



NEWS

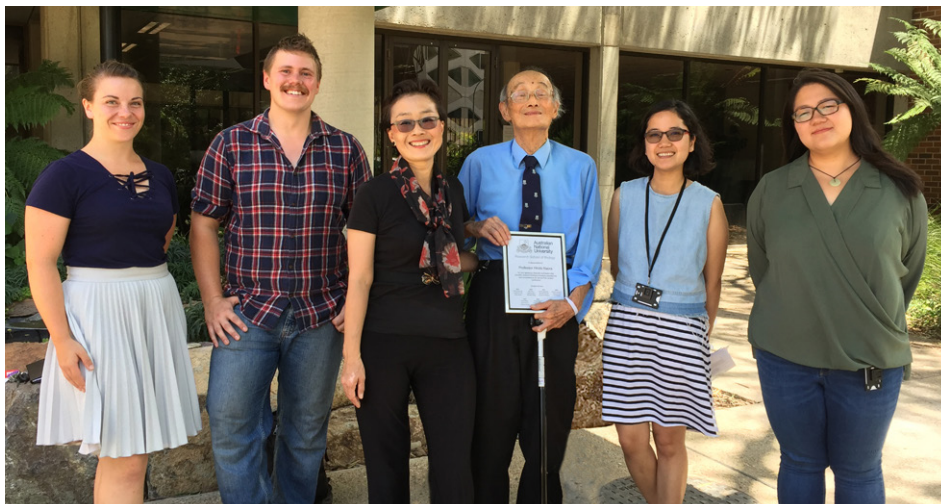
Hiroto Naora visit

Professor **Hiroto Naora**, one of the founding faculty members of RSBS, visited the refurbished RN Robertson building on December 28 last year. **Allen Rodrigo** (RSB Director), **Spencer Whitney** (PS) and **Mel Norris** (RSB Coms) showed him over the new building, and student winners of the Hiroto Naora award, **Ariel Ivanovici** (Djordjevic group, PS), **Tom Rowell** (Magrath group, E&E), **Flor Danila** (von Caemmerer group, PS) and **Holly Yuan** (Leyton group, BSB) presented him with a certificate listing the names of all the award winners. (See main photo).

Outreach news

Once again RSB hosted the Australian Biology Olympiad Summer School, an intensive two weeks of non-stop biology, including a visit to Kioloa campus. Thanks to **Juliey Beckman** (BTLC), Deputy Director of the Biology Olympiad program, and the teaching lab team, especially **Melanie Trinick** (BTLC) and **Peta Moisis** (BTLC), who volunteered their time as chief cooks and bottle washers for the weekend trip to Kioloa, as well as providing tech support for the two weeks. Thanks also to guest presenters **Chris Fulton** (E&E) and **Stefan Bröer** (BSB), **Alisha Duncan** (Furbank group, PS), **Spencer Whitney** (PS) and the staff of the CSIRO Australian National Insect Collection for making the program such a success.

Andras Keszei (BTLC) and the BTLC teaching lab team ran two DNA profiling sessions for the National Youth Science Forum in January, and RSB provided space for two other sessions run by the Canberra Nature Lab on scientific drawing. **Damien Esquerre** (Keogh group, E&E) ran two sessions for the NYSF students, where researchers and PhD students from E&E talked about their research, science, and what they love about what they do, to inspire the students. Speakers were **Jessie Au** (Foley group), **Damien Esquerre** (Keogh group), **Jessica Fenker** (Moritz group), **Tom Rowell** (Magrath group), **Carlos Pavon** (Keogh group), **Anna MacDonald** (Moritz group), **Alex Skeels** (Cardillo group), **Constanza Leon** from Fenner, and **Peter Kenny**, a visiting PhD student from University College London.



Current and former winners of the Hiroto Naora award came in to meet Professor Hiroto Naora, when he visited the refurbished RN Robertson building during the University break with his daughter Honami Naora, an RSB alumna now Associate Professor at the MD Anderson Cancer Centre in Texas. From left. Ariel Ivanovici (Djordjevic group, PS), Tom Rowell (Magrath group, E&E), Honami Naora, Hiroto Naora, Flor Danila (von Caemmerer group, PS) and Holly Yuan (Leyton group, BSB). Image Mel Norris (See: News Item).

Alisha Duncan (Furbank group, PS) ran a workshop for 70 science teachers at the the STEM X Academy, entitled 'Measuring Photosynthesis: thinking outside the pot'. Thanks to volunteer demonstrators **Soumi Bala** (Evans and von Caemmerer groups, PS), **Spencer Whitney** (PS), **Julius Sagun** (Chow group, PS), **Wil Hee** (Price group, PS) and **Victoria Allen** (Farquhar group, PS), along with teaching lab expert technicians **Tammy Gomersall**, **Yiming Li** and **Peta Moisis**.

Awards

Kalya Subasinghe (Gardner group, E&E) has been awarded a CSIRO top-up scholarship for her PhD project on avian morphology and climate change.



Linden Muellner-Wong (van Dooren group, BSB) was awarded the 2017 RSB Director's Prize in Honours In January (see image above). She will be working as an RA at Monash this year, but hopes to return to RSB in 2019 to begin a PhD.

IN THE MEDIA

Research that investigated how a species

of eucalyptus survived extreme heatwaves, published by **Owen Atkin** (PS) and colleagues at Western Sydney University, was reported in *The Guardian*, *The Australian* (paywall, no link), *The South China morning news* and other outlets, including the blog JoNova.

Graham Farquhar (PS) was interviewed on ABC Radio Canberra this month, about his work, climate change, and being recognised during this years Australian of the Year awards.

WELCOME



Welcome to **Juan Jose Nogueira Perez (Juanjo)** a postdoc who is joining the school from the University of Vienna. He will be working in the Corry group (BSB), conducting computational simulations of membrane transport proteins.



The Jennions and Head groups (E&E) welcome **Milan Vrtilek**, who joins RSB as an Endeavour post-doc, from the Czech Academy of Science.



Upama Aich, formerly of the University of Dhaka, Bangladesh, began her PhD at RSB in January, supervised by Michael Jennions and Megan Head (E&E).

Pawel Rek (Adam Mickiewicz University, Poland; Magrath group, E&E) is back for a

DECRA Fellow profile: Dan Rosauer (Moritz group, E&E)



Research background

I worked in the federal Environment Department for many years before taking the plunge into a PhD at UNSW, based at the National Herbarium on Black Mountain. After submitting my thesis on spatial patterns of phylogenetic diversity in Australia and new methods to measure them, I moved to the US in 2010, for a 2 year postdoc fellowship at Yale focussing on patterns of global mammal diversity. I was then lucky to snare a postdoctoral position at ANU with Craig Moritz, returning to Canberra in 2012 to work on patterns and causes of lizard diversity and endemism in Australia's monsoonal tropics. In mid 2016 I started my DECRA project.

Current Research Interests

I am fascinated by the incredibly uneven spatial distribution of biological diversity, at all levels, particularly centres of phylogenetic endemism. This leads to two questions. First, how can phylogenetic information contribute to better conservation decisions? We recently published a conservation assessment for lizards of the Kimberley which identifies priority areas for conservation directly from evolutionary units, bypassing the uncertain and rapidly changing taxonomy. I want to help make phylogenetic approaches to conservation accessible, practical and well-used by on-ground conservation managers. The more fundamental question is why centres of endemism are found where they are? Especially, how do particular types of landscape generate endemism? I am tackling this through various approaches including process models, where dispersal, niche evolution and isolation are simulated through evolutionary time.

What do you enjoy most about research?

I really like the mix of collaboration and focussed solo work in science. It can be incredibly entrepreneurial – building teams and working together to promote an idea, attract funding, research and write. But this is balanced by the quiet time reading, writing, coding.

couple of months to continue his project on magpie-lark duetting. He uses a combination of robotic birds and acoustic playback to examine the role of visual and vocal signals during communication.



Two new PhD students join the Lanfear group (E&E) this month. **Eleanor Beavan** (left) will be working on molecular evolution in plants and animals, and **Suha Naser** (below left) is going to be working on new statistical tests of model violation in phylogenetics.



Two PhD students join the Atkin group (PS) this month. **Andy Garcia** has an undergraduate degree from the University of Columbia in New York. For his PhD project, Andy will quantify



organ-and whole-plant level respiration in a wide range of wheat genotypes known to have differing rates of leaf respiratory oxygen consumption. His project is funded by a GRDC grant to the ARC Centre of Excellence in Plant Energy Biology.

Brad Posch did Honours in the Atkin lab



last year, with his project investigating genotypic variation in photosynthetic heat tolerance of wheat. For his PhD - funded in part by a GRDC studentship - Brad will investigate mechanisms responsible for variation in thermal acclimation and heat tolerance of respiratory metabolism in wheat lines known to differ in heat tolerance.

Tanuka Sen joins the Verma group



(BSB) this month as a PhD student. She has a Masters in Microbiology from the University of Delhi and will be working on the functional genomics and pathogenesis of *Shigella flexneri*.

The Fulton group (E&E) welcomes new PhD



student **David Ellis**, who will be exploring how fisheries productivity is linked to habitat quality within coastal marine ecosystems.

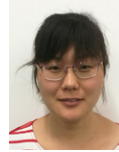
Welcome to **Ayman Hemasa** who is starting his PhD in the Saliba group (BSB).



Ayman will be enrolled in the ANU-Humboldt University International Research Training Program. He will be studying riboflavin metabolism in red blood cells infected with malaria parasites. Ayman has a Masters in

Pharmaceutical Science from the University of Tasmania and is moving to Canberra with his young family.

The Atkin group (PS) welcomes **Deping Zhai**, a CSC PhD scholar from the East



China Normal University in Shanghai. Deping will spend the next 18 months working on root and leaf respiration before returning to Shanghai to complete her PhD.

Cibelly Goulart has joined the van Dooren group (BSB) as a visiting postdoctoral



fellow from Western Sydney University. Cibelly hails from Brazil, and her research is funded by an NHMRC grant that aims to generate a transmission blocking vaccine to prevent toxoplasmosis.

Suresh Yerasu from the Division of Crop Improvement, ICAR-Indian



Institute of Vegetable Research, Varanasi, India, joined the Jones group (PS) on 15 January on a nine-month Indo-Australian Career Boosting Gold Fellowship.

NEW APPOINTMENTS

The ANU node of the Australian Plant Phenomics Facility (APPF) has three new appointments:

Penny Burrell joins the APPF team as



technical officer taking over Prue Kell's role. Penny will work part-time Thursday and Friday, balancing the role with being a part-time teacher and full-time parent and will work closely with new senior technical officer Richard Poiré.

Richard Poiré, the new APPF Senior



Technical Officer, is an ecophysiological (PhD at FZJ Germany) who became an expert in various plant phenotyping platforms while working at CSIRO (High

Resolution Plant Phenomics Centre) and ANU (JCSMR) as a divisional visitor in John Evans' group. He will be working under the direction of Tim Brown using the latest lighting and imaging technologies to provide novel plant growth and phenotyping capabilities at RSB.

Ellen Levingston is the new APPF Data



Administrator. Her role includes data architecture development, documentation and novel data visualisation techniques. We are developing point clouds, both

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individually and as time series, which we are exploring in virtual reality. This also involves spatial analysis and exploration of tree identification algorithms. - **Aly Weirman**, APPF Manager.

FAREWELL

Pip Wilson has been part of the Pogson and Borevitz groups (PS) as a postdoc since 2014 and was associated with RSB/BamBi since her time as an undergraduate student. She has taken up a job with the GRDC and we wish her the best. - **Derek Collinge** (Pogson group, PS).

Elena Martin Avila (Whitney group, PS) has left RSB to take up a position doing GM regulations at the Office of the Gene Technology Regulator.

Brani Igic (Magrath group, E&E) has taken up a position of Trainee Biostatistician in the Centre for Epidemiology and Evidence in Sydney, with the NSW Ministry of Health. The job entails undertaking biostatistics research projects and completing a Master of Biostatistics at the University of Sydney.

PHDS SUBMITTED

Kristen Barratt (Arnell group, E&E) 'New aspects of Zic2-associated Holoprosencephaly'.

Adelaide Dennis (Kirk and Lehane group, BSB) 'PfATP4 and the biochemical signature of PfATP4-associated compounds'.

Diep Ganguly (Pogson group, PS) 'Training memory: investigating the intersection between plant stress signalling and DNA methylation'.

Ji-Fan (Sarah) Hsieh (Foley group, E&E) 'Molecular and chemical mechanisms of defence in Australian Myrtaceae against myrtle rust'.

Xin Hou (Pogson group, PS) 'Hunting for carotenoid-derived retrograde signals that regulate plastid development'.

Huw Ogilvie (Moritz group, E&E) 'Evaluating, accelerating and extending the multispecies coalescent model of evolution'.

Annisa Satyati (Nicotra group, E&E) 'A multi-scale exploration of the drivers and implications of germination strategy in Australian alpine plants'.

PHDS AWARDED

Sharon Every (Fulton group, E&E), 'Trophic ecology of riverine sharks in tropical northern Australia'.

Regina Vega Trejo (Jennions group, E&E) 'Inbreeding depression and a poor start in life'.

Lingling Zhu (Atkin group, PS) 'Thermal plasticity of leaf energy metabolism:

ecological, physiological and biochemical linkages'.

PAPERS ACCEPTED

Akbari A, Meragawi S, Martin S, Corry B, *et al*, Solvent transport behavior of shear aligned graphene oxide membranes and implications in organic solvent nanofiltration, *ACS Applied Materials & Interfaces*.

Bahar NHA, Hayes L, Scafaro A, Atkin OK, Evans JR, Mesophyll conductance does not contribute to greater photosynthetic rate per unit nitrogen in temperate compared to tropical evergreen wet-forest tree leaves, *New Phytologist*.

Bloomfield KJ, Cernusak LA, Eamus D, .. Egerton JJG, ... Zhu L, Atkin OK, *et al*, A continental-scale assessment of variability in leaf traits: within species, across sites and seasons, *Functional Ecology*.

Burden CJ, Wei, Y, Mutation in populations governed by a Galton–Watson branching process, *Theoretical Population Biology*.

Buyan A, Sun D, Corry B, Protonation state of inhibitors determines interaction sites within voltage-gated sodium channels, *Proceedings of the National Academy of Sciences of the USA*.

Corry B, Physical basis of specificity and delayed binding of a subtype selective sodium channel inhibitor, *Scientific Reports*.

Doughty CE, Goldsmith GR, Raab N, ... Meir P, *et al*, What controls variation in carbon use efficiency among Amazonian tropical forests? *Biotropica*.

Drake JE, Tjoelker MG, Varhammar A, ... Nicotra AB, Atkin OK, *et al*, Trees tolerate an extreme heatwave via sustained transpirational cooling and increased leaf thermal tolerance, *Global Change Biology*.

Eom J, Feisst V, Ranjard L, *et al*, Visualization and quantification of mesenchymal cell adipogenic differentiation potential with a lineage specific marker, *Journal of Visualized Experiments*.

Hall ML, Langmore NE (Eds), *Fitness Costs and Benefits of Female Song*, Frontiers Media SA.

Hua X, Bromham L, 'Fitness', in B Fath (ed), *Encyclopedia of Ecology*, 2nd Edition, Elsevier.

Hua X, Lanfear R, The influence of non-random species-sampling on macroevolutionary and macroecological inference from phylogenies, *Methods in Ecology and Evolution*.

Keighley MV, Heinsohn R, Langmore NE, Murphy SA, Penalba JV, Genomic

population structure supports vocal dialect boundaries in palm cockatoos (*Probosciger aterrimus*) and a refugial late-Quaternary distribution model, *Emu*.

Kutty AM, Wong WH, Musemann K, Meier R, Cranston PS, A phylogenomic analysis of Culicomorpha (Diptera) resolves the relationships among the eight constituent families, *Systematic Entomology*.

McDonald MC, Solomon PS, Just the surface: Advances in the discovery and characterization of necrotrophic wheat effectors, *Current Opinion in Microbiology*.

Medina I, Langmore NE, Commentary on 'Can hosts tolerate avian brood parasites? An appraisal of mechanisms', *Behavioral Ecology*.

Nottingham AT, Hicks LC, Ccahuana AJQ, Salinas N, Baath E, Meir P, Nutrient limitations to bacterial and fungal growth during cellulose decomposition in tropical forest soils, *Biology and Fertility of Soils*.

Ranjard L, Wong TKF, Külheim C, Rodrigo AG, Ragg NLC, Patel S, Dunphy BJ, Complete mitochondrial genome of the green-lipped mussel, *Perna canaliculus* (Mollusca:Mytiloidea), from long nanopore sequencing reads, *Mitochondrial DNA Part B: Resources*.

Rowland L, Almeida SS, Oliveira AAR, Metcalfe DB *et al*, Meir P, Shock and stabilisation following drought in tropical forest from 15 years of litterfall, *Journal of Ecology*.

Rowland L, da Costa ACL, Oliveira AAR, ... Meir P, *et al*, Drought stress and tree size determine stem CO₂ efflux in tropical forests, *New Phytologist*.

Sanfilippo P, Wen J, Lai EC, Landscape and evolution of tissue-specific alternative polyadenylation across *Drosophila* species, *Genome Biology*.

Tjhin ET, Spry C, Sewell AL, ... Howieson VM, Maier AG, ... Saliba KJ, *et al*, Mutations in the pantothenate kinase of *P. falciparum* confer diverse sensitivity profiles to antiplasmodial pantothenate analogues, *PLOS Pathogens*.

Yuan X, Johnson MD, Zhang J, ... Leyton DL, *et al*, Molecular basis for the folding of β -helical autotransporter passenger domains, *Nature Communications*.

Zhu L, Bloomfield KJ, Hocart CH, Egerton JJG, O'Sullivan OS, Penillard A, Weerasinghe KW, Atkin OK, Plasticity of photosynthetic heat tolerance in plants adapted to thermally contrasting biomes, *Plant, Cell & Environment*.