



From the Director

Dear Colleagues

Welcome to the March 2025 RSB Newsletter. Amidst the ongoing budget-driven changes on campus, it is good to be reminded of our core business – including research and training EMCRs. And that is what the following celebrates. We have new cohorts of PhD and Hons/MSc students settling in and engaged in planning new and exciting research. On that topic, I hope for strong attendance at the HDR conference on Friday next week (April 11).

Last Saturday I dropped in at the RSB exhibit for the ANU open day. This is chance to talk with young scholars who are excited about opportunities for university education. Some had very clear ideas about aspects of biological science that they will pursue, but most were much less clear on the scope and purpose of modern biology. Hopefully our teaching can provide pathways for all.

RSB is all about our people; what they do and how we support them. Science is a global enterprise and people – even senior academics – should be mobile within that. Recently we attracted and supported two amazing plant scientists – Alison Bentley and Ute Roessner – each of whom is now moving on to nationally significant roles. Alison has just started as Deputy Chief of CSIRO Agriculture and Food where she will lead the scientific research program and hundreds of scientists. Ute has been appointed as CEO of the Australian Research Council and will play a key role in enabling ARC programs to adapt to the needs of the nation and the research community. We have all benefited from their contributions to RSB and ANU and I wish both every success in their new roles.

RSB has a strong track record of innovation in research and research-led teaching. We celebrate our success in winning competitive funds to support this – for example the two ARC Training Centres led by RSB. But it all starts with a good idea and use of internal resources – people and \$\$\$ - to build on this to get external support for research & training, or to establish new ways of teaching. It is no secret that recent budget cuts have compromised our ability to support these activities – but we must not cease to invest.

To that end, we are building the philanthropic Biology Future Fund, with income from that to support seed funding from the Research and Education committees, HDR events and school social functions – all of which build cohesion across the school. I have contributed \$200k to launch this fundraising drive and would be delighted to see this matched by other gifts. Please go to Giving pages on our website to learn how you can support community and innovation in RSB. If you would like to know more about the Biology Future Fund please get in touch.

Craig.

Welcome

Suzanne Yahfoufi (Mathesius Group, PS) is starting as a new PhD student in the Mathesius Group. Suzanne will be working on a mechanistic understanding of how chickpea plants optimise biological nitrogen fixation and seed protein allocation under climate change conditions.

The Williams Group would like to welcome back **Ben Silke** (Williams Group, PS) for a PhD. We are excited to have Ben join the Group for his PhD and congratulate him on his prestigious Westpac Fellowship!

Welcome to **Emily Cross** (Solomon/Williams Group, PS) who has joined the Solomon/Williams Group after completing her PhD at Charles Sturt University that included a 2-year placement at the UK's national synchrotron science facility the Diamond Light Source.



A warm welcome to **Jamie Piroe** (Pogson Group, PS & Leach Group, CPAS), who has joined the Future Crops Centre. She will be working at CPAS on "Exploring the Intersection Between New Technologies, Responsible Research and Inclusive Innovation, and Agriculture and Food." You may also see her around RSB from time to time.

Farewell

The Williams Group said farewell to some important people late last year. After joining the Group in 2018 for a summer project, followed by Honours (Uni medal), PhD and a short postdoc we said farewell to **Carl McCombe** (Williams Group, PS) as he takes up a postdoc position at Caltech in California, USA. His contributions to our Group, the plant-microbe interactions theme and the wider RSB community were immense, both in original research and student supervision. We are excited to see what you do next Carl! We also said farewell to **Bayantes Dagvadorj**, after a short stint working on protoplast in the Williams/Zhang Groups. Bayantes also joined RSB in 2018 for a 3-year postdoc in the Solomon Group, after which he worked for numerous years in the Schwessinger Group on projects from the COVID response to wheat protoplasts. His technical abilities are unmatched, and we wish him the best of luck at the OGTRI! Farewell also to **Daniel Wallis**, who worked as an RA in the Williams/Jones groups in 2024 and has moved to the University of Sydney for a PhD.

Grants awarded

Congratulations to the following Department of Education for the Australia's Economic Accelerator (AEA) Ignite grant awardees:

- Jonathan Arundel, **Ashley Jones** (Schwessinger Group, PS), and **Benjamin Schwessinger** (PS) received \$497,117 for: Digitally-targeted yeast

bioprospecting for non-alcoholic beer to value add to Australian agriculture (IG240100298).

- **Eric Pereira** (Schwessinger Group, PS), **Mareike Moeller** (Schwessinger Group, PS), and **Benjamin Schwessinger** (PS) received \$197,791 for: Towards digital genetic plant pathogen surveillance and smart chemical disease control in agriculture (IG240100686).

Congratulations to the following ESA Holsworth Wildlife Research Endowment awardees:

- **Nils Kreuter** (Sequeira Group, E&E) valued at \$7000
- **James King** (Nicotra Group, E&E) valued at \$8500
- **Sadia Ayyub** (Linde Group, E&E) valued at \$8500
- **Franziska Hacker** (Farine Group, E&E) valued at \$8130
- **Salma Sarker** (Linde Group, E&E) valued at \$8500
- **Samuele Ramellini** (Farine Group, E&E) valued at \$8365

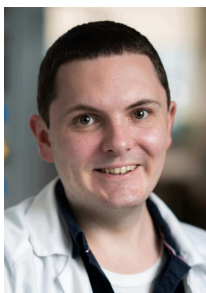
Congratulations to **Nay Chi Khin** (Pogson Group, PS), **Hendry Susila** (Pogson Group, PS), and their team for being awarded the Future Crops Centre's first Agility Funds.

Nay Chi, in collaboration with Chaoqun Carrie Shen (University of Adelaide) and the New South Wales Department of Primary Industries and Regional Development (DPIRD), has been awarded \$25,000 for the project "Enhancing Protoplast Transformation and Regeneration in Monocot and Dicot Crops Using Developmental Regulators."

Hendry, also in collaboration with DPIRD and Nay Chi, has been awarded \$25,000 for the project "Heritable, Transgene-Free, and Tissue-Culture-Free Genome Editing Using a Novel Virus-Induced Genome Editing System."

Congratulations

Congratulations to **Ashley Jones** (Schwessinger Group, PS) who has been awarded the Alan Wilton Award by the Genetics Society of Australasia. The award recognises outstanding contributions to the field of genetics research by Australasian scientists early in their career. He will give a plenary talk during the GSA 2025 conference at The University of Auckland, New Zealand.



Ashley was also awarded an ORG.one project from Oxford Nanopore and NEB, receiving consumables to support equitable, faster, and more localised sequencing of endangered species in Australia.

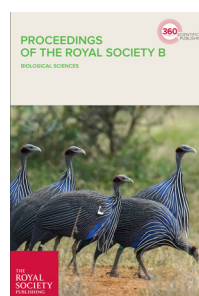
Congratulations to **Benjamin Silke** (Williams group, PS) who was awarded a Westpac 2025 Future Leader Scholarship for his PhD studies.

In the Media

Ian Morgan (Visiting Fellow, BSB) spoke to The Guardian about rises in young people developing myopia.

Lucy Aplin (E&E) spoke to ABC Radio about bird behaviour.

Emily Roycroft (Moritz Group, E&E) spoke to ABC Radio about genetically engineered mice.



James Klarevas-Irby (Farine Group, E&E), **Brendah Nyaguthii** (Farine Group, E&E), and **Damien Farine** (E&E) made the cover of Proceedings of the Royal Society B for their paper comparing the energetic efficiency of making large displacement movements in a group versus alone (answer: groups are less efficient!).

News

Caitlin Byrt (PS) shared a presentation and joined a panel event organised by the NSW Smart Sensing Network (NSSN) at the Sydney Startup Hub, supported by the Federal Department of Industry, Science and Resources, which focussed on cutting-edge waste-to-profit technologies. Read more about the event on the NSSN website, From waste to wealth: researchers showcase innovative technologies at Climate Action Week event.



Ryan O'Donnell (Linde Group, E&E) spoke as a panelist at a talk entitled "Magic Mycelium" for the opening weekend of the exhibition "Thinking together: Exchanges with the natural world" at the Bundanon Art Museum. The panel conversation was between Ryan and the artist Keg de Souza, and was chaired by television presenter Richard Morecroft.

The ARC Training Centre for Future Crops Development is transitioning its directorship, with **Tony Millar** (PS) stepping up as Director to replace **Barry Pogson** (PS). Tony has been serving in an acting role for the past six months and Barry will continue to contribute in an Advisor to the Executive role while also supervising students and projects as a Chief Investigator. Thank you both for your dedication and leadership in driving successful research.



The ARC Training Centre for Future Crops Development and the Agrifood Innovation Institute co-hosted a

special event on the 7th of March marking International Women's Day. The event focused on careers in Agriculture at a student and ECR audience. Deputy Director **Alison Bentley** (PS) led a panel discussion featuring four inspiring women (plant scientist, anthropologist, social scientist, and economist) who shared their insights on driving change in agriculture and tackling global challenges such as climate change and instability. A special shoutout to **Sadia Majeed** (Furbank Group, PS), who represented the panel brilliantly!

Check out the new Instagram account of the [ARC Training Centre for Future Crops Development](#), where we showcase exciting student projects and research highlights. Follow us to stay updated and celebrate the incredible work happening in our community

Dave Rowell (E&E) gave a talk to the Friends of the Arboretum on the 11th of March entitled "The Genus *Brachychiton* – Species, hybrids and varieties". The talk covered the evolution and diversity of the genus *Brachychiton*, and how the general interfertility among species has made it possible to generate many new and interesting varieties.

RSB Spotlight - Plant Sciences

Plant microbe Interactions

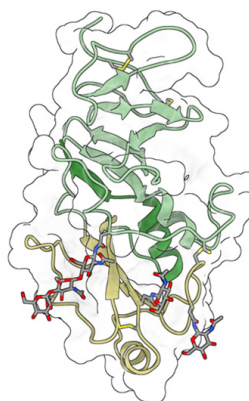
Numerous research groups in RSB are interested in beneficial and pathogenic microbe-plant interactions. Plant fungal pathogens contribute to 10-23% yield losses in crop production annually, with conservative estimates suggesting this loss in productivity could feed more than 140 million people. In contrast, beneficial associations with microbes, such as the interaction between legumes and nodule forming rhizobia bacteria, replace significant amounts of chemical nitrogen fertilisers that contribute to greenhouse gas emissions and environmental damage.

The Williams Group, in collaboration with researchers in Germany and the US, have identified a conserved class of secreted fungal effectors proteins that are required for the pathogenicity of a wide range of pathogens that infect crops including rice, corn and lentils. Using a structure/function lead approach, supported by collaborations at the Australian Synchrotron, lead author **Carl McCombe** (Williams Group, PS) identified the target of these effectors and showed they hijack phosphate signalling in plants to promote pathogen virulence. You can read more about the work [here](#) (McCombe et al. Science, 2025) Credit: **Carl McCombe** (Williams Group, PS).

The Rathjen/Zhang (RSC) Group developed a novel in-vitro gene shuffling approach that enables the development of "new to nature" plant disease immunity receptors. It is anticipated this work will fast track the design of novel resistance genes with the capacity to recognise pathogens that have escaped recognition by the plant immune system in crops like barley and wheat. Xiaoxiao Zhang (RSC), lead author of the work supported by an ARC DECRA, has recently started her independent group in the RSC and is looking to expand these engineering strategies for a wide range of SynBio applications. You can read more about the work [here](#) (Zhang et al., MPMI, 2025) Credit: Xiaoxiao Zhang (RSC & Rathjen/Williams Group, PS).

The Solomon/Williams Group, supported by GRDC funding, have recently determined the structure of an extracellular immune receptor, Stb6, responsible for detecting the first identified recognised effector

protein from the fungal pathogen *Zymoseptoria tritici*.



Work by PhD student, **Nuren Tasneem** (Williams Group, PS), is now seeking to understand and ultimately engineer the recognition, guided by the structures of both the receptor and effector protein. Our goal is to rescue resistance pathways in wheat and this new data is assisting those efforts. Unpublished Credit: **Nuren Tasneem** (Williams/Solomon Group, PS).

The three-dimensional structure of the wheat resistance protein Stb6 solved by Nuren Tasneem, representing the first experimental structure resolved from this class of receptor

The Schwessinger Group is developing innovative tools to understand and monitor rust fungi pathogens. Supported by the DCCEEW and in collaboration with the Australian Botanical Gardens and SARDI, they are monitoring airborne myrtle rust spores as an early warning system for potential exotic incursions. Foundational work on [myrtle rust detection](#) was published last year by PhD student **Zhenyan Luo** (Schwessinger Group, PS) et al. Later this year, Postdoctoral Fellow **Mareike Möller** (Schwessinger Group, PS) will begin her GRDC-funded mid-career fellowship to develop a lineage-specific diagnostic protocol for detecting stripe rust in air samples. This work will enable targeted identification of stripe rust threats and contribute to improved fungal pathogen management strategies.

The Schwessinger Group applies genomics to study genome biology, identify avirulence (Avr) candidates, and develop precise diagnostic markers. PhD student **Rita Tam** (Schwessinger Group, PS) recently published a preprint on a [fully haplotype-phased genome of an Australian stripe rust isolate](#). In collaboration with researchers from Denmark and Pakistan, the Group analyses genetic data from stripe rust isolates worldwide to identify avirulence factors essential for plant infection. These candidates are functionally validated using a [protoplast screening system](#), a method established by former PhD student **Salome Wilson** (previously Schwessinger Group, PS). A recently awarded AEA Ignite grant will further expand and refine this screening system across different plant-pathogen interactions, led by PhD student **Danish Baig** (Schwessinger Group, PS) and Postdoctoral Fellow **Eric Pereira** (Schwessinger Group, PS).

The Mathesius Group investigates the unique features of legumes that enable them to form symbioses with nitrogen-fixing bacteria. Current projects, supported by the ARC and GRDC, focus on improvement of nitrogen fixation in chickpea, especially under conditions of climate change and challenging soil conditions. One of their goals is to understand the physiological mechanisms that maximise the allocation of fixed nitrogen to the seed, and to identify the underlying biochemical markers that can be used to breed for improved nitrogen fixation under conditions of low fertiliser input.

Peter Solomon (PS) and **Simon Williams** (PS) recently delivered invited plenary presentations in Busan, Korea

as part of the Korean Society of Plant Pathology. This was a great opportunity to not only share the exciting research from Plant-Microbe Interactions but to also build networks and collaborations within the vibrant Korean sector.



Peter Solomon opening the Korean Society of Plant Pathology meeting in Busan, Korea, with a Plenary entitled “Are we closer to understanding the role of PR1 proteins in plant immunity?”

The Linde/Peakall Group recently combined phylogenomic data with almost 70 years of orchid mycorrhizal fungal data to reveal unprecedented phylogenetic niche conservatism of fungal symbionts within Australian terrestrial orchids. Moreover, orchid symbiont preferences provided new insights into the placement of several groups with longstanding phylogenetic uncertainty. The work led by PhD student, **Ryan P. O'Donnell** (Linde Group, E&E) highlights that in spite of complex evolutionary histories, host-symbiont relationships can be used to help detangle alternative phylogenetic hypotheses. You can read more about the work [here](#) (O'Donnell et al. 2024, Systematic Biology. Credit: **Ryan O'Donnell** (Linde Group, EE/PS).



From the Research Committee

Lots of uncertainties in the research funding landscape recently, but nowhere as much as the USA. There are multiple commonwealth research policy reviews currently in progress, from infrastructure, R&D review, to national competitive grants. Congratulations to the ten RSB DECRA applicants who submitted their grants earlier this month. Many thanks to all who helped to refine their proposals and ROPE sections. Best of luck to many of you polishing your ARC DP26 grants and NHMRC Idea grants.

The future ARC funding landscape will look very different starting in Q2 2026 and even more so in 2027. In February ARC announced the future mothballing of existing ARC schemes, with their intentions introduced in a [policy discussion paper](#). Many thanks to many of you who have already contributed feedback to the RSB submission. Email [me](#) with additional feedback by April

2nd.

As of last week we now know which [ARC schemes will run later this year and into next year](#). In short, there will be one more round of DECRA's, Future Fellowships, Discovery and Linkage Projects, ITRPs and LIEFs. Laureates and Industry fellowships are paused pending review of the new proposed schemes. Be sure to bookmark the new research management, Funding Calendars for all the latest dates ([ARC](#), [NHMRC-MRFF](#), [Other](#)).

Notice anything new on the external RSB website? The most observant of you will have noticed the refreshed design of our website and the addition of the new [Research Impact](#) webpage. Many thanks to **Craig Moritz** (E&E) for the vision, **Vienna Harkness** (RSB Executive Administration Officer), and others for providing us a common place to share our research impacts and the journeys we take to get there. Our principal research impact areas are Biodiversity, Biosecurity, Climate Resilience, One Health, and Synthetic Biology. I've set myself a goal of adding a few new impact cases each month. If you have an idea for one please get in [touch](#).

Written by **Charlie Morgan** (RSB Research Development Strategist) on behalf of the Research Committee.

Papers

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Lovelock CE, Ball MC, Brothers N et al. Dynamics of surface accretion and surface elevation differ between river and tide dominated settings in tropical mangroves. Limnology and Oceanography.

McGaughey SA, Iqbal S, De Rosa A, Caley JA, Byrt CS et al. Interactions of rare earth elements with living organisms and emerging biotechnical applications. Plants, People, Planet. <https://doi.org/10.1002/ppp3.70010>.

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Zhang P, Sharwood R, Carroll A, von Caemmerer S, Furbank RT et al. Systems analysis of long-term heat stress responses in the C4 grass *Setaria viridis*. *The Plant Cell*. <https://doi.org/10.1093/plcell/koaf005>.