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Front Cover

Harnessing the power of computational protein design to create novel therapeutics. The image displays nanobodies produced by a pipeline that designs *de novo* CDRs for specific target antigens. Multiple candidates shown have been show to display binding to their target *in vitro*. Created by Jerry Chen using Affinity Designer 2, with PyMOL structure renderings and a background generated via GPT-Image 2. Image courtesy of Jerry Chen.

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Moving Beyond One-Size-Fits-All Treatment in Stage III Colon Cancer

Aref AT[#], Pathan M[#], Habib R[#], Hains PG, Lim SH, Anees A, Ma L, Heads J, Wang D, Loudon C, McLeod D, Caixeiro N, Noor Z, Craft GE, Bucio-Noble D, Koh JM, Robinson PJ, Zhong Q, Gowrishankar K, Micklethwaite K, Moustou E, Datseri G, Balleine RL, Lee CS[‡], Souglakos J[‡], Nagrial A[‡], Reddel RR[‡*]. Proteomics-driven risk stratification in stage III colon cancer: a validated prognostic signature for recurrence prediction using three independent cohorts. *Clin Cancer Res* 2026; in press.

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Stage III colon cancer represents one of the most clinically challenging settings in gastrointestinal oncology. Although surgical resection can be curative, most patients are routinely offered adjuvant chemotherapy following surgery because of the substantial risk of recurrence. However, current treatment decisions rely predominantly on conventional clinicopathological features such as tumour stage and nodal involvement, which do not fully capture the underlying biological heterogeneity of the disease. As a result, many patients are exposed to the toxicity and long-term consequences of chemotherapy despite deriving limited benefit.

In our recent study, we sought to address this unmet clinical need through large-scale tumour proteomics. Proteins are the functional drivers of cancer biology and represent a direct readout of tumour behaviour. Unlike genomic or transcriptomic approaches, proteomics measures the molecular machinery actively operating within tumour cells and the tumour microenvironment. Advances in mass spectrometry technologies have now made high-throughput and clinically scalable proteomic profiling increasingly feasible and ready for implementation in clinical practice.

Using tumour tissue from 759 patients with stage III colon cancer across three independent cohorts from Australia and Europe, we developed and validated a six-protein proteomic risk score capable of stratifying patients according to their risk of recurrence following surgery. To our knowledge, this represents one of the largest tissue proteomic studies performed in colorectal cancer to date. The study incorporated both real-world and clinical trial populations, enhancing the robustness and translational relevance of the findings.

The six-protein signature (ITIH1, PPIE, LTBP1, KPNA2, IGFBP7, and CKAP4) was derived using tumour samples from a training cohort and subsequently validated in two completely independent external cohorts. Across these validation cohorts, the proteomic score consistently identified patients at significantly higher risk of recurrence and poorer survival outcomes. Importantly, the prognostic value of the score remained independent of established clinical risk factors (including tumour stage, side and grade), demonstrating that proteomics provides biologically distinct and complementary information beyond standard staging systems.

One of the most clinically meaningful findings emerged when the proteomic score was integrated with conventional clinical risk classification (based on the tumour stage (T-stage) and lymph node status (N-stage)). Patients classified as both clinically low-risk and proteomic low-risk demonstrated an exceptionally favourable prognosis across all cohorts. This subgroup may represent patients who could potentially avoid overtreatment with adjuvant chemotherapy and thus avoid the associated toxicities. Conversely, patients with high proteomic risk showed substantially poorer outcomes and may benefit from treatment intensification or closer monitoring.

These findings are particularly important in the context of adjuvant chemotherapy for stage III colon cancer. While oxaliplatin-based chemotherapy improves survival overall, fewer than 20% of patients derive substantial additional benefit from treatment, and many experience significant toxicities including neuropathy and impaired quality of life. Our study provides evidence that tumour proteomics could help refine this therapeutic decision-making process by identifying patients more likely to benefit from treatment escalation versus those who may be candidates for de-escalation strategies.

Beyond its prognostic value, the study also highlights the growing translational potential of proteomics in oncology. The assay was developed using routinely available formalin-fixed paraffin-embedded tumour tissue, supporting its future clinical applicability. In addition, the identified proteins are biologically linked to pathways involved in tumour progression, extracellular matrix remodelling, angiogenesis and metastatic behaviour, reinforcing the biological plausibility of the signature.

Importantly, this work represents a foundation for future prospective clinical validation studies. Further studies within randomised clinical trial cohorts would determine whether proteomic-guided treatment strategies can safely improve patient outcomes while reducing unnecessary chemotherapy exposure. Nevertheless, this study demonstrates how integrating tumour biology directly into clinical decision-making may represent an important step towards more precise and personalised care for patients with stage III colon cancer.

Adel Aref, Mohashin Pathan and Roger Reddel
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Adel Aref.

Mohashin Pathan.

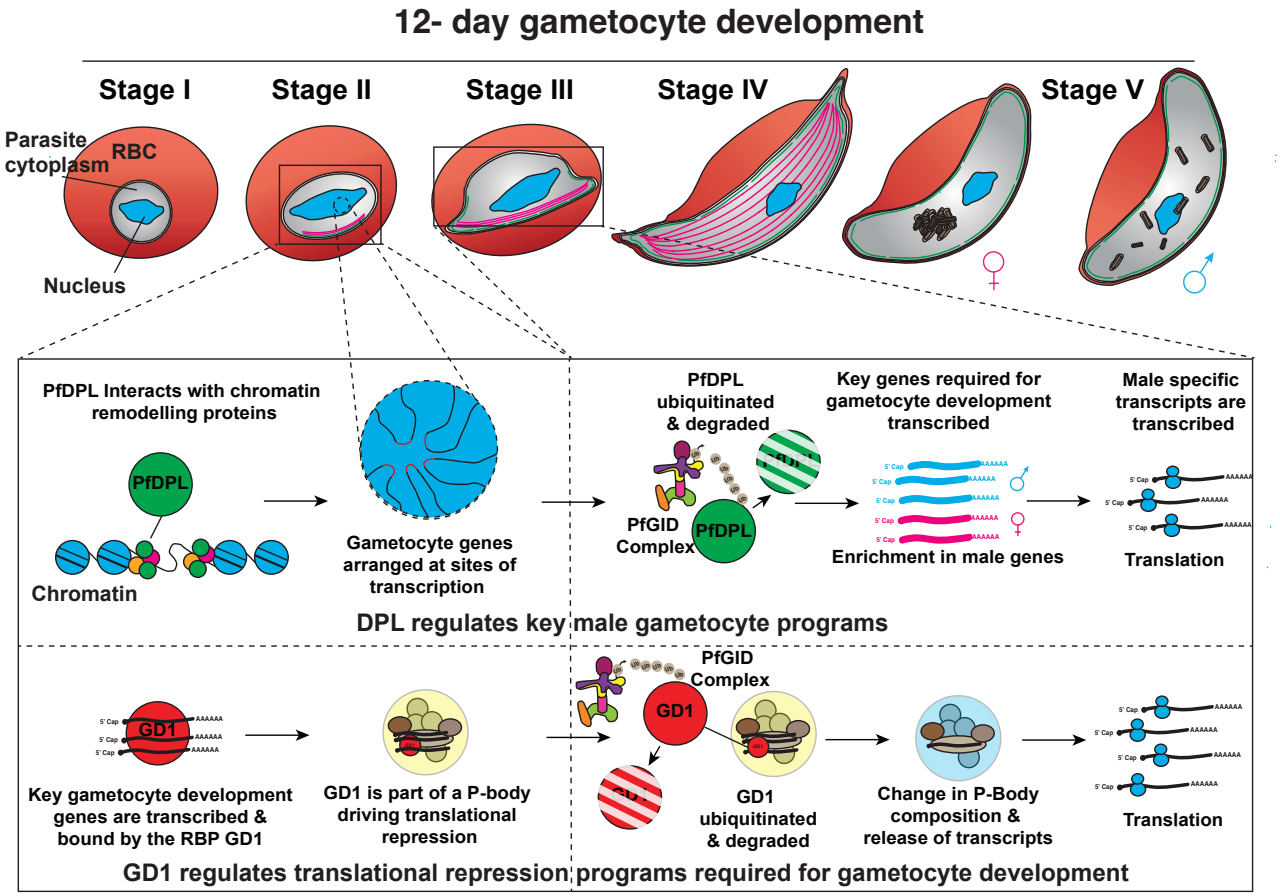
Roger Reddel.

Ubiquitination Fine-tunes Malaria Transmission

Marapana DS, Lopaticki S, Balan B, Reaksudsan K, Cobbold SA, Geoghegan ND, Khurana S, Scally SW, Hickey P, Jayakrishnan N, Vaibhav V, Spall S, Yousef JM, Dagley LF, Goodman CD, Cozijnsen A, McFadden GI, Rogers KL, Jex A, Komander D, McCarthy JS, Tonkin CJ, Dixon MWA, Cowman AF. GID/CTLH E3 ligase complex control cell fate programs for sexual development of *Plasmodium falciparum*. *Nat Commun* 2026;17(1):3497.
***Corresponding authors: marapana@wehi.edu.au; dixon.m@wehi.edu.au; cowman@wehi.edu.au**

Malaria caused more than 600,000 deaths worldwide in 2024. The deadliest human malaria parasite, *Plasmodium falciparum*, depends on a precisely coordinated life cycle to ensure replication in the human host and human to mosquito transmission. While much of the malaria eradication agenda has historically focused on suppressing parasite replication within the human host, increasing attention is now being directed toward targeting transmission stages, which represent a major bottleneck in parasite biomass and lifecycle progression. Transmission of the parasite requires the formation of a specialised cell called the gametocyte, and mature gametocytes are the only parasite forms capable of human to mosquito transmission. Gametocyte maturation occurs over approximately 12 days and five distinct stages and involves extensive morphological, physiological and metabolic remodelling that gives rise to sexually dimorphic male and female parasites. Despite substantial advances in defining the regulators that promote the initial steps of gametocyte commitment, the molecular mechanisms that coordinate the multi-day transcriptional and translational programs driving the gametocyte developmental program and transmission remain poorly understood.

Our work identified a parasite-encoded E3 ubiquitin ligase, the PfGID complex, as a central quality-control regulator of gametocyte development. In the absence of PfGID, parasites initiate sexual differentiation but arrest midway through development, producing defective gametocytes incapable of mosquito transmission. Mechanistically, PfGID acts as a molecular rheostat by ubiquitinating two key substrates, deoxypyrimidine photo-lyase (PfDPL) and gametocyte development 1 (GD1), which regulate distinct but complementary



12-day gametocyte development. *Model of PfGID-mediated control of gametocyte development in* P. falciparum. *PfGID regulates gametocyte maturation by ubiquitinating the developmental regulators PfDPL and GD1. During progression from stage I–V gametocytes, PfDPL is proposed to organise chromatin architecture and activate male-specific gene expression, while GD1 controls P-body-mediated translational repression. By fine-tuning the abundance of both proteins, PfGID coordinates transcriptional and translational programs required for male and female differentiation, ensuring successful maturation and transmission competence. Reprinted from* Nat Commun *2026;17(1):3497, Springer Nature (CC BY NC ND 4.0 license).*

biological programs required for gametocyte maturation and transmission competence.

The first substrate, PfDPL, is a nuclear-localised protein with homology to cryptochromes, highly conserved regulators of developmental timing across eukaryotes. Functional analysis demonstrated that PfDPL interacts with chromatin remodelling proteins and is required for male gametocyte maturation, with disruption of PfDPL resulting in reduced abundance of male-specific proteins essential for transmission. These findings link a conserved effector of biological timing to sexual differentiation and identify the first candidate regulator of biological timing in malaria parasites. While the precise molecular function of PfDPL in controlling male gametocyte biology is currently under investigation, its similarity to cryptochromes suggests a role in integrating environmental or developmental signals with temporally coordinated gene-expression programs.

The second PfGID substrate, GD1, is an RNA-binding protein that localises to P-body-like structures involved in translational repression and mRNA storage. This is particularly significant in the context of gametocyte maturation, a prolonged developmental process that requires highly dynamic and tightly regulated gene expression. We found that PfGID-dependent ubiquitination of GD1 is a key regulator of P-body dynamics, with both increased and decreased GD1 abundance disrupting P-body composition and arresting gametocyte development. This bidirectional sensitivity identifies GD1's role in fine-tuning the composition and function of mRNA regulatory hubs, thereby controlling the expression dynamics of biological programs required for successful differentiation.

Together, these findings reveal that PfGID coordinates complementary gene-regulatory layers that balance gene transcription and protein translation to control gametocyte maturation and transmission. This work uncovers two novel regulatory layers in malaria parasites and identifies new vulnerabilities for blocking parasite transmission. In addition, these findings reveal a previously unappreciated role for ubiquitination in parasite development, identifying

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From left: Matthew Dixon, Danushka Marapana and Alan Cowman.

ubiquitin-dependent regulation as a central mechanism controlling differentiation, gene-expression dynamics, and transmission competence in malaria parasites. The temporally coordinated and multi-layered nature of this regulation resembles developmental checkpoint systems described in other eukaryotes, suggesting that analogous mechanisms may govern cellular differentiation across the parasite life cycle. The evolutionary conservation of the PfGID complex across eukaryotes further highlights the importance of this regulatory strategy and provides insight into how Apicomplexan parasites evolved the molecular flexibility required to navigate diverse host environments and optimise transmission in response to developmental and environmental cues.

Danushka Marapana, Matthew Dixon and Alan Cowman
Walter and Eliza Hall Institute of Medical Research and University of Melbourne

A Novel Chaperone-mediated Mechanism Supports Purine Homeostasis for Normal Brain Growth

Morris MJ, Yeap YY, Edwards JR, Chen C, Paolino A, Furness SB, Millard SS, Pagan JK, Fenlon LR, Ng DCH*. Microcephaly-associated protein WDR62 supports purine metabolism by interacting with co-chaperone BAG2. *EMBO Journal* 2026;45(7):2157–2181.
***Corresponding author: d.ng1@uq.edu.au**

Primary microcephaly is a rare inherited condition where an individual is born with a much smaller brain than expected. This happens because the “starter” cells that build the brain (neural progenitor cells) do not multiply and mature normally during pregnancy. One of the genes most often linked to this condition is *WDR62*. WDR62 binds microtubules and has mainly been studied for what it does in cytoskeletal and cell cycle regulation, but we also find a large proportion of WDR62 is not associated with the cytoskeleton. We made a key observation that suggests a previously unrecognised role for WDR62 in maintaining brain growth. Independent of microtubules, we found that WDR62 was recruited to cytoplasmic granules together with enzymes involved in metabolic synthesis of purines, small molecules needed to build DNA and RNA, and for ATP and energy generation. Importantly, deficiencies in purine metabolism are known to cause defects in human brain development including microcephaly.

Purine nucleotides are synthesised in cells via two primary mechanisms: *de novo* biosynthesis and salvage pathways. Both processes are dependent on a range of specialised enzymes, whose proper folding, stability and activity are regulated by molecular chaperones. This observation prompted us to investigate whether WDR62 serves as a molecular bridge between chaperone-mediated protein quality control and the cellular systems governing purine homeostasis. We further hypothesised that such a connection may underlie the pathogenic effects of WDR62 mutations observed in microcephaly.

Using proximity labelling and quantitative proteomics, we identified an unexpected interaction between WDR62 and the co-chaperone BAG2, a component of the HSP70/90 protein quality control machinery. Under cell stress conditions including purine depletion, WDR62 and BAG2 colocalise with HSP70/90 and purine enzymes in cytoplasmic granules that resemble purinosomes, metabolically active condensates that enhance purine production. Functionally, loss of WDR62 disrupts purine metabolism in multiple ways. Cells lacking WDR62 exhibit reduced expression of key biosynthetic enzymes, impaired nucleotide synthesis under basal conditions and increased sensitivity to purine depletion. This metabolic vulnerability is accompanied by the accumulation of nucleosides, pointing to an imbalance between synthesis, salvage and degradation pathways. Notably, while WDR62 is not required for purinosome assembly per se, it appears to fine-tune purine metabolic capacity, particularly under steady-state conditions where feedback regulation predominates.

A key mechanistic insight from our study is the regulation of the purine salvage enzyme HPRT. We demonstrate that WDR62 stabilises HPRT protein levels through its interaction with BAG2. In the absence of WDR62, BAG2

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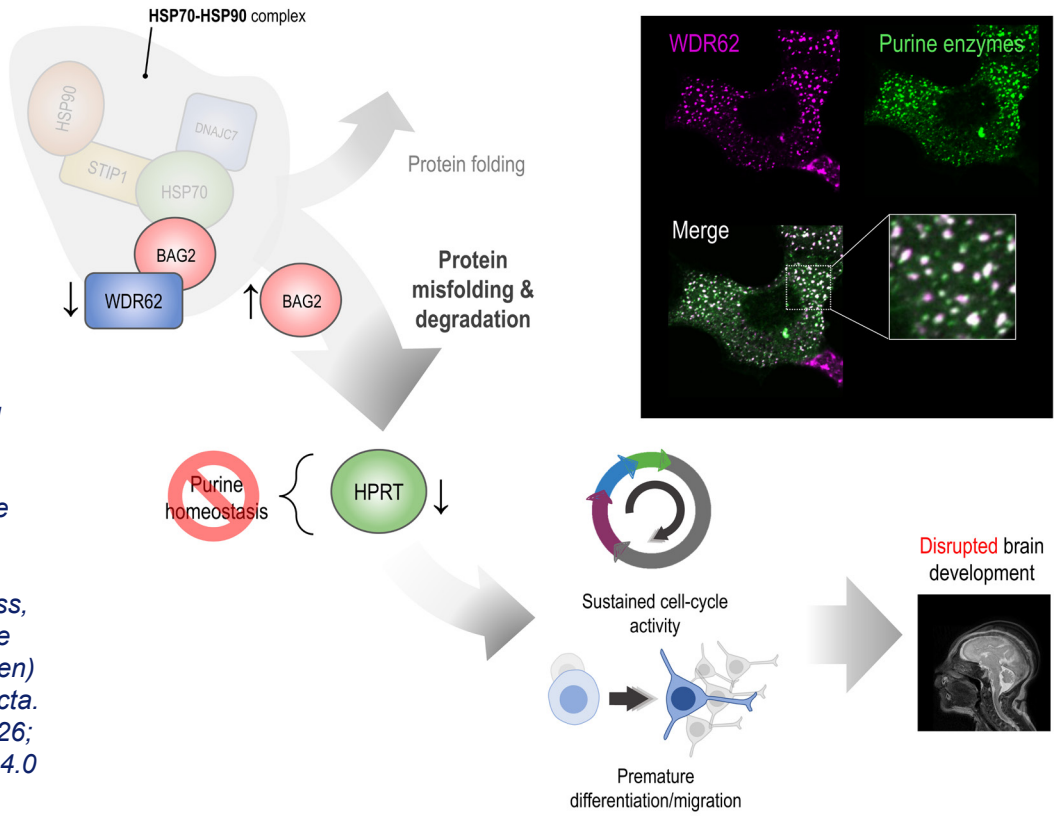

Left: *WDR62 loss (deletion or mutation) elevates BAG2 levels, shifting the proteostatic balance away from folding and towards degradation of purine enzymes such as HPRT, disrupting purine homeostasis and brain development.*
Top right: *Under cell stress, WDR62 (magenta) and the purine enzyme PFAS (green) co-cluster in cytosolic puncta. Adapted from* EMBO J *2026; 45(7):2157–2181 (CC BY 4.0 license).*

expression increases and HPRT becomes destabilised and prone to degradation, reducing its steady-state abundance. Importantly, microcephaly-associated mutations in WDR62 disrupt its interaction with BAG2 and fail to rescue HPRT levels, linking this pathway directly to disease-associated variants. These findings position WDR62 as a scaffold that coordinates chaperone activity with metabolic enzyme stability, bridging proteostasis and metabolism.

The *in vivo* relevance of this pathway is underscored by experiments in the developing mouse cortex. Depletion of either WDR62 or HPRT leads to premature migration and altered positioning of neural progenitors. However, the phenotypes diverge in important ways: WDR62 loss reduces progenitor proliferation, while HPRT depletion enhances the generation of proliferative intermediate progenitors. These distinct outcomes suggest that WDR62 integrates multiple pathways, including purine metabolism, to regulate neural development. The overlap in cellular behaviour supports a model in which disrupted purine homeostasis contributes to microcephaly pathogenesis.

By connecting a canonical microcephaly protein to purine metabolism, our study expands the conceptual understanding of protein mechanisms that underlie neurodevelopmental disease such as microcephaly. It suggests that defects in nucleotide metabolism, long appreciated in other contexts, may play a more prominent role in neocortical development than previously recognised. More importantly, it opens new avenues for investigating how metabolic and proteostatic pathways intersect to control cell fate decisions. By showing that the WDR62–BAG2 partnership helps protect the purine recycling enzyme HPRT and supports purine balance, our work highlights purine metabolism as a potential weak point in WDR62-related disease. More broadly, it suggests that how cells protect and reorganise their metabolic machinery during stress may be an important and underappreciated factor in healthy brain development.

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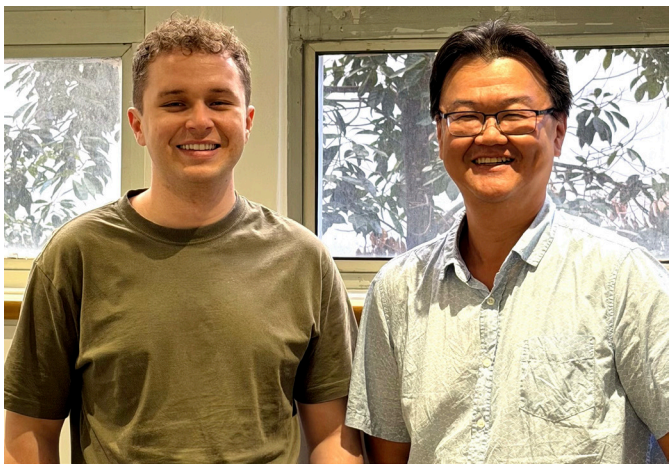
School of Biomedical Sciences
University of Queensland



Matthew Morris (left) performed the study and authored the paper as part of his PhD under the supervision of Dominic Ng.

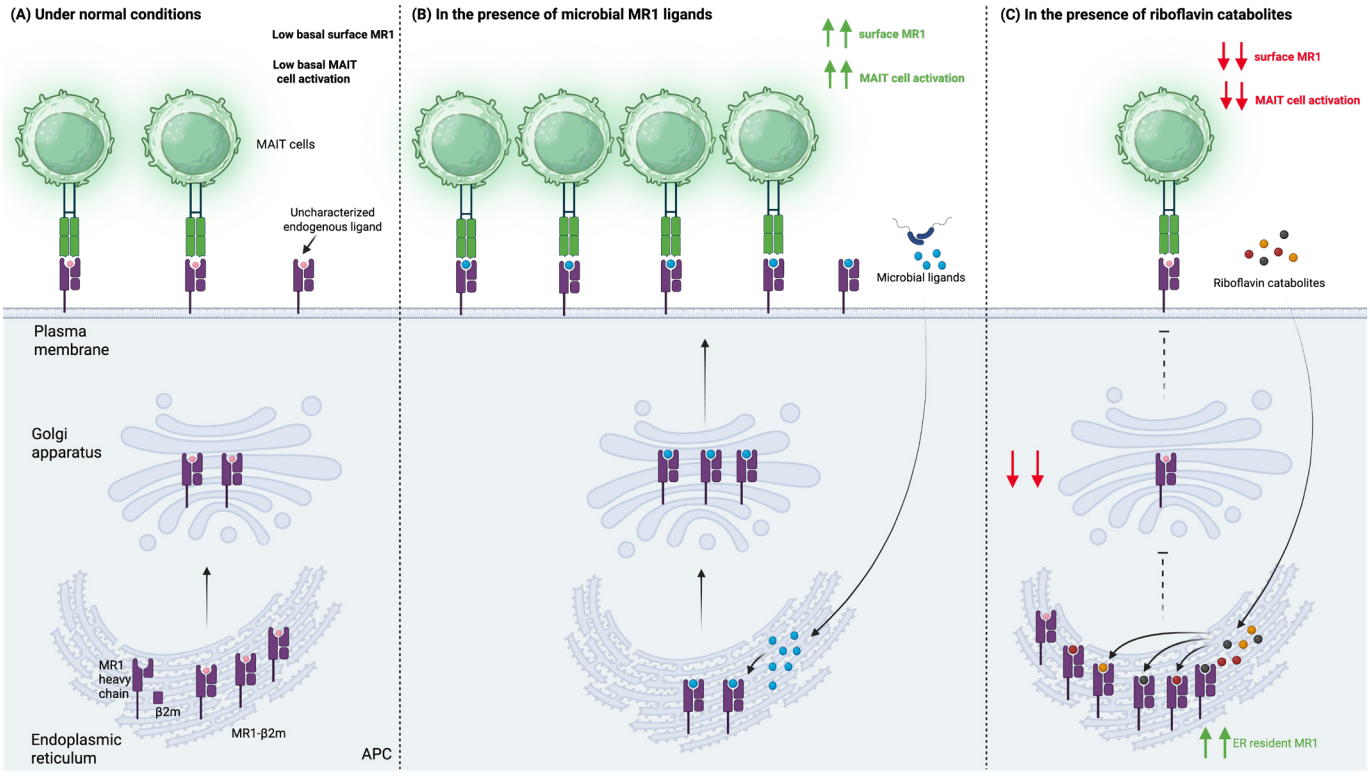
Publications With Impact

Natural Riboflavin Degradation Metabolites Suppress T Cell Immunity

Abdelaal MR, Deng J, McInerney MP, Ito E, Purcell AW, Yamasaki S, Villadangos JA, McWilliam HEG, Gherardin NA*, Rossjohn J*, Awad W*. The antigen-presenting molecule MR1 binds host-generated riboflavin catabolites. *J Exp Med* 2026;223(2):e20250711.
***Corresponding authors: jamie.rossjohn@monash.edu; n.gherardin@unimelb.edu.au; wael.awad@monash.edu**

At the interface between the immune system and metabolism lies a unique group of immune cells known as mucosal-associated invariant T (MAIT) cells. These cells act as rapid responders against infection and are particularly abundant in tissues such as the lungs, liver and gut. MAIT cells are activated when a specialised immune molecule called MR1 presents small-molecule organic metabolites, many of which are produced by bacteria and fungi. For years, researchers have largely focused on how microbial molecules stimulate MAIT cells during infection. However, an important question remained unanswered: does the human body itself produce molecules capable of regulating these cells?

Our research set out to address this gap in knowledge. Rather than investigating bacterial products, we explored whether natural metabolites generated within the body could influence MR1 and MAIT cell activity. Surprisingly, we discovered that when the body breaks down vitamin B2 (riboflavin), it generates small molecules that can suppress MAIT cell activation. These naturally occurring metabolites bind to MR1 and reduce its ability to present activating signals to MAIT cells. In doing so, they appear to function as an internal 'brake' on this arm of the immune system.



MR1 downregulation and MAIT cell inhbition by host-derived riboflavin (RF) catabolites. Shown is a schematic illustration depicting the hypothesised mechanism by which host-generated RF catabolites modulate MR1 expression and MAIT cell activity.
***(A)** In the absence of MR1 ligands, the majority of MR1 resides in the ER with a small number of MR1 molecules escaping to the cell surface to maintain basal MAIT cell activation.*
***(B)** Microbial RF-derived ligands stimulate MR1 trafficking to the cell surface and subsequent MAIT activation.*
***(C)** RF catabolite-bound MR1 exhibits reduced export from the ER, resulting in decreased surface MR1 levels and MAIT cell suppression.*

These findings provide new insight into how immune balance may be maintained under normal physiological conditions. While MAIT cells play an important protective role against infection, excessive or prolonged activation of these cells has also been linked to inflammatory disorders and tissue damage. Therefore, the immune system must carefully regulate MAIT cell responses to ensure that protection against pathogens does not come at the expense of healthy tissues. Our work suggests that riboflavin breakdown products may represent one of the body's natural mechanisms for achieving this balance.

The study also broadens our understanding of MR1 biology. Traditionally, MR1 has been viewed primarily as a sensor of microbial metabolites. Our findings support the idea that MR1 can also present endogenous, or self-derived, metabolites that shape immune activity in a regulatory manner. This expands the known biological role of MR1 beyond infection sensing and highlights its potential importance in maintaining immune homeostasis.

Importantly, these discoveries may have broader implications for human health. MAIT cells have been implicated in a wide range of conditions, including autoimmune diseases, chronic inflammation, metabolic disorders and cancer. Understanding how endogenous metabolites regulate these cells could open new avenues for therapeutic intervention. Instead of broadly suppressing the immune system, future therapies might selectively target the MR1–MAIT axis to fine-tune immune responses more precisely and safely.

Although these findings are promising, this research is still at an early stage. Our current work has primarily been conducted in controlled laboratory systems, and the next critical step is to investigate whether these regulatory mechanisms operate similarly in living organisms. Future studies will involve animal models to better understand the physiological relevance of these metabolites during health and disease.

Mohamed Abdelaal and Wael Awad Abdelhady
Monash Biomedical Discovery Institute

Mohamed Abdelaal (left) and Wael Awad Abdelhady.

When Ubiquitin Meets Metabolism: Direct Ubiquitination of Glycogen and Metabolites

Jochem M[#], Cobbold SA[#*], Goodman CA, Kueng C, Cerra A, Fielden LF, Kim ML, Schenk P, Agarwal R, Wang XS, Scutts SR, Pandos M, Tang L, Hermanns T, Devine SM, Brzozowski M, Shibata Y, Geoghegan ND, McLean CA, Lechtenberg BC, Hofmann K, Gregorevic P, Komander D*.
Ubiquitination of glycogen and metabolites in cells and tissues. *Nature* 2026; in press.
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Ubiquitination is a central post-translational modification that regulates protein stability, localisation and signalling through the covalent attachment of ubiquitin to target substrates. This process is mediated by a cascade of E1, E2 and E3 enzymes and can generate diverse signalling outputs through polymerisation into distinct chain types. While ubiquitin biology has been studied extensively, it has remained overwhelmingly protein-centric, largely due to technical limitations that preclude detection of non-protein ubiquitination.

In this work, we overcome this barrier by developing **Non-Protein Ub-clipping (NoPro-clipping)**, a mass spectrometry-based method that enables the detection and quantification of ubiquitination on non-proteinaceous substrates. The approach uses ubiquitin-specific proteases to cleave ubiquitin while leaving a diagnostic diglycine (GG) remnant attached to the modified substrate. This GG tag is then selectively labelled via sortase-mediated transpeptidation, enabling enrichment and compatibility with high-sensitivity proteomic workflows. This strategy transforms previously undetectable ubiquitin–metabolite conjugates into species amenable to standard mass spectrometry analysis.

Applying NoPro-clipping revealed a previously unrecognised landscape of ubiquitination beyond proteins. Most notably, we demonstrate that glycogen, the primary cellular glucose storage polymer, is directly ubiquitinated across mammalian cells and tissues. Functional experiments show that glycogen ubiquitination promotes its trafficking to lysosomes, consistent with a role in glycophagy, an alternative

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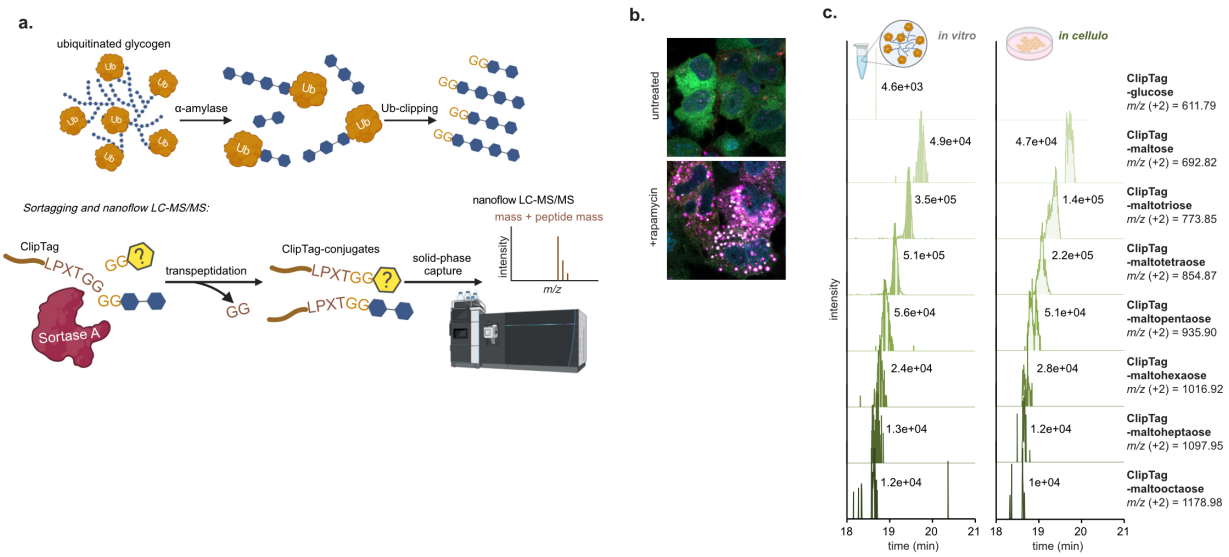


Fig. 1. NoPro-clipping enables detection of non-protein ubiquitination.
(a) *Non-protein ubiquitinated substrates are collapsed into MS-compatible species, i.e. treating glycogen with amylase produces short glucose polymers. Then a ubiquitin-specific protease is used for Ub-clipping, removing all conjugated ubiquitin, while leaving the C-terminal diglycine motif. Sortase is then used to label these diglycine motifs with a peptide, enabling clean-up and nanoflow LC-MS acquisition.*
(b) *Using an inducible dimeriser system to recruit an E3 ligase to glycogen, we confirmed addition of the dimeriser (rapamycin) led to co-localisation of ubiquitin (purple) and glycogen (green).*
(c) *Detection of ubiquitinated glycogen from cells undergoing induced ubiquitination (right column) in comparison to an* in vitro *Ub-glycogen standard (left column). Amylase treatment produces a breadth of glucose polymers.*

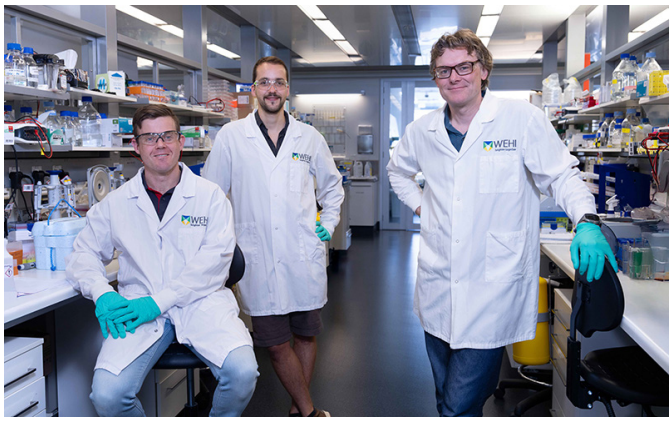
pathway to the canonical cytosolic degradation of glycogen. This establishes ubiquitin as a direct regulator of metabolic substrate fate, rather than solely a modifier of proteins.

Importantly, this mechanism is dynamically regulated *in vivo*. In mouse liver, glycogen ubiquitination increases markedly during early fasting, coinciding with active glycogen breakdown. This indicates that ubiquitin participates in the physiological response to energy stress and contributes to metabolic adaptation. Mechanistically, glycogen ubiquitination is mediated in part by components of the linear ubiquitin assembly complex, linking this process to Met1-linked ubiquitin signalling. Given that this pathway is also associated with inflammatory signalling, these findings suggest a potential mechanistic bridge between metabolic dysregulation and inflammation.

Beyond glycogen, untargeted analyses uncovered additional ubiquitinated metabolites, including glycerol and spermine, which were validated using *in vitro* standards and metabolic labelling. These findings demonstrate that ubiquitination extends broadly to diverse classes of biomolecules, revealing a new dimension of cellular regulation that integrates metabolism with ubiquitin signalling.

Collectively, this work expands the conceptual framework of ubiquitin biology by establishing ubiquitination as a general modifier of biomolecules, not just proteins. By enabling systematic exploration of non-protein ubiquitination, NoPro-clipping opens new avenues for understanding metabolic regulation and its dysregulation in disease. These findings also raise the possibility of targeting ubiquitin-dependent metabolic pathways therapeutically, particularly in glycogen storage disorders and related metabolic diseases.

Simon Cobbold, Marco Jochem and David Komander
Walter and Eliza Hall Institute of Medical Research



From left: Simon Cobbold, Marco Jochem and David Komander.

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The ASBMB Education Feature is coordinated by Amber Willems-Jones and Matthew Clemson.

Building Stronger Biochemistry Educators Nationwide: Early Impact of the ASBMB Education SIG Peer Mentoring Program

Amber Willems-Jones on behalf of the ASBMB Education SIG

Department of Biochemistry and Pharmacology, University of Melbourne

Peer mentoring supports the formation of professional identity through reflection, dialogue and meaning making (1). Participants learn through observation and interaction within a social setting to develop capability and self-efficacy through shared experiences (2). When mentoring relationships are collaborative and built on mutual engagement, a sense of belonging and shared purpose, they become dynamic systems that support both personal growth and institutional outcomes (3). Consistent with this, evidence suggests that mentoring relationships broaden perspectives, enhance connectedness, reduce isolation and support professional identity formation and career development pathways (4).

To leverage these positive outcomes for our membership, the ASBMB Education Special Interest Group (Ed SIG) launched a Peer Mentoring Program in February 2025. The Peer Mentoring Program provides a national, discipline-specific mechanism for connecting educators across institutions, supporting career development in teaching and learning, and strengthening the biochemistry education community. It is guided by the acronym, CARES, highlighting the importance of trust, genuine interactions, mutual growth, understanding and encouragement within the mentor–mentee dynamic (**Fig. 1**).

Program overview and participants

The inaugural 2025 cohort included 13 mentor–mentee pairs drawn from 16 institutions across Australia, reflecting broad representation of academic roles and geographical locations. Participants included six Lecturers (Level B), six Senior Lecturers (Level C), six Associate Professors (Level D) and four Professors (Level E), with at least 50% holding education-focused roles and 25% identifying as teaching/research fellows.

Participants were supported throughout their mentoring journey with a purpose-designed Peer-Mentoring Handbook, which outlined program expectations and provided practical strategies, a mentoring checklist, and a mentor–mentee agreement to guide goal setting, help structure discussions and to support ongoing reflection.

The program was designed for educators in biochemistry and related disciplines across both undergraduate and postgraduate teaching contexts. Though not tied to any single institution or course, participants commonly reported working with large undergraduate cohorts (typically 100–500+ students) within biomedical science and molecular biology programs.

Fig. 1. *The CARES guiding principles for peer mentoring in the ASBMB Education SIG program.*

Evidence of impact and participant reflections

Qualitative feedback suggests the program has had a positive impact on participants' confidence, career clarity and engagement with scholarly teaching. Participants highlighted several key benefits:

- **Career progression support** – discussions around promotion, tracking achievements and developing a coherent Scholarship of Teaching and Learning narrative were frequently cited. *"I think this is a great scheme… it's important that people get good advice early in their careers which will help them do well as their career progresses."*

- **Increased motivation and accountability** – regular meetings encouraged goal setting and sustained progress. *"Setting goals using the mentoring booklet gave me something to work towards."*
- **Enhanced opportunities** – participants reported being inspired to submit conference abstracts, join committees and pursue collaborations. *"I was inspired to submit an abstract for a conference."*
- **Value of cross-institutional mentoring** – having a mentor from a different university provided fresh perspectives and reduced institutional bias. *"Thanks for organising this! I found it really helpful to have someone outside of my uni to chat with and share ideas."*

These outcomes are consistent with the literature which demonstrates that mentoring improves academic productivity, career satisfaction and institutional engagement.

Looking ahead

Given the strong interest from participants in continuing and expanding the program, alongside clear evidence that the ASBMB Education SIG Peer Mentoring Program is addressing an important need within the biochemistry education community, the initiative has continued in 2026. New and returning participants have recently been invited to join, with at least a dozen mentor–mentee pairs established to foster new (and/or continue) relationships and broaden perspectives.

By supporting collaboration, career development and cross-institutional networks, the program continues to contribute to a more connected and resilient community of biochemistry educators in Australia.

If you are interested in being part of the Peer Mentoring Program and are an ASBMB member, please reach out to Dr Jess Gibbons jessica.gibbons@monash.edu or Associate Professor Amber Willems-Jones amber.willems@unimelb.edu.au.

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A Picture is Worth 1,000 Words – What is a Video Worth? Student Perceptions of Video and Screen-recorded Feedback

James Tsatsaronis

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Feedback is an essential component of high-quality educational experiences. However, student perceptions to feedback are often critical of the detail, relevance or timeliness of feedback they receive. While feedback on assessment is most often delivered as text, there is a growing appreciation of using multimodal feedback, including audio, video or screen casting, in feedback dialogue.

My exploration of multimodal feedback was prompted by a recent institutional update to Canvas, which introduced video and screen-recording capabilities for feedback. In Semester 1 2025, I decided to experiment with these features. While I had previously provided audio feedback, a multimodal approach – combining video with screen recording – offered even greater potential for providing feedback on multimedia assignments.

I implemented this approach to feedback in an advanced biochemistry unit at the University of Sydney, where students create a five-minute pre-recorded video presentation as one of the assessments. As students submitted a video assignment, providing written comments alone may not adequately relate that feedback to specific aspects of the assignment itself. I provided video feedback for 51 students, with my recordings ranging from about 2.5 to 6.5 minutes. In some cases, the length of my feedback video was longer than the submitted assignment from the student. To structure this feedback, I used a five-part feedback template adapted from Henderson and Phillips (1), shown in **Table 1**.

A key benefit to this approach was in the detailed feedback section. With the student's submission being recorded on my screen, I could drag the slider of their video, pause at key frames, and give specific feedback on how they had conveyed structures or mechanisms. Each feedback video ended with an acknowledgement; usually a good luck message for exams, along with an invitation to ask questions or seek clarify on the feedback provided. These videos were intentionally designed to prioritise authenticity and support relationship building. I recorded all the feedback videos in one

Table 1. Video Feedback Template adapted from Henderson and Phillips (1).

Component	Description	Example feedback
Salutation	Conversational/informal greeting, include student and marker name	"Hi [Student], this is James, I'm trying something different and giving you some recorded video feedback"
Evaluative summary	Acknowledge student's work and give broad statement	"Thank you for your submission, overall you've [done a really great job/put a lot of effort in]"
Orient to student work	Brief statement that recapitulates the submission to orient the student to the feedback	"You started off your presentation by talking about the background of Gateway cloning"
Detailed feedback for each video section	With student submission on screen, move slider and comment on positive and negative aspects of the submission. Pause at key frames and use narration and the mouse cursor to indicate areas of focus. Use web browser tabs to show key literature when correcting any fundamental misconceptions	"In preparing for this presentation, I think you might have overused text. The intention was in this assignment to convey meaning mostly through drawings and diagrams, like here in your section for the experimental workflow"
Valediction	Acknowledgement and relational work	"Thanks again for your submission, please let me know if you have any questions, otherwise best of luck for the final exam"

take and adopted an informal, conversational tone. My perspective was that these should not be highly edited, perfectly polished pieces of instructional media, but rather, they should resemble an in-person conversation with the student about their work.

After feedback and marks were returned to students, I surveyed students using a questionnaire adapted from the *Community of Inquiry* instrument that evaluated their perception of the feedback according to dimensions of social, cognitive and teaching presence (2). Students (15/51, 29% response rate) rated items from all dimensions highly, with the highest ratings observed for items relating to social and teaching presence. Students three main themes related to the feedback. They identified that 1. the feedback helped them understand their strengths, 2. helped focus their attention on the most important aspects of their work, and 3. gave them a sense of personal connection. Prominently, 100% of students agreed that the video/screen-recorded feedback "addressed areas for improvement, I still felt supported and trusted by my instructor."

Student responses to open-response questions further emphasised these themes, with many reporting that they felt a closer personal connection to me as the grader. Other students commented that they found the feedback easier to understand and absorb, and that it was clear, specific and personalised. Several noted it felt kind and respectful, describing it as "comforting and encouraging." Many expressed gratitude for "taking the time" to give feedback this way. The student responses collectively emphasised how video feedback delivered in this modality can foster positive student perspectives towards feedback dialogues.

Adopting this mode of feedback did not come without challenges. Giving feedback of this type requires a quiet location and active endorsement, particularly if the feedback is being provided by tutors or casual academics. However, despite these constraints, this approach shows promise to nurture richer conversations between students and teachers regarding their work.

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Scaling Engagement in Large Biochemistry Classes: A Case-based Redesign Using Digital Collaboration to Maintain Learning Quality

Mehrnaz Keyhanfar, Briony Forbes and Amy Wyatt

College of Medicine and Public Health, Flinders University

Growing university participation in Australia is increasing enrolments in biochemistry, creating pressure to maintain learning quality in larger classes. Evidence suggests class size alone does not determine outcomes; rather, student engagement and instructional design are key drivers of learning (1). However, large cohorts can reduce interaction and place constraints on effective teaching practices, which may affect the overall learning experience (2). This article outlines a scalable redesign of a third year biochemistry topic that preserves active learning while accommodating growth.

This topic is highly relevant to biochemistry educators, as many programs are experiencing similar expansion pressures. Practical, evidence-informed strategies are needed to sustain student engagement and equitable learning outcomes in laboratory- and concept-heavy disciplines such as biochemistry.

The case study describes a third-year undergraduate topic, Biochemistry of Human Disease, at Flinders University (College of Medicine and Public Health; 162 students in 2024, an increase from 104 in 2023). The subject integrates clinical case-based learning across human diseases including diabetes and cancer. Previously delivered through small tutorials (12–14 students), the redesign implemented mid-sized tutorial groups (approximately 60 students) subdivided into smaller working groups, supported by Padlet, a digital collaboration platform (**Fig. 1**). Pre-recorded lectures maintained a flipped classroom model, enabling active in-class learning (3).

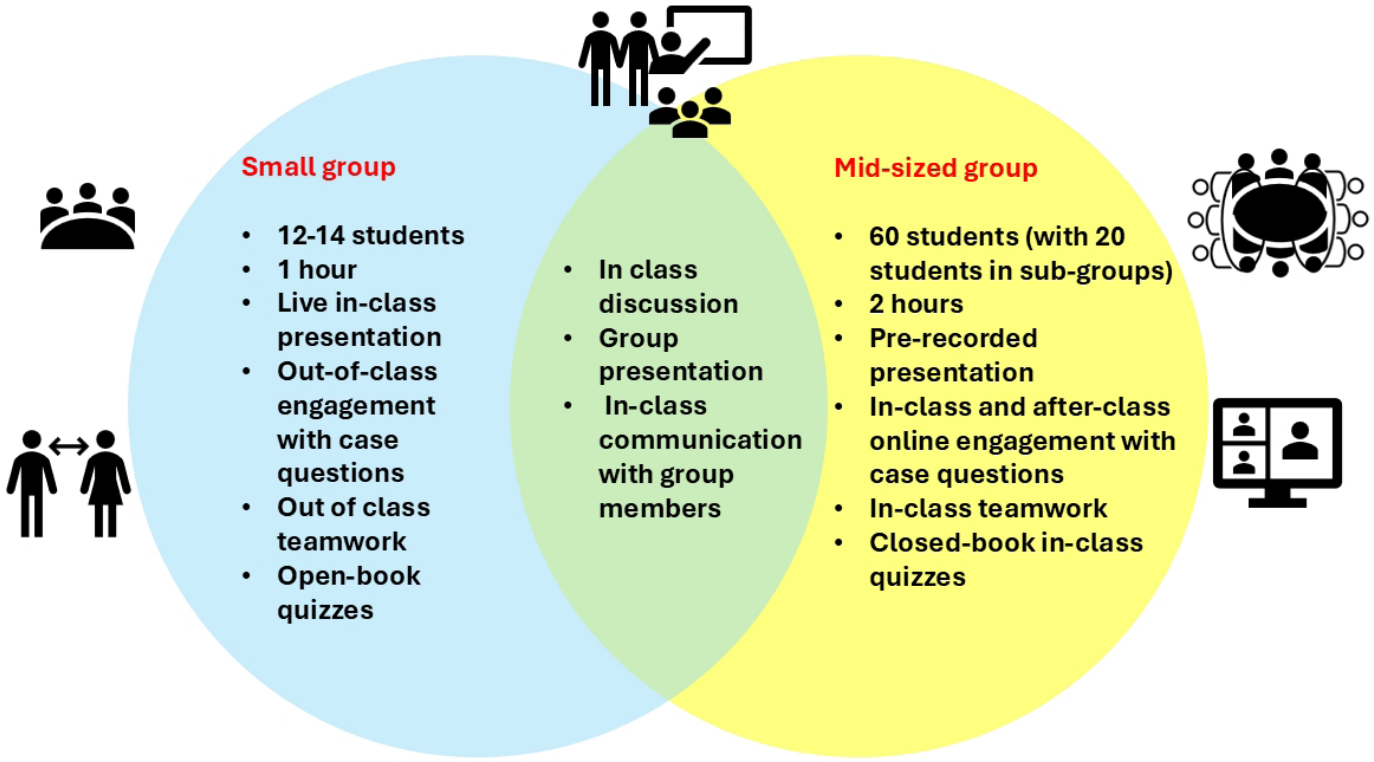

Fig. 1. *Contrasting pedagogical approaches with a small tutorial group structure used prior to 2023 (blue) and the mid-sized tutorial group structure used in 2024 (yellow), with highlighting shared elements in the overlap. Illustrations depict learning environments for each group size.*

The redesign was guided by the Biochemical Literacy Framework, emphasising critical thinking, communication and conceptual understanding (4). Students engaged in structured, case-based discussions via Padlet, contributed collaboratively during and between tutorials, and completed regular closed-book quizzes to reinforce retrieval practice. Student-generated presentations were submitted as recorded videos to enhance flexibility and reduce performance pressure.

To evaluate the impact of the redesign, deidentified institutional data and student feedback (24.7% response, n=40) were analysed under ethics approval (Flinders University HREC Project ID 8806). Results showed strong engagement: all students contributed to online discussions at least once per case. Student feedback highlighted improved collaboration and deeper understanding, particularly through Padlet activities and peer discussion. Illustrative comments included: “Padlet each week was very useful in finalising my understanding” and “report backs solidified concepts.”

Academic outcomes showed no major negative impact despite increased cohort size. Failure rates decreased (4.8% to 1.8%), though high distinctions declined slightly, resulting in a shift toward mid-range grades. Mean scores decreased modestly (87.7% to 84.7%), suggesting mixed performance outcomes rather than overall decline. These findings align with evidence that active learning improves student performance and is effective across class sizes, including large classes (5).

Reflecting known tensions between active learning and cognitive load, where poorly structured or excessive demands can hinder performance (6), students also identified areas for improvement, including high workload, need for clearer instruction and stronger alignment between lectures, activities and assessment.

Overall, the redesign demonstrated that well-structured digital collaboration and assessment alignment can sustain engagement and inclusivity at scale, even if academic outcomes require careful interpretation. Key lessons for biochemistry educators include:

- Use structured digital tools to scaffold peer learning
- Maintain clear alignment between learning activities and assessment
- Balance active learning with manageable workload and explicit guidance

This approach offers a practical model for Australian educators adapting to larger cohorts while preserving student-centred learning.

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Taking ASBMB Education to Europe: Report on the FEBS Education and Training Conference

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Biomedicine Discovery Institute, Monash University

The second FEBS Education and Training Conference (FEBS ETC) held in the beautiful seaside resort town of Kuşadasi, Türkiye, in March 2026, was an outstanding success. Notwithstanding the geopolitical tensions in the region, the meeting brought together an awe-inspiring and dedicated community of 114 scientists and educators from 28 countries. The conference offered plenary lectures, invited speakers from the region, debates, workshops and a large number of short presentations and posters, as well as multiple inspiring conversation over the four days.

Welcome address by Professor Ferhan Sagin (Ege University, Türkiye) and Professor Nino Sincac (Zagreb University, Croatia).

Thought-provoking plenaries

The opening plenary by Professor Aviad Haramati (Georgetown University School of Medicine, USA) highlighted the importance of fostering wellbeing in the learning environment. The message was simple: learning requires care and empathy. Removing unnecessary examinations, providing suitable curriculum interventions and developing self-awareness were highlighted as being important contributors to student wellbeing in an educational setting. The second plenary by Dr Allegra Via (Sapienza University, Italy) stressed the importance of empowering educators; reminding us to treat students as our colleagues, model the pedagogy we advocate and build a community of practice. It was a reminder that enduring change in education begins with the work of all of us: the educators. This was followed by a plenary from Associate Professor Manuel Costa (University of Minho, Portugal) that focused on how teaching and learning centres can support educators to navigate challenges and leverage opportunities. Finally, the closing plenary by Professor Hakan Abacıoğlu (Izmir University, Türkiye), treated us to a narrative of the evolution of the university, from the Medieval University in Bologna, Italy, in the 11th century to today's university. This narrative highlighted the human role in shaping universities through periods of change driven by educators' curiosity and innovations in teaching and learning.

Lively debates

The debators battled energetically and passionately resulting in much enjoyment and laughter by the audience. The debates were all on highly topical issues, sparking lively discussions. To begin, a thought-provoking debate on 'Burnout is contagious; whom to save first?' raged over a 'happy educator meant a happy student' or a 'happy student meant a happy educator'. This was followed by a second debate, 'Innovation versus tradition in teaching' which triggered another lively discussion on who is the winner in the classroom and how far should we push for change in education. The final debate was equally passionate; 'Social media: strategic networking or shallow self-promotion'. Undoubtedly, the debates were a highlight of the conference captivating the entire audience.

Interactive workshops

There were several highly interactive and hands-on workshops across the four days. The FEBS Education Academy ran a series of three workshops titled 'Integrating AI tools to enhance learning'. The three workshops were well attended and comprised content including using AI tools to design a course or unit, an activity and an assessment. Many walked away with several strategies and ideas of integrating AI in our teaching.

Conference attendees in Kuşadasi, Türkiye.

ASBMB Education Feature

Representing ASBMB Education

Representing the ASBMB at this highly inspiring meeting were Matthew Clemson (University of Sydney) and Nirma Samarawickrema (Monash University) who delivered two invited presentations. Matthew kickstarted day 2 of the conference with a discussion on how the AI-driven chatbot tutor, Dr Mattabolism, was a useful ally to teach the basics of metabolism to second-year biochemistry students. This was followed by Nirma showcasing how she combined case study pedagogy with active learning workshops to foster belonging in large classes, and to facilitate first-year Biochemistry students' transition to university.

Invited presentation on case study pedagogy and active learning workshops in facilitating transitioning to university by Nirma Samarawickrema.

Other highlights

A meeting with the Education section Associate Editor of the *FEBS Open Bio* gave many an opportunity for one-on-one discussions on how to better target their submissions for publication.

Socially, the highlight was a visit to Ephesus, the ancient city in Türkiye's central Aegean region, in present-day Selcuk in Izmir. Built in the 10th century BCE, the Temple of Artemis and the amphitheatre with seating for 24,000 spectators, were awe-inspiring. It is no small wonder that the Temple was designated one of the seven wonders of the ancient world.

Needless to say, the conference was a resounding success, with each day proving to be dynamic. Inspirational ideas and conversations continued to connect sessions, participants and institutions. We all walked away convinced that meaningful connections and conversations are vital for us educators irrespective of the noise present in the outside world.

Invited presentation by Matthew Clemson on the benefits of the AI-driven chatbot tutor, Dr Mattabolism. He also gave a remote Workshop on using AI-chat bots.

Outside the Temple of Artemis, Ephesus

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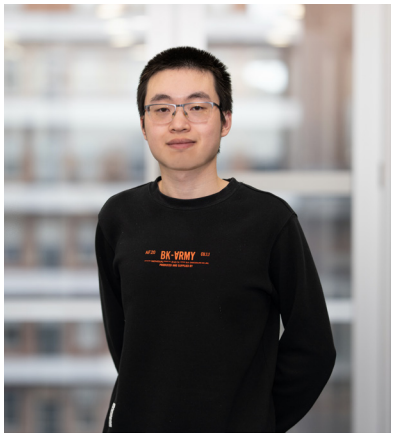
SDS Page: Short Discussions for Students Page

Of Predictions and Proof: When Computational Biology Meets the Wet Lab

Jerry Chen

Few undertakings in life ask you to become comfortable with uncertainty quite like a PhD. Though I had prepared myself for this reality, I had not expected it to arrive so immediately, being thrown into the completely unfamiliar field of protein design during my first week. Previously, my lab experience had focused on virology and immunology, studying ferret models and their responses to viral infections during my Masters. A PhD focused on nanobodies against viruses felt like a natural progression, moving towards a more applied area while remaining grounded in virology. I expected the project to be a relatively standard characterisation study: take alpaca nanobodies, examine how they bind viral proteins and assess their neutralisation capabilities. In fact, this was the project described to me during my interview. It was therefore a surprise to learn, upon starting, that the project would not begin with the expected immunisation campaigns. Instead, I would have to design a new, computational workflow to create them, despite having arrived with no prior experience in either nanobody research or protein design. The artificial intelligence revolution I had assumed would remain largely in the background of my own PhD was now suddenly front and centre.

Examples of nanobodies designed using Jerry's nanobody design pipeline, including experimentally validated binders.



Jerry Chen.

A little over a year onwards, that workflow is now powering the lab. We have a high-performance computing pipeline which generates, filters and optimises nanobody candidates for experimental testing. It even includes a user-friendly interface, making it easier for researchers without coding experience to configure and launch design runs. That is the short version of the story we tell others. The journey behind it, however, was far less orderly, filled with the struggles of learning to balance wet-lab and computational biology while the field was literally being updated daily, and the usual pressures of PhD life continued in the background.

As wet-lab scientists, we become used to particular kinds of uncertainties. A failed expression, a strange gel or an uncooperative binding assay can be frustrating, but the problem usually belongs to a world we know how to navigate. There are controls to check, conditions to change and colleagues who have seen similar failures before. Beginning computational work felt like having to learn that whole process again, only in a world where the tools, language and failure modes were unfamiliar. Anyone who has tried to install open-source scientific software will recognise this feeling. Documentation is often written for people who already know what they are doing, with layers of assumed knowledge hidden between each command. For a newcomer, even reaching the point where a tool runs successfully can feel like an experiment in its own right.

I suspect many more wet-lab scientists will find themselves moving into this space in some capacity, as artificial intelligence becomes increasingly woven into modern biology. If that includes you, the most useful starting point, at least in my experience, is not trying to master every programming language or understand every model. It is learning the basic logic of the computational

world first. It is learning how computational work is organised: where things live, what each tool needs and how information moves from one step to the next. That may sound basic, but it changes how you troubleshoot. Most programs are not mysterious black boxes. They are logical systems of inputs, outputs and assumptions, and scientists are already trained to think in those terms. Once you can picture how those pieces connect, the program becomes a tool you can understand, adjust and use with purpose.

After that, the most useful goal is simply to get one thing to run. It does not need to be impressive. A short script, an installed package or a structure prediction tool is enough. For those with access to a high-performance computing system, even loading an existing software module and confirming that it runs can be a meaningful first step. There will still be many frustrations along the way. Commands will fail because a path is wrong, a package is missing, a version has changed or a file is not where the program expects it to be. Jobs will crash after hours of waiting. Error messages will be both too specific and not specific enough. At times, it can feel as though you are making no progress at all. But this is part of the process, not evidence that you do not belong in it. I still remember the quiet satisfaction of seeing the first novel nanobody file appear where it was supposed to, after days of trying to make the workflow behave. It was not a finished discovery, or even a candidate ready for testing. But it was proof that the system could respond, and that I could learn how to make it do so.

Wet-lab biologists do not all need to become computer scientists, but many of us will need to become comfortable enough with computational tools to question them, adapt them and recognise their limits. Computational predictions, however powerful, are still predictions. They can help us narrow the search space, suggest new possibilities and prioritise what to test next, but they cannot replace careful experiments, biological judgement or validation at the bench. If anything, my experience has made those things feel even more important. The real challenge, then, is not letting AI take us out of the lab, but learning how it can send us back with better questions.

Three take-home messages

- **Start with the logic, not the language.** You do not need to master every programming language or model before beginning. First, learn how computational work is organised: where things live, what each tool needs and how information moves from one step to the next.
- **Get one thing to run.** It does not need to be impressive. A small working example can change computation from something abstract into something you can test, break, repair and use. Tools such as large language models can now help with this first step, especially for interpreting errors or drafting simple scripts. They have improved significantly since I began this work, but they are most useful when treated as guides rather than substitutes for understanding.
- **Let computation sharpen the experiment.** The goal is not to move away from wet-lab biology, but to return to it with better questions. Computational tools are most useful when they help narrow what to test, clarify why it is worth testing and make experimental validation more focused.

Jerry Chen is a second year PhD candidate in the Tham Lab at the Walter and Eliza Hall Institute. His research combines computational and experimental approaches to design and validate nanobodies targeting viruses with pandemic potential.
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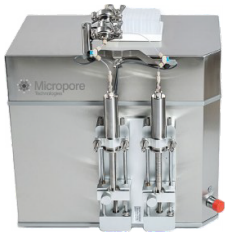

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Off the Beaten Track

Written by former researchers who have now established careers outside of research, Off the Beaten Track is intended to give the readers insights into the range of alternative careers available to them. Authors describe the paths they have taken to arrive at their present career and provide a detailed description of exactly what the job entails on a day-to-day basis.

My Ikigai Away From Wet Lab

Nguyet (Marisa) Duong
Statistical/Data Analyst and Private STEM Tutor

One more paragraph… another paragraph… every paragraph of the thesis accomplished was another road marker I passed to finish my PhD marathon before it 'finished' me. I was making progress, inching towards the light at the end of the 'PhD tunnel'. The daily grind of editing and rewriting my thesis distracted me from asking the big question, which I eventually had to face upon submission: what am I going to do at the end of this PhD?

Nguyet (Marisa) Duong.

I still remember the presentation from the University of Western Australia's Graduate School of Research in my third year of my PhD (2018), stating only 0.54% of the PhD graduates would continue along the academic path. At that time, I had asked myself, do I persevere to stay on this path, almost by default, or shall I join the 'black box' of 'industry'?

My mind conjured up the *ikigai* Venn diagram (**Fig. 1**)– I adopted this Japanese concept on 'life's calling', as my mental model to shape my career. I aimed to ensure my path was a combination of (1) what I'd love to do (research and teaching), (2) what I can do well (maths and science) and (3) what the world needs and would pay me to do. The last circle seems to incorporate a range of market factors (luck, chances, the people met while networking who point to opportunities that are not immediately visible). I tried to listen to the 'Australian market': how Australian research outputs are superior in the world, yet translational research – those that produce actual economic outcomes – are few. I felt the pull towards an industry that would be able to translate my research field into useful products.

This led to my first decision at the end of my PhD: I applied to work at a biotech company that used the same techniques and equipment I had familiarised myself with during my PhD. I was particularly drawn towards the translational and commercialisation aspect of my research. There, I worked as an R&D scientist investigating biomarkers within blood to support early diagnosis of several diseases of public health importance. I consider myself super lucky to get my first dream job, one that was relevant to the biotechnology field aligned to my research interests – all thanks to my PhD supervisor who had engaged with the company and facilitated my early engagement with them during my PhD. By the time I emailed them to express my earnest desire to work there, they already knew me.

Fig. 1. Ikigai *diagram.*

Off the Beaten Track

Whilst completing my PhD, I gained teaching experience as a casual laboratory demonstrator and tutor, which was surprisingly enjoyable (and soothing) to me during the harrowing periods of failed experiments and equipment breakdown. I was also deeply engaged by my volunteering experiences. Speaking to local high school students about STEM and my research was particularly rewarding, especially when I received feedback that I had inspired the next generation of STEM students. I recall feeling delighted to bump into my former students, some of whom had graduated from the School of Medicine at the University of Western Australia and the University of Queensland and had entered the workforce or had pursued a PhD themselves. Based on these experiences, starting an independent tutoring business was another clear *ikigai* moment for me, given I've acquired the love and skills for teaching throughout my uni life and witnessed an increasing demand for STEM learning support. When I sat down to create my first advertisement, I felt surprisingly calm. Even if the business never took off, my PhD had taught me to expect setbacks and approach them without fear.

Through my experience to date, I have learnt that the 'industry black box' has multiple mysterious tracks that could be followed. In a parallel universe, I might have continued my training to be a medical liaison, or pursued the path of a patent attorney, perhaps a university lecturer… some of my peers decided to pursue medicine or have become high school teachers after their PhDs.

After a stint of four years in the same company, I found the exciting R of R&D was somewhat lost in the daily grind of repetitive scaled up industrial work. Product development in my field turns out to be way longer than I had imagined, and I found this taxing. I fell out of love with the wet laboratory work and in love with data analysis and programming components of my work. I decided to undertake a six-month online data analytics bootcamp jointly delivered by UWA and edX and got excited with AI when ChatGPT was first introduced to the world. I felt the urge to pivot my career towards this pathway. I thought a job in data analytics would be needed everywhere and if I could add value to the company I worked for, I could widen my horizons rather than being restricted to well-equipped labs.

I still love to do research, to learn new things, and I am still good at maths and science, but the *ikigai* circle for "what the world needs and would pay me to do" could now be expanded as I could include, not just the biotech industry, but any field that involves data/programming and analytical skills.

With reinvigorated desire, I applied for 20+ jobs and luckily was accepted in my second dream job – Statistical/Data Analyst. In this role, I have quickly learnt to navigate new in-house systems, extract and analyse data from surveys, and learnt to model time-series data.

Some downsides include being unable to use most AI systems, including tools such as ChatGPT, due to strict security requirements and rigid rules requiring management approval for minor deviations from the standard operating procedures. The great upside is work–life balance (since I am no longer allowed to work excessively) and overall, I feel empowered by my PhD to have the research skills and the ability to present my ideas to other teammates and managers.

Parallel to this, the number of high school students I tutor and mentor has risen largely through word of mouth, giving me a fun side gig. My PhD gave me the skills to quickly learn and stay updated with the changing curricula of my students so I can support them effectively.

My PhD has started to feel like part of a past life, yet it has given me a kind of confidence I didn't have before. This is not the confidence of knowing all the answers straight away, but the confidence to step into the unknown, work through problems thoughtfully, and communicate well considered solutions to the people who need them. It is not the confidence that I will succeed every time, but rather the reassurance that if something doesn't work, I can simply try another approach, even if that means pivoting my career into something completely new and exciting. In that sense, I never regret the uphill battle of attaining my PhD – the struggle was worth it after all. For PhD candidates considering a non-academic path: trust that your skills travel with you, even when your job title changes.

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Frequently Asked Questions for Patenting in the Age of AI

Dr Julie Murison (Associate) from FPA Patent Attorneys answers frequently asked questions about artificial intelligence in life science and health technology patents.

Julie Murison.

Life science and health technology is experiencing an AI boom. From AI for drug discovery and drug repurposing (1–3), to AI-powered diagnostics (4) and AI use in clinical trials (5), it would be fair to say that AI is currently everywhere, including at the patent office.

AI may be present at every stage of the patenting process: inventing, drafting and examination. This article answers some frequently asked questions regarding AI in patents for inventors and applicants working on life science-based technology.

Can AI be an inventor?

Currently, no. This question was answered by courts in many countries around the world. An inventor must be a human (6).

But if AI contributes to the invention, who is the inventor?

Good question! If the AI really did contribute to the invention, i.e. but for the AI contribution, the invention could not have been made, then the inventive contribution will need to be attributed to a person. The USPTO has put out some guidance on this question (7), stating that AI tools are similar to inventor-supporting tools like software or laboratory equipment. The person using the AI tool may therefore be an inventor if the contribution would qualify as an inventive contribution.

Similarly, the EPO has published guidance stating that for human-made inventions using AI for the verification of the outcome, or inventions in which a human identifies a problem and uses AI to find a solution, AI is used as a tool for human inventors.

Inventorship can only be determined after the invention is actually made, and inventors for a patent application can only be decided with respect to the scope of the patent application. Applicants should treat work that has been outsourced to a third party using an AI tool as similar to work performed by a third-party CRO. In some cases, an inventive contribution may be made by work performed by a third party, and patent applicants should consider whether an inventive contribution was made by any outsourced work.

If you are in this situation and you have questions about who may be an inventor, it's best to reach out to a patent attorney who can conduct an inventorship review for you.

Can AI be an element of my invention?

Yes. This is a rich technology area, and methods of medical treatment, or methods of diagnosis using AI may be patentable subject matter in Australia and other jurisdictions.

For this type of invention, it is important to understand if the AI element is an optional (or even preferred) element or an essential element of the invention.

For example, a hypothetical invention using sensors to detect biomarkers might use AI to analyse the outputs and make a diagnostic prediction. The inventive concept may reside in the identification that the biomarkers are useful for the diagnosis, or in the sensor itself. In these cases, the AI analysis may be used to identify the invention, but may not be an element of the invention. However, if the invention resides in the implementation of the AI to analyse the sensor outputs and make a prediction, then it is likely to be an essential element of the invention.

If the invention is the AI itself, it's important to seek advice from a patent attorney specialising in computer implemented inventions with experience in drafting and prosecuting this type of technology. Australian courts have confirmed that computer-implemented inventions may be patentable subject matter (8). If the invention is a combination of an AI and a therapeutic effect, for example a method of surgery using real time AI input, a cross-technology attorney team with an expert on both features of the invention is recommended.

Do I need to disclose that I used AI in preparing my invention?

The written description requirements for patent applications are about providing enough information that someone reading the patent document can use the invention, and would expect that, if following the directions given in the patent or patent application, the invention would work. There is no requirement to outline how the invention was developed if this information is not required to use the invention. For example, there is no requirement to describe in the specification that a lead compound was identified from a high-throughput screening of a library of compounds. Similarly, there is no requirement to say that a library of compounds to be screened was identified by an AI process.

However, if a person would need to also use the AI tool to use the invention, then this is likely to be an essential element of the invention and it will likely be necessary to include this information.

In some cases, the information derived from AI may be commercially valuable know-how but not an essential

Frequently Asked Questions for Patenting in the Age of AI

feature of the invention. For example, characterisation of a binding site for a therapeutic may not be essential information for a patent application for the new therapeutic itself. Keeping the binding site characterisation as a trade secret may prevent competitors from being able to prepare a fast follow-on invention. On the other hand, if this information is needed to support and enable the invention, so that a person working in the relevant field would (i) reasonably expect the invention to work and (ii) be able to perform the invention across the full scope of the claims, then it may be necessary to include it in a patent application.

Can I use AI to draft my patent application?

This is the question a lot of people asked the Australian patent office in 2025, which saw a 200% increase in self-filed provisional applications, which strongly suggests AI is being used to prepare patent applications (9).

While this may appear like a cheaper option, unless you understand what is in the patent application and how this maps onto your invention, this might be an expensive disclosure with a challenging path to achieving a granted patent. Approach with caution!

There are numerous examples of how AI has erred in the preparation of legal documents, for example by hallucinating citations (10), which highlights that it is critical that AI generated work product is reviewed by people with the appropriate expertise. A patent document is both a technical and legal document. It can be difficult to estimate the quality of a patent application if you are unfamiliar with working with patents, and unfamiliar with critical issues that may lead to issues with coverage of the invention, or validity of the patent.

There is also a significant risk that using an AI tool may be a disclosure of the invention which could be fatal to patentability. One test for whether information has been made publicly available (and may be prior art for your patent application) is if the information was shared with someone who was free to share that information to third parties. In the context of using an AI tool, sharing undisclosed invention details could be considered a public disclosure if they are incorporated into the input data of the AI model. Even if the information is never shared with a third party, if the AI developer is able to access and is free to share the input data, the input data might be considered prior art (11).

If you are using an AI tool to develop the inventive concept, search literature, prepare invention disclosure documents or draft a patent application (again, approach with caution), we recommend confirming with the tool or service providers that your inputs are not incorporated into training data sets and cannot be accessed by other parties.

Is my patent attorney using AI?

You would need to ask them, but possibly. There are a suite of both bespoke LLM patent tools and general LLM AI tools which your patent attorney may be using, and individual practices may use one or more of these tools. Patent attorneys are hyper-aware of disclosure, so they should only be using tools with zero data retention and privacy guarantees. Patent attorneys are responsible for the work product that they sign their name to, and so regardless of how the work product was prepared, you will still be benefiting from their experience and expertise in navigating the patent system.

Is the patent office using AI?

Yes, they sure are. The USPTO (United States Patent and Trademark Office) started an AI pilot program for pre-examination searches (12); and has developed AI tools to assist examiners with searching and reviewing prosecution histories across patent families (13).

The Australian patent office uses AI tools to classify and allocate patent specifications to examination divisions, identify relevant family members in other countries, automate preliminary searches and schedule issuing of directions to request examination (13).

The European Patent Office has developed AI tools for prior art searching, and classification and allocation of patent applications to examination divisions (13).

Should I run my emails to my patent attorney through an AI to put them in "patent speak"?

No need. Firstly, as mentioned above, this is an unnecessary disclosure risk if you are not using tools with zero data retention and privacy guarantees.

Secondly, you don't need to ask an AI tool to do your attorney's job for them. Answering your attorney's question as plainly as possible, even in dot points, is more efficient than asking an AI to phrase your answers in patent attorney speak.

Summary

AI tools are everywhere, they are being heavily explored and implemented in the life sciences space, but they are tools, not inventors. When AI is used in the background but is not essential to the invention, inventors should discuss with their patent attorneys how much of this information needs to be disclosed in a patent application, and what can be kept as confidential know-how. Lastly, the potential to boost efficiency in written communications should be balanced with care not to accidentally disclose information.

If you are working in this space and have specific questions regarding patentability, the patenting process, or anything else mentioned in this article, please reach out to the team at FPA Patent Attorneys.

Frequently Asked Questions for Patenting in the Age of AI

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Melbourne Protein Group: an ASBMB Special Interest Group

History

The Melbourne Protein Group (MPG) was established in 2002 by the Lorne Conference on Protein Structure and Function organising committee. The purpose of the MPG was to hold an annual, single day symposium with the aim of giving early-stage Victorian researchers an outlet to present their science. In 2009, the Australian Society for Biochemistry and Molecular Biology (ASBMB) formally recognised the MPG as a Special Interest Group (SIG). This affiliation enabled the MPG to expand its activities to include EMCR symposia and networking events, while aligning the group with other state-based protein societies across Australia.

The Student Symposium remains the cornerstone of MPG activities, providing emerging researchers with a supportive, conference-style environment in which to develop presentation skills, showcase their research and build professional networks. Increasingly, the symposium also serves as a forum for career development, exposing attendees to both traditional and non-traditional career pathways. Keynote speakers are selected for their achievements across academia, industry and related sectors, and are encouraged to share insights from their own career journeys and perspectives on the future of protein science.

From 2002 to 2019, hosting duties rotated between Bio21, La Trobe University and Monash University. Following the COVID-19 interruption, the MPG revised the hosting model, to better reflect the breadth of protein research conducted across Melbourne. Since then, the symposium has been hosted by the Chair's home institution, resulting in host venues at SVI, MIPS, RMIT and WEHI between 2021 and 2024. Now entering its 24th year, the 2026 MPG Student Symposium was held at Monash University, on 13 July 2026.

MPG Executive Committee

President: Dr Chris Langendorf (St Vincent's Institute (SVI))
Treasurer: Associate Professor David Thal (Monash Institute of Pharmaceutical Sciences (MIPS))
Secretary: Associate Professor Jessica Holien (RMIT University)
General Committee Members:
Dr Rhys Grinter (Bio21 Institute), Dr Tom Murray-Rust (CSL), Dr Abdel Belaidi (Florey Institute of Neuroscience and Mental Health/University of Melbourne), Dr Laura Osellame (Olivia Newton-John Cancer Research Institute (ONJ)/La Trobe University), Dr Adam Shahine (Monash University), Dr Chris Szeto (Swinburne University of Technology) and Dr Nadia Kershaw and Dr Gabby Watson (Walter and Eliza Hall Institute (WEHI))

MPG Student Symposia 2023

Chair: Associate Professor Jess Holien
Host: RMIT University, city campus
About: Together with the Royal Australian Chemistry Institute (RACI) VIC Branch, the MPG organised a joint student and early/mid-career research symposium, which combined the annual student symposia for RACI (day 1) and MPG (day 3), as well as a cross-discipline day aimed at both students and EMCR researchers from RACI and MPG (day 2). The MPG would like to acknowledge the generous support provided by the ASBMB, which supported our student symposium presentation awards winners. The Tilley Award is given annually to the best student oral presentation at the symposium. The award is named after Distinguished Professsor Leann Tilley, in recognition of the significant impact of her research and advocacy on shaping the Melbourne proteins community.
Keynote speakers: Professor Mibel Aguilar (Monash), Dr Rhys Grinter (Bio21), Dr Jai Rautela (Audax Biosciences) and Dr Sarah Hennebry (FPA Patent Attorneys)
EMCR best oral presentation award: Dr Jia Truong (RMIT) and Dr Stephanie Nguyen (WEHI/University of Adelaide)
Tilley Award: Jordan Crameri (Bio21) and Kaisel Sarson-Lawrence (WEHI)
Best poster presentation awards: Phoebe Lemming (Bio21), Fabian Munder (Monash Uni), Minal Chaturvedi (RMIT) and Imesha Hettige (MIPS)

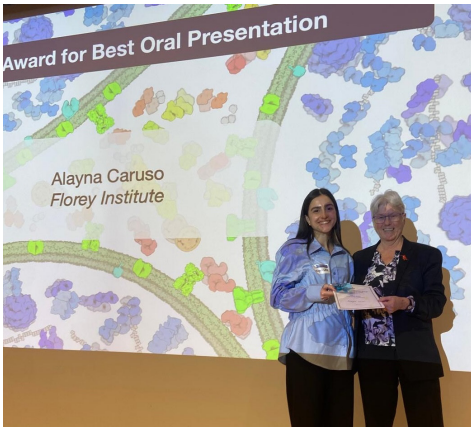
2023 Tilley Award for best student oral presentation awardees, Kaisel Sarson-Lawrence (left) and Jordan Crameri (right), joined by Chris Langendorf (MPG President).

2023 poster prize winners, from left: Fabian Munder, Minal Chaturvedi, Chris Langendorf (MPG President), Phoebe Lemming and Imesha Hettige.

Melbourne Protein Group: an ASBMB Special Interest Group

2024

Chair: Dr Gabby Watson
Host: WEHI
About: The 22nd MPG student symposium was attended by 80 delegates
Keynote speakers: Professor Louise Purton (SVI), Associate Professor Bernhard Lechtenberg (WEHI) and Dr Katherine Jackman (Brandon Capital)
Tilley Award: Alayna Caruso (Florey)
ANSTO best poster presentation awards: Alexander Ziegler (UoM), Fabian Munder (Monash), Yiling Yu (Florey), Taylor Cunliffe (La Trobe), Alicia Yong (Florey), Evelyn Huang (Bio21), Daniel Fox (Monash) and Emily Park (WEHI)



2024 Tilley Award awardee, Alayna Caruso, and Professor Leann Tilley.

2025

Chair: Dr Rhys Grinter
Host: Bio21 Institute, University of Melbourne
About: The 23rd MPG student symposium was attended by over 100 delegates
Keynote speakers: Professor Max Cryle (Monash), Dr Michael Pasternak (Denteric) and Marilyn Jones (Mexec)
Tilley Award: Daniel Fox (Bio21)
ANSTO best poster presentation awards: Emily Park (WEHI), Riya Joseph (UoM), Helen Barber (Bio21), Javaid Jabbar (Bio21), Danise Onda (SVI) and Geoff Zhang (SVI)

I would like to congratulate all students who have presented their research at an MPG student symposium and thank all delegates for their attention, questions and engagement, you have helped to grow the symposium and the Melbourne protein science community. A big thanks to our many symposium sponsors whose support allow us to hold this great event, our brilliant keynote speakers, the MPG Committee for your organisational efforts (especially the symposium chairs) and the host institutes/universities for providing us with amazing spaces and support. Your contributions allow us to make the student symposium better every year!

ECMR activities

Each year the MPG provides early career researchers an opportunity to represent the Melbourne protein research community at the SIG session of an ASBMB associated conference. Selected representatives are awarded funds to cover their conference registration.

Congratulations to the recent awardees, Dr Joshua Hardy (WEHI) ComBio2023, Dr Winnie Tan (WEHI) Biomolecular Horizons 2024 and Dr Chris Horne (WEHI/MIPS) ASBMB2025.

In 2024, Melbourne hosted one of the largest biochemical/biological conferences to be held in Australia, Biomolecular Horizons (BMH2024), bringing together representatives from all ASBMB-affiliated protein groups to Melbourne. This presented the MPG with a unique opportunity to host the inaugural Australian Protein Groups EMCR social mixer, a free event held at the conclusion of Sir Richard Roberts evening plenary presentation at the nearby Boatbuilders Yard on South Wharf. The event was well attended with ~40 researchers from across Australia's Protein Groups making the most of free food and libations. It is my hope that networking opportunities like this can continue at future ASBMB/ComBio conferences.

From left: 2025 Tilley Award awardee, Daniel Fox, and ANSTO poster prize winners, Geoff Zhang, Emily Park, Riya Joseph, Javaid Jabbar, Helen Barber and Danise Onda.

Melbourne Protein Group: an ASBMB Special Interest Group

MPG sponsorship

In 2023, the MPG committee sponsored the inaugural Melbourne Emerging Leaders in Biomedical Research (MELBR) Symposium Q and A panel session and social mixer at the Leveson Hotel in North Melbourne. MELBR was attended by more than 80 local EMCR researchers.

President's note

After eight years on the MPG Committee (4.5 years as President) and many fond memories, I will be stepping away from the committee at the conclusion of the 2026 MPG student symposium. The MPG will be in terrific hands with Associate Professor Jess Holien taking over as President and Dr Rhys Grinter stepping into the new role of Vice President and Communications. I have no doubt that the MPG will continue to go from strength to strength under their leadership. It has been an enormous privilege to be president of the MPG, a group I have always held in high esteem for the role it plays in our community. I have thoroughly enjoyed my time with the MPG; it is exciting to see the quality of the next generation of protein scientists coming through and the knowledge that the MPG has play a small role in their development is deeply gratifying. I'd like to thank the amazing people that I have worked alongside on the committee, your dedication and support is greatly appreciated!

Chris Langendorf, MPG President

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ASBMB Awards 2027

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no later than **31 October 2026**.

There are membership requirements for all
nominations/applications. Contact the ASBMB Secretary,
Victor Anggono, with any queries: v.anggono@uq.edu.au

NOMINATIONS FOR MEDALS AND AWARDS

*The **Lemberg Medal** is awarded to a distinguished ASBMB member who will present the Lemberg Lecture at the ASBMB annual scientific meeting. The Medal is presented in memory of Emeritus Professor M.R. Lemberg who was the Society's first President and Honorary Member. The award will be made to an individual who has demonstrated excellence in biochemistry and molecular biology and who has made significant contributions to the scientific community. An honorarium is provided by ASBMB.*

*The **Shimadzu Research Medal** is awarded to an outstanding ASBMB member with no more than 15 years since the award of the PhD degree (or equivalent taking any career disruption into account) at the nominated deadline. The successful candidate will present the Shimadzu Medal Lecture at the ASBMB annual scientific meeting. An honorarium is provided through the courtesy of Shimadzu.*

ASBMB Awards 2027

APPLICATIONS FOR TRAVEL AWARDS AND FELLOWSHIPS

*The **Eppendorf Edman EMCR Award** is awarded to an ASBMB member with no more than 10 years postdoctoral experience (or equivalent taking any career disruption into account), in recognition of their outstanding research work. The Award provides funds to assist the recipient to attend an overseas conference in a field associated with biochemistry or molecular biology, or to visit briefly a research laboratory in Australia or elsewhere to access specialised equipment, or to learn new research techniques. The recipient will give a talk at the ASBMB annual scientific meeting. The contribution toward travel expenses is provided through the courtesy of Eppendorf South Pacific.*

*The **Education Award** rcognises outstanding achievement in education in biochemistry or molecular biology, particularly innovation and creativity, with a view to fostering leadership in this important area of the Society's objectives. The Award will enable the recipient to participate in an international conference with a significant focus on education, or to spend a period of time at another institution to undertake developments in education in biochemistry and molecular biology. The recipient will present a lecture within the Education Symposium at the ASBMB annual scientific meeting.*

*The **Boomerang Award** is awarded to an outstanding expatriate Australian biochemist or molecular biologist to allow them to return to Australia to present their work in a symposium at the ASBMB annual scientific meeting and to give seminars at universities or research institutes. This will provide the awardee with exposure in Australia and will facilitate interactions with local researchers. The Award makes a significant contribution to the cost of a return airfare and accommodation for the ASBMB annual scientific meeting, and towards domestic travel expenses to visit at least one other Australian city. Applicants must have been awarded their PhD not more than 10 years prior to the closing date (or equivalent, taking any career disruption into account). The contribution to travel expenses is provided by ASBMB.*

*The Awards Committee will also award several **ASBMB Fellowships** to postgraduate students who are no more than 2 years from completing their PhD degree, or to postdoctoral researchers who are no more than 5 years beyond. The contribution to travel expenses is provided by ASBMB. The most outstanding ASBMB Fellowship applicant may receive the **Fred Collins Award**. These travel grants are awarded to early-career researchers, normally resident in Australia, in recognition of their outstanding work in biochemistry and molecular biology, relative to opportunity. The Fellowships provide funds to assist the recipient to attend an overseas conference in a field associated with biochemistry or molecular biology, or to visit briefly a research laboratory in Australia or elsewhere to access specialised equipment or to learn new research techniques.*

Science Meets Parliament 2026

Bridging evidence and influence

Science Meets Parliament (SMP), hosted by Science & Technology Australia, is Australia's premier initiative for connecting scientists with federal policymakers. Held in 2026 at Parliament House, Canberra, SMP brought together researchers, industry leaders and parliamentarians for a two-day program of professional development, policy engagement and direct dialogue. The program is designed to strengthen relationships between Australia's STEM workforce and government, while supporting the integration of scientific expertise into national decision-making. Through a jam-packed schedule featuring panel discussions, a parliamentary forum and small group meetings with parliamentarians, wide-eyed scientists gained rare insight into how science is communicated and applied within policy.

SMP2026 was the biggest SMP ever, with over 400 STEM delegates and over 40% of parliamentarians engaged in the event. I was fortunate to attend as ASBMB's early-career researcher representative, providing me with a unique opportunity to engage directly with the science–policy interface and better understand the role of scientists in shaping Australia's future.

Dr Ashleigh Geiger (left) and Professor Kate Quinlan (ASBMB President Elect) in the marble foyer at Parliament House, Canberra.

Building the foundations for engagement

In the week leading up to SMP2026, delegates were sent two online 'runway' video sessions designed to prepare us for engaging with policymakers. These sessions focused on two key skills that were consistently reinforced throughout the program: communicating science clearly and making the most of opportunities to engage with parliamentarians.

The 'Practise Your Pitch' session, led by Dr Lila Landowski, Tanya Ha and Paul Richards, emphasised the importance of distilling complex research into clear, compelling messages. A strong pitch was framed not as a simplified version of science, but as a strategic tool – one that captures attention, conveys relevance and invites further discussion. In addition to providing many gems of science communication advice, the session also highlighted the value of using a prop as part of your science storytelling, to make your research more engaging and memorable. Thanks to this advice, in the days leading up to SMP, I found myself gluing sesame seeds into a petri dish to represent my organoid work. I was initially worried it was a bit too basic, or even a touch cheesy, but it turned out to be a fun and interactive talking point!

The 'Prepare to Meet a Parliamentarian' session, delivered by Professor Kylie Walker, Associate Professor Jeremy Brownlie and Dr Sarah Tynan, provided practical guidance on how to approach meetings with policymakers. Key advice included being clear about your purpose, articulating a specific "ask" and understanding the broader context in which parliamentarians operate. The session also emphasised the importance of follow-up, reminding us that engagement is an ongoing relationship, not just a one-off interaction.

Day 1 – science as strategy: economy, influence and communication

Armed with our learnings from the runway sessions, hundreds of scientists descended on Parliament House. Day 1 began with opening remarks from STA President Jas Chambers and CEO Ryan Winn. These were followed by the Assistant Minister for Science, Technology and the Digital Economy, the Hon Dr Andrew Charlton MP, and the Shadow Minister for Science, Mr Aaron Violi MP. Both emphasised the importance of science in shaping Australia's future and the need to build public trust in evidence. We were also reminded that if we want to have an impact in the public domain, we shouldn't just lecture the community – we should take people on a journey of understanding and scientific appreciation.

A key moment of the morning was the launch of **Science Meets the Economy** program, signalling an expansion of STA's work beyond policy engagement into economic strategy. In the panel discussion, chaired by Jas Chambers, Denise Goldsworthy AO (former senior executive, Rio Tinto) and Dr Steve Hatfield-Dodds (Chief Climate Economics and Policy Officer, EY-Parthenon) explored how scientific expertise can inform decision-making in business and government contexts. Goldsworthy highlighted that scientists must learn to frame their work in terms of risk, opportunity and return on investment – concepts that resonate with policymakers and industry leaders. She also told us that if we expect economists to be scientifically literate, then we have to be economically literate – underscoring the

importance of STA's newly launched program. Hatfield-Dodds reinforced that diversity of expertise leads to stronger decision-making, positioning scientists as critical contributors to complex national challenges. He also reminded us to never lose our humanity and empathy – understanding the worldviews of the people we engage with is the key to impact and meaningful dialogue.

The focus on strategic positioning was reinforced in the **Civics 101** session led by STA Deputy CEO, Dr Sarah Tynan, which unpacked how Australia's parliamentary system operates in practice. By outlining how legislation is developed, debated and passed, the session highlighted that effective engagement depends on understanding when and where to intervene in the policy cycle, not just what to say. She also discussed the difference between 'policy for STEM' and 'STEM for policy', highlighting the numerous ways science and STEM professionals can impact not only how our industry functions, but also how society functions.

In **A Day in the Life of a Policy Advisor**, a panel comprising Amanda Bachmann (Media Advisor to Independent Ms Rebekha Sharkie MP), Fiona Scott (Chief of Staff to Independent Senator David Pocock) and Richard Temperly (Principal Health Advisor to Senator the Hon Anne Ruston) provided some of the most practical insights of the program. They described the realities of working in ministerial offices: high-pressure environments where time is limited and priorities shift rapidly. Their advice was clear – scientists must communicate succinctly, focus on relevance to constituents and avoid overwhelming policymakers with technical detail. Importantly, they emphasised that effective engagement is a two-way conversation, not a one-sided delivery of information. They also reminded us that advisors work across party lines, advocating for a bipartisan approach to communication.

At the **National Press Club Address**, Senator the Hon Tim Ayres, Minister for Industry and Innovation and Minister for Science, framed science as central to Australia's economic and strategic agenda. Referencing the Ambitious Australia vision, he called for coordinated action across government to strengthen research, innovation and industry collaboration. In particular, he called for the reindustrialisation of Australia, referencing the natural resource and manufacturing industries as key to the government's vision of a Future Made in Australia. For many of the STEM professionals in the room, especially those involved in fundamental research, it was perhaps not the message we were hoping to hear, though one we needed to pay attention to.

The afternoon sessions shifted towards practical communication skills. Chair of the panel discussing **Fronting a Parliamentary Inquiry**, journalist Catriona Jackson, highlighted inquiries as key opportunities for scientists to contribute directly to policy, encouraging us to reframe them as problems we are well-equipped to solve. Professor Kylie Walker AM (CEO, Australian Academy of Technological Sciences and Engineering) reinforced the importance of communication in this context, describing storytelling as the use of clear, plain language to convey a broader point. Rather than focusing on technical detail, she encouraged us to think in terms of big-picture examples that illustrate why our work matters. Professor Lee Baumgartner (Charles Sturt University) encouraged participants to be "comfortable being uncomfortable" when stepping into unfamiliar spaces such as policy and public engagement. Importantly, we were reminded to be honest and transparent in contributions, and to actively seek out opportunities to get involved and make a difference.

A particularly impactful session focused on Indigenous knowledge and community engagement, featuring Senior Gamay Ranger Dr Robert Cooley and marine ecologist Professor Adriana Verges. **Truth Telling and Cultural Capability** highlighted the importance of respect and genuine collaboration, emphasising that effective science must be grounded in strong relationships with communities. It was sobering to hear how a lack of scientific and political consultation on development programs has caused harm to Indigenous communities, but uplifting to hear how scientists such as Robert and Adriana are working together, proactively restoring trust with communities.

Day 1 concluded with the **Gala Dinner** in the Great Hall of Parliament House, providing an opportunity to reflect on the day's discussions – and of course, to dress up and socialise! A highlight of the evening was a conversation with Senator the Hon Tim Ayres, joined by Denise Goldsworthy AO and Professor Nicola Phillips (Vice Chancellor of the University of Adelaide), which explored the place of science within Australia's broader economic and innovation landscape. Australia's Chief Scientist, Professor Tony Haymet, spoke to both the strengths of Australia's research system and the challenges facing its translation into innovation and impact. Mr Aaron Violi MP shared the story of his grandmother – the first woman to graduate from Swinburne University as a chemical engineer. Her journey served as a reminder that while persistence is critical, opportunity and support are equally important in enabling scientific careers.

Day 2 – engaging with policy in practice

Day 2 focused on applying the skills developed throughout the program, providing practical insight into how scientists can engage with policymakers and contribute to the policy process.

The morning began with the **Parliamentary Forum**, bringing together Senator Mehreen Faruqi, Senator Maria Kovacic, Dr Anne Webster MP, Senator David Pocock and Ms Zaneta Mascarenhas MP. A consistent message

Science Meets Parliament 2026

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was the importance of clear, direct communication when engaging with policymakers, being upfront about your position and articulating a specific 'ask'. The parliamentarians also emphasised the value of scientists actively contributing to policy processes, particularly through submissions, which help inform parliamentary reports and recommendations. There was strong encouragement for scientists to recognise that their engagement matters, regardless of career stage or level of influence. Broader themes included the importance of diversity in decision-making, and the need to continue supporting fundamental research as a public good that underpins long-term innovation. Senator Pocock was met with a rousing round of applause following that assertation! It was fantastic to meet Senator Pocock briefly before the session, and chat about our mutual passion for discovery science. In closing, Senator Faruqi told us that "in a time of lies, truth becomes a revolution" and as scientists, we are the revolutionaries.

Senator David Pocock (left) and Dr Ashleigh Geiger.

This was followed by a session on **Science in the Media** featuring journalist Greg Jennett and science communicator Maddie Massy, chaired by Dr Landowski. The panel drew strong parallels between communicating with journalists and policymakers, emphasising the importance of timing, relevance and authenticity. A key takeaway was that communication is not about simplifying science to the point of inaccuracy, but about making it accessible and engaging without losing meaning.

An important aspect of SMP was the opportunity to **meet directly with parliamentarians and their advisors**, with around 100 meetings held across the program. Together with environmental lawyer Associate Professor Phillipa McCormack, I was fortunate to meet with Mr Matt Smith MP (Member for Leichhardt) and his advisor, and share some of my research into new ways to model human mammary gland development and its potential to enhance breast cancer research. The conversation provided insight into Mr Smith's priorities for his electorate, particularly in relation to the needs of First Nations communities, and how research and policy must align with these local contexts to be meaningful. The meeting was also a great reminder of the complexities of political life, as Mr Smith had to leave to vote in the House, cutting our meeting short. However, we continued a fantastic conversation with Mr Smith's advisor, who was genuinely interested in hearing about how to advocate for basic science in political forums. We left with the offer to follow up with more information.

A session with past STA Presidents, **Putting SMP Skills Into Action**, focused on sustaining engagement beyond SMP, encouraging participants to view advocacy as a long-term process rather than a single interaction. We were also reminded of the privilege of our education, and that when we talk to politicians, we are not 'dumbing down' our science – our goal is clear and respectful communication. At the end of the day, politicians are people too!

This was followed by a panel featuring Professor Anne Kelso AO (former CEO, NHMRC), Dr Monique Ryan MP and Dr Sophie Lewis (Chief Scientist, Australasian Centre for Corporate Responsibility), who shared their experiences transitioning from STEM into leadership and policy roles, in **Applying STEM Skills to a New Career**. Their discussion highlighted that scientific training provides a strong foundation for navigating complex systems and influencing decision-making. They also reinforced that you don't have to have all the answers yourself. Instead, recognising our skill set and how it can be complemented by others is critical to working effectively across disciplines and contributing meaningfully to policy.

The afternoon continued with a session on **community collaboration** featuring Professor Joanne Jamie (Macquarie University) and Associate Professor Azure Hermes (Deputy Director, National Centre for Indigenous Genomics), who emphasised that meaningful partnerships require listening, respect and shared goals. A key focus of the session was collaborating with Indigenous communities, noting that initiatives that benefit First Nations Australians are an asset to all Australians.

Before the closing session, we were offered the choice to attend Parliament Question Time, a geology tour of Parliament House, or a tour of Parliament's beekeeping facilities. I booked in for the **Beekeeping Tour**, which turned out to be a fantastic scientific adventure! Led by environmental scientist and Parliament House head beekeeper, Cormac Farrell, we learnt about Varroa destructor mites and how they pose a threat to not only

bees, but also honey producers and agricultural sectors that rely on bees for pollination, sparking conversations on food security, sustainability and climate change. A sweet bonus was getting to try freshly harvested honey from one of the hives.

The program closed with a conversation between Anna-Maria Arabia OAM (outgoing Chief Executive, Australian Academy of Science) and Professor the Hon Bill Shorten, Vice-Chancellor and President of the University of Canberra, who reinforced the importance of defining clear problems, proposing actionable solutions and following up after engagement. Their discussion brought together many of the themes of the program, highlighting that effective science advocacy requires both strategy and persistence. Professor Shorten's perspective as a former politician and current university leader provided a unique take on how to be effective as a scientist in a policy environment. In closing, he told us that "to bring about change, you just have to keep fighting for one more day." He left us with a question: are you willing to keep going for one more day than the people who are saying no to you?

Science's political agenda or politics' scientific agenda?

A reflection from SMP2026 is that the relationship between science and politics is deeply interconnected, but not straightforward. Science does not simply inform policy, it must be communicated and advocated for within a system shaped by competing priorities, limited resources and political considerations.

One clear insight was that evidence alone is rarely sufficient to drive change. Scientific knowledge must be translated into narratives that align with policy priorities, whether economic growth, national security or community wellbeing. This requires scientists to think strategically about how their work is framed, communicated and delivered. At the same time, policy is not purely evidence-based. Decisions are shaped by timing, feasibility and negotiation, meaning that even strong evidence may not be adopted without effective advocacy. Understanding this dynamic is essential for meaningful engagement, allowing scientists to identify where and how their expertise can have the greatest impact.

The events surrounding SMP reinforced this in real time. The launch of STA's Science Meets the Economy demonstrated a shift towards embedding science within Australia's economic agenda, while the announcement that Australia will begin negotiations to associate with the European Union's flagship research and innovation program, Horizon Europe, highlighted a major step towards deeper international collaboration. Concurrently,

From left: Dr Aaron Phillips (University of Adelaide), Dr Ashleigh Geiger and Professor Renae Ryan (University of Sydney) on the Beekeeping Tour.

the progression of the Treasury Laws Amendment (Genetic Testing Protections in Life Insurance and Other Measures) Bill 2025 illustrated how scientific evidence, ethical considerations and political processes converge in legislative decision-making. Together, these examples highlight that science and policy do not operate in isolation – they are part of a continuous dialogue, shaped by both evidence and context.

Ultimately, SMP2026 taught me that the role of scientists is evolving. Beyond generating knowledge, there is an increasing expectation to communicate, advocate and engage with the systems that shape how that knowledge is used. Programs such as SMP are critical in building this capacity, ensuring that Australia's science sector is not only innovative, but influential. I strongly recommend attending SMP to anyone who is curious about how science and policy interact, and who wants to understand how the work we do in our labs has the potential to influence decision-making at the highest levels.

I sincerely thank ASBMB for supporting my attendance at SMP2026. This was a formative experience in understanding the ecosystem in which we work. I hope that I can one day return to SMP, as a more senior researcher, to gain new insights as my role within the STEM workforce evolves.

Dr Ashleigh Geiger is a postdoctoral researcher at the South Australian immunoGENomics Cancer Institute (SAiGENCI) and the Adelaide Centre for Epigenetics, Adelaide University. She is also the President of the Adelaide Protein Group, an Special Interest Group of the ASBMB.
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ASBMB Members Elected Fellows of the AAS

On 21 May 2026, the Australian Academy of Science announced the election of 28 Fellows, including ASBMB members, Professor Alpha Yap and Professor Aleksandra Filipovska.

PROFESSOR ALPHA YAP FAA
INSTITUTE FOR MOLECULAR BIOSCIENCE, UNIVERSITY OF QUEENSLAND

Professor Alpha Yap is a cell biologist and ARC Laureate Fellow at the University of Queensland's Institute for Molecular Bioscience. In an earlier life, he trained in medicine at UQ, specialising in Endocrinology at the Royal Brisbane Hospital, before returning to UQ to undertake a PhD in thyroid cell biology. At that time (the latter part of the last century), endocrinology was a very academic clinical discipline and it was common for trainees to undertake research. Alpha, however, did not realise that this would take his life in a very different direction. Thyroid cell biology led to an interest in cell adhesion and a postdoc at Memorial Sloan-Kettering Cancer Centre, New York, before he returned to Australia to start his own lab at UQ.

His work has been occupied with the broad question of epithelial homeostasis: how epithelia operate as multicellular collectives to detect abnormalities (cell death, transformation, wounds) and elicit proportionate responses. Conversely, he has sought to understand how homeostatic mechanisms can be disrupted in disease. He has focused on the cellular mechanisms of multicellularity, especially the cell–cell adhesion systems that yoke cells together. He and his lab have been instrumental in identifying the signalling and cytoskeletal systems that are engaged by adhesion to monitor epithelial homeostasis. In the past decade or so, this has led them to explore how mechanical forces may be used in cell–cell communication. They have found that cell–cell junctions serve to detect changes in mechanical force between cells, a common pathway for many cellular disturbances, and activate signaling pathways that elicit physiological responses. For their entry into the world of mechanobiology, Alpha and his lab have been assisted by multidisciplinary collaborations with theoretical and experimental physicists, engineers, mathematicians as well as developmental biologists, pathologists and clinical researchers.

Alpha serves on the boards of several international journals (including *Developmental Cell* and *Current Biology*); has led national and international conferences (e.g. Hunter Meeting and Gordon Conferences, respectively); and has been President of the Australian and New Zealand Society of Cell and Developmental Biology and Director of Research (acting) for the IMB. His work has been supported by the NHMRC, ARC, HFSP and Wellcome Trust. Alpha was elected as a Foreign Associate of the EMBO in 2024. He has been fortunate to have been able to work with terrific students, postdocs and RAs, some of whom are now faculty at places like the Crick, Adelaide University and UQ. Nor would his work have been possible without the support and talents of many colleagues and collaborators, in Brisbane, Australia and internationally. In his spare time, Alpha basks in the escapades of his family, tortures his piano and walks his dog.

ASBMB Members Elected Fellows of the AAS

PROFESSOR ALEKSANDRA FILIPOVSKA FAA FAHMS
THE KIDS RESEARCH INSTITUTE AUSTRALIA AND
UNIVERSITY OF WESTERN AUSTRALIA

Professor Aleksandra Filipovska is the Inaugural Louis Landau Chair in Child Health Research, NHMRC Investigator and Deputy Director of the ARC Centre of Excellence in Synthetic Biology, at The Kids Research Institute Australia and the University of Western Australia. Aleksandra completed her undergraduate and doctoral training in biochemistry at the University of Otago, New Zealand, before undertaking postdoctoral research at the MRC Mitochondrial Biology Unit in Cambridge, UK. She returned to Australia in 2006 to establish her independent research program at the University of Western Australia. She was awarded an NHMRC Howard Florey Fellowship, followed by an ARC Future Fellowship and successive NHMRC Senior Research Fellowships and Investigator Grants. Over the past two decades, she has built an internationally recognised program in mitochondrial biology and synthetic biology, while also helping shape research leadership in Western Australia through roles at the Harry Perkins Institute of Medical Research, The Kids and the national ARC Centre of Excellence in Synthetic Biology.

Aleksandra's research has made major contributions to understanding how the mitochondrial genome is organised, expressed and regulated in health and disease. Her work helped redefine the mitochondrial transcriptome and revealed unexpected complexity in mitochondrial gene expression, including the discovery of previously unrecognised RNAs and regulatory pathways that are now widely studied in the field. She has also contributed substantially to understanding mitochondrial protein synthesis and ribosome function. Through biochemical, genetic and structural studies, her team has identified mechanisms regulating mitochondrial translation initiation, ribosome assembly and translation termination, helping explain how defects in these processes contribute to metabolic and neurodegenerative disease. More recently, her group has developed new advanced imaging, omics and artificial intelligence approaches to understand organelle architecture, lipid remodelling and interorganellar communication in health and genetic diseases.

Alongside these fundamental RNA and cell biology discoveries, for the past 20 years, Aleksandra has made a translational impact by providing molecular diagnosis for patients and families affected by genetically inherited diseases. She has developed programmable RNA- and genome-targeting technologies with applications in gene therapy and synthetic biology. Her technologies that have been licensed internationally for therapeutic development in neurodegenerative and genetic diseases. She is a Founding Director of CodeBreakers, a new Australian based spinout biotech focused on gene therapies for mitochondrial and neurodegenerative diseases.

Aleksandra has published more than 140 research articles in journals including *Cell, Science, Nature, Nature Cell Biology, Nature Chemical Biology, Nature Communications* and *Science Advances*. Her contributions have been recognised with awards including the ASBMB Merck Medal, the Australian Academy of Science Ruth Stephens Gani Medal and the Ross Crozier Medal. She has also made significant contributions to the national and international scientific communities through leadership, mentorship and service. Aleksandra served as President of the Australian and New Zealand Society for Cell and Developmental Biology, organised leading national and international meetings and has contributed to national scientific initiatives through the Australian Academy of Science and the Mito Foundation. She has played an active role in supporting early- and mid-career researchers, promoting equity and diversity in STEM, and fostering collaborations between academia, medicine and biotechnology. Through her leadership in mitochondrial medicine and synthetic biology, she continues to advocate for translational research that improves diagnosis and therapeutic opportunities for patients with rare and inherited diseases.

ASBMB Member Elected Fellow of the Royal Society

On 27 May 2026, the Royal Society announced the election of 94 Fellows for their outstanding contributions to science, including ASBMB member, Professor Bostjan Kobe.

Bostjan Kobe grew up in Ljubljana, Slovenia (part of Yugoslavia at the time), and finished his undergraduate degree in chemistry at the University of Ljubljana in 1989. During these studies, he carried out a research project using X-ray crystallography to solve a structure of an organo-metallic complex, which made him interested in applying this technique to complex molecules such as proteins. As there was no expertise or equipment available in Slovenia at the time, he applied for PhD positions in the US and ended up at the University of Texas Southwestern Medical Center at Dallas. He finished his PhD under the supervision of Hans Deisenhofer in 1994, determining one of the first structures of solenoid proteins built from structural repeats, ribonuclease inhibitor, and also the complex with its ligand, ribonuclease A.

The PhD work set up much of the career path that followed. The interest developed in the structural basis of protein–protein interactions and signal transduction led Bostjan to take up a position as a postdoctoral fellow with Bruce Kemp at St Vincent's Institute of Medical Research in Melbourne, working on protein kinases, protein phosphorylation as well as viral infection. With the help of the Wellcome Senior Research Fellowship, he started his own group at St Vincent's Institute in 1998, and then moved to the University of Queensland (UQ) in Brisbane in 2000, where he has worked since. The work in his group has built further on his interests in the structural biology of solenoid proteins, protein–protein interactions, signalling and infection/immunity, resulting in programs on topics integrating these fields. Bostjan's major contributions include advances in signal transduction (e.g. describing the concept of signalling by cooperative assembly formation, SCAF), protein regulation (e.g. active site-directed protein regulation), principles of protein structure (e.g. solenoid proteins), innate immunity in animals and plants, and nucleo-cytoplasmic transport; as well as advances in methodology (including new bioinformatic tools, the use of fusion proteins in crystallography and microcrystal electron diffraction).

Bostjan Kobe FAA FRS.
Image:University of Queensland.

Bostjan's work has been funded mostly by the ARC and the NHMRC, including ARC Federation and Laureate Fellowships, and NHMRC Fellowships and Investigator Grants. He has also contributed to building structural biology infrastructure in south-east Queensland and elsewhere in Australia through ARC LIEF grants. His contributions have been recognised by the 2001 Minister's Prize for Achievement in Life Sciences, the 2009 ASBMB Roche Medal and 2018 Beckman Coulter Discovery Award, and two UQ supervision awards. Bostjan was named a Fellow of the Australian Academy of Science in 2018 and a Slovenian Ambassador of Science in 2020. He has been a member of ASBMB since 1999.

King's Birthday Honours for ASBMB Members

Professor Ryan Lister was awarded a Member of the Order of Australia (AM) for significant service to biochemistry, genetic science and neuroscience.

Ryan is a genome biologist at the University of Western Australia and the Harry Perkins Institute of Medical Research in Perth, where he leads the Genome Biology and Genetic Diseases Program. His laboratory studies the epigenome, the layers of information superimposed on the genome that influence how genetic instructions are used, in both plants and animals.

Ryan completed his undergraduate degree and PhD in biochemistry and genetics at UWA, finishing his doctorate in 2005, under the supervision of Jim Whelan and Harvey Millar. He then spent five years at the Salk Institute for Biological Studies in La Jolla, USA, joining the laboratory of Joseph Ecker, where he moved into the emerging field of epigenomics, as a Human Frontier Science Program Postdoctoral Fellow and later a California Institute for Regenerative Medicine Fellow. He returned to Perth in 2011 to establish his own laboratory at UWA, and joined the Harry Perkins Institute in 2015.

Much of Ryan's work has involved developing and applying technologies to read and edit the epigenome and gene activity. While at the Salk Institute, he developed an approach to precisely map the location of methylated DNA bases across whole genomes, along with the RNA-seq technique now widely used to measure gene activity. He applied these tools to produce the first integrated base-resolution maps of transcription and DNA methylation of any eukaryote, in the model plant *Arabidopsis*, followed by the first maps of the human DNA methylome.

His research has ranged across diverse biological systems. In mammals, he and his colleagues have mapped how the brain's epigenome changes during development, and more recently traced human brain gene activity from gestation to adulthood. His lab has developed a way to reset the "epigenetic memory" of reprogrammed stem cells, making them better suited for research, disease modelling and potential therapies.

Ryan Lister.

In plants, his group has pioneered synthetic gene circuit technologies to more precisely control gene expression, for new applications in agriculture, including for crops grown in space as part of the ARC Centre of Excellence in Plants for Space.

Ryan has received significant national recognition, including the Frank Fenner Prize for Life Scientist of the Year in the 2014 Prime Minister's Prizes for Science and was elected a Fellow of the Australian Academy of Science in 2020. He sees the AM award as both a personal honour as well as recognition of his many mentors, students, staff and collaborators, and the public investment, that make science possible.

Professor Jozef Gécz was awarded an Officer of the Order of Australia (AO) for distinguished service to human translational genetic science, to genomic research, to child health and to neurodevelopmental disability.

Jozef is a molecular geneticist at the University of Adelaide. He has discovered more than 350 different genes linked to brain function, including genes involved in intellectual disability, autism and cerebral palsy. These findings have revealed new and unexpected biological pathways for brain development and led to better management and treatment of neurological conditions.

Australian Academy of Science Honours for ASBMB Members

On 30 March 2026, the Australian Academy of Science (AAS) awarded 23 Australian researchers for their contributions to the advancement of science, including three ASBMB members.

MACFARLANE BURNET MEDAL AND LECTURE
A Premier Honorific Award
PROFESSOR ALAN COWMAN AC FAA FAHMS FRS
WALTER AND ELIZA HALL INSTITUTE OF MEDICAL RESEARCH

Professor Alan Cowman has spent his career studying the biology of the malaria parasite *Plasmodium falciparum* and applying those insights to the development of new approaches for control and treatment. Early in his work, he established methods to manipulate the parasite genetically, enabling experiments that were not previously possible and opening new avenues for molecular investigation. That capability has underpinned much of the subsequent progress in understanding parasite biology and host–parasite interactions.

His laboratory clarified how the parasite invades and remodels human red blood cells and defined the signals and machinery by which parasite proteins are exported into infected erythrocytes. This work provided a much clearer picture of the parasite–host interface and identified pathways that have been pursued as targets for intervention. In parallel, his group characterised the genetic changes associated with resistance to a number of antimalarial drugs, an effort that has supported surveillance and informed treatment strategies in endemic regions and contributed to the development of molecular epidemiology as a practical tool for public health decision making.

Professor Cowman has also led translational programs, including a collaboration between the Walter and Eliza Hall Institute (WEHI) and Merck Sharp & Dohme. Building on target discovery in his laboratory, the partnership progressed inhibitors of the aspartic proteases plasmepsin IX and X through optimisation and preclinical evaluation. That work has produced clinical candidates now in first-in-human trials as a novel class of antimalarials, illustrating a laboratory-to-clinic pathway in which academic and industry partners, supported by national and international funders, have advanced potential therapeutics to clinical assessment. His group has been involved in parallel vaccine initiatives, contributing to genetically attenuated parasite approaches that have entered early human studies.

Throughout his career, Professor Cowman has collaborated widely and attracted support from a range of funders and international partners. He has published extensively and has contributed to the training and mentoring of many researchers who now work across basic and translational malaria research. He founded the international conference series, Molecular Approaches to Malaria, and served as President of the World Federation of Parasitologists, roles that reflect his engagement with the broader scientific community.

He is a Fellow of the Australian Academy of Science and the Royal Society, and in 2019, was appointed a Companion of the Order of Australia for service to the biological sciences and to mentorship. The Macfarlane Burnet Medal recognises Professor Cowman's sustained contributions to understanding malaria biology and his ongoing efforts to translate that knowledge into practical approaches for control and prevention.

FENNER MEDAL
An Early-career Honorific Award
DR KAI XUN CHAN
AUSTRALIAN NATIONAL UNIVERSITY

Dr Kai Xun Chan is a Senior Lecturer at the Research School of Biology, and Deputy Director (Research) of the ARC Future Crops Training Centre, at the Australian National University (ANU). His research dissects how cellular signals coordinate photosynthetic biochemistry and physiological adaptation of plants to challenging environments. Dr Chan obtained his PhD in Plant Sciences in 2015 at the ANU, working with Professor Barry Pogson FAA and Professor Colin Jackson to identify an oxidative stress sensor protein in chloroplasts.

Research conducted during his first postdoctoral position at the ARC Centre of Excellence in Plant Energy Biology, ANU, revealed how stress signalling from chloroplasts regulates key plant physiological processes such as stomatal closure

Australian Academy of Science Honours for ASBMB Members

to retain water in leaves during drought, and how chloroplast signalling may have contributed to the transition of plants from water to land. This work was performed in close collaboration with Professor Zhong-hua Chen's group (Western Sydney, now Adelaide University). In 2018, Dr Chan moved to the Vlaamse Instituut voor Biotechnologie (VIB) Centre for Plant Systems Biology in Ghent, Belgium, on an FWO Postdoctoral Fellowship to investigate the intersection of chloroplast and mitochondrial signalling in the laboratory of Professor Frank Van Breusegem.

Dr Chan returned to Australia in 2022 as an ARC DECRA Fellow and group leader at the Research School of Biology, ANU. His current research interests include the specialisation of chloroplast signalling in different leaf cells for acclimation to light and heat stress, supported by the ARC DECRA and an ARC Discovery Project. He is also working with a local Ngambri custodian, Paul Girrawah House, to elucidate the molecular basis of abiotic stress resilience in Australian native plants with support from a Westpac Research Fellowship.

Dr Chan's work has been recognised with the 2026 Australian Academy of Science Fenner Medal, the 2017 ACT Emerging Scientist Award and the 2017 ACT Young Tall Poppy Award.

LE FÈVRE MEDAL
An Early-career Honorific Award
ASSOCIATE PROFESSOR YU HENG LAU
UNIVERSITY OF SYDNEY

Associate Professor Yu Heng Lau is a Group Leader and NHMRC Investigator Fellow in the School of Chemistry at the University of Sydney. Yu Heng completed a Bachelor of Science (Hons I, University Medal) at the University of Sydney. He moved to the UK to complete his PhD in Chemical Biology at the University of Cambridge, developing chemically-modified peptides as inhibitors of oncogenic protein–protein interactions. He was subsequently awarded a Sir Henry Wellcome Fellowship to conduct postdoctoral research in Synthetic Biology at Harvard Medical School, where he invented genetic engineering methods to rewrite bacterial genomes with synthetic DNA and began designing synthetic organelles from self-assembling bacterial proteins.

Associate Professor Lau returned to Australia in mid-2017 to establish his laboratory in Sydney, where he now leads two distinct research programs in Chemical and Synthetic Biology. The first is a cancer drug discovery program, where he is using a combination of small-molecule medicinal chemistry and peptide display technologies to develop the first chemical inhibitors of a cancer-specific pathway known as the Alternative Lengthening of Telomeres. The second is a protein engineering program to develop synthetic carbon-fixing organelles by trapping the enzyme Rubisco inside encapsulin protein cages, which are currently being installed into plants to assess their impact on photosynthetic growth.

Associate Professor Lau's research program has been supported over the years by an ARC DECRA Fellowship, a Westpac Research Fellowship and a Cancer Institute NSW Career Development Fellowship. He was a recipient of a 2019 J G Russell Award from the Australian Academy of Science, a 2021 NSW Young Tall Poppy Award and the 2022 RACI ACES Early Career Award. He is most proud of having completed supervised to completion 19 HDR and Honours students to date.

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

In Memoriam

Marloes Nitert Dekker 1976–2026

Marloes was born in the Netherlands in 1976, and showed an aptitude for science subjects already in Grammar School. She chose to study Medical Biology at the University of Amsterdam and completed her Masters there, with various internships at labs in the UK and Sweden in 1998. She commenced her PhD at Linköping University Medical School not long after – interspersed with periods of generous Swedish parental leave which she shared with her husband, Sid – and later completed the PhD at Lund University in Sweden in the 2000s. Her doctoral research focused on the role of beta cells in diabetes and pregnancy. After various postdoctoral positions, Marloes and Sid made the decision to move their family to Australia. Their desire to pursue new opportunities for their careers took them to two different universities in Brisbane, Queensland: Marloes at the University of Queensland (UQ) and Sid at Griffith University.

Marloes Dekker.

Marloes initially took up a position at the Royal Brisbane Clinical Unit, and later as a joint appointee within the UQ Centre for Clinical Research. In 2016, after five years as predominantly research-focused academic, Marloes moved her research group from the Herston Campus of UQ to St Lucia, where she joined the School of Chemistry and Molecular Biosciences (SCMB) as a Teaching and Research academic. She was promoted to Associate Professor in 2023. As a researcher, Marloes published well over 100 papers with excellent metrics. For those familiar with her caring nature, it would come as no surprise that her work integrated microbiome biology and clinical collaboration to address complications of pregnancy and their long-term metabolic consequences. Historically, this field has received less structural attention than other areas of biomedical research despite its profound implications for lifelong health equity, and she sought to redress this through her work. Marloes' impact was more than just academic as her work informed national clinical guidelines. Following a chance conversation over coffee with her long time friend and colleague, Associate Professor Marina Fortes, her research branched out into agriculture and climate change, and she studied the influence of the microbiome on methane emissions in pregnant cows.

While Marloes had firmly established herself as a world class researcher, it was as a Teaching and Research Academic that many felt she found her true calling. This is because she was such a fine teacher and truly cared for the students she taught. She was a Senior Fellow of the Higher Education Academy and an incredibly popular lecturer, as judged by student feedback. Her colleagues described her as incredibly well organised, bringing a sense of calm to every classroom she entered. She was appointed to the role of Deputy Director of the SCMB Teaching and Learning Committee and spent a significant period as Acting Director, making a challenging role look effortless. She was also an excellent research supervisor with a dozen students completing their PhD with her as supervisor, the most recent of which graduated on 16 July 2026. As an advisor and mentor to HDR students, she often sought out and helped those who needed sustained personal support; many of her supervisees and mentees successfully completed their degrees part-time over an extended period due to family or clinical responsibilities. This became a hallmark of Marloes' character as an academic – she was just someone whose support made those around her more effective.

Marloes' influence as a scientist went well beyond traditional teaching and research roles. As the Chair of SCMB's Equity, Diversity and Inclusion Committee, she developed the Women in Science podcast with Marina Fortes and Professor Kirsty Short. This series, now in its fifth season, highlights the career paths of female scientists with the goal of inspiring young female scientists to choose a career in science. Through formal and informal mentoring programs, she gave selflessly

Pencil drawing of Marloes Dekker.

of her time and supported the career progression of numerous female academics, not only in science but across broader academic disciplines, within and beyond UQ. She became a respected academic voice at UQ which saw her elevated to a number of leadership roles within the university. These included being appointed to Committee for Academic Policy and Procedure in 2025 and serving as a member of the Academic Board.

Through various roles, Marloes was an active and engaged member of the Australian Society of Biochemistry and Molecular Biology. As Program Chair, she played a key role in delivering the incredibly successful ASBMB 2025 conference held in Brisbane. This meeting returned a significant profit to the Society and helped frame policy for future standalone ASBMB meetings (held in non-Com Bio years). Marloes was also an active member of the ASBMB Education Special Interest Group, joining the ASBMB Education Core Concept Working Group in 2024 and co-chairing the Education Symposium at ASBMB 2025. Her contributions to professional societies across Australasia were not limited to the ASBMB. She was twice elected to the Board of the Australian Society of Medical Research, chairing the National Scientific Conference in 2025 before being elected as an Executive Director and Treasurer in 2026. She was a member of the Endocrine Society of Australia, serving on the society's Scientific Strengthening Committee, and a member of the Society of Obstetric Medicine of Australia and New Zealand, where she joined the Local Organising Committee for the 2026 meeting.

With a long career still in front of her, Marloes tragically passed away after an incredibly brief illness in June 2026, surrounded by family. To many Marloes was a friend and colleague, and to countless others a truly fine teacher and a remarkable scientist that we are all truly devastated to have lost.

Based on the speech delivered by Professor James De Voss at Marloes' Requiem on 16 June 2026. It is modified with permission with contributions from Associate Professor Michael Landsberg and Professor Sidney Dekker.

Annual General Meeting of the Australian Society for Biochemistry and Molecular Biology Inc.

The 70th Annual General Meeting of the Australian Society for Biochemistry and Molecular Biology Inc. will be held on Wednesday 30 September 2026. The meeting will be conducted at the International Convention Centre Sydney. Time and lecture room are to be determined and will be released with the meeting program.

AGENDA

1. Apologies
2. Confirmation of the Minutes of Annual General Meeting No. 69
3. President's Report
4. Treasurer's Report
5. Fees for 2027
6. Elections to Council
7. Amendments to Constitution and By-laws
8. Any Other Business

Victor Anggono
Secretary, ASBMB

Election of Council 2027

Nominations are called for the following positions on the Council of the Australian Society for Biochemistry and Molecular Biology Inc for 2027: Secretary, Treasurer, Editor, Education Representative, FAOBMB Representative, Secretary for Sustaining Members and State Representatives.

Eligible for re-election
§ Position open

The ASBMB Council for the period 1 January 2026 to 31 December 2026 is composed of the following members:	President	M Maher
	President Elect	K Quinlan
	Secretary	V Anggono #
	Treasurer	A Achuthan #
	Editor	T Soares da Costa #
	Education Representative	A Willems-Jones #
	FAOBMB Representative	D Ng #
	Secretary for Sustaining Members	S Parsons
Representatives for:	ACT	C Suraweera §
	NSW	T Christie §
	QLD	C Wang §
	SA	M Roach §
	TAS	K Fairfax #
	VIC	N Kershaw #
	WA	J Haywood #

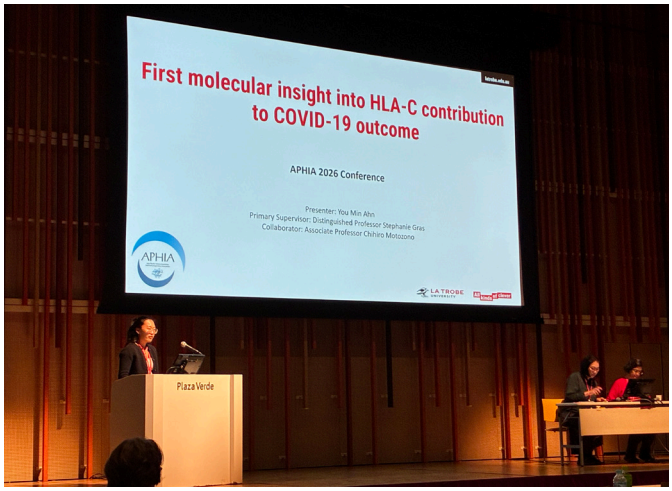
Nomination forms are available on the ASBMB website and are to be submitted online: https://www.asbmb.org.au/asbmb/council-nomination/Site/Register. Nominations for all vacant positions must be signed and seconded by members of the Society. The nominations must be signed by the nominee to indicate his/her willingness to stand. If more than one nomination is received for any position, a ballot will be held at the Annual General Meeting. All members will be notified of any elections and members not attending the Annual General Meeting may submit a proxy form available from the Secretary.

NOMINATIONS MUST REACH THE SECRETARY BY 5PM 15 SEPTEMBER 2026
(PRIOR TO THE ANNUAL GENERAL MEETING TO BE HELD ON 30 SEPTEMBER 2026).

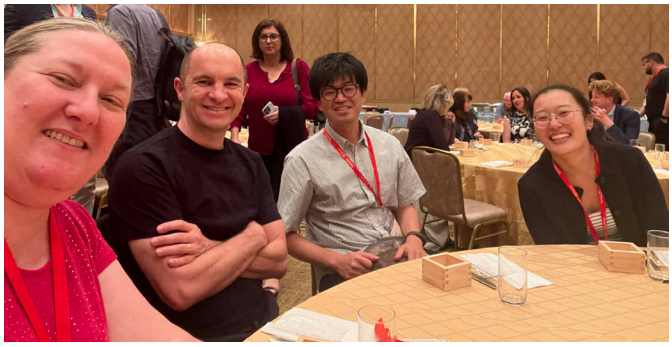
ASBMB Fellowship Report

Building Bridges in Japan

It was an honour to receive an ASBMB Fellowship which supported my travel to Japan to attend the Asia–Pacific Histocompatibility and Immunogenetics Association (APHIA) 2026 conference in Numazu, Japan, and visit my collaborator's laboratory located at Kumamoto University Hospital.



You Min Ahn presents at the APHIA 2026 conference.



From left: Stephanie Gras, Nicolas Faramaz, Chihiro Motozono and You Min Ahn at the conference dinner.

Taking place from 25–28 May, the APHIA 2026 conference was a highly anticipated event that brought together experts, researchers and professionals in the fields of histocompatibility and immunogenetics from around the world. During this conference, I had the opportunity to share my PhD work done in collaboration with Associate Professor Chihiro Motozono from Japan, published in *Nature Communications*, which revealed the first molecular insight into HLA-C contribution to COVID-19 outcome. We were able to show that HLA-C molecule does play a role in controlling infections such as SARS-CoV-2 much like HLA-A and HLA-B. I also had the opportunity to meet with Associate Professor Motozono to plan experiments to further explore new data derived from the recently published paper. I was fortunate to hear multiple outstanding international researchers share their cutting-edge research. What was so special about this conference was the commitment to advance our understanding of HLA (human leukocyte antigen) diversity in infection and immunity. This conference provided invaluable opportunities to foster my networking skills and engage in meaningful discussions and exchange new insights.

I was also able to visit A/Prof Motozono's laboratory at Kumamoto University Hospital where I carried out cellular assays on T cells such as tetramer staining to finalise my PhD thesis. I'm truly grateful for this opportunity to visit a laboratory overseas and gain experience in working internationally. Furthermore, I was honoured to present my PhD work at the Joint Research Center for Human Retrovirus Infection Departmental Seminar held at Kumamoto University Hospital. I also had the chance of meeting Dr Masao Hashimoto from Emory University, USA, who shared a captivating presentation on T cell exhaustion during chronic hepatotropic viral infection and Professor Takamasa Ueno who is a prominent immunologist and virologist. Though the laboratory visit was short, this experience challenged me to get out of my comfort zone, meet new people, share my research and foster new collaborations.

The trip did also provide some leisure time to explore what Japan has to offer. During the APHIA 2026 conference, alongside my supervisor, Distinguished Professor Stephanie Gras, I was fortunate to get a closer look at Mt Fuji and see monkeys along the way. We enjoyed the delicious food Japan had to offer which included lots of fluffy pancakes and mochi. During my laboratory visit, I visited the iconic Kumamoto Castle, took a road trip to Mt Aso and forged new friendships in Japan.

There were lots of highlights during this trip and I am grateful for this opportunity provided by the support of the ASBMB Fellowship.

You Min Ahn is completing her PhD at La Trobe University.

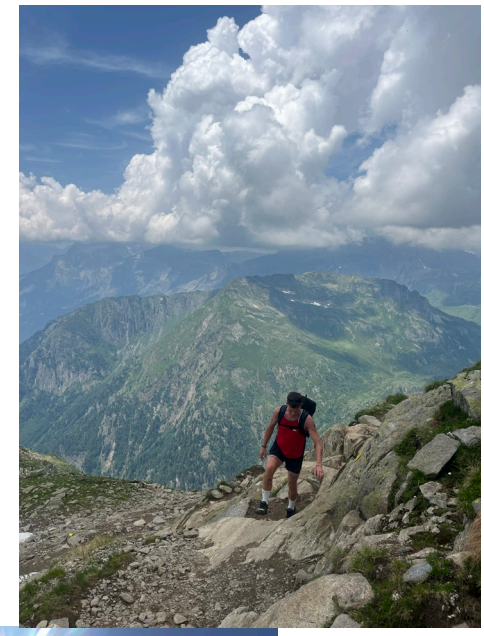
Kumamoto Castle.

ASBMB Fellowship Report

From Trieste to Geneva

It was an honour to receive an ASBMB Fellowship and the Fred Collins Award which provided me the opportunity to combine two incredible experiences that have had a lasting impact on my academic career. I first visited the Scuola Internazionale Superiore di Studi Avanzati (SISSA) in Trieste, Italy, to undertake a brief collaborative research project, followed by the European Academy of Neurology (EAN) Congress in Geneva, Switzerland.

As a PhD candidate at UNSW Sydney, my research focuses on understanding how different structural forms, or strains, of α-synuclein contribute to Parkinson's disease and related neurodegenerative disorders. A major aim of my project is to determine how the biochemical environment influences fibril structure and how these different strains interact with proteins involved in protein quality control and innate immunity.



Halfway up Le Brévent to view Mont Blanc accompanied by mountain goats and alpine meadows.

Standing 2,000 m high atop the Planpraz gondola station with Mont Blanc in view behind, in Chamonix, France.

The first stage of my fellowship took me to SISSA, an internationally recognised centre for structural biology and neuroscience. Working alongside Associate Professor Giuseppe Legname, Dr Anna Burato and Valentino Panico, who specialise in prion research and other key proteinopathies surrounding neurological disease, I had the opportunity to learn how they purified their proteins at an extremely advanced level and also share with them our single-molecule techniques we routinely use at UNSW. This mutually productive experience reinforced our collaboration, and they now utilise our techniques to determine novel interactions at the single molecule level using our established methods.

One of the most valuable aspects of visiting SISSA was seeing how different groups approach the same scientific questions. Although we all share the common goal of understanding neurodegenerative disease, the experimental philosophies and technical expertise differed. Discussing data with researchers from diverse backgrounds challenged many of my assumptions and generated several new ideas that I have since incorporated into my own work.

Beyond the science, I thoroughly enjoyed experiencing life at SISSA. Located high above the Adriatic Sea in the northeast corner of Italy, the institute provided an inspiring environment for research, and it was easy to see why it attracts scientists from across the globe. Spending time with members of the laboratory outside the bench was equally rewarding, reinforcing how international collaborations are built through personal relationships as much as shared scientific interests. For one outing, we visited a traditional Triestine osmiza, which is a rural tavern serving charcuterie produced directly on the farm and reflecting the region's combined Italian and Slovenian heritage. It was a memorable experience that I would highly recommend.

A traditional Triestan osmiza.

ASBMB Fellowship Report

Following my time in Trieste, I travelled to Geneva, Switzerland, to attend the 2026 EAN Congress. EAN is one of the largest international meetings dedicated to neurological disorders, bringing together clinicians, basic scientists and industry partners working across every aspect of neuroscience.

I presented my research examining how different biochemical environments influence α-synuclein strain formation and discussed our findings with researchers from both laboratory and clinical backgrounds. These conversations were particularly valuable, highlighting how fundamental biochemical research can ultimately contribute to improved diagnosis and treatment strategies for neurodegenerative diseases. These conversations also inspired me to further our techniques into developing a clinical application of our basic science. Sessions ranged from biomarker discovery and neuroimaging to emerging therapeutics and artificial intelligence in neurology. As someone working at the interface between structural biology and disease mechanisms, it was inspiring to see how rapidly these fields are converging to address complex neurological disorders. I was also inspired by how doctors were relying on our research to conduct their day-to-day lifesaving work.

Looking back, the combination of laboratory collaboration and conference participation made this fellowship particularly valuable. The technical expertise I gained at SISSA complemented the broader scientific perspective provided by EAN, while together they strengthened my confidence in communicating my research to an international audience.

I am incredibly grateful to the ASBMB for supporting this opportunity for me to travel internationally and attend such amazing academic experiences. Receiving the Fred Collins Award is particularly meaningful given Dr Collins' lasting contributions to Australian biochemistry and his commitment to advancing fundamental scientific discovery. I hope to carry forward that spirit by continuing to foster international collaborations and applying the knowledge and connections gained during my time in Trieste and Geneva. These experiences and relationships fostered would not have been possible without the help of the ASBMB, and I will gladly carry them with me for the rest of my academic and personal life.

Exploring cutting-edge developments in neurological diagnostics at the European Academy of Neurology Congress in Geneva, Switzerland.

Noah J Graves is completing his PhD at UNSW Sydney.

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Azure Biosystems Launches Sapphire FL Biomolecular Imager With Resolution to 5µm

Scitech Pty Ltd is pleased to announce the launch of the Sapphire FL Biomolecular Imager from Azure Biosystems, a versatile multi-modal imaging system that now delivers resolution down to just 5 microns. With user-changeable laser and filter modules, the platform supports wavelengths from 375nm to 900nm, enabling UV, phosphor, visible and near-infrared imaging, with an optional chemiluminescence module for added flexibility.

The Sapphire FL is the only biomolecular scanner in its class that reaches into the UV spectrum, allowing multiplexing of UV dyes with dyes in the near-infrared. Using the 375 Standard Optical Module, it can image common DNA stains such as DAPI and Hoechst.

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High sensitivity enables femtogram detection of proteins labelled with common fluorescent dyes. When Extended Dynamic Range (EDR) is selected, the system can capture both bright and faint bands without saturation, producing up to 24-bit data for samples with widely varying expression levels.

The Sapphire FL also supports live animal imaging. When used with appropriate tubing and nose cones, living mice can be fluorescently imaged under anaesthesia via one of five built-in anaesthesia ports. The wide imaging platform accommodates specimens up to 4 cm deep, making it suitable for mice, plants, multi-well plates, petri dishes, microscope slides and other large biological samples.

A 7 mm software-controlled adjustable focal plane allows users to scan samples at multiple depths and capture more complete image data. The system scans from 5 to 1000 µm resolution, supporting clear visualisation across both highly detailed and larger-format samples.

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Together these technologies create an integrated workflow that connects binding events to cellular behavior and functional outcomes, providing a framework for studying immune cell cytotoxicity. Learn more with this application note.

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ASBMB Council 2026

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