



Research School of Biology Newsletter

Issue 168 | May 2025

From the Director

Well, another semester of teaching completed and now just the joy of marking exams and compiling grades. My thanks to all concerned – faculty, professional staff and the many dedicated CSAs.

This edition again reports on new grants & fellowships, outreach and publications. The latter includes a spotlight on multiple papers in Nature journals from E&E. This, along with our high-quality teaching, serves to emphasize that our core business of quality research and teaching continues, despite the perturbations from above. I sincerely hope that we can keep this up over the coming months.

We also announce the opening of the RSB parenting and retreat facility on level 2 next to the entrance to the Robertson lecture theatre. This has been advocated by the IDEA Committee and I'm really pleased to see it come together. Many thanks to all concerned.

Over the coming month, the draft Change Management Plan for the College will be released. There is no escaping that this will impact several of our colleagues and friends in RSB and beyond. I have scheduled an all staff meeting for June 27th on the assumption that the draft plan is released before then. Please look after each other as we go through this unpleasant process.

Yours Craig

Welcome

The Peakall (E&E) and Schwessinger (PS) Groups welcome **Michelle Schröder**, who will be joining their teams as a Research Assistant. She will be conducting DNA barcoding of insect specimens of orchid pollinators associated with their NSW Environmental Trust funded project 'Illuminating the pollination biology of the cryptic underground orchids of NSW: New tools for monitoring and ensuring successful future translocation'.



Welcome to Anu (Anupama), who has joined the Melonek Group (PS) as an ANU Future Research Talent Scholar. Anu is currently a thirdyear Biology student at the Indian Institute of Science Education and Research, Tirupati (IISER -Tirupati), India. She will be with the Melonek Group for 11 weeks, during which she will further develop her expertise in plant molecular

biology techniques.

Farewell

Farewell to **Samale Mohammed** (IT) who will leave RSB on the 13th of June to take up a Government IT role. Samale joined in RSB in 2020 from ITS Deployment, and has been a valued member of RSB IT. We wish him all the best in his new job.

Grants awarded

Alexander Maier (BSB) was recently awarded a Proof of Concept Grant from the <u>Grains Research and</u> <u>Development Corporation</u> for "Using Phytosterols to fight grain-parasitic nematodes".

Ashley Jones (Schwessinger Group, PS), Su Yin Phua (Furbank Group, PS) and Kai Chan (Chan Group, PS) were awarded financial support (~\$25,000) for transcriptomics, metabolomics and genomics of Mitchell grass (Astrebla pectinata) as part of the Australian Grasslands Initiative by Bioplatforms Australia (BPA).



Mareike Moeller (Schwessinger Group, PS) received a GRDC Mid-Career Fellowship to lead a new project "Smart detection tools for rust disease control in a new era of plant protection" focused on improving early detection and understanding of stripe rust lineages in Australian wheat. In collaboration with the South Australian Research and Development Institute (SARDI), the project will apply lineage specific longread amplicon sequencing to identify specific stripe rust lineages in airborne spore samples. By combining live surveillance with detailed phenotyping of rust lineages, the project aims to uncover lineage specific aggressiveness traits, and adaptation to different environmental and management conditions. The outcomes will support more targeted, lineage-specific strategies for disease management and biosecurity.

Julian Greenwood (Pogson Group, PS) received a GRDC Mid-Career Fellowship to lead a new project "Establishing transient assays to rapidly assess resistance responses in canola and test engineered resistance receptors for improved blackleg resistance". Canola (Brassica napus) production is threatened by blackleg disease which causes yield losses of 10-15%



in Australia. Currently there is no way to rapidly assess resistance responses from the most important class of blackleg resistance receptors in Canola. This project aims to develop transient gene expression systems for assessing canola resistance responses. It will provide high throughput methods to test the large number of resistance receptor variants generated by AI and classical methods which must be screened to confirm new functional variants. Newly identified resistance receptor variants can then be integrated into elite cultivars to provide resistance to blackleg in the field.

Congratulations to the <u>Hermon Slade Foundation</u> awards grant recipients:

Megan Outram (Lead CI, Tham Group, BSB) **Wai-Hong Tham** (BSB), **Peter Solomon** (PS) and **Erin Hill** (Solomon Group, PS) with the project title *Deciphering the role of cell death effectors in frog chytrid fungi* valued at \$89,820.

Allan Lohe (Lead CI, Millar Group, PS), Tony Millar (PS) and Ashley Jones (Schwessinger Group, PS) with the project title *Can Synthetic Allopolyploids be Tailored to become Novel Crop Plants?* valued at \$72,000.

In the Media

Celeste Linde (E&E) spoke to <u>About Regional</u> about bioluminescence.

Jennie Mallela (Jennions Group, E&E) spoke to <u>2GB</u> about a workshop she co-designed, which is aimed at empowering school-aged children to understand the importance of protecting the planet.



Peter Solomon (PS) has spoken to various news outlets about the recent opening of the new ARC <u>Training</u> <u>Centre in Plant Biosecurity</u>, that will equip the next generation of scientists to tackle some of the world's biggest biosecurity challenges, including the most effective ways to build trust when threats such as the Varroa mite are identified. Read the ANU Reporter article: <u>ANU centre to tackle world's biggest biosecurity</u> <u>challenges</u> Listen to the interview on 3WM radio <u>Country Today</u>.

News

RSB parenting and retreat facility



Do you want to bring your kids to work and still have a meeting or do other business? Or need a quiet space for reflection? To promote inclusion in RSB we have now set up a suite of 3 rooms – one large as a play/ workspace, a smaller adjacent room where children (or their parents?) can take a nap, and a separate quiet room. This is an initiative of RSB's IDEA Committee and is now available for use by staff and HDR students.



It remains a work in progress, and I'll ask the IDEA Committee to now set some guidelines for use. This is yet another reason why you should engage with and participate in their meetings and discussions – please reach out to <u>Emily Furlong</u>, the current Chair, if you have interest.

RSB parenting and retreat facility location:

Rooms N2.006, N2.007, N2.008 & N2.009,

Level 2, RN Robertson Building (46)

RSB Spotlight - Ecology and Evolution

E&E PhDs, postdocs and staff are celebrating a string of high-quality papers. In the last six months alone, E&E members have led or co-authored three papers in Nature, two in Nature Ecology & Evolution, two in Nature Communications, one in Nature Climate Change, and one in Ocean Sustainability. The work is incredibly wide ranging in both topic and scope across these 9 papers.

Patrice Pottier (Noble Group, E&E) led a team looking at the effect of global warming on frog survival; Robyn Shaw (Moritz Group, E&E) led a team documenting a recent global decline in genetic diversity; Ivan Vinogradov & Bec Fox (Jennions Group, E&E) led a study showing that smarter male fish are sexier and have higher mating/fertilisation success; Putter Tiatragul (Keogh Group, E&E) was on a team documenting the evolution of Anolis lizards; Ana Sequeira (E&E) was part of two large international teams - one team reviewing the value of biologger data collections to document life on earth, and the other team looking at the effect of shipping on marine vertebrates, and first author on a third paper exploring the value of marine megafauna and their contribution to the global economy;



Karen Marsh (E&E) contributed to a huge Australian effort to document <u>the horrendous effects of the</u> <u>Australian megafires on biodiversity</u>; and Naomi Langmore (E&E) was a key part of a small team showing the link between female song and territoriality in birds (article in press).



Frogs, fish, lizards, land and sea mammals, and birds - something for almost everyone! What is more, we already know of other high-profile papers, currently under embargo, that will be out soon!

Written by Michael Jennions (E&E) and Rod Peakall (E&E)

Papers

Arnold PA, White MJ, Cook AM, Briceño VF, Nicotra AB et al. Plants originating from more extreme biomes have improved leaf thermoregulation. Annals of Botany. https://doi.org/10.1093/aob/mcaf080.

Asao S, Way DA, Turnbull MH, Bloomfield KJ, O'Sullivan O, Crous KY, Egerton JJG, Weerasinghe LK, Meir P, Atkin O et al. Leaf nonstructural carbohydrate residence time, not concentration, correlates with leaf functional traits following the leaf economic spectrum in woody plants. New Phytologist. <u>https://doi.org/10.1111/</u> nph.20315.

Bruhn D, Fan Y, Griffin KL, Cowan-Turner D, Scafaro AP, Atkin OK et al. Importance of the leaf respiratory quotient. Physiologia Plantarum. <u>https://doi.org/10.1111/</u> ppl.70235.

De Smet B, Yang X, Plskova Z, Chan KC et al. The nuclear sulfenome of Arabidopsis: spotlight on histone acetyltransferase GCN5 regulation through functional thiols. Journal of Experimental Botany. <u>https://doi.</u> org/10.1093/jxb/erae514.

Dusenge ME, González-Caro S, Restrepo Z, et al. Unexpected Large Photosynthetic Thermal Plasticity of Montane Andean Trees. Global Change Biology. <u>https://</u> doi.org/10.1111/gcb.70266. Liu X, Chu A, Nekouei M, Saliba KJ et al. Thiazole substitution of a labile amide bond - a new option towards antiplasmodial pantothenamide-mimics. Antimicrobial Agents and Chemotherapy.

Mojerlou S, Moeller M, Schwessinger B & Rodriguez-Algaba J. Beyond Asexual: Genomics-Driven Progress in Unveiling Sexual Reproduction in Cereal Rust Fungi. Online APS Publications. <u>https://doi.org/10.1094/</u> <u>MPMI-10-24-0122-FI</u>.

Monson RK, Li S, Ainsworth EA. Fan Y, Way D et al. C4 photosynthesis, trait spectra, and the fast-efficient phenotype. New Phytologist. <u>https://doi.org/10.1111/nph.70057</u>.

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Stuart OP, Cleave R, Pearce K, Magrath MJL & Mikheyev AS. Purging of Highly Deleterious Mutations Through an Extreme Bottleneck. Molecular Biology and Evolution. <u>https://doi.org/10.1093/molbev/msaf079</u>.

Wang R, Bowerman AF, Chen Y, Pogson B et al. Ethylene modulates wheat response to phosphate deficiency. Journal of Experimental Botany. <u>https://doi.org/10.1093/</u> jxb/erae483.

Wang Z, Wang Y and Wong DCJ (2025) Surviving and thriving: how crops perceive and respond to temperature stress. Front. Plant Sci. 15:1550257. doi: https://doi.org/10.3389/fpls.2024.1550257.

Wess J, Hu Y, Periyannan S, Jones A & Rathjen JP. Global transcriptome changes during growth of a novel Penicillium coffeae isolate on the wheat stripe rust fungus, Puccinia striiformis f. sp. Tritici. Fungal Genetics and Biology. <u>https://doi.org/10.1016/j.</u> fgb.2024.103956.

Zeil J. Neuroscience going wild. Current Biology. Book review of Ulanovsky N: Natural Neuroscience, MIT Press.

Zhou F, Zhao Y-N, Perkins J, Peakall R, Wong DCJ et al. Fine-tuned terpene synthase gene expression, functional promiscuity, and subcellular localization: implications for the evolution of complex floral volatile bouquet in Caladenia orchids. Plant and Cell Physiology. https://doi.org/10.1093/pcp/pcaf026.