

Research School of Biology Newsletter

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From the Director

Dear Colleagues

Welcome to the first newsletter for 2025.

It will be no surprise to you all that RSB finds itself in a very challenging financial position due to budget cuts from ANU to the College, and then to us (along with other Schools). Our Dean and I have met with Faculty to explain the situation and take suggestions, and then Steve and I did the same with our professional staff. I was really pleased by the constructive and collegial discussions at both meetings and afterwards. We are all doing our very best to manage this situation in a way that minimises impact on people and our core activities across research, training and research-led teaching. There will be some stress, so please lookout for yourself and those around you in the weeks to come. Taking leave as you can is also a healthy option!

Amidst all this doom and gloom, it is easy to lose sight of our ongoing achievements, as outlined in the following.

- RSB has performed strongly in the ARC DP26 EoI competition with some 50% of submitted EoIs (14/29 internal and 5/10 external led proposals) progressing to full proposal. My commiserations to those that missed out, including several near-misses, and good luck to those still in the game.
- We had a great graduation day, including several RSB PhD graduates who joined us in celebration prior to the main event.
- With semester 1 underway, our classes are full of curious and inspiring students. In that context it is great to see so many recognised for excellence in teaching via the College awards.
- Our publication output remains strong, as evidenced by multiple papers in leading journals (including Science, Nature Ecology and Evolution).

All this is to say that RSB continues to be a topperforming School. Hang in there.

Craig

Welcome

Welcome to Megan Outram (Tham Group, BSB) who



is joining the Tham Group as a
Postdoctoral Researcher working
on chytrid infection in frogs.
She will be applying structural
and biochemical approaches
to understand the molecular
mechanisms of infection. Megan
was previously employed in PS with
Simon Williams working on plant
pathogens and returns to ANU after
spending some time at CSIRO. She

is excited to apply her knowledge of plant pathogens in this space and expand her knowledge into new areas. Welcome to Lavi Singh (Schwessinger Group, PS) and Samantha Whitling (Schwessinger Group, PS) who have recently commenced their PhDs in the Schwessinger Group and the ARC Training Centre in Plant Biosecurity.

Farewell

Farewell to Elaine Tao (Corry Group, BSB) who is taking up a postdoc position at RMIT in Melbourne upon completing her PhD in early March. During her PhD Elaine greatly improved our understanding of how local anaesthetics, anti-arrhythmics and anti-epileptics interact with ion channels and helped explain the basis of a severe form of epilepsy. She became a world leader in the study of sodium channels and a great tutor to our local biology students. She will be greatly



missed in the lab and the Group's knowledge of contemporary music will suffer in her absence. Wishing you good luck in Melbourne!

Farewell to Yiechang (YC) Lin (Corry Group, BSB) who is finishing at RSB in March to start a prestigious Boya fellowship at Peking

University. As a PhD student and Postdoc in our group YC led the investigation of how membrane lipids modulate the function of membrane proteins and how different proteins help lipids zoom from one place to another. Her inspirational ideas, frank feedback, outstanding contributions to undergraduate teaching and cheerful spirit will all be greatly missed. We wish you the best of luck in China!

Grants awarded

Hilary Rose Dawson (Nicotra Group, E&E) was awarded a Marie Skłodowska-Curie Actions Postdoctoral Fellowship for her proposal titled "SeedTraits: Using seed functional traits to understand and predict alpine plant responses to global climate change". She will be starting the Fellowship in April 2026 and working with Vigdis Vandvik and Aud Halbritter at the University of Bergen in Norway.

Robert Furbank (PS) was awarded a GRDC International Visiting Fellowships program by the Grains Research and Development Corporation valued at \$49,600.

Congratulations

Congratulations to Celeste Linde (E&E), Denisse Leyton (BSB), Gavin Huttley (E&E) and Rob Lanfear (E&E), who were awarded a College of Science Commendation for Excellence in Supervision.

Congratulations to **Dinithi Rajapaksha** (Adamska Group, BSB) and **Alexandra Williams** (Brock Group,

BSB) who were awarded a College of Science Commendation for Excellence in Tutoring or Demonstrating.

Congratulations to Benjamin Schwessinger (PS) who was awarded a College of Science Commendation for Outstanding Contribution to Education Experience.

Congratulations to Alexander Maier (BSB), Rod Peakall (E&E), Melanie Rug (CAM), Eric Stone (E&E), Giel van Dooren (BSB) who were awarded a College of Science Commendation for Teaching Excellence.

Congratulations to **Aude Fahrer** (BSB) who received the ANU 25 Years of Service award.

Congratulations to Arslan Mahmood (Millar Group, PS) for attending the Global Young Scientists Summit (GYSS) 2025 (6-10 Jan) at the National University of Singapore. This prestigious five-day event, themed "Advancing Science, Creating Technologies for a Better World," brought together 342 students from 49 countries, featuring speakers who are Nobel, Fields, and Turing Award winners. Arslan's PhD research on gene editing in plants gained significant attention, and he had the opportunity to discuss CRISPR technology with Nobel Laureate Professor Richard Roberts. He highly recommends GYSS as an inspiring and motivating experience for all students.



Congratulations to Polly Hannaford (Lanfear Group, E&E) who was awarded a Sir Roland Wilson PhD Scholarship in 2024 for her research which aims to reduce disease risk in aquaculture. The awarding of this PhD Scholarship includes an invitation to the ANU's annual 'Secretary's Dinner' with the Australian Department of Agriculture, Fisheries and Forestry's Secretary Mr. Adam Fennessy PSM. The Secretary's Dinner was held 26 November 2024 and brings together Australia's most senior public servants, ANU academics, and awardees of Sir Roland Wilson scholarships which aim to build bridges between academia and public policy.

PhDs awarded

Yusuke Fukuda (Moritz Group, E&E) Understanding the movement and dispersal of saltwater crocodiles (Crocodylus porosus) within and around Australia

Rosalie Harris (Nicotra Group, E&E) Bridging land and sea perspectives of photosynthetic thermal tolerance in a climate change context

YC Lin (Corry Group, BSB) Investigating Lipid Modulation of Ion Channels Using Molecular Dynamics Simulations

Xuexin (Cookie) Gao (Leyton Group, BSB) Investigating how metabolite fluxes affect two brain diseases using different model systems

Hannah Glanville-Jones (Arkell Group, E&E) Zinc finger protein of the cerebellum 2 (Zic2) protects against

teratogenesis during early mammalian development

Timothy Rodes (Whitney Group, PS) *Engineering Plant Rubisco*

Xiaojun (Holly) Yuan (Leyton Group, BSB)

Jing Zhang (Leyton Group, BSB)

Xuexin Gao (Callaghan Group, formerly BSB)

You Zhou (Magrath Group, E&E) Acoustic Ecology in Birds: How to Avoid Danger in Noisy and Cluttered Environments

In the Media

Daniel Noble (E&E) has co-written an article published by the Conversation on the effectiveness of poisoned baits, read the full article Poison baits were used on 1,400 feral cats, foxes and dingoes. We studied their fate to see what works.

Benjamin Schwessinger (PS) spoke to ABC Radio about fungi, listen to the full program on ABC Drive.



Caitlin Byrt (PS) has had an article published by ANU Reporter on harnessing the power of plants to create a sustainable future for people and the planet, read the full article Power plants: the green way to sustain the global energy transition. The College of Science and Medicine have published a Youtube video from a recent excursion where Caitlin Byrt (PS) and Patrick De Deckker (RSES) discuss the science behind the Captains Flat historic mine site, the video now has upwards of 53,000 views.

Hilary Rose Dawson (Nicotra Group, E&E) has had her research featured in a recent article by AAAS Science News, read the full article 'Good boy!' Trufflesniffing dogs are helping uncover hidden underground ecosystems.



Ivan Vinogradov (Jennions Group, E&E) has had an article published by ANU Reporter on intelligent male mosquitofish having more offspring, helping future generations become smarter over time, read the full article Smart is sexy: evolution of intelligence partly driven by love. You can also read more about this in

articles published by The Conversation and Cosmos.



Alexander Mikheyev (E&E) has had an article published in the ANU Reporter on the current dangers faced by Australian honeybees and what can be done about it, read the full article <u>Hive mind: collecting intel to help</u> Australia's honeybees.



Simon Williams (PS) has had an article published by ANU Reporter on the discovery of a powerful "weapon" used by many disease-causing fungi to infect and destroy major food staples, such as rice and corn, could offer new strategies to bolster global food security, read the full article Scientists closer to engineering more resilient food crops or listen to the ABC Radio interview at the 7.5 minute mark.

News

Blooming corpse flower heats up

On Saturday the 8th February, the impressive corpse flower (Amorphophallus titanum) at the Australian National Botanic Gardens (ANBG) bloomed for the first time in its 15-year life. The massive flower bloomed for just 2-3 days, releasing an intense rotting smell to attract pollinators.



Predicting exactly when the flower spike will open is difficult but an indication that it is about to flower is when the flower spike starts to produce its own heat through thermogenesis. Pieter Arnold (Nicotra group, E&E) collaborated with Vero Briceño (Nicotra group alumni, now Conservation Manager at ANBG) to set up

sensors for temperature datalogging and an infrared thermal camera (thanks to the RSB Seed Funding scheme in 2021) to monitor the remarkable plant's temperature leading up to the rare flowering event.

Outreach

Curious Minds empowers girls from regional and rural areas who are passionate, high performers in STEM to explore their full potential, through an eight-month hands-on extension and mentoring program. A second group of girls visited the biology teaching labs in December 2024 to experiment with lactase specificity, the structure of DNA, the structure of hominid skulls and development of modern humans.



Also in December, a group of 28 students from the Indigenous Summer School attended the biology teaching labs to participate in the 'Art and Science of Plant Colour' hosted by **Uli Mathesius** (PS) and Rebecca Mayo (School of Art and Design). The students produced silk prints using dyes made from leaves and then participated in a practical to separate the pigments found in leaves via thin layer chromatography.

January 2025 saw the return of the annual Biology Olympiad, with 24 students participating in theory and practical lab activities over 2 weeks, organised by Juliey Beckman (BTLC), Julie Cooke (UC) and the BTLC team. The top four students will represent Australia at the International Biology Olympiad to be held in the Philippines this year.

Andras Keszei (BTLC) and the teaching lab team hosted 32 students from the NYSF for the popular DNA Forensics and Phenotyping Lab. Another 10 students from the Snowy Mountain Grammar School participated in the same activity in February, this time run by Tammy Armour (BTLC).

From the APPN ANU

APPN hosts annual forum at ANU

On 12th and 13th of February, the ANU team of the Australian Plant Phenomics Network hosted the annual APPN forum at ANU. For its second edition, the APPN forum aimed to bring together members from all nine APPN host organisations in SA, NSW, WA, VIC, QLD and the ACT. Seven of the nine nodes are new to the network with a lot of new staff, so there was a lot to chat about and new people to meet!

Led by CEO Richard Dickmann the group discussed the progress of the new network over the past year – from purchasing new infrastructure to officially opening several new APPN nodes. Individual focus groups also had the opportunity to meet and talk about strategies to develop new capabilities across controlled environment and field phenotyping, governance and data management. All we can say at this point is watch

this space - we have ambitious plans:)

After an intense day of discussions, we were happy to kick back during a cruise on Lake Burley Griffin and dinner at the Australian museum where Tom Giles, Senior Manager in Enabling Technologies at GRDC, spilled the tea on future GRDC investment strategies. He also highlighted how APPN's mission to resolve agricultural challenges through innovative plant phenotyping solutions aligns closely with GRDC. They are very excited to see what APPN will achieve as a network in the coming years.

The ANU team also organised a facility tour to show members of the new nodes our local infrastructure, some of which will soon be implemented in other nodes of the APPN. Safe to say the ANU team received stellar reviews for the tour from a very engaged audience.

The forum was a great success and would not have been possible without the work of the organising team in Canberra and Adelaide consisting of Jesusa Aguilar-Mana (APPN, PS), Richard Poiré (APPN, PS), Danielle Way (APPN, PS), Alison Hay, Kirsten O'Donnell, Kerry Bormann, Richard Dickmann and Belinda Cay.

RSB Spotlight - Ecology and Evolution

The joy of being a biologist - by Rod Peakall (Head of the Division of Ecology and Evolution)

Amidst an unprecedented crisis at ANU, my Director's Seminar on the 17th of February offered me a timely opportunity to publicly reflect on the privilege of being an academic. I was also able to use that opportunity to hold a short discussion with the audience on the 'joy of being biologists', whether that be short-term as a student or postdoc, or long-term as an academic. Subsequent conversations on this topic have followed in the corridors of the School and via email. Here, I take the opportunity to share some of those insights.

Scott Keogh (E&E), despite long carrying a disproportionately high administrative load, told me that he has never lost sight of the privilege and sheer joy of being an academic, particularly in Australia. Spencer Whitney (PS) pointed out that as biologists we have extraordinary freedom to manage our daily, weekly and long-term work plans, and reflected on the excitement of hard-won scientific breakthroughs. Marcel Cardillo (E&E) highlighted the joy of being paid to be a lifelong learner. A conversation with Megan Head (E&E) echoed this same theme, with the joy of learning a key reason why she loves her job. **Benjamin** Schwessinger (PS) has also emphasised the combined joy of learning and teaching, and the pleasure of seeing others get excited about learning something new. He also recognised the unique joy of discovering something major, 'whatever major means to you'.

The combination of an unexpected scientific discovery, publication in a high-profile journal, and wide media coverage, can be another joy for biologists. A hot of the press example is the February Nature Ecology and Evolution publication lead by E&E PhD student Ivan Vinogradov (Jennions Group, E&E) supervised by Michael Jennions (E&E). This publication has generated the media headline "Smart is sexy: evolution of intelligence partly driven by love". The six-year international study indicating that intelligence in mosquito fish is partly driven by sexual selection, rather than exclusively by natural selection, which has long been considered to be the major driver of

intelligence.

Talking about PhD students, in her recent E&E PhD exit seminar, Jennifer Evans (Mikheyev Group, E&E) identified multiple reasons why her PhD had been so much fun for her. These included the opportunity to conduct remote fieldwork, working with amazing and passionate fellow students and mentors, and 'being trusted' with amazing datasets to work with. She also greatly enjoyed engaging with multiple forms of the media to promote her work, and science more generally. Importantly, she would 'love to do it all over again!'

Engaging in these recent conversations has reminded me of the sheer privilege of working alongside talented and passionate students and colleagues. Meanwhile, with my intense teaching of a large second year class underway, I have been reminded yet again of the satisfaction of teaching engaged undergraduate students.

There is one final point that I would like to make. It is my personal observation that our School Director and Executive team members are first and foremost academics who deeply understand both the joys (and frustrations) of being an academic. As we attempt to steer the School through the uncharted waters of the present crisis, our collective goal is to make every effort to ensure that we can maintain the joy of being a biologist, both for our students and staff.

Papers

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