of this information on treatment, allowing for the rational use of medications according to the patient's genetic profile. Pharmacogenetics opens a new era for drug prescribing.

P836

Pharmacogenomic testing: Gaps, recommendations and implications for adverse event prevention

Prof Ratinder Jhaj

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Pharmacogenomic testing: Gaps, recommendations and implications for adverse event prevention

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Introduction. Pharmacogenomics (PGx) can help identify patients at higher risk of serious adverse drug reactions (ADRs) or therapeutic failure. However, there is a significant gap in clinical adoption of PGx testing in low- and middle-income countries (LMICs).

Aims. To assess prescription rates and ADRs of drugs with PGx Testing Required or Recommended and Actionable PGx according to ClinPGx (https://www.clinpgx.org/guidelineAnnotations) at a tertiary care hospital in Central India.

Methods. This was a retrospective observational study correlating prescription audit data from January 2016 to July 2025 and pharmacovigilance data from March 2014 to July 2025.

Results. A total of 3827 (33.61%) out of 11,388 prescriptions analyzed contained one or more drugs with PGx testing required (45, 0.40%), recommended (31, 0.27%), or actionable (3751, 32.94%) in 1988 (51.95%) men, and 1839 (48.05%) women, with a mean age 40.91 years. Out of the total 4977 adverse drug reactions reported during the study period, drugs in the above categories were suspected to cause 337 (6.77%) ADRs in 282 patients, including 126 (44.68%) men, and 146 (55.32%) women, with a mean age 39.74 years. These included 106 (2.13 %) cases of cutaneous hypersensitivity reactions, with 19 (0.44 %) serious cADRs, including 10 cases of Stevens Johnson Syndrome (SJS) and SJS-TEN (Toxic Epidermal Necrolysis) overlap, which could have been predicted by testing specific HLA genes. There was one case each of hemolysis and methemoglobinemia with dapsone, which could have been pre-empted by ruling out G6PD deficiency. Antiepileptics (valproic acid, carbamazepine, oxcarbazepine) were the most frequently prescribed drugs with testing required or recommended, and the most common suspected drugs in ADRs (64, 26.34%), followed by hydroxychloroquine (45, 18.52%). Pantoprazole was the most prescribed drug with actionable PGx. No PGx testing was carried out for any of the prescribed or suspected drugs.

Discussion. There was significant prescribing and ADRs with drugs with PGx testing required, recommended or actionable. Although the ADRs reported cannot be ascribed to lack of testing with any degree of certainty, at least some of these could represent missed opportunities for prevention, highlighting the need to adopt PGx testing.

P837

Impact of OCT1 Polymorphism on Metformin Pharmacokinetics in T2DM Patients

Dr Vycke Yunivita

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Impact of OCT1 Polymorphism on Metformin Pharmacokinetics in T2DM Patients

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Introduction. Metformin demonstrates considerable interindividual variability in therapeutic response among type 2 diabetes mellitus (T2DM) patients. Genetic variations in Organic Cation Transporter 1 (OCT1), which mediates the hepatic uptake and pharmacokinetics of metformin, represent a potential explanation for this variability.

Aims. This study aimed to evaluate the influence of OCT1 polymorphisms (rs2282143, rs628031, rs622342) on metformin pharmacokinetics parameters in T2DM patients.

Methods. This cross-sectional study analyzed 117 DNA samples. Genotyping was performed using Sanger sequencing. A subset (n=34) underwent pharmacokinetic assessment with blood collection at 0, 1, 2, and 5 hours following metformin administration. Plasma metformin concentration was measured by UPLC and differences in C_{max} and AUC_{0-5} between patients with and without variant alleles were analyzed with t-tests.

Results. The mutant allele frequencies were 13% (rs2282143), 52% (rs628031), and 50% (rs622342). No significant pharmacokinetic differences were found. The geomean C_{max} was 2.4±0.8 vs. 2.6±0.8 mg/L (p=0.495) and the geomean AUC_{0-5} was 9.1±3.0 vs. 10.4±2.8 mg·h/L (p=0.250). The median T_{max} was comparable (1.9 vs. 1.6 hours, p=0.216).

Discussion. These findings indicate that the investigated OCT1 polymorphisms do not significantly affect metformin pharmacokinetics in this T2DM population, suggesting that other genetic or physiological factors may be primarily responsible for the observed variability in metformin exposure and response.

P838

Population-Specific Distribution of Clinically Relevant Pharmacogenetic Variants Among Healthy Malaysian

Dr Nurfadhlina Musa

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Population-Specific Distribution of Clinically Relevant Pharmacogenetic Variants Among Healthy Malaysian
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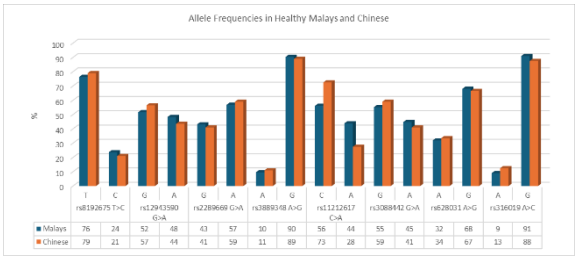

Introduction. Genetic variation in drug-metabolizing enzymes and transporters contributes to interindividual variability in drug response, yet pharmacogenetic data from Malaysian populations remain under-represented in global databases.

Aims. This study aimed to characterise and compare genotype and allele frequencies of selected pharmacogenetically relevant single nucleotide polymorphisms (SNPs) among healthy Malaysian Malays and Chinese.

Methods. Genomic DNA was obtained from archived whole blood samples and archived DNA from previous studies, and genotyping was performed using an in-house developed nested allele-specific polymerase chain reaction (PCR) method.

Results. Eight pharmacogenetically relevant SNPs (rs8192675, rs12943590, rs2289669, rs3889348, rs11212617, rs3088442, rs628031, and rs316019) were successfully genotyped, revealing distinct interethnic differences in allele frequencies between Malays and Chinese, including a higher prevalence of the rs11212617 C allele among Chinese (72.5%) compared with Malays (56.1%), with several variants exhibiting high minor allele frequencies in both populations.

Discussion. These findings demonstrate population-specific pharmacogenetic variability in Malaysia and provide essential baseline data to support future clinical pharmacology studies and the implementation of pharmacogenomics within Malaysia's Precision Medicine Agenda.

Relling MV, Evans WE. Pharmacogenomics in the clinic. Nature. 2015;526:343–350.

P840

Genetic variants associated with anthracycline-induced cardiotoxicity in paediatric oncology: a case-control study

Dr Julia Netylko

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Genetic variants associated with anthracycline-induced cardiotoxicity in paediatric oncology: a case-control study

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Introduction. Anthracyclines are widely used in cancer treatment and improve patient survival, however they are also known to cause anthracycline induced cardiotoxicity (ACT). Genetic susceptibility has been reported for several genes and variants, but results remain inconclusive. In this study, ACT associated variants in an Australian paediatric survivor cohort using a matched case control design were investigated.

Aims. To replicate known genetic associations and discover novel variants associated with anthracycline-induced cardiotoxicity.

Methods. Fifty-two participants formed 26 matched case-control pairs. Cases had echocardiographic cardiotoxicity (EF <53% or FS <28%) ≥21 days post-anthracycline. Controls were matched on treatment era, diagnosis, age, sex, and cumulative dose. Whole exome (n=18) and genome sequencing (n=34) were performed. Previously reported variants were tested and discovery analyses were undertaken on gene and variant level.

Results. Mean age at diagnosis was 7.4 years, with 44.2% male. A total of 16 literature curated variants were analysed. TTN rs2303838 was enriched in controls and associated with reduced toxicity odds, while SLC28A3 rs7853758 was enriched in cases. For the latter, a meta-analysis was conducted showing high heterogeneity in results with minor odds for risk. Gene-based discovery analysis prioritised six genes (SLC12A4, REG3A, TRIM34, HTR3D, HPS5 and SERPIND1), within which several rare risk-associated variants were identified. In SLC12A4, which has been linked to the cardiovascular system, the rs770789419 variant was enriched in cases (~26%) and were found in none of the controls.

Conclusions. This matched case control study replicated a protective association for TTN rs2303838 and observed case enrichment for SLC28A3 rs7853758. Discovery analyses highlighted additional candidate loci, including variants in previously unreported K-Cl cotransporter 1 gene, supporting larger studies for validation and mechanistic follow up.

P841

Sex differences in glucose metabolism in the Oatp1a/1b cluster knockout mouse model

Mr Jonathan T Nguyen1

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Sex differences in glucose metabolism in the Oatp1a/1b-cluster knockout mouse model

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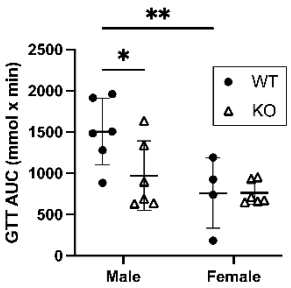
Introduction. Organic anion-transporting polypeptides (OATPs) are uptake transporters predominantly studied for their role in drug disposition. Our initial data from a whole-body Oatp1a/1b-cluster knockout (KO) mouse model (Oatp1a1, Oatp1a4, Oatp1a5, Oatp1a6, Oatp1b2) suggest altered glucose tolerance in adult male mice. However, the physiological role of Oatp1a/1b in glucose homeostasis is not known. As well, males and females can differ in their metabolic status.



Aims. To conduct metabolic testing in male and female KO mice compared to wild-type (WT) mice to investigate the role of Oatp1a/1b with sex in glucose homeostasis.

Methods. Male and female WT (FVB) and KO mice (n=4-6 per group, 12-14 weeks old) were subjected to ip glucose tolerance tests (GTT; 1.5 g/kg; 5-hour fast) and insulin tolerance tests (ITT; 0.75 U/kg; 3-hour fast). Blood glucose was measured, and AUC differences assessed by unpaired t-tests and two-way ANOVA.

Results. No sex differences were observed in WT body weight, while male KO showed a trend towards higher body weight (12%) versus female KO ($p=0.06$). There were no sex or genotype differences in fasting blood glucose. In WT mice, males had impaired glucose tolerance compared to females (2-fold GTT AUC increase, $p<0.05$), and no differences in insulin tolerance. In KO mice, males did not differ from females in the GTT or ITT. In male mice, KO showed improved glucose tolerance compared to WT (1.5-fold GTT AUC decrease, $p<0.05$), and no differences in ITT. In female mice, KO had impaired insulin tolerance compared to WT (1.3-fold ITT AUC increase, $p<0.05$), while no differences in glucose tolerance were found. When simultaneously assessing sex and genotype (Figure), sex remained significant ($p<0.01$) with a trend for a genotype interaction ($p=0.11$). While male WT displayed impaired glucose tolerance compared to male KO, this effect was not present in female mice.

Discussion. Our findings confirm sex differences in glucose tolerance in mice and suggest a potential effect of the Oatp1a/1b cluster in regulating glucose metabolism that may be sex-dependent. Underlying mechanisms may involve changes in the transport of known endogenous Oatp substrates such as bile acids and sex hormone conjugates.

P842

National action plans on medication safety in Sri Lanka: Comparison and implementation

Prof Priyadarshani Galappatthy

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

National action plans on medication safety in Sri Lanka: Comparison and implementation

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Introduction. Sri Lanka launched a five- year national action plan on medication safety in 2021, developed on the World Health Organization (WHO) third Global Patient Safety Challenge: *Medication Without Harm* framework. An updated action plan was developed in 2025.

Aims. To compare the 2021 and 2025 action plans and to assess the progress of implementation of 2021 action plan

Domains	Activities in each plan		Sub-activities in each plan		KPIs in each plan		Implementation score by 2025 (%)
	2021	2026	2021	2026	2021	2026	2021 plan
Patients and the public	4	4	14	21	13	19	9/30 (30)
Medicines as products	7	9	20	37	18	49	28/40 (70)
Healthcare professionals	16	11	41	28	34	32	39/82 (47)
Systems and practices	16	17	46	48	26	49	38/90 (42)
Total	43	41	121	134	81	149	114/242 (47)

Methods. The same process of multi-stakeholder consultation adopted for 2021 plan was carried out over 4 consultative meetings coordinated by the Patient Safety and Accreditation Bureau (PSAB), the former Directorate, Healthcare Quality and Safety, Ministry of Health and supported by WHO. Both plans were developed focussing on the 3 key action areas and on the four domains of the WHO Challenge and considering country priorities. The implementation of each sub activity was scored 0-2 on the degree of progress. (0-Not started, 1-partial implementation, 2 -full implementation)

Results. The number of activities, sub activities, key performance indicators (KPIs) and scores achieved on each domain is given in the Table. Many activities are at different stages of implementation. New activities included focussed on addressing recent safety concerns such as medicines shortages and substandard and falsified medicines.

Discussion. The 2021 medication safety national action plan achieved near 50% implementation in 5 years. The 2026 -2030 action plan has included emerging and current safety concerns identified in Sri Lanka.

P845

Research animal welfare legislation and ethical review processes in Gulf Countries

Prof Dave Lewis

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Research animal welfare legislation and ethical review processes in Gulf Countries

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Introduction. IUPHAR's Integrative and Organ Systems Pharmacology (IUPHAR IOSP) Initiative supports high-quality, humane research involving animals through the provision of professional educational opportunities for all those involved in the care and use of research animals, or the administration of such studies. To-date, the initiatives activities have been concentrated predominantly in Africa. However, it wishes to expand to other regions of the world, including the Gulf. Resources and activities cannot be directly transferred from one region to another. Instead, they must be tailored to the culture, values, legislation and resources of the host country.
Aims. To identify the research animal welfare legislation and ethical review processes in the nine Gulf countries.
Methods. A scoping review of the published literature, indexed in the PubMed and Scopus databases, of studies involving research animals (laboratory, conservation biology, wildlife, captive, domesticated, marine) in the nine Gulf Countries was undertaken.
Results. 339 papers which met the inclusion criteria and not the exclusion criteria were published in 2024-25. From these publications, seven countries (Bahrain, Iran, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates) were found to have animal welfare legislation that was specific for, or covered, research animals, six of these also had national or Institutional animal ethical review regulations and processes. Iraq and Yemen have national or Institutional animal ethical review regulations and processes. This discovered information was utilised to access and evaluate further details of legislation and ethical review requirements in each country.
Discussion. Gulf countries are investing significant resource to growth their scientific research capacity and outputs, including research involving animals. This study has evidenced that most Gulf countries have implemented appropriate animal welfare legislation and ethical review processes to support expanding high-quality, humane research involving animals. This information will support the co-creation, with interested parties in the host country, of tailored, country-specific professional education opportunities for all those involved in the care and use of research animals, or the administration of such studies, providing new opportunities where these do not currently exist, or in further developing existing opportunities.

P846

Drivers and barriers in pharmacology learning: systematic reviews and recommendations

Dr Arlene M Taylor

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Drivers and barriers in pharmacology learning: systematic reviews and recommendations
Arlene M Taylor, PRAISES, Australia.

Introduction. Pharmacology learning underpins safe prescribing (and patient outcomes) yet often suffers from poor engagement +/- uneven mastery. Prior reviews focus on "what works" interventions rather than behavioural and contextual factors that shape learning. Strategic analysis of the former provides a foundation for improvement.
Aims. To identify and categorise drivers and barriers to pharmacology learning, draw transferable insights from other challenging disciplines, and propose an actionable blueprint for educators and program leaders.
Methods: Mixed-methods systematic reviews of MEDLINE, Embase, ERIC, PsycINFO, and Web of Science (2000–2025) were conducted. Search terms combined 'pharmacology,' 'education,' 'drivers,' 'barriers,' 'learning,' and comparators from comparator disciplines. Dual independent screening and data extraction was applied. Risk of bias assessment utilised the Mixed Methods Appraisal Tool (MMAT) [1]. Results were synthesised (pooled effect sizes when feasible), explaining learner engagement using the COM-B model (Capability, Opportunity, Motivation → Behaviour) [2], and capturing system-level determinants using the Consolidated Framework for Implementation Research (CFIR) [3].
Results. Over 90 studies met inclusion criteria (~1/3 pharmacology; ~2/3 comparator fields). Barriers included cognitive overload, misaligned assessments, limited feedback, and lack of authentic application. Drivers included active retrieval, case-based integration, feedback-rich design, and scaffolded digital tools. Pooled analyses suggested moderate gains for retrieval practice and case-based learning. Equity analyses highlighted disproportionate barriers for learners with lower prior knowledge or limited resources, or reduced IT capability/digital literacy.
Discussion. Four strategic levers emerged; (1) embed authentic decision tasks, (2) mandate feedback-linked assessments, (3) deploy AI-supported tools with safety guardrails, and (4) adapt resources to close equity gaps. This blueprint connects behavioural and contextual determinants to implementable actions for pharmacology education.

[1] Hong QN et al (2018) Mixed Methods Appraisal Tool (MMAT). User guide, McGill University. [2] Michie S et al (2011) The Behaviour Change Wheel: a new method for characterising and designing behaviour change interventions. Implement Sci 6:42. [3] Damschroder LJ et al (2009) Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. Implement Sci 4:50.

P849

From collaborative redesign to reality: initial outcomes of the Human Biosciences program at Memorial University

Dr Mark Berry

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

From collaborative redesign to reality: initial outcomes of the Human Biosciences program at Memorial University
Todd, A.M., Bertolo, R.F., Booth, V.K., Brown, R.J., Brunton, J.A., Cheema, S.K., Christian, S.L., Clemson, E., Codner, M., Farahnak, Z., Harding, S.V., Kakumani, P.K., Li, Y., Mayengbam, S., Mulligan, M.E., Park, J., Shahidi, F., Smith, S.R., Wilson, K.A., & Berry, M.D.
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Introduction. In 2020, an external review prompted the Department of Biochemistry at Memorial University of Newfoundland to undertake a full curriculum redesign of its Biochemistry and Nutrition programs. This process led to the creation of a single interdisciplinary "Human Biosciences" program, integrating biochemical, pharmacological, and nutritional sciences. The redesign emphasized 12 core concepts and nine program-level outcomes (PLOs), with courses co-taught and aligned to ensure interdisciplinary learning by including at least one biochemical/pharmacological and one nutritional instructor in each mandatory course, ensuring consistent embedding of content across the program.
Aims. This study reports on the initial implementation of the Human Biosciences program, focusing on student enrolment trends, preliminary feedback, and alignment of learning experiences with program goals.
Methods. Program evaluation employed a mixed approach. Enrolment and demographic data were tracked in the first years of implementation (2023–25). Focus groups, structured student surveys and course evaluations were analyzed to assess perceived clarity of program structure, learning outcomes, and alignment with career goals. Formal and informal feedback from faculty and staff was also collected.
Results. Initial enrolment exceeded expectations, with 304 students entering the program, including strong uptake from both first-year entrants and internal transfers. This represents a substantial 43% increase in majors as compared to the average number of majors in the previous program. Early student feedback highlighted appreciation for the integrated curriculum and clarity of progression through courses. Students reported valuing alignment between courses, engaging activities and assessments within courses, and the varied perspectives within our co-teaching model. Areas for improvement included balancing workload across courses and increasing cohesiveness between co-instructors. Particular challenges were noted around managing assessment difficulty in some high-enrolment 3000- and 4000-level courses, with possible solutions under discussion. Faculty reported improved alignment between teaching activities and program outcomes.
Discussion. Early evaluation suggests that the Human Biosciences program is achieving its intended goals of integration, progression, and alignment with PLOs, while remaining responsive to student needs. Future monitoring will further evaluate adjustments to assessment design and course delivery in upper-level courses. Ongoing monitoring will assess longer-term outcomes, including retention, academic performance, and post-graduate pathways. This work demonstrates how deliberate, collaborative curriculum redesign can be implemented and evaluated to ensure responsiveness to evolving student needs.

P850

Bridging Digital Divide in Postgraduate Pharmacy Education Through Software Learning Adoption Insights

Dr Hemanth Kumar Boyina

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Bridging the Digital Divide in Indian Postgraduate Pharmacy Education Through Software Learning Adoption Insights

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Introduction. Postgraduate pharmacy education is rapidly reshaping and transforming as a result of the digitalization of technologies; nevertheless, inequalities in access, digital skills, and effective usage have led to a persistent digital divide. The gap could impact the development of competencies, research skills, and equal access to advanced learning tools.
Aims. The objective of the study was to evaluate the adoption, perception, and barriers regarding software-based learning among Indian postgraduate pharmacy students and their determinants of the digital divide.
Methods. An Online survey, a questionnaire-based cross-sectional study, was conducted for 40 days, i.e., from March 13, 2026, to April 23, 2026. and the questionnaire was circulated in multiple regions across various Indian Universities and implemented on postgraduate pharmacy students from different Indian Universities (Sample size n=110). The survey assesses access to digital infrastructure, frequency of software use, familiarity with more advanced software, such as AI-based software, stimulation software, and virtual laboratories, perceived academic value, and barriers to successful use. Microsoft Excel and GraphPad Prism were used to conduct a descriptive analysis of the data.
Results. Most respondents said their access to basic resources, such as mobile and internet connectivity, was satisfactory, but there was little access to advanced educational technologies and their use. Even though awareness and perceived benefits of digital learning were high, its actual use was moderate as a measure of availability and actual use. Lack of organization in training, institutional support, and the inability to incorporate digital tools into the academic curriculum were the key obstacles mentioned. A large percentage of the respondents highlighted the necessity of instructor-based training plans with standardized electronic learning frameworks.
Discussion: The results have shown that access and utilization of digital resources are not connected with postgraduate pharmacy training. Half of the respondents suppose that the attitude of various stakeholders is positive and that the use of the software-based learning is at least at the minimum due to the absence of official training and inclusion in the curriculum. Inclusive and outcome-oriented education can be achieved by addressing faculty development, infrastructure/policy-based curriculum reforms.
Conclusion: The digital divide should be bridged through a multi-level strategy that incorporates capacity building, institutional support, and integration of the curriculum of digital tools. Improving these areas will improve competency-based education and equip postgraduate students of pharmacy to address the evolving clinical, academic, and research environments.

P851

Reinforcing learning of pharmacokinetics concepts with a sequential problem-solving exercise

Dr Willmann Liang

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Reinforcing learning of pharmacokinetics concepts with a sequential problem-solving exercise
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Introduction. Discrete topics of pharmacokinetics taught in lectures could present challenges for students who are looking for conceptual linkages of the principles and their applications in real-life or simulated problems.
Aims. To evaluate user acceptability and user preference of a sequential pharmacokinetics problem-solving exercise
Methods. A problem set consisting of 10 pharmacokinetic questions was available to Year 1 MBBS students. Questions are presented in sequence, and more information is revealed in each subsequent step as the student proceeded. Some questions are more trivial and are of binary-choice type, only requiring the student to select an option before moving on. Other questions are more demanding, which require the student to first correctly choose from a list of pharmacokinetic-related equations that should be used, and then perform calculations to obtain the correct answer. It is only possible to proceed after a correct response is entered. The problem set was hosted on the university learning management system where unlimited access was granted to self-enrolled students. User interactivity with the problem set was recorded to analyse student responses and to obtain student feedback.
Results. Eighty-nine of 331 Year 1 MBBS students opted in to the problem set by enrolling voluntarily, with the understanding that this was an exercise supplementing the pharmacokinetics lectures. Sixty-four students (unique users) attempted at least one question, with 25 of them attempting the problem set more than once and proceeded to various stages. Thirty-four unique users completed the problem set; 1 user completed twice. Students performed the best (with 97 % of them successful) in selecting an equation for half-life calculation, but only 86 % of them were able to reach the correct numerical value. In contrast, the least number of students were able to use the correct equation and subsequently to determine plasma drug concentration at the beginning of a dosing interval. Upon completion of the problem set, 88 % of the students agreed that they felt more competent in performing pharmacokinetic calculations.
Discussion. Students were able to consolidate and apply their pharmacokinetics knowledge by working through this problem set. The majority of students who successfully completed found this exercise helpful. Student progress could be monitored easily, allowing the teacher to identify areas that warrant refinements in lesson planning and execution.

P852

Identifying career outcomes of Monash University students with a pharmacology major

A/Prof Brad Broughton

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 202

Identifying career outcomes of Monash University students with a pharmacology major

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Introduction. Research by the pharmaceutical industry in the United Kingdom (UK) found that approximately a quarter of pharmacology graduates in the UK gain employment within the pharmaceutical industry. However, there is a lack of information about the career outcomes of pharmacology graduates within Australia.
Aims. To determine the first employment and postgraduate experience of Monash University graduates with a pharmacology major.
Methods. Using the social networking platform LinkedIn, the career and educational profiles of n=80 Monash University pharmacology students from the 2022 (n=37) and 2023 (n=43) graduating cohorts were analysed.
Results. A total of 49 (61%) Monash University pharmacology students were employed after graduating in 2022 or 2023. Of the employed graduates, 20 (25%) had first time positions in the pharmaceutical industry, predominantly in marketing and manufacturing roles. Moreover, 47 (59%) pharmacology graduates had subsequently enrolled in further studies. Specifically, 12 (15%) of the graduates undertook Honours in Pharmacology, of which 2 continued onto a PhD, 16 (20%) enrolled in a master's degree, 6 (8%) pursued post-graduate medicine, and another 6 (8%) entered post-graduate pharmacy. The most popular master's degree was in Pharmaceutical Science (n=8), followed by Biotechnology (n=3). Further analysis of the Education section of the graduates' LinkedIn profiles revealed that 19 (24%) students had completed a double degree, most commonly in commerce.
Discussion. Monash University pharmacology graduates have a diverse range of university education experiences, leading to a variety of first-career outcomes. Jobs within the pharmaceutical industry was the most common first employment for Monash graduates, which was a percentage consistent with pharmacology graduates in the UK. Collectively, these findings can be used by students and staff to guide career planning and curriculum development, ensuring that future pharmacology graduates gain skills that align with industry demands and career opportunities.

*Denotes equal contribution

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Incorporation of game-based learning in Medical Education with traditional teaching: randomized study

Dr Arpita Maitra

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Incorporation of game-based learning in Medical Education with traditional teaching: randomized study

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Introduction. Implementation of Competency Based Medical Education(CBME) (NMC 2023),leads to many newer and novel teaching-learning methods (TLMs) (Gudadappanavar 2021)forUG teaching to create competent Indian Medical Graduate (IMG) with knowledge, skills, values, attitude and responsiveness. Game-based learning has proven to engage more students and grow interest and better understanding of the topic as well. (Xu M et al 2023)

Aims. To determine the effectiveness of incorporating game -based learning approach along with traditional TLM in UG teaching. To determine the student perspective on the incorporation of game-based learning.

Methods. Out of 56 consented 2nd phase MBBS students, 32 comparable students were selected and equally divided to group A and B. 5 classes of 60 minutes each on priorly selected 5 topics were taken to each group for 5 alternate days. Group A received traditional lecture while group B received 20 minutes traditional lecture plus 40 minutes game-based learning. A pre-and post-test questions containing MCQ, short answer type question (SAQ) were given before and after. Second assessment was done with MCQs, SAQs, long answer type questions (LAQs) after 1 month.

Results. There was significant improvement ($p<0.05$) in the marks between the pre and post test marks within the group in both the groups and also significant improvement in marks of SAQs in group B ($p<0.05$), while no significant difference ($p=0.43$) in case of MCQs between the group. Second assessment showed significant difference in case of MCQ and SAQ, post hoc analysis showed the group B students got better marks. Feedback showed that 86% of Group B agreed with the game-based learning and 25 % of group A felt the same way on traditional teaching method.

Discussion. The study showed that incorporation of game-based learning with the traditional teaching can kindle interest and also give full understanding of the subject (Gudadappanavar 2021). Though we cannot undermine the value of traditional teaching method. Still newer game-based TLM can encourage and enable students to face all type of questions and apply knowledge in their future practice.

References: NMC 2023/ Gudadappanavar AM et al (2021) J Educ Health Promot. Mar 31;10:91/Xu M et al (2023) Front Public Health. Mar 3;11:1113682

P854

Students' perception of an interactive pharmacology e-learning practical

Assoc Prof Micha Wilhelmus

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Students' perception of a newly developed interactive pharmacology e-learning practical in a life sciences curriculum

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Introduction. In higher education, laboratory practicals incorporating scientific experiments play an essential role in aiding students to understand relations between phenomena that are observable in the real world and the often abstract, scientific, principles that are used to explain these phenomena. Digital forms of these scientific experiments are particularly useful in supporting students in grasping difficult and abstract concepts and scientific inquiry self-efficacy, i.e. the students' confidence in their ability to reach study targets. In our pharmacology education in a life sciences programme at the VU University in Amsterdam, The Netherlands, we designed an interactive digital practical and accompanying assessment to actively engage our students with certain core concepts of pharmacology.

Aims. To gain insight into students' perspective on their experience of the implementation of this novel interactive e-learning practical and its assignment in our course.

Methods. We used a dedicated questionnaire, that included a Likert scale and free text elements, and subsequent (statistical) analysis of its outcome. Evaluation of the students' perspective on the e-learning practical was performed on the cohort of 2023-2024 (student number enrolled in course: n = 161).

Results and Discussion. We observed that students found the design and implementation of our interactive digital practical of value to our course and especially appreciated both the interactive nature and quality of the e-learning as well as the assignment setup.

P855

PharmCQ: Gamified Competition as a Catalyst for Pharmacology Learning in Pharmacy Education

Dr Suzanne Caliph

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

PharmCQ: Gamified Competition as a Catalyst for Pharmacology Learning in Pharmacy Education

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Introduction. Pharmacology is fundamental to safe, effective pharmacy practice by equipping students to understand how drugs work and apply that knowledge in pharmacotherapy decisions and patient communication. However, the breadth and complexity of pharmacology content can challenge students' engagement and progress. Innovative teaching strategies are needed for in-depth understanding and to enhance student engagement and outcomes.

Aims. This study introduces an education intervention aimed at promoting pharmacy students' understanding of key pharmacology concepts, while developing metacognitive skills such as self-reflection, evaluation and critical thinking.

Methods. A pharmacology competition quiz (PharmCQ) was developed to reinforce student learning and assess key concepts related to drugs used in treatment of major diseases/disorders including cardiovascular, respiratory, endocrine systems etc. The quiz emphasized applied understanding rather than simple recall using multiple choice questions (MCQ) and short-answer items requiring explanation. PharmCQ consisted of three stages: an online MCQ round, followed by semi-final and final short-answer rounds requiring oral explanations within timed sessions. After the competition, participants completed a survey on the event, quiz questions and open-ended feedback items.

Results. Eight teams, each made up of three third- and fourth-year pharmacy students from five Malaysian pharmacy schools, took part in the inaugural PharmCQ. Twenty students completed the survey (83% response rate), with an average event satisfaction score of 8.3/10. Most participants strongly agreed or agreed that the quiz improved their understanding of key pharmacology concepts (4/5), motivated them to study further (4/5), and helped them identify areas needing improvement (5/5). They also highlighted valuable opportunities for reflection and self-evaluation (5/5).

Discussion. This study indicates that gamified quiz competitions such as PharmCQ can enhance students' interest in deeper learning and improve their grasp of pharmacology concepts and clinical applications. The team-based competition format promotes peer-assisted learning, self-reflection and self and peer feedback and evaluation. Similar models may be adopted in other challenging disciplines to enhance students' learning experiences and outcomes.

Ortiz-Rojas M et al. How gamification boosts learning in STEM higher education: a mixed methods study. Int J STEM Educ. 2025;12(1).

P856

Predictors of antibiotic knowledge and self-assessment in dental students

Assoc Prof Ivana Šutej

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Predictors of antibiotic knowledge and self-assessment in dental students

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Introduction. Inappropriate antibiotic use is driven partly by gaps in knowledge and over-confidence among trainees..

Aims. To examine predictors of objective antibiotic knowledge and the alignment between self-assessed and measured knowledge in dental students.

Methods. Cross-sectional cohorts of 3rd- and 6th-year students (2019–2025) completed a validated antibiotic knowledge test (theory and clinical domains) plus a survey on self-assessment and learning sources. Multiple linear regressions modelled total and domain scores with predictors: year of study, cohort, gender, self-assessed knowledge, exam year, and information sources.

Results. Year of study was a strong positive predictor of total and domain scores ($P<0.001$). Higher self-assessed knowledge independently predicted lower objective performance for total, theory, and clinical scores ($P<0.001$), indicating miscalibration. Cohort effects were present, with performance varying across years; gender, exam year, and primary information source were not significant predictors (all $P>0.10$). Model fit was moderate ($R^2 \approx 0.30–0.46$). Students' learning sources shifted from textbooks (junior years) toward professors/clinical settings and apps (senior years). Seniors more often preferred later course placement (4th–5th year).

Discussion. Objective knowledge improves with seniority, but over-confidence relates to poorer performance, underscoring the need for training and frequent formative feedback. Structuring earlier clinical integration and guiding resource use may narrow perception–performance gaps and support prudent antibiotic prescribing.

P857

Medical Student's Perception towards Post Marketing Surveillance Practice of Medical Devices

Dr Bikash Ranjan Meher

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Medical Student's Perception towards Post Marketing Surveillance Practice of Medical Device

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Introduction. Undergraduate medical students could play a major role and bring a paradigm shift in successful implementation of Materiovigilance program if adequate knowledge and skill are imparted to them regarding reporting of adverse events related to medical device during undergraduate training. However, there are not much data exists in public domain regarding their knowledge, attitude and practice about Post Marketing Surveillance Practice of Medical Device in India.

Aims. The aims of this study was to evaluate the knowledge, attitude, and practice of undergraduate medical students regarding Post Marketing Surveillance Practice of Medical Device.

Methods. This was a cross-sectional and non-interventional study adopted a questionnaire-based design to evaluate the knowledge, attitudes, and practices (KAP) of undergraduate medical students of a tertiary care institution of national importance.

Results. One hundred and sixty-nine undergraduate medical students participated in our study constituting 84.5 % response rate. The mean knowledge score of final year and third year medical students was 2.22± 0.9 and 1.75 ± 0.1 and respectively and difference between two groups was statistically significant($p<0.01$). Majority of the students (93.4%) believes medical device can cause adverse events however very few of them (5%) have reported it during their practice.

Discussion. Requisite knowledge and appropriate attitude are essential for developing healthy practice towards reporting of adverse events associated with medical devices. Our study revealed that the knowledge gap exists among the undergraduate medical students of about reporting of adverse events related to medical devices. A continuous effort is required to make them aware of the Materiovigilance program by conducting various training programs like CME (Continuous Medical Education) and workshop.

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Retrieval practice improves prescribing skills of medical undergraduates in Nepal

A/Prof Kumud Chapagain

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Retrieval practice improves prescribing skills of medical undergraduates in Nepal

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Introduction. Medical students are often overwhelmed by the volume of learning. Knowledge once acquired degrades over time, and our educational systems lack structured approaches to optimize long-term retention.
Aims. To apply retrieval practice learning to prescribing skills and assess students' perceptions of its effectiveness in improving retention.
Methods. A comparative prospective study was conducted among first-year medical undergraduates of BPKIHS. Students were randomly assigned to receive either a retrieval practice session or a conventional teaching-learning session on prescription writing. Test scores before and after sessions were compared using paired t-tests within groups and independent t-tests between groups (SPSS v20). Students' perceptions were collected via a validated self-made five-point Likert scale questionnaire. P<0.05 was considered statistically significant.
Results. Among 100 students (50 per group), pre-test scores were comparable (Conventional: 6.80 ± 1.59; Retrieval: 7.36 ± 1.60; P=0.82). Post-test scores increased significantly in the retrieval group (Conventional: 8.22 ± 2.50; Retrieval: 13.23 ± 2.21; P<0.0001). The mean difference in scores was higher for retrieval practice (6.87 ± 2.69) than conventional learning (1.42 ± 2.49; P<0.0001). Students reported retrieval practice improved understanding, retention, and prescription-writing skills.

Learning method	Pre-test (mean ± SD)	Post-test (mean ± SD)	Mean difference ± SD	P value
Conventional (n=50)	6.80 ± 1.59	8.22 ± 2.50	1.42 ± 2.49	<0.0001
Retrieval practice (n=50)	7.36 ± 1.60	13.23 ± 2.21	6.87 ± 2.69	<0.0001

Discussion. Retrieval practice enhanced prescribing skills more effectively than conventional methods. Students perceived it improved understanding, retention, and overall learning experience.
Keywords: Retrieval; Retrieval practice; Learning

P859

This one went to market: a university/government collaboration to teach drug regulation

Assoc Prof Graham Mackay

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 202

This one went to market: a university/government collaboration to teach drug regulation.

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Introduction. The work of drug regulators across the world is critical for the safe and effective introduction of new medicines and the monitoring of existing drugs. In a 3rd year undergraduate Pharmacology subject (class size≈120) *'Drugs: from Discovery to Market'*, students explore the full lifecycle of drug development that leads to new medicines. However, a review of the subject content revealed a notable gap: the critical role of government regulators was underrepresented. This omission not only compromised the subject's learning outcomes but also limited students' exposure to a potential career pathway in regulatory science.

Aims. To jointly develop and evaluate an authentic, in-person workshop with the Australian government drug regulator - The Therapeutic Goods Administration (TGA). The workshop (2 hours) aimed to introduce students to the core principles and considerations involved in the approval of safe and effective medicines.

Methods. Three planning meetings between the TGA and subject coordinators designed and then refined the workshop's structure, selecting case studies/pre-clinical data sets and generating a worksheet to enable students to summarise their thinking, analysis and conclusions. The workshop ran for the first time in October 2025.

Results. The workshop was led by TGA employees with subject coordinators serving as facilitators. Ahead of the workshop, students were provided with a short contextualising video on the purpose and work of the TGA to maximise time available for in-class small group interaction. Case studies dealt with target engagement and drug efficacy, pharmacokinetics and drug safety (including carcinogenicity). In an anonymous, optional post-workshop survey, students commented very positively on the real-world nature of the workshop and that it served as a capstone for the subject. Time constraints were identified as the major deficit in the workshop.

Discussion. This new collaboration has delivered an authentic and engaging workshop that highlights the evidence-based decision making of the drug regulator. The workshop's alignment with real-world regulatory practices was seen as a key strength by students. Further refinement, largely to streamline the workshop, will be undertaken this year as we continue to offer students valuable insights into the professional activities of TGA experts.

P860

Case-Based Learning from a Pharmacist Intervention Preventing Medication Error

Miss Yu-Feng Chu

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 202

Case-Based Learning from a Pharmacist Intervention Preventing Medication Error

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Introduction. Medication errors in emergency departments (EDs) during night shifts are heightened by fatigue, reduced staffing, and communication gaps. These errors pose serious risks to vulnerable populations such as breastfeeding mothers, where drug safety concerns extend to the infant. This case demonstrates the educational value of pharmacist-led interventions in preventing high-risk prescribing errors.
Aims. To illustrate how a real-world clinical incident can be used as a case-based learning (CBL) resource for improving prescribing safety in special populations.
Methods. A structured analysis was undertaken using the Swiss Cheese Model to identify systemic contributors to an intercepted error. Literature on lactation pharmacology and medication safety education was reviewed to support case discussion. Educational strategies for integrating the case into pharmacist and prescriber training were developed.
Results. A breastfeeding woman was prescribed cyclophosphamide 50 mg TID instead of misoprostol 200 mcg TID during an ED night shift. Cyclophosphamide, a cytotoxic alkylating agent, is contraindicated in lactation due to toxic metabolites in breast milk and risk of infant neutropenia. The pharmacist identified the error at discharge, communicated the risks to the prescriber, and corrected the order. This prevented serious harm and preserved breastfeeding. Contributing factors included time pressure, electronic prescribing dropdown selection error, and limited lactation pharmacology knowledge. Educationally, this case can be applied to simulate error recognition, interprofessional communication, and evidence-based decision-making in CBL sessions.
Conclusion. Embedding pharmacists in ED night shifts strengthens the medication safety net and provides real-world cases for health professional education. This case supports integrating lactation pharmacology and high-alert medication safety into CBL curricula, fostering practical skills in identifying and managing medication errors.
Keywords: Case-based learning, education, emergency department, lactation, medication safety, night shift, pharmacist intervention.

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Students' perceptions regarding pharmacology education's impact during clinical training blocks

Dr Lehlohonolo Mathibe

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Students' perceptions regarding pharmacology education's impact during clinical training blocks
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Introduction. Clinical training blocks or work-based learning activities, which are structured lessons nestled into the curriculum, provide for real-life clinical exposures for health sciences students before undergraduate degrees are completed. However, there is insufficient scientific evidence regarding the impact of pharmacology theory lessons on expected competency outcomes for the clinical training blocks completed as part of pharmacy and optometry undergraduate programmes.
Aim. Therefore, this study investigated the perceptions of final-year Bachelor of Pharmacy (B. Pharm) and Optometry (B. Optom) students regarding the impact of theory pharmacology lessons, which were completed during earlier years of study, on successfully achieving the outcomes of practical clinical training blocks.
Methods. This was a cross-sectional 5-point Likert scale questionnaire-based (viz, 1 = Not impactful at all; 2 = slightly impactful; 3 = Not sure (I do not remember these lessons); 4 = very impactful; 5 = exceedingly) study. The questionnaires were distributed to the final-year B. Pharm and B. Optom students at the University of KwaZulu-Natal (UKZN), South Africa. Descriptive statistical methods were used to analyse data. The UKZN ethics committee granted full ethics approval (BREC8606/2025).
Results. Sixty-nine percent (69%, n = 25) of participants were females. Most respondents (86%, n = 31) were registered B. Pharm IV students. Lessons or topics which were perceived as having been very/exceedingly impactful were: the nonsteroidal anti-inflammatory drugs (82%, n = 32); antibacterials/antimicrobials (80%, n = 29); drugs which treat gastrointestinal diseases (76%, n = 27); respiratory tract diseases medicines (72%, n = 26); antiretroviral therapy (69%, n = 25); drugs used to treat cardiovascular diseases (61%, n = 22); and neuroleptics (61%, n = 22). The lessons on drugs which affect or used to treat the diseases of the autonomic nervous system, dyslipidaemia, and vitamin deficiencies were perceived as slightly or not impactful by 52% (n = 19), 47% (n = 17), and 41% (n = 15), respectively.
Discussion. It is encouraging that pharmacological lessons on essential medicines, which were mainly used at primary healthcare facilities, were perceived as impactful during work-based learning activities. However, it was surprising that the lessons on drugs that affect or are commonly indicated for the diseases of the autonomic nervous system were perceived as slightly or not impactful.

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Mapping a newly-formulated pharmacology curriculum framework for South African nursing students

Prof Werner Cordier

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Mapping a newly-formulated pharmacology curriculum framework for South African nursing students

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Introduction. Nurses, who serve as medication managers,[1] are often reported to lack pharmacology competencies. Generalised pharmacology curricula[1] reduce focus or contextualisation, hindering competency development.

Aims. To determine the most important pharmacology competencies for South African nurses and evaluate the potential alignment of the revised curriculum in a higher education institution context.

Methods. A modified, reactive Delphi-study employing nurse leaders in academic, professional or accreditation sectors (n = 23) ranked pharmacology competencies. Current and proposed curricula were mapped to determine module linkage. Focus group interviews (n = 6) was conducted for targeted needs analysis of the proposed curriculum.

Results. Participants highlighted the broad expectations towards nurses in cognitive, psychomotor and affective domains to manage the quadruple burden of disease that they will encounter in public healthcare settings. Furthermore, it emphasises their scope of practice as medication managers to promote educated and safe practice. Core concepts were important for scaffolding at a higher cognitive order. While the current curriculum displayed numerous prerequisite education (30.60% to 61.90%) and vertical integration (82.33% and 100.00%) gaps, the proposed curriculum was stronger (86.33% prerequisite link; 36.69% vertical alignment). The proposed curriculum was more clearly aligned to the scope of practice, facilitating the potential for integrated and contextualised learning. However, participants believed a programme-level review was necessary to ensure full alignment. Furthermore, fear of pharmacology, misaligned basic sciences platforms, and the nursing identity could hinder its development.

Discussion. The proposed pharmacology curriculum provides a more fit-for-purpose design, however, necessitates programme review to address systemic scaffolding concerns between basic and clinical sciences. Mapping allowed for the identification of current weaknesses, strengths, and potential for future educational bolstering.

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P863

Alternatives to Animal Use in Pharmacology Teaching: Educator priorities for simulation design

Dr Showmika Tabassum Supti

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Alternatives to Animal Use in Pharmacology Teaching: Educator priorities for simulation design

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Introduction: Ethical, regulatory, and logistical constraints on live-tissue practicals are accelerating adoption of digital and cell-based alternatives in undergraduate pharmacology. Uncertainty remains about the extent to which current simulations support conceptual understanding, practical reasoning, and assessment alignment relative to traditional labs.
Aims: To characterise current practice and perceived effectiveness of laboratory simulations, identify learning gaps, and derive educator-prioritised design requirements for next-generation simulated or blended laboratories.
Methods: A mixed methods needs analysis was conducted: i) pilot survey with Australian pharmacology educators, followed by an international survey targeting course coordinators and practical leads in pharmacology education. Survey domains included purposes of practicals, tools in use, concepts/skills taught, perceived effectiveness, barriers, desired features, assessment alignment (including (Objective Structured Practical Examination (OSPE)-style tasks), and implementation contexts. A subset volunteered for interviews; quantitative data were summarised descriptively, and qualitative responses thematically analysed.
Results: Preliminary survey findings suggest that uptake of laboratory simulations spans a range of institutions and courses, though depth of use varies. They appear most common for concept demonstration and pre-lab preparation, with more limited adoption where outcomes require technical proficiency or professional judgement. Early patterns indicate that educators perceive key gaps in supporting practice of tacit/technical skills, modelling real-time physiological behaviour, and aligning with performance-based assessment. Initial qualitative feedback suggests that while simulations support conceptual learning, they may not yet replicate the uncertainty of live experiments that cultivates professional judgement.
Discussion: Findings support a blended approach rather than chasing strict 'lab equivalence'. Priorities are lifelike physiological responses, student-led inquiry with iteration, real-world constraints with clear decision points, and built-in assessment with quick feedback. The work also raises practical questions including what skills belong in undergraduate vs later training, and how AI should support (not replace) lab learning.

P864

Objective Structured Practical Examinations as an Inclusive Assessment Tool for Pharmacology Curricula

Prof Margaret Cunningham

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Objective Structured Practical Examinations as an Inclusive Assessment Tool for Pharmacology Curricula

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Introduction. This project investigates the learning benefits of a co-designed, inclusive Objective Structured Practical Examination (OSPE) within a second-year biomolecular integrative pharmacology course. Our work is framed by the principles of inclusive education, recognising the critical need for equitable learning environments in STEM fields as student populations become more diverse (Batty & and Reilly, 2023).
Aims. We aimed to demonstrate how an OSPE can be used as an inclusive assessment tool to effectively assess practical skills and identify knowledge gaps to enhance the overall student experience.
Methods. The OSPE was implemented as an informal, summative assessment for our second-year Introduction to Pharmacology cohort. To accommodate 140-180 students, a five-stage stationary OSPE was developed with individual trays of materials. A 'circle if unsure' option was included to reduce anxiety. We used a mixed-methods approach, combining quantitative performance data and qualitative insights (thematic analysis (Braun V et al., 2006)).
Results. In our five-stage OSPE, 98% (n=151) of students were competent in pipetting, but performance progressively declined with task complexity. Pass rates for calculations (66.5%) and serial dilutions (67.5%) were lower, with students indicating uncertainty. Conceptual understanding of drug potency was most challenging, with a pass rate of only 47.2%. The lowest success rate (42.2%) was in the final integrated data interpretation and practical skills stage. These findings highlight a progressive decline in competence as tasks increased in complexity, reinforcing the need for targeted support in quantitative and conceptual pharmacology.
Discussion. The OSPE proved to be an effective tool for identifying a wide range of misunderstandings, which is essential for refining future curriculum strategies. Our use of thematic analysis to interpret student performance offers a framework for translating complex assessment data into actionable pedagogical insights. This work develops existing teaching theory by demonstrating the effectiveness of OSPEs in a non-clinical, practical science setting.

Batty L & Reilly K (2023) 57(5), 1147-1169
Braun V et al (2006) 3(2): 77-101.

P865

Using Students-as-Partners to Explore Education for Sustainable Development (ESD) in STEM

Prof Margaret Cunningham

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Using Students-as-Partners to Explore Education for Sustainable Development (ESD) in STEM

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Introduction. Education for Sustainable Development (ESD) is a framework that encourages the development of skills, knowledge, values, and attitudes essential for addressing social, economic, and environmental barriers (Fathurohman et al., 2023). This workshop explored the relationship between educational inequalities, focusing on how ESD principles can be used to promote equity, with students as the primary focus.
Aims. The interactive activities designed for the workshop aimed to encourage student voice to reflect on their experiences with educational inequalities and practical ways to address these.
Methods. Students from all STEM disciplines were invited to take part; however, most of the participants were pharmacology students. Interactive activities were designed using Mentimeter and Mural, grounded in the principles of intellectual engagement, emotional intelligence, and practical implementation. Mentimeter was used for quantitative data, including student awareness of sustainability and preferences for its integration into the curriculum. Mural facilitated qualitative discussions on barriers to accessing resources and reflections on educational inequities.
Results. Analysis of the data revealed key insights into barriers and effective learning methods. A recurring theme was disproportionate access to educational experiences, identified by 45% of students (n=23). To address this, 42.3% suggested new curriculum additions like workshops. While students recognised a wide range of sustainable resources (from societies to maternity leave), a common barrier was "too much noise from the university," making resources difficult to find. At the end of the workshop, 80% of participants agreed that sustainability principles fit into their curriculum, and 90% believed sustainable learning should be assessed.
Discussion. Engaging students as partners is crucial for developing effective and inclusive educational practices. The identified "noise" barrier highlights the need to re-evaluate communication strategies to improve resource accessibility. The strong student consensus on integrating and assessing sustainable learning provides a clear incentive for educators. The breadth of the students' understanding of sustainability, which includes social factors like maternity leave, highlights the need for a holistic ESD approach in curriculum design.

Fathurohman et al., (2023) 9(11), 1052-1059

P866

Introducing reflexivity to the undergraduate pharmacology course at the University of Malta

Prof Janet Mifsud

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Introducing reflexivity to the undergraduate pharmacology course at the University of Malta
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Introduction. Reflexivity involves critical self-awareness and reflection on how one's experiences, beliefs, values, and assumptions shape learning and practice. This conceptualisation underscores the temporal and developmental nature of human experience, where learning and growth are understood as an evolving process. Therefore, reflexivity enables pharmacology students to note their own responses to tasks, the people they interact with and events around them.
Aims. To develop the competence in pharmacology students to engage as reflexive practitioners by integrating personal experience with theoretical and disciplinary knowledge through their study units related to their site visits.
Methods. Students were introduced to three established frameworks for reflection: Borton's (1970) process model, Gibbs' (1988) Reflective Cycle, and Hollway and Jefferson's (2000) approach to reflexive inquiry. Through these frameworks, students were encouraged to analyze 'critical incidents' or 'significant events' encountered during the site visits to laboratories, industry and hospitals. The sessions also incorporated journaling as a pedagogical tool.
Results. First-year students expressed enthusiasm towards reflexive training sessions; however, many reported that their limited practical and academic experience constrained their capacity to engage meaningfully with the reflexive process. By contrast, second-year students, encountering reflexivity for the first time, demonstrated greater resistance, suggesting that the process required a degree of preparedness that had not yet been cultivated. Across all cohorts, it became evident that students were largely unfamiliar with documenting reflective processes, with several indicating a preference for responding to structured, pre-determined questions rather than engaging in reflection and open-ended journaling. Nonetheless, following the sessions many students observed that listening to their peers' reflections fostered a collaborative and supportive learning environment, which, in turn, facilitated deeper insights.
Discussion. This first attempt at introducing reflexivity to undergraduate pharmacology is promising, however it requires further fine tuning. The next step is to address the limitation that have been identified and introduce hand- written reflections of their experiences which would better support the process of reflexivity. Moreover, it is essential that students appreciate reflexivity not as a technique but as a mode of being—one that shapes their engagement with others and the situations they encounter.

P867

Comparing JiTT, Team-Based Learning, and Traditional Lectures on Pharmacology Students' Performance

Mr Kenneth Bitrus David

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Comparing JiTT, Team-Based Learning, and Traditional Lectures on Pharmacology Students' Performance

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Introduction. Pharmacology is conceptually challenging for many students due to its high cognitive load and abstract mechanisms. Traditional lectures often promote passive learning & limited application. Active learning strategies, including Just-in-Time Teaching (JiTT) and Team-Based Learning (TBL), have been reported to enhance critical thinking, and long-term retention in medical and health sciences education (Parsad & Divakaran, 2025)
Aims. This study explored the comparative effectiveness of these strategies against traditional lectures among undergraduate pharmacology students in a low-resource setting (Kaduna State University, Nigeria).
Methods. Ninety-six 4th-year pharmacology students completed a 15-week pharmacology course using JiTT and TBL (Part I) and conventional lectures (Part II). Learning was assessed via two summative tests, feedback questionnaires, and participation logs. A subset (n=40) completed a delayed post-test to assess knowledge retention. Quantitative data were analyzed with t-tests and chi-square tests.
Results. Mean score for active learning (16.2 ± 2.8) was significantly higher than for lectures (12.1 ± 1.7; $t(94) = 14.7$, $p < 0.001$, Cohen's $d = 1.1$). Pass rates were 96% (active) vs. 78% (lecture), while high achievement (≥15/20) was 72% vs. 22%. On delayed post-test, active learning students retained 86% of concepts vs. 61% for lecture-taught content ($p < 0.001$). Attendance during active learning averaged 92% vs. 74% during lectures ($\chi^2 = 12.4$, $p < 0.01$). Participation scores were also significantly higher ($p < 0.001$). 92% of students reported improved conceptual understanding, 87% higher motivation, 76% greater confidence applying knowledge clinically, & 81% perceived stronger collaboration skills.
Discussion. Active learning (JiTT + TBL) substantially improved performance, and long-term retention compared with traditional lectures in undergraduate pharmacology. Beyond higher grades, students reported deeper understanding, greater motivation, and enhanced confidence. Findings underscore the value of embedding active learning strategies into pharmacology curricula, particularly in resource-limited contexts where maximizing learning efficiency is critical.

Parsad V & Divakaran J (2025) MAR Pathol Clin Res 2:4-10.

P868

Bringing lived experience into the classroom: collaborative autoethnography for case study development

Dr Megan Waldhuber

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Bringing lived experience into the classroom: collaborative autoethnography for case study development
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Introduction. This study explores the use of collaborative autoethnography to generate an authentic, context-rich case study, tailored for pharmacy students learning about transmission and prevention of infectious diseases.
Aims. To use collaborative autoethnography to support the design of an authentic case study for student learning.
Methods. Drawing on the lived experiences of pharmacy students, the research team engaged in reflective writing, dialogic exchange and thematic analysis to create a case study narrative that captured the complexities of the COVID-19 pandemic on issues such as transmission and protection through vaccination.
Results. The resultant case study addresses critical domains such as empathy, patient communication and clinical decision-making within the context of periods of uncertainty.
Discussion. By grounding learning materials in personal realities, this approach enhances relevance, empathy and critical thinking among pharmacy students to foster deeper engagement and bridge the gap between theory and practice. Implications for enriching the curriculum and its impact on student learning are potential areas of future research.

P869

Bridging gaps in pharmacokinetics education across Canadian biomedical and pharmacology programs

Assoc Prof Fatima Mraiche

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Bridging gaps in pharmacokinetics education across Canadian biomedical and pharmacology programs

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Introduction. Pharmacokinetics is fundamental to drug discovery, therapeutic optimization, and patient safety. Yet students show limited mastery of core concepts, a challenge linked to the mathematical basis of the field and the difficulty of applying abstract principles to real-world scenarios. While pharmacokinetics education among allied health trainees has been examined, far less is understood about how pharmacokinetics is taught and learned within undergraduate biomedical and pharmacology curricula in Canada.

Aims. This study examines how pharmacokinetics is taught across Canadian post-secondary pharmacology programs, focusing on instructional time, assessment methods, and pedagogical approaches. It aims to identify curricular deficiencies and propose recommendations to strengthen student comprehension.

Methods. We used a mixed-methods approach, surveying faculty across Canadian institutions on teaching practices and perceptions of student competence in pharmacokinetics. Follow-up interviews will further explore effective methods and gaps in curricula.

Results. The current survey responses have been completed by faculty responsible for teaching pharmacokinetics at U15 research-intensive Canadian universities, with a mixture of respondents including tenured faculty. Pharmacokinetics was a mandatory, semester-long course in the majority of the programs, most often offered in the third year and instructional time exceeded six hours in most cases. Few courses incorporated laboratory-based instruction, and teaching was primarily delivered through lectures, case studies, and practice questions. More than half of respondents indicated that students achieved an appropriate level of pharmacokinetics knowledge at course completion, with a slight decline by program completion.

Discussion. Coverage was predominantly in didactic formats, with few laboratory components, representing a missed opportunity to strengthen the translation of theory into practice. These findings highlight the need to review course content, optimize instructional strategies and timing, and introduce pharmacokinetics earlier with reinforcement in upper years to better support education in Canadian biomedical and pharmacology programs. The slight decline in program completion underscores the need for consistent longitudinal integration to support long-term retention.

P870

Keeping pharmacology on the map: Strategies for integrated curricula

Assoc Prof Katerina Venderova

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Keeping pharmacology on the map: Strategies for integrated curricula

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Introduction. The shift from discipline-based to integrated, case-based curricula in health professions education has transformed how foundational sciences, including pharmacology, are taught. At Kaiser Permanente School of Medicine (KPSOM), pharmacology is embedded within an integrated, case-driven curriculum designed to promote clinical reasoning and early application of basic science concepts. While this approach enhances contextual learning, it also introduces challenges in ensuring cohesive and comprehensive coverage and appropriate development of fundamental pharmacology knowledge and skills. This work represents an innovative, AI-assisted approach to curriculum mapping and contributes to the growing body of educational scholarship on integration and competency-based education.

Aim. To develop and implement a structured, AI-supported approach for mapping pharmacology content across a horizontally and vertically integrated curriculum, ensuring alignment with clinical relevance, competency-based frameworks, and national licensure expectations.

Methods. We used AI to conduct a comprehensive review of all slide decks for case-based learning sessions across pre-clinical and clinical phases. Using a coding framework, pharmacology content was categorized by drug classes (e.g., antihypertensives) and key pharmacology concepts (e.g., mechanism of action, side effects, pharmacokinetics) and mapped to courses, Entrustable Professional Activities (EPAs), and program-level competencies. Depth of coverage was assessed, and a gap analysis identified opportunities for improved integration and reinforcement.

Results. Mapping revealed uneven distribution of pharmacology content, with underrepresentation in some areas (e.g., anesthetics) and redundancy in others (e.g., anticoagulants). While pharmacology appeared “well-covered” at first glance, most sessions rarely extended beyond basic mechanisms and indications.

Discussion. Systematic mapping of pharmacology content within integrated, case-based curricula is essential for maintaining depth, coherence, and competency alignment. Our AI-assisted approach generated robust data to inform curriculum restructuring and offers a scalable model for other institutions navigating similar challenges.

P871

Strengthening pharmacology education through establishing an academic support and quality assurance office

Mrs Cara de Moura-Cunningham

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Strengthening pharmacology education through establishing an academic support and quality assurance office

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Introduction. Academics of the University of Pretoria, like others in South Africa, face challenges balancing academic responsibilities (Dlamini et al, 2024). Many faculty members are subject-matter experts, though they lack formal training in education and administration (Barnes et al, 2021). This, coupled with staff shortages and institutional expectations, increases workloads and amotivation.

Aims. To establish the Academic Excellence (AE) Office's brand and scope of work within the Department of Pharmacology, supporting educational administration and quality.

Methods. A situational analysis was conducted across all Pharmacology modules presented to the Faculties of Natural and Agricultural Sciences and Health Sciences to determine system strengthening outcomes. This identified teaching needs, gaps, and administrative challenges. Various modalities were piloted, including a postgraduate internship, artificial intelligence, automation, and change management.

Results. The situational analysis identified unassigned lectures (due to staff turnover), lack of a central resource repository, redundant administrative tasks, and insufficient monitoring systems. Initial feedback was positive, with staff expressing a need to further reduce the administrative burden.

Discussion. Pilot interventions improved student monitoring through attendance tracking, early risk identification, and remedial support, while bi-monthly teaching meetings and postgraduate training fostered a culture of excellence. The AE Office presents a scalable model for strengthening administration and teaching, with future plans to expand automation, AI integration, and curriculum mapping.

Barnes N et al (2021) SA Journal of Human Resource Management 19:0
Dlamini NG and Dlamini ND (2024) Discover Education 3:9-18

P872

Introduction of Prescription Skill Assessment to Japanese Medical Schools

Prof Shinichiro Ueda

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Introduction of Prescription Skill Assessment to Japanese Medical Schools

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Introduction. Japanese Medical Schools largely lack educational programs on prescribing, which may be contributing to serious health risks. We began to introduce the Prescribing Skills Assessment (PSA), a CBT designed to evaluate prescribing skills in the UK, in Japan.

Aims. The aim of this study to report the results and feedback from medical students who participated in the PSA in 2025.

Methods. With the significant support from the PSA team of BPS a test trial was conducted after modifying items from the UK to suit Japanese medical practice. In 2025, six items developed in Japan were added, and six universities participated.

Domain	Average	Average(%)	SD
Prescribing (40 marks)	20.5	51.3	7.1
Prescription Review (16 marks)	8.3	52	2.8
Planning Management (8 marks)	3.5	44.3	1.8
Providing Information (6marks)	1.8	30.3	1.6
Calculation Skills (8 marks)	3.9	48.3	2.3
Adverse Drug Reactions(8 marks)	4	49.4	2.4
Drug Monitoring(8 marks)	3.6	45.5	2.1
Total Marks		48.1	14.4

Results. The total number of examinees in 2025 was 43, with a total score of 48%, as shown in Table. Domain-specific scores were approximately 50% in most areas, but Patient Communication (30%) and Data Interpretation (40%) scored relatively lower compared to other domains.

In post-exam feedback, about half of students indicated the content was appropriate for graduation but nearly all stated they had no systematic education addressing this exam, particularly regarding specific medications and dosages, and reported having almost no prescription experience during clinical clerkships.

Discussion. Despite insufficient education on prescribing, Japanese medical students scored approximately 50%. By providing sufficient educational content of prescription based on student feedback, the introduction of PSA was deemed fully feasible.

P873

A postgraduate module to develop experimental skills in Pharmacology

Dr Miriam Moriarty

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

A postgraduate module to develop experimental skills in Pharmacology

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Introduction. As a practical science, the discipline of Pharmacology demands that students are exposed to the processes of designing, conducting, analysing and communication experimental findings. At a postgraduate level, such a grounding in experimental methodologies is vitally important, prior to embarking on their research projects.

Aims. To describe the components of the Experimental Methods in Pharmacology module and how they have been incorporated into a cohesive module.

Methods and Results. Over the last 30 years, a continual iterative process has resulted in the current Experimental Methods in Pharmacology which is provided in the first semester to a combined class of 25 students drawn from our M.Sc. programmes in Neuropharmacology and Toxicology. The module starts with a team-based activity that revolves around a novel drug and how it might be evaluated using animal models of CNS disease. This activity allows experimental design and application of appropriate statistical tests to be employed. This is followed by a paper critique in which students evaluate the experimental approach taken in a primary research paper of their choice. The next stage involves graphical analysis of key pharmacological parameters and concludes with "wet-lab" exposure which includes a hands-on exam. The module provides formative interim assessments followed by higher stakes end of semester examination of the range of skills acquired. Indicators of the success of the module from its most recent iteration in 2025 reveal a significant improvement in statistical knowledge when compared to baseline whilst in feedback students were very satisfied/satisfied with the module's content, delivery and organisation.

Discussion. The Experimental Methods in Pharmacology has developed into a series of interlocking features that provide postgraduate students with an opportunity to acquire a range of research skills that are valuable foundation that can be developed further in the programme and following graduation.

P874

Small differences in entry scores do not affect retention or success rates

Dr Sheila A Doggrell

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Small differences in entry scores do not affect retention or success rates

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Introduction. Undergraduate enrolments and completions in nursing are declining at the same time as requirements for registered nurses in the workforce is increasing. One way to increase enrolments is to lower entry requirements.

Aims. To determine the effect of a small difference (lowering) in entry scores on the retention and success rates of nursing students in two combined pathophysiology and pharmacology courses.

Methods. A comparison of the students enrolled in the courses at the lower- than normal- (lesser) entry requiring campus with those enrolled in the courses in a normal-entry requiring campus. For both courses, retention/completion rates were measured and compared between campuses. For completing students, success was measured as (i) Academic outcomes; overall marks and marks for the exam and coursework and (ii) Failure rates in the examination and coursework.

Results. For both courses, there were no significant differences between retention and success between the lower- and normal-entry courses. In the first course in pharmacology, 14 of 97 lower-entry students withdrew early (8%), compared to 22/223 (10%) from the normal-entry campus. Sixty-three lower-entry students completed and passed (76%, and consequently, overall, 24% failed), compared to 77% passing and 23% failing in the normal-entry campus. Overall marks were 57% ± 14 (mean ± SD) vs 58% ± 12, exam marks were 56% vs 57%, and coursework marks were 58% vs 60%, for the lower-, compared to the normal-entry campus, respectively. Failure rates (< 50% of marks) in the exam were 41% and 30% for the lower-, compared to the normal-entry campus, respectively (Odds ratio 1.59, P =0.09), and 18% in the coursework at both campuses.

Discussion. This study shows that small reductions in entry requirements had no effect on retention or success in pharmacology courses in a nursing program. It is not known whether this applies to pharmacology courses in other programs. In nursing, there are similar findings for anatomy and physiology courses between entry level scores (Doggrell, 2024). Thus, decreasing entry requirement for nursing programs may be a way to increase nursing enrolments and graduates.

Doggrell SA (2024) BMC Nursing 23:639

P875

Integrating AI into Pharmacology Pedagogy: Practices and Insights from Peking University

Assoc Prof Lu Tie

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Integrating AI into Pharmacology Pedagogy: Practices and Insights from Peking University

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Introduction. I In the rapidly advancing era of biomedical and AI technologies, we are experiencing a "knowledge explosion," making AI integration into pharmacology education crucial for enhancing teaching efficiency and cultivating advanced scientific thinking. Traditional pharmacology education faces multiple challenges, including evolving medical education models and changes in medical students' learning behaviors.

Aims. To address these issues, Peking University's Department of Pharmacology developed an innovative "Smart Pharmacology Course," aiming to improve students' learning efficiency and critical thinking by integrating AI technologies with educational resources.

Methods. Built upon a core "Target-Drug-Disease-Clinical" framework, we designed "Drug Target Prompts" using specific targets as clues to analyze their biological characteristics and construct drug collections. Concurrently, "Efficacy-Driven Prompts" trace pharmacological effects to analyze involved pathways and build target collections. This dual approach deepens understanding of target-drug mechanisms and stimulates interest in drug discovery. The course also integrates intelligent agents including "Drug Manual," "Drug Therapy," and "Drug Development Lab," simulating realistic scenarios to encourage critical evaluation of AI outputs.

Results. Preliminary teaching indicates high student acceptance. Students rapidly organized target-drug relationships using AI prompts, deepening comprehension of core concepts. Through intelligent agent interactions, students actively explored drug development and therapeutic decision-making, enhancing analytical skills. Course feedback suggests AI tools contribute to personalized learning and inspire interest in drug discovery.

Discussion. This study demonstrates innovative AI application in pharmacology teaching through target-oriented prompts and scenario-based agents. This model facilitates knowledge mastery while cultivating critical thinking skills essential in the AI era. Future work will optimize agent design and expand applications to provide a replicable model for training future medical professionals.

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Active learning enhances student engagement and retention of rigorous statistical analysis

A/Prof Paul J Mitchell

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Active learning enhances student engagement and retention of rigorous statistical analysis
Paul J Mitchell. Department of Life Sciences, University of Bath, Bath, BANES, United Kingdom.

Introduction. The British Pharmacological Society's Core Curriculum in Pharmacology highlights core skills in experimental design and statistical analysis, and yet students and academic staff alike often fail to appreciate the importance of such skills. This may lead to low tuition quality and consequently lack of student engagement and retention resulting in a limited ability to use such key skills appropriately inherent in rigorous data analysis.
Aims. To design a high-quality program of study using active learning techniques (Khan et al., 2017) applied to experimental design and statistical analysis to promote student engagement and enhance retention.
Methods. The program of study was designed to be flexible in duration and to reach a diversity of cohorts (UG, PG, post-doctoral and early-career researchers in academia or the pharmaceutical industry) via in-person sessions or on-line directed study. The program combines hands-on application of statistical analysis via lectures, workshops, examples of data sets analysed by directed study and MCQ assessments (completed before and after the program) that are linked to a standard textbook (Mitchell, 2022).
Results. Comparison of MCQ scores for two different cohorts showed that prior to the program performance was weak (32-item MCQ; PhD students 52.8±4.5%, Industrial early-career researchers 61.1±4.6%) but significantly improved in a final 72-item MCQ (82.1±2.3% and 86.9±3.2%, respectively, paired *t* test $p \leq 0.003$ in both cases). Furthermore, student feedback indicated only 27% found the stand-alone lectures useful, but 97% found the combination of lectures with workshops, data exercises and the use of statistical software either useful or very useful!
Discussion. In general, performance indicators and student feedback indicate that active learning encompassed by hands-on data analysis workshops and directed study exercises were far more beneficial and promoted engagement and retention than the passive learning associated with the lecture material only.

Khan A et al. Active Learning: Engaging Students To Maximize Learning In An Online Course. Electronic Journal of e-Learning. 2017; 15: 107-115
Mitchell PJ. Experimental Design and Statistical Analysis for Pharmacology and the Biomedical Sciences. John Wiley and Sons Ltd; 2022.

P877

Evaluation of active learning strategies for the enhancement of practical competencies

Dr Christine Edmead

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Evaluation of active learning strategies for the enhancement of practical competencies

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Introduction. Practical skills competency and accurate reporting of laboratory data are essential skills for all STEM students (STEM learning, 2009). However, changes to pre-university curricula resulted in students entering university with very little prior experience of practical work and lacking the ability to write structured laboratory reports. The practical curriculum delivered in year 1 of the Pharmacology course, intent on building on prior knowledge and skills, was no longer found to be effective in enabling students to reach the level of competency required.

Aims. To adopt an active learning approach to the acquisition, enhancement and retention of practical competencies.

Methods. As part of our ongoing course curriculum review, we designed a series of stepwise practicals and workshops which enabled students to acquire, practice and receive iterative peer and tutor feedback, on their skills and competencies. These formative opportunities were linked to the end of year summative assessments in the form of a practical assessment (OSPE) and full written laboratory report with statistical analysis of data.

Results. We observed increased student attendance and engagement with these contextualised learning and feedback opportunities. Comparison of average laboratory report marks before and after implementation of the active learning approaches revealed a sustained improvement in the quality of undergraduate laboratory report writing [mean mark $\pm$ SEM: 53.80$\pm$1.15 (2022/23) vs 63.2$\pm$2.26 (2023/24), 61.0$\pm$1.24 (2024/25), n=45 p <0.005]. Preliminary data from confidence-based questionnaires indicate an increase in practical ability and confidence.

Discussion. Active learning approaches have been previously shown to yield positive results when applied to theoretical knowledge (Freeman et al, 2014). We have demonstrated a sustained improvement in undergraduate practical competencies providing a strong indication that active learning strategies can also be beneficial in the acquisition and application of skills.

Freeman, S. et al. Active learning increases student performance in science, engineering, and mathematics. Proc Natl Acad Sci U S A. 2014 Jun 10;111(23):8410-5.

STEM learning Skill 5: Scientific Writing. 2000-09. https://www.stem.org.uk/resources/collection/3713/skill-5-scientific writing (accessed 11/9/25)

P878

When students sign-off: Reflections and lessons from inadvertent real-world student electronic prescribing

Mr Milan Sundermann

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

When students sign-off: Reflections and lessons from inadvertent real-world student electronic prescribing

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Introduction. Authentic workplace learning experiences contribute to effective prescribing education. Medical students at Christchurch Hospital are required to create pre-prescriptions in the live inpatient electronic prescribing system (25234 for 3215 patients from 2021 to 2024), for doctors to authorise. However, some have inadvertently created student-authorised prescriptions, which triggered emails from the supervising clinical academic to students.

Aims. To describe student-authorised prescriptions at Christchurch Hospital in terms of clinical impact and educational value. To identify themes from medical students' email responses to the academic's email.

Methods. Prescribing data (2021 to 2024) were extracted, and clinical records were reviewed to inform descriptive statistics (including median and interquartile ranges). Prescriptions in patients ≥ 65 y were examined against START criteria. Deidentified email responses from medical students were subjected to inductive reflexive thematic analysis.

Results. There were 296 student-authorised prescriptions (333 medicines) by 53 students for 69 patients aged 70 y (54-79), and Charlson Comorbidity Index of 3 (1-5). Prescriptions were live for 11.2 h (0.3-46.7) before being ceased by a doctor/medical student (155/296, 52%) or patient discharge (141/296, 48%). The number of doses administered per prescription was 0 (0-2). Of these, 237/333 (71%) medicines were from the Otago Medical School Core Medicines List, 48/333 (14%) medicines met the APINCHS high-risk criteria, and 35 were both. Only 8/333 medicines occurred in ≥ 65-year-old patients with a START criterion clarity score of ≥ 75%; none were considered inappropriate prescriptions. Key themes from 29 medical student emails included: uncertainty and ambiguity in prescribing authority; the role of supervision and responsibility; emotional responses of guilt, caution and professional identity; systemic processes and flaws; and learning from error and seeking clarification.

Discussion. Student-authorised prescriptions reflect system design vulnerabilities rather than individual failures. They had minimal clinical impact but potentially significant learning value, both about medicines and professionalism.

Charles KA et al (2025) BJCP DOI: 10.1002/bcp.70126
Sallevelt et al (2020) BMJ Open DOI: 10.1136/bmjopen-2019-033721

P879

Designing an MSc curriculum bridging postgraduate learners and the life science ecosystem

Dr Nurulhuda Mustafa

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Designing an MSc curriculum bridging postgraduate learners and the life science ecosystem

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Introduction. Pharmacology education plays a central role in preparing the biomedical workforce, yet most postgraduate curricula remain content-heavy and insufficiently connected to the professional ecosystems graduates must enter. Relational learning scholarship highlights the value of co-created curricula that situate learners in authentic communities of practice, enabling them to integrate disciplinary knowledge with professional identity development, confidence, and practice readiness.

Aims. To design an MSc in Medical Pharmacology curriculum as a relational bridge connecting postgraduate learners with the biomedical sector by embedding connections to practice through sustained academia–industry collaboration.

Methods. Guided by SGInnovate's Biotech Sector report and principles of relational curriculum design, we undertook an iterative process involving stakeholders from biotech, regulatory, and clinical pharmacology sectors. Steps included (1) sense-making panels and one-on-one discussions to identify priority areas, unmet gaps and in-demand skills, (2) co-designing courses and authentic assessments simulating professional tasks, and (3) integration of industry partners as co-educators, career advisors and capstone co-supervisors. The course Precision Drug Discovery and Development was piloted to prototype this approach. It maps the entire pipeline from target validation to clinical translation, with scaffolded assignments, peer critique, and industry-simulated review panels to mirror the real world.

Results. Student reflections and artefacts obtained from the pilot course demonstrates the value of this approach. Students show fluency in discipline-specific terminology, signalling readiness to engage with industry level discourse. They can specify experimental assays, critically weigh benefits & limitations and integrate computational and experimental approaches, reflecting an emerging systems-level understanding of the complexity of drug development and growing confidence in articulating their potential contributions signalling professional identity formation.

Discussion: Through this integrated approach, curriculum becomes a relational bridge where students gain domain expertise, industry readiness and a clearer sense of professional roles they can inhabit. Next steps include longitudinal tracking of graduate outcomes and expansion of co-created courses across the MSc curriculum. This approach offers a replicable framework for pharmacology programmes seeking to close the education-to-industry gap.

P880

Making the disciplinary assessment literacy of pharmacology explicit

A/Prof Lynette B Fernandes

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Making the disciplinary assessment literacy of pharmacology explicit

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Introduction. Assessment is essential for driving student learning. However, unless students understand what is being asked of them, learning may be steered in the wrong direction. While students readily address knowledge demands of assessment questions, they often handle processing demands either inappropriately or not at all. Our research is a continuation of an international assessment project initiated in University College Cork.
Aims. To identify the most frequent action words / phrases used in pharmacology assessments. To determine the meaning pharmacology academics attribute to the most commonly used action words / phrases.
Methods. Summative exam papers over a 5-year period were collated from four core pharmacology units that contribute to the Major in the Bachelor of Biomedical Science at The University of Western Australia. A frequency analysis of action words was performed on short answer questions. Pharmacology academics were invited to participate in a focus group to discuss the meaning they attribute to the most commonly used action words (UWA Approval No. 2024/ET000208).
Results. Across all four core pharmacology units, the most frequently used action words in exams were: describe, explain, discuss, provide, highlight, and interpret. Example meanings attributed to these words that arose from the focus group were: “describe” – “implies a bit of depth” / “pretty peripheral” / ”a definition”; “explain” – “address … why and how” / “more depth”; “discuss – “implies … breadth … or depth” / “a lot more information”; “provide” – “provide your reasoning” / “justify”; “highlight” – “this is a concept, give examples that highlight it”; “interpret” – “demonstrating their ability to analyse” / “given them some data and you want them to interpret the findings”. Participants ascribed similar meanings to “interpret” and “discuss” as well as to “highlight” and “provide”. However, participants agreed on the following sequence of action words, arranged by increasing depth of information required: “describe”, “explain”, and “discuss”.
Conclusion. Findings from this project could be used to guide the development of literacy guidelines aimed at supporting student learning and success in pharmacology.

P881

Pitching the Cure: Using Fictional Diseases to Develop Pharmacological Reasoning

A/Prof Angela Finch

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Pitching the Cure: Using Fictional Diseases to Develop Pharmacological Reasoning

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Introduction. Developing higher-order reasoning can be a challenge in introductory courses, where students often prioritise memorisation over application. To address this, I developed an assessment in which students applied pharmacological concepts to a novel scenario involving a fictional disease affecting non-human beings such as aliens, elves, unicorns or dragons.

Aims. To develop an authentic assessment task that promotes higher-order reasoning and the integration of pharmacological concepts, including drug selectivity, mechanisms of action, side effects, and routes of administration.

Methods. Science students enrolled in PHAR2011, Introductory Pharmacology and Toxicology (2024-2025), working in groups were assigned a fictional disease with an accompanying fact sheet outlining its pathophysiology. This included invented receptors, enzymes, and/or transporters, as well as associated signalling pathways relevant to the affected population. The students assumed the role of a pharmaceutical company team tasked with developing a Target Product Profile (TPP) and identifying a viable drug target. The assessment culminated in a five-minute pitch to the fictional drug company leadership team (course academics), where groups justified their proposed therapeutic strategy. Evaluation of the task was via rubric-based grading of TPPs and presentations.

Results. The students successfully applied their pharmacological knowledge to the novel scenarios and produced creative, well-reasoned pitches. The majority of student indicated that they appreciated that the task allowed them to apply their knowledge, be creativity and that it was engaging. A small number of students felt that the fictional aspect detracted from the task.

Discussion. By eliminating reliance on readily searchable information or content generated by large language models, this task required students to engage in genuine problem-solving and reasoning. The TPP development and pitch elements further mirror real-world pharmaceutical processes, enhancing the authenticity of the task. This approach using fictional diseases and patient populations could be adapted to provide application-focused learning across a broader range of pharmacological concepts.

P882

Defining core competencies for pharmacology education in Canada: a multiphase mixed-methods approach

Dr Karim Ibrahim

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Defining core competencies for pharmacology education in Canada: a multiphase mixed-methods approach
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Introduction. Pharmacology education in Canada spans multiple institutions and programs and is increasingly integrated with other disciplines. Nevertheless, no shared national standards exist defining core graduate competencies, and whether current programs equip students with skills that employers value is unclear.
Aims. This study aims to establish a Canadian competency framework for learners in undergraduate and postgraduate pharmacology programs.
Methods. We employed a multiphase mixed-methods approach to develop and validate a competency framework. The initial framework was developed from literature and refined by the Canadian Society of Pharmacology and Therapeutics Education Committee. We then conducted structured focus groups and interviews with experts from academic (n=11), private (n=5), and public (n=5) sectors to solicit feedback on the proposed framework. Data from the sessions were thematically analyzed to identify key and emerging themes. A modified Delphi process with national experts is underway to achieve consensus on the stakeholder-amended framework (n=34 recruited participants).
Results. Academic focus groups (mean±SD= 18.1±8.6 years of pharmacology experience) identified pharmacodynamic and pharmacokinetic concepts as core knowledge for both training levels. Beyond these foundations, themes such as critical appraisal of literature, research design, and data analysis were considered more appropriate for postgraduate training. Interdisciplinary collaboration was a recurrent theme identified and highlighted by public sector representatives from government and provincial bodies. Private sector representatives considered communication, teamwork, critical thinking, and project management as important as core pharmacology knowledge. They also identified gaps in the academic training related to clinical trial design, regulatory drug approval, and budget management.
Conclusions and future directions. Our findings highlight perceived gaps between current university training and employer needs. The follow-up Delphi survey will address these gaps and provide a framework for evidence-based curriculum design that aligns pharmacology education with employer expectations in Canada.

P883

Learning benefits of case based lectures: A case study

Dr Suong Ngo

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Learning benefits of case based lectures: A case study

Suong N T Ngo[1]. College of Science, School of Animal and Veterinary Sciences. Adelaide University, Roseworthy Campus, Adelaide, SA, Australia.

Introduction. Critical thinking and application of knowledge have been identified as a gap perceived by graduates in certain fields of education [1]. This study describes a teaching module that utilised embedded clinical case studies in didactic lectures to provide students a better understanding of clinical decision rational and application of pharmacology in veterinary practice.

Aims. To examine the benefits of embedded case studies in the delivery of didactic lectures and whether case based learning actually helped students to better understand the application/relevance of pharmacology in their future professional practice.

Methods. The case based lectures were implemented in a vet pharmacology course at Adelaide Uni in Semester 1 2025. There were total 90 DVM students enrolled in the course. Each pharmacology topic was taught as 3 lectures (1h duration). There were about 12 topics in the course. Case studies were embedded in selected topics, including PKs/PDs/toxicology, anti-inflammatory, antimicrobial, cardiovascular and neurological drugs, as these were the topics deliver by the author teacher/researcher). Case study was presented at the beginning or middle or end of the topic, depending on the relevance of the scenario to the pharmacology content. Students were provided with medical history, physical examination and diagnosis then prompted to a set of questions/discussion on how to treat the case. Treatment, rational and alternative options were then provided to conclude the scenario and reinforce what have been discussed.

Results. Positive feedback and comments on the case based lectures were received from students via face-to-face interactions after the lectures and discussion/reflection sessions. Overall, students appeared to appreciate the teacher efforts, the relevant case scenarios and generally found the vet pharmacology content more interesting and engaging.

Discussion. This is a pilot study and has limitations, such as no formal evaluation on student performance and/or retention of knowledge. For future study, it would be critically important to perform an analysis of student assessments/performance to evaluate the impact of case based learning on retention of knowledge.

[1] Aničić K.P., Munđar J.G., Šimić D. (2022). High. Educ., 1-21.

P884

An investigation into how educators implement teamwork in their undergraduate bioscience units

Dr Jennifer Irvine

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

An investigation into how educators implement teamwork in their undergraduate bioscience units
Jennifer Irvine[1], Michelle Ly[1], Arani Dasanayake[2], Betty Exintaris[2], Nilushi Karunaratne[2], Yeong H Ling[1], Klaudia Budzyn[1]
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Introduction. Teamwork is increasingly valued during hiring processes for supporting both career success and positive workplace dynamics. Our recent unpublished study involving third-year undergraduate pharmacology students revealed that while students unanimously acknowledge the necessity of teamwork, the vast majority still prefer to work individually due to a number of teamwork challenges. Thus, assessing how teamwork is being implemented by educators is crucial to understanding how student experiences of teamwork in their tertiary studies can be improved.
Aims. To explore how educators implement teamwork in their bioscience curriculum and their perceptions of how students are supported in this process.
Methods. An anonymous online survey was completed by 28 Monash University unit coordinators and/or chief examiners from the Biomedical Discovery Institute, the Department of Immunology, and first-year prerequisite units from the Faculty of Science.
Results. Formative in-class activities (93% of survey respondents) and presentations (86%) were the most common approaches to fostering teamwork skills in students. Of the tasks nominated as fostering teamwork, presentations (82%) were the most often to include summative assessment of the final product of teamwork, followed by written assignments (43%). The summative assessment of individual students' contributions to these team tasks was much less common, with presentations (50%) again being the most frequently used modality. With regards to student support, 64% of survey respondents nominated that they consciously employed teamwork skills training, yet thematic analysis of free text responses indicated that approximately half of these nominated approaches actually contained no formal skills training. Nonetheless, 93% of respondents felt confident in supporting students when there was a team dispute, and 75% intervened if approached by students with a teamwork problem.
Discussion. This study suggests there remains a disconnect between how students and educators perceive the delivery of teamwork tasks. Addressing this mismatch could ultimately lead to an improved experience for both students and educators.

P885

Inside learners' minds: Exploring response-process and misconceptions in Pharmacology Concept Inventory

Mr Adeladlew Kassie Netere

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Inside learners' minds: Exploring response-process and misconceptions in Pharmacology Concept Inventory

Adeladlew K. Netere. Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Melbourne, Vic. Australia.

Introduction: Evaluating pharmacology learning and instructional practices requires assessment tools, such as the Pharmacology Concept Inventory (PCI), to be validated using learner-based evidence.
Aim: We conducted a qualitative study to establish response process validity (RPV) evidence, identified emerging misconceptions, and pinpointed areas needing refinement.
Methods: A qualitative study design integrated multiple sources of evidence, including students' open-ended responses, cognitive interviews analyzed using inductive thematic analysis, and expert-led item review.
Result: The OERs revealed common patterns of understanding, misconceptions, and uncertainty. The qualitative analysis identified three themes: interpretation and understanding of items; pharmacological reasoning and evidence use; and validation of conceptual understanding and distractor function, including new misconception-driven reasoning. These findings guided the development of a cognitive diagnostic framework, supporting RPV, item refinement, and the identification of misconceptions within the PCI.
Discussion: Learners' item interpretations, reasoning, and misconceptions influence students' decision-making. Item interpretations have an association with response accuracy, while distractor analysis revealed recurring misconceptions. Qualitative findings provided RPV evidence and informed item refinement to strengthen concept-based pharmacology assessments.
Netere AK (2025). Inside the learners' minds: Exploring response-process validity and diagnosing misconceptions in the Pharmacology Concept Inventory.

P886

AI for pharmacology exam marking assistance – a pilot study

Dr Marina Junqueira Santiago

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

AI for pharmacology exam marking assistance – a pilot study

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Introduction. Written examinations are a common method for assessing pharmacology learning. Among the various question formats, short-answer questions are favoured by many educators for their effectiveness in evaluating knowledge application and the explanation of key concepts. However, marking short-answer responses poses a significant challenge in higher education, as it is time-intensive and demands both subject matter expertise and consistent evaluation across large student cohorts. We propose that artificial intelligence (AI) could help address these challenges.

Aims. This project explores the potential of use of an internal AI platform to assist in marking short-answer questions, focusing on the effectiveness and consistency while acknowledging practical and ethical considerations.

Methods. This project repurposes Macquarie University's secure internal AI chat platform to enable automated marking of short-answer exam questions. The system will be configured to support assessment-specific grading assistants and tested on final exam responses of 220 students completing an undergraduate (Pharmacology fundamentals) unit. After completion and ratification of results for the 2025 academic session, academic marked questions will be re-marked with the developed AI-model. Comparisons between the two results will be examined to assess accuracy, consistency, and feedback quality to support student learning.

Results. The results from academic marked exam papers and AI model marked exam papers will be reported. Descriptive statistics will report on accuracy, consistency and feedback quality between the academic marked papers, and the AI model marked papers. Review of the marking process will assess the feasibility of the model, ease of use of the model, consistency of feedback and critical analysis of the ethical use of AI for marking purposes.

Discussion. The project is expected to highlight effectiveness and limitations of using AI for marking short-answer questions. Findings will guide the development of future AI models for short answer marking, with the goal of ethically guiding the responsible AI use in assessment marking, ensuring transparency, fairness and reliable moderation in the assessment of student work.

P887

Innovative, Profession-Specific Pharmacology Teaching: Engaging Nursing and Pharmacy Students

Ms Nokwanda Nhlanzeko Ngcobo

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Innovative, Profession-Specific Pharmacology Teaching: Engaging Nursing and Pharmacy Students
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Introduction. Pharmacology is essential in healthcare education but often poses challenges due to its complexity. Traditional teaching methods may not sufficiently address the distinct learning needs of nursing and pharmacy students, highlighting the importance of tailored instructional approaches.
Aims. To explore and evaluate innovative, profession-specific pharmacology teaching strategies for nursing and pharmacy students that address their unique clinical roles and educational needs.

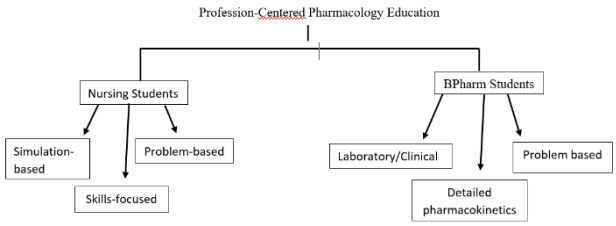

Figure 1: Conceptual framework illustrating the alignment of innovative teaching strategies with profession-specific learning needs in pharmacology.

Methods. Using a reflective teaching approach, profession-specific strategies were implemented, including flipped classrooms, on-the-spot testing, problem-based learning, gamification, interactive simulations, and clinical integration. Student engagement and feedback were compared between nursing and pharmacy cohorts.
Results. Pharmacy students responded positively to flipped classroom activities, demonstrating higher engagement, receptivity, and confidence in pre- and post-lecture testing. Nursing students, while benefiting from interactive strategies, reported workload challenges that limited preparation and engagement, and appeared slower to gain confidence with pharmacology content. Overall, profession-specific approaches improved participation and understanding, with greater immediate gains observed among pharmacy students.
Discussion. Tailored, profession-aligned pharmacology pedagogy enhances learning outcomes and confidence, though discipline-specific barriers such as workload must be addressed for equitable impact. These findings support the adoption of adaptable, innovative teaching strategies across health professions curricula.

P888

Rethinking Assessment: OSPEs Provide Authentic Alternatives in the Generative AI Era

Dr Nilushi Karunaratne

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Rethinking Assessment: OSPEs Provide Authentic Alternatives in the Generative AI Era

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Introduction. Generative AI has disrupted traditional approaches to assessment, challenging the validity of tasks that rely heavily on written responses. This raises the central question: *does the task genuinely measure student learning?*

Aims. To design and implement an Objective Structured Practical Examination (OSPE) in a 2nd-year pharmacology unit as an authentic alternative to written examinations, with the aim of promoting deep learning and assessing applied reasoning and judgement.

Methods. A three-station OSPE was developed to assess both hands-on and cognitive skills. The first station focused on practical laboratory tasks including safety, experiment planning, calculations, pipetting technique, and data interpretation. The second station was a verbal consult requiring students to defend experimental decisions by interpreting data, justifying methodology, and articulating reasoning. The third station required students to explain a key laboratory concept or technique, assessing clarity of explanation and conceptual understanding. Students rotated through stations under timed conditions. Feedback was gathered through student surveys and examiner reflections.

Results. Evaluation indicated the OSPE effectively assessed both technical skills and higher-order reasoning. Students valued the authenticity of demonstrating practical techniques and explaining their thinking aloud, noting this better reflected real-world expectations than a written exam. Examiners reported that the format revealed differences in depth of understanding and communication that traditional exams often overlook.

Discussion. OSPEs provide an assessment structure aligned with authentic, transferable skills. In contrast to traditional exams vulnerable to AI assistance, OSPEs assess reasoning, judgement, and reflection - core human learning dimensions. While resource-intensive, OSPEs represent a powerful shift in assessment design, ensuring student learning outcomes are measured meaningfully in an AI-enhanced educational landscape.

P889

Implementing OSPEs in large pharmacology cohorts: logistics, challenges, successes, lessons learned

Dr Nilushi Karunaratne

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Implementing OSPEs in large pharmacology cohorts: logistics, challenges, successes, lessons learned

Nilushi Karunaratne[1], Edris Chan[1], Karen J. Gregory[2], Lauren T. May[2], Angelina Lim[1], Betty Exintaris. Faculty of Pharmacy and Pharmaceutical Sciences Education Research[1], and Drug Discovery Biology, Monash Inst. Pharm. Sci[2], Monash University[1], Melbourne, VIC, Australia

Introduction. Scaling authentic assessments such as Objective Structured Practical Examinations (OSPEs) presents significant logistical challenges, particularly in large science cohorts.
Aims. To describe the design, coordination, and implementation of an OSPE for ~220 students in a 2nd-year pharmacology unit, highlighting practical considerations and lessons learned.
Methods. The OSPE comprised 3 stations covering laboratory techniques, data analysis, and oral justification tasks. Logistics involved timetabling rotations, training 15 examiners, developing consistent rubrics, and ensuring equitable student experience. A pilot trial informed refinement in station timing, examiner calibration, and resource allocation.
Results. The OSPE was delivered successfully within a single day. Timetable modelling ensured manageable student flow, while examiner training reduced variability in marking. Key challenges included venue availability, resource duplication, and staff workload. Solutions included early station prototyping, deployment of sessional staff, and staggered student scheduling. Feedback from staff and students indicated the assessment was demanding but authentic and fair.
Discussion. Implementing OSPEs at scale requires careful planning of staff, space, and resources, alongside clear communication with students. Building on lessons learned, refinements for 2026 include running separate days for laboratory and verbal stations, clustering consulting rooms to streamline transitions, enforcing clearer protocols for academic integrity, and strengthening examiner-student identification and marking calibration. While resource-intensive, the process has proven feasible and transferable, providing a blueprint for other science disciplines considering authentic, AI-resilient assessment models.

P890

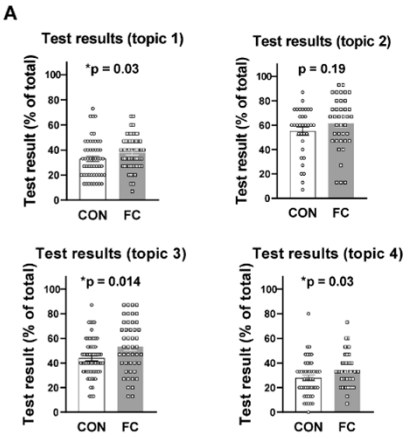
Implementing the Flipped Classroom Teaching Model to Enhance Knowledge Retention in Pharmacology

Dr Zsófia Onódi

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Implementing the Flipped Classroom Teaching Model to Enhance Knowledge Retention in Pharmacology
Zsófia Onódi[1], Anikó Görbe[1], Pál Riba[1], Zoltán V. Varga[1], Péter Ferdinandy[1]. Department of Pharmacology and Pharmacotherapy[1], Semmelweis University, Budapest, Hungary

Introduction. The flipped classroom (FC) approach has demonstrated efficacy in enhancing learning even in higher education, particularly due to its more engaging nature. However, there is less data available regarding its impact on student performance, especially for long-term knowledge retention in pharmacology.
Aims. Our aim was to assess the short- and long-term impact of FC on student performance in pharmacology teaching at our medical faculty.
Methods. 161 medical students and 10 teachers were involved in this study. We flipped four seminars, then we assessed the academic performance by using multiple choice tests immediately and two weeks after the FC. A follow-up assessment was conducted six months after the initial two FC sessions. We assessed student and teacher perceptions as well.
Results. FC approach enhanced both short- and long-term knowledge retention in case of three topics. This improvement was detectable even six months after the seminars. However, the overall performance, such as exam grades, did not show significant improvement. Students perceived positively the FC approach, highlighting its interactive and thought-provoking aspects. However, they identified the time-consuming preparation as a concern. Teachers viewed the FC approach favorably, particularly appreciating its potential for greater effectiveness. However, more experienced teachers were less receptive to the FC method compared to their younger colleagues.
Discussion. The flipped classroom can be a viable strategy for teaching traditional pharmacology, as it can enhance student performance and engagement. However, student occupation and faculty resistance has been identified as significant challenges to the introduction of such teaching methods.



P891

The Clinical Vignette as a means of enhancing the learning of the core concepts of Pharmacology

Prof John P. Kelly

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

The Clinical Vignette as a means of enhancing the learning of the core concepts of Pharmacology

John P. Kelly[1], Hawa Bah[1,2], Louise Rabbitt[1], James Curneen[3], Rosmara Infantino[1], Declan McKernan[1] and Zina Alfahl[2]

Discipline of Pharmacology and Therapeutics[1], Discipline of Bacteriology[2], Discipline of Anatomy[3], University of Galway, Galway, Ireland

Introduction. Although Pharmacology is an essential discipline in Medical Education it is frequently perceived by Medical students when first encountered to be content-heavy and difficult to make links to its clinical relevance. The movement towards case- and problem-based learning in Medical Education provides an opportunity to integrate clinical vignettes early in the curriculum to support contextualised learning of pharmacological principles.

Aims. To introduce clinical vignettes into an Introduction to Pharmacology module and evaluate student perceptions of their educational value.

Methods. In the Summer of 2025, an inter-disciplinary team began developing clinical vignettes that would be accessible for Medical students at the beginning of their 2nd year, whilst possessing a clinical authenticity. The team used the core concepts of pharmacology proposed by White et al (2023) as a guide. Three clinical vignettes were created, and these were posted on the Canvas LMS for all students to access. At 2 subsequent on-campus workshops, teams of 5 students were provided with a single vignette along with either the Pharmacodynamics or Pharmacokinetics questions. Immediately after the workshops, an online session went through the model answers for all 3 vignettes. Student perceptions were collected using a paper-based survey administered immediately following the workshops.

Results. A total of 135 of 203 students completed the survey (67% response rate). The most common responses were that the vignettes enabled an application of foundational knowledge to a clinical context (55% of respondents), that the vignettes reflected authentic cases (26%), were useful for exam preparation (26%) and promoted engagement with the material (15%).

Discussion. These findings suggest that early integration of clinical vignettes can support student engagement and contextual understanding of core pharmacology concepts. Clinical vignettes may represent a valuable educational strategy for enhancing relevance and application in introductory pharmacology teaching.

White, P.J. (2023): British Journal of Pharmacology. 180: 1197-1209.

P892

Evaluating student engagement and experience in a redesigned third-year pharmacology subject

Dr Rahini Ragavan

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Evaluating student engagement and experience in a redesigned third-year pharmacology subject
Monique Stoltz[1], Ross O'Shea[1], Michael De Silva[1], Elly Djouma[1], Katelyn Mroczek[1], Antony Vinh[1], Rahini Ragavan[1]. Department of Microbiology, Anatomy, Physiology and Pharmacology, La Trobe University[1], Bundoora, VIC, Australia

Introduction. Pharmacology is a core subject in many allied health courses. Traditionally, it included face-to-face lectures and workshops, with online lectures introduced during the COVID pandemic. In 2025, the subject was redesigned to be more student-centered and interactive, replacing lecture recordings with a digital workbook, practical classes, and interactive workshops to enhance cognitive engagement.
Aims. The goal was to evaluate student engagement and perception of the new subject, particularly the digital workbook, and to determine if there is a correlation between online engagement, class attendance, and academic success.
Methods. Online lecture videos were replaced by short, embedded videos, concise online text, and H5P activities optimised for mobile access. Students engaged with the content asynchronously before attending in-person workshops and practicals. Data was collected using qualitative and quantitative methods, including a student survey, student feedback survey, assessment analysis, and engagement metrics.
Results. Sixty-five students completed the survey, with 68% preferring the new digital workbook and 75% finding it more engaging than lecture-based delivery. However, 69% still favored lecture videos for their flexibility, visual learning, and ability to review content at their own pace. Despite high engagement, final exam results were similar to previous years.
Discussion. The findings suggest that while the digital workbook promoted higher engagement and satisfaction, the strong preference for lecture recordings highlights the need for flexible learning modalities to cater to diverse learning needs. The unchanged exam outcomes suggest that engagement strategies may influence student experience more than summative performance.
Conclusion. The redesign demonstrates the value of embedding digital interactivity and inclusive pedagogy into pharmacology teaching, while also emphasising the need to balance innovation with flexibility to optimise both student experience and learning outcomes.

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P893

Defining and creating an effective pharmacology education in an integrated curriculum

Dr Jennifer A Koenig

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Defining and creating an effective pharmacology education in an integrated curriculum

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Introduction. Teaching pharmacology in an integrated medicine/health sciences curriculum can be challenging but, at the same time, it comes with many advantages. Institutions approach content incorporation from different angles and face various pitfalls and challenges.

Aims. Identify the key factors to consider when designing and implementing pharmacology education within an integrated curriculum.

Methods. The organising team, pharmacology educators teaching on integrated curriculum programmes, began by discussing their experiences and the key factors they had identified in the successful implementation of pharmacology education within an integrated curriculum. At two online workshops, they presented the key themes and led discussions. They described their experiences, highlighting what worked well and why, as well as how they resolved some of the challenges they faced. Workshop participants were invited to contribute short presentations and discuss the common themes that arose.

Results. Key factors were grouped into themes which included: What (e.g., integrating core concepts, curricular mapping); How (horizontal and vertical integration, sequencing content, use of technology, assessment, reinforcement opportunities, tracking retention); Why (pedagogical advantages, student motivation); and Who (the role of the pharmacology thread director and other instructors, communication).

Discussion. The workshops proved to be very useful in sharing practices and creating and establishing networks. There was a great deal of discussion on what academics wished they knew before they started. It was clear that effective pharmacology leadership was key in ensuring that pharmacology was not marginalized in an integrated curriculum.

P894

Alliance4Life – Opportunity to Impact Higher Education and Research in Central and Eastern Europe

Prof Mojca Krzan

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Alliance4Life – Opportunity to Impact Higher Education and Research in Central and Eastern Europe
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Alliance4Life (A4L), supported by the A4L_BRIDGE project, is an initiative that focuses on bridging the gap in research and innovation by enhancing the capabilities of research institutions in Central and Eastern Europe. A4L members aim to achieve this through sustainable institutional reforms, modernising research career frameworks, and fostering interdisciplinary and intersectoral collaboration. The A4L mission aligns with the European Research Area policy agenda and supports national and regional systems in implementing transformative processes that enhance research excellence and innovation capacity in Widening countries.
In addition to strengthening research and innovation performance across the EU, the A4L_BRIDGE project also aims to advance higher education at biomedicine and health research-performing institutions. A4L_BRIDGE has established a Virtual Research Center and is developing a comprehensive E-learning platform with an accredited system of online courses, including self-led courses, instructor-led courses, and micro-credentials. The courses are designed for researchers at different professional levels, from PhD candidates to research managers. PhD candidates and postdocs can learn how to prepare a research proposal and how to manage research tools and data, while courses on mentoring and collaboration are intended for senior researchers.
As virtual platforms, the A4L Virtual Research Center and E-learning platform can continually evolve, improve, and adapt to the needs of their members and users.
"This project is funded by the European Union under Grant Agreement No. 101136453. The views and opinions expressed, however, are those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them."

P895

Development of an anecdotal book of pharmacology for teaching and advocacy purposes

Prof Helen O Kwanashie

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Development of an anecdotal book of pharmacology for teaching and advocacy purposes
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Introduction. As the science of how chemicals (from useful medicines to horrendous poisons) interact with living organisms, pharmacology is everybody's business! However, there exists a dearth of pharmacologists worldwide, especially in low- and middle-income countries (WHO, 2013).
Aims. The authors are in the active phase of developing a pharmacology educational resource (planned for publication before the WCP2026), which will complement standard textbooks while bringing the subject to life through the weaving of hilarious discoveries, stories, serendipity, and titbits into its core concepts.
Methods. The project involves multi-author writing of a 100-topics, 200-pages anecdotal book of pharmacology, publishing and distributing same for improved teaching-cum-learning of the subject, as well as for purpose of pro-pharmacology advocacy. The authors are four professors of pharmacology with different but complementary professional backgrounds in science, pharmacy, medicine and veterinary medicine. Topics in the book have been planned to cover the spectrum of undergraduate-level pharmacology, with a planned second volume of the book, if necessary.
Results. It should be noted that the book is not intended to be a substitute for textbooks or other learning resources required by medical, pharmacy, nursing, veterinary and such students of the medical and allied professions, who need to dig deeper into sources and mechanisms of action of drugs, the uses and side effects of the drugs, etc. Again, although pharmacology is about drugs rather than diseases, a few of the latter are also being covered in the book.
Discussion. The proposed educational resource is guaranteed to make the subject come alive for everyone - the serious student and amateur alike - and from the very young to the elderly. Actual examples of such pharmacological anecdotes will be given during the WCP2026 presentation.

WHO (2013). *Transforming and scaling up health professionals' education and training*. WHO Press.

P896

University students want the replacement of vertebrate animals in their education

Prof Dave Lewis

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

University students want the replacement of vertebrate animals in their education
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Introduction. Animals and animal tissues have historically made a significant contribution to drug discovery and development, and to pharmacology education. However, there is a drive from Regulators and other stakeholders globally to reduce, and ultimately replace, the involvement of animals in both research and university education.
Aims. To gather the views of stakeholders across the world on the continued use of animals and animal tissues in university education.
Methods. Online surveys for students, educators and researchers, and those involved in the care of research animals were created and distributed globally via social media, Professional, Statutory and Regulatory Bodies, research animal welfare organisations, and other stakeholder communities.
Results. Responses were obtained from 438 students, 338 educators/researchers and 123 animal care colleagues from 65 countries. Most students (60%) disagreed or strongly disagreed with the involvement of live vertebrate animals in their education. In contrast, only 34% of educators/researchers and 37% of animal care colleagues were opposed. Invertebrates are often viewed as an ethically acceptable alternative to vertebrates yet only 60% of students, 77% of educators/researchers and 66% of animal care colleagues supported this, whilst 23% of students were opposed to the use of animal tissues from humanely killed animals. Eighty-eight percent of students wanted the right to consciously object to the involvement of animals or animal tissues in their education, and to be provided with academically equivalent educational alternatives, with 28% stating they would exercise this right if given the choice.
Discussion. This study has shown that students views on the involvement of animals in their education differ substantially from those of other stakeholders. Students also demand the right to opt out of education that doesn't align to their ethical values. With the global drive to reduce the involvement of animals in research and education, and the high financial cost to students of their education, their views cannot be ignored. Educators need to re-purpose new approach methodologies and non-animal technologies being developed for research into learning opportunities.

Lewis DI (2026) Adv Physiol Ed 50:374-378

P897

Bridging east and west: AI-Enhanced Integrative Pharmacology Education for Natural &Chemical Drugs

Dr Chang Nianwei

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Introduction. The concurrent use of natural products and chemical drugs is widespread across Asia and increasingly prevalent in parts of Europe and North America, driven by patient preference, cultural legacy, and the pursuit of synergistic therapeutic effects. In China, integrated traditional Chinese medicine and Western medicine (integrative medicine) has become a formal healthcare modality, yet pharmacology education remains largely siloed. Students trained exclusively in Western pharmacology lack fluency in herb-drug interaction mechanisms, while those trained in traditional pharmacopoeia often struggle with pharmacokinetic and pharmacodynamic rationales. This educational disconnect poses patient safety risks and represents a missed opportunity to cultivate a workforce capable of navigating modern polypharmacy realities.

Aims. This study aims to design, implement, and evaluate an AI-enhanced integrative pharmacology curriculum that bridges natural product pharmacology and chemical drug pharmacology. By positioning polypharmacy as the norm rather than the exception, we seek to develop a pedagogical model relevant to Asian and global contexts where multi-source pharmacotherapy is routine clinical practice.

Methods. Our team constructed an "Integrative Pharmacology Knowledge Graph" embedding 200+ herb-drug pairs, their mechanistic pathways (e.g., CYP450 modulation, P-gp interactions, synergistic anti-inflammatory nodes), and clinical evidence levels. The knowledge graph was integrated into a chatbot-powered virtual patient system where learners encounter cases requiring simultaneous management of synthetic drugs and botanical prescriptions. A pilot elective course was delivered to 64 third-year pharmacy students at our university. A mixed-methods evaluation was conducted, including pre-post knowledge tests, clinical reasoning assessments, and semi-structured interviews.

Results. Post-course knowledge scores (herb-drug interactions, pharmacokinetic basis of integration) increased by 43.8% ($p<0.001$). Students demonstrated significant improvement in constructing rationales for combined regimens rather than defaulting to categorical separation of drug classes. 90.6% of participants agreed that "AI-assisted knowledge mapping helped me visualize connections between Eastern and Western pharmacological frameworks." Qualitative themes included: "This course reflects how medicine is actually practiced—patients take everything together" and "I finally understand why herbal formulas and cardiovascular drugs interact."

Discussion. This study demonstrates that pharmacology education can and should reflect clinical reality: patients rarely adhere to singular therapeutic traditions. The siloed teaching of natural and chemical drugs—prevalent even in regions with high integrative practice—is anachronistic and potentially unsafe. Our AI-enhanced, knowledge graph–driven approach provides a scalable infrastructure for institutions seeking to modernize curricula. The chatbot virtual patient format successfully lowered students' cognitive barrier in reconciling mechanistic languages across epistemologically distinct systems. Future work will expand the knowledge graph to include additional traditional pharmacopoeia, contributing to global equity in pharmacology education.

P898

GMXvg: Streamlined Visualization and Summary Analysis of GROMACS Simulation Outputs

Dr Varsha Rathore

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

GMXvg: Streamlined Visualization and Summary Analysis of GROMACS Simulation Outputs
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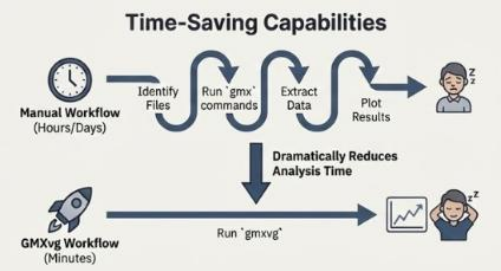

Introduction. GROMACS is one of the most widely used molecular dynamics simulation packages, generating output data in the form of XVG files. Handling, converting, and visualizing these files, especially in bulk, often requires manual scripting and plotting, which is time-consuming and error-prone for researchers.

Aims. GMXvg was developed to simplify and automate the conversion, visualization, and summary analysis of GROMACS XVG files through a lightweight, command-line-based utility.

Methods. GMXvg automatically scans the working directory and its subdirectories to identify XVG files generated by GROMACS simulations. The tool converts these files into publication-ready graphical formats (JPG by default, with support for PNG and PDF). It also extracts numerical values and standard deviations from XVG data and compiles them into a structured CSV summary file. Users can customize plot titles, legends, and output formats, and multiple plots can be merged into a single figure when required.

Results. GMXvg enables rapid batch processing of XVG files without requiring manual plotting scripts. The automated CSV summary provides quick access to key simulation parameters, improving data interpretation and reproducibility. The tool significantly reduces analysis time and enhances consistency in graphical outputs.

Discussion. GMXvg is a practical and efficient solution for researchers working with GROMACS simulation data. By automating XVG file discovery, conversion, plotting, and summarization, it streamlines post-simulation analysis and supports reproducible computational research workflows across Windows, Linux, and macOS platforms. GMXvg is open-source and available via PyPI (pip install gmxvg) and GitHub, with full documentation and tutorials provided.

P899

Systematic Integration of Stage Outcomes in Korea's Outcome-Based Pharmacy Accreditation Reform

Assist Prof Heejin Oh

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Systematic Integration of Stage Outcomes in Korea's Outcome-Based Pharmacy Accreditation Reform
Hee-Jin Oh[1]. Department of Medical Education, Daegu Catholic University School of Medicine, Daegu, Korea.

Introduction Outcome-based education (OBE) is the global standard for pharmacy education, as reflected in FIP and ACPE standards. While international bodies establish competency frameworks, national accreditation mechanisms for operationalizing these frameworks remain underexplored. Korea's systematic integration of OBE principles across successive accreditation cycles provides critical insights into this process.
Aims. This study analyzes the progressive integration of OBE principles in Korean pharmacy accreditation, focusing on stage-based outcomes aligned with international frameworks, and identifies transferable implementation strategies.
Methods. Document analysis examined Korean Pharmaceutical Education Accreditation Board standards across four phases: Initial (pre-2019, input-focused), Cycle 1 (2020-2021, OBE introduction), Post-Cycle 1 (2022-2026, consolidated outcome-curriculum linkage), and proposed Cycle 2 (2027~, stage outcomes integration). Analysis focused on outcome evolution, curriculum-outcome alignment, and competency assessment.
Results. Accreditation evolved from infrastructure-oriented standards to sophisticated competency assurance. Cycle 1 established graduation outcomes, while Post-Cycle 1 strengthened curriculum mapping. The proposed Cycle 2 introduces 'stage outcomes,' requiring formative assessment at transition points and summative graduation verification. Notably, Cycle 2 mandates remediation systems for students not achieving benchmarks, operationalizing a shift toward competency assurance.
Discussion. Korea's implementation demonstrates how national accreditation operationalizes global OBE principles through: (1) progressive complexity from outcome articulation to stage-based integration; (2) explicit alignment with FIP's Nanjing Statements and ACPE standards; (3) assessment architecture supporting both formative and summative evaluation; and (4) mandatory intervention for competency gaps. Phased evolution allowed institutional adaptation while explicit mapping served as implementation scaffolds. The synchronization of accreditation reform with Korea's 2027 six-year integrated curriculum restructuring demonstrates the system-level policy coherence essential for advancing practice-ready pharmaceutical care education globally.

P900

Building Professional Identity through Mandatory Medical Humanities Education

Assist Prof Heejin Oh

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Building professional identity through social pharmacy education: A three-year implementation of mandatory humanities curriculum for first-year pharmacy students

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Introduction. As pharmacy practice shifts toward community-integrated care, foundational professional formation is essential. Korea's Community Integrated Care Act and strengthened disability health rights policies highlight pharmacists' expanding social responsibilities, yet systematic integration of medical humanities into mandatory first-year curricula remains limited internationally.
Aims. This study analyzes the design and impact of a three-year mandatory 'Pharmacy Humanities and Ethics' course aimed at cultivating socially accountable professional identities in first-year students.
Methods. The 2-credit course was delivered to three cohorts (2023–2025, N≈190). Core modules addressed pharmacists' roles in integrated care systems, disability health rights, and diverse public health career pathways. Teaching combined lectures, flipped discussions, and student-led projects. Pre-post surveys and qualitative reflection analysis assessed changes in role perception and identity development.
Results. Students showed significant conceptual expansion from 'medication dispensers' to 'community health managers.' The disability health rights module substantially increased ethical sensitivity regarding healthcare accessibility. Career aspirations diversified toward public health and social care roles, with reflections revealing identities grounded in social responsibility and public accountability.
Discussion. Embedding medical humanities at the foundational stage effectively shapes professional identity before clinical specialization. Early mandatory placement establishes core values, while focusing on disability health rights enhances relevance and ethical engagement. This model provides a structured approach for strengthening pharmacist social accountability, aligning with Korea's transition to six-year integrated pharmacy education.

P901

Impact of Gamification on Enhancing Education for Students with Autism in Jordan

Dr Fadi G Saqallah

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Impact of Gamification on Enhancing Education for Students with Autism in Jordan

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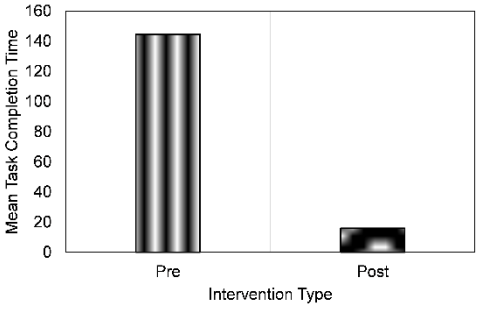

Introduction. Emotion recognition is a critical component of social communication, yet individuals with Autism Spectrum Disorder (ASD) often face significant challenges in this area. These deficits can hinder interpersonal relationships and participation in educational and social contexts (Celani et al, 1999). In Jordan, as in many regions, support for adolescents with ASD is often limited by traditional educational methods that may not engage or address their specific needs effectively. Gamification, using game design elements in non-game contexts, has emerged as a promising approach to enhance learning and engagement (Seixas et al 2016), especially among neurodiverse populations (Rodríguez et al, 2024). However, research evaluating gamified interventions for emotion recognition in adolescents with ASD, particularly within the Jordanian context, remains limited.

Aims. This study aimed to develop and evaluate EmotionMap, a web-based, gamified, and technology-driven educational platform designed to improve emotion recognition skills in adolescents with ASD in Jordan. The primary objective was to determine whether this gamified approach could enhance emotion recognition performance more effectively than traditional, non-gamified educational methods. The study also sought to assess user engagement and the perceived educational value of the platform.

Methods. A mixed-methods, within-subjects repeated-measures design was employed, involving nine adolescent participants diagnosed with ASD. Over a period of two months, the EmotionMap platform was co-designed in collaboration with a special-education expert to ensure educational relevance and accessibility. Participants engaged with the platform in structured, caregiver-supported sessions conducted in pairs. Each session featured interactive, gamified emotion-recognition scenarios. The platform collected detailed interaction data, including millisecond-level task completion times, while researchers gathered observational notes and conducted a post-intervention interview with the lead educator to capture qualitative insights.

Results. Quantitative findings demonstrated statistically significant improvements across all primary outcome measures. Mean task completion time decreased substantially from 144.56±5.29 seconds to 15.97±1.78 seconds ($n = 9$, $p < 0.001$). Participants also showed notable gains in both response speed and accuracy ($n = 9$, $p < 0.05$), alongside a reduced number of attempts required to achieve correct responses ($n = 9$, $p < 0.05$). Importantly, these improvements were consistent across participants regardless of ASD severity level, with no significant variation in effect magnitude by spectrum classification. Qualitative data reinforced the quantitative results, indicating high levels of user engagement, positive reception by students, and strong perceived educational value by the educator.

Discussion. This study provides compelling evidence that a teacher-supported, gamified platform such as EmotionMap can significantly enhance emotion recognition performance among adolescents with ASD. The use of engaging, interactive scenarios appeared to facilitate learning and retention more effectively than traditional methods, suggesting a valuable direction for educational innovation in special education settings. Furthermore, the consistency of improvement across severity levels supports the platform's broad applicability. These findings offer practical implications for educators, therapists, and policymakers seeking to integrate technology and gamification into autism education. Future research should examine long-term retention of skills, generalization to real-world social interactions, and scalability of the platform across more diverse and inclusive populations.

Celani G (1999) J Autism Dev Disord 29:57–66
Rodríguez T (2024) JMIR Serious Games 12:e59053
Seixas L d R et al (2016) Comput Hum Behav 58:48–63

P902

Impact of workshop attendance and online engagement on academic performance in pharmacology

Assoc Prof Ross O'Shea

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Impact of workshop attendance and online engagement on academic performance in pharmacology
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Introduction. In recent years, we have offered pharmacology subjects in 'StudyFlex' mode, providing 'lecture' material as short videos on LMS, and allowing students to attend workshops either on-campus (blended) or online.
Aims. This study aimed to investigate changes in student preference for mode of attendance, how students engaged with online content, and how these factors related to academic performance.
Methods. We collected attendance data from students enrolled in an introductory pharmacology subject (2021-2023, 559 students) and examined preference for mode of study, workshop attendance and subject results. The instances of the subject only differed in the mode of delivery of weekly 2-hour workshops. To investigate engagement with online content, we analysed LMS logs from a different subject in 2024 (197 students) to determine what percentage of the content videos each student viewed and whether this correlated with their exam marks in the subject.
Results. Student preference for on-campus workshops increased from 2021-2023, while preference for online workshops decreased accordingly. Workshop attendance increased for the blended cohort but decreased for the online cohort in 2023. Test marks and overall subject marks were highly correlated with workshop attendance ($P<0.01$), independent of attendance mode, but average marks were not different between the two cohorts in any semester. There was a highly significant correlation ($P<0.0001$) between the percentage of subject videos viewed by students and their exam marks.
Discussion. Despite a shift in preference for on-campus workshops, the mode of workshop attendance had no significant effect on academic performance. Greater workshop attendance, independent of attendance mode, was correlated with improved academic performance. Student performance was also correlated with engagement with the subject content. This data highlights the utility of online workshops, and also demonstrates the importance of students engaging with the subject learning materials.

P903

Impact of an educational intervention on medication disposal among medical students

Dr Kiruthika Slvagourounadin

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Impact of an educational intervention on medication disposal among medical students

Jeyashree B[1], Dr S. Kiruthika[2], Dr. R.P. Priyadharshini[3], Pharmacology, JIPMER Karaikal[1,2,3], Puducherry, India

Introduction. The improper disposal of unused and expired medications in garbage and sewage poses a tremendous environmental threat. There is an escalating demand for the dissemination of information regarding the methods and strategies of safe drug disposal.

Aims. This study aimed to evaluate first the current knowledge, attitude and practice of drug disposal among medical students. Secondly, to assess the impact of an educational intervention in improving their knowledge, attitude and practice of expired and unused drugs disposal.

Methods. This quasi-experimental (educational intervention) study uses a pre- and post-test questionnaire in MBBS students. A self-administered, structured questionnaire was developed in English, and it comprised 15 items to assess the students' knowledge, attitude and practice of expired and unused drugs disposal (pre-test). The impact of improper drug disposal, the need for safe drug disposal, the methods of safe disposal, and the strategies the MBBS students can follow to ensure safe disposal in their household and hostel premises were discussed in detail during the educational intervention session. Three months after this, the participants were asked to complete the same questionnaire as a post-test. The improvement in knowledge, attitude and practice of disposal of unused and expired medications was assessed.

Results. Analgesics (22%), antibiotics (20%) and vitamin supplements (17%) were the major groups of leftover drugs. Storage for future use (35%) and switching over to other medications (20%) were the primary reasons for the drugs being left over at their households or hostel premises. The Wilcoxon signed rank test showed a significant difference in median knowledge, attitude and practice scores before and after intervention.

Discussion. The positive impact of educational intervention observed in the present study is similar to the findings reported by Mahnoora et al. Thus, planning and implementing various educational programs encompassing modern artificial intelligence tools and techniques will be pivotal in spreading awareness among the medical students and the general public.

Mahnoora Z et al (2023) Ann. Pharm. Fr.81(4):667–73

P904

Implementing Novel Pharmacological Teaching using Interactive Technology and the Flipped Classroom Approach

Dr Eunice Pak

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Implementing Novel Pharmacological Teaching using Interactive Technology and the Flipped Classroom Approach

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Introduction. Pharmacology is often taught via traditional approaches in the preclinical years of medical education as a standalone with limited clinical integration, through theoretical scientific styled lectures and textbooks. This project aimed to use novel technology to create an interactive e-learning module, featuring a cartoon patient and doctor consultation in the setting of a virtual clinic, which went on to support a flipped classroom teaching session.

Aims. To improve students' understanding on key drug treatments used in the management of heart failure with reduced ejection fraction, based on the Rale's trial (Pitt et al, 1999), including: spironolactone, bisoprolol, ramipril and dapagliflozin.

Methods. The "Pharmacologi-E: Heart Failure Virtual Clinic" was created using advanced computer software. The case went through a scenario of an elderly patient whose symptoms of heart failure were not well controlled despite being on three medications, and required the addition of spironolactone. Students worked through the drug-receptor drag-drop feature and a prefilled hospital drug chart, which directed them to the pharmacology underpinning the drugs.

Results. A flipped classroom session was conducted following the launch of the e-learning, for which students were given access to the module prior to attending an in-person "Quescussion" forum where they were given the opportunity to raise questions and then to discuss answers amongst small groups afterwards. Student feedback was collated, with 5/8 students rating it 10/10 for benefitting their learning. Specific comments included: "it put the pharmacology into context", "a really helpful instrument to improve knowledge about the treatments of the most common pathologies especially in the outpatient setting, where it can be difficult for a student to follow a patient long term". 10/10 students would like to see more Pharmacologi-E cases to be developed in the future.

Discussion. This project demonstrates that integrating interactive e-learning with a flipped classroom approach made pharmacology learning more engaging and clinically relevant, which improved contextual understanding for students.

Pitt B et al (1999) N Engl J Med 341(10): 709-717

P905

Deprescribing in palliative care: an educational model integrating pharmacology and psycho-oncology

Assoc Prof Olivian Stovicek

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Deprescribing in palliative care: an educational model integrating pharmacology and psycho-oncology
Ramona Adriana Schenker[1], Cristina Mihaela Ghiciuc[2], Liliana Mititelu-Tarțău[2], Dan Gheorghe Mălăescu[3], Puiu Olivian Stovicek[1,3], Sf. Nectarie Oncology Center[1], Craiova, Romania; University of Medicine and Pharmacy Grigore T Popa[2], Iași, Romania; Titu Maiorescu University[3], Bucharest, Romania.

Introduction. In oncological palliative care, patients often receive complex therapeutic regimens with limited clinical benefit in the advanced stages of disease. Deprescribing, the discontinuation of unnecessary or harmful medications, can improve quality of life by reducing therapeutic burden and the risks of polypharmacy. This process involves a dual challenge: the medical team must make deprescribing decisions based on clinical and pharmacological criteria, while patients and their families must accept these changes, often experiencing anxiety, depression, or fear of loss of care.
Aims. This project proposes the development of an interdisciplinary educational model for practicing palliative care physicians, integrating principles of deprescribing, psycho-oncological approaches, and communication strategies with patients and caregivers, to support patient-centered therapeutic decision-making.
Methods. The model consists of interactive workshops embedded in continuing medical education (CME) programs. Participants will analyze real-world cases with complex medication lists, addressing both pharmacological criteria for deprescribing (identifying high-risk drugs, prioritizing symptoms, adjusting doses) and psychological and communication strategies to facilitate patient and family acceptance. The workshops will be facilitated by an interdisciplinary team including a clinical pharmacologist, a palliative care specialist, and a psycho-oncologist. Program impact will be assessed through structured feedback and questionnaires administered to participants, evaluating improvements in clinical decision-making and empathetic communication skills.
Results. The project is currently in its early implementation phase. It is expected to enhance physicians' clinical deprescribing skills and communication competencies, as well as their ability to manage situations in which patients and families express reluctance toward discontinuing treatments.
Discussion. Incorporating deprescribing as a core theme in medical education programs may reduce the risks of polypharmacy, support patient-centered palliative care, and facilitate acceptance of deprescribing by patients and families. This model could be replicated and adapted across diverse clinical and academic settings, contributing to the development of an interdisciplinary culture of responsible therapeutic decision-making.

P906

Integrating psycho-oncology into oncological pharmacology education: a pilot curriculum innovation study

Assoc Prof Olivian Stovicek

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Integrating psycho-oncology into oncological pharmacology education: a pilot curriculum innovation study

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Introduction. Oncological pharmacology is traditionally taught with a focus on pharmacological mechanisms, pharmacokinetics, and somatic adverse effects. However, cancer patients frequently experience psychological effects, often associated with the cancer diagnosis itself. Anxiety, depression, and cognitive impairments may be influenced by pharmacological treatment and significantly affect adherence to therapy and quality of life. Integrating psycho-oncology into pharmacological education may help train practitioners to address these complex clinical situations.

Aims. This project proposes the development of interdisciplinary educational modules, in the form of a pilot study, carried out through workshops coordinated by a clinical pharmacologist and a psycho-oncologist, to provide participants with an integrated understanding of pharmacological and psychological adverse effects to oncological treatment.

Methods. The workshops will be structured around clinical case studies. Participants will analyze clinical scenarios combining pharmacological decisions with psycho-oncological aspects, including the recognition of pharmacologically induced psychological adverse effects (anxiety, depression, cognitive impairments), as well as empathic communication and emotional support. The impact of the program will be evaluated through validated questionnaires administered before and after the workshops, assessing participants' ability to recognize psychological adverse effects, as well as empathy, communication skills, and integration of pharmacological and psycho-oncological knowledge.

Results. Although the project is currently in its early implementation phase, this educational pilot is expected to improve participants' ability to recognize and manage pharmacologically induced psychological adverse effects, while strengthening empathy, communication skills, and integrated understanding of oncological pharmacology.

Discussion. Incorporating psycho-oncology into pharmacology teaching may represent an important step toward interdisciplinary, patient-centered medical education and could serve as a replicable model for other academic centers or continuing education programs.

P907

Ethics and communication in oncological prescribing: preparing students for real-world prescribing challenges

A/Prof Olivian Stovicek

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Ethics and communication in oncological prescribing: preparing students for real-world prescribing challenges
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Introduction. In oncological practice, physicians are constantly confronted with ethical dilemmas related to prescribing: the off-label use of innovative therapies, the high costs of medications, equitable access to treatment, and realistic communication with patients and families regarding benefits and risks. The lack of systematic curricular training in this field limits the ability of future oncologists to make responsible, patient-centered decisions.
Aims. This project aims to develop an interdisciplinary educational module that integrates medical ethics and communication into the teaching of oncological pharmacology, preparing students and residents to address the ethical challenges in oncology practice.
Methods. The module will combine real oncological case studies, structured debates, and role-play exercises. Clinical scenarios will address dilemmas such as off-label prescribing of oncological therapies, allocation of resources for costly treatments, balancing clinical efficacy with quality of life, and communication in the process of obtaining informed consent. Activities will be facilitated by a clinical pharmacologist, an oncologist, a psycho-oncologist, and a bioethicist. Evaluation will include validated questionnaires and analysis of participants' written critical reflections.
Results. In its early implementation phase, this educational module is expected to improve recognition of ethical dilemmas, critical thinking capacity, and empathetic communication skills among oncology students and residents.
Discussion. Integrating ethics and communication into oncological pharmacology education may contribute to training future oncologists capable of making balanced, transparent, and patient-centered therapeutic decisions. The model could be replicated in other academic centers and may represent an innovative direction for modernizing medical education in oncology.

P908

WHO Guidelines on the quality control of biological products: implications for Australia

Dr Natalie Anderson

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

WHO Guidelines on the quality control of biological products: implications for Australia

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Introduction. In November 2025, the World Health Organization (WHO) published Guidelines on replacing or removing animal tests for quality control of biological products, to supersede all WHO quality control guidelines published prior to 2025. These Guidelines signal an international shift toward non-animal methods (NAMs) for regulatory control of vaccines and other biologicals.

Aims. To summarise the findings of the WHO-commissioned independent review underpinning the new Guidelines and assess the scientific and regulatory implications for implementation in Australia.

Methods. A WHO-commissioned independent review, conducted by the UK National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs), evaluated 81 WHO biological guidance documents, of which 63 included animal tests. Test categories included detection of adventitious agents, neurovirulence, potency, pyrogenicity and specific toxicity. The review was co-funded by the Bill & Melinda Gates Foundation.

Results. The review concluded that implementation of in vitro alternatives to animal-based testing for biological product quality control, and development of new methods, were strongly recommended. A draft Guideline promoting NAMs was opened for public consultation and accepted. The Guideline was to supersede all existing documentation. Product developers, manufacturers and stakeholders were advised not to wait for updating of previously published WHO documents but instead, wherever possible, to develop, validate and implement non-animal-based in vitro approaches to quality control in consultation with, and with approval of, the National Regulatory Authority.

Discussion. This WHO Guideline can be adopted in Australia by the Therapeutic Goods Administration under mutual acceptance of principles, following public consultation. This creates a timely opportunity to modernise Australian biologicals regulation in line with evolving international standards. This issue is also the focus of international collaboration, including within the International Council on Animal Protection for Pharmaceutical Programs (ICAPPP), of which Animal-Free Science Advocacy is a member. Given the shift toward replacing animal testing for ethical, economic and public health reasons, it is in the best interests of manufacturers, product developers and regulators to do so. Immediate federal investment in validation and development of NAMs is needed to support this transition and align Australia with international regulatory developments.

P909

Expedited Drug Approval: FDA's Accelerated Pathways and Regulatory Approaches

Ms Chahat Choudhary

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Expedited Drug Approval: FDA's Accelerated Pathways and Regulatory Approaches

Chahat Choudhary[1], Gyan Vardhan[1], Puneet Dhamija[1]. Dept of Pharmacol, AIIMS, Rishikesh, UK, India

Introduction. Over the past decade, the FDA has increasingly utilized accelerated approval pathways to address urgent medical needs. This review examines these expedited strategies, focusing on successful and failed outcomes. Accelerated approval offers faster treatment access but risks withdrawals if confirmatory trials fail, particularly amid rapid advancements in targeted therapies and immunotherapies.

Aims. This study aimed to evaluate FDA's Accelerated Approval pathway, analysing drug trends, outcomes, retention, withdrawals, and traditional approval transitions.

Methods. Preliminary analysis of 248 drug were done, which were granted FDA Accelerated Approval included variables such as drug identifiers (name, indication, therapeutic class), approval status, and key regulatory timelines.

Results. Evaluation of the FDA's Accelerated Approval pathway demonstrates that 77.8% of drugs (193 out of 248) successfully transitioned to traditional approval, while 22.2% (55 drugs) were withdrawn. Oncology drugs accounted for 76.6%, underscoring their prominence due to urgent clinical demands. The most prevalent indication was non-small cell lung cancer (NSCLC), with 28 approvals, followed by urothelial cancer (14 approvals).Notably, several drugs received multiple accelerated approvals, with pembrolizumab leading at 16 approvals, representing 8.4% of all cancer-related accelerated approvals. Of the 55 withdrawn drugs, primary reason for withdrawal were failure to demonstrate clinical benefit in confirmatory trials (68%), safety concerns (18%), and miscellaneous factors (14%), such as manufacturing issues or sponsor decisions.

Discussion. The determinants of failure in clinical trials include inadequate surrogate validity, which undermines endpoint reliability; delayed or inconclusive confirmatory trials, hindering evidence generation; safety concerns, compromising patient well-being; and economic or operational pressures, disrupting trial execution. Recommendations include better tracking of above stated key finding.

Accelerated Approval Program. U.S. Food And Drug Administration. https://www.fda.gov/drugs/nda-and-bla-approvals/accelerated-approval-program

P911

Independent Appraisals vs ESMO-MCBS for Reimbursed Solid Tumor Drugs in Croatia (2020–2024)

A/Prof Viktorija Erdeljć Turk

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Independent Appraisals vs ESMO-MCBS for Reimbursed Solid Tumor Drugs in Croatia (2020–2024)
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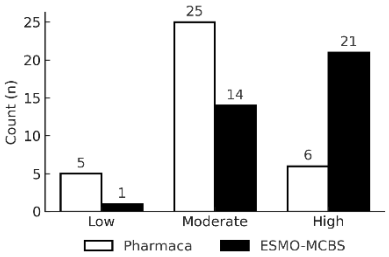

Introduction. Financially independent drug journals often take a more conservative view of drug benefit than stakeholder-anchored frameworks. In oncology, ESMO-MCBS (European Society for Medical Oncology Magnitude of Clinical Benefit Scale) is widely used to prioritize therapies, but it may weight endpoints and early evidence differently from independent sources.

Aims. Compare Pharmaca vs ESMO-MCBS; measure agreement overall and by curative vs non-curative intent; test the link between EC (European Commission approval)-to-reimbursement delay and appraisal differences.

Methods. We included 36 newly reimbursed solid-tumor drugs or new indications (2020–2024). Pharmaca provided High/Moderate/Low ratings from annual reimbursement-list reviews. ESMO-MCBS was harmonized to High/Moderate/Low (High = 4–5 or A; Moderate = 3 or B; Low = 1–2 or C). We summarized the direction of differences, calculated quadratic-weighted Cohen's κ and Spearman's ρ, and measured EC-to-reimbursement delay.

Results. Overall, 29 of 36 (80.6%) entries were non-curative and 7 (19.4%) curative. Pharmaca rated lower than ESMO in 18/36 (50.0%), equal in 17/36 (47.2%), and higher in 1/36 (2.8%). Medians were Moderate (Pharmaca) vs High (ESMO). Agreement was low (κ = 0.22); correlation was weak (ρ = 0.28, p = 0.10). Pharmaca was lower than ESMO in 5/7 (71.4%) curative vs 13/29 (44.8%) non-curative entries. The EC-to-reimbursement delay had a median of 22.3 months (IQR 14.0–30.9, range 1.8–80.2) and showed no association with appraisal gaps (ρ = −0.13, p = 0.45).

Discussion. Pharmaca's independent appraisals were more conservative than ESMO-MCBS in about half of entries and were rarely higher. Low agreement indicates the two approaches weigh evidence differently. Time from EC approval to reimbursement did not explain the differences, pointing to methodological causes rather than evidence maturation. Independent drug information remains valuable: using Pharmaca alongside ESMO-MCBS can improve transparency, highlight marginal or uncertain benefit, and support rational decisions for clinicians, payers, and policymakers.

P913

Phase 3 trials in India - A comprehensive analysis of the Clinical Trial Registry – India

Dr Ajaya Lumar Sahoo

Thursday poster presentations 3, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Phase 3 trials in India - A comprehensive analysis of the Clinical Trial Registry – India

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Introduction. Phase III clinical trials are pivotal in assessing the efficacy and safety of new medical interventions across diverse patient populations. India has become a prominent center for clinical research, supported by its large patient base and an evolving regulatory environment. The Clinical Trials Registry of India provides comprehensive trial data, including design attributes, sponsorship, and disease focus; however, systematic analyses of Phase III trials registered in this database remain scarce. This study aims to fill this gap by examining Phase III trials registered in the Clinical Trials Registry of India.

Methods. This registry-based observational study included all phase III clinical trials registered in the Clinical Trials Registry - India between January 1, 2008, and June 15, 2025. Trials were identified using specific search terms and then manually screened to confirm eligibility. Data submitted by sponsors or principal investigators were systematically extracted into a structured database, encompassing variables such as study design, setting, and geographic scope, intervention type (drugs, vaccines, other), sponsorship classification, disease category, and recruitment status.

Results. Among the 1,385 phase III trials, oncology led (28.0%, n=388), followed by lifestyle noncommunicable diseases (17.3%, n=240), and infectious diseases (12.3%, n=171). High randomization (93.7%), parallel-group (92.7%), and multicenter (89.5%) designs were prevalent. Blinding was used in 59.4% of the studies. Industry-sponsored 84.6% overall, with academics/research institutes contributing 34.6%. Active controls (60.7%) > placebo (32.5%). India-only: 54.0% (69.2% lifestyle, 64.9% infectious vs. 45.1% oncology). Drugs: 83.0% (vaccines 36.3% infectious). India recruitment: 36.0% completed (≈50% infectious/lifestyle), 21.5% open, 18.6% not yet recruited, and 6.1% terminated.

Conclusion. The prevalence of open-label, single-center oncology trials and frequent gaps in registry data on control groups and recruitment highlight critical areas for improvement in clinical trial design. These results emphasize the need to diversify trial methodologies and interventions, bolster independent and public health research efforts, and enhance the completeness and standardization of trial registry information to promote transparency and support informed decision-making.

P914

Trauma informed medical care supports opioid stewardship in Aboriginal Medical Services, Australia.

Dr David Skalicky

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Trauma informed medical care supports opioid stewardship in Aboriginal Medical Services, NSW Australia.

David A Skalicky[1]. Durri Aboriginal Medical Service, Kempsey, NSW, Australia.

Introduction. Aboriginal Communities trust their Aboriginal Medical Services (AMS) to provide trauma informed, holistic health care. Medication management, including prescribing opioids, whose harm is often greater than their benefit in chronic pain, is important in primary care.
Aims. To explore the contribution of trauma informed care as a support for the management of chronic pain, and opioid stewardship in Aboriginal Medical Services.
Methods. This retrospective study of a physician practitioner, reviewed clinical episodes with patients for the effect of trauma informed counselling on opioid stewardship and pain medicine prescriptions. Clinical notes and physician letters from the physician clinical episodes for three years 2023 - 2025 across two AMS sites in NSW, one face to face and another telehealth, were retrospectively reviewed for trauma informed counselling and opioid stewardship.
Results. Of the 228 clinical episodes for 136 patients showed that trauma informed counselling and opioid stewardship were provided together in almost all episodes. The benefits were reduced opioid use, and support for general practitioner prescribers in the primary care settings.
Discussion. Provision of trauma informed care complements a successful opioid stewardship program for Aboriginal Australians in a primary care setting.

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P915

Ten-year cost savings associated with biosimilar tumour necrosis factor inhibitors

Mr Chin Hang Yiu

Thursday poster presentations 2, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Ten-year cost savings associated with biosimilar tumour necrosis factor inhibitors
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Introduction. Biological therapies are a major and growing driver of medicine expenditure globally, with tumour necrosis factor (TNF) inhibitors among the most widely used biologics. Biosimilars offer lower-cost alternatives; however, the aggregate cost savings associated with TNF inhibitor biosimilars in Australia have not been comprehensively quantified.
Aims. To quantify Pharmaceutical Benefits Scheme (PBS) cost savings associated with the listing of biosimilars for adalimumab, etanercept, and infliximab used in the treatment of inflammatory arthritis in Australia.
Methods. A retrospective, population-level expenditure analysis was conducted using publicly available, aggregated PBS Item Reports data between 2015 and 2024. Counterfactual scenarios were constructed to isolate the effect of biosimilar entry, while accounting for key PBS pricing mechanisms, including mandated price reductions and price disclosure cycles.
Results. Biosimilar PBS listing was associated with cumulative savings of AU$450,123,393 between 2015 and 2024. Etanercept biosimilar generated the largest absolute savings (AU$308,965,423; 23.3% reduction). Adalimumab biosimilars generated savings of AU$119,540,216 (6.4% reduction) despite the highest prescription volumes, reflecting delayed biosimilar entry. By indication, rheumatoid arthritis accounted for the largest share of savings (AU$246,370,328; 54.7%), followed by ankylosing spondylitis (AU$101,409,592; 22.5%), psoriatic arthritis (AU$90,144,702; 20.0%), and juvenile idiopathic arthritis (AU$12,198,772; 2.8%).
Discussion. Biosimilar listing of TNF inhibitors was associated with substantial reductions in national medicine expenditure in Australia. The magnitude of savings varied markedly by molecule and was strongly influenced by the timing of biosimilar entry and subsequent pricing mechanisms, highlighting timely biosimilar availability as a critical and modifiable policy lever for maximising cost savings.

P918

Pharmacogenetic determinants of response variability to SGLT2 inhibitors

Prof Rim Charfi

Thursday poster presentations 1, Exhibition Bay 14, 15 & 16 (Ground floor), July 16, 2026

Pharmacogenetic determinants of response variability to SGLT2 inhibitors

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Introduction. Sodium–glucose cotransporter 2 inhibitors (SGLT2i) have emerged as a cornerstone therapy in type 2 diabetes mellitus (T2DM), heart failure, and chronic kidney disease, demonstrating cardiovascular and renal protection beyond glycemic control (Seidu S et al, 2024). These benefits have been consistently confirmed in large randomized clinical trials such as EMPA-REG OUTCOME (Zinman B et al, 2015), CANVAS Program (Neal B et al, 2017), DECLARE–TIMI 58 (Wiviott SD et al, 2019), DAPA-HF (McMurray JJV et al, 2019), and DAPA-CKD (Heerspink HJL et al, 2020).

Despite these robust outcomes, substantial interindividual variability in therapeutic response persists, suggesting a contribution of pharmacogenetic factors affecting both pharmacodynamic and pharmacokinetic pathways.

Aims. To evaluate the role of pharmacogenetic determinants in the variability of response to SGLT2 inhibitors.

Methods. A structured literature review was conducted using PubMed and Google Scholar, focusing on studies addressing genetic variability associated with SGLT2i response.

Results. The SLC5A2 gene encodes the sodium–glucose cotransporter 2 (SGLT2), predominantly expressed in the S1 segment of the proximal renal tubule where it mediates the majority of renal glucose reabsorption (Wright Emet al, 2011).

Loss-of-function variants responsible for familial renal glucosuria constitute a natural human model of impaired glucose reabsorption and may attenuate the pharmacodynamic effect of SGLT2 inhibition (Allaire P et al 2025) suggesting a potential reduction in therapeutic efficacy in carriers of such variants.

Beyond rare variants, single nucleotide polymorphisms (SNPs) in SLC5A2 have been associated with interindividual variability in response to dapagliflozin (Abou Warda AE et al, 2025), including differences in glycemic control, natriuresis, and cardiorenal outcomes in heart failure populations, supporting a modulatory role of genetic variability on both metabolic and pleiotropic drug effects.

From a pharmacokinetic perspective, SGLT2 inhibitors undergo extensive phase II metabolism via glucuronidation mediated by UGT1A9, UGT2B4, and UGT2B7. Functional polymorphisms in these enzymes may influence systemic exposure, clearance, and elimination half-life. However, the clinical impact of these variants remains uncertain due to inconsistent and non-replicated findings across studies (Koo N et al, 2025).

More broadly, pharmacogenomic translation in cardiometabolic therapeutics remains limited, as illustrated by large-scale analyses highlighting modest effect sizes and poor replication of candidate gene associations in clinical outcomes (Roden DM et al, 2019).

Discussion. Pharmacogenetic variability, particularly involving SLC5A2, emerges as a potential determinant of response to SGLT2 inhibitors. Further large-scale studies are required to confirm these associations and support their integration into precision medicine approaches.

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