Australian National University

Research School of Biology Newsletter

Issue 170 | July-August 2025

From the Director

Dear colleagues

Welcome to this combined July & August newsletter. Since I last wrote, there have been yet more developments around the Renew ANU process, which are causing some delays as we progress towards a sensible Implementation Plan. These include interventions by the NTEU and the VC's decision to implement a new round of Voluntary Separation proposals, which are open to our community until September 12. Further details are available via the Renew ANU website. If you have any interest in this, please let me know as soon as possible. All this, along with lots of constructive feedback on the initial proposal, will be taken into account as we finalise the Implementation Plan. I am well aware that ongoing uncertainty about jobs and duties is causing considerable anxiety and will continue to share information as I can. Please also read the section below from the WHS committee regarding mental health (aka "psychosocial issues"). As before, I ask that you look out for others may be experiencing undue stress and take advantage of opportunity to record problems on FigTree. I can assure you that such reports are being taken seriously and are treated in confidence. As always, if you have concerns that you want to raise with me directly, please do so.

To happier news, by now you will be aware that Graham Farquhar and Susanne von Caemmerer – have been awarded jointly the Royal Medal of the Royal Society for their profound contributions to plant science. This rare honour recognizes their highly productive collaboration over decades, merging new theory with novel experimental evidence to develop models of photosynthesis that are now widely used in plant and climate sciences. We celebrated with them earlier this week which was a very positive and well attended event. Thanks to those that stepped up to organize this. In the following there is more news of further awards. Including recognition of major contributions to climate science by John Finnigan and multiple awards to EMCRs in the school. The latter bodes well for the future. And to top if off, another strong list of publications, including some in top journals such as Science, Nature Plants and PNAs (x3!). Highlighting these does not detract from the excellent scholarship embodied in the many papers published in other journals. Well done all.

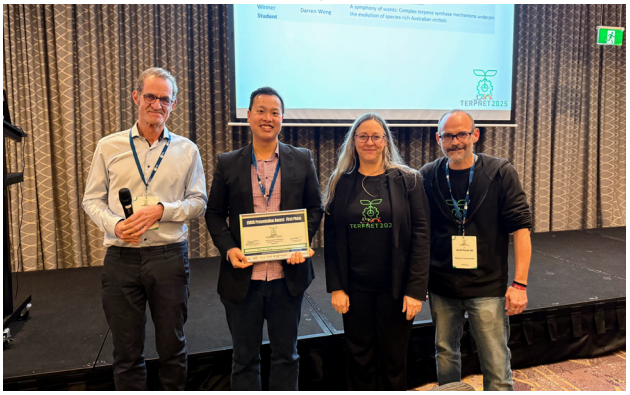
Craig

Welcome

Welcome to **Grace Jones**, a PhD student who is co-supervised by Tham and Solomon Groups to study the chytrid fungus Batrachochytrium dendrobatidis which causes devastating disease in frogs. Her PhD research focuses on establishing novel genetic transformation techniques for chytrid fungus and to understand the role of cell death effectors in infection. Grace is excited to expand her knowledge and expertise on genetic transformation and structural determination approaches. She was previously an Honours Student in the Brock Group working on synthetic biology in yeast, as well as an intern in the Kershaw Lab at WEHI doing crystallography.

Farewell

The Peakall Group says a fond farewell and very best wishes to **Darren Wong** (Peakall Group, E&E), who will be moving with his family to Adelaide University in September to become a Future Making Fellow. Darren has been a highly productive postdoctoral researcher, and former ARC DECRA fellow in the Peakall Group for some 9 years. Across this period, he has also co-supervised several Honours, Masters and PhD students. His E&E seminar of July 31, entitled "A symphony of colour and scents: Complex anthocyanin and terpene synthase mechanisms underpin the evolution of species-rich Australian orchids" showcased some of the depth and breadth of his research which has utilised cutting-edge genomics, transcriptomics, metabolomics, and integrative approaches to address the molecular mechanisms of floral colour and scent changes in orchid flowers.



In the first week of August, Darren presented a modified version of this seminar at TERPNET 2025 in Brisbane, winning first place for the EMCR Presentations. This is the premier meeting of international researchers working on all aspects

of terpenes, terpenoids and isoprenoids including biosynthesis, function, biological activities, industrial applications and synthetic Biology. Congratulations Darren!

Grants awarded

Guillaume Tcherkez (Emeritus Professor, PS), Limami A, Lothier J, **Marilyn Ball** (PS) et al. were awarded AAPG funding valued at 622,550 Euros over 2026-2028 for their research proposal *Sapomics: Steps towards the understanding of phloem sap composition and regulation*.

Nuren Tasneem (Williams Group, PS) was awarded an AINSE (Australian Institute of Nuclear Science and Engineering) Postgraduate Research Awards (PGRA) stipend ($9K/year) to support research associated with the MX beamlines at the Australian Synchrotron in collaboration with Dr Daniel Eriksson (Senior Scientist, MX).

Nils Kreuter (Keogh Group) was awarded a Training Grant from the Fisheries Society of the British Isles for further training in advanced statistical analysis for fish biology and fisheries science valued at approximately $1850 AUD.

Congratulations to the following ESA Holsworth Wildlife Research Endowment awardees:

- **Thomas Hanley** (Nicotra Group, E&E) valued at $8,275
- **Peisong Tian** (Head Group, E&E) valued at $8,490
- **Muhammad Farooq** (Head Group, E&E) valued at $8,495

Olga M. Azevedo (Sequeira Group, E&E) has been awarded $8,400 from the ESA Holsworth Wildlife Research Endowment to investigate tiger shark predation on threatened dugongs and green turtles in the Shark Bay World Heritage Area. Olga will be investigating tiger shark predation on threatened dugongs and green turtles in the Shark Bay World Heritage Area. This project will test the hypothesis that dugongs and turtles are the major food source for tiger sharks in Shark Bay, using fatty acid analysis.

Congratulations

On behalf of all in RSB, it is my pleasure to congratulate **Chenke Zang** (Jennions Group, E&E) as the winner of the ANU final of the Three Minute Thesis (3MT) competition for 2025. Chenke's PhD research within the Jennions and Head Groups, focuses on the behavioural responses of mosquitofish to environmental and social factors. This work is aimed at understanding sexual selection and reproduction in aquatic species, which was the focus of her winning 3MT talk. To quote from the ANU reporter "Zang's clear explanation of what fish can teach us about love won her first place in the annual 3MT competition – beating out the 12 other finalists from across the University. Zang will now progress to the Asia-Pacific Semi-Final Showcase and compete against scholars from across Australia, New Zealand, Japan, Hong Kong, Malaysia and Singapore. Read the ANU Reporter article Love lessons from mosquitofish: tales from the ANU 3MT competition. Watch her presentation on Youtube ANU 3MT 2025, Chenke is 7th in the line up.

Congratulations to **John Finnigan** (Ball Group, PS) FAA who has been selected by the Council of the American Meteorological Society to receive The Award for Outstanding Contributions to Boundary-Layer Meteorology. The citation for this prestigious international award recognizes Finnigan's extraordinary advances in physical ecology, specifically, "For transformative contributions to our understanding of surface and boundary layer flows over vegetated and complex terrain through innovative uses of observations and simulations".

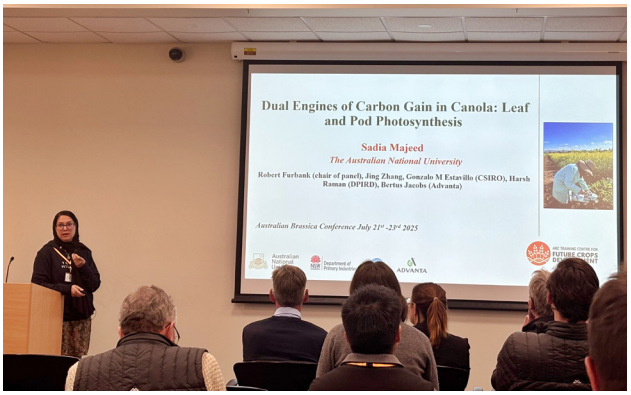
Congratulations to **Emily Furlong** (BSB) and **Ashley Jones** (Schwessinger Group, PS) who both received an ACT Young Tall Poppy Science Award 2025 from the Australian Institute of Policy and Science (AIPS):

Emily Furlong (BSB) recieved a Young Tall Poppy award for her work tackling antimicrobial resistance. Her research focuses on uncovering the inner workings of bacteria and the specialised processes they use to cause disease. Using cryo-electron microscopy, crystallography, and artificial intelligence, Emily has solved the structure of several key proteins that help bacteria survive and infect their hosts. This knowledge is vital for designing new antibacterial therapies and developing better strategies to prevent bacterial infections. Congratulations Emily!

Ashley Jones (Schwessinger Group, PS) received the ACT Young Tall Poppy of the Year Award for his work on genome evolution in Australian native plants and their fungal pathogens. Using long-read DNA sequencing, his work has uncovered genome structural variations that drive climate adaptation and disease resistance in iconic native plants including Eucalypts, paperbarks, and grass trees. Ashley's research has been translated to the community through conservation efforts and improving Australia's biosecurity measures, with government and industry partnerships. Congratulations Ash!

Congratulations to **Samantha McGaughey** (Byrt Group), who has won the 2025 ACT Emerging Scientist of the Year award. This award recognises local scientists' excellence in research and innovation and celebrates work shaping a more sustainable future. Sam has been working on plant transporter proteins and is aiming to design artificial membranes that incorporate specific properties of these transporters to filter wastewater,

both to clean up the water and to recover valuable resources, e.g. from mining and agricultural waste. Sam's research has built tools to understanding the specificity of aquaporins, channels with dual functions in water and ion transport and is the co-founder and co-director of Membrane Transport Engineers.



Sadia Majeed (Furbank Group, PS), from the ARC Centre for Future Crops Development, recently attended the 2025 Australian Brassica Conference in Horsham, where she received the Phil Salisbury Best Student Presentation Award for her outstanding PhD research presentation. This award includes a $500 prize.

Congratulations to **Damien Farine** (E&E) and **Lucy Aplin** (E&E) who were both honoured with life membership to the Association for the Study of Animal Behaviour (UK) in recognition of their contributions to the field.

PhDs Submitted

Imam Fathoni (Saliba Group, BSB) Targeting Thiamine (vitamin B1) Metabolism and Utilisation in Plasmodium

In the Media

Samuele Ramellini (Farine Group, E&E) was interviewed on their Group's research on the superb fairywrens at the Australian National Botanic Garden. Listen to the interview on ABC Radio Canberra Drive.

Cecilia Nie (Maier Group, BSB) and **Lizzy Durban** (Maier Group, BSB), supervised by Melanie Rug (Director, Centre of Advanced Microscopy), delivered one of the ACT's largest National Science Week programs this year with Parasite Pandemic. Across four activities, the program drew more than 600 participants and over 1,000 session bookings at both the ANU Canberra and Kioloa campuses. The success of the event was also recognised widely in the media, with Cecilia and Lizzy featured on the front cover of CityNews (July edition), in Canberra Daily and Region Canberra, and on ABC Canberra and 2CC Radio. The event achieved great success, joined by people of all ages and backgrounds to explore the fascinating world of Parasitology! The program was hosted by the Australian National University and the Australian Society for Parasitology, and proudly supported by the Australian Government through Inspiring Australia.

Damien Farine and Fran Hacker spoke with several media outlets, including science podcasts, in the lead up to Science Week, hear them on 2xxfm on the 3rd of August and the 10th of August and ABC's Sunday Brunch on the 10th of August.

News

Talking Marine Megafauna at the Pub

As part of National Science Week, **Ana Sequeira** (Sequeira Group, E&E) joined the 'Pint of Science' public event Wildlife Tales: Marine Megafauna, Fairywrens & Conflict Resolution at King O'Malley's in Canberra. Ana delivered an engaging presentation on marine megafauna, exploring how these ocean giants migrate across the globe and connect ecosystems in surprising ways. She also highlighted recent outcomes from her MegaMove project, giving the audience unique insights into the data and stories behind her research. The evening also featured talks from fellow RSB researchers **Damien Farine** (E&E) and **Fran Hacker** (Farine Group, E&E) and provided a welcoming space for the community to hear from scientists, ask questions, and connect with science in an informal and engaging environment.

Damien Farine (E&E) attended a high-level workshop "Connecting Continents: Research Dialogue with Europe" discussing a proposal for Australia to join the Horizon Europe funding scheme. The event was hosted by the Australian Academy of Science and jointly organized by Euraxess and the embassies of Germany, France and Italy. Participants included representatives from industry, numerous embassies, academics, and government. The overall mood was very positive for this action, with the benefits highlighted by speakers ranging from existing grantees through to Australia's current and past chief scientists.

The annual E&E curry and quiz night on July 24 was a big win with a huge variety of curries presented. As judged by our Honours and Masters students (**Taia Artemov**, **Olivia Young** and **Mingxiao Ye** (Mikheyev Group), **Rhiana Woods** (Farine Group), **Ella Wishart** (Nicotra Group), and **Amelia Peardon** (Noble Group), first prize for best curry of the night went to **Anuj Shinde**'s (Keogh Group) dish of chicken coconut korma. **Scott Keogh** (E&E) the long-term organiser of this event, who unfortunately could not be there, will be

very happy to keep the Curry Gnome safe within the lab. This winning curry was all tied together by the very traditional entrée of garlic bread supplied by the culinary mastermind **Siwanon (Bank) Paphatmethin** (Keogh Group).

The trivia was similarly chaotic and broken up by physical activity rounds of M&M chopstick wars, tupperware ping pong and charades. My team, the illustrious *Competitive but Incompetent* (**Ian Brennan** (Keogh lab), **Naomi Laven** (Noble Group), **Stephen Zozaya** (Moritz Group), and **Wes Read** (Keogh Group)), got the win in a nail-biting tie breaker for first place, with honourable second going to **Samuele**'s Biscuits (Samuele Ramellini, Farine Group). The team will keep training hard to keep the streak going next year. Until then! Written by **Wes Read** (Keogh Group)

Outreach

Many thanks to those who have volunteered to help teach the Australian National team for the International Biology Olympiad. Four students who successfully completed a rigorous 2 week summer camp that equated to an intensive first year undergrad (and more) course represented Australia from over 1400 applicants. In individual challenges they achieved 1 gold, 1 silver, and 2 bronze medals.

Our Australian Biology teams, exclusively trained at RSB, consistently punch above our weight in this international competition, with over 65 countries competing, and we attract many students as a result. The Australian Science Olympiads are governed and funded by a not for profit: Australian Science Innovations Ltd. Written by **Juliey Beckman** (BTLC); Deputy Head of the Australian Biology Olympiad.

RSB Spotlight - Biomedical Science and Biochemistry

Decade-Old Data Yields Fresh Insights into Malaria Protection

Research carried out by PhD student **Ayman Hemasa** (Saliba Group, BSB) and colleagues, published this week in *PNAS*[1], is a timely reminder that valuable science is never out of date.

Left: Ayman Hemasa Right: Kylie Easton circa 2010

Work on this project was first undertaken more than a decade ago in Ferrara, Italy, by former Saliba Group PhD student Dr **Kylie Easton**. Ayman extended this work to a new study site in Huye, Rwanda, testing a long-standing hypothesis first proposed in the 1980s–1990s: that individuals with red blood cells deficient in flavins (metabolites of riboflavin, aka vitamin B2) may have inherited this condition because it offered protection against malaria.

The team confirmed that individuals with flavin-deficient erythrocytes are not confined to Italy, where malaria was once common, but are also present in Rwanda, a country where the disease remains endemic. Laboratory experiments further showed that flavin-deficient erythrocytes, whether sourced from individuals with the condition or generated in vitro, are less able to support malaria parasite proliferation. These results provide experimental support for the decades-old hypothesis.

Ayman's thesis, now under examination, forms part of the International Research Training Group between ANU and Humboldt University in Berlin, Germany.

This outcome, however, is also a poignant one. When the study was first being planned in 2009, the proponents of the hypothesis, Dr Barbara Anderson and Prof Rino Vullo, then aged in their late 80s, were both enthusiastic supporters of the work. Sadly, they passed away before the study's findings became available.

[1]Hemasa, A. et al. Flavin-deficient erythrocytes offer protection against malaria parasites. Proceedings of the National Academy of Sciences of the United States of America. https://doi.org/10.1073/pnas.2504687122.

From the WHS Committee

Psychosocial awareness

In this time of unprecedented change and uncertainty at ANU, many of us are experiencing increased levels of stress. You may have noticed changes in the behaviours or emotions of yourself or your colleagues. These can include an inability to concentrate, withdrawal from social activities, burnout, irritability, anxiety, fatigue or sleep problems. If any of this sounds familiar, the University offers many avenues of support, though they can sometimes be difficult to navigate. You are invited to have a confidential conversation with the WHS Team, any of the School Mental Health First Aiders, your RSB Health and Safety Representatives, or directly contact the Employee Assistance Program.

We also encourage anyone feeling distressed by the current changes to lodge a confidential psychosocial

incident in Figtree. Confidential incidents are only seen by the Head of the University Injury Management team, and unlock extra resources to fund external psychological counselling services. Additionally, de-identified Figtree reports are compiled quarterly, with numbers reported to the University's WHS Committee, ANU Council, and Comcare. Significant changes in the number of incidents will trigger a Comcare investigation into the operation of the University.

Papers

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