



NEWS

Graduation

RSB congratulates our graduating PhD students! They are: **Jehangir Ahmed** (Arkell group, EEG), **Helen Bellchambers** (Arkell group, EEG), **Peter Crisp** (Pogson group, PS), **Christina Delay** (Djordjevic group, PS), **Rodney Eyles** (Djordjevic group, PS), **Bee Fong Gunn** (Crisp group, EEG), **Iliana Medina Guzman** (Langmore group, EEG), **Anna Harts** (Kokko/Jennions group, EEG), **Daniel Hoops** (Keogh group, EEG), **Camile Moray** (Bromham group, EEG), **Trevor Murray** (Magrath group, EEG), **Viridiana Silva Perez** (Evans group, PS), **Su Yin Phua** (Pogson group, PS), **Nadiatul Akmal, Mohd Radzman** (Djordjevic group, PS).



Graduands pose with supervisors and supporters after the School morning tea in their honour on graduation day. (Image: Sharyn Wragg) (See: News)

RSB 3 Minute Thesis competition



3MT competitors and judging panel, from left: Melanie Ridgway, Wes Keys, Karen Scholte, Christina Spry, Megan McDonald, Estee Tee, Don Lim, Mrinalini Pratap, Meng Zhang, Jacinta Watkins and Dave Rowell. (Image Spencer Whitney) (see news item).

Six PhD students entered the RSB 3 Minute Thesis (3MT) competition held this month, demonstrating their communication skills to a crowd of more than 100 in the Slatyer seminar room. The presenters were: **Estee Tee** (Pogson group, PS), **Meng Zhang** (Maier group, BSB), **Jacinta Watkins** (Pogson group, PS), **Melanie Ridgway** (Maier group, BSB), **Don Lim** (O'Neill group, BSB) and **Mrinalini Pratap** (Maier group, BSB).

Melanie Ridgway won the event, with 'Sexist science at the apocalypse'. "The high quality of the presentations made it a difficult task for the judging panel!" - **Dave Rowell**, (EEG and BTLC), **Megan McDonald** (Solomon group, PS), **Christina Spry** (Saliba group, BSB), and **Wes Keys** (DTO, EEG) - said chairperson **Spencer Whitney** (PS). "The event was a great success, thanks to the fantastic organising efforts of **Karen Scholte** and **Sam Jahromi** of the BTLC," he said.

Mid-year Honours and Masters

A record 24 students completed their mid-year Biology Honours and Masters projects in June. Congratulations to all these students for their fantastic achievements across the year.

Joy Zeng (co-supervised by **Adele Lehane** and **Giel van Dooren**, BSB) achieved the top mark in the class, and was awarded the inaugural "Director's prize in Honours", which comes with a certificate and a \$200 prize. The prize will be awarded to up to three students in a cohort who achieve a final mark of above 90.

Many of this year's cohort will be continuing on at ANU in PhD and MChD degree programs, while others are moving on to new challenges. We wish all the Honours and Masters students the best for the future. The Honours year would not be possible without the efforts of examiners and supervisors. Many thanks to **Patricia Seddon** of the BTLC, who does a marvellous job in administering the program. - **Giel van Dooren** (BSB).

Parasitology at Questacon

Questacon celebrated EuroScience week by hosting scientists who are involved in research or projects with a European connection. Parasitologists **Alex Maier** (BSB) and **Melanie Rug** (ANU Center of Advanced Microscopy) took up the challenge to develop interactive activities for the general public to illustrate the fascinating world of parasites. Expecting an age range from 3-85, they prepared a wide spectrum of activities: match the parasite to the disease and vector; Sushi delights and parasites; name, design and draw your

parasite; traditional cures for parasites; spiral of prevalence; posters on parasites in general and our malaria research; parasite tattoos; jars with specimen; a microscope to look at malaria parasites. They also had a 'show reel' with video clips on parasites. Of course Josephine (the mannequin, see Faculty Flash article, June 2016) joined us, who happened to be infected with scabies, head lice and bedbugs on that day (poor Josephine!). - **Alex Maier** (BSB)

RSB PhD student committee set up

PhD students from RSB have set up a PhD and MPhil student committee. Committee members and their responsibilities are: **Kathryn Parker** (van Dooren and Kirk groups, BSB) - Chair, Events and PhD conference; **Jessie Au** (Foley group, EEG) - Social officer, events and PhD conference; **Melanie Ridgway** (Maier group, BSB) - CMBE representative; **Pawan Parajuli** (Verma group, BSB) - Events, PhD conference; **Christiana McDonald-Spicer** (Moritz group, EEG) - EEG representative; **Joshua Penalba** (Moritz group, EEG) - EEG representative; **Lily Chen** (Furbank group, PS) - PS representative; **Annamaria De Rosa** (Evans group, PS) - PS representative; **Edwin Tjhin** (van Dooren group, BSB) - BSB representative; **Mrinalini Pratap** (Maier group, BSB) - BSB representative.

The committee have set up a [facebook page](#), and will organise an annual PhD BBQ, conference and other social events, as well as represent HDR students on the Research Training Committee.

Group leader profile: Richard Callaghan (BSB)



Group research focus

There are two main research interests of the team. The first investigates how cells become resistant to chemotherapy; primarily in the treatment of cancer. In particular, we focus on drug pumps that prevent drugs entering the cells and causing their demise. The work is fundamental biochemistry and aims to provide a molecular understanding of how these pumps can recognise so many different types of drugs and move them out of cells. Once we understand this property, it will be possible to engineer ways to overcome their unwanted actions. The other main research priority is to develop new ways to kill cancer cells by targeting 'quirks' in their cellular biology such as altered metabolism and through novel drug delivery systems that evade resistance pathways.

Teaching and research achievements

A huge proportion of my research career has been spent trying to unravel how a particular drug pump in cancer cells is able to bind and transport close to 300 drugs. The research teams I have been involved with provided the first structural data on this pump back in 1997. The structural information is being used to generate a map of drug binding sites on the protein. This has been a goal of mine for >20 years and we are now very close to achieving it.

I have taught the dreaded subject of Biochemistry to Medical and Science students for almost 20 years and nobody has fallen asleep in a lecture yet! At Oxford I developed the first graduate training program in the Medical Sciences Division and the program was subsequently adopted across the University.

What do you enjoy most about teaching?

I enjoy teaching and interacting with students that show a real passion and curiosity for the topic, whatever discipline this involves. In September, I am off to the UK to learn a novel procedure that was developed by one of my former D. Phil. students and seeing the student-teacher profile turned on its head is quite gratifying.

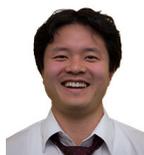
Who is your science hero?

My scientific hero is actually a British engineer with a very extravagant name – Isambard Kingdom Brunel. He was however, a quintessential scientist because of his extraordinary problem solving ability. No project was too difficult or impossible to overcome with ingenuity. His feats in the 1800s changed the field of engineering forever and his achievements are still standing, or in operation, 200 years later.

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

Congratulations

John Rivers (Pogson group, PS) and his team of PhD students won the Australian-French Entrepreneurship Challenge this year, with an innovative idea where a traveller could use their smartphone to test water quality.



Awards

Hee Jin Noh, new PhD student in the Langmore group (EEG), won the best poster prize at the Australasian Society for the Study of Animal Behaviour conference this month.



Grants

Peter Solomon (PS) has been awarded a Global Connections Fund Priming Grant worth \$7000, to facilitate further research with Biotelliga Ltd, in New Zealand.

Chris Fulton (EEG) and colleagues from Anthropology, Engineering, Law, Medicine and CHELT have won a 2016 ANU Teaching Enhancement Grant for the project 'Students as teachers: guidelines for effective co-creation of online resources', which will develop and test guidelines for staff and students to co-create videos and other online learning content for courses across the ANU.

IN THE MEDIA

A recent *Nature* paper by **Lindell Bromham** (EEG), **Russell Dinnage** (Cardillo group, EEG) and **Xia Hua** (Bromham group, EEG) showed that it is more difficult to attract funding for interdisciplinary research. It was also discussed in the *Nature* editorial, and was covered in *Nature News*, the *Nature* podcast, and in other news services including *The Australian*.

An article in the journal *Science*, co-authored by **Chris Fulton** (EEG), has received international media attention. The study showed that gradual ocean warming, punctuated by a severe marine heatwave event, has caused the collapse of kelp forest ecosystems along the Western Australian coastline. It was reported in the *Guardian*, *The Atlantic*, *ABC News* and *New Scientist*.

The Director's Seminar given by Janine Deakin, from the University of Canberra, was the subject of an article in the *Canberra Times*, written by Ian Warden, who attended the seminar.

Loeske Kruuk (EEG) was an author on a *Nature* paper entitled 'Phenological sensitivity to climate across taxa and trophic levels', on how climate change is disrupting ecosystems. The paper received media coverage in the *Guardian*, *Scientific American*, *Biosphere Magazine*, and *Science Nordic*.

David Kainer (Foley group, EEG) and **Carsten Kulheim** (Foley group, EEG) published an article in *The Conversation*, about making jet fuel from *Eucalyptus* oil.

PHDS SUBMITTED

Thi Hoa Nguyen (M Ball group, PS) 'Influence of salinity on leaf structure and water relations in the mangrove, *Avicennia marina* (Forssk.) Vierh.'

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'.

Wenjie Wu (Hardham group, PS) 'Studies of flax rust effector gene expression, and effector protein localisation and interactions'.

PHDS AWARDED

Joanna Lee (Millar Group, PS) 'Understanding the interaction between RNA-directed DNA methylation and DNA demethylases and its role in *Fusarium oxysporum* disease response in *Arabidopsis thaliana*'.

Emrah Tumer (Bröer group, BSB) 'Transcriptional Regulation of Slc6a19 along the Crypt-Villus axis'

WELCOME

Eric Stone joins the RSB as Director of the ANU-CSIRO Centre for Genomics, Metabolomics and Bioinformatics (CGMB). Eric comes to the ANU after 11 years on the faculty at North Carolina State University in the USA.



He is a quantitative biologist/geneticist with a background in mathematics and statistics, and at the ANU he has a fractional appointment with the Research School of Finance, Actuarial Studies and Statistics. Eric enjoyed playing team sports before age won out, and he enjoyed playing games of strategy before he had kids. Now he enjoys team science and is always keen to hear about your latest project ideas. Eric can be

found in the back corner of the EBL, hiding from the Bobcats as they dismantle the rest of the R.N. Robertson Building.

New group leader **Rob Lanfear** (EEG) joins RSB this month. Rob was a postdoc in

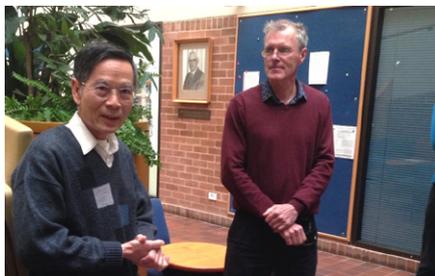


BoZo and EEG for eight years, before moving to a permanent position at Macquarie University. He is very happy to be back at RSB, and is currently teaching the third year Biology, Society and Ethics course.

Rob has a Future Fellowship to study somatic mutations in plants. He is broadly interested in molecular evolution and phylogenetics, and is always interested in collaborations. You can find him in the Gould building, and [here](#).

FAREWELL

Wah Soon (Fred) Chow retires



Fred Chow and John Evans at Fred's retirement party in Catcheside Court. (see news item).

To mark the retirement of Professor **WS Chow** (PS), colleagues gathered in Catcheside court. Fred came to RSBS from CSIRO in 1996 to join the Photobioenergetics Group. He was group leader from 2002-2006. Over his career he has published over 200 papers on biophysics of photosynthesis and was identified as a highly cited researcher in Plant and Animal Sciences by Thomson ISI in 2005. He plans to remain actively researching and is associated with the ARC CoE for Translational Photosynthesis. - **John Evans** (PS).

PAPERS ACCEPTED

Bentham, A, Burdett, H, Anderson, PA, Williams, SJ, Kobe, B, Animal NLRs provide structural insights into plant NLR function, *Annals of Botany*.

Bröer, A, Rahimi, F, Bröer, S, Deletion of amino acid transporter ASCT2 (SLC1A5) reveals an essential role for transporters SNAT1 (SLC38A1) and SNAT2 (SLC38A2) to sustain glutaminolysis in cancer cells, *Journal of Biological Chemistry*.

Cain, KE, Langmore, NE, Female song and aggression show contrasting relationships to reproductive success when habitat

quality differs. *Behavioral Ecology and Sociobiology*.

Cranston, PS, Martin, J, Mulder, M, Spies, M, Clarification of *Einfeldia* Kieffer 1922 (Diptera: Chironimidae) with *E. australiensis* (Freeman 1961), comb. nov., based on immature stages, *ZooTaxa*.

Fromhage, L, Jennions, MD, Coevolution of parental investment and sexually selected traits drives sex role divergence, *Nature Communications*.

Fulton, CJ, Noble, MN, Radford, B, Gallen, C, Harasti, D, Microhabitat selectivity underpins regional indicators of fish abundance and replenishment, *Ecological Indicators*.

Harper, AB, Cox, PM, Friedlingstein, P, ... Atkin, OK, *et al.*, Improved representation of plant functional types and physiology in the Joint UK Land Environment Simulator (JULES v4.2) using plant trait information, *Geoscientific Model Development*.

Hua, X, The impact of seasonality on niche breadth, distribution range, and species richness: a theoretical exploration of Janzen's hypothesis, *Proceedings of the Royal Society B*.

Lejeune, L, van de Pol, M, Cockburn, A, Louter, M, Brouwer, L, Male and female helper effects on maternal investment and adult survival in red-winged fairy-wrens, *Behavioral Ecology*.

Nguyen, HT, Meir, P, Wolfe, J, Mencuccini, M, Ball, MC, Plumbing the depths: extracellular water storage in specialized leaf structures and its functional expression in a three-domain pressure-volume relationship. *Plant, Cell and Environment*.

Parker, TH, Nakagawa, S, Gurevitch, J, ... Head ML...*et al.*, Promoting transparency in evolutionary biology and ecology, *Ecology Letters*.

Potvin, DA, Curcio, MT, Swaddle, JP, MacDougall-Shackleton, SA, Experimental exposure to urban and pink noise affects brain development and song learning in zebra finches (*Taenopygia guttata*), *PeerJ*.

Rodríguez-Calcerrada, J, Li, M, López, R, Atkin, OK, *et al.*, Drought-induced shoot dieback starts at massive root xylem embolism and variable depletion of non-structural carbohydrates in seedlings of two tree species, *New Phytologist*.

Schreiber, K, Bentham, A, Williams, SJ, Kobe, B, Staskawicz, B, Multiple domain associations within the *Arabidopsis* immune receptor RPP1 regulate the activation of programmed cell death, *PLoS Pathogens*.

Tang, SS, Carlin, NI, Talukder, KA, Cam, PD, Verma, NK, *Shigella flexneri* serotype 1c derived from serotype 1a by acquisition of *gtrIC* gene cluster via a bacteriophage, *BMC Microbiology*.

Thackeray, SJ, Henrys, PA, Hemming, D, ...Kruuk, LEB, *et al.*, Phenological sensitivity to climate varies across taxa and trophic levels. *Nature*.

Venn, SE, Pickering, CM, Butler, SA, Letten, A, Using a model based fourth-corner analysis to explain vegetation change following an extraordinary fire disturbance, *Oecologica*.

Wernberg, T, Bennett, S, Babcock, RC, ... Fulton, CJ, *et al.*, Climate-driven regime shift of a temperate marine ecosystem, *Science*.

Wilson, SK, Depczynski, M, Fulton, CJ, Holmes, TH, Radford, B, Tinkler, P, Influence of nursery microhabitats on the future abundance of a coral reef fish, *Proceedings of the Royal Society of London B*.

NOTICES

Legislation requires the Globally Harmonised System (GHS) for chemical categorisation to be implemented by the end of 2016, thus the RSB Single Chemical Risk Assessment form has been updated. GHS categories now replace Chemwatch Hazard ratings - note that this reverses the order of hazard (1 is the highest hazard level in the GHS). Contact your STO or RSB Compliance for more information. - **Jeremy Weinman**.

Last Happy Hour in Catcheside Court, for now



Eli Thynne (Solomon group, PS) and Duncan Fitzpatrick (Price group, PS) at the last RSB Happy Hour in Catcheside Court before the RN Robertson building decanting in early August (Image Graham Hicks).