



NEWS

ARC Laureate Fellowship for Barry Pogson



Barry Pogson (PS) has been awarded an ARC Laureate Fellowship worth \$2.9 million to create higher-yielding and more resilient 'smart plants' for good and bad seasons. "ARC Laureates are extremely competitive and prestigious. They recognise Australian researchers at the pinnacle of their game as well as research of the highest quality and impact," said ANU Acting VC and Provost Mike Calford. "Their research makes a major difference to Australia and Australians every day." [Click here to find out more.](#)

CEAT to become Innovation Institute

Negotiations are underway to elevate the Centre for Entrepreneurial Agri-Technology (CEAT) to the status of an ANU Innovation Institute, led by the 2019 Vice Chancellor's Entrepreneurial Professor, **Owen Atkin** (PS). CEAT is a joint investment by the ANU, CSIRO and ACT Government and as an Innovation Institute will have increased opportunities and resources to build an innovation ecosystem where research and technology is targeted to agricultural challenges independent of traditional discipline boundaries.

Sporting triumph for RSB!

The RSB lunchtime soccer team took out the ANU Purple Shins trophy for 2019 this month, in an exciting game on the South Oval against the Woolwich Wanderers. RSB scored first, then the WW tied the game, going into half time with a one-all score. Around halfway through the second half RSB scored again, winning the game 2-1. Both goals were scored by **Cüneyt Caglar**, PhD student in the Adamska group (BSB). The Purple Shins competition has been going since 1970, and the trophy is a purple shin



The winning RSB soccer team, with the trophy. Back row, from left: Sebastian Lavin-Varela (RSPE), Jesse Wallace (Zeil group, E&E), Amen Etisham (RSB alum), Benjamin Durant (RSB Technical Services), Matthew Sutton (RSB Building Services), Carlos Pavon-Vazquez (Keogh group, E&E), Rocco Notarnicola (Nicotra group, E&E), Jonny King (Saliba group, BSB), Deyun Qiu (Lehane group, BSB). Front row, from left: Riichi Oguchi (Chow group, PS), Alexander Kiy (RSPE), Putter Tiatragul (Keogh group, E&E), Cüneyt Caglar (Adamska group, BSB), Denis Hawkins (RSB IT), Ayla Manwaring (Adamska group, BSB), and Yilin Hao (Callaghan group, BSB). (See: News Item)

on a stand. Hopefully it will be on display for all to enjoy until the competition comes around again next year.

ANU Open Day



Holly Beckett (Ball group, PS) and Panit Thamsongsana (BTLC) on the Biology stand at ANU Open Day this year. (Image: Tom Davis)

The College of Science had more than 4000 registrations for Open Day this year, which was held in Kambri for the first time. Science information booths were on level 6 of the Marie Reay Building - thanks to **Barry Pogson** (PS), **Juliey Beckman** (BTLC), **Scott Keogh** (E&E), **Susan Howitt** (BSB, BTLC), **Aude Fahrner** (BSB), **Spencer Whitney** (PS), **Rachael Remington** (BTLC), **Holly Beckett** (Ball group, PS) and **Panit Thamsongsana** (BTLC) who worked the academic advice booth, and to **Susan Howitt** and **Uli Mathesius** (PS) who gave talks about biology teaching and research and the PhB degree respectively. **Jennie Mallela** (Rodrigo group, CBBU) was one of the ANU characters in the giant 'Guess Who' game on the Kambri lawn.

The 4th Annual RSB EMCR Conference



Piet Arnold, Britta Forster, Hua Ying and Xiaoxiao Zhang from the 2019 EMCR conference organising committee. (Image: Sharyn Wragg)

On September 3rd 2019, around 150 researchers from within RSB and across the ANU came together at the Science Teaching Building to discover the diversity of fantastic EMCR-driven research showcased at the 4th annual RSB EMCR conference. The purpose of this annual conference is to bring together RSB EMCRs from across the three biology divisions of PS, E&E, and BSB for networking opportunities and it is open to a wider audience.

This year EMCR speakers excelled at tailoring their research for a general biology audience which was truly appreciated: audience ratings averaging very good to excellent. Talks were also randomised and alternated between the three divisions to maximise the chance of hearing something you'd never ordinarily hear about! We had an informative and eye-opening Funding Masterclass with **Amanda Buyan** (Corry group, BSB) bravely volunteering to

DECRA profile: Lisong Ma (Jones group, PS)



Research Background

My science path specializing in molecular plant pathology commenced in 2006 with a Master at Wageningen University in the Netherlands.

I completed a PhD at the University of Amsterdam, where I conducted the research on the activation of disease resistance by the tomato I-2 resistance protein in response to attempted infection by the soil-borne pathogen *Fusarium oxysporum*. Subsequently, I moved to Canada as a postdoctoral fellow with Agriculture and Agri-Food Canada (AAFC), where I was involved in several projects focusing on the molecular interaction between canola and the blackleg fungus. I spent five years at AAFC and was the first to identify a plant target of a blackleg effector protein. In late 2017, I joined the Jones Lab (PS) in RSB on an ARC DECRA fellowship.

Current research interests

My current research interests in the Jones lab stem from my PhD work with a focus on understanding how *Fusarium* effector proteins manipulate host plants to promote infection and how the tomato I-2 resistance protein activates host immunity in response to *Fusarium* infection. These findings may be translated to agriculture as a suite of genes for overexpression, deletion or replacement to enhance *Fusarium* resistance, not only in tomato but also in other economically important crops, such as banana for which resistance genes against *Fusarium* infection (Panama disease) are not yet available. Currently, we are using RNA-sequencing to identify specific genes involved in delivering I-2-mediated resistance against *Fusarium* infection and we plan to use TurboID to identify susceptibility proteins in tomato that are manipulated by *Fusarium* effector proteins. In the Jones lab, we are also developing CRISPR/Cas9 genome-edited tomato lines for assessing resistance against *Fusarium* infection.

Challenges in my field of research

Some interesting biological questions remain in my research field. During colonization of host plants, *Fusarium* resides in the xylem vessels and secretes effector proteins. Some *Fusarium* effector proteins, like Avr2, are translocated inside plant cells to manipulate cytoplasmic targets whilst others have extracellular targets. One of the top challenges is discovering how these effector proteins translocate into plant cells. Recent findings show that resistance mediated by I-2 and other resistance genes only restricts *Fusarium* spread after the fungus has reached the xylem rather than blocking penetration of the root cortex during the initial stages of infection. Understanding why resistant tomato plant allow the pathogen to reach the xylem remains another challenge.

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Layout: Mel Norris
Editing: Scott Keogh & Mel Norris

have her in-progress funding application critiqued by a panel of experts in front of a live audience! Valuable grant writing advice was given by invited panel members:

Stefan Bröer (Industry funding) and **Michael Jennions** (ARC Grants), as well as expert grant writers **Michele Lamb** and **Joyce Das** from the ANU Research Management Office (an often untapped grant writing resource!).

A highlight of the day was the genuinely heartfelt Career Pathways panel of guest speakers with amazing academic and non-academic CVs. We thank **Mary Kelly** (Center for Entrepreneurial Agri-technology; CEAT), **Hannah Osborn** (Australian Department of Agriculture), **Julie Christie** (CSIRO), and our own **Simon Williams** (ANU RSB) for emphasising that there are many ways to build a career!

We would like to thank all those who participated in this year's conference including our sponsors: Plant Energy Biology, the Centre for Entrepreneurial Agri-Technology (CEAT), the Network for Early Career Academics at ANU (NECTAR), and the ANU Research School of Biology.

Videos of the Funding Masterclass and Career Pathways sessions will be made available on [the conference website](#), and a report is being developed from the EMCR Ideas Rally. If you have any great ideas for how to run the conference next year, please volunteer your time in 2020! The 2019 RSB EMCR Conference Organising Committee was **Melanie Carmody** (Pogson group, PS), **Pieter Arnold** (Nicotra group, E&E), **Trevor Murray** (Zeil group, E&E), **Hua Ying** (Eldon Ball group, E&E), **Xiaoxiao Zhang** (Rathjen group, PS), and **Britta Forster** (Price group, PS). - **Melanie Carmody**, Pogson group, PS.

New African bat species named for David and Meri Happold



David and Meredith Happold. (Image: J Decher)

A new African bat species has been named for world bat experts **Meredith** and **David Happold** (Emeritus Fellow, E&E). The name of the new species, *Parahypsugo happoldorum* (Happolds' pipistrelle) recognises the Happolds' work 'Mammals of Africa Volume IV - Hedgehogs, Shrews and Bats' and their work in general on African bats.

Outreach News



Peta Moisis (centre, in black) supervises the collection of invertebrates and measurement of water turbidity in Sullivans Creek on ANU Science Extension Day (Image: Mel Norris).

More than 50 primary school students and their teachers from Tuggeranong area schools came to RSB this month for their annual ANU Science Extension Day. Students spent the day in the lab experimenting with plant colours, identifying invertebrates from Sullivans Creek and programming robots with Robogals. WIN TV covered the event, which was attended by ACT Education Minister **Yvette Berry**. Thanks to **Susan Howitt** (BTLC, BSB) who was drafted in at the very last minute to talk to camera, and to **Peta Moisis**, **Melanie Trinick** and **Yiming Li** (all BTLC). [You can watch the WIN TV segment here.](#)

Congratulations

Hannah Carle (Meir group, PS) has been awarded the Jan Anderson ANU-NTU HDR Scholarship, which she will use to travel to Singapore to work with **Shawn Lum** at NTU, who is a co-supervisor on her project. Her PhD project will seek to identify key structural and physiological mechanisms underlying the survival and growth of dipterocarps – a regionally important family of trees. She hopes to carry out ecophysiological work on dipterocarp trees both in Sabah, Malaysia, and in Singapore's famous Bukit Timah reserve, combining her new ecophysiological information with long-term demographic datasets from both forests.

Benjamin Schwessinger (PS) is part of a trans-Tasman team of researchers, the Myrtle Rust Research Consortium, that is shortlisted for the [New Zealand Biosecurity Awards](#) in the category 'Bio-Protection Research Centre Science Award'.

Grants and Awards

Lydia Zhang (Lehane group, BSB) and **Adele Lehane** (BSB) developed a new screening assay to improve the efficiency by which antiplasmodial compounds are matched with their targets: "A one

stop pH-based screen to simultaneously identify inhibitors of multiple validated and potential antimalarial drug targets". The Medicines for Malaria Venture has approved US\$120,000 in funding for the Lehan group to apply this screen to triage compounds at an early stage of the drug discovery process.

IN THE MEDIA

Bob Furbank (PS) and **Rob Sharwood** (Furbank group, PS) featured in an [article in the New York Times](#) about the work of Australian scientists to breed more efficient crop plants, to feed a growing global population and cope with climate changes.

WELCOME

Welcome to **Sarah Rottet**, who has joined the Price group (PS) as a postdoc. She is a synthetic biologist with experience in



working on membrane transporters. She previously worked on transporters in Colin Scott's lab at CSIRO Black mountain. She will

be working on RIPE projects related to transferring functional bicarbonate and CO₂ pumps to the C3 chloroplast, with a view to improving photosynthetic CO₂ fixation.

PHDS AWARDED

Damien Esquerré Gheur (Keogh group, E&E) 'Old world serpents and new world dragons : The evolutionary dynamics of pythons and liolaemid lizards'.

PAPERS ACCEPTED

Alves F, López-Iborra GM, Stojanovic D, Webb MH, Langmore N, Heinsohn R, Occupancy and density of a habitat specialist and a sympatric generalist songbird species in Tasmania, *Austral Ecology*.

Bates H, Zavafer A, Szabo M, Ralph PJ, A guide to Open-JIP, a low-cost open-source chlorophyll fluorometer, *Photosynthesis Research*.

Blyton MDJ, Soo RM, Whisson D, Marsh KJ, Pascoe J, Le Pla M, Foley W, Hugenholtz P, Moore BD, Faecal inoculations alter the gastrointestinal microbiome and allow dietary expansion in a wild specialist herbivore, the koala, *Animal Microbiome*.

Brouwer L, Cockburn A, van de Pol M, Integrating fitness components reveals that survival costs outweigh other benefits and costs of group living in two closely related species, *The American Naturalist*.

Brouwer L, Griffith SC, A review of extra-pair paternity in birds, *Molecular Ecology*.

Burdett H, Bentham AR, Williams SJ, Dodds PN, Anderson PA, Banfield MJ and Kobe B, The Plant "Resistosome": Structural Insights into Immune Signaling, *Cell Host and Microbe*.

Chan DS, Hess J, Shaw E, Spry C, et al., Structural insights into *Escherichia coli* phosphopantothienoylcysteine synthetase by native ion mobility-mass spectrometry, *Biochemical Journal*.

Choi B, Crisp MD, Cook LG, Meusemann K, Edwards RD, Toon A, Külheim C, Identifying genetic markers for a range of phylogenetic utility—From species to family level, *PLoS ONE*.

Deakin JE, Potter S, O'Neill R, Ruiz-Herrera A, Cioffi MB, Eldridge MDB, Fukui K, Marshall Graves JA, Griffin D, Grutzner F, Kratochvil L, Miura I, Rovatsos M, Srikulnath K, Wapstra E, Ezaz T, Chromosomics: Bridging the gap between genomes and chromosomes, *genes*.

Ebner BC, Donaldson JA, Courtney R, Fitzpatrick R, Starrs D, Fletcher C, Seymour J, Averting danger under the bridge: video confirms adult Small-toothed moray tolerate salinity before and during tidal influx, *Pacific Conservation Biology*.

Ebner BC, Donaldson JA, Starrs D, Barred gruners shift objects to access benthic invertebrates in a crater lake, *Food Webs*.

Ebner BC, Donaldson JA, Starrs D, Juvenile silver grunter *Mesopristes argenteus* shift benthic objects to access food, *Journal of Fish Biology*.

Ganguly DR, Stone BAB, Bowerman AF, Eichten SR, Pogson BJ, Excess light priming in *Arabidopsis thaliana* genotypes with altered DNA methylomes, *G3: Genes, Genomes, Genetics*.

Garcia-Porta G, Irisarri I, Kirchner M, ... Jimenez-Robles O, et al., Environmental temperatures shape thermal physiology as well as diversification and genome-wide substitution rates in lizards, *Nature Communications*.

Hamylton SM, Mallela J, Reef development on a remote coral atoll before and after coral bleaching: A geospatial assessment, *Marine Geology*.

He J, Qin L, Chow WS, Impacts of LED spectral quality on leafy vegetables: Productivity closely linked to photosynthetic performance or associated with leaf traits? *International Journal of Agricultural and Engineering Research*.

Oktalira FT, Whitehead MR, Linde CC, Mycorrhizal specificity in widespread and narrow-range distributed *Caladenia* orchid species, *Fungal Ecology*.

Perez DM, Backwell PRY, Male spacing and female choice in a fiddler crab, *Behavioural Ecology*.

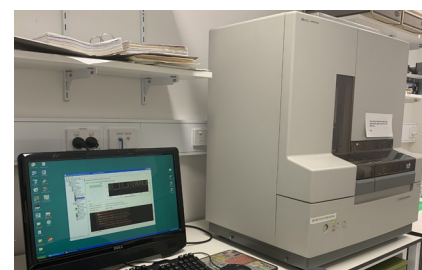
Quaas Z, Harasti D, Gaston T, Platell M, Fulton Christopher, Influence of habitat condition on shallow rocky reef fish community structure around islands and headlands of a temperate marine protected area, *Marine Ecology Progress Series*.

Rahimi F, Abadi ATB, Comment on "circSMARCA5 functions as a diagnostic and prognostic biomarker for gastric cancer, *Hindawi Disease Markers*.

Sagun JV, Badger MR, Chow WS, Ghannoum O, Cyclic electron flow and light partitioning between the two photosystems in leaves of plants with different functional types, *Photosynthesis Research*.

NOTICES

DID YOU KNOW?



The school has an ABI 3130XL dna analyser which is available to all school members to run sanger sequencing and fragment analysis (see image above). We do not provide a full service, but are able to run your amplified and cleaned up samples for as low as \$1.50 per reaction. If you would like any more details please contact Wes Keys in E&E.