



NEWS

The year in brief

It was a good year for RSB with many successes and exciting developments. Allen Rodrigo was appointed as the new director of RSB, after Kiaran Kirk was appointed as the Dean of the College of Medicine, Biology and Environment.

Members of the School were awarded prestigious research awards. Graham Farquhar will receive the Macfarlane Burnet medal of the Australian Academy of Science and has received the UK Rank Prize. Hanna Kokko and Craig Moritz were elected as members of the Australian Academy of Sciences. Susanne von Caemmerer received the Charles F. Kettering Award and Loeske Kruuk was awarded the Genetics Society Mary Lyon Medal. The School also excelled in teaching. Susan Howitt, Adrienne Nicotra, and Dave Rowell were elected Senior Fellows of the Higher Education Academy, and Sue Cossetto received a Vice Chancellor's Teaching Award. Chris Fulton and Julie Beckman were awarded ANU Research-Led Education Fellowships, and Christina Delay a grant to set up a 'Tutor cafe'. Melanie Trinick and Peta Moisis received a Citation for Outstanding Contribution to Student Learning (see news item in this newsletter).

The School had a very successful year with regard to research funding. The ARC Centre of Excellence for Translational Photosynthesis opened and the ARC Centre of Excellence in Plant Energy Biology received another round of funding. We had extraordinary success in project grant outcomes from the ARC and NHMRC. None of this would be possible without the fantastic support by all members of the professional staff.

While we have many reasons for a cheerful end of the year, the School suffered a tragic loss with the untimely death of Warwick Hillier. A memorial was held at the Arboretum in March.

'Concepts in Parasitology' course



The Australian Society for Parasitology (ASP) course 'Concepts in Parasitology' took place at the Australian National University (ANU), Canberra and

Kioloa Coastal Campus between 23 November and 6 December 2014. The future of parasite research in Australia will be in safe hands as 16 young Australian scientists converged for an intensive two-week workshop with world-leading biologists to study worms, protozoans, ticks, fleas, lice and more.



RSB Group Leaders with incoming Director Allen Rodrigo at the RSB Christmas Party.

RSB Christmas party



The school enjoyed a relaxing RSB Christmas party in fine summer weather. It was a great opportunity for members of the RSB to socialise as a School community, and for incoming Director Allen Rodrigo to meet with members of the School.

Many thanks to all who helped to get the party rolling, notably: The BBQ team: Graham, Farid, Mandy, Derek and Diep; The infrastructure team: Trent, Jules, Spencer and Jason; The drinks team: Jack, Christine, Jenny, Sanduni, and Vanessa; The Clean-up team: Stephen, Peter, Jeanette, Eldon, Laura and Sharyn; and Michelle for other arrangements and for catering.



Excellence in Education awards

Melanie Trinick and Peta Moisis (BTLC) received a Citation for Outstanding Support to Student Learning by Supporting Academic Staff, for their work developing effective and safe laboratory classes as key components of the biology research-led curriculum.



Student grant

Mark Wong (Rowell Group, EEG) won a National Geographic Young Explorer Grant for his funnelweb work.

PHDs SUBMITTED

Rod Eyles (Djordjevic Group, PS) 'MicroRNA involvement in root organ formation and function in *Medicago truncatula*'.

Yvonne Gonzalez Cendales (Jones Group, PS) 'Isolation and functional characterisation of the tomato *I-7* gene for *Fusarium* wilt resistance'.

Piyankarie Jayatilaka (Zeil Group, EEG) 'Individual foraging careers in the Australian ant *Myrmecia croslandi*'.

Masters submission

Chloe Raderschall (Zeil Group, EEG) 'Vision and navigation in nocturnal ants'.

Academic profile: Ajay Narendra (EEG)



Research focus: Animals know their way around the world and I am interested in how animals achieve this at the physical limits of size and photons. In insects, I aim to

identify the design of sensory structures and pinpoint the neural requisites for navigation in ecologically relevant conditions.

Background: I joined Jochen Zeil's group as a Postdoctoral Fellow in 2006 to study the use of motion parallax in homing wasps. But my stint with the wasps was brief as Jochen very generously allowed me to pursue my new found interest - the charismatic bull ants and jack jumpers. We discovered a unique set of congeneric sympatric ant species active in discrete temporal niches that had evolved visual adaptations to cater to their respective light environments. Understanding their navigational challenges and sensory adaptations for operating in discrete temporal niches formed the basis of my two ARC fellowships, an APD ('09), DECRA ('12) and research grants from ACEVS, Hermonslade Foundation and GO8 Australia Germany Cooperation Scheme. A big advantage of working at RSB, has been the steady stream of visiting fellows with whom I have been able to develop sophisticated tools for insect tracking, to image the environment in 3D and to trace neuronal pathways.

Achievements: include supervising a field based project in a third year course that resulted in a publication; a special topics student project (Ms Ramirez-Esquivel) that turned into a publication; and students winning awards (Ms Raderschall: Heiligenberg award, ASSAB talk award). I have been leading ant walks held every summer at Mt Majura and Mt Ainslie, which have been most enjoyable opportunities to talk about science with the general public and especially the kids.

Future: In 2015, I will take up my Future fellowship at Macquarie University, and together with a successful ARC Discovery grant (Cheng, Barron, Narendra, Wehner, Zeil) we will tackle the next frontier in the field of insect navigation to identify the limits of how small and how few sensors are required for efficient navigation and where in the brain navigational information is stored, integrated and recalled.

MEDIA

A paper in *Nature Communications* and another in *PNAS* have been featured in the media. The research was carried out in collaboration with researchers across the country, including Natalie Spillman, who took up a postdoc at Washington University after completing her PhD at RSB, and **Kiaran Kirk** (BSB).

WELCOME

Simon Foxcroft has accepted the position of RSB Operations Manager, and will commence this role on 5 January. Simon was a key member of the Colleges of Science Building Project. Prior to his employment with the ANU, Simon held operational management roles within the UK higher education sector, and comes to the School with a breadth of operational, technical and compliance experience.

Kiki Kots will be working with Adrienne Hardham's Group (PS) as an Occupational Trainee for the next four months, investigating changes in plant cell wall components during disease development. Kiki is from the University of Wageningen in The Netherlands.

Martha Muñoz has taken up a postdoctoral position in Craig Moritz's Group (EEG) to work on climate change adaptation in Australian skinks. Martha recently completed her PhD with Jonathan Losos at Harvard University.

FAREWELL

Ajay Narendra (Zeil Group, EEG) will leave in January to take up a position as a Future Fellow at Macquarie University. See under 'Academic profile'.

PAPERS ACCEPTED

Aplin, LM, Farine, DR, Morand-Ferron, J, Cockburn, A, *et al*, Experimentally induced innovations lead to persistent culture via conformity in wild birds, *Nature*

Atkin, OK, Bloomfield, KJ, Reich, PB, Tjoelker, MG, *et al*, Global variability in leaf respiration among plant functional types in relation to climate and leaf traits. *New Phytologist*

Bromham L, What is a gene for? *Biology & Philosophy*

Cacho, RA, Tang, Y, Chooi, YH, Next-generation sequencing approach for connecting secondary metabolites to biosynthetic gene clusters in fungi. *Frontiers in Microbiology*

Eaton, CJ, Dupont, P-Y, Solomon, PS, Clayton, W, Scott, B, & Cox, MP, A core gene set underpins the shift from mutualism to antagonism in multiple *Epichloë* symbiotic mutants. *Molecular Plant-Microbe Interactions*

Jiménez-Díaz, MB, Ebert, D, Salinas, Y, Spillman, NJ, Kirk, K, *et al*, (+)-SJ733, a clinical candidate for malaria that acts through ATP4 to induce rapid host-mediated clearance of *Plasmodium*, *PNAS*.

Misof, B, Lui, S, Meusemann, K, Lanfear, R, *et al*, Phylogenomics resolves the timing and pattern of insect evolution, *Science*



Muñoz, MM, The London Baedeker for the Darwin enthusiast. *Evolution: Education and Outreach*

Muñoz, MM, Stimola, MA, Algar, AC, *et al*, Evolutionary stasis and lability in thermal physiology in a group of tropical lizards, *Proceedings of the Royal Society, B*

Muñoz, MM, Wegener, JE, & Algar, AC, Untangling intra- and interspecific effects on body size clines reveals divergent processes structuring convergent patterns in Anolis lizards, *American Naturalist*

Pascovici, D, Song, X, Solomon, PS, Winterberg, B, *et al*, Combining protein ratio p-values as a pragmatic approach to the analysis of multi-run iTRAQ experiments, *Journal of Proteome Research*

Rug, M, Cyrklaff, M, Mikkonen, A, Kuelzer, S, Maier, AG, *et al*, Export of virulence proteins by malaria-infected erythrocytes involves remodeling of host actin cytoskeleton, *Blood*



Veliz-Vallejos, DF, van Noorden, GE, Yuan, & Mathesius, U, A *Sinorhizobium melliloti*-specific N-acyl homoserine lactone quorum-sensing signal increases nodule numbers in *Medicago truncatula* independent of autoregulation, *Frontiers in Plant Science*

Vaidya, AB, Morrissey, JM, Zhang, Z, Spillman, NJ, Kirk, K, *et al*, Pyrazoleamide compounds are potent antimalarials that target Na⁺ homeostasis in intraerythrocytic *Plasmodium falciparum*, *Nature Communications*

Zsögön, A, Negrini, ACA, Peres, LEP, Nguyen, HT, & Ball, MC, A mutation that eliminates bundle sheath extensions reduces leaf hydraulic conductance, stomatal conductance and assimilation rates in tomato (*Solanum lycopersicum*). *New Phytologist*.

This newsletter is archived at biology.anu.edu.au/newsletter. Content & layout: Sharyn Wragg
Editing: Stefan Bröer & Sharyn Wragg.