



NEWS

RSB plant scientists recognised at national university teaching awards

A team of RSB researchers has been recognised nationally for their outstanding contribution to student learning, at the Federal Department of Education and Training's Australian Awards for University Teaching, held in Sydney recently. (see main photo).

Estee Tee (Pogson group, PS), **Su Yin Phua** (Pogson group, PS), **Kai Xun Chan** (Pogson group, PS), **Diep Ganguly** (Pogson group, PS), **Peter Crisp** (Pogson group, PS, & University of Minnesota), **Xin Hou** (Pogson group, PS) and **Barry Pogson** (PS), from the ARC Centre of Excellence in Plant Energy Biology, received the Citation for Outstanding Contributions to Student Learning for their program Training and Inspiring Educators in Research (TIER).

TIER is a program for researchers and teachers, which aims to influence the personal development, career prospects, and learning experiences of students at all tertiary levels through a dynamic and sustainable multi-tiered mentoring approach. The program provides mentees with unprecedented support, independence and opportunities for leadership and self-improvement.

Estee Tee, the spokesperson for the project, said of the award "this is a wonderful reflection on our own past and present mentors, and we dedicate this award to them because of how they influenced our own careers and outlook on teaching". She said the award acknowledged the importance and value of teachers and their important, long-lasting impact on students.

RIPE reinvestment funding awarded to two RSB research projects



Susanne von Caemmerer (PS) and **Dean Price** (PS) (pictured above) will receive



Barry Pogson, Xin Hou, Estee Tee, Diep Ganguly and Su Yin Phua, from the award-winning team responsible for the TIER program, at the Federal Department of Education and Training University Teaching awards ceremony in Sydney this month. (See: News Item)

around AU\$4.5 - 5 million over the next five years, to continue to fund research that aims to help boost world food production. The funding comes from a global collaboration called Realizing Increased Photosynthetic Efficiency (RIPE), led by the University of Illinois.

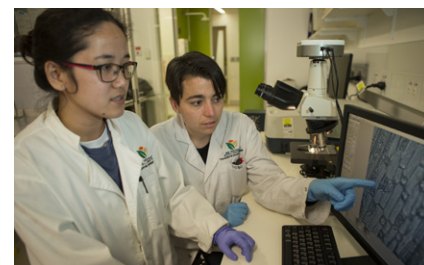
The two projects that have been funded are Dean's work on cyanobacteria and new research into mesophyll conductance led by Susanne. The ANU projects will focus on engineering more productive crops such as cow peas for smallholder farmers in Africa, but the research will also help to improve the productivity of other common crops around the world including wheat and rice.

Newly developed crop plants from the international collaboration will be made available royalty-free for farmers in the developing world, and will also be available with a licence in developed countries such as Australia and the United States.

"The population is increasing at a tremendous rate and we're currently not keeping up our food production to match that rate of population growth, so our challenge is to improve crops that can produce more food for people in continents such as Africa and Asia," said Susanne. "This research builds on 20 years of work on photosynthesis here at ANU, and we'll be working with an excellent international team. "I think we'll have a real chance to deliver on improved crop production which will help agriculture and food production in the third

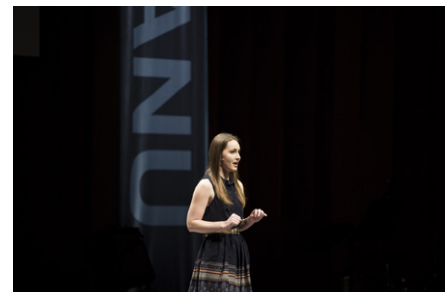
world."

Watch a video about the RSB RIPE projects [here](#).



Florence Danila (von Caemmerer group, PS) and Rowarne Leith (Furbank group, PS) will be working on the RIPE projects. Image ANU.

Erin Andrew from RSB takes first prize in the ANU 3 Minute Thesis competition



Erin Andrew giving her 3MT talk. Image Jane Duong

Erin Andrew (Fahrer group, BSB) won the 2017 ANU 3MT competition with her presentation 'Cancer Immunotherapy: fighting back against cancer'. She will head to the University of Queensland later this month to represent ANU at the Asia Pacific finals.

The win was personal for Erin, as she

DECRA profile: Steve Eichten (Borevitz group, PS and E&E)



Research background

My research background is examining epigenomic variation across and within plant species. Specifically, identifying how DNA methylation

acts as a cause, or consequence, of molecular regulation of gene expression. For my PhD I examined this within inbred species of *Zea mays* and have transitioned into natural populations of the model cereal *Brachypodium distachyon* since joining the ANU.

Current research interests

My current interest is in assaying novel transposable element variation across plant populations. Recent work has shown that there is abundant variation of these mobile genomic elements within a species. As novel insertions or deletions may directly impact genes or regulatory regions through chromatin-based regulation, I hope to discover how often these variants, and overall genome stability, may be related to phenotypic variation we see in the field.

What do you see as challenges for your field of research?

Epigenomics takes all of the challenges of genomic-scale analyses (increased sample numbers, complex computational workflows, multiple testing concerns, etc) and adds in a new layer of possible signal instability. As chromatin modifications are more malleable than genetic variants, they have high expectations as novel genomic regulators which are heritable, yet reversible. This leads to more complex experimental designs that require one to directly assess the stability of your measurement (e.g. DNA methylation state) across multiple samples and, in some cases, multiple generations. Even when accounting for this, there is still the ever-present challenge of taking millions of (epi)genomic, and phenotypic, measurements and distilling them into biological meaning.

had been diagnosed with Hodgkins lymphoma at the age of 16. After enduring chemotherapy, she wants to improve the way patients receive treatment. Her thesis is part of a clinical trial at the Canberra Hospital.

Erin also won the People's Choice Award at the competition, held in Llewellyn Hall, on Wednesday 6 September, and her supervisor, **Aude Fahrer** (BSB), won the Supervisor's award.

You can watch Erin's talk [here](#), and read more about Erin's story [here](#).

Silver and Bronze medals for our International Biology Olympiad contestants

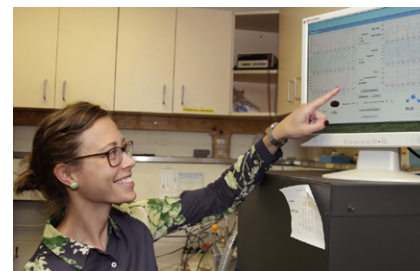


This year the Australian Biology Olympiad Team returned from The International Biology Olympiad competition with 2 Silver and 2 Bronze medals. The competition, hosted by the Royal Society of Biology at Warwick University, was attended by more than 240 high school age students from around the world. Our team of four, pictured above, who completed their intensive training here at RSB in January and again in April, competed as individuals representing Australia in the international exams. All of our students placed in the top 35%, with one ranked 29th best in the world. Many thanks go to **Juliey Beckman** (BTLC), Deputy Director of the Australian Biology Olympiad and to all of those who volunteered their time and expertise to teach into the 2107 program: **Chris Fulton** (E&E), **Guillaume Tcherkez** (PS), **Maja Adamska** (BSB), **Meredith Cosgrove** (Crisp group, E&E), **Jacinta Watkins** (Pogson group, PS), **Kristen Barratt** (Arkell group, E&E, JCSMR), **Sara Rapson** (BTLC), and the Teaching Labs and Plant Services teams.

International workshop on crop photosynthetic ecophysiology in Wuhan

In August, RSB researchers from the CoE for Translational Photosynthesis, **Graham Farquhar** (PS), **Susanne von Caemmerer** (PS) and **Meisha Holloway-Phillips** (Farquhar group, PS), participated as instructors on a six-day workshop

in Wuhan, China, attended by 78 students from all around the country. The experience was meaningful for Meisha in many ways (spoiler: noodles are involved!); you can read her reflections on the workshop, teaching, life as an early career scientist and yes, noodles, [here](#).



Meisha Holloway-Phillips working in the lab at the workshop. Image Charles Tambiah.



The Wuhan students were in awe at the opportunity to meet Susanne and Graham. Image Meisha Holloway-Phillips.



Susanne von Caemmerer teaching the fundamentals of gas exchange in Wuhan. Image Meisha Holloway-Phillips.

CoE in Plant Energy Biology advisory committee visit



Members of the Centre of Excellence for Plant Energy Biology scientific advisory committee visited labs at RSB as part of an advisory meeting in late August.

Grants

PhD student **Ariel Ivanovici** (Djordjevic group, PS) has been selected as a

Laureate of the Embassy of France 'Nicolas Baudin' mobility program, for a research internship at the Institute of Plant Sciences at Paris Saclay University.

Benjamin Schwessinger (Rathjen group, PS) has been awarded two grants recently. One involves sequencing capacity at the US Dept of Energy Joint Genome Institute (JGI) Community Science Program (CSP), and is entitled 'Rust pangenomics: understanding the diversity and potential impact of rust fungi - systematic collection of genomes & transcriptomes.'

The second is funding for an honours project, from the Centre for Biodiversity Analysis (CBA). The project is 'Uncovering the hare microbiome - implications for invasive lagomorph management, and is a joint project with Robyn Hall (CSIRO) and **Louis Ranjard** (Rodrigo group, CBBU).

IN THE MEDIA

Erin Andrew (Fahrer group, BSB) was interviewed on ABC Radio Canberra and by the *Canberra Times*, after her win in the ANU 3 minute thesis competition.

FAREWELL

The Atkin group (PS) wishes **Lingling Zhu** all the best for her return to China. Lingling recently submitted her PhD thesis and will now begin the next stage of her life back in her home country.

Lucy Hayes (Atkin group, PS) will soon leave RSB to start a Masters in Education. RSB wishes her well and thanks her for her contributions to many field and lab work over the past four years.

NEW APPOINTMENTS

Welcome to new group leader **Jean**

Wen. Jean is an ARC Future Fellow and



a computational biologist and will be based in BSB. She received her PhD at RSB, and has worked at The Bioinformatics Centre at Copenhagen University,

Denmark, and at Memorial Sloan-Kettering Cancer Centre, New York, before returning to RSB.

Her research projects are typically multi-disciplinary, involving computational and statistical method development, large scale genome-wide data analysis, and molecular genetics/biochemistry experimental validations through collaborations.

You can find Jean in room 3.021 in the Linnaeus building. Her group website is

here.

The Centre of Excellence for Plant Energy



Biology (Pogson, Borevitz and Atkin groups) would like to warmly welcome

Naomi Hawley (Pogson group, PS) who has started work with the centre as Operation and Projects Officer and joins us from across campus from the Australian Phenomics Facility.

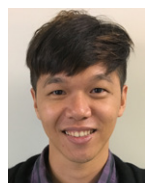
Welcome to **Helen Wong**, who joins the Biology Teaching and Learning team this month.



Helen will be working in the afternoons with senior HDR officer **Karen Scholte** until Karen leaves in November, at which

time Helen will take over the position.

The Fulton group (E&E) welcomes new



PhD student **Alex Chen**, who will be researching sources and pathways of macroalgae-based production in the Ningaloo reef ecosystem.

The Leyton group (BSB) welcomes **Jing Zhang** as a PhD student, funded by an ANU-CSC Scholarship. Jing joined the group as a mid-year Masters student in 2016 and worked briefly



as a Research Assistant after the completion of her Masters degree. She will continue to work on how disease-causing

molecules called 'autotransporters' are assembled in bacteria, with a particular focus on drug discovery as a means to combat antibiotic resistance.

PHDS SUBMITTED

Daniela Perez (Backwell group, E&E)

'Selection for sexually dimorphic traits and signal diversity in fiddler crabs'.

Lingling Zhu (Atkin group, PS) 'Thermal plasticity of leaf energy metabolism: ecological, physiological and biochemical linkages'.

Veronica Roman Reyna (Rathjen group, PS) 'Understanding wheat stripe rust through studies on host and pathogen metabolism'.

PHDS AWARDED

Virginia Abernathy (Langmore group, E&E) 'Investigating the first stages of

coevolution between the Pacific koel and its newest host, the red wattlebird'.

David Kainer (Foley Group, E&E)

'Genome-wide analysis of essential oil yield variation in *Eucalyptus polybractea*'.

PAPERS ACCEPTED

Attard MRG, Medina I, Langmore NE, Sherratt E, Egg shape mimicry in parasitic cuckoos varies with nest type, *Journal of Evolutionary Biology*.

Bromham L, Curiously the same: swapping tools between linguistics and evolutionary biology, *Biology & Philosophy*.

Dewar RC, Mauranen A, Mäkelä A, Hölttä T, Medlyn B, Vesala T, New insights into the covariation of stomatal, mesophyll and hydraulic conductances from optimisation models incorporating non-stomatal limitations to photosynthesis, *New Phytologist*.

Duchêne DA, Hua X, Bromham L, Phylogenetic estimates of diversification rate are affected by molecular rate variation, *Journal of Evolutionary Biology*.

Geange SR, Briceño VF, Aitken NC, Ramirez-Valiente JA, Holloway-Phillips M-M, Nicotra AB, Phenotypic plasticity and water availability: responses of alpine herb species along an elevation gradient, *Climate Change Responses*.

Parajuli P, Adamski M, Verma, N, Bacteriophages are the major drivers of *Shigella flexneri* serotype 1c genome plasticity: a complete genome analysis, *BMC Genomics*.

Putland RL, Ranjard L, Constantine R, Radford CA, A hidden Markov model approach to indicate Bryde's whale acoustics, *Ecological Indicators*.

Rek P, Magrath RD, Deceptive vocal duets and multimodal display in a songbird, *Proceedings of the Royal Society B*.

Spry C, Sewell AL, Hering Y, Villa MVJ, Weber J, Hobson SJ, Harnor SJ, Gul S, Marquez R and Saliba KJ, Structure-activity analysis of CJ-15,801 analogues that interact with *Plasmodium falciparum* pantothenate kinase and inhibit parasite proliferation, *European Journal of Medicinal Chemistry*.