Australian National University

Research School of Biology Newsletter

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ANU COLLEGE OF MEDICINE, BIOLOGY AND ENVIRONMENT

NEWS

Promotions

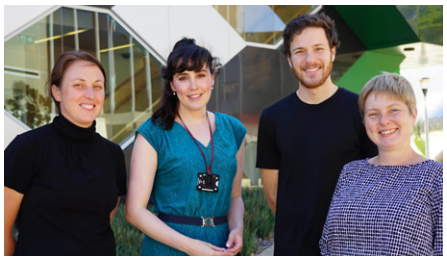
Congratulations to **Maja Adamska** (BSB), **Sylvain Forêt** (EE), and **Chris Fulton** (EE), who were promoted to Associate Professor this month.



VC Award to Alex Maier

Alex Maier (BSB) was awarded the Vice-Chancellor's Award for Public Policy and Outreach this month. Alex is the driving force behind an innovative outreach activity, the 'Concepts in Parasitology' course, offered annually by the Australian Society for Parasitology since 2014. It offers a fully immersive experience, where 16 early career researchers from all over the world interact with leaders in the field for two weeks. As the inaugural convenor, Alex has worked tirelessly to ensure that the course is successful: he conceived the course concept, has put the course infrastructure in place, and now coordinates the course delivery and contributes to the teaching of the course.

ARC and NHMRC fellowship results



New ARC Future Fellows Megan Head, Rowena Martin and Maja Adamska., and NHMRC Early Career Fellow Rob Summers. Image Sharyn Wragg.

Congratulations to new RSB Future Fellows **Maja Adamska** (BSB), **Megan Head** (Jennions group, EE), **Rowena Martin** (BSB), **Sasha Mikheyev** (Jennions group, EE) and **Jiayu (Jean) Wen** (Rodrigo group, CBBU), and to NHMRC Early Career Fellow **Rob Summers** (Martin group, BSB). Fifteen ARC Future Fellowships were awarded to ANU researchers, with a third of these going to scientists at the Research School of Biology. Similarly, Rob Summers won one of only three NHMRC Early Career Fellowships awarded to ANU academics.

Paul Cooper (EE) (pictured above) and Claire Stephens (Moritz group, EE, CBA) took a group of Year 4 students from Ainslie School on a field trip this month, to learn about the role of insects in ecosystems. (see News story).

ARC Discovery Project (DP) grants were awarded to **Loeske Kruuk** (EE)**, Adrienne Nicotra** (EE) and Christina Richards to study multi-trait plasticity in response to a changing climate, **Patrick Meir** (PS) and collaborators to study hydraulic control of water use, growth and survival in tropical rainforest, and **John Rathjen** (PS) and Peter Dodds (CSIRO), to work on protein trafficking pathways in fungal rust pathogens of plants. **Graham Farquhar** (PS) and **Peter Solomon** (PS) were also awarded DP grants, through Margaret Barbour (Sydney) and Yit-Hei Chooi (UWA) respectively.

Murray Badger (PS) is part of a team who won an ARC LIEF (Linkage Infrastructure, Equipment and Facilities) grant to establish Australia's first high-field pulse electron paramagnetic resonance (EPR) facility.

Lisong Ma (Jones group, PS), **Sambasivam Periyannan** (Rathjen group, PS) and **Megan Supple** (Borevitz group, PS) were awarded ARC Discovery Early Career Researcher Awards (DECRAs). Lisong will be working on development of fungus-resistant crops, Sambasivam aims to investigate why wheat succumbs to stripe rust fungus, and Megan's project will use landscape genomic techniques to look at migration and adaptation of Box-Gum grassy woodland community species.

RSB also did well in the 2016 NHMRC project grants round, but results remain under embargo until further notice.

Biology in the pub

Erin Walsh (Keogh group, EE), **Dominique Potvin** (Magrath group, EE) and **Nick Matzke** (Moritz group, EE) were part of the inaugural Biology in the Pub session organised and hosted by Phil Dooley (CPMS), held at Smiths Alternative Bookshop this month.

Macaw Project documentary

The premiere of **George Olah**'s (Peakall group, EE) documentary 'Macaw Project', will be held on 6 December, at the Centre on China in the World. George and **Rod Peakall** (EE) will also participate in a panel discussion to follow the 26 minute film, along with Robert Heinsohn (Fenner School) and the Ambassador of Peru. There is no charge to attend - click here to register.

Outreach News

Paul Cooper (EE) and **Claire Stephens** (Moritz group, EE) joined the Year 4 classes from Ainslie School up at Mt Ainslie Reserve

Group leader profile: Rod Peakall (EE)

What are your research interests?
Research in my lab group broadly falls under one of two research themes. One theme applies molecular genetic tools to help us better understand the biology of a diverse range of organisms. Our study species have included bacteria, fungi, plants, small mammals, whales and birds. The other theme concerns the biology and evolution of specialised pollination systems in Australian orchids. With our international team of collaborators this ARC funded research program extends across the fields of entomology, pollination biology, chemical ecology, biochemistry, molecular biology and phylogenetics. This research has discovered entirely new classes of volatile compounds along with other new to science compounds that are involved in orchid-pollinator interactions. Current research is now investigating the biosynthesis and evolution of these novel compounds.

What are your teaching interests?
I am presently a major contributor in 2nd year Genetics (BIOL2151). In this course I focus on the topic of DNA forensic analysis that provides a nice real-life example of molecular methods and population genetic analysis in action. At the graduate level, one contribution I have made that connects teaching and research has been the ongoing development of our software package: GenAlEx: genetic analysis in Excel. Population genetic software for teaching and research. Initially developed for teaching, but also offering some unique tools for research, the uptake of the software has surpassed my wildest dream. Not only is the software used across many countries for teaching, but Google Scholar also indicates an excess of 10,000 cites, demonstrating its far-reaching research impact.

What advice would you give to prospective young scientists?
Being a scientist is more than just a 9 to 5 job! To be successful it takes talent, hard work, lots of passion and a far degree of serendipity. Above all it is important to always have fun! If you are not passionate about your research topic, and don't have fun doing research, I suggest you consider a job elsewhere!

This newsletter is archived at biology.anu.edu.au/news-events/newsletter.
Layout: Mel Norris
Editing: Stefan Bröer & Mel Norris

as part of the school's weekly 'Mt Ainslie Ecosystem Excursions' where the students have been learning about native plants, weeds, fire and birds with other local ANU and CSIRO scientists. The students enthusiastically embraced entomology using sweep nets and beating trays to collect different insects and learnt about the important roles insects play in ecosystems. (See main photo) - Claire Stephens.

Guillaume Tcherkez (PS) hosted a group of 40 students from Telopea Park School, to his 'Flora of the Paris Basin' exhibition at the Australian National Botanic gardens recently. The visit included a tour of the gardens, where Guillaume and the students discussed eucalypt natural history, and the adaptation of Australian plants to drought.

Excellent Biology Olympiad results
After two weeks of intensive training last January, plus three more days in April, in our RSB Teaching labs, the 2016 Australian Biology Olympiad team of four high school students went to Hanoi, Vietnam for individual competitions; a week of theory and practical exams. Out of 176 competitors, three Australian students were awarded a silver medal each, with our final competitor earning a bronze. A great result and many thanks to **Guillaume Tcherkez** (PS) and **Bee Gunn** (Keogh group, EE) for lending their time and expertise to teach the students about flower and fruit morphology in April, and to **Juliey Beckman** (BTLC) for her work as Deputy Director of the Biology Olympiad Program.

Guillaume Tcherkez teaching Biology Olympiad students in the biology teaching lab, earlier this year.

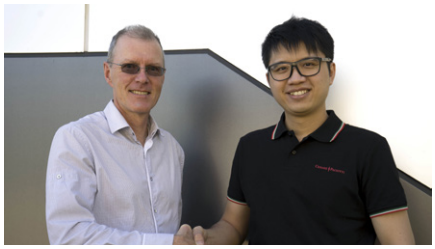
Awards
Iliana Medina (Langmore group, EE) has won a three year University of Melbourne McKenzie Fellowship.

Chaminda Ratnayake (Magrath group, EE) received a President's Award for Scientific Publication from the Sri Lankan National Research Council. Chaminda went to a ceremony in Colombo on 22 November, where he met President Maithripala Sirisena.

Congratulations to **Estee Tee** (Pogson group, PS), **Jacinta Watkins** (Pogson group, PS), and **Zara Rashid** (Atkin group, PS), recipients of the Plant Energy Biology Jan Anderson Scholarship.

Jan Anderson Scholarship recipients Estee Tee, Jacinta Watkins and Zara Rashid, with Jan Anderson family members Martin Barrett and Caroline Mordaunt.

Jason Ng (Hardham group, PS), won the 2016 Denis Carr Prize, which is awarded annually for the best paper published by an HDR student in Plant Sciences at RSB.



John Evans presented the Carr Prize to Jason Ng (Image: Sharyn Wragg).

Grants
PhD student **Thomas Semple** (Peakall group, EE) has been awarded $7500 from The Holsworth Wildlife Research Endowment – Equity Trustees Charitable Foundation for the project titled 'Exploring the diversity and ecology of Australian thynnine wasps (Tiphiidae: Thynninae)'.

David Kainer (Foley group, EE) was recently awarded the Jerome P. Miksche Travel Grant Award which will fund him to attend the Plant and Animal Genomes conference in San Diego in January 2017.

Erin Walsh (Keogh group, EE) has been awarded a Vice-Chancellor's Teaching Enhancement Grant. This grant supports innovative and creative initiatives and projects.

IN THE MEDIA

Dominique Potvin was interviewed by Red Symons on ABC radio in Melbourne, about her research about bushfire effects on frog population genetics.

Rob Lanfear (EE) gave a biology perspective on evolution, in the 5th 'Conversations across the Creek', organised by the Humanities Research Centre and CPAS. You can listen to the conversation here.

WELCOME

The Peakall group (EE) welcomes a new postdoc, **Darren Wong**. Darren completed his Honours and PhD at the University of Adelaide followed by a 2 yr postdoc at the University of British Columbia in Canada. Darren won this position following international advertisement and brings new expertise to the Peakall group in molecular biology, biochemistry and bioinformatics. He will be working on the ARC funded project 'The biosynthesis and evolution of novel semiochemicals in Australian orchids.'

PHDS SUBMITTED

Laura Wedd (Maleszka Group, EE) 'DNA methylation, epialleles and gene regulation: Insights from the honey bee.'

PHDS AWARDED

Debora Veliz Vallejos (Mathesius Group, PS) 'The effect of quorum sensing signals on nodulation of *Medicago truncatula*.'
Marlene Reichel (Millar Group, PS) 'The scope and impact of post-transcriptional gene regulation in plants- microRNAs and the RNA-binding proteome of *Arabidopsis*.'
Choon Yang (Kevin) Tee (Jones Group, PS) 'Structure-Function Analysis of an Autoactive Derivative of the Tomato Cf-9 Disease Resistance Protein.'

PAPERS ACCEPTED

Buechel SD, Booksmythe I, Kotrschal A, Jennions MD, Kolm N, Artificial selection on male genitalia length alters female brain size, *Proceedings of the Royal Society Series B.*

Busch FA, Farquhar GD, Poor evidence for C_4 photosynthesis in the wheat grain, *Plant Physiology.*

Fletcher S, Lucantoni L, Sykes ML, Saliba KJ, *et al*., Biological characterization of chemically diverse compounds targeting the *Plasmodium falciparum* coenzyme A synthesis pathway, *Parasites & Vectors*.

Gardner JL, Symonds MRE, Joseph L, Ikin K, Stein J, Kruuk LEB, Spatial variation in avian bill size is associated with humidity in summer among Australian passerines, *Climate Change Responses*.

Greaves IK, Eichten SR, Groszmann M, Wang A, Ying H, *et al.,* Twenty-four–nucleotide siRNAs produce heritable trans-chromosomal methylation in F1 Arabidopsis hybrids, *Proceedings of the National Academy of Sciences.*

Head ML, Fox RJ, Barber ID, Environmental change mediates mate choice for an extended phenotype, but not for mate quality, *Evolution.*

Head ML, Jennions MD, Zajitschek S, Sexual selection: incorporating nongenetic inheritance, *Current Opinion in Behavioral Sciences.*

Henshaw JM, Zemel Y, A unified measure of linear and nonlinear selection on quantitative traits, *Methods in Ecology and Evolution.*

Hibberd JM, Furbank RT, Wheat genomics: Seeds of C_4 photosynthesis, *Nature Plants.*

Hopwood PE, Head ML, Jordan EJ, *et al.*, Selection on an antagonistic behavioral trait can drive rapid genital coevolution in the burying beetle, *Nicrophorus vespilloides, Evolution.*

Iglesias-Carasco M, Head ML, Cabido C, Habitat dependent effects of experimental immune challenge on lizard anti-predator responses, *Behavioral Ecology and Sociobiology.*

Kelly CD, Jennions MD, 'Sperm competition theory', in TK Shackelford & VA Weekes-Shackelford (eds), *Encyclopedia of Evolutionary Psychological Science*, Springer International.

Langmore NE, Bailey LD, Heinsohn RG, Russell AF, Kilner RM, Egg size investment in a cooperatively breeding bird: helper effects are modulated by climate, *Proceedings of the Royal Society B.*

Logan CJ, Kruuk LEB, Stanley R, *et al*., Endocranial volume is heritable and is associated with longevity and fitness in a wild mammal, *Royal Society Open Science.*

Mallela J, Milne BC, Martinez-Escobar D, A comparison of epibenthic reef communities settling on commonly used experimental substrates: PVC versus ceramic tiles, *Journal of Experimental Marine Biology and Ecology*.

Olah G, Heinsohn RG, Brightsmith DJ, Espinoza JR, Peakall R, Validation of non-invasive genetic tagging in two large macaw species (*Ara macao* and *A. chloropterus*) of the Peruvian Amazon, *Conservation Genetics Resources.*

Olah G, Smith AL, Asner GP, Brightsmith DJ, Heinsohn RG, Peakall R, Exploring dispersal barriers using landscape genetic resistance modelling in scarlet macaws of the Peruvian Amazon, *Landscape Ecology*.

Quek S-P, Ueda S, Gullan PJ, *et al.*, Nuclear-DNA-based species delineations of *Coccus* scale insects in symbiosis with plants and ants, and the role of plant epicuticular wax in structuring associations, *Biological Journal of the Linnean Society.*

Smith SM, Fox RJ, Donelson JM, Head ML, Booth DJ, Predicting range-shift success potential for tropical marine fishes using external morphology, *Biology Letters.*

Wurzbacher C, Warthmann N, Bourne E, *et al*., High habitat-specificity in fungal communities in oligo-mesotrophic, temperate Lake Stechlin (North-East Germany), *MycoKeys*.

Zdenek C, Heinsohn R, Langmore NE, Vocal individuality, but not stability, in wild palm cockatoos (*Probosciger aterrimus*), *Bioacoustics.*

Melbourne Cup Lunch photos

Jack Egerton (DSTO, EE) and Wes Keys (DTO, EE). Image Sharyn Wragg.

Jacinta Watkins (Pogson group, PS), Mrinalini Pratap (Maier group, BSB), Sanduni Hapuarachchi (van Dooren group, BSB), Esther Rajendran (van Dooren group, BSB), Meng Zhang (Maier group, BSB). Image Graham Hicks.

Ginger beer and the horse! Susan Breen (Solomon group, PS) and Tom Davis (IT Client Services team leader). Image Graham Hicks.

More Melbourne Cup photos here.