



NEWS

New Head of BSB announced



The Division of Biomedical Sciences and Biochemistry voted Kevin Saliba (BSB) as its new head, effective 1 July 2018, this month. Susan Howitt will remain as Head of BSB until 30 June 2018.

2018 Ralph Slatyer medal awarded to Rana Munns

Rana Munns, of CSIRO and UWA, was awarded the 2018 Ralph Slatyer medal at a ceremony in the Robertson Lecture Theatre this month, attended by ANU VC Brian Schmidt, UC VC Deep Saini, ANU College of Science Dean Kieran Kirk, RSB Director Allen Rodrigo, and many others. Rana is a plant physiologist, who identified genes that confer greater tolerance to salinity in soils, and led a research team that bred durum wheat lines that yielded 25% more grain on salty soils.

First Growth Capsule arrives at RSB



Justin Borevitz (PS and E&E) and Tim Brown (Director, APPF ANU node) with the first specially designed Growth Capsule, delivered this month. (Image Tim Brown)

The Borevitz group's (PS and E&E) first GRDC funded Growth Capsule has arrived in the RSB compound behind building 46. This new modular growth environment is a modified shipping container with two growth rooms lit with LED lights in low light, high light and multispectral configurations. Light, temperature and humidity can be adjusted according to experimental climate conditions with a high degree of accuracy. Three more growth capsules will arrive later in the year completing the GRDC Grain Phenomics Climate Facility. The APPF NCRIS facility will manage the running of the growth capsules and will be able to provide training to new users in running the growth rooms for experiments. Tours of the growth capsule will be held in the 3rd week of June - please



June Slatyer (left), representing the Slatyer family, presented the 2018 Ralph Slatyer medal to Rana Munns (right). (Image Sharyn Wragg) (See: News Item)

email Aly Weirman if you are interested in joining a tour. - Aly Weirman (Borevitz group, PS).

RSB Cultural Garden update

You may have noticed a small space in front of the RN Robertson Building has slowly been taking shape. This cultural garden has been developed for the Research School of Biology and the Fenner School of Environment and Society by the local Aboriginal community, including representatives from the Ngunawal, Ngunnawal and Ngambri groups, facilitated by ANU Heritage. The School Directors Allen Rodrigo and Saul Cunningham felt strongly that the refurbishment of the building and surrounds should include local Aboriginal perspectives, and proposed and workshopped the garden concepts with the community representatives.

A handmade and carved bench (pictured below) has just been installed, created by



Ngunnawal man Adrian Brown. The stunning carvings represent the natural and cultural features of this area including Sullivans Creek and Black Mountain. The plants in the garden

have been carefully selected to reflect food,

fibre and medicinal plants of the region and several extant native trees provide shade and texture to the space. The Garden will be completed (including an interpretive sign with plant labels and uses) by NAIDOC Week in early July, and we look forward to launching it as a unique teaching resource to act as a catalyst for future engagement with the local Aboriginal community. Stay tuned for more. - Amy Jarvis, ANU Heritage.

Indigenous Tuition Programme

The Tjabal Centre runs a tuition programme for indigenous students. They keep a list of potential tutors (Honours students, postgrads, postdocs and staff) who could give tutorial assistance in their field of study. To find out more, please visit the Indigenous Tuition Programme website.

Graham Farquhar (PS) gave his Kyoto prize lecture at Oxford University this month. It was livestreamed in the Slatyer Room, but if you missed it, you can watch it here.

New Biology Masters' room

RSB Masters students now have their own space to work, study, and socialize with each other. The new Biology Masters Student Room opened this month on the 3rd floor of the Robertson building, with a pizza lunch for all our Masters students. The room will provide a study/social space in a location where Masters students can integrate with other post-graduates, post-docs

DECRA profile: Simon Williams (Solomon group, PS)



Research background

I completed my PhD from Flinders University in late 2009, where I developed protein expression and biochemistry approaches to characterise the

activation mechanisms of plant disease resistance proteins. I subsequently moved to the University of Queensland, where I focused on using structural biology approaches to understand the interactions between plants and pathogenic microbes at a structural level. I spent ~6 years at UQ and was involved in some really exciting work in the plant-microbe interaction field, detailing some of the first protein structures of plant disease resistance proteins. In late 2015, I was awarded an ARC DECRA fellowship and joined the plant-microbe interaction theme in Plant Sciences, RSB in 2016.

Research interests

I consider myself a Plant Structural Immunologist. I use protein biochemistry and structural biology approaches to understand how plant pathogens cause disease and how the plant immune system prevents infection. I really want my research career to maintain a plant focus. This is likely a result of my background. I was raised on a dairy farm and I still have strong connections to farming and rural communities. I believe that the biggest impact one can have on human health is by studying plants and developing new technologies in agriculture. My current fellowship work aims to understand how fungal necrotrophic pathogens of wheat cause disease. Recently, we have solved some novel protein structures from both the fungus and the plant and these are directing our studies in wheat.

What do you enjoy most about research?

As a structural biologist we seek to understand what proteins look like, with the premise that this information will inform function. In much of my work we have no clues of the proteins function from the protein sequence. Subsequently, when you resolve an unknown structure that has not been seen before it is a really exciting moment! The challenge is to link the structural information to biological function and that often involves collaborations. I've been fortunate to work with people from all over the world with different research expertise and cultural backgrounds. These collaborations not only help you answer more interesting and important biological questions they also allow you to grow as a person through the people you meet and work with.

and research lab supervisors. Currently, facilities include hot-desks, group tables and white boards, wifi, printer/photocopier, a large TV for presentations and a lounge space. There are also two offices where **Rachael Remington** (BSc Masters Convener) and **Camile Moray** (BSc Masters Academic Support Advisor) are now located. We recently practiced final research proposal presentations (BIOL8700) on the large TV screen in the front of the room, where students received feedback not only from their classmates, but also from students who were using the room during the presentations.

The ANU Biological Masters program is growing rapidly and we currently have about 60 students at RSB who are primarily international students. Please stop by the room and introduce yourself to the Masters students, as many who are using this room are from the new cohort. -

Rachael Remington (BTLC).



RSB Masters students enjoy pizza at the grand opening of their new room. Image Sharyn Wragg..

Outreach News

The **BTLC lab team**, **Giel van Dooren** (BSB) and **Julie Beckman** (BTLC) provided outreach practical sessions for year 12 students from St Mary Mackillop College, and Burgmann Anglican School, both in the ACT.

Estee Tee (Pogson group, PS) joined other mentors to talk to students from Calwell High School and Lanyon High School as part of the Smith Family and Inspiring Australia STEM Post School Option Speed Mentoring event this month.

Awards

Loeske Kruuk (E&E) has won the European Society for Evolutionary Biology President's Award. The prize recognises outstanding contributions to evolutionary biology by a mid-career scientist, and is awarded once every six years. Loeske will receive the award at the Joint Congress of Evolutionary Biology to be held at Montpellier, France, in August.

Both **Alyssa Weinstein** and **Thomas Semple** from the Peakall group (E&E) have recently been awarded a Student Travel Grant under the Australian Biological Resources Study (ABRS) National Taxonomy Research Grant Programme to

attend a relevant international conference. Alyssa has also received a Student Travel Award from the International Society of Chemical Ecology.

Jacinta Watkins (Pogson group, PS) received a Crawford Fund scholarship travel award to attend the IRRI Rice: Research to Production Course in 2018, in the Philippines.

Erin Andrew (Fahrer group, BSB) has been awarded a Vice-Chancellor's HDR Travel Grant.

IN THE MEDIA

Bob Furbank (PS) was interviewed on ABC TV and radio stations this month, talking about recent research showing that rice grown in high CO₂ environments may be less nutritious. Read the ABC Online article [here](#).

WELCOME

Julie Leroux started her PhD in the Pogson group (PS) under the supervision of **Ryan McQuinn**. She will work on

the biosynthesis pathway of an uncharacterised apocarotenoid signaling molecule (ACS1), which appears to control aspects of leaf and flower development, and joins us from the CoE in Plant Energy Biology in Perth, where she worked for over 3 years as research assistant with Joshua Mylne on new modes of action from the plant-malaria connection.



Adam Reddix has started as a postdoc in the Borevitz group (PS and E&E) working on quantitative genetics and Single Cell RNA sequencing and joins us from the University of Queensland.



FAREWELL

Sharon Satlabanis has left RSB Stores to take up a position as Purchasing Officer at the JCSMR.

PHDS SUBMITTED

Qi Cheng (Broer group, BSB) 'Identification of novel inhibitors of the amino acid transporter B0AT1 (SLC6A19), a potential target to induce protein restriction and to treat Type 2 Diabetes'.
Alex Carey Hulyer (Callaghan group, BSB) 'Bioenergetic coupling in P-glycoprotein: determining the relative position, topography and role of transmembrane helices six and twelve'.

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

PHDS AWARDED

Marcin Falkowski (Zeil group, E&E) 'The spectral and temporal properties of fiddler crab photoreceptors in the context of predator avoidance'.

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'.

Nina McLean (Kruuk group, E&E) 'Life in a changing world: climate change impacts on common European birds'.

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

Pernelyn Torrena (Hardham group, PS) '*Phytophthora parasitica* and lupin (*Lupinus angustifolius*) interactions: changes in gene expression during infection and after phosphite treatment'.

John Rivers (Pogson group, PS) 'Volatile apocarotenoid biosynthesis and carotenoid catabolism in *Arabidopsis thaliana*'.

PAPERS ACCEPTED

Abadie C, Carroll A, Tcherkez G, Interactions between day respiration, photorespiration, and N and S assimilation in leaves, in Tcherkez G, Ghashghaie J (eds), *Plant Respiration: Metabolic Fluxes and Carbon Balance*, Springer International Publishing.

Aspinwall MJ, Blackman CJ, Resco de Dios V, Busch FA, *et al*, Photosynthesis and carbon allocation are both important predictors of genotype productivity responses to elevated CO₂ in *Eucalyptus camaldulensis*, *Tree Physiology*.

Atkin OK, Bahar NHA, Bloomfield KJ, *et al*, Leaf respiration in terrestrial biosphere models, in Tcherkez G, Ghashghaie J (eds), *Plant Respiration: Metabolic Fluxes and Carbon Balance*, Springer International Publishing.

Bahar NHA, Gauthier PPG, O'Sullivan OS, Brereton T, Evans JR, Atkin OK, Phosphorus deficiency alters scaling relationships between leaf gas exchange and associated traits in a wide range of contrasting *Eucalyptus* species, *Functional Plant Biology*.

Barbour MM, Ryazanova S, Tcherkez G, Respiratory effects on the carbon isotope discrimination near the compensation point, in Tcherkez G, Ghashghaie J (eds), *Plant Respiration: Metabolic Fluxes and Carbon*

Balance, Springer International Publishing.

Bathellier C, Badeck F-W, Ghashghaie J, Carbon isotope fractionation in plant respiration, in Tcherkez G, Ghashghaie J (eds), *Plant Respiration: Metabolic Fluxes and Carbon Balance*, Springer International Publishing.

Bokulich NA, Kaehler BD, ... Huttley GA, *et al*, Optimizing taxonomic classification of marker-gene amplicon sequences with QIIME 2's q2-feature-classifier plugin, *Microbiome*.

Edworthy AB, Langmore NE, Heinsohn R, Native fly parasites are the principal cause of nestling mortality in an endangered songbird, *Animal Conservation*.

Fox RJ, 'The ecology of parrotfishes on low coral cover reefs', in AS Hoey, RM Bonaldo (eds), *Biology of Parrotfishes*, CRC Press, Boca Raton.

Ganguly D, Crisp PA, Eichten SR, Pogson BJ, Maintenance of pre-existing DNA methylation states through recurring excess-light stress, *Plant, Cell and Environment*.

Gomez-Fernandez BJ, Garcia-Ruiz E, ... Whitney SM, *et al*, Directed -in vitro- evolution of Precambrian and extant Rubiscos, *Scientific Reports*.

Henshaw JM, Finding the one: optimal choosiness under sequential mate choice. *Journal of Evolutionary Biology*.

Hoey AS, Taylor BM, Hoey J, Fox RJ, 'Parrotfishes, are we still scraping the surface? Emerging topics and future research directions', in AS Hoey, RM Bonaldo (eds), *Biology of Parrotfishes*, CRC Press, Boca Raton.

Keighley M, Heinsohn R, Langmore NE, Murphy SA, Penalba J, Genomic population structure aligns with vocal dialects in palm cockatoos (*Probosciger aterrimus*); evidence for refugial late-Quaternary distribution? *Emu*.

Lu K-J, Danila FR, Cho Y, Faulkner C, Peeking at a plant through the holes in the wall – exploring the roles of plasmodesmata, *New Phytologist*.

Mallela J, Fox RJ, 'The role of parrotfishes in the destruction and construction of coral reefs', in AS Hoey, RM Bonaldo (eds), *Biology of Parrotfishes*, CRC Press, Boca Raton.

Meir P, Shenkin A, *et al*, Plant structure-function relationships and woody tissue

respiration: upscaling to forests from laser-derived measurements, in Tcherkez G, Ghashghaie J (eds), *Plant Respiration: Metabolic Fluxes and Carbon Balance*, Springer International Publishing.

Noh H, Gloag R, Langmore NE, True recognition of nestlings by hosts selects for mimetic cuckoo chicks, *Proceedings of the Royal Society B: Biological Sciences*.

Shimono H, Kondo M, Evans JR, Internal transport of CO₂ from the root-zone to plant shoot is pH dependent, *Physiologia Plantarum*.

Simbaqueba J, Catanzariti A-M, Carolina González C, Jones DA, Evidence for horizontal gene transfer and separation of effector recognition from effector function revealed by analysis of effector genes shared between cape-gooseberry- and tomato-infecting formae speciales of *Fusarium oxysporum*, *Molecular Plant Pathology*.

Supple MA, Bragg JG, ... Nicotra AB, ... Widdup A, Aitken NC, Borevitz JO, *et al*, Landscape genomic prediction for restoration of a Eucalyptus foundation species under climate change, *eLife*.

Tcherkez G, Respiratory metabolism in CAM plants, in Tcherkez G, Ghashghaie J (eds), *Plant Respiration: Metabolic Fluxes and Carbon Balance*, Springer International Publishing.

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Togashi HF, Prentice IC, Atkin OK, ... Bloomfield KJ, *et al*, Thermal acclimation of leaf photosynthetic traits in an evergreen woodland, consistent with the co-ordination hypothesis, *Biogeosciences*.

Vega Trejo R, Kruuk LEB, Jennions MD, Head ML, What happens to offspring when parents are inbred, old or had a poor start in life? Evidence for sex-specific parental effects, *Journal of Evolutionary Biology*.

Zajitschek SRK, Dowling D, Head ML, *et al*, Transgenerational effects of maternal sexual interactions in seed beetles, *Heredity*.