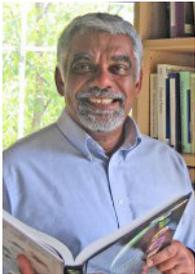




NEWS

New Director for RSB



Professor Allen Rodrigo has been appointed as the new Director of RSB and will be commencing in July 2015.

Professor Rodrigo is currently a Professor of Biology at Duke

University in the United States and Director of the US National Evolutionary Synthesis Center, which is a collaborative venture between Duke University, the University of North Carolina at Chapel Hill and the North Carolina State University.

Stefan Bröer will be Interim Director of RSB until Allen takes up the position on July 1 next year. Stefan and Allen will be in close contact with one another throughout this period.



While in the Interim Director role, Stefan will step aside from the role of Head of the RSB Division of Biomedical Science and Biochemistry (BSB). Susan Howitt will be Acting-Head of BSB.



NHMRC grant success

Ten project grants were awarded to ANU, with four of these awarded to RSB members. With a national funding rate of 15%, this is a very good outcome.



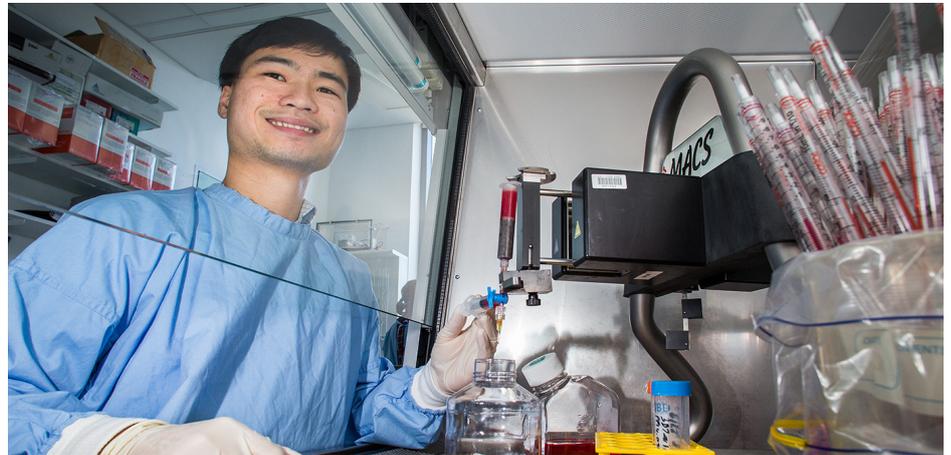
Richard Callaghan (BSB), What is the role of ABCA4 in the visual process? \$312K.



Jonathan Tan (O'Neill Group, BSB), Understanding the mechanisms that regulate spleen organogenesis, \$401K.



David Tschärke (BSB), Recognition of virus-infected cells by T cells, \$1,114K. A humanised mouse model for herpes simplex virus pathogenesis \$268K.



A study by Phuong Tran (Maier Group, BSB) and colleagues on fat transport in Malaria parasites was featured in the ANU Media (see under MEDIA and PUBLICATIONS). Photo by Stuart Hay, ANU.

Australian Orchid Foundation grant

Michael Whitehead (EEG), Celeste Linde (PS), Rod Peakall (EEG), and Kingsley Dixon (Kings Park Botanic Garden), were awarded \$9.87K from the Australian Orchid Foundation for their grant, entitled 'Below ground diversity in an orchid biodiversity hotspot'.

Student awards

Duncan Fitzpatrick (Hillier/Price Group, PS) won the ASPS student poster prize at the Combio2014 conference in Canberra, for his poster entitled: 'Thermophiles: Probing the thermal limits to photosynthetic processes'.

Samira Hassan (Mathesius Group, PS) was awarded Best Speaker at the RACI Natural Products Chemistry Group Annual symposium held at Charles Sturt University, Wagga Wagga, NSW on 3 October 2014.

Women in Science

A dinner for 'Women in Science' was held at Teatro Vivaldi (ANU) on 28 September. The dinner, which was part of Combio2014, was attended by 65 people, including 13 ANU staff and students. A panel of six female scientists from around Australia discussed ideas and initiatives that could help close the gender gap observed in science. Details of the event are posted on the RSB website. The event will be held again at Combio 2015.



MEDIA

Nature Communications paper

A paper by Phuong Tran (Maier Group, BSB), Kieran Kirk, Alex Maier and colleagues entitled 'A female gametocyte-specific ABC transporter plays a role in lipid metabolism in the malaria parasite', and published in Nature Communications has been featured in the media. The study has revealed that a molecule called gABCG2 controls the transport of fat molecules in the parasite, and that female parasites genetically modified to have no gABCG2 did not accumulate fat in the same way, and struggled to survive in the mosquito (see under PUBLICATIONS).

Nature 'News & Views' paper

Dean Price (PS) and Susan Howitt (BSB and BTLC) have summarized the developments in engineering plants with the more efficient cyanobacterial enzyme for carbon fixation in a Nature 'News & Views' article, entitled 'Plant science: Towards turbocharged photosynthesis'. Price, who was not involved in the research but who is a leading plant geneticist and expert on translation of CO2 acquisition by cyanobacteria into crop plants, was interviewed by Technology Review and Popular Mechanics.

New edition of 'The Insects'

Penny Gullan and Peter Cranston, Emeritus Professors (EEG), have received advance copies of their new 5th edition of 'The Insects: An Outline of Entomology' (Wiley-Blackwell, November 2014). For the past year Penny and Peter reviewed the whole field

## Lab Leader profile: Celeste Linde (EEG)

### Group research focus



We explore patterns of fungal population diversity and their interactions with plants. This type of work has implications for management of viable populations of rare and threatened species, but also for plant disease management in agricultural and natural ecosystems.

### Teaching and research achievements

Being able to get the message across to students and industry, that a species is not a single entity but that it consists of ever changing and often highly variable populations, and that a single tiny lesion on a leaf can be caused by multiple fungal individuals, all potentially exchanging genetic information. Also, that durable resistance in plants can be fairly accurately predicted by the life history of the pathogen.

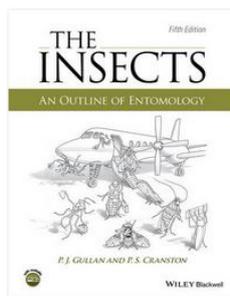
### What do you enjoy most about teaching?

Reviewing and preparing lectures is a chance to learn some new things myself in the ever-evolving knowledge and technological landscapes of science, and that is always stimulating for me. It does mean there's always more to try and teach the students though – so finding ways to fit as much as possible in to a semester's course is a challenge. If I can inspire students to not just absorb, but to embrace the concepts and apply those in their own science thinking, that feels like a big achievement.

### Who is your science hero?

Heroine actually. Barbara McClintock's story is one that always inspires me. She worked in the early years of cytogenetics, demonstrated things like recombination between sister chromosomes during meiosis and how inheritance of traits in one could be attributed to such "crossing over" events. And her brilliant work on demonstrating the "jumping genes" or transposons – from trait observations deducing that a mechanism like that must exist inside nuclei at a time when nobody else had imagined it could, and being shunned by her peers because they couldn't imagine it. She largely withdrew, waiting twenty years for others to demonstrate in simpler organisms what she had shown in maize in the early 1950s. And then thirty-odd years after this work she finally won a Nobel Prize for it. A very impressive female scientist at a time when there were very, very few women in science. And she achieved so much in her field that has been essential to the progress of modern genetics.

of entomology, and there is major revision to the chapter on systematics and a new chapter, Insects in a Changing World, includes insect responses to, and the consequences of, both climate change and human-assisted global alterations to distributions (see under PUBLICATIONS).



## PHDs SUBMITTED

**Jason Bertram** (Dewar Group, PS) 'Entropy-related principles for non-equilibrium systems: theoretical foundations and applications to ecology and fluid dynamics'.

**Will Feeney**, (Langmore Group, EEG) 'Frontline interactions between avian interspecific brood parasites and their hosts'.

**Ying Ying Hey**, (O'Neill Group, BSB) 'Characterisation of a novel antigen presenting cell type'.

**Robert Wilson** (Whitney Group, PS) 'Directed evolution of Rubisco'.

**Katarzyna Walczewska-Szewc** (Corry Group, BSB) 'Interpreting resonance energy transfer experiments with Monte-Carlo and molecular dynamics simulations'. Kasia is doing a dual award PhD with the University of Gdansk (Poland) and has also just passed the other requirement for her degree - a general physics exam.

**Uyen Nguyen** (Maier Group, BSB) 'An exported protein of the human malaria parasite *Plasmodium falciparum* plays a role in modifications of the erythrocyte membrane and parasite survival in the host'.

## PHDs AWARDED

**Veronica Briceno** (Nicotra Group, EEG) 'Elevation and microclimate affect vegetative and physiological traits in the alpine herb *Aciphylla glacialis* (Apiaceae)'.

**Tilo Forbes** (Maier Group, BSB) 'Composition and immunogenicity of virulence complexes on the surface of erythrocytes infected with the malaria parasite *Plasmodium falciparum*'.

**Katharina Schneebeli**, (Mathesius Group, PS), 'Studying root diseases of wheat and other cereals, using the model plant *Brachypodium*'.

**Keith Schultze** (Masle Group, PS) 'A Developmental and molecular analysis of *Arabidopsis thaliana* ERECTA gene function in leaf organogenesis and orchestration of three-dimensional structure'.

### Masters by Research

**Tegan (Khan) Dolstra** (Martin Group, BSB) 'Structure-function studies of the malaria parasite's 'chloroquine resistance transporter'.

## WELCOME

**Haron Asif** and **Victoria Zhong** have joined RSB IT as Client Services Officers.

**Vivien Bauer**, a Masters student from the University of Wuerzburg, Germany, has joined Ajay Narendra and Jochen Zeil (EEG) to carry out a two month research project on navigation in ants.

**Debra Giuliano** has joined RSB as Centre Administrator for the CoE Translational Photosynthesis on a casual basis until February 2015. Debra has held several roles within the ANU, most recently at the School of International Political & Strategic Studies, ANU College of Asia & the Pacific.

**Joshua van Lier** has joined the Fulton Fishlab (EEG) to do his PhD research on the implications of habitat patch dynamics for reef fish diversity. Josh is from New Zealand, where he studied his Honours degree in marine ecology at the University of Canterbury.

**Sara Shortt** has joined the College Administration team as the RSB Senior Research Management Officer. Sara has extensive experience in Research Management and previously worked at the General Practice Education and Training program. She can be reached on extension 58384, or [rsb.rm@anu.edu.au](mailto:rsb.rm@anu.edu.au).

**Genevieve Carey** has joined the BTLC Student Admin team. Gen looks after HDR general student administration and her working hours are 9:30am to 2:30pm each day.

## FAREWELL

**Michele Lamb**, Centre Administrator for the CoE Translational Photosynthesis, has transferred to the CMBE Research Management team, effective 24 October. Michele has been a delight to work with and we wish her every success in her new role.

**Simone Kuelzer's** fellowship from the German Research Foundation came to an end. Simone (Maier Group, BSB) was working on a conditional system to functionally block the export of malaria parasite proteins to the host red blood cell.

## PAPERS ACCEPTED

Blackman, LM, Cullerne, DP, & Hardham, AR, Bioinformatic characterisation of genes encoding cell wall degrading enzymes in the *Phytophthora parasitica* genome. *BMC Genomics*

Bromham, L, Macroevolutionary patterns of salt tolerance in angiosperms. *Annals of Botany*

Cheung, A, Collett, M, Collett, TS, Narendra, A, & Zeil, J *et al*, Still no convincing evidence for cognitive map use by honeybees. *Proceedings of the National Academy of Science USA*.

Chan, H, Kopecki, Z, Waters, JM, Powell, BC, Arkell, RM, Cowin, AJ, Cytoskeletal protein Flightless I differentially affects TGF- $\beta$  isoform expression in both in vitro and in vivo wound models. *Wound Practice and Research*

Chervenak, AP, Bank, LM, Thomsen, N, Arkell, RM, *et al*, The role of *Zic* genes in inner ear development in the mouse: Exploring mutant mouse phenotypes. *Developmental Dynamics*

Cvitanovic, C, Fulton, CJ, *et al*, Utility of primary scientific literature to environmental managers: An international case study on coral-dominated marine protected areas, *Ocean & Coastal Management*

Ebner, BC, Fulton, CJ, *et al*, Filming and snorkelling as visual techniques to survey fauna in difficult to access tropical rainforest streams, *Marine & Freshwater Research*

George, DT, Behm, CA, Hall, DH, Mathesius, U, Verma, NK, *et al*, *Shigella flexneri* Infection in *Caenorhabditis elegans*: Cytopathological examination and

Identification of host responses, *PLoS One*

Gullan, PJ, & Cranston, PS, The Insects: An Outline of Entomology, 5<sup>th</sup> Edition, Wiley-Blackwell

Jakhetia, R, Marri, A, Stähle, J, Verma NK, *et al*, Serotype-conversion in *Shigella flexneri*: identification of a novel bacteriophage, Sf101, from a serotype 7a strain, *BMC Genomics*

Kahn, AT, Holman, L, & Backwell, PRY, Female preferences for timing in a fiddler crab with synchronous courtship waving displays. *Animal Behaviour*

Kokko, H, Booksmythe, I, Jennions, MD, Mate sampling costs and sexy sons, *Journal of Evolutionary Biology*

O'Dea, R, Jennions, MD, Head, ML, Male size and condition affects sperm number and production rates in mosquitofish, *Gambusia holbrooki*. *Journal of Evolutionary Biology*

Ogilvie, HA, Imin, N & Djordjevic, MA, Diversification of the C-TERMINALLY ENCODED PEPTIDE (CEP) gene family in angiosperms, and evolution of plant-family specific CEP genes. *BMC Genomics*

Pratchett, MS, Fulton, CJ, *et al*, Abundance, diversity and feeding behaviour of coral reef butterflyfishes at Lord Howe Island. *Ecology & Evolution*

Rahimi, F, & Bitan, G, 'Methods for studying and structure–function relationships of non-fibrillar protein assemblies in Alzheimer's disease and related disorders' in *Advances in Alzheimer's Research*, DK Lahiri (ed.), Bentham Science Publishers.

Ramirez-Esquivel, F, Narendra, A, & Zeil, J, The antennal sensory array of the nocturnal bull ant *Myrmecia pyriformis*, *Arthropod Structure & Development*

Rug, M, Cyrklaff, M, Mikkonen, Maier AG, *et al*, Export of virulence proteins by malaria-infected erythrocytes involves remodelling of host actin cytoskeleton

Samet, N, Zeil, J, Mair, E, *et al*, Ground-nesting insects could use visual tracking for monitoring nest position during learning flights, *Lecture Notes in Artificial Intelligence*

Starrs, D, Ebner, BC, & Fulton, CJ, All in the ears: unlocking the early life history

biology and spatial ecology of fishes, *Biological Reviews*

Tran, PN, Brown, SHJ, Mitchell, Kirk, K, Maier, AG, *et al*, A female-gametocyte-specific ABC transporter plays a role in lipid metabolism in the malaria parasite, *Nature Communications* (see under MEDIA)

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

White, T, Zeil, J, Kemp, D, Signal design and courtship presentation coincide for highly biased delivery of an iridescent butterfly mating signal, *Evolution*

Wilson, SK, Fulton, CJ, Noble, MM, *et al*, Seasonal changes in habitat structure underpin shifts in macroalgae-associated tropical fish communities, *Marine Biology*

Wu, B-J, Chow, WS, Liu, Y-J, *et al*, Effects of stomatal development on stomatal conductance and on stomatal limitation of photosynthesis in *Syringa oblata* and *Euonymus japonicus* Thunb. *Plant Science*

Zeil, J, & Hemmi, JM, 'Path integration, vision and decision-making in Fiddler crabs', in *Crustacean Nervous Systems and their Control of Behavior*, CD Derby & M Thiel (eds), Vol 3 of *The Natural History of Crustaceans* (ten-volume series, editor-in-chief, M. Thiel). Oxford Univ. Press, New York.

Zeil, J, Ribbi, W, & Narendra, A, 'Polarisation vision in ants, bees and wasps', in *Polarized Light and Polarization Vision in Animal Sciences*. G Horváth (Ed). Springer Verlag, Heidelberg, New York

Zeil, J, Nachruf auf Dezsö Varjú. Mitteilungen der Deutschen Zoologischen Gesellschaft 2014. Obituary in German.

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