Australian National University

Research School of Biology Newsletter

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From the Director

Hello Colleagues:

Here we have another information-packed newsletter, celebrating achievements, welcoming new members of RSB and bidding farewell and best wishes to others. It also notes the passing of a significant researcher – Shin-Ho Chung.

Among other items, we announce major new research infrastructure – a major upgrade of our capacity in Plant Synthetic Biology. This facility is one of 3 nodes (others are Univ Adelaide and Latrobe University) of a national Plant SynBio Facility, which aims to lower the barriers to genetic transformation of plants including crops and native species and help build new capability and support links between academics and industry. That ANU was selected by Bioplatforms Australia as a major partner reflects the deep expertise in plant and molecular biology and plant phenomics in RSB as well as our strong translational research with industry partners (e.g. as manifest in the Future Crops and Biosecurity Training Centres and via APPN and AFFI). My congratulations to all concerned!

All this is to say that, thanks to our staff and students, RSB continues to prosper on the research front including training HDR students, postdocs and informing our research-led teaching.

Now, by the time you read this, you'll be aware from the VC's presentation of the necessary efforts to reign in the increasing operating deficit across ANU. This will require permanent reduction of both salary and non-salary spend of about 17%, and this by the end of 2025. Our own Steve O'Connor is part of the team, led by the COO, tasked with finding $150M in savings in non-salary costs. This is certainly room to cut some currently inefficient processes and practices and your thoughts on this are most welcome. There will be new constraints, and some will be frustrating at first. But remember, every $$ saved means less impact on jobs. Some of the reduction in salary can be achieved (in some areas) by not replacing staff as they retire – but more may be needed over the coming 15 months.

In this context, the VC has been re-organising central portfolios and, today, announced plans to reorganise how existing schools etc are distributed across colleges. The most drastic proposed change is to disestablish the College of Health & Medicine, with its schools being redistributed between College of Science (& Medicine) and College of Law (& Governance & Policy). As a consequence, the intent is to move the JCSMR and School of Medicine & Psychology into CoS(M), and the Fenner School, MSI and CPAS into what is currently CECS (to be renamed as College of Systems and Society.

This is a lot to digest – right? And this is not the first time that a VC has reorganised the campus! For now, some initial thoughts from me.

•First, my condolences to our colleagues in CHM for the challenges that this will present.

•Second, note that a formal change proposal will be released for feedback, as is required. The VC assures me that the Senior Leadership genuinely wants suggestions and that the details are not set in stone, so please participate.

•Third, assuming that something like this proposal is ultimately accepted, there will be ongoing adjustments within our new College structure. What these are I do not know. But for now, let's focus on the opportunities that closer alignment with JCSMR and SMP could offer, while ensuring that our collaborations in research and teaching (e.g. with Fenner, MSI and CPAS) can continue.

I'll be away for field work and a seminar over the coming 2 weeks but would welcome any suggestions that you might have – especially on points 2 and 3 above.

Best, Craig

Welcome

The Sequeira Group (E&E) welcomes **Dahlia Foo** (Sequeira Group, E&E) as a new Postdoctoral fellow who will contribute to a range of Sequeira Group projects, including the MegaMove project.

The Sequeira Group also welcomes **Priscella Seah** (Sequeira Group, E&E) as a new communications assistant who will assist in communicating research outputs from the Sequeira Group.

The Atkin Group (PS) welcomes **Eric Dusenge** (Atkin Group, PS) as a new DECRA in the Division of Plant Sciences. Eric will collaborate with the Atkin lab on projects investigating the impacts of climate change drivers on plant respiration.

The Solomon Group (PS) welcomes **Dibya Bhatta** (Solomon Group, PS) as a new PhD student researching the mechanistic basis of the Septoria Tritici Blotch disease on wheat. Dibya completed her undergraduate in Nepal before undertaking her Masters in Korea.

Farewell

The Williams Group says farewell to **Helana Trantino** (Williams Group, PS) who is moving to Melbourne to take up a position at WEHI. Helana has been working with the Williams Group since 2021, including a successful honours year, and her work as Research Officer has been pivotal in establishing new protein production systems in the Group. We will miss her

unwavering enthusiasm, determination and cheerful spirit that have enhanced our work environment over these years. We wish Helana all the best for her Melbourne move.

The Sequeira Group says farewell to **Xiaohan Xu** (Sequeira Group, E&E) and thanks her for all her help as a Research Assistant to the Sequeira Group. We wish her the best of luck with completing her Masters!

Grants awarded

Ulrike Mathesius (PS) was awarded a R&D Open Tender: Improving Crop Yields grant from the Grains Research and Development Corporation (GRDC) valued at $435,977.

Kai Chan (PS) was awarded a research grant from the ANU Hansen Scandinavian Friendship Endowment valued at $10,000.

Benjamin Schwessinger (PS), together with industry partners Data Effects and SARDI, was awarded funding from the Department of Climate Change, Energy, the Environment and Water (DCCEEW) for air sampling devices that detect invasive myrtle rust spores across nine botanical gardens - an early warning system to better protect gums, paperbarks and lillypillies, valued at 1.5 million dollars (~450,000 ANU).

Congratulations

Congratulations to **Alison Bentley** (PS) who was awarded the 2024 JBS Haldane Award from the Genetics Society. The award recognises an individual for outstanding ability to communicate topical subjects in genetics research. Alison delivered the 2024 JBS Haldane Lecture “Evolving fields: from historical lessons to future innovations in plant breeding” in the Department of Genetics at the University of Cambridge on the 3rd of September.

Congratulations to **Adrienne Nicotra** (E&E) who has been accepted into the ARC College of Experts for 2025.

Congratulations to **Ana Sequeira** (E&E) who was awarded the Fenner Medal 2024 at the Australian Academy of Science's annual event, Science at the Shine Dome 2024 Awards Ceremony. She received the prestigious Fenner Medal 2024, presented to her by Chennupati Jagadish, the President of the Australian Academy of Science.

Congratulations to **Ashley Jones** (Schwessinger Group, PS) and **Benjamin Schwessinger** (PS) who received the Australian Society of Plant Scientists (ASPS) Education and Outreach Award for 2024. They will present their awards lecture at the ASPS 2024 Hybrid Conference on the 28th of November 2024.

Congratulations to **Rita Tam** (Schwessinger Group, PS) who was awarded the Best Presentation Award at the Queenstown Research Week's Plant-microbe interaction satellite meeting in New Zealand on the 1st of September. The title of her presentation was *Dikaryotic organisation and regulation of the complex wheat stripe rust fungus genome*.

In the Media

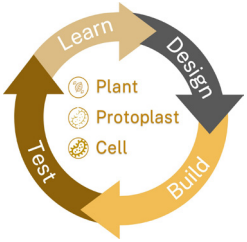
Lindell Bromham's (E&E) research on how islands drive linguistic change and generate language diversity has been widely reported by various media outlets including Cosmos magazine and ABC Radio. Listen to the interview with ABC Pacific: Pacific language diversity driven by isolation, study finds. Read the ANU Reporter article on our website Islands are engines of linguistic diversity, study shows.

Sasha Mikheyev (E&E) spoke with The Guardian about the Varroa mite and feral honeybees, read the full story on The Guardian's website ‘It’s inevitable’: Australian beekeepers brace for national spread of varroa mite.

Ryan O'Donnell (Linde Group, E&E) was a guest on the 2XXfm 98.3 radio show 'Fuzzy Logic' recorded live at Floriade on the 15th of September. Ryan spoke about fungi and their roles in the world around us, along with the specialised symbiotic relationships between Australian orchids and their fungal partners. To listen to the episode recorded on the 15th of September visit the 2XXfm website.

News

Contracting is in the final stages for a new Bioplatforms Australia investment to launch Plant SynBio Australia across the ANU, University of Adelaide and La Trobe University. The ANU facility, housed within RSB, will receive $7 million in NCRIS funding over the next four years to establish transformation and gene editing services across major crop species and to develop and deploy new synthetic biology approaches that can be applied at scale through research to industry applications. This exciting new investment will accelerate our capacity to deploy synthetic biology tools in plants, linking with and



enhancing the existing portfolio of synthetic biology investments at ANU and beyond. Stay tuned for opportunities to get involved with the facility and its activities!

RSB Parasitologists ran a parasite-themed stall at the Canberra Centre, as part of "Science in the Centres" during National Science Week in August. The stall, coordinated by **Christina Spry** (BSB) and **Alex Maier** (BSB), was set-up and manned by **Cookie Gao** (Spry Group, BSB; and BTLC), **Melanie Rug** (CAM), **Cecilia Nie** (Maier Group, BSB), **Kwong Sum Lam** (Maier Group, BSB), **Sabina Morgan** (Maier Group, BSB) and **Linnea Polito** (Maier Group, BSB), **Claire Roder** (Saliba Group, BSB), **Deyun Qiu** (Lehane Group, BSB) and talented undergraduate parasitology students Lil Brewer, Tahlia Creighton, Christy-Amber Radmann, Hunter Seabrook, Nada Vidyattama, Sienna Wu and Heie Zidan.

Members of the general public delighted in the chance to see a variety of parasites (including some live), test their knowledge in a parasite-themed quiz and learn more about parasites – including those local to Canberra - through various displays.

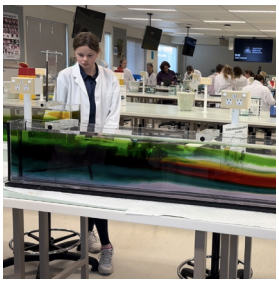
Connecting teaching and research in Shandong. Our latest teacher cohort -**Lavi Singh** (Schwessinger Group, PS), **Yapeng Lang** (Huttley Group, E&E), **Jiajia Li** (BDSI), and **Benjamin Schwessinger** (PS)- just returned from another successful and peaceful teaching trip at Shandong University in Weihai. Clearly all students greatly appreciated RSB teaching staffs' efforts as shown during teachers' appreciation day.

This year, the group also had the opportunity to connect shared research interests via the first SDU-ANU Joint Computational Biology Mini-Symposium. The symposium was good fun for 16 speakers from both universities and over 60 participants in Qingdao, Canberra, and online. You can find all the talk recordings on the BDSI webpage.

Outreach

This year marked the 10th year (minus Covid years) of the ANU Primary Schools Enrichment Event. ANU alumni and 2020 recipient of the Prime Minister's Prize for Science, Primary Teaching, Sarah Fletcher coordinates the annual event. After teaching for a number of years Sarah realised that a lot of kids had the misconception that to be a scientist someone had to be an Einstein like genius. This caused her to reach out to her previous lecturers to see if they could help in any way to dispel this myth.

10 years later, with the support of RSB, the event remains a success. Students from five Tuggeranong primary schools and one high school attend the two-day event and on their return to school they present to their cohort. Attendance at the event is a highlight of the students' primary school years with the excitement generated spreading beyond those in attendance. Sarah states that the importance of reaching out to students at a young age is paramount to retaining more students in Science study throughout high school and beyond. If they can see themselves as a scientist at a young age, then they are far more likely to seek a future in the Science world. Photo credit: ACT Education Directorate



The event was covered by Riotact, read the full article Showing students what's possible beyond science at school on their website.

Kioloa 2024

The annual HDR inductions at Kioloa was held from 13-15 September. A record 28 new HDRs attended

– enjoying the program arranged by our wonderful HDR representatives **Alex Williams** (Brock Group, BSB), **Marvin Jin** (Djordjevic Group, PS), **Jack Wess** (Rathjen Group, PS), **Capella Maguire** (van Dooren Group, BSB), Brenda Nyagah (Farine Group, E&E) and help from **Arslan Mahmood** (Millar Group, PS). Thank you team!

A Q&A session attended by all the HDR convenors, **Celeste Linde** (PS), **Giel van Dooren** (BSB), **Scott Keogh** (E&E) and **Spencer Whitney** (PS), and **Craig Moritz** (E&E) provided some thoughtful questions.

From the IDEA Committee

Thanks to everyone who came along to the IDEA morning tea and voted on priorities for the RSB IDEA Committee. The most popular choice was additional support for EMCRs, so we'll be liaising with the RSB EMCR Committee over the coming months to develop activities for 2025. In addition, there was strong support for a RSB Parenting Room and Quiet Space, and the IDEA Committee will be working on plans to make both available soon. If you are interested in joining the RSB IDEA committee, or contributing to specific activities, please contact alison.bentley@anu.edu.au.

From the APPN ANU

It has been a very busy couple of months for the APPN team at ANU with field work season and various requests from ANU and external clients!

A friendly reminder to return APPN equipment to our office on time and if you are running late or need to extend equipment hire, please let us know as soon as you can.

To help manage booking requests and client requirements, it would be great if you can give the team at least 48 hours to respond to Resource Booker requests.

Please reach out if you have any questions or need help with plant phenotyping services. Thank you for your continued support!

Obituary

In memoriam: Prof Shin-Ho Chung

Prof Shin-Ho Chung was a truly interdisciplinary researcher whose research and mentorship pioneered ion channel research for over half a century and shaped the Australian biophysics research community.

Shin-Ho grew up in South Korea before immigrating to the US to study at Stanford, where he was awarded his B.Sc. in 1962, before being awarded a PhD from Harvard in 1966. He held a post-doctoral position at MIT, before taking up a position at University of London. His early research interests included auditory physics and pattern recognition, where he made seminal contributions in auditory processing, directional hearing and the inner ear. He published extensively on bioacoustics, before pursuing research in ion channels, publishing no less than six Nature and Science articles.

After moving to the Australian National University in 1990, he collaborated closely with electrophysiologist Prof Peter Gage. His work from this period was highly respected by the ion channel community and is still a standard in the field. At the closing of the 2024 Ion Channel Gordon Conference, Fred Sigworth cited key papers by Shin-Ho and Peter Gage from the 1990s on the characterisation of ion channel currents using Hidden Markov Models. Shin-Ho was a much respected and liked researcher in the scientific community for over 60 years.

Shin-Ho developed a keen interest in computational biophysics of ion channels in the 1990s. His primary research effort was aimed at building theoretical models of biological and synthetic ion channels. His innovative methods burst onto the world scene yielding the first ever movies of permeation through ion channels, helping explain the origins of selective ion transport. Shin-Ho continued to father a successful group of students and postdocs, still actively collaborating and publishing on the design of ion channel inhibitors as recently as 2018.

Shin-Ho published numerous books with leading biophysicists, as well as over 200 publications, and has three US and Australian patents. He leaves an amazing funding track record, having continuously maintained prestigious fellowships and grants across three decades with the NHMRC and ARC. He also championed Medical Advances Without Animals (MAWA) at ANU and across Australia, serving as a role model for transitioning from animal-based electrophysiology to computational modelling.

Shin-Ho was an extremely hard-working man who was passionate about science. He leaves an important legacy, captured not only in his groundbreaking papers, but also in the students and colleagues he worked with. He was a strong advocate and mentor for all of his group members and helped them develop their careers, with several having gone on to make their own marks in membrane protein biophysics. Shin-Ho's influence is still evident in the thriving Australian computational biophysics community.

Most of all, Shin-Ho touched the lives of countless scientists within the Australian and worldwide biophysics communities. He is fondly regarded by all of those who worked and interacted with him and leaves a lasting legacy for generations of Australian biophysicists. Shin-Ho passed away on the 20th of September 2024. We give our deepest sympathies to Shin-Ho's wife Anna and his sons Francis and Julian.

Obituary written by Megan O'Mara, **Ben Corry** (BSB) and Toby Allen, on behalf of all Shin-Ho's past group members and collaborators.

Papers

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