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DNA methylation of CpG dinucleotides tethers the nucleosome remodelling and repression complex NuRD (depicted as a dog) to prevent gene expression. Image created by Henry Bell using Adobe AI tools. Image courtesy of Henry Bell and Merlin Crossley.

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Publications with Impact profiles recent, high impact publications by ASBMB members. These short summaries showcase some of the latest research by presenting the work in a brief but accessible manner. If your work has recently been published in a high profile journal, please email Doug Fairlie (d.fairlie@latrobe.edu.au).

Does DNA Methylation in Eukaryotes Do Anything?

Bell HW#, Feng R#, Shah M, Yao Y, Douglas J, Doerfler PA, Mayuranathan T, O'Dea MF, Li Y, Wang YD, Zhang J, Mackay JP, Cheng Y, Quinlan KGR, Weiss MJ#, Crossley M#. Removal of promoter CpG methylation by epigenome editing reverses HBG silencing. *Nat Commun* 2025;16(1):6919.
#Contributed equally
***Corresponding authors: mitch.weiss@stjude.org, m.crossley@unsw.edu.au**

We've just used epigenome editing to remove DNA methylation and to reactivate the fetal hemoglobin genes, a potential therapy for sickle cell disease and beta-hemoglobinopathies.

But why is this scientifically, as well as therapeutically, interesting? It is a long, or medium length story. Let me explain.

Lots of people, including those interested in the spooky field of epigenetics, are interested in DNA methylation. But the role of DNA methylation has been mysterious. In bacteria, it plays a clear role in protecting host DNA from being cut by 'restriction enzymes' (genes first identified in restricting bacteriophage host range). In 1979, a *Nature* paper by just two authors – McGhee and Ginder – proposed that DNA methylation repressed gene expression in eukaryotes.

Then things got complicated. Some eukaryotes have DNA methylation, but others like *Drosophila* and nematode worms, have very little. Yet they still turn genes on and off.

The binding of many DNA-binding proteins is prevented by DNA methylation, just as is restriction enzyme binding, but there are relatively few examples where DNA methylation unequivocally prevents transcription factor binding and silences genes.

On the other hand, some correlations have been very well established. When the human fetal globin genes are turned off in infancy, their promoters become methylated. What's more, if you inhibit methylation with a drug like 5-azacytidine, fetal globin expression is reactivated. DNA methylation inhibitors have been used in clinical trials to boost fetal globin production in patients with mutations in their adult globin genes, affected by sickle cell disease or beta-thalassemia. But such non-specific agents are not generally considered suitable for long-term treatments.

For decades, there was no way to specifically remove or add methyl groups to the fetal globin gene promoters, so no one could say for certain if DNA methylation caused or merely correlated with globin gene silencing. The lack of specific agents also hindered clinical harnessing of the

DNA methylation of CpG dinucleotides tethers the nucleosome remodelling and repression complex NuRD (depicted as a dog) to prevent gene expression. Image created by Dr Henry Bell using Adobe AI tools.

knowledge that demethylation might be useful.

Enter dCas9 – a catalytically inactive CRISPR system that does not cut DNA but can deliver a chosen cargo to a chosen gene. We used dCas9 hooked up to the demethylating enzyme TET1 (meth-stripper) and a guide to deliver it to the fetal globin genes, and saw DNA demethylation and gene activation. We then delivered dCas9 hooked up to a methylating enzyme (DNMT3 meth-adder), and we silenced the gene again. We conclude that DNA methylation directly represses fetal globin gene expression.

We also showed that this occurred, not by the modification of a specific motif for a DNA-binding protein, but rather by modifying a series of CpG dinucleotides that recruit the nucleosome remodelling and deacetylase complex (NuRD). We conclude that fetal globin silencing depends in part on DNA methylation, recruitment of NuRD, and the locking of chromatin into an inactive state.

Epigenetic editing to remove methylation from certain genes may be preferable to cutting genes with Cas9 or with base editing or prime editing nickases, which can all cause unintended genetic rearrangements. What's more, avoiding making a mutation may be considered less ethically charged.

We don't know how long the effects will last though. In our experiments they lasted well, but we worked in primary cells *in vitro*, not *in vivo*. *In vivo* regular redosing may be required.

We see a big future for epigenome editing. We've examined the effect of DNA marks, the marks on histones and transcription factors will be our next target.

Henry Bell†, Manan Shah, Michael O'Dea, Sonia Goozee, Kate Quinlan and Merlin Crossley
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The lab run by Merlin Crossley and Kate Quinlan, with the first author on the paper, Henry Bell, also properly dressed immediately following his PhD graduation. Manan Shah (fifth from right), Sonia Goozee (fourth from right), and Michael O'Dea (second from right).

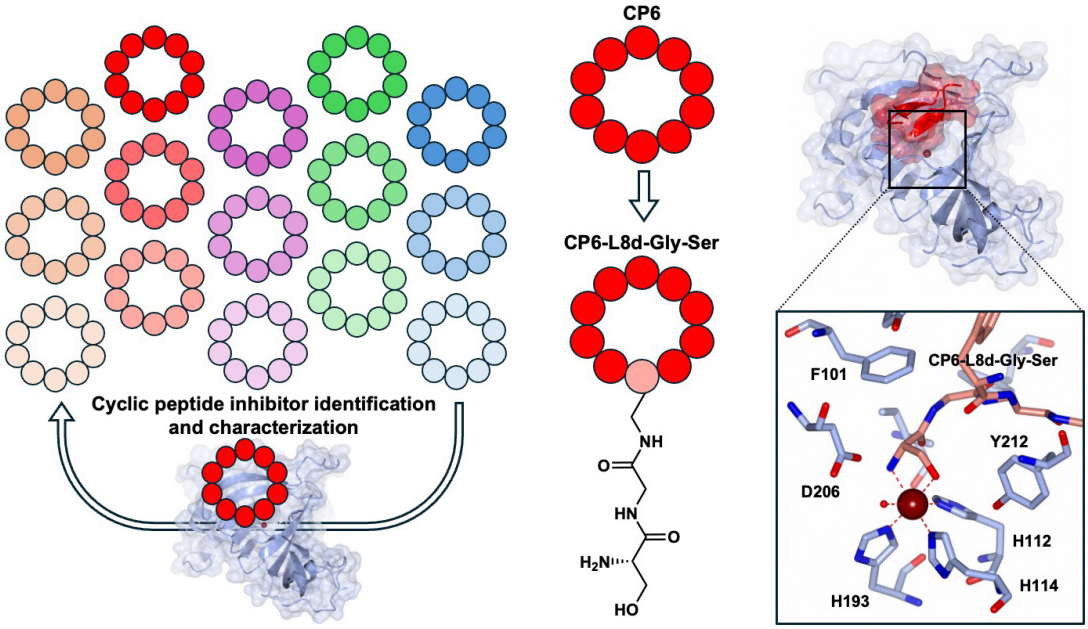
Structural Insights Into the N-Terminal Cysteine Oxidases: Enzymatic Oxygen Sensors Implicated in Crop Flood Tolerance and Hypoxic Disease

Jiramongkol Y, Patel K, Johansen-Leete J, Maxwell JWC, Chang Y, Du JJ, Passioura T, Cook KM, Payne RJ, White MD*. An mRNA-display derived cyclic peptide scaffold reveals the substrate binding interactions of an N-terminal cysteine oxidase. *Nat Commun* 2025;16(1):4761.
***Corresponding author: mark.white@sydney.edu.au**

Oxygen (O_2) is a vital biological resource, consumption and delivery of which needs to be tightly monitored and regulated to maintain its homeostasis. N-terminal cysteine oxidases (NCOs) – a class of non-heme iron-dependent thiol dioxygenases – have recently been identified as enzymatic O_2 sensors, which coordinate cellular changes to O_2 in plants and animals. They regulate the O_2-dependent stability of proteins bearing a co- or post-translationally exposed N-terminal cysteine residue through the N-degron pathway. Under normal conditions, NCOs use both atoms of O_2 to generate cysteine-sulfinic acid at the N-terminus of their substrates, constitutively marking them for ubiquitin mediated degradation through the N-degron pathway. However, when O_2 levels decrease below physiologically relevant concentrations (and hypoxia ensues), NCOs become inactivated due to their high K_m (and low affinity) for O_2, resulting in target stabilisation and cellular change, including enhanced anaerobic metabolism (plants) and attenuated G-protein coupled receptor signalling (animals).

Despite their central role in hypoxic adaptation, which renders them potential agrichemical and therapeutic targets (particularly in the context of crop flood resistance and hypoxic disease treatment), structural information on NCO substrate binding remained elusive, owing to the rapid turnover and weak association of native and analogue substrate sequences.

Publications With Impact



Left *Cyclic peptide inhibitors of ADO were identified through RaPID, a variation of mRNA display, and characterised using a range of biophysical, kinetic and structural techniques.*

Middle *One of the cyclic peptide inhibitors, CP6, was used as a scaffold to graft substrate (analogue) moieties. Leucine 8 was replaced with 2,3-diaminopropionic acid (d), which was coupled with a glycine-cysteine/ serine dipeptide to generate a pseudo-N-terminal substrate sequence.*

Right *The crystal structure of cobalt incorporated ADO in complex with CP6-L8d-Gly-Ser was solved, revealing bidentate coordination of the N-terminal residue and a close interaction between aspartate-206 and the putative oxygen binding site.*

To overcome this challenge, we employed Random nonstandard Peptide Integrated Display (RaPID), a variation of mRNA display that allows the incorporation of non-standard amino acids through genetic reprogramming, to identify and characterise cyclic peptide inhibitors of the mammalian NCO, 2-aminoethanethiol dioxygenase (ADO), using a variety of biophysical, kinetic and structural methods. One of the inhibitors was then used as a scaffold to graft substrate moieties bearing a pseudo-N-terminal cysteine or serine residue off a side chain amine, allowing two substrate analogue bound crystal structures to be solved at high resolution. In both structures, the N-terminal residue coordinates the metal cofactor in a bidentate arrangement, leaving one ligation site available for O_2 to bind in an end-on orientation, analogous to the homologue cysteine dioxygenase, which processes free L-cysteine as part of sulphur metabolism. Conserved and structurally interesting active site residues were subsequently probed through mutagenesis, highlighting amino acids involved in binding and activity, with aspartate-206 identified as an essential catalytic residue. Given its position relative to the O_2 binding site, aspartate-206 may play a role in orientating, directing or stabilising a reactive oxygen intermediate, such as a putative iron(III) superoxo species, ensuring correct reaction with the substrate thiol.

Together, this work can help elucidate NCO mechanism and facilitate the rational development of small molecule inhibitors to study and manipulate the O_2-dependent branch of the N-degron pathway and associated low O_2 processes, which may lead to new strategies to enhance crop flood tolerance and help treat hypoxic disease.

Mark White
School of Chemistry
University of Sydney

Yannasitta Jiramongkol (top left) and Karishma Patel (fourth from left) led the biochemical and structural work under the supervision of Mark White (bottom left).

Publications With Impact

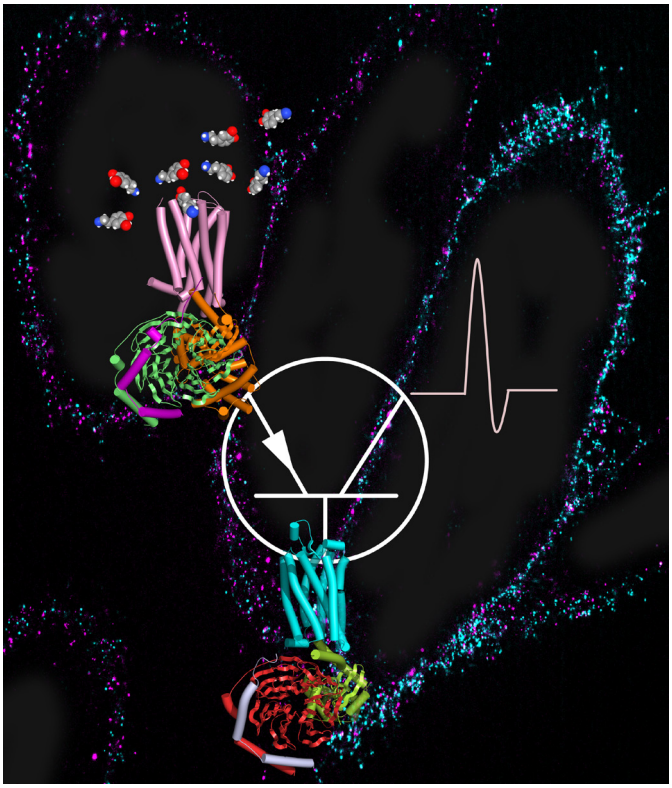
GPCR Crosstalk Reverses Dopaminergic Output in the Spinal Defaecation Centre

Dehkhoda F, Ringuet MT, Whitfield EA, Mutunduwe K, Whelan F, Nowell CJ, Misganaw D, Xu Z, Piper NBC, Clark RJ, Hossain MA, Fothergill LJ, McDougall SJ, Furness JB, Furness SGB*.
Constitutive ghrelin receptor activity enables reversal of dopamine D2 receptor signaling.
***Mol Cell* 2025;85(11):2246-2260.**
***Corresponding author: s.furness@uq.edu.au**

Everyone has heard of dopamine and probably knows it as the feel-good hormone. However, it is involved in more than just pleasure and reward; some of such actions include movement, cognition, motivation, sleep and mood. We had previously discovered that dopamine, acting through the dopamine D2 receptor (DRD2), is the relevant neurotransmitter in the spinal cord defaecation centre neurons. Additionally, in the spinal daefaecation centre, DRD2 exhibits a functional interaction with the ghrelin receptor, GHSR. These two receptors are GPCRs (G protein-coupled receptors) typically coupling to different classes of G proteins. DRD2 stimulation usually results in neuronal hyperpolarisation (reduced firing) via $G\alpha_{i/o}$ activation, whereas GHSR stimulation results in depolarisation (increased firing) via $G\alpha_{11/q}$ activation. Our previous work, using slice electrophysiology experiments, demonstrated that in neurons of the defaecation centre, DRD2 stimulation produces atypical excitatory effects rather than the expected inhibitory effect. In contrast, GHSR activation exhibited excitatory effects characteristic of a $G\alpha_{11/q}$ coupled receptor.

In this study, using defaecation centre neurons from DRD2 reporter mice, we show that DRD2 activation mobilises store calcium, and its atypical excitatory response is reversed to an inhibitory response once ER stores are depleted with thapsigargin. We hypothesised that the observed calcium mobilisation via DRD2 could be due to dimerisation or signal crosstalk. We then tested the G protein preferences of these two receptors in a transfected cell system and found that their preferences for primary transducer were unaffected by the presence of the other receptor, that the functional interaction only occurred from GHSR to DRD2 and not vice versa, and that both $G\alpha_{i/o}$ and $G\alpha_{11/q}$ were required for DRD2-dependent calcium mobilisation (whereas only $G\alpha_{11/q}$ was required downstream of GHSR). We generated DRD2 and GHSR specific fluorescent ligands and in saturation binding assays neither ligand showed altered affinity for its receptor in the presence of the other receptor, suggesting the absence of dimerisation, which would have resulted in allosterically induced changes in affinity. We used the same ligands for STORM (stochastic optical reconstruction microscopy) super resolution microscopy with effective xy resolution of 15 nm and showed that DRD2 and GHSR are not near enough to be part of a dimeric complex.

Based on these data, we propose a model in which dopamine induces depolarisation through GHSR-dependent $G\alpha_{11/q}$ mediated priming of PLCβ. This priming enables PLCβ activation by βγ subunits released from DRD2, leading to dominant inhibition of M-type potassium channels. In contrast, in the absence of PLCβ priming and M-channel inhibition, βγ subunits released from DRD2 predominantly activate GIRK channels, resulting in hyperpolarisation. Supporting our hypothesis, inhibition of PLCβ in neurons with U73122 caused DRD2 to revert to its typical inhibitory response, while ghrelin's excitatory effect was abolished. Similarly, the DRD2-mediated calcium response was completely abrogated in transfected cells. Because GHSR possesses high constitutive activity, and a naturally



The image depicts a schematic of a bipolar junction transistor. The dopamine D2 receptor acts as the emitter, determining whether there will be a cellular response at the collector, according to the presence of dopamine. The ghrelin receptor sits at the base, its constitutive activity modulates the collector output. Artwork by Sebastian Furness.

occurring variant (A204E) lacks this activity, we chose to further test our model by co-expressing GHSR^{A204E} with DRD2. Indeed, we found that DRD2 could no longer mobilise calcium in this context, indicating that DRD2's ability to illicit a calcium response depends on GHSR's constitutive activity. Interestingly, when DRD2/GHSR^{A204E} cells were primed with a low dose of ghrelin, DRD2 regained the ability to robustly mobilise calcium. This priming effect is not specific to GHSR, where activation of another $G\alpha_{11/q}$ coupled receptor, the cholecystokinin 1 receptor, also conferred calcium mobilisation capacity to DRD2. Our discovery that DRD2 requires GHSR's constitutive activity to mobilise calcium is particularly significant, as it sheds light on why GHSR expression in the spinal cord is conserved, even though ghrelin appears to be absent.

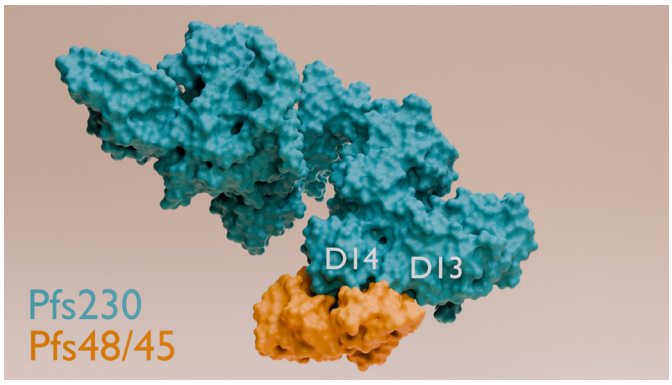
Farhad Dehkhoda and Sebastian Furness
School of Biological Sciences
University of Queensland

From left: Farhad Dehkhoda and Sebastian Furness.

Cryo-EM of a Malaria Parasite Fertilisation Complex and Development of a Novel Transmission Blocking Vaccine

Dietrich MH, Chmielewski J, Chan LJ, Tan LL, Adair A, Lyons FMT, Gabriela M, Lopaticki S, Dite TA, Dagley LF, Pazzagli L, Gupta P, Kamil M, Vaughan AM, Rojrung R, Abraham A, Mazhari R, Longley RJ, Zeglinski K, Gouil Q, Mueller I, Fabb SA, Shandre-Mugan R, Pouton CW, Glukhova A, Shakeel S, Tham WH*. Cryo-EM structure of endogenous *Plasmodium falciparum* Pfs230 and Pfs48/45 fertilization complex. *Science* 2025;389(6765):eady0241.
***Corresponding author: tham@wehi.edu.au**

Fertilisation is a critical process in generating new offspring. For malaria parasites, fertilisation of its gametes occurs in the midgut of female *Anopheles* mosquito. By inhibiting parasite fertilisation in mosquitoes, we can stop malaria parasite transmission from mosquitoes to humans. The development of transmission-blocking vaccines against fertilisation antigens are important tools for malaria elimination. Reducing malaria parasite transmission is critical to the elimination of the deadly malaria parasite, which is responsible for over 600,000 deaths annually, with *Plasmodium falciparum* responsible for the majority of malaria-related deaths.



Cryo-EM of the endogenous fertilisation complex of Plasmodium falciparum *Pfs230 bound to Pfs48/45. Image generated by Li-Jin Chan*

Using cryo-electron microscopy (cryo-EM), we determined the structure of the endogenous *P. falciparum* Pfs230-Pfs48/45 fertilisation complex. Pfs230 and Pfs48/45 are critical for male fertility and transmission of the malaria parasite. They form a core fertilisation complex, but it was unknown how they interact. Both proteins are members of the 6-cysteine protein family in *P. falciparum*. Full-length Pfs230, a > 300 kDa protein which has 14 6-cysteine domains, cannot be produced recombinantly necessitating isolation of the fertilisation complex from its native parasite source, which are sexual stage malaria parasites. This cryo-EM structure showed that domains 13 and 14 of Pfs230 interact with Pfs48/45, providing novel functional insight to these previously uncharacterised domains.

Pfs230 and Pfs48/45 localise to the gamete surface, with Pfs230 membrane association likely mediated through its interaction with glycosylphosphatidylinositol (GPI)-anchored Pfs48/45. We generated transgenic *P. falciparum* parasites with a deletion of domain 13 and 14 of Pfs230 and show that they are crucial for localisation of Pfs230 on the surface of gametes. Using the standard membrane feeding assay, in which mosquitoes are

fed with infected blood to assess malaria parasite transmission, we show that the transgenic parasite line lacking Pfs230 domains 13 and 14 did not form oocysts in the mosquito midgut. This clearly demonstrates that the absence of these domains greatly reduces parasite transmission within the female *Anopheles* mosquito.

Using nanobodies against domains 13 and 14 of Pfs230, we show that they can inhibit Pfs230-Pfs48/45 complex formation and reduce transmission. This is the first description of antibodies against these domains in Pfs230 and our crystal structures provides a robust framework for future rational design of novel transmission blocking antibodies. We also show that mRNA-lipid nanoparticle (mRNA-LNP) vaccination of mice with Pfs230 domains 13 and 14 elicits antibody responses specifically to these domains. Immune sera from vaccinated mice showed potent transmission-reducing activity when tested in the standard membrane feeding assays, validating the immunogenicity and functional efficacy of these domains as vaccine antigens.

Collectively, this work shows that Pfs230 domains 13 and 14 are new vaccine candidates for blocking the transmission of this deadly parasite. The structural characterisation of both the endogenous Pfs230-Pfs48/45 complex and Pfs230-nanobody interactions provides a foundation for structure-guided development of novel transmission-blocking vaccines and therapeutic monoclonal antibodies.

Melanie Dietrich, Jill Chmielewski, Li-Jin Chan, Frankie Lyons and Wai-Hong Tham
Walter and Eliza Hall Institute of Medical Research

Lead author, Melanie Dietrich.

The team behind the discovery, from left: Stewart Fabb, Alisa Glukhova, Sash Lopaticki, Frankie Lyons, Shabih Shakeel, Li-Jin Chan, Rekha Shandre-Mugan, Wai-Hong Tham, Quentin Gouil, Mikha Gabriela, Jill Chmielewski, Lynn Tan, Colin Pouton, Kathleen Zeglinski, Laura Dagley and Amy Adair. Image credit: WEHI

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ASBMB2025 Meeting Report

Michael Landsberg, ASBMB2025 Conference Chair

ASBMB2025 brought together leading scientists, educators and industry innovators at the University of Queensland's St Lucia campus. Held from 29 September – 1 October 2025, the meeting showcased cutting-edge research, fostered collaboration and celebrated excellence in molecular biosciences. Hosted at UQ's Global Change Institute with a strong emphasis on inclusivity, sustainability and future-focused science, ASBMB2025 reaffirmed its role as a key meeting for Australia's life sciences community.

ASBMB President Professor Megan Maher commenced proceedings on Monday morning by welcoming the 229 registered delegates that joined us from eight countries and most Australian states and territories. The scientific program commenced with the opening plenary lecture delivered by Professor Randall Halfman from the Stowers Institute in Kansas City, Missouri. Fresh off a long-haul flight from the US, Randall delivered a fascinating presentation which explored his group's work on nucleation of inflammatory "signalosomes" and the diverse rolls played by supersaturable death domain proteins. He delivered an engaging presentation that challenged the audience to rethink the traditional structure–function paradigm.

With the trade display up and running, delegates enjoyed morning tea in the atrium of the Global Change Institute before the parallel symposia commenced. In total, there were 13 parallel symposium sessions aligned with the programmatic themes of the meeting that reflected the breadth of modern molecular biosciences. These covered proteins and peptides, structural biology, drug discovery, computational biology, multi-omics, RNA and DNA biology, GPCRs, cell signalling and developmental biology, immunology, cancer, neurodegeneration, plant biochemistry and biochemistry education. Each session featured a keynote presentation delivered by an invited speaker, followed by a selection of talks chosen from submitted abstracts, providing a platform for established scientists, early-career researchers (ECRs) and research higher degree students to share their work. The education session was followed by a workshop that explored the role of AI in modern biochemistry education. A report on Education at ASBMB2025 is on page 16 of this issue of *Australian Biochemist*.

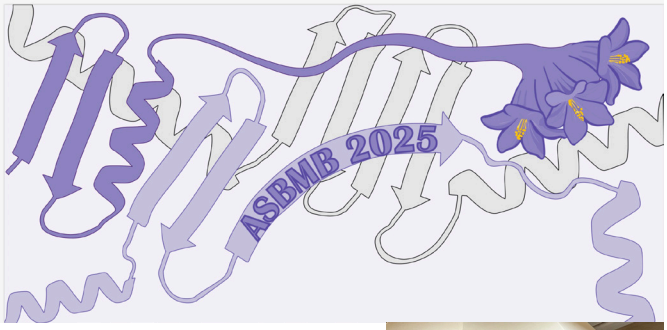
Plenary speakers Danielle Grotjahn (left) and Randal Halfmann.

Morning tea in the Global Change Institute atrium.

A special thanks goes to BMG Labtech for sponsoring the GPCR symposium, which featured two invited keynote speakers – Professor Denise Wootten from the Monash Institute of Pharmaceutical Sciences and Dr John Lin from the University of Tasmania. A special symposium session was also held to highlight the outstanding work being done by ECRs and PhD students chosen to represent their respective ASBMB Special Interest Groups (SIGs). These included Manasa Bharathwaj (Yeast SIG), Madeline McRae (Sydney Protein Group), Chris Horne (Melbourne Protein Group), Stephanie Portelli (Queensland Protein Group) and Shreshtha Malik (Adelaide Protein Group).

Networking opportunities were woven into the program through poster sessions, social events and the trade exhibition, creating an environment where ideas flowed freely between academia and industry representatives. Delegates visited our trade exhibitors and collected stamps to enter the passport draw, which saw entrants in the running to win numerous prizes including free registration for ComBio 2026 and 3-year ASBMB memberships.

ASBMB2025 Meeting Report



Above: gelato cart design by Solace Roche.

Left: gelato cart at the poster session.

The poster session on Monday evening featured 123 posters covering a breadth of topics. Delegates and poster judges alike were enticed to visit by the promise of delicious gelato delivered from the conference's custom designed gelato cart which featured a design contributed by contest winner Solace Roche from the University of Queensland. The conference dinner was a highlight of the social program, with over 150 delegates attending the function on Tuesday evening.

Throughout the program, ASBMB2025 honoured outstanding contributions by Society members through its annual awards, all of whom delivered lectures at the conference. Professor Michelle Haber (Children's Cancer Institute), who received the Lemberg Medal, delivered a powerful plenary lecture to open Day 2 of the conference that highlighted advances in childhood cancer research and how molecular insights are transforming treatment strategies. Dr Alexander Knights (Washington University, USA), recipient of the Boomerang Award, and Professor Si Ming Man (Australian National University), recipient of the Shimadzu Research Medal, delivered plenary lectures on Days 2 and 3, respectively, sharing insights from their careers and showcasing recent research highlights. Associate Professor Amber Willems-Jones (University of Melbourne), recipient of the ASBMB SDR Scientific Education Award, Dr Dimitra Chatzileontiadou (La Trobe University), recipient of the Eppendorf Edman Award, and Dr Shouya Feng (Hudson Institute), recipient of the Fred Collins Award, also presented keynote lectures in the Education, Structural Biology and Immunology symposium sessions, respectively.

The ASBMB2025 organising committee was committed to honouring the diversity of our membership. Our session chairs (15 male and 13 female) did a fantastic job of evaluating 176 abstract submissions and inviting exceptional keynote speakers and delivered a program that featured 7 male and 6 female invited keynote speakers, alongside 24 male and 32 female speakers selected from abstracts. Of the selected symposium speakers, 17 were established academics, 19 were early- to mid-career researchers (EMCRs) and 20 were PhD students. The ASBMB provided bursaries to support attendance by ASBMB members who otherwise would not have been able to attend the meeting due to caring responsibilities. Targeted funding was also offered to EMCR members in meeting their costs to attend the conference through travel grants. This support complemented the Society's established awards and student travel bursaries, which have long helped members attend ASBMB meetings.

One of the highlights of the final day of the meeting was the final plenary address delivered by Associate Professor Danielle Grotjahn from the Scripps Research Institute in San Diego, California. Danielle's talk explored the dynamic architecture of cellular organelles, leveraging cryo-electron microscopy to reveal structural complexity on an unprecedented scale. She also highlighted her group's efforts to develop innovative new tools inspired by 3D animation and video game rendering techniques to quantitatively map and interrogate membrane architecture. Her talk offered a fascinating view into the future of *in situ* structural biology and served as an appetiser of things to come at future ASBMB meetings.

As ASBMB2025 concluded, Conference Chair Associate Professor Michael Landsberg delivered closing remarks before the winners of the ASBMB Poster Prizes were announced, as well as the awards for best oral presentations by students and EMCRs, and the drawing of the Exhibition Passport prize winners. Looking ahead to ComBio 2026 in Sydney, Co-Chair Professor Tracey Bryan offered an exciting glimpse of what delegates can expect at the meeting. A huge thanks to the members of the Organising Committee – Associate Professor Marloes Nitert Dekker (Program Chair), Dr Conan Wang (Sponsorship and Trade), Associate Professor Adrian Achuthan (Treasurer), Dr Rosie Cater (Social Media

ASBMB2025 Meeting Report

ASBMB2025 Prize Winners

STUDENT TALK WINNERS

Maxim Harding (Institute for Molecular Bioscience, University of QLD)
Bacteriophage P22 virus-like particles as nanoscale scaffolds for plant synthetic biology

Joanna New (University of Sydney)
Exploiting tau amyloid polymorphism for diagnosis of chronic traumatic encephalopathy (CTE)

EMCR TALK WINNERS

Dr Sylvie Callegari (Walter and Eliza Hall Institute)
Structure of human PINK1 stabilised at a novel mitochondrial translocase assembly

Dr Neil Robertson (UNSW)
Learning to walk: the first steps of an artificial protein motor

POSTER PRIZE WINNERS

Denaye Eldershaw (University of Queensland)
An AlphaFold screen for Rab GTPase interacting partners reveals novel Rab effectors and GAPs

Dr Weixi Gu (University of Queensland)
Structural and functional characterisation of black fruit bat MyD88

Alfred Hartojo (University of Sydney)
First inhibitors of a two-partner secretion system

Javaid Jabbar (University of Melbourne)
Lysine acetylation modulates s-OPA1 GTPase activity and oligomerization in mitochondrial membrane remodeling

Mirrin Mckay (University of Adelaide)
Unlocking the value of lysine for sustainable agriculture

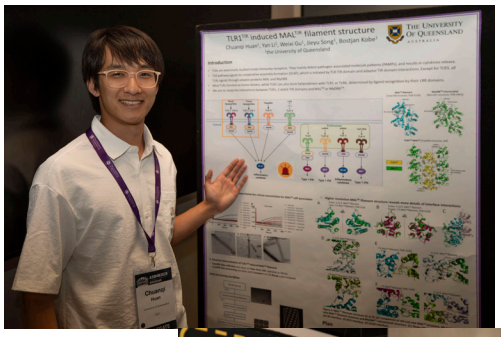
Michael O'Dea (UNSW)
NucleoScope – precise resolution of nucleosome positions, genome-wide

Tawatchai Singphongam (Mahidol University, Thailand)
Chemo-enzymatic cascade for ethylene glycol detection and its application for PET hydrolase assay

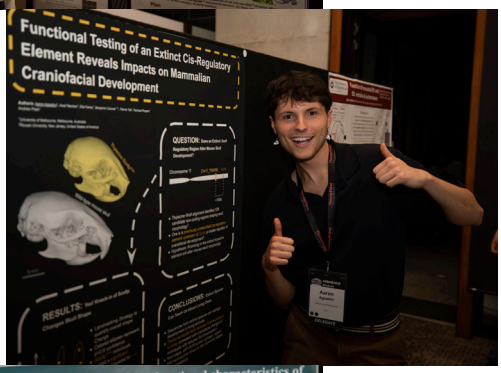
Jieyu Song (University of Queensland)
Filamentous assemblies of bacterial TIR-domain induced by NAD+ analogue and nucleic acids

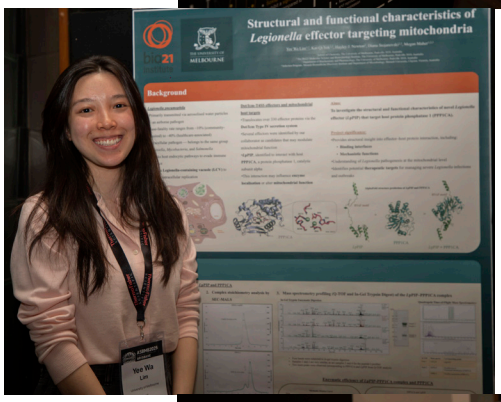
Dr Yikai Song (University of Queensland)
Discovery of novel calcium-sensing receptor allosteric modulators using fragment-based drug design approaches

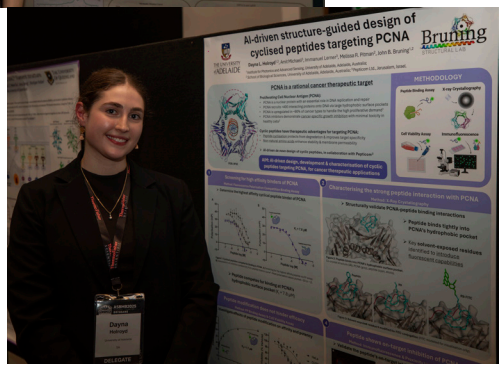
Thunchanok Wilasri (Mahidol University, Thailand)
Formate dehydrogenase-catalyzed cascade coupled with NADH regeneration for the conversion of carbon dioxide into value-added chemical feedstocks



Poster display at ASBMB2025.







Poster prize winners, from left: Thunchanok Wilasri, Tawatchai Singphongam, Denaye Eldershaw, Alfred Hartojo, Yikai Song, Weixi Gu, Jieyu Song, Mirrin Mckay, Javaid Jabbar and Michael O'Dea.

and Communication), Professor Tracey Kuit (Education Workshop), Professor Bostjan Kobe (Posters and Judging), Dr Yaoqin Hong (Passport Draw), Associate Professor Patrick Schaeffer, Associate Professor Sonia Henriques, Dr Thomas Ve, Dr Linlin Ma, Dr Edward Kerr, Professor Brett Collins, Dr Evelyne Deplazes and Dr Michael Healy. I'd also like to acknowledge the support of Kate Smith and her team at Waldron-Smith Management for providing support with the website and registrations, Niki Tsiaousidou for running the registration desk, Jasper Stone, Julian Hay and Jessica Weeland for AV support, Zhihao Jiang for coordinating the trade hall and Gary Liu for capturing all the photos that accompany this report and appear on social media. Most importantly, thanks to our ASBMB Sustaining Members and sponsors who supported the meeting: BMG Labtech, VectorBuilder, Proteintech, MP Biomedicals, New England Biolabs, Pacific Laboratory Products, GenScript, Cytiva, ATA Scientific, Shimadzu, In Vitro Technologies, AXT and Bioline Global. Thanks also to the University of Queensland for sponsoring the venue and UQ Ventures for providing space to host the poster sessions. Finally, to the presenters, participants, poster judges – thank you for contributing to a stimulating and enjoyable program. I hope to see you all in Sydney next year.

Michael Landsberg
University of Queensland

Lemberg medallist, Michelle Haber (left), with ASBMB President Megan Maher.

Shimadzu Research medallist, Si Ming Man.

From left: ASBMB Fellowship awardees, Shouya Feng (recipient of the Fred Collins Award), Daniel Fox, Cynthia Turnbull and Xuan Ling Hilary Yong, with with Fred Collins' son, Stephen Collins, and ASBMB President, Megan Maher.

ASBMB Boomerang Award winner, Alexander Knights (left), with ASBMB President Elect Kate Quinlan.

Eppendorf Edman ECR awardee, Dimitra Chatzileontiadou (left), with Kim Dewar of Eppendorf South Pacific.

ASBMB2025 Organising Committee members, from left: Edward Kerr, Brett Collins, Rosie Cater, Bostjan Kobe, Michael Landsberg, Michael Healy, Marloes Nitert Dekker, Patrick Schaeffer, Adrian Achuthan, Yaoqin Hong, Linlin Ma and Thomas Ve.

Innovations in Science Education and Career Development at ASBMB2025

Education Day at ASBMB2025 was a highlight of this year's calendar for education enthusiasts. Here is a summary of the education day activities, many of which appear are featured articles within this issue.

We started the day with a keynote presentation by SDR Education Award winner Associate Professor Amber Willems-Jones (University of Melbourne), titled **Establishing the Australian Core Concepts of Biochemistry and Molecular Biology** (BMB). Amber presented on this national initiative that brought together discipline experts from institutions representing most states and territories to define a consensus framework for core concepts in BMB education in Australia. Using a Delphi-inspired method, the project identified four Core Concepts, six Experimental Approaches and nine Core Skills essential for undergraduate BMB majors. The framework aligns with international models while being tailored to the Australian context. Endorsed by the ASBMB Executive Council, the Australian BMB Core Concepts aim to guide curriculum design and assessment across higher education institutions. This initiative is detailed on page 18 of this issue of the *Australian Biochemist*.

SDR Scientific Education Award winner, Amber Willems-Jones (left), and ASBMB President Megan Maher.

Our Education session featured a range of forward-thinking presentations that explored how technology and strategic interventions are reshaping science education and career development. Four standout contributions demonstrated how educators are enhancing student engagement, practical skills, and employability in BMB.

Back to the lab: a hybrid future for practical science education.
Marloes Dekker Nitert, Jack Wang, Nick West, Lisa Akison, Justin Ridge, Gareth Denyer, Rohann Dorabjee and Ulrike Kappler (University of Queensland and University of Sydney)

Marloes Dekker Nitert.

This presentation introduced a hybrid laboratory model that blends physical lab work with a Virtual Lab platform. Designed to address resource constraints and support student learning, the virtual environment enables students to repeat, expand and design experiments beyond the physical lab. The model led to improved exam performance, increased confidence, and reduced anxiety, while also allowing students to learn techniques previously limited to demonstrations.

Enhancing student knowledge of laboratory skills through a synergistic approach: Labster and face-to-face practical.
Juliana Antonipillai, Narin Osman and Elizabeth Verghese (RMIT University)

Juliana Antonipillai.

This study explored the combined use of Labster virtual simulations and traditional practicals to improve student understanding of laboratory protocols and safety. The integrated approach significantly enhanced students' ability to apply safety measures and technical skills, supporting a more holistic and effective laboratory education experience. This work is detailed page 20 of this issue of the *Australian Biochemist*.

1000 words for a picture, how much for video? Student perceptions of video and screen-recorded feedback.
James Tsatsaronis (University of Sydney)

James Tsatsaronis.

Using Canvas LMS's video and screen-recorded feedback tools, this pilot study provided personalised feedback on student video assignments. Students appreciated the clarity, specificity and personal touch of the feedback, which fostered stronger connections with educators and enhanced engagement with assessment.

Innovations in Science Education and Career Development at ASBMB2025

Harnessing the value of students' paid work for career development learning in non-vocational science courses.
Sharon La Fontaine (Deakin University)

Sharon La Fontaine.

The Stepping Stone program encourages science students to use their paid work as a platform for career development. Embedded across undergraduate courses, the initiative supports students in progressing toward industry-relevant roles during their studies. Early results show improved employment outcomes and increased student confidence, with the program now integrated into strategic planning for long-term sustainability. This work is detailed on page 22 of this issue of the *Australian Biochemist*.

Matthew Clemson facilitates the workshop on AI in higher education.

In the afternoon, Dr Matthew Clemson (University of Sydney) facilitated a workshop on **Navigating the AI Landscape: Insights from Australian Biochemistry Educators**. This workshop brought together biochemistry educators to explore the evolving role of generative AI in teaching, learning and assessment. Participants shared how AI is being used to create content, develop assessments and streamline feedback, while drawing clear ethical boundaries – particularly around grading. Key concerns included academic integrity, student learning and institutional support. Despite widespread use, most educators lacked clarity on institutional AI policies. The workshop called for clearer guidelines, better access to tools and more time for professional development. The initiative continues with a national survey gathering student perspectives on AI use in education. This work is detailed on page 25 of this issue of the *Australian Biochemist*.

ASBMB 2025 served as a pivotal forum for Australian biochemistry and molecular biology educators, researchers and academic leaders to collaborate on the future of science education. The conference highlighted a shared commitment to innovation, inclusivity and adaptability in response to evolving educational landscapes and technological advancements. We thank the ASBMB for ongoing support of the Education SIG, and Associate Professor Michael Landsberg and the entire conference organising committee for supporting our activities throughout the day. Additional thanks to Marloes Dekker Nitert, James Tsatsaronis, Amber Willems-Jones and Matt Clemson for assisting with the workshop preparations. We look forward to coming together in Sydney for ComBio 2026.

Professor Tracey Kuit
School of Biotechnology and Biomolecular Sciences, UNSW
Chair, ASBMB Education Special Interest Group

The ASBMB Education Feature is coordinated by Tracey Kuit (t.kuit@unsw.edu.au) and Amber Willems-Jones (amber.willems@unimelb.edu.au). This issue was supported by James Tsatsaronis (University of Sydney).

The Australian Core Concepts of Biochemistry & Molecular Biology

Amber Willems-Jones

School of Biomedical Sciences, University of Melbourne

In each discipline taught across universities globally, a set of core principles/concepts are integral to ensuring students gain an appropriate understanding of the relevant aspects within that discipline. These are often referred to as core concepts.

In 2022, I established a project to bring together discipline experts in Biochemistry and Molecular Biology (BMB) to establish a national (Australia-wide) consensus on core concepts in the Australian context. A Working Group of 21 academics from 12 Australian higher education institutions representing most Australian states and territories (excluding NT) joined the project. The Working Group began by firstly mapping 300 unique intended learning outcomes sourced from public-facing web data of 30 Australian universities (from 146 subjects). Secondly, we compared these against the threshold concepts for BMB from the United States (1,2) and the key concept lens areas (CLAs) by Rowland *et al.* (3). A preliminary list of five Core Concepts with associated Subthemes (framed using the Rowland CLAs and USA classifications), three Experimental Approaches and six Core Skills were reviewed by a Task Force of 77 discipline experts from across Australia. **Fig. 1** represents the demographics of the Task Force participants.

We used a Delphi-inspired method of iterative consensus (4) across two questionnaires. **Fig. 2** illustrates the timeline of the project's four phases illustrating involvement of the Working Group members and Task Force participants.

For Core Concepts, progression into Round 2/Phase 3 was based on 80% agreement (agree plus strongly agree on a 7-point Likert scale) to the statement: *"In my opinion, within [Core Concept], this should be listed as a key BMB concept & subtheme in the Australian context"*. An average of 91% agreement was achieved for the majority of suggested concepts and subthemes, with feedback requesting adjustment to the wording of concepts and subthemes. The preliminary core concept of Evolutionary Biology and Diversity did not meet the required 50% agreement threshold. Progression into Round 2/Phase 3 for Experimental Approaches and Core Skills also required at least 80% agreement (to the statements: *"In my opinion, undertaking this [experimental approach]/[core skill] is essential for students when completing a BMB major"*. Experimental Approaches achieved an average of 98% agreement for the three approaches, with recommendations to expand the list, and Core Skills achieved 92% agreement with requests to include an additional two Core Skills for the second-round questionnaire.

A rigorous revision of each list was undertaken by the project lead to ensure every participant's feedback was carefully reviewed, actioned and incorporated.

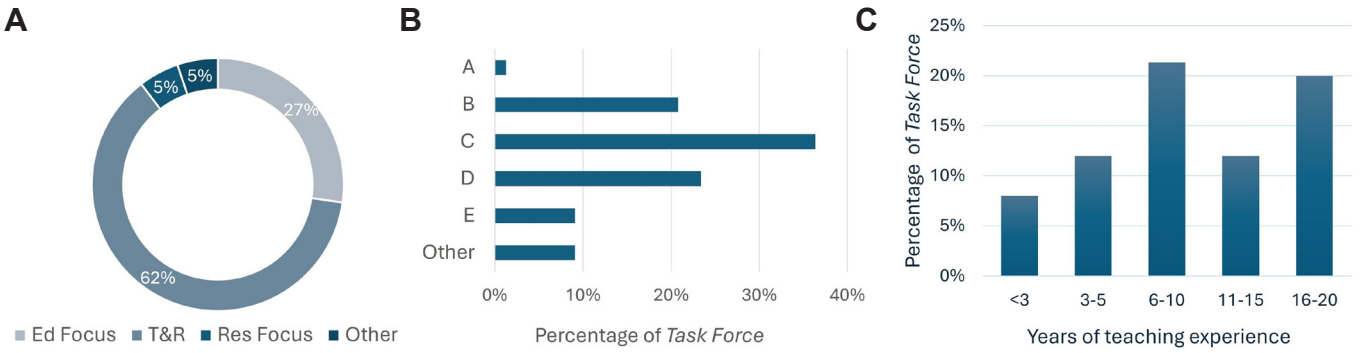


Fig. 1. Demographics of Task Force participants who were part of the national consensus project.

(A) *Work force classification (Ed Focus: Education Focussed, T&R: Teaching and Research, Res Focus: Research Focussed, Other: comprises an Honours student, casual employees, Emeritus professors, and members from the public service) (n=77)*

(B) *Academic Level, 'other' includes an Honours student, a member from the TGA and 2 not specified (n=77)*

(C) *Years of teaching experience (n=75)*

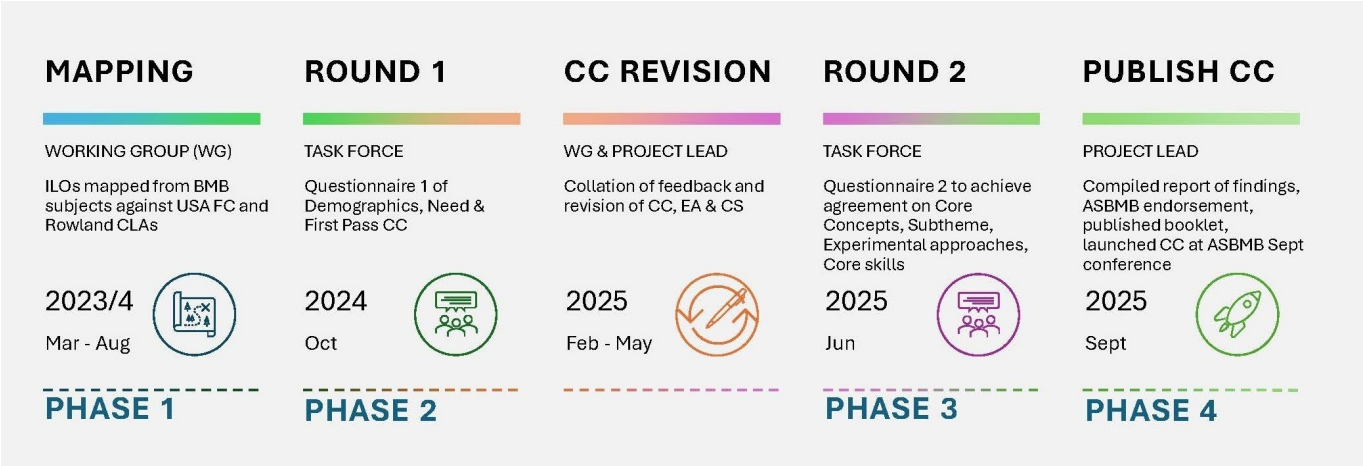


Fig. 2. Timeline of the project's four phases highlighting involvement of the Working Group members and Task Force participants.

A revised list was provided to the Working Group for comments to ensure appropriate wording. After several revisions, the Working Group settled on four Core Concepts and associated Subthemes (with suggested topic areas for each), six Core Experimental Approaches and eight Core Skills.

In Phase 3, consensus on the revised list of Core Concepts (**Table 1**) was achieved, with an average of 93% agreement (agree plus strongly agree on a 7-point Likert scale) with the statement *"I would like to adopt the Core Concept of A-B-C-D, and subthemes, as part of the National Consensus Project"*. Furthermore, an average of 87% and 95% of the Task Force were in agreement (agree plus strongly agree on a 7-point Likert scale) with the statements: *"In my opinion, undertaking this Experimental Approach is an essential part of a BMB major"* and *"In my opinion, we should include the Core Skills as essential for a student completing a BMB major"*. Therefore, these additional parameters (six core experimental approaches and

Table 1. The Australian Core Concepts and Subthemes.

Core Concept	Subtheme and Topics
Genetic Information: Storage, Transfer and Expression	Nucleic Acid Structure and Dynamics Gene Expression and Regulation in Prokaryotes and/or Eukaryotes Mechanisms of Genetic Variation and Repair Biochemical and Molecular Adaptations Driving Evolution and Biodiversity
Structure and Function of Biomolecules	Biomolecular Structure and Organisation Protein Structure and Function Enzymology and Catalysis Lipid Structure and Function Carbohydrates and Glycobiology
Thermodynamics and Energy	Bioenergetics and Metabolic Pathway Coordination and Integration Thermodynamics in Biological Systems Cellular Homeostasis and Energy Balance
Cellular Regulation and Organisation in Living Systems	Cellular Architecture and Dynamics Cell Cycle Regulation Molecular Mechanisms of Cellular Processes Mechanisms of Cell Signalling and Cellular Communication

nine core skills) were adopted as part of the Australian BMB Core Concepts. These have been published in the official *Australian Core Concepts in BMB* booklet.

As part of Phase 4 of the project, the Australian BMB Core Concepts have been officially endorsed by the Executive Council of the ASBMB and the booklet is available in both printed and electronic forms: https://doi.org/10.26188/30450767.v1.

The Australian BMB Core Concepts will serve as a guide/framework for what can be taught and assessed across BMB majors in Australian undergraduate higher education. Ultimately, the Australian BMB Core Concepts will help to achieve greater integration of BMB core principles into the undergraduate university curricula with consistent high-quality assessment of the associated content areas.

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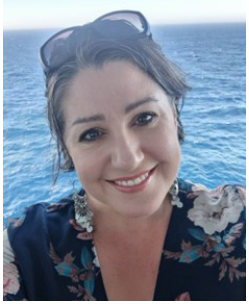

Reflecting on the Journey: Combining Biology and Chemistry for Health Science Students in the Foundation Year

Juliana Antonipillai

School of Health and Biomedical Sciences, STEM College, RMIT University

In recent years, my academic journey at RMIT University has focused on innovative and blended teaching strategies to create inspiring learning environments that motivate students and prepare them for real-world challenges and industry-ready skills. Guided by this approach, I led the development of a new foundation course, Biology and Chemistry for Human Biosciences (BIOL2528), specifically designed for health science students. Combining chemistry with biology to form a cohesive curriculum had significant hurdles. We needed to ensure that students, regardless of their prior knowledge, felt confident in handling two complex scientific subjects simultaneously in a course. The idea of developing a combined course arose from students' feedback that the majority of health science discipline students were overwhelmed by non-human cell biology and advanced chemistry content. Under my leadership, my team developed this course in 2022 and first implemented it in 2023. This course integrates human cell biology, chemistry and foundational biochemistry, catering to students from diverse backgrounds, including those enrolled without completing Year 12 Chemistry or Biology.

Our development teams aimed to teach the theory content through the integration of simulation activities, empowering students to build transferable knowledge and skills that support their progression in health science programs at RMIT University. These simulations, provided by Labster (Labster.com), offered immersive experiences in a safe environment for students to explore and learn from their mistakes. We found that Labster simulation activities provided extended knowledge in a safe and authentic manner. In 2024, data from the Labster platform revealed that the BIOL2528 course was selected as the top course among 17 RMIT University courses using Labster modules. Data shows 82% of enrolled students completed the activities with an average score of 90%, and 95% rated LABSTER's simulation activities positively (**Fig. 1**). This highlights the successful integration of simulations in a complex, content-specific course and their impact on student engagement. Student feedback validated this: *"I found the virtual labs very helpful in developing an understanding of all of the topics"* (2025 Course Evaluation Survey).

During the course development, we realised another big challenge was identifying a course-specific textbook. Failure to identify a suitable textbook at a foundational level led me to consider developing an Open Education Resources Pressbook for our students, using an existing one as a starting template. In late-2023, Dr Durga Dharmadana, Dr Narin Osman, Dr Nhiem Tran, Professor Terry Piva and Associate Professor Celine Valery joined with me in this project, and we published *Biology and Chemistry for Human Biosciences* in March 2025 (**Fig. 2**). Within six months of publication, over

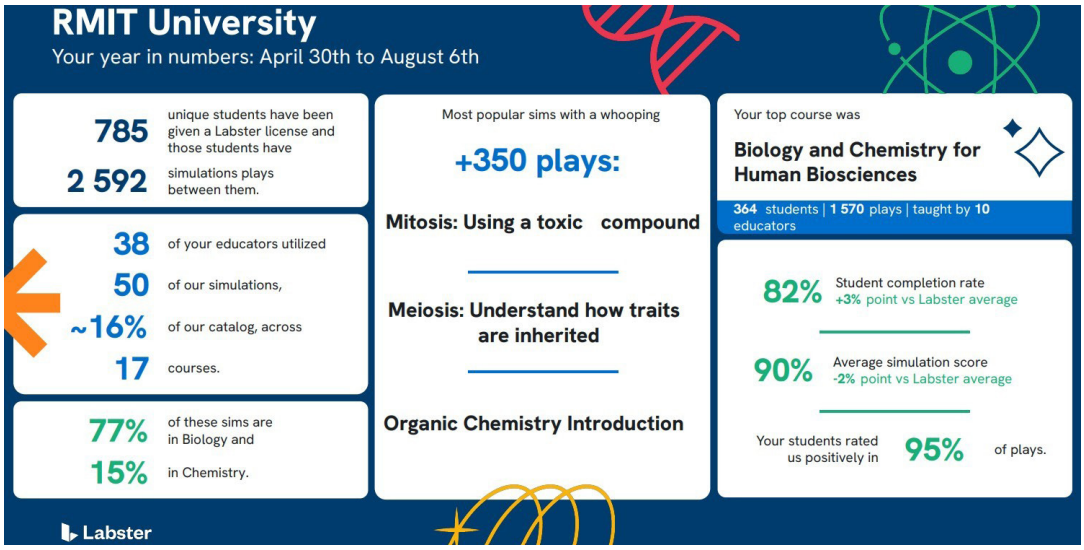

Fig. 1. BIOL2528 achieved the highest Labster engagement and positive student ratings amongst RMIT University courses in 2024.

1,800 individual users accessed our book. Although 265 students were enrolled in the Foundation year in 2025 and studied the BIOL2528 course in semester 1 (March to May 2025), a much larger number of individual users outside this period, especially in September (**Fig. 3A**), accessed the resource, indicating the essential need for a simplified textbook for the wider community. This is confirmed after analysing the individual user access points in September, which were outside the RMIT community; the majority of them used Google or other search engine tools, while only a handful of students used the RMIT Pressbook site directly in September 2025 (**Fig. 3B**).

This successful course development gives me a deep sense of satisfaction with developing a course that suits our health science students the best. After three years of successful coordination, I'm now moving to the next stage of introducing traditional face-to-face labs to provide synergistic lab experiences.

Reflecting on this journey, I am proud of how the development of the Biology and Chemistry for Human Biosciences course has enriched our students' learning. This experience highlights the importance of adaptive teaching methods in producing competent and confident graduates. For academics developing a course, I encourage you to refer to students' feedback, collaborate widely and remain flexible in your approach to meet the evolving needs of your students.

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***Fig. 2.* Biology and Chemistry for Human Biosciences.**

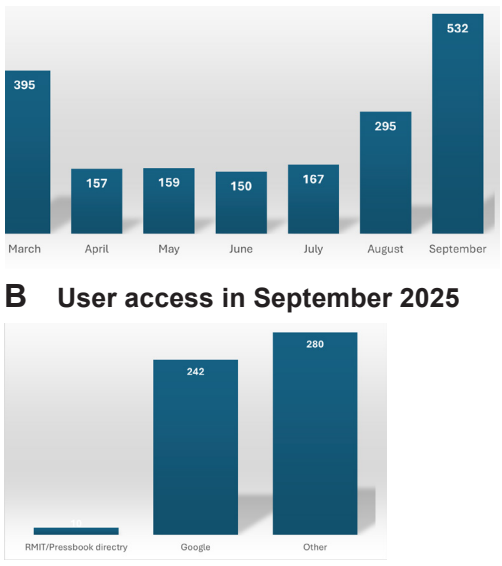

Fig. 3.* Biology and Chemistry for Human Biosciences – *RMIT Pressbook user analysis.
(A) *The number of individual users who accessed the book from March 2025 to September 2025.*
(B) *Access user locations from RMIT/Pressbook, Google, or other search tools in September 2025.*

Enhancing Career Confidence and Employability With a New Approach to Career Development and Work-Integrated Learning in Undergraduate Science Degrees

Sharon La Fontaine[1,2], Cathy Caballero[3], Jen Chung[2], Sharon Berman[2], Julius Daguman Jr[1], Lynda O'Sullivan[1,4], Amanda McPherson[1], Karen Young[4] and Anthony R. Rendall[1]

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Graduate employability has been a persistent challenge in higher education, particularly for science graduates, whose employment rates have remained at approximately 50% since 2012 (1). Equipping students to successfully transition to work and manage their careers is especially important for non-vocational science degrees with diverse career pathways (2,3). In response and aligned with national priorities, we developed a curriculum-integrated career development learning (CDL) approach that leverages students' need for paid employment (3), alongside work-integrated learning (WIL) to improve science graduates' career and employability outcomes.

Theoretical Foundation

Our CDL+WIL approach is grounded in practice and theories that recognise the psychosocial dimensions of career learning (3). Our student-centred, holistic approach is tailored to learners' diverse needs and designed to meet them where they are. DOTS (decisions, opportunities, transition, self) (4) and Bridgstock's models (2) underpinned our approach, though we recognise career and employability learning as ongoing processes, rather than fixed career management skill sets (3). The value of WIL and paid, relevant work in improving employability is well established and supports students to build their professional identity, networks and industry engagement (3).

Implementation

Increasing student diversity, circumstances and career pathways requires personalised career development that is equitable, adaptable and relevant. Recognising students' need to work, our approach harnesses paid work as a vehicle for CDL, enabling students to "learn while they earn" (3). We designed (2021) and implemented (2022 onwards) an evidence-based CDL program that supports students in securing paid work from year 1 and/or leveraging existing roles into industry-relevant or Stepping Stone roles by graduation (**Fig. 1**) (3). From 2023, all science courses also included a core placement experience (≥600 students/year on placement). The CDL+WIL program is embedded in all undergraduate science degrees, from environmental to biomedical science, reaching over 2,500 students/year.

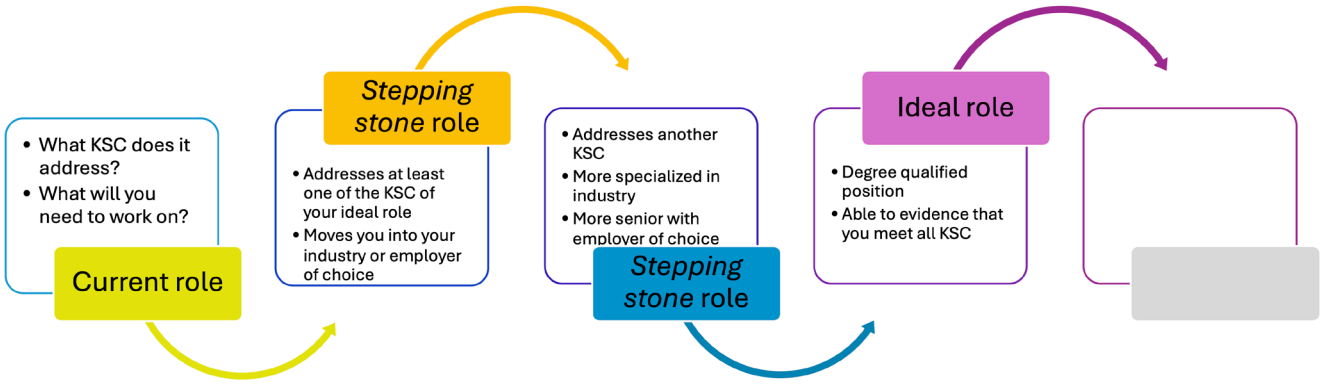

Fig. 1. Stepping Stone roles for career development learning. *Stepping Stone roles are paid roles that should help to address the key selection criteria (KSC) of a student's ideal professional role, helping them move into their industry or employer of choice and develop discipline and/or advanced transferable skills. Illustrates an ongoing, evolving process that should be relevant regardless of career stage (3).*

Table 1. Subset of WRS data showing percentage of students in paid work and collected during 2022–2025 for year 1 (CDL: 2022, 2023) and year 3 (CDL: 2024, 2025). *Represents matched, aggregated data.*

Cohort	2022 – 2024		2023 – 2025	
Year Level	1 (n=711)	3 (n=757)	1 (n=793)	3 (n=527)
% in Paid Work	76.4	79.4	65.2	86.0
% Unrelated to field of study	66.2	59.6	57.4	68.1
% Related to field of study	9.0	16.8	5.8	13.7
% Directly Related to field of study	1.1	3.0	2.0	4.2

In a whole-of-course approach, four scaffolded CDL touchpoints across all science degrees, from first year to graduation, provide opportunities for reflection, career exploration, planning and action. These touchpoints support students to make informed career decisions and build lifelong career-management skills. Discipline teams and university careers service staff (DeakinTALENT) co-design and co-teach contextualised CDL content and assessments, structurally embedded in core units (weighted at 20%), achieving greater than 90% completion rates. Assessments are flexible to accommodate varying career stages. A year 1 online unit – Career Tools for Employability – prepares students for CDL and placement (5), followed by embedded CDL in years 1–3 that supports students to engage with paid (Stepping Stone) roles (**Fig. 1**) (3) and to prepare for placements. The third CDL touchpoint includes an 80-hour (minimum) placement aligned with students' course and career goals and incorporates quality WIL assessment design principles.

Initial Outcomes

A suite of tools helps evaluate impact and support continuous improvement. Graduate Outcomes Survey (GOS) data (www.qilt.edu.au) showed that the percentage of Deakin Mathematics and Science graduates in full-time employment increased from 48% in 2020 (2019 graduates) to 71% in 2023 (2022 graduates), matching the Mathematics and Science study area at other Victorian universities. A similar increase was evident when only the relevant science courses in this study area were considered. More graduates also cited career-related preparation by the institution. Although GOS data has limitations and the increase may not be solely due to the CDL+WIL program, it aligns with significant university investment in these initiatives and marks a shift since implementing a systematic CDL approach. A Work Readiness Scale (WRS) (6) embedded within year 1 and 3 assessments offers a validated measure of students' perceived work readiness at each year level and captures students' engagement with paid work (**Table 1**). Year 3 students scored significantly higher on the WRS compared to year 1 students [WRS score 7.68>7.25, $t(6027)=-20.50$, $p<0.001$], suggesting substantial perceived development over time. Significantly, students in relevant, paid work increased by year 3, suggesting more students may be engaging with Stepping Stone roles (**Table 1**).

Conclusion

Our CDL program is an iterative, reflective, and highly personalised approach, fostering student agency in career management and supporting our ethical responsibility to promote self-reliance and informed career decision-making. We have observed improved employment rates and greater student confidence, preparedness, and engagement in career-relevant work. Supported by employers, community partners and institutional leaders, the program is embedded in Faculty strategic plans, ensuring a sustainable, relevant, adaptable and equitable approach to CDL+WIL for science students with diverse career pathways.

Acknowledgements

Thanks to Professor Jamie Mustard and Associate Professor Lauren Hansen, Graduate Employment for their vision and support of this program; and for support provided by the Faculty of Science, Engineering and Built Environment and the School of Life and Environmental Sciences. The work was approved by Deakin University's Human Research Ethics Committee (DUHREC) [SEBE-2021-80-MOD08; HEAG-H 132_2004; 2024/HE000379].

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ASBMB Education Feature

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Navigating the AI Landscape: Insights from Australian Biochemistry Educators

Matthew Clemson

School of Life and Environmental Sciences, University of Sydney

With so much attention surrounding the impact of generative AI on higher education, the ASBMB2025 conference was a timely opportunity for biochemistry educators from around Australia to share their views and discuss how each of our institutions are transitioning policy, learning activities and assessments at this time.

Intense scrutiny has already been specifically directed towards student learning, assessment and academic integrity over the last couple of years, so we decided to focus our discussions on how we, as educators, are currently engaging with generative AI as part of our daily work.

The Generative AI in Biochemistry Education Workshop provided educators a setting to share efficiency improvements enabled by generative AI technologies, to consider current institutional policies, and to examine familiarity with and access to specific AI tools within our workplaces.

Underpinning all of this was the concept of trust (**Fig. 1**). Recent work highlights that AI impacts trust between students and teachers, with the absence of 'two-way transparency' in AI usage reinforcing the power imbalance (2). Universities need to trust that educators are using AI ethically and responsibly, educators need to trust that their institutions are supporting them effectively by providing both access to the best available tools and the time and support required to upskill and gain confidence in using these tools. Universities need to support their educators so they can provide the best possible to support students throughout this challenging period.

A short polling anonymous questionnaire was presented using Mentimeter at the workshop to gather data to share our current familiarity, use, concerns, ideas and to plan for a world where AI is ubiquitous, that in many ways is already upon us.

The results of the survey indicate that most of the workshop participants are using generative AI in various aspects of their jobs, more so for developing content and teaching resources, such as writing tutorial questions and case studies, drafting lecture notes and even creating interactive simulations for students (**Fig. 2**). Most of the respondents considered that minimal to moderate use of AI was acceptable, yet some participants held the view that AI should never be used.

For assessment-related tasks, use of AI was also relatively widespread among the participants and the variety of tasks for which AI was being used. Many educators had used or currently use AI-driven tools to assist with drafting marking rubrics, creating multiple choice and short answer exam questions, writing assignment instructions and even helping to provide written feedback on student work (**Fig. 3**). Significantly, no participants reported using AI for marking student work – a deliberate boundary suggesting educators recognise that qualitative assessment requires human judgement.

There was a definite shift in opinion regarding AI use for assessment purposes, with most attendees indicating that their current use and what they considered to be ethically acceptable use was lower for assessment compared to content creation.

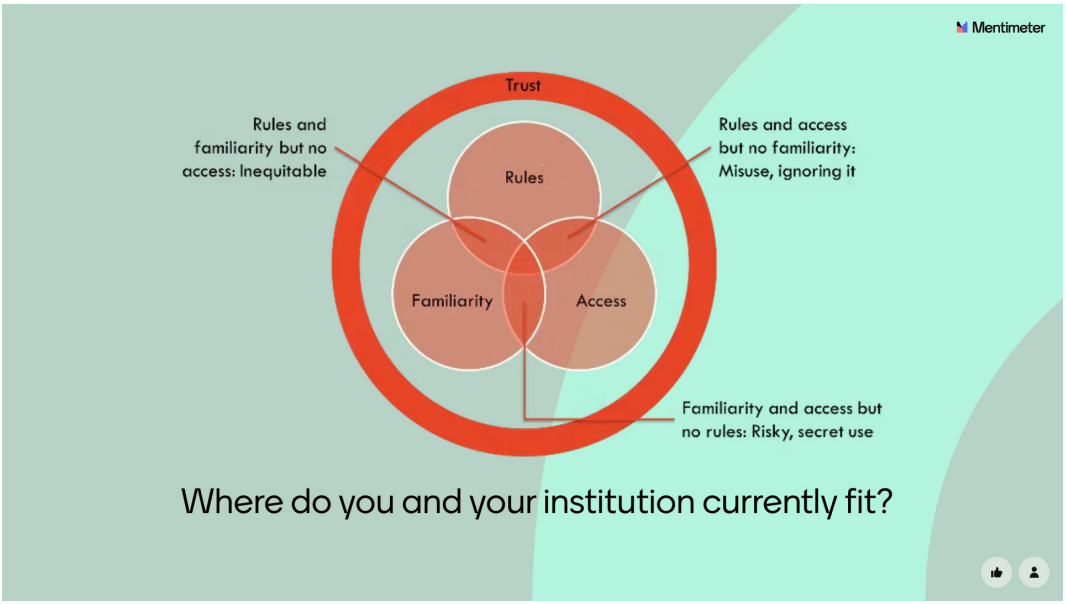

Fig. 1. Considering the practicalities of AI for both educators and students. *Adapted from (1).*

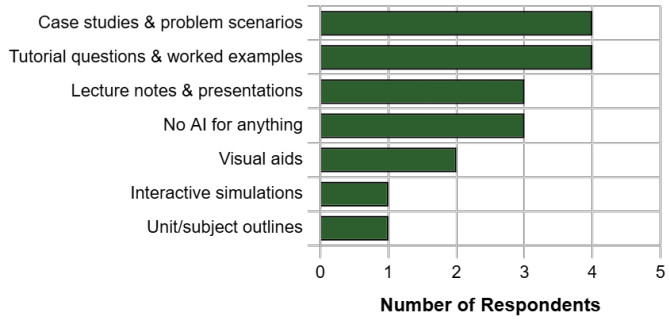

Fig. 2. Use of AI for content creation tasks.

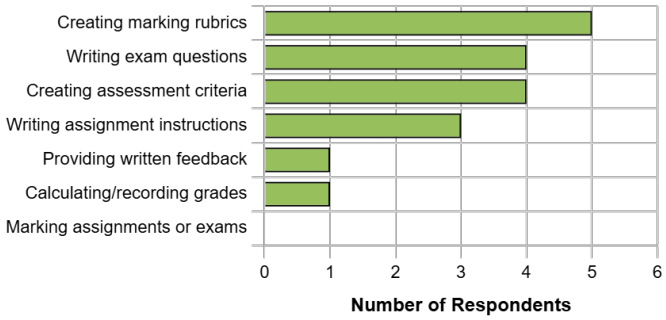

Fig. 3. Use of AI for assessment-related activities.

The greatest primary concern was academic integrity, followed by the impact on student learning, equity and trust. Interestingly, job displacement ranked lowest (2.75), suggesting educators view AI more as a tool to be managed than as an existential threat to their profession (**Fig. 4**). Almost 90% of participants were only vaguely familiar with their institutional policies, and only a single person indicated that they knew what their institution's current policy was for the use of AI by academic staff (**Fig. 5**). This finding is particularly concerning given that all participants were engaged enough to attend a workshop on AI in education, suggesting either that policies don't exist, aren't being effectively communicated or are insufficiently clear to provide practical guidance.

In terms of policy recommendations for AI use in our roles as biochemistry educators at Australian universities, attendees wanted clarity on what is considered acceptable use and access to the most effective tools to stay a step ahead of – or at least keep pace with – students. They highlighted the importance of professional development and dedicated time to stay ahead of the curve in this rapidly evolving field. They also wanted their institutions to consider the feasibility of any rules that were being considered and to remain open to and continue supporting secure forms of assessment, such as invigilated tasks and paper-based exams.

Finally, workshop participants were challenged to consider the best and worst outcomes for an AI-driven world, as a call to action for us, our institutional funders and policy makers, to ensure that we are addressing the correct points of contact. Of greatest concern was the possibility that students could graduate without the necessary knowledge and skills to enter the workforce, or that they might avoid the points of constructive struggle or friction that are necessary for deep learning. In the worst-case scenario, a world where AI is used to create, complete and grade tasks, as well as provide feedback on them, outsourcing all aspects of learning considered bottlenecks to technology.

On a positive note, some educators identified that integration of AI into learning and assessment opens new possibilities, with a reduction in the time spent on menial or routine tasks. Ideas included a world where students experience new, personalised challenges and are able to tackle more challenging tasks using data integration. They could also engage with robust simulations that allow hypotheses and ideas to be tested more meaningfully at various levels, all of which offer potential to positively impact learning.

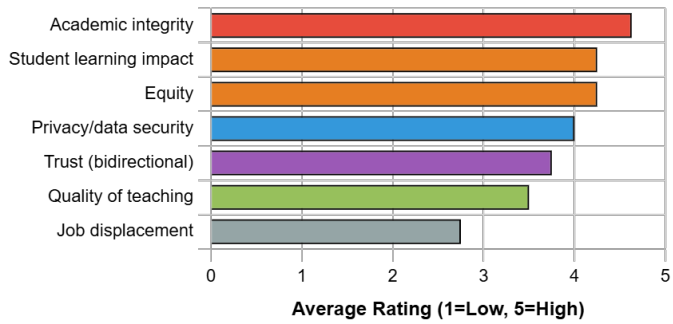

Fig. 4. Concerns related to AI use in education. *Numbers represent average scores on a 5-point Likert scale from strongly disagree (0.0) to strongly agree (5.0).*

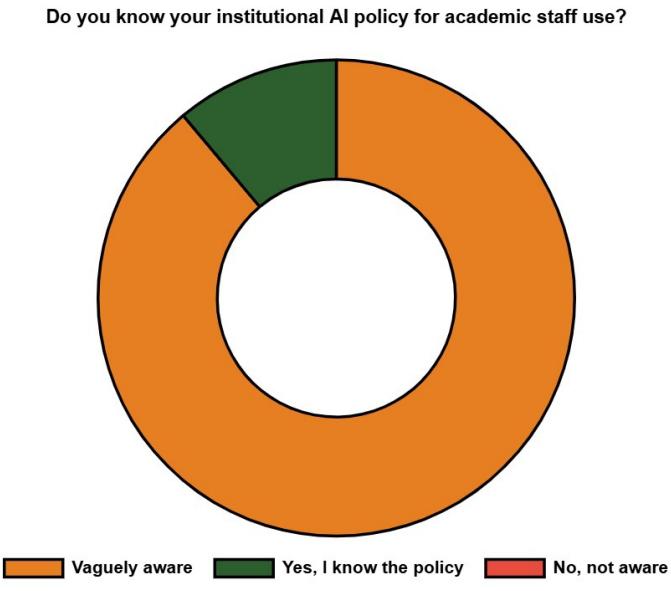

Fig. 5. Institutional AI policy awareness.

The key take-home points for participants, whether in support of or opposed to AI, were the same. There was shared concern that organisations expect an immediate and under-resourced upskilling, with inadequate time, training, support and guidance for educators. There was a consensus among participants that without meaningful investment in the necessary support structures, biochemistry academics risk not only burnout, but the erosion of trust in the very systems meant to guide us through this educational transformation.

We welcome contributions from additional biochemists in Australia to this project survey. The ongoing project intends to gather student opinions on how their educators should be permitted to use AI for content creation and assessment-related tasks. To get involved in this study, email matthew.clemson@sydney.edu.au by 31 December 2025. Contribute to the survey via this link.

> *"Upskilling is a constant, I just wish we were given more time, support and guidance."*

Acknowledgements

Thank you to workshop participants Dr Lisa Akison (University of Queensland), Dr Juliana Antonipillai (RMIT University), Associate Professor Marloes Dekker Nitert (University of Queensland), Dr Doaa Hanafy (Charles Sturt University), Professor Tracey Kuit (UNSW), Associate Professor Sharon La Fontaine, (Deakin University), Professor Terry Piva (RMIT University), Dr James Tsatsaronis (University of Sydney) and Associate Professor Amber Willems-Jones (University of Melbourne).

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Crossing Kingdoms:
What Changing Fields Has Taught Me

Megan Outram

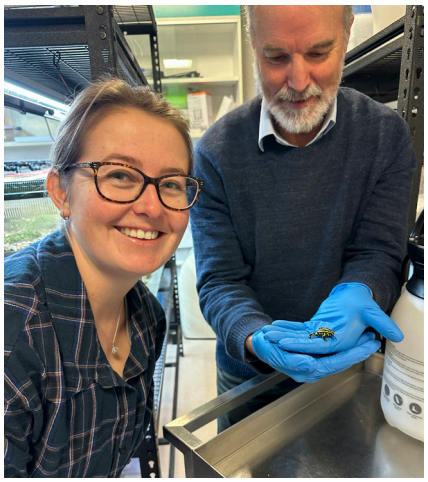
If you'd told me at the start of my career that I'd end up working on chytrid fungal infection in frogs, I wouldn't have believed you for a second. My early career was firmly rooted in plants. From my Honours work on grapevine pathogens at Lincoln University to my PhD at the University of Queensland studying wheat diseases, I lived in the world of molecular plant–microbe interactions. In its entirety, this was the direction I saw my future career going in. I fully embedded myself in the field, falling in love with the capacity to dissect these interactions at a molecular and atomic level resolution, and the opportunity to contribute to providing fundamental knowledge to better combat disease in key agricultural crops.

After my PhD, I stayed in plant structural immunology at ANU, using experimental approaches to understand how fungal effectors manipulate host immunity in a variety of crops. I had the pleasure of supporting Dr Simon Williams as he established his new research group, amidst hailstorms, fires and a global pandemic. I built my technical skills while mentoring students and co-authoring research papers that developed methods to improve protein production of key fungal virulence factors. These studies also determined new protein structures, providing mechanistic insights into fungal infection strategies. Toward the end of my position with Simon, a pivotal moment emerged in the field, the release of AlphaFold. Overnight, the landscape of structural biology shifted. Like many in the field, I held my breath wondering whether I'd still have a job in the morning. Thankfully, it turned out that structure prediction didn't replace experimental science but certainly has redefined it and acted as a catalyst for reimaging how we think and do science.

With this shift came an opportunity to extend my skillset by taking a position at CSIRO, integrating these new AI-based approaches with protein biochemistry and *in planta* studies to explore the infection repertoires of cereal rust fungi. The transition was both daunting and exciting; after years of living in the wet lab, I suddenly found myself coding, modelling and learning how to ask new types of questions and manage data at an entirely different level. Some days it felt like I was starting from scratch, after troubleshooting for years in the wet lab it was a humbling and somewhat frustrating experience to not even know what to Google to overcome roadblocks in my project. But while being a beginner again was uncomfortable it came amazing opportunities, making new collaborations, honing new skills and having the opportunity to speak and sit on a panel at arguably the leading conference in the field giving my "expert" opinion, alongside others pioneering these approaches in the field.

It's true that when opportunity knocks, it can lead you into entirely unexpected territory, and in my case, into a new kingdom moving from plant pathogens to a system where the biochemistry of infection is still largely uncharted. In 2025, I embraced a new chapter in my research journey, joining the Tham Laboratory at ANU to study chytrid fungal infections in frogs. The frog-infecting fungus, *Batrachochytrium dendrobatidis*, has devastated amphibian populations worldwide, making them one of the most destructive pathogens in recorded history. This shift has been energising, offering the opportunity to "see" chytrid under a new lens. Since starting, I've drawn on my understanding from plant–pathogen interactions, structural biology and AI-based protein prediction. I have also returned to my roots in fungal culturing, expanded my technical skills and integrated myself into a new research community, all whilst being able to leverage existing connections.

While this is a relatively new step in my journey, changing kingdoms has not meant that I have erased my expertise, but instead has reframed it in a way that adds unexpected value and ways to contribute.



Chytrid fungus severely impacts Corroboree frogs. Megan with Professor Lee Skerrett.

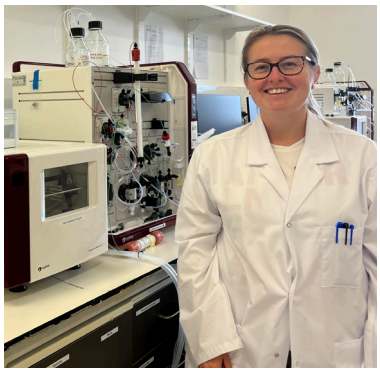
Pivoting can feel risky, moving into the unknown is intimidating, and it's easy to worry about starting over. But in my experience, it's one of the most rewarding forms of professional growth. It pushes you to see connections you'd otherwise miss and builds resilience when plans inevitably change. Most importantly, changes in career trajectory gives you the space to let your curiosity reignite once again, which for me is what gets me up and out of

SDS Page: Short Discussions for Students Page

bed every day.

Three take homes for PhD and ECR readers:

- **Skills are portable.** The ability to visualise structures, ask mechanistic questions and design clear experiments transcends systems. What really shifts is your mindset. Embrace the discomfort of being new again to see the opportunity for what it is.
- **Stay adaptable.** Know your story, shift when the field shifts, stay at the forefront and never stop learning. Curiosity is a compass worth following even when the terrain is unfamiliar.
- **Find your people.** Seek mentors who will support you to champion your development, refine your story, and navigate what comes next.



Dr Megan Outram is a Postdoctoral Research Fellow in the Tham lab at ANU. Her research uses structural and molecular biology to understand how chytrid fungus infects frogs.
megan.outram@anu.edu.au

New ASBMB Honorary Members

Merlin Crossley, Briony Forbes, Terry Piva and Leann Tilley were elected ASBMB Honorary Member at the Society's Annual General Meeting held at ASBMB2025.

Distinguished biochemists and molecular biologists who have rendered notable service to the Society are eligible for Honorary Membership of the Society. Candidates are nominated by Council and elected by a majority of members voting at an Annual General Meeting of the Society. Honorary Membership is tenable for the lifetime of the member.

Throughout his career, Merlin Crossley has attempted to remain in sight of the rapidly advancing horizon of progress in molecular genetics, and learn from his mentors, colleagues and students. He worked on bacterial plasmids during his BSc Honours year under the supervision of Jim Pittard at the University of Melbourne, when recombinant DNA technology was just emerging. He moved to Oxford, supported by a Rhodes Scholarship, to study an unusual form of haemophilia that resolved after puberty, and described some of the first mutations that affect the regulation of human genes, with George Brownlee. Then he went to work at Harvard with Stu Orkin, and was instrumental in cloning the genes encoding zinc finger protein KLF3 and the GATA1 cofactor FOG1. In 1995, he returned to set up a lab at the University of Sydney, and his students cloned genes for KLF8, KLF17 and new IKAROS family members, EOS and PEGASUS, as well as the corepressor CTBP2. He also began collaborating with a leading structural biologist Joel Mackay, who defined many important interactions between zinc fingers and cofactors. He began contributing to academic administration in 2004, serving as Acting Dean of Science, and was then Acting Deputy Vice-Chancellor Research for three years, before moving to the University of New South Wales (UNSW) in 2010 as Dean of Science. In 2016, wanting to do more to support teaching, he took on the role of Deputy Vice-Chancellor Education and oversaw the introduction of Education Focussed career paths and the establishment of the Scientia Education Academy at UNSW. In 2022, he became Deputy Vice-Chancellor Academic Quality. He has been active in developing UNSW College (a pathway college) and UNSW Press, which publishes non-fiction, including the Best Australian Science Writing anthology each year. His lab continues to work on gene regulation, and in collaboration with Kate Quinlan's lab, has characterised the point and deletion mutations that are associated with boosting fetal globin production. Introducing these mutations via CRISPR-gene editing is being developed as a genetic surgery for sickle cell disease. The labs are now pioneering epigenetic editing and other new recombinant DNA technology techniques. Merlin continues to teach undergraduate students and mentor graduate students, postdoctoral researchers and fellow academics. He also continues to study and learn by regularly publishing opinion pieces on the lab's blog (What's Lab Life Like – http://crossleylab.wordpress.com) and contributing to science outreach initiatives and discussions on educational policy. In recognition for his work on the Trust of the Australian Museum, a new species of iridescent butterfly bobtail squid was name in his honour, *Iridoteuthis merlini* – Merlin's bobtail squid.

New ASBMB Honorary Members

Professor Briony Forbes graduated from the University of Adelaide with a BSc (Hons) in 1984 and then a PhD in Biochemistry in 1991. This was when her interest in protein chemistry, growth factor signalling and protein structure/function was sparked. Her postdoctoral years were spent in the University of Adelaide Department of Biochemistry and at the Commonwealth Scientific and Industry Research Organisation (CSIRO) Division of Human Nutrition. She established her independent research team under the mentorship of Professor John Wallace who supported her through career disruptions in her early- and mid-career. In 2013, Briony was appointed Associate Professor of Medical Biochemistry at Flinders University, where she continued to work on insulin and insulin-like growth factors, funded by NHMRC, ARC and Diabetes Australia. Her research benefited greatly from valuable collaborations with structural biologists (including Mike Lawrence, Ray Norton and Pierre De Meyts) and chemists (including Andrea Robinson, Lisa Martin and Danny Chou).

Briony's passion for developing a vibrant and successful research environment was recently evident in her role as Deputy Director of Flinders Health and Medical Research Institute (Research Education and Development), in which she developed programs to support researchers to build success. She also contributes to undergraduate (BMedSci) and postgraduate teaching (MD1 and PhD) of Biochemistry and has nurtured many into research through coordination of Honours and lab placement topics. Briony has served on university committees (including IBC, Athena Swan) with the aim to uphold high standards in safety, equity and diversity, and education.

Briony started her involvement with the ASBMB through chairing the Adelaide Protein Group Special Interest Group (2010). She was South Australian State Representative (2013–2015) and then Secretary of the Society (2016–2020). She has been a regular attendee and supporter of ComBio and highly values the ASBMB's contributions to the biochemistry and molecular biology community.

Professor Terry Piva received his BSc (Hons) and PhD from the Department of Chemistry and Biochemistry at James Cook University under the guidance of Associate Professor Eddie McEvoy-Bowe. The focus of his work was investigating the uptake and metabolism of glutamine in cancer cells. After his PhD, he moved to Oxford University to work with Professor Eric Newsholme on glutamine metabolism in immune cells. He returned to Australia, where he undertook postdoctoral positions at the University of Queensland, John Curtin School of Medical Research and the Queensland Institute of Medical Research, before he accepted a Biomedical Science lectureship at Central Queensland University in 1999. In 2003, he moved to RMIT University.

His current research focuses mainly on cell signalling pathways, in particular how melanoma cells overcome BRAF inhibition. In addition, he is currently investigating the effect of natural products on augmenting therapeutic cell killing of cancer cells, as well as the cytotoxic effect FLASH radiation on tumour cells. His research work has been funded from CRC, NHMRC, ARC and philanthropic granting bodies. He has also worked on amino acid and carbohydrate metabolism in a wide range of body tissues, photobiology, cellular signalling pathways, the effect of metal oxide nanoparticles on skin cell function, and the effect of heat on the bleaching of corals from the barrier reef.

He has held several senior administrative roles within RMIT University and has taught biochemistry, cell biology and physiology to undergraduate students. In 2023, he was awarded the Vice Chancellor Teaching award for his efforts in improving student learning outcomes in undergraduate practical classes. He is currently the coordinator of the Health and Biomedical Science Honours program at RMIT.

Terry attended his first Australian Biochemical Society (now ASBMB) Conference in 1980 at Monash University. He served as the inaugural Treasurer of the Metabolism SIG for three years. In 2012, he was elected as the ASBMB Treasurer. During his five-year term, he initiated several reforms to the Society's operations and successfully restored its finances, which had suffered since the global financial crisis. He also served as Treasurer on the local organising committees of the national conferences during this period, all of which returned a surplus to the societies involved. Between 2018–2024, he was the Treasurer for the BMH24 Congress that was held in Melbourne. In 2018, he was appointed as the ASBMB representative to the Federation of Asian and Oceanian Biochemists and Molecular Biologists (FAOBMB), stepping down in 2022. In 2023, he was appointed as the International Union of Biochemistry and Molecular Biology's representative for the FAOBMB region, and in 2024, was elected as the Secretary General of the FAOBMB.

New ASBMB Honorary Members

Professor Leann Tilley received her BSc(Hons) from the University of Melbourne and her PhD from the University of Sydney, under the guidance of Professor Bill Sawyer and Professor Greg Ralston, respectively. She undertook postdoctoral fellowships at Utrecht University, the Netherlands, the College de France, France and the Univerity of Melbourne, before beginning her independent career at La Trobe University in 1989. She was promoted to Professor in 2004. She returned to the University of Melbourne in 2011 and is currently Redmond Barry Distinguished Professor Emeritus in Biochemistry and Pharmacology.

Leann's laboratory is working to understand and combat malaria. She is particularly interested in the action of and resistance to antimalarials, such as the front-line drug, artemisinin. Her laboratory discovered a new reaction hijacking mechanism for targeting malaria and is working with industry colleagues to design new antimalarials. Leann embraces a large range of technologies from drug and protein chemistry to molecular cell biology and novel imaging technologies. Her lab pioneered the application of super-resolution microscopy and electron tomography techniques to malaria, generating an ultrastructural atlas and providing important molecular insights into the parasite's virulence mechanisms and sexual stage development.

Leann was awarded a Georgina Sweet Australian Laureate Fellowship (2016–2020), the premier award of the Australian Research Council (ARC). She worked to promote women in science, including establishing the Georgina Sweet Awards for Women in Quantitative Biomedical Science. She served as Deputy Director, then Director of the ARC Centre of Excellence for Coherent X-ray Science (2005–2014). The Centre received international acclaim for its cross-disciplinary and cross-institutional work and its contributions to the development of novel imaging techniques.

Leann attended her first Australian Biochemistry Society meeting in 1982. She was awarded the ASBMB Lemberg Medal (2022) and the ASBMB Beckman Coulter Discovery Award (2011). She was the ASBMB representative to FAOBMB (2014–2015). Leann served as President of the ASBMB (2017–2018), during which time she and colleagues bid to host the International Union of Biochemistry and Molecular Biology (IUBMB) Congress. She was Convenor of the IUBMB/FAOBMB/ComBio2024 Biomolecular Horizons Organising Congress held in Melbourne in 2024.

Leann believes that answering the major medical and biotechnology questions of the 21st century will require convergence of the life and physical sciences, with particular reliance on advanced imaging techniques and biocomputational approaches. She argues that the development of drugs for diseases that affect patients who can't afford expensive treatments, such as antimalarial drugs, requires radical new approaches involving academia–industry partnerships.

Australian Society for Biochemistry and Molecular Biology Inc
PUBLICATION SCHEDULE FOR *AUSTRALIAN BIOCHEMIST*, volume 57, 2026

Issue	ASBMB Content	Copy Deadline	Issue Date
April 2026 57(1)	Profiles of medal, award and fellowship winners Nominations for Executive/Council	Monday 2 February	Monday 30 March
August 2026 57(2)	Nominations for medals, awards and fellowships Notice of AGM/proposed constitutional changes	Monday 1 June	Monday 3 August
December 2026 57(3)	Annual reports ASBMB meeting report	Monday 5 October	Monday 30 November

FROM SAMPLE TO PURIFIED EXOSOMES IN MINUTES

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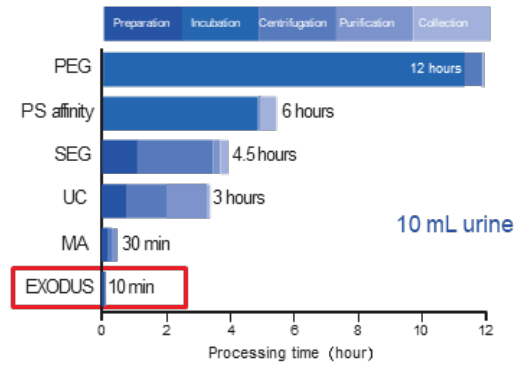

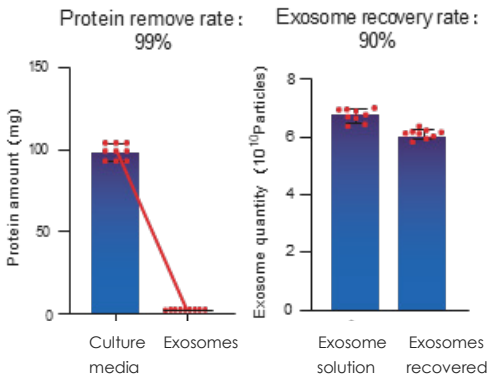

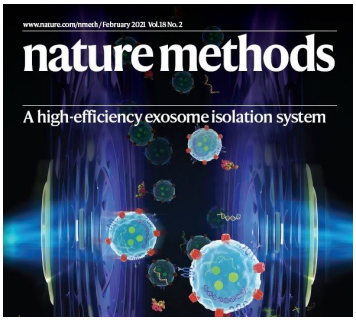

Chen, Y., Zhu, Q., Cheng, L. et al. Exosome detection via the ultrafast-isolation system: EXODUS. Nature Methods 18, 212–218 (2021). go.nature.com/44EGqRX

Shipping a Successful Patent – Patent Inventorship and Ownership

Dr Harriet Keenan (Associate) and Dr Julie Murison (Associate) from FPA Patent Attorneys unpack inventorship, authorship and ownership.

Harriet Keenan (top) and Julie Murison.

In the context of fiction, shipping can involve speculating about the relationships between characters and enthusiastically hoping that certain characters partner up. But in the context of patents, although there may be enthusiasm and hope, there is no speculation involved for the various ships. Inventorship and ownership are important concepts for patents as they affect the validity of the patent. Incorrect ships sink patents.

The criteria for inventorship are different from those that determine authorship of a scientific article. Patent attorneys will often use a draft manuscript to prepare a patent application. However, not all listed authors will necessarily be inventors, and this can be a sticking point! Another misconception is that inventorship guarantees patent ownership, but in academic institute and employee–employer scenarios, this may not be the case.

In this article, we answer some frequently asked questions regarding inventorship, authorship and ownership to help inventors and patent applicants learn the ropes of patent-ships.

Authorship – I'm an author of the manuscript, why am I not an inventor of the patent?

Authorship is not a legal concept, and the decision on who is an author of a paper differs across different research organisations and groups.

For many researchers, it is typical to include all contributors to a manuscript as authors and this covers a wide range of contributions. Authors may broadly encompass those who designed, conducted and analysed the experiments, along with heads of lab groups, platform providers, research assistants, students, people who wrote up the manuscript (even after results and analyses were complete) and people who obtained funding for the project (even if this funding was not the result of a grant specific for the project). In other words, an authorship contribution can comprise general leadership, fundraising, and supervisory, logistical or practical support.

In contrast, inventorship is a strictly determined legal concept based on an individual's *intellectual* contribution to a defined invention. Inventorship has legal consequences for patent rights (see below). That is, authors may sail close to the wind, but inventors must run a tight ship.

For a patent application, inventorship is a binary concept, a person either is, or isn't, an inventor. Not everyone who contributes towards project, grant or manuscript will be considered an inventor of an invention. A common situation is that all the inventors are authors; but not all the authors are inventors. And unlike authorship of a paper, the order of listed inventors of the patent application carries no significance.

Inventorship – who is an inventor for a patent application?

Inventors are human beings that make an inventive contribution to an invention. The question of whether AI can be an inventor has been answered by courts in many countries, and currently the law in most countries requires inventors to be human.

An inventor must:

- Come up with, or contribute to the inventive concept and/or
- Overcome a barrier or difficulty when reducing the inventive concept to practice.

"Inventive concept" is a nuanced legal concept, as is "reduction to practice". But in broad terms, actions that can qualify for inventorship include:

- Conceptualising the inventive solution to an identified problem.
- Identifying features of the invention as improvements or advantages over the prior art (i.e. things already known).
- Modifying a standard product, test or procedure to overcome an obstacle on the route to the final invention.
- Unexpectedly combining elements or steps from different technical fields.
- Determining which, out of many possible solutions, was the best.

Table 1 shows some examples of the differences between an inventor and a non-inventive contributor. We emphasise that inventorship determination is often complex and nuanced, and requires proper legal assessment.

Shipping a Successful Patent – Patent Inventorship and Ownership

Table 1. Differences between inventors and contributors.

Inventor	Contributor
Conceived the key idea or is a key contributor to the discussion that conceived the key idea	Built or tested the invention after the idea has been conceived Made high-level suggestions that required more thought/refinement before they could be implemented/tested
Materially contributed to the development of the invention	Wrote up results, formulates and/or publishes a paper
Followed the instructions of a supervisor applying initiative and creativity	Carried out the instructions of a supervisor without making significant changes over and above those instructions Acted as a supervisor on the project but did not contribute to the inventive concept
Provided non-routine solutions to problems	Provided materials, funding, or logistical support without intellectually contributing to the development of the inventive product or method

How is inventorship determined?

Inventorship determination is a legal, objective process based on assessing the facts and interviewing potential inventors, in view of the relevant legal tests. Patent attorneys are regularly enlisted to conduct these determinations.

Inventorship determinations often require diving back into historical emails, meeting minutes, and lab notebooks showing experimental design, results, analyses – so make sure your note keeping is shipshape!

What happens if patent inventorship is wrong?

If the correct inventors are not named for a patent application, inventorship can be challenged in court and result in (i) revocation/invalidation of a granted patent, or (ii) expensive negotiations to add missing inventors to the patent. The legal consequence of incorrect inventorship invalidating a patent is particularly acute in the US; for most a crucial commercial market and key jurisdiction in which to obtain sound patent protection.

Where there is genuine doubt whether someone is an inventor or not, it is preferrable to list the potential inventor to reduce the risk of invalidation.

I think I am an inventor, but I've been left off the patent application. What can I do?

Seek advice from a patent attorney. This interaction may occur via your tech-transfer or commercialisation office. Have evidence on-hand of what you consider to be your contribution to the invention. You may need to request that an inventorship determination be formally conducted.

I am a patent applicant, and I'm unsure if someone is an inventor or not. What can I do?

The best course of action is to request that your patent attorneys undertake an inventorship determination, to identify which people have likely contributed to the inventive concept or reduction to practice of the invention, and how they have each contributed. Again, if there is doubt about an inventor, it is best to include them on the inventor list.

An inventorship determination can be a time-consuming process and an upfront cost that is unappealing at the very start of a patenting project, when the value of the IP is unclear. When initially filing a patent application, it might not be necessary to list inventors and inventorship determination may therefore be postponed to later patent stages. Listing inventors could be delayed until the international/PCT application is filed, or patent applications are filed into individual countries (e.g. US, China, India).

However, the decision to list inventors or not should be considered carefully and in consultation with a patent attorney. Inventor information required at filing differs from jurisdiction to jurisdiction and is influenced by the citizenship of inventors and where the invention was conceived and reduced to practice.

Shipping a Successful Patent – Patent Inventorship and Ownership

Can the listed inventors be corrected at a later stage in the patenting process?

As the patent application process progresses, you can review the listed inventors to check that the contribution aligns with the invention. In most countries, it is easier to remove a listed inventor that was inadvertently added than to add an inventor that was inadvertently excluded.

Additionally, during the lifecycle of a patent application, what is defined as "the invention" may change and require amendment of the listed inventors. This is particularly true for jurisdictions such as the US, where the inventor/s for patent are determined based on the invention as it is defined in the claims. If the claims are amended during prosecution/examination of the patent application (which is typical) then the inventors may change. This potential for change provides another reason for why it is important to know exactly how each of the inventors have contributed to the invention.

What does patent inventorship get me?

Whilst you start with owning IP rights as an inventor, you may have assigned (transferred) or be obligated to assign these rights to another party via an employment contract (e.g. from researcher to university), or other legal agreement such as a research agreement. In such a scenario, inventorship does not give you patent ownership. So, say the patent application is a boat, you're onboard but you're not the captain!

Inventorship can still provide value to individuals even in the absence of ownership. Like how authorship can evidence research output and reputation, patent inventorship can be used to support applications for grants and other funding opportunities by evidencing IP and commercialisation efforts.

It is also possible to negotiate having the rights transferred back to you as the inventor, so you have ownership of the patent application or patent again.

Ownership – who owns a patent application/patent?

Ownership of a patent or patent application flows from the inventors to the applicant. As noted above, patent rights may be automatically assigned from inventors to the applicant via employment contracts or research agreements.

Before filing a patent application, it is important to know who owns the rights to what invention. Students can sometimes be exempt from assignment agreements. Ideally, the applicant/s should obtain evidence (assignment documents) of all potential inventors assigning their patent rights to the applicant/s before filing.

What does ownership mean for the owner?

The owner of a patent owns the IP right provided by the patent. This is a negative right to exclude others from working/using the invention. If a third party is identified as infringing the patent, the owner can take steps to enforce their rights, and if successful, stop the third party from acting or force them to pay damages.

Importantly, owning a patent is ownership of an asset that can be sold or licensed to others – with IP providing value for many commercial negotiations and deals.

What happens if ownership is wrong?

It is important to get ownership correct when the patent application is filed because it cannot always be corrected later in the patenting process. Like incorrect inventorship, incorrect ownership can have significant legal consequences, such as jeopardising grant of the patent, inability to enforce the patent and invalidation of the patent.

Summary: Getting your ships in order

This article aims to help readers approach their patent-ships on an even keel. Some key points to remember:

- Authorship and inventorship are distinct: authors are not always inventors.
- Inventorship is a legal determination and can affect the validity of a patent.
- It is easier to remove an inventor from a patent application than to add one, so when in doubt, keep inventors on-board.
- Patent ownership flows from the inventor/s to the applicant/s. It is important to get ownership correct when the patent is filed and obtain assignments early.

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Higher Peaks – Clearly

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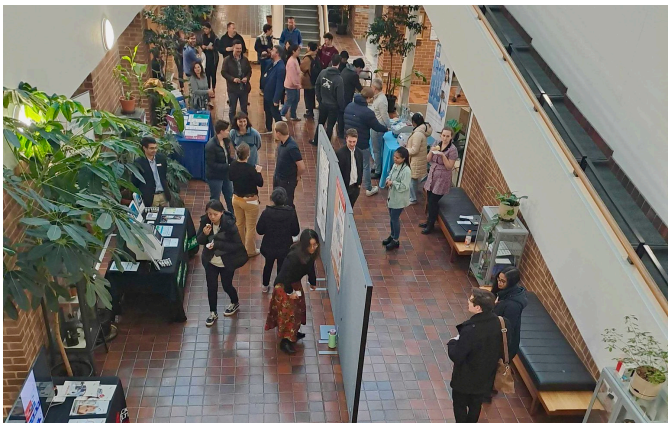
Canberra Protein Group: an ASBMB Special Interest Group

The Canberra Protein Group (CPG) is a Special Interest Group of the ASBMB that brings together protein scientists across the ACT and surrounding region. Our purpose is to foster a vibrant and inclusive community for researchers working on all aspects of protein science, from fundamental structure and function to applied biotechnology and therapeutic development. The group has grown steadily since its inception in 2017, and now includes more than 150 members drawn from the Australian National University's Research Schools of Biology and Chemistry and the John Curtin School of Medical Research, as well as researchers at CSIRO and affiliated institutes. CPG has always been guided by two central principles: a commitment to scientific excellence and a determination to support the careers of early- and mid-career researchers (EMCRs) and PhD students. These values are reflected in the format of our events, the voices we showcase and the welcoming spirit we try to cultivate within the Canberra scientific community.

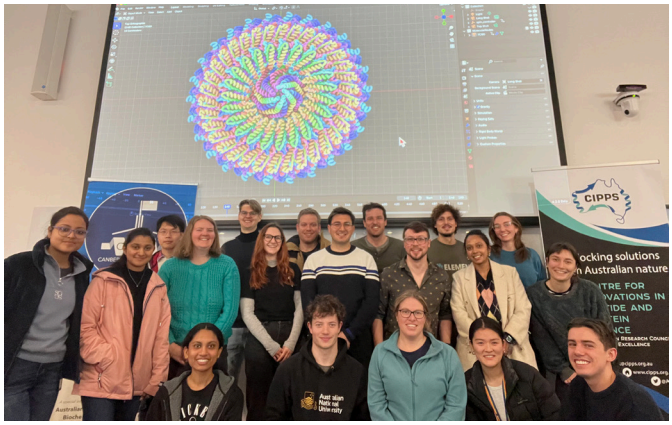
Over the past three years, the group has steadily expanded its activities, combining seminar series, practical workshops and symposia with informal opportunities for networking. In 2022 and 2023, we ran a themed seminar series that covered topics ranging from the organisation and function of oligomeric protein complexes to the application of machine learning in protein science, and advances in precision design and mutagenesis. A hallmark of the series was the deliberate pairing of established researchers with PhD students and EMCRs, ensuring that junior members had the opportunity to present their work to a broad audience. These talks routinely attracted lively discussion and helped establish collaborations that stretched across disciplines. Additionally, we aim to begin each year with our New Faces session, which serves as an opportunity to introduce newly arrived group leaders and postdoctoral fellows to the community.

Our flagship event remains the annual EMCR Symposium. The symposium brings together members from across the ACT and provides a showcase for the breadth of local research. The best talk, selected by an independent judging panel, is awarded the opportunity to represent the CPG at the ASBMB-sponsored conference later in the year. In 2024, the competition was particularly fierce, with outstanding talks on topics as diverse as multidrug resistance in pathogenic *Candida* species, ligand specificity evolution, chromatin remodelling by histone variants, and the function of *Plasmodium* transporters. Alongside the talks, the catered poster session has become a popular element of the day, giving graduate students and postdocs a chance to share their work in a more informal setting and strengthening connections across Canberra laboratories.



Poster session held during the CPG EMCR Symposium.

The past year also saw us broaden the scope of our professional development activities. In collaboration with the Centre for Innovation in Peptide and Protein Science (CIPPS), we hosted a Molecular Nodes workshop led by Brady Johnson, which introduced participants to new approaches for visualising protein structures. The workshop catered to all levels of experience and was especially well received by students looking to integrate advanced visualisation tools into their projects. Later in the year, in partnership with Cytiva, we delivered a week-



CPG members at the Molecular Nodes workshop hosted by Brady Johnson in collaboration with CIPPS.

Canberra Protein Group: an ASBMB Special Interest Group

long program on FPLC/AKTA systems. This covered both basic and advanced purification techniques, along with machine care and troubleshooting and concluded with a lively networking session over pizza. These events, while very different in scope, shared the same goal of providing practical skills in an accessible and collegial setting.

The ability to deliver this program has been greatly supported by ASBMB funding, which has allowed us to cover catering and venue costs, support poster and people's choice prizes, and subsidise training workshops. This financial support ensures that our events are welcoming and accessible, and that they continue to deliver real value to our members, particularly students and early career scientists. Looking to the future, the Canberra Protein Group remains committed to providing a platform for protein researchers at all stages of their careers. We will continue to host seminar series that balance fundamental and applied research, and expand training opportunities through collaborations with industry and academic partners. Above all, we will maintain our focus on supporting EMCRs and graduate students, ensuring that Canberra's vibrant protein science community continues to thrive.

Sacha Pulsford
EMCR Representative
Canberra Protein Group
sacha.pulsford@anu.edu.au

ASBMB Fellowship Report

Chocolate Truffles, Trains and Tregs

Cynthia at IUIS 2025, Austria, Vienna.

It was an incredible honour to receive a 2025 ASBMB Fellowship. The fellowship allowed me to attend the International Congress of Immunology (IUIS) in Vienna, Austria. IUIS is the biggest meeting of immunologists worldwide, with over 3,000 delegates from 104 countries, 2,000 abstracts and 320 oral presentations this year, covering topics from innate and adaptive immune cells, immune regulation, infection, vaccines, cancer, autoimmunity, immunotherapy and artificial intelligence and systems immunology.

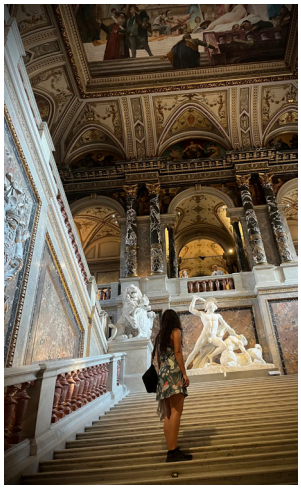
I presented my PhD work, published in *Science Advances*, which identified the antifungal protein DECTIN-1 as a new modifier protein of the immune system. We showed that DECTIN-1 could decrease the severity of autoimmune disease by increasing the differentiation T regulatory cells (Tregs), a special kind of immune cell which stops other T cells from attacking the body and causing disease.

My highlights were the talks on Tregs by legends in the field including Arlene Sharpe and Shimon Sakaguchi. This was the second time I heard Sakaguchi present, and I was again blown away by the elegance of his early experiments which discovered Tregs and their ability to supress the activation of other cells. It comes as no surprise that he was awarded the 2025 Nobel Prize in Physiology or Medicine with Mary Brunkow and Fred Ramsdell. Brunkow and Ramsdell built on the discovery of Tregs by identifying forkhead box P3 (FOXP3) as the transcription factor for Treg function and linking loss of function mutations in FOXP3 to immune dysregulation, polyendocrinopathy, enteropathy and X-linked syndrome.

As a testament to the importance of Tregs, the last talk of the conference was also Treg-focused and by none other than James Allison, who won the 2018 Nobel Prize in Physiology or Medicine alongside Tasuku Honjo, for the discovery of immune checkpoint inhibitors (ICIs). ICIs inhibit Treg function by targeting Treg effector proteins, cytotoxic T-lymphocyte associated protein 4 (CTLA-4) and programmed cell death protein 1 (PD-1). This approach has fundamentally transformed cancer treatment, enabling the development of more selective immunotherapies as alternatives to traditional strategies such as surgery, chemotherapy and radiation.

During my spare time in Vienna, I explored the city and visited the Kunsthistorisches Museum Wien (Vienna Museum of Art History). The building was opened by Emperor Franz Joseph I of Austria in 1891 as a site for the Habsburg art collection and is part of the Ringstraße

ASBMB Fellowship Report



Cynthia at Kunsthistorisches Museum Wien, Austria.

museums with the Naturhistorisches Museum (Natural History Museum) directly across the Maria-Theresien-Platz square. I highly recommend a visit to see pieces by masters Rafael, Caravaggio and Bruegel, Roman/Greek/Egyptian artefacts, ceilings paintings by artists including Gustav Klimt and Hans Makart and to marvel at the intricate architecture by Karl Hasenauer and Gottfried Semper. The building itself is a piece of art.

I also visited my family in Switzerland and had a lab tour with Mathias Hauri-Hohl at the Gebäude für Labor, Lehre und Forschung Universitäts-Kinderspital (Building for Research and Teaching at University Children's Hospital) in Zurich. The Hauri-Hohl lab performs stem cell transplantations and T cell transfers for the treatment of paediatric diseases involving immunodeficiency or autoimmunity. I enjoyed learning about the techniques involved in this translational research space and beyond immunology, was blown away by the building's architecture, designed by Basel-based firm Herzog & de Meuron. The futuristic cylindrical building, built primarily out of concrete with a white lacquer finish, stands amongst a fruit orchard with views of Zurich Lake and contains a whimsical spiral staircase connecting floors of research labs to lecture halls on the lower levels. The nearby Children's Hospital, where Hauri-Hohl regularly visits his patients, was built recently by the same firm and had a more rustic and natural feel, with wooden façades and an internal garden courtyard. The hospital, containing approximately 600 office spaces for staff and 114 inpatient rooms, was designed to contribute to the healing process of paediatric patients with ample light, playrooms and capacity for parents to stay with their children overnight, and was unlike any hospital I have visited before.

During my time in Switzerland, I ate many delicious treats including chocolate truffles and Sprüngli Luxemburgerli (a lighter form of macaron). I also used the extensive train system to travel around Zurich and across the country to Jungfraujoch, the highest train station in Europe, and Zermatt, the town closest to the iconic Matterhorn mountain.

In all, my trip was an unforgettable experience full of immunology and adventure. My deepest thanks to the ASBMB for supporting my travels to IUIS 2025 and to my previous supervisors Professor Si Ming Man and Professor Ben Corry for nominating me for this award.

Dr Cynthia Turnbull completed her PhD and a one-year postdoctoral fellowship at the John Curtin School of Medical Research, Australian National University, and is in the process of moving to the USA for her next research position.

Building for Research and Teaching at University Children's Hospital in Zurich, Switzerland.

ASBMB Fellowship Report

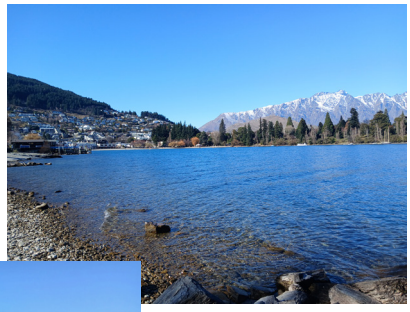
From Stress Signals to Manuka Honey

With the great support of an ASBMB Fellowship, I recently had the opportunity to attend the IUBMB conference, The Emerging Roles of (Pseudo)Kinases in Signal Transduction, held in Queenstown, New Zealand, from 18–22 August 2025.

This meeting brought together a global community of scientists, including structural biologists, cell biologists, and signalling experts, focused on the fascinating world of kinases and pseudokinases. Plenary talks by some of the leading figures in kinase biology, such as Kevan Shokat and Alexandra Newton, showcased cutting-edge insights into recent advances in structural biology and signalling. As has become increasingly common, many discussions also centred on the application of AI-based tools for kinase structure prediction and targeted drug development. Another prominent theme was the development of whole-proteome atlases and the integration of large-scale omics data into unified, accessible platforms. I believe this is an outstanding initiative, as it will make new atlases and large datasets more accessible and easier to navigate for the broader scientific community. It was also fascinating to hear stories of the early days of the kinase biology field, how it emerged and has evolved over the decades. These talks gave me a greater appreciation for the progress made over the years and the foundational work that now allows us to discuss topics like kinome atlases.

I am pleased to now be contributing to the field. The organisers provided an excellent platform for early-career scientists to present their work and engage in social events. As an early-career researcher myself, I was honoured to give a talk on my PhD project, which focused on the signalling dynamics of the JNK pathway. My presentation explored how cells encode information about stress stimuli through JNK activity dynamics and interpret this information to determine appropriate responses and cell fate. Sharing these ideas with an audience of kinase experts sparked new directions for my current research. I now plan to investigate how changes in the biophysical properties of cells influence the structure and function of kinases in the JNK pathway, and how this affects signalling dynamics and cellular responses to stress. The conference also helped me establish a new network of collaborations that will support this work.

Beyond the lecture halls, the conference featured a rich social program, including a boat trip around the lake, a pub mixer, and a conference dinner, which provided excellent opportunities to connect with colleagues from New Zealand, Finland, Austria, the USA and many other countries. These informal interactions were often as thought-provoking as the formal sessions, serving as a reminder of the global and collaborative nature of science, as well as the shared ambitions and challenges researchers face regardless of geographic location. The welcoming and collegial atmosphere also offered a valuable space to reflect on my future in science and discuss potential career trajectories. Having completed my PhD and now finalising the remaining experiments from my doctoral projects, I am actively seeking a new position in academia. The conference provided useful insights into postdoctoral positions and research environments in Sweden, Finland and Singapore, which will help guide my next steps. Following these discussions, I have already begun preparing several fellowship proposals with a prospective host laboratory focused on kinase signalling biology, which will be the next exciting step toward advancing my research career.



Yuliia in Queenstown, New Zealand.

Coming from subtropical Brisbane, arriving in a wintry Queenstown surrounded by snow-capped mountains was an unexpected and welcome change of scenery. Fortunately, the conference schedule included some free time to explore the area. I visited Queenstown's Kiwi Park and saw kiwi and other endemic birds for the first time, which was an unforgettable encounter with New Zealand's unique wildlife. While I'm not quite adventurous enough for skiing or bungee jumping, I enjoyed hiking in the surrounding lake and mountain areas and taking in the breathtaking views of the town from the Skyline Gondola. In addition to its natural beauty, Queenstown offered some memorable culinary experiences, including classic fish and chips, exceptional meat pies and locally produced manuka honey, notable for its exceptional fragrance. I returned not only with new knowledge and collaborations in kinase biology, but also with a deep appreciation for New Zealand's nature and culture and a very convenient supply of manuka honey products.

Altogether, this was a deeply enriching experience – scientifically, professionally and personally. I'm incredibly grateful to the ASBMB for making it possible. I returned with new insights, meaningful connections and renewed motivation for the next stage of my research journey.

Dr Yuliia Didan is a research assistant at the School of Biomedical Sciences, University of Queensland.

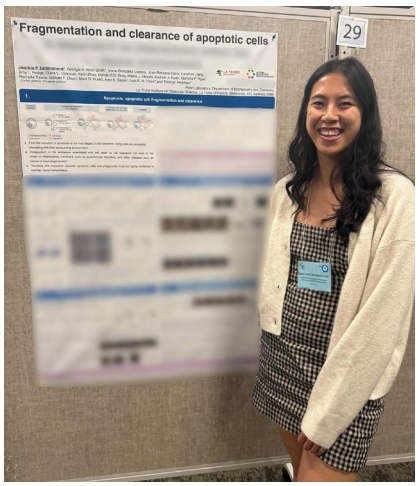
ASBMB Fellowship Report

Where Innate Immunity Meets Mountain Serenity

2025 Phagocytes.

I was honoured to receive an ASBMB Fellowship, which supported my travel to the 2025 Phagocytes Gordon Research Seminar (GRS) and Gordon Research Conference (GRC) held in New Hampshire, USA. This prestigious meeting brought together a diverse range of researchers and international leaders in the field of phagocyte biology and aimed to foster interactions between scientists across all career stages.

The conference took place at Waterville Valley Resort, nestled in the serene White Mountains. It began with a two-day GRS designed specifically for graduate and postdoctoral researchers. As the only Australian attendee, the GRS provided a wonderful opportunity to meet other students and early-career researchers (ECRs) and settle in before the main conference began. I was both excited and nervous to present my research, as this was the first international meeting I had attended. The discussions and feedback I received on my research were insightful and motivating. The GRC that followed was a five-day conference focusing on the themes of Phagocytes in Homeostasis, Development and Disease. Here, I was fortunate to hear from international leaders presenting their cutting-edge unpublished research. The poster sessions were another highlight, offering valuable one-on-one discussions with both junior and senior investigators.



Jascinta presents her poster at the GRC.

Although the days were long, intense and jam-packed with science, we also had the chance to explore the stunning surroundings and enjoy the resort's summer activities. In our free time, we hiked several mountain trails that led to beautiful waterfalls. The sense of community at this conference was remarkable, enhanced by long-standing traditions such as lobster night and the much-anticipated Europe vs. the World football match.

The remote location created an immersive environment, allowing ample time to build meaningful connections and collaborations in an informal setting. It was a fantastic introduction to the international phagocyte community, one that I hope to remain an active part of. I am deeply grateful to the Phagocytes community for their warmth and generosity as well as the ASBMB for the recognition and fellowship that made this trip possible. This was an incredible way to begin my postdoctoral journey.

Dr Jascinta Santavanond is undertaking postdoctoral research in the Department of Biochemistry and Chemistry, La Trobe Institute of Molecular Science, La Trobe University.

Hike to the Fletcher Cascades waterfall.

Lobster night.

Eppendorf Edman ECR Award Report

Masks Off, Mechanisms On: the Asymptomatic Puzzle

Receiving the Eppendorf Edman Award has been an incredible milestone in my early-career researcher (ECR) journey. This recognition has not only enriched my postdoctoral experience but also provided opportunities that have significantly contributed to my professional development. Thanks to this award, I attended the 8th International Conference on Molecular Perspectives in Protein–Protein Interactions held from 17 to 22 October 2025 in Chania, Crete, Greece. It was an unforgettable experience, scientifically and culturally.

Dimitra presents her research at the 8th International Conference on Molecular Perspectives in Protein–Protein Interactions.

I had the privilege of being an invited speaker at this prestigious conference, where I presented my recent findings on the molecular mechanisms underlying asymptomatic SARS-CoV-2 infection. This work builds on my first-author publication in *Nature* (2023), which has already attracted significant international attention, reflected by an Altmetric score of 2,951. Sharing these insights with a global audience of leading experts was both exciting and rewarding. The feedback I received was invaluable, sparking stimulating discussions and opening doors to new international collaborations with researchers from Europe, the Middle East, the US and Asia. It was humbling to see the level of interest in my research, with many one-on-one conversations following my talk.

The conference was a perfect blend of cutting-edge science and collegial interaction. Over four full days, the program featured keynote lectures, oral presentations, and poster sessions, all set against the stunning backdrop of Crete. Coffee breaks overlooking the Aegean Sea, leisurely lunches and evening dinners created an atmosphere that encouraged both group discussions and personal networking. Some of the most thought-provoking discussions took place in these informal settings, ranging from debates on protein–protein interaction dynamics to practical tips for structural biology techniques. As an ECR, these interactions were priceless, helping me expand my global network and gain perspectives that will undoubtedly shape my future research.

I also had the honour of chairing the Protein Interactions in Signaling II session, which allowed me to engage deeply with the scientific content and connect with international speakers whose work complements my own. The conference theme aligned perfectly with my research focus as a molecular and structural biologist studying immune responses to viral infections, particularly SARS-CoV-2 and HIV. Exposure to the latest methodologies and conceptual advances in protein interaction studies will directly benefit my ongoing projects at La Trobe University.

Balancing the demands of research with caring responsibilities as a mother of a two-year-old is challenging, and professional recognition like this reinforces the value of perseverance. The experience reminded me of the importance of visibility and networking for career progression, especially for women in science navigating multiple roles.

Of course, the trip was not all science! Crete offered a rich cultural tapestry that made the experience even more memorable. Chania, with its Venetian harbor, narrow cobblestone streets, and vibrant markets, was a delight to explore. I sampled traditional Cretan cuisine including fresh seafood, olive oil, kalitsounia and dakos salad, while enjoying conversations that ranged from protein folding to Greek mythology. One afternoon, we explored the charming old city of Chania and the old Venetian port on a guided tour, discovering its rich history and picturesque streets. Each evening, the conference organised dinners at different local restaurants, offering a taste of authentic Cretan cuisine and creating the perfect setting for informal conversations and deeper connections beyond the scientific program. These cultural experiences added a unique dimension to the trip, reinforcing the idea that science flourishes in an environment of shared humanity and diverse perspectives.

Dimitra (second from left) and Stephanie Gras (right) at the old port of Chania, accompanied by their spouses, David and Nico.

In summary, attending this conference with the support of the Eppendorf Edman Award has been transformative. It allowed me to showcase my research to a global audience, gain critical feedback and build collaborations that will propel my work forward. The exposure to cutting-edge science, combined with the cultural richness of Crete, made this journey an unforgettable chapter in my career. I return to Australia inspired, energised and deeply grateful for this opportunity.

Dr Dimitra SM Chatzileontiadou is undertaking postdoctoral research in the Department of Biochemistry and Chemistry at the La Trobe Institute for Molecular Science, La Trobe University.

News From the States

Australian Capital Territory

Contributed by Chathura Suraweera

Canberra Protein Group

The Canberra Protein Group (CPG) has had an active and engaging year, hosting a number of successful events aimed at fostering collaboration, professional development and scientific exchange within the local protein science community. Highlights from the past year included a series of learning and networking sessions in partnership with Cytiva, which provided valuable insights into the latest technologies and methodologies in protein research. These sessions offered attendees the opportunity to engage directly with industry experts and expand their technical knowledge.

Another standout event was the New Faces in RSB seminar, which showcased emerging researchers within the Research School of Biology. This seminar provided a platform for early-career scientists to present their work, build their professional networks, and gain visibility within the broader research community. All events were very well attended, attracting a diverse audience of students postdoctoral researchers, and academic staff from across the ANU campus as well as from CSIRO. The strong participation reflects the continued relevance and impact of CPG's initiatives in supporting and connecting the protein research community in Canberra.

ANU ASBMB Awardees

The 2024 ANU ASBMB Prizes for the two undergraduate students who achieved the highest average marks in three of four courses with a biochemistry and/or molecular biology focus, were awarded to Elizabeth Michelmore and Jacob Rose.

New South Wales

Contributed by Tara Christie

It is a pleasure to report on the activities and awards supported by ASBMB NSW throughout 2025. We continued our commitment of recognising academic excellence and supporting students at all stages of their education, from enthusiastic high school students to emerging early career researchers. Our programs aim to celebrate outstanding achievement, foster scientific curiosity and provide support that helps students progress in their academic and research careers.

Charles Sturt University – ASBMB Biochemistry Prize

The ASBMB Biochemistry Prize was awarded to Alicia Cruwys for outstanding results in Biochemistry subjects at Charles Sturt University.

University of Newcastle – ASBMB Prize for Biomedical Science

This award was presented annually to the top-performing student in the Bachelor of Biomedical Science program. This year's recipient is yet to be announced.

NSW Science Teachers Association Young Scientist Awards

The ASBMB Award is given for the best high school student project with a biochemistry or molecular biology theme. Programs like this play an important role in encouraging students' interest in science and gives them a platform to explore their passions.

ASBMB 2025 Travel Award

In partnership with the Sydney Protein Group (SPG), ASBMB NSW sponsored a travel award for an ASBMB/SPG member to attend ASBMB2025. This year's award went to Alanah Eisenhuth from the University of Sydney. Alanah was selected from a strong field of applicants.

Alanah Eisenhuth (right) receives a travel award at the SPG Postdoc Symposium from SPG President, Rachel North.

Queensland

Contributed by Conan Wang

STAQ Queensland Science Contest

The Queensland Science Contest, held in October 2024 and organised by the Science Teachers Association of Queensland, has consistently received support from ASBMB Queensland. This competition is an excellent outreach initiative, offering students from Prep to Year 12 across Queensland the opportunity to have their scientific work assessed for awards and prizes.

Last year's winners included Elijah Harris, Trini Kong, Gabriel Harris and Charmaine Kong from Citipointe Christian College, as well as Heidie Palade from the Queensland Academy for Science, Mathematics and Technology. Group entry winners also came from both schools. It's inspiring to see such young talent and enthusiasm for science.

QPG Ross Smith Award

This event was held in July 2025 and attracted over 75 registrants. The Ross Smith Medal, which recognises an outstanding early career researcher in Biochemistry and Molecular Biology, was awarded this year to Stephanie Portelli from David Ascher's lab. The student prize went to Alexandra Sundman from Glenn King's lab.

News From the States

UQ SCMB Research Students Symposium

We supported the University of Queensland's School of Chemistry and Molecular Biology Research Students Symposium on 19 November 2025 at the St Lucia campus. The symposium serves as the flagship event in the postgraduate student calendar, attracting over 150 students and group leaders last year, and celebrates the exceptional research contributions of our postgraduate and Honours students across various disciplines including biotechnology, chemistry, biochemistry, molecular biology, microbiology and parasitology.

Right: QPG Treasurer, Kevin Chen, presents the Ross Smith Medal to Stephanie Portelli.

Left: QPG Chair, Thomas Ve, presents the Ross Smith event student prize to Alexandra Sundman.

Griffith University ASBMB Prize

This prize is awarded to the Griffith University student who achieves the highest GPA across the subjects: Genetics & Evolutionary Biology; Fundamentals of Biochemistry; Metabolism; Molecular Biology; Protein Science; and Molecular Cell Biology. The winner for the 2024 academic year was Gen (Jack) Lu.

South Australia

Contributed by Michael Roach

The ASBMB SA branch sponsored events throughout 2025 to support our amazing community of undergraduate and HDR students, and early career researchers.

Centre for Cancer Biology Achievement Awards

The Centre for Cancer Biology (CCB) Achievement Awards recognise the research accomplishments of its postgraduate and EMCRs over the past year. Awards include Best Publication, Best Student Publication, ECR Award, Commended PhD Theses and Best Scientific Image. We congratulate all 2024 CCB Award recipients, including the winners of the Best Student Publication Awards sponsored by the ASBMB, Shannon Nicolson and Jiarna Zerella.

APG Annual Research Symposium

The Annual Research Symposium is the APG's flagship event, including student and ECR talks and posters in a full-day symposium. Held on 24 July 2025, the event featured guest talks from Michael Roy (SAiGENCI), Danielle Rudler (Harry Perkins Institute for Medical Research) and Renae Ryan (University of Sydney). We congratulate the APG 2025 winners, Dayna Holroyd, Rebekah Munro, Sarah Eisemann, Jesse Kennedy, Emma Mao and Ashleigh Geiger.

APG Representative at ASBMB 2025

The SA branch continued its support for a local member to present their work at the ASBMB conference. We congratulate Sreshtha Malik (University of Adelaide) as this year's SA representative.

Student representative at Perth Protein Group 2025

A new initiative was launched between the APG and PPG this year to host an invited interstate talk at each SIG's annual research symposium event. Danielle Rudler from WA presented at this year's APG symposium and the SA branch supported the APG student talk winner, Dayna Holroyd, to present at the PPG's annual symposium in November.

ASBMB member, Greg Goodall, presents the CCB 2024 ASBMB best student publication awards to Shannon Nicolson (left) and Jiarna Zerella.

News From the States

Dayna Holroyd receives the APG best student talk award from APG Events Coordinator, Lachlan Staker.

Victoria

Contributed by Sarah Stewart

The ASBMB Victoria branch continued to support a range of scientific events in Victoria that engage the next generations of scientists.

Melbourne Protein Group Student Symposium

The 23rd MPG Student Symposium was held on 16 July at the Bio21 Institute. The event, chaired by Rhys Grinter (Bio21/University of Melbourne), welcomed more than 100 delegates. The scientific program included keynote presentations from Max Cryle (Monash University), Michael Pasternak (Denteric) and Marilyn Jones (Mexec), who shared insights into their scientific careers. The event also featured six selected PhD student oral presentations, with Daniel Fox (Bio21) receiving the Leann Tilley Award for best oral presentation. There were 73 poster presentations showcased during the symposium.

ASBMB Victorian and Tasmanian representatives (Sarah Stewart and Adele Holloway, respectively), University of Tasmania representatives Kirsten Fairfax and Sabine Wimmer-Kleikamp, and MPG President, Christopher Langendorf, are collaborating to broaden the involvement of Tasmanian biochemists in MPG activities. Supported by ASBMB, MPG has proposed sponsorships for Tasmanian protein science students to attend future MPG student symposia. The intention is to increase engagement and support protein science communities in both Victoria and Tasmania over the next five years.

Science Talent Search

ASBMB Victoria was once again a gold sponsor of the Science Talent Search (STS) organised by the Science Teachers' Association of Victoria. The STS is open to primary and secondary school students throughout Victoria. In its 73rd year in 2024, the STS engaged over 2,500 students from 155 schools. There were 1,989 entries submitted across ten project categories, from Experimental Research and Working Models to Creative Writing and Games, students explored the theme Species Survival: More Than Just Sustainability. Sponsorship provided by ASBMB directly contributes to the recognition and encouragement of young scientific minds.

Monash University Microbiology Student Symposium

ASBMB Victoria supported the 2025 Monash Microbiology Postgraduate Society Student Symposium on 31 October at Monash University Clayton campus. The event brings together students and staff from the microbiology departments of Monash BDI, Hudson Institute and The Alfred hospital affiliates to recognise postgraduate student research.

Daniel Fox receives the Leann Tilley Award for best oral presentation from Leann Tilley.

MPG Student Symposium awardees, from left: Leann Tilley Award winner, Daniel Fox, and ANSTO poster prize winners, Geoff Zhang, Emily Park, Riya Joseph, Javaid Jabbar, Helen Barber and Danise Onda.

Western Australia

Contributed by Alyssa Van Dreumel

The sixth Perth Protein Group (PPG) Annual General Meeting was held on 27–28 November 2025 at the

News From the States

Harry Perkins Institute of Medical Research, Perth. This flagship event continued to provide an excellent platform for early career researchers and PhD students to present their work and engage with the local and national research community. This year's program included keynote presentations by Dr Kate Michie (UNSW Sydney) and Dr Jie Tang (Monash University), alongside a capabilities session that highlighted Perth's genomic, transcriptomic, structural and biochemical research infrastructure. A key focus of the AGM was supporting higher degree by research students and early- to mid-career researchers. The ASBMB WA branch sponsored research communication prizes for outstanding talks and posters at the event. We were also pleased to host a representative from the Adelaide Protein Group as part of the first Perth–Adelaide research exchange initiative.

As State Representative, I attended the 2024 Murdoch University College of Environmental and Life Sciences Awards Ceremony to present ASBMB-sponsored prizes to the top-performing second-year undergraduate biochemistry students, Kitana Rose Lamby and Kelsie Dowley.

Finally, WA members continued to be active contributors to the national Biochemistry and Molecular Biology Core Concept Project Working Group, led by Dr Amber Willems-Jones. This collaborative effort concluded in 2025 with the release of the Australian Core Concepts in Biochemistry and Molecular Biology undergraduate learning outcomes at ASBMB2025.

From left: ASBMB WA Representative, Alyssa Van Dreumel, presents ASBMB prizes at the Murdoch University College of Environmental & Life Sciences Awards Ceremony, to Kelsie Dowley and Kitana Rose Lamby.

ASBMB Annual Reports

President's Report

ASBMB President Megan Maher.

Dear ASBMB members,

I write this from the unceded lands of the Wurundjeri Woi Wurrung and Bunurong peoples in Naarm (Melbourne) and pay my respects to their Elders past, present and emerging.

As we approach the end of 2025, it is a pleasure to reflect on the strength of our Society and the many achievements of our members. It has been a privilege to serve as President and to witness first-hand the scientific, educational, and outreach activities that continue to define the ASBMB.

I extend my sincere gratitude to the ASBMB Executive, Council, and our State Representatives and Special Interest Group leaders for their tireless contributions. Their dedication ensures that the Society remains active, visible and supportive of members. I particularly acknowledge those completing their terms at the end of this year. Our thanks go to State Representatives Alyssa Van Dreumel, Sarah Stewart and Adele Holloway for their valuable service. Tracey Kuit concludes her tenure as Education Representative (2023–2025), a role in which she has made valued impact. The Society's education activities are truly a highlight, from insightful articles in the *Australian Biochemist* to dedicated conference sessions. It was a pleasure to see Tracey recognised with the 2025 FAOBMB Education Award and to attend her outstanding plenary lecture at the 31st FAOBMB Conference in Busan.

I also wish to thank Ross Hannan for his leadership as President and Past-President. His focus on support for early- and mid-career researchers and on strengthening international engagement has been both timely and influential. I am particularly grateful for his continued commitment to the Society during a period of considerable change at his own institution.

Finally, I offer my heartfelt thanks to our Secretary, Dominic Ng, who will conclude his role at the end of this year. Dom's service to ASBMB began as Queensland State Representative (2015–2017) and culminated in his exceptional tenure as Secretary (2021–2025). His calm guidance and meticulous organisation have been invaluable to me personally and to the Society as a whole. We are fortunate that Dom will continue to serve as the FAOBMB Representative, ensuring we can continue to benefit from his expertise and dedication.

This year has also been marked by strong international engagement. In May, ASBMB members participated in the FAOBMB 2025 Conference in Busan, South Korea, which highlighted the vibrancy of biochemistry and molecular biology across our region. Our early- and mid-career researchers were especially well represented through the Young Scientist Program. The second ASBMB–KSBMB joint meeting, held alongside the conference, once again demonstrated the value of enduring international partnerships. We extend thanks to Mihwa Lee and Victor Anggono for coordinating ASBMB's involvement, and to Professor Tae-Kyung Kim and Professor Sekyu Choi (KSBMB) for their excellent organisation and generous hospitality. Planning is already underway for the third joint meeting to be held in conjunction with ComBio in Sydney in 2026.

I am delighted to acknowledge the outstanding recognition of ASBMB members in 2025, including the election of Professor Christina Mitchell and Professor Anthony Weiss as Fellows of the Australian Academy of Science, and the award of an Order of Australia to Emeritus Professor John Carver. These honours highlight the calibre of our community and provide inspiration for the next generation of researchers.

Our flagship publication, the *Australian Biochemist*, continues to thrive under the stewardship of Tatiana Soares da Costa and the Editorial Committee, serving as both a showcase of research achievements and a platform for education and outreach.

The ASBMB2025 meeting in Brisbane was a fantastic success, delivering excellent science in a collegial and welcoming environment (and, for those of us in the southern states, the added bonus of warmer weather!). My thanks to Michael Landsberg and his committee for their work in organising such a successful meeting. These standalone ASBMB meetings provide a vital forum for early- and mid-career researchers and an intimate setting for the broader membership to connect. Preparations are also well underway for ComBio 2026 in Sydney, which we eagerly anticipate.

In closing, I thank you all for your commitment to the ASBMB. Together, we continue to foster a vibrant and inclusive community dedicated to advancing biochemistry and molecular biology in Australia and beyond.

Professor Megan Maher, President
megan.maher@unimelb.edu.au

ASBMB Annual Reports

Treasurer's Report

ASBMB Treasurer Adrian Achuthan.

This statement should be read in conjunction with the relevant summaries of the filed annual return for the period 1 July 2024 to 30 June 2025. The final audit has been completed and the summary statements underpinning this report were provided by our auditors. The Society's overall financial position has strengthened compared to the 2023–2024 financial year. We recorded an operating profit of $144,289 in 2024–2025, a significant increase from $21,603 in the previous year. This surplus was primarily driven by conference income from Biomolecular Horizons 2024 (BMH2024), which contributed $168,083. Additionally, interest income of $20,750 from term deposits, resulting from higher interest rates, also supported the improved result.

BMH2024 was held at the Melbourne Convention and Exhibition Centre in September 2024 and was an outstanding success, delivering significant benefits to the Society. The ASBMB received a risk premium of $64,041 and a surplus disbursement of $106,291, reflecting approximately 40% of total registrations from the participating societies. I would like to extend my sincere congratulations and thanks to Convenor Leann Tilley, Deputy Convenors Frances Separovic and Christina Mitchell, and the local conference organising committee for delivering such a high-impact event. As agreed with the organisers, the surplus disbursement from BMH2024 will be used to establish a legacy fund aimed at supporting early- to mid-career researchers within the Society.

The other major sources of income for the ASBMB during the financial year were membership revenue and bank interest. Corporate support for our named awards remains strong, and on behalf of the Society, I extend our sincere thanks to our sponsors for their continued commitment. Interest income is expected to remain stable in the next financial year, as a higher interest rate was secured for the ASBMB term deposit maturing in April 2026. However, with recent interest rate cuts, we anticipate a decline in interest income in the following financial year. Looking ahead, we aim to strengthen the ASBMB's financial position by diversifying income streams, including long-term investments in equity markets. We also expect to break even for the ASBMB 2025 meeting, with increased number of sponsorships, while keeping the registrations rates lower and awarding increased number of awards and prizes. With ComBio meetings now held biennially, we look forward to returning to ComBio 2026 in Sydney, where ASBMB is expected to receive a significant share of the conference profits, further strengthening our financial position. Overall, I am confident that the Society's financial position will continue to strengthen over the coming year.

Total expenditure for the 2024–2025 financial year was $138,767, up from $96,022 in the previous period. This increase was largely due to support expenses associated with BMH2024, which were offset by the substantial income generated from the conference. In 2024–2025, the distribution of funds to state branches and Special Interest Groups was also higher than in the previous year, likely reflecting an increase in member-focused activities and engagement. The overall financial position of ASBMB has continued to improve in 2024–2025. As of the end of the 2024–2025 financial year, cash reserves stand at $636,855, up from $544,994 at the close of 2023–2024.

We are fortunate to have WALDRONSMITH Management (WSM) managing the ASBMB National Office with a high level of professionalism and effectiveness. Our partnership with WSM has been further strengthened through their support of ASBMB2025, and we are grateful for their continued contribution. On behalf of the Society, I extend our sincere thanks to WSM for their ongoing role in managing the National Office and for providing valuable conference support.

Our flagship publication, the *Australian Biochemist*, is available to members in PDF format. I would like to commend Editor, Tatiana Soares da Costa, and Editorial Officer, Liana Friedman, for their outstanding work in producing the magazine. Their dedication and editorial expertise continue to ensure the publication remains a valuable resource for our members.

I would like to express my sincere thanks to the ASBMB Executive, Ian Price (ASBMB Bookkeeper), Priestleys (ASBMB Accountants) and Mark Andreassen (ASBMB Auditor) for their invaluable support of both the Society and myself in my role as Treasurer. I also extend my gratitude to former Treasurer, Kate Quinlan, for her generous assistance during my transition into this role.

Associate Professor Adrian Achuthan, Treasurer
aaa@unimelb.edu.au

ASBMB Annual Reports

Executive Officers' Report

Your Executive Officers submit herewith the financial statements of the Association for the year ended 30 June 2025, together with the Auditors' Report thereon and in accordance with Section 73 of the Associations Incorporation Act 1991 report as follows.

PRINCIPAL ACTIVITIES

The principal activity of the Association in the course of the financial year was the advancement of the science and profession of both biochemistry and molecular biology.

EXECUTIVE OFFICERS

The Executive Officers throughout the year were: Professor Ross Hannan (President to 31/12/24); Professor Megan Maher (President from 1/1/25) Professor Dominic Ng (Secretary and FAOBMB Representative); Professor Kate Quinlan (Treasurer to 31/12/24); Associate Professor Adrian Achuthan (Treasurer from 1/1/25); Dr Tatiana Soares da Costa (Editor and Chair of Communications); Associate Professor Tracey Kuit (Education Representative).

OPERATING RESULTS

During the year, the Association produced an operating profit of $144,289 (2024: operating profit $21,603).

STATEMENT BY EXECUTIVE OFFICERS

In the opinion of the Executive Officers the financial statements, consisting of the Statement of Profit and Loss and other Comprehensive Income, Statement of Financial Position, Statement of Changes in Equity, Statement of Cash Flows and Notes to and forming part of the Financial Statements:

(a) Presents a true and fair view of the financial position of the Association as at 30 June 2023 and its performance for the year ended on that date in accordance with Australian Accounting Standards – Simplified Disclosure Requirements.

(b) At the date of this statement, there are reasonable grounds to believe that the Association will be able to pay its debts as and when they fall due.

Signed in accordance with a Resolution of the Executive Officers.

Professor Megan Maher, President
Associate Professor Adrian Achuthan, Treasurer

Independent Auditor's Report

REPORT ON THE FINANCIAL STATEMENTS

We have audited the financial report of the Australian Society for Biochemistry and Molecular Biology Incorporated (the association) which comprises the statement of financial position as at 30 June 2025, the statement of profit or loss, statement of comprehensive income, statement of changes in equity and statement of cash flows for the year then ended, notes comprising a summary of significant accounting policies and other explanatory information, and the certification by members of the committee on the annual statements giving a true and fair view of the financial position and performance of the association.

AUDIT OPINION

In our opinion, the accompanying financial report of the Australian Society for Biochemistry and Molecular Biology Incorporated is in accordance with the Associations Incorporation Act 1991 including:

(i) giving a true and fair view of the association's financial position as at 30 June 2025 and of its performance for the year then ended; and

(ii) that the financial records kept by the association are such as to enable financial statements to be prepared in accordance with Australian Accounting Standards – Simplified Disclosure Requirements.

BASIS FOR OPINION

We conducted our audit in accordance with Australian Auditing Standards. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Report section of our report. We are independent of the association in accordance with the ethical requirements of the Accounting Professional and Ethical Standards Board's APES 110: Code of Ethics for Professional Accountants (the Code) that are relevant to our audit of the financial report in Australia. We have also fulfilled our other ethical responsibilities in accordance with the Code.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

EXECUTIVE OFFICERS' RESPONSIBILITIES

The committee of the association are responsible for the preparation and fair presentation of the financial statements in accordance with Australian Accounting Standards – Simplified Disclosure Requirements, the Associations Incorporations Act 1991 (ACT) and for such internal control as the committee determine is necessary to enable the preparation of the financial report that gives a true and fair view and is free from material misstatement, whether due to fraud or error.

MC Andreassen (Partner)
Priestleys Chartered Accountants

ASBMB Annual Reports

AUSTRALIAN SOCIETY FOR BIOCHEMISTRY AND MOLECULAR BIOLOGY INCORPORATED

STATEMENT OF FINANCIAL POSITION AT 30 JUNE 2025

	2025 $	2024 $
CURRENT ASSETS		
Cash and cash equivalents	636,855	544,994
Trade and other receivables	86,333	57,162
Other current assets	10,000	2,500
TOTAL CURRENT ASSETS	**733,188**	**604,656**
TOTAL ASSETS	**733,188**	**604,656**
CURRENT LIABILITIES		
Trade and other payables	119,082	134,839
TOTAL CURRENT LIABILITIES	**119,082**	**134,839**
TOTAL LIABILITIES	**119,082**	**134,839**
NET ASSETS	**614,106**	**469,817**
EQUITY		
Retained surplus	614,106	469,817
TOTAL EQUITY	**614,106**	**469,817**

STATEMENT OF CASH FLOWS FOR THE YEAR ENDED 30 JUNE 2025

	2025 $	2024 $
CASH FLOWS FROM OPERATING ACTIVITIES		
Receipts from members	74,483	97,491
Conference revenue	138,544	110,566
Other income	6,910	26,373
Payments to suppliers and employees	(149,194)	(226,680)
Interest received	21,118	27,028
Net cash provided by/(used in) operating activities	**91,861**	**34,778**

REVENUE

	2025 $	2024 $
Operating activities		
Administration Fund		
Subscriptions – ordinary, student, retired and Sustaining Members	88,401	88,401
Conference revenue – Biomolecular Horizons (Note a)	168,083	-
Conference – Registration Fees (Note b)	-	68,518
Conference – Sponsorships (Note b)	-	9,435
Conference – Sale of Booths (Note b)	-	38,618
Advertising in proceedings and magazines	3,555	1,995
Other Income	-	7,500
	262,305	**214,467**
Non-operating activities		
Interest received – Administration Fund	20,750	20,002
Donations	-	-
	20,750	**20,002**
Total Revenue	**283,055**	**234,469**

EXPENSES

	2025 $	2024 $
Other expenses from ordinary activities		
Affiliate memberships	13,692	7,304
Awards and medals	11,800	10,000
Conference expenses – food and beverages	-	55,805
Conference expenses – other expenses	-	3,580
Conference expenses – support services	-	15,474
Conference expenses – travel and accommodation	-	23,688
Conference expenses – venue hire	-	18,296
Conference support – other conferences	25,078	1,652
Council expenses	19,565	5,265
Insurance	2,393	2,265
National Office costs	24,149	26,432
Magazine costs	8,655	7,701
Other costs	4,673	2,793
State allocations	11,163	16,863
Remuneration of auditor		
- audit or review services	3,645	3,425
- other services	3,953	2,323
ASBMB Fellowship – Research Fund	10,000	10,000
	138,766	**212,866**

CASH AND CASH EQUIVALENTS

	2025 $	2024 $
Cash at bank – Administration Fund	636,855	544,994
	636,855	**544,994**

TRADE AND OTHER RECEIVABLES

	2025 $	2024 $
Current		
Accrued expenses – Administration Fund	3,006	3,374
Conference receivables	50,827	21,288
Advances to state committees	32,500	32,500
	86,333	**57,162**

RETAINED SURPLUS

	2025 $	2024 $
Administration Fund		
Balance at 1 July	469,817	448,214
Surplus (deficit) for the financial year	144,289	21,603
Balance at 30 June	**614,106**	**469,817**

All sums given in Australian Dollars.

Notes

a. *Conference revenue represents the Association's share of the net profits generated by the conference held. This conference is held in partnership with other associations.*

b. *The Conference revenue and expense represents the revenue received and the expenses incurred in holding the ASBMB2023 conference held at the Australian National University. This conference is held solely by the association making the association entitled to all of the revenue generated and is liable for all of the expenses from this conference.*

Our Sustaining Members

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Sapphire FL+ features a unique, patent-pending design of interchangeable and customisable laser and filter modules, enabling a virtually infinite number of spectral combinations. A broad range of excitation and emission wavelengths as well as phosphor imaging are supported.

The instrument offers laser options from UV to NIR wavelengths (375–900 nm), 5–1000 µm resolution scans and a Z-plane range from -1.0 to +6.0 mm. Whether imaging Western blots, gels, 96-well plates, or tissue slides, the adjustable Z-plane ensures optimal focus for your sample.

An optional Chemiluminescence Module adds high-resolution, quantitative chemiluminescence and visible imaging. It allows you to capture proteins with femtogram sensitivity and gives you the ability to capture colour marker images.

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This ready-to-use solution is specifically used for membrane blocking and antibody dilution in Western blot experiments and designed to significantly shorten the blotting workflow to around 40 minutes or less. It contains special organic compounds, which can significantly shorten the reaction time of experiments and thus improve experimental efficiency.

This product contains inert proteins of different molecular weight ranges, which can effectively reduce the background and protect the activity of the antibody. Antibody working solutions diluted with this product can usually be stored at 4°C for more than 3 months.

This product contains pathology grade preservatives and is compatible with HRP, so it can dilute primary antibodies (including phosphorylated primary antibodies), HRP-labelled primary antibodies, or secondary antibodies. It is also possible to dilute fluorescently labelled primary and secondary antibodies.

For further information, please contact United Bioresearch Products who distribute the full range of Proteintech products in Australia.

https://www.ptglab.com/products/-TM-WB--PR20039.htm

United Bioresearch Products
Kirrily Smith
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CapellaScience

New Kuhner microTOM

New Kuhner microTOM (micro-scale Transfer-Rate Online Measurement) is the next-generation online monitoring system for analysing cellular respiration in microbial and cell culture applications directly in 96- or 24-well microtiter plates. Using oxygen transfer rate (OTR), it offers automated, label-free screening without manual sampling, offline analysis and interruptions.

What Sets the New Kuhner microTOM Apart?

96 parallel OTR measurements – unrivalled throughput for microplate-based cultivation. With low running costs, compact design, and extreme sensitivity, it's ideal for microbial and mammalian cultures, offering robust, scalable data and full compatibility with all Kuhner shakers and FeedPlate®.

Two application specific modules are available: the Kuhner microTOM Type M (microbial) and the Kuhner microTOM Type C (cell culture). The new Kuhner microTOM quantifies cellular activity every 20 minutes via OTR. It is non-invasive, probe-free, and unaffected by turbidity or morphology. Correlating directly with substrate consumption and viable cell count, its ideal for clone screening, media optimisation, toxicity studies, process development, and scale-up validation.

Kuhner microTOM is the only system on the market offering precise, high throughput OTR monitoring in standard microtiter plates with low costs, no manual labour and full compatibility with your existing Kuhner setup.

Learn more at (02) 9575 7512 or sales@capellascience.com.au

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GenScript Launches Year-End Online Gene Synthesis Promotion for ANZ Researchers

GenScript, a global leader in life-science research solutions, has announced a special year-end promotion for researchers in Australia and New Zealand. From now until **31 December 2025**, customers can enjoy **up to 25% OFF** gene synthesis orders placed through the **GenSmart™ 2.0 Online Platform**.

The online platform allows users to upload their sequences, receive instant quotes, and complete payment with automatic discount application offering a faster and easier way to order genes.

In addition, GenScript is offering **FREE vector onboarding** for ANZ users during the campaign period. Archived vectors enable researchers to reuse existing constructs and save over seven days in project timelines while ensuring consistent quality and accelerated delivery.

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For inquiries, contact Boon-hwa Tay at boonhwa.tay@genscript.com

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Extracellular vesicles (EVs) especially exosomes play a critical role in intercellular communication and are emerging as biomarkers for disease diagnostics and therapeutic delivery. Yet, the field continues to grapple with a familiar bottleneck – isolation and purification.

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EXODUS H-600 delivers fully automated EV isolation, achieving purity levels of ~98% and yields beyond 90%, all while reducing hands-on time from hours to just minutes. Paired with **NanoSight Pro**, researchers can obtain high-resolution particle size, concentration, and fluorescence data, ensuring confidence in downstream analysis and applications.

Trusted by leading universities worldwide – including here in Australia – EXODUS is rapidly becoming the new standard for EV research.

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Maximise purity, boost yield, and save valuable time – automate EV isolation.

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NaveniFlex Tissue Red – *In Situ* Proximity Ligation Assay Kit for Tissue Samples

Navinci Diagnostic's NaveniFlex Tissue Red Kit is an *in situ* proximity ligation assay kit optimised for tissue samples. The kit enables fluorescence visualisation of protein–protein interactions or post-translational modifications such as phosphorylation and ensures high specificity when localising single proteins. The kit should be used with the user's primary antibodies of choice (raised in mouse and rabbit).

Validated on FFPE and fresh frozen human and mouse tissue sections. Validated on several types of tissues, both healthy and cancerous, for example, colon, tonsil, ovary, kidney, breast, spleen, brain and skin. Compatible with traditional immunostaining equipment, the kit uses secondary antibody detection to produce an amplified signal in the form of a fluorescent dot, thus facilitating the quantification of the readout. The kit is based on Navinci Diagnostic's Naveni® *in situ* proximity ligation technology, with two Navenibodies conjugated to proprietary oligo arms.

Navinci Diagnostic's NaveniFlex Tissue Red is distributed by Sapphire Bioscience in Australia and New Zealand.

https://navinci.se/product/naveniflex-tissue-red

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