



NEWS

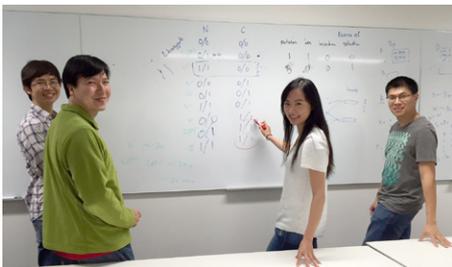
Undergraduate enrolments increase

Undergraduate student enrolments for semester one are up more than 13% from last year. The teaching lab is at capacity in Biology 1: Evolution, Ecology and Genetics, convened by Andras Keszei, where lab staff have managed to accommodate 435 students, 37 more than last year (see photo). Numbers in the 3rd year course, Advances in Medical and Plant Biochemistry, convened by Peter Solomon, have more than doubled, from 30 in 2015 to 72 in 2016, and enrolments in Invertebrate Zoology (Dave Rowell) and Plants: Genes to Environment (Michael Djordjevic) have almost doubled in number. 'It's great to see so many students choosing to study biology. Special thanks to the teaching lab staff, who are working flat out to make sure the labs run smoothly', said Dave Rowell, head of Biology Teaching and Learning.



Teaching lab staff in the busy lab: Fiona Roxburgh, Peta Moisis, Yiming Li, Melanie Trinick and Tammy Gomersall (photo: Sharyn Wragg) (see News item).

Ecogenomics and Bioinformatics Lab (EBL)



Qinglong Zeng, Thomas Wong, Yuantong Ding (Rodrigo group) and Steven Wu, Rodrigo group visitor, discuss work in the EBL (photo: Mel Norris) (see News item).

The EBL, located on the ground floor of the RN Robertson Building (46), at the rear of Catcheside Court, is now open for business.

The EBL supports a joint ANU-CSIRO initiative to promote the training and stronger collaboration between genomicists and computational biologists across environmental and agricultural sciences, and is SIEF funded.

Genomics oversight will be through the Centre for Biodiversity Analysis (CBA), directed by Craig Moritz, and the bioinformatics component will be run through the ANU-CSIRO Centre for Genomics, Metabolomics and Bioinformatics, under the direction of Eric Stone, who will join RSB in June.

The Rodrigo group has already moved in to the new space, which includes offices, a wet lab, student and visitor workspaces and two discussion rooms. The wet lab will be managed by Niccy Aitken, and Marcin Adamski will co-ordinate bioinformatics support. The EBL will be formally opened in due course.

New HDR students

Eighteen new PhD students join RSB in Semester 1, 2016. The students (and supervisors) are:

- Annamaria De Rosa (John Evans, PS), Ariel Ivanovici (Michael Djordjevic, PS), Cameron Turner (Rob Magrath, EEG), Christiana McDonald-Spicer (Craig Moritz, EEG), Emmanuel Young (Spencer Whitney, PS), Gigi Wong (Tony Millar, PS), Hee-Jin Noh (Naomi Langmore, EEG), Kelly Chapman (Michael Djordjevic, PS), Kenneth Webster (Paul Cooper, EEG), Kimberley Hunnam (Chris Fulton, EEG), Kiran Javed (Stefan Broer, BSB), Lily Chen (Robert Furbank, PS), Michael Taleski (Michael Djordjevic, PS), Nghiem Nguyen (Dean Price, PS), Pamodha Somasiri (Naresh Verma, BSB), Pawan Parajuli (Naresh Verma, BSB), Sanduni Hapuarachchi (Giel van Dooren, BSB), Weiwen (Raymond) Wang (Sylvain Foret, EEG)

We also have two new MPhil students:

- Fitria Oktalira (Celeste Linde, EEG) Ojas Dixit (David Gordon, EEG).

Artworks on loan

Three artworks that normally hang in the Gould building (Bldg 116) are currently on loan to Canberra Museum and Gallery (CMAG), for a show on the natural history of the ACT, called 'Bush Capital'. They are



two botanical works by Betty Conabere, and a coloured lithograph of rakali (Hydromys chrystogaster) by John Gould (shown above). The show runs from 12 March - 26 June 2016.

AWARDS

Masters student Xiaojun (Holly) Yuan (Leyton group, BSB) won a student poster prize at the 41st Lorne conference on protein structure and function, in February. According to her supervisor, Denisse Leyton, these awards usually go to PhD students, making Holly's achievement even more laudable.

PhD student Diep Ganguly, (Pogson group, PS) was awarded the Best Paper prize for 2015 by the Australian Society of Plant

Group leader profile:

Graham Farquhar (PS)

Group research focus



We are mainly interested in photosynthesis and water use, and how Nature has organised them at different scales from

the chloroplast to the leaf to the plant to the canopy and in some cases to the globe. We are also interested in how different species make optimal (or sub-optimal) choices for gas exchange properties, depending on stochastic properties of the environment and on their life strategies – we need to understand the molecular bases for the latter. Also, how such features are affected by climate change and increasing CO₂ levels.

Teaching and research achievements

We have developed models of photosynthesis and carbon isotope discrimination and optimal stomatal behaviour, and these have been applied in agricultural, meteorological and biogeochemical settings. Prime Minister's Prize for Science 2015.

What is your teaching focus?

My lectures in BIOL 3125 examine climate change, particularly aspects affecting plant water relations, and how the plant physiological properties of the land surface intersect.

What else do you have underway?

We're keen on understanding the compromises the carboxylating enzyme Rubisco makes between reaction velocities at different substrate levels. We want to know the genetic bases for differences in response of growth rate among Eucalyptus seedlings to increased CO₂ levels. We want to know how much stress leaves can endure while still maintaining saturating humidity in the leaves, and when this breaks down and why. We are interested in the plant physiological modulation of the isotopic composition of global atmospheric oxygen and carbon dioxide.

This newsletter is archived at biology.anu.edu.au/news-events/newsletter.

Layout: Mel Norris

Editing: Stefan Bröer & Mel Norris

Scientists. The prize goes to a paper published by an early career scientist in Functional Plant Biology. Diep's paper was entitled 'Genetic suppression of plant development and chloroplast biogenesis via the Snowy Cotyledon 3 and Phytochrome B pathways'.

GRANTS

Sylvain Foret (EEG) has been awarded a Young Investigators grant by the Human Frontier Science Project, along with collaborators Adam Reitzel in the USA and Sebastian Fraune in Germany for their project, entitled 'Beyond the genome: the role of microbial communities and epigenetic regulations in adaptation'. Their application was ranked third out of more than 1,000 applicants.

IN THE MEDIA

Chris Fulton (EEG) and **Mae Noble** (formerly EEG, now at Fenner)



grabbed the front page of The Canberra Times and a Pope cartoon (see image) for their research on the implications of habitat loss for the threatened Murray crayfish. The

story also appeared in the Sydney Morning Herald, on ABC News Online, ABC Radio (666, NSW & Victoria) and international websites.

Nick Matzke's paper about the evolution of antievolution policies in the USA has attracted a lot of media attention. Nick's (Moritz group, EEG) work was reported in the Los Angeles Times, Washington Post and Le Monde, The Daily Beast, and Scientific American podcasts among many others. The full list of media and blog coverage is here.

Nick has also written an article about his research for the April 2016 issue of Australasian Science magazine.

A paper by **Owen Atkin** (PS) and colleagues, published in PNAS, was selected for the highlights section. The research, about global similarities in plant responses to temperature changes, was reported all over the world, including Singapore, Belgium, Brazil, USA and Australia.

A paper by **Peter Crisp, Diep Ganguly, Steven Eichten, Justin Borevitz and Barry Pogson** was reported in an article in New Scientist, entitled 'Plants have evolved forgetfulness to wipe out memory of stress'. The research also appeared on SBS online, and the Daily Mail.

Dominique Roche was interviewed on CBC/Radio Canada about a paper with **Loeske Kruuk** in PLOS Biology. The interview, in French, is here.

A paper by **Amanda Edworthy** (Langmore group, EEG) and Sam Case about 'mining' behaviour in forty-spotted pardalotes has been reported in New Scientist.

An e-textbook created by **Gonzalo Estavillo** (Pogson group, PS), **Uli Mathesius** (PS), **Michael Djordjevic** (PS) and **Adrienne Nicotra** (EEG) was mentioned in an article in The Conversation.

NEW APPOINTMENTS

Terri Richardson joins the RSB administration team as **Allen Rodrigo's** Executive Assistant.



Originally from Sydney, she has been in Canberra for 16 years. Her first job in Canberra was a short contract at the ANU, and since then she has

worked at non-profits, including the Heart Foundation, Alzheimer's Australia and Greening Australia. She's a passionate bird lover, and has done a zookeeper course at Taronga Zoo, in Sydney, as well as working in the music and film industries. Terri works 9.30am-2.30pm, five days a week and can be found in Room 124, Building 46 (Robertson).

Shannon McMullen replaces Trent



Orchard as building co-ordinator for the RN Robertson Building. All Trent's contact numbers and addresses have been redirected to Shannon.

Thomas Wong joins the Rodrigo group as a postdoc. Thomas most recently worked at CSIRO, and works on phylogenomic methodologies.



Niccy Aitken has been appointed manager of the Ecogenomics and Bioinformatics Lab (EBL) wet lab. Niccy was formerly TO in the Nicotra group (EEG).



WELCOME



Simon Williams has joined the Solomon group (PS). He is currently here as a divisional visitor, and will begin his DECRA fellowship in early April.

Shahen Shah joins the Atkin group (PS) with an Endeavour Award Research Fellowship, Shahen, from the Agricultural University of Pakistan, Peshawar, will collaborate on crop-related projects.



PhD student **Sanduni Hapuarachchi** joins the van Dooren group (BSB), examining solute transporter proteins in a range of apicomplexan parasites. She will be supervised by **Kiaran Kirk, Adele Lehane** and **Giel**.



PhD student **Kiran Javed** joins the Broer group (BSB) this month. She studied microbiology and molecular genetics at the University of Punjab, Lahore, and will develop biomarkers for protein digestions and study how protein nutrition could be used to treat type 2 diabetes.



The Langmore group (EEG) has a new PhD student - **Hee-Jin Noh**. Hee-Jin will be working on coevolution and speciation in Australian bronze-cuckoos.



Pamodha Somasiri begins his PhD in the Verma group (BSB). He will be investigating the role of novel bacteriophage genes in *Shigella* virulence, and studying the host/pathogen interaction using the *C. elegans* model for Shigellosis.



FAREWELL

Kristal Cain (Langmore group, EEG) is leaving RSB to take up a lectureship at the University of Auckland, New Zealand.

PAPERS ACCEPTED

Bahar, O, Mordukhovich, G, Luu, DD, Schwessinger, B, et al., Bacterial outer membrane vesicles induce plant immune responses, *Molecular Plant-Microbe Interactions*.

Booksmythe, I, Head, ML, Keogh, JS, Jennions, MD, Fitness consequences of artificial selection on relative male genital size, *Nature Communications*.

Carter, M, Head, ML, Moore, AJ, Royle,

NJ, Behavioral plasticity and GxE of reproductive tactics in *Nicrophorus vespilloides* burying beetles, *Evolution*.

Case, SB, Edworthy, AB, First report of 'mining' as a feeding behaviour among Australian manna-feeding birds, *Ibis*.

Cranston, PS, *Conochironomus* (Diptera: Chironomidae) in Asia: New and redescribed species and vouchering issues, *Zootaxa*.

Day, E, Hua, X, Bromham, L, Is specialization an evolutionary dead-end? Testing for differences in speciation, extinction and trait transition rates across diverse phylogenies of specialists and generalists, *Journal of Evolutionary Biology*.

Crisp, PA, Ganguly, D, Eichten, SR, Borevitz, JO, and Pogson, BJ, Reconsidering plant memory: Intersections between stress recovery, RNA turnover, and epigenetics, *Science Advances* 2.

Every, SL, Pethybridge, HR, Crook, DA, Kyne, PM, Fulton, CJ, Comparison of fin and muscle tissues for analysis of signature fatty acids in tropical euryhaline sharks, *Journal of Experimental Marine Biology & Ecology*.

Goatley, CHR, Bonaldo, RM, Fox, RJ, Belwood, DR, Sediments and herbivory as sensitive indicators of coral reef destruction, *Ecology and Society*.

Hayes, CL, Callander, S, Booksmythe, I, Jennions, MD, Backwell, PRY, Mate choice and the operational sex ratio: an experimental test with robotic crabs, *Journal of Evolutionary Biology*.

Heskel, MA, O'Sullivan, OS, ..Weerasinghe, KWLK, Penillard, A, Xiang, J, Egerton, JJG, Creek, D, Bloomfield, KJ, ..Meir, P, Atkin, OK, et al., Convergence in the temperature response of leaf respiration across biomes and plant functional types, *Proceedings of the National Academy of Sciences USA*.

Hilder, TA, Gaston, N, Interaction of Boron Nitride Nanosheets with Model Cell Membranes, *ChemPhysChem*.

Hopwood, PE, Mazué, GPF, Carter, MJ, Head, ML, Moore, AJ, Royle, NJ, Do female *Nicrophorus vespilloides* reduce direct costs by choosing males that mate less frequently? *Biology Letters*.

Kondo, T, Gullan, PJ, Cook, LG, A review of the genus *Capulinia* Signoret (Hemiptera: Coccoidea: Eriococcidae) with description of two new species, *Zootaxa*.

Kondo, T, Gullan, PJ, et al., First records of the iceryine scale insects *Crypticerya brasiliensis* (Hempel) and *Crypticerya genistae* (Hempel) (Hemiptera: Monophlebidae) for Colombia, *Insecta Mundi*.

McLean, N, Lawson, C, Leech, D, van de Pol, M, Predicting when climate-driven phenotypic change affects population dynamics, *Ecology Letters*.

Meng, F, Luo, Q, Wang, Q, Qi, Z, Zhang, X, Xu, F, Chow, WS, Sun, G, Physiological and proteomic responses to salt stress in chloroplasts of diploid and tetraploid black locust (*Robinia pseudoacacia* L.), *Scientific Reports*.

Noble, MM, Fulton, CJ, Habitat specialization and sensitivity to change in a threatened crayfish occupying upland streams, *Aquatic Conservation: Marine & Freshwater Ecosystems*.

Raderschall, CA, Narendra, A, Zeil, J, Head roll stabilisation in the nocturnal bull ant *Myrmecia pyriformis*: Implications for visual navigation, *Journal of Experimental Biology*

Sack, L, Ball, MC, Brodersen, C, et al., Plant hydraulic transport as a central hub integrating plant and ecosystem function: meeting report for 'Emerging Frontiers in Plant Hydraulics' (Washington, DC, May 2015), *Plant, Cell and Environment*.

Vega Trejo, R, Head, ML, Jennions MD, Inbreeding depression does not increase after exposure to a stressful environment: a test using compensatory growth, *BMC Evolutionary Biology*.

Wilson, LJ, Fulton, CJ, Joyce, KE, et al., Climate-driven changes to ocean circulation and their inferred impacts on marine dispersal patterns, *Global Ecology & Biogeography*.

Yi, X-P, Zhang, Y-L, Yao, H-S, Luo, H-H, Gou, L, Chow, WS and Zhang, W-F, Different strategies of acclimation of photosynthesis, electron transport and antioxidative activity in leaves of two cotton species to water deficit, *Functional Plant Biology*.