

Australian National University

Research School of Biology Newsletter

Issue 135 | March 2022

Welcome

We welcome back **Kai Chan** (PS) who has just returned to RSB after three years of research at the VIB in Gent



(Belgium), at the Institute of Plant Systems Biology. Kai received a FWO fellowship in Gent to work on organelle signalling. Kai is taking up a DECRA Fellowship and is starting his continuing position as a new group leader in Plant Sciences. He

will be building on his work in organelle signalling and expand this on how organelle signalling is involved in C4 photosynthesis.

Welcome back also to Su Yin Phua (Chan Group, PS),

who spent the last three years at the VIB in Gent focussing on projects on transcriptional regulation in plants and on auxin signalling in photorespiration. Su Yin has started her position as a Technical Officer in the Chan lab and will be working on a number of projects related to organelle signalling.



We are very happy to welcome them back to RSB.

News



After two years of lockdowns and periods of working from home, RSB held a lunch to celebrate International Women's Day on March 8 with women in our School. Colleagues had a catch up with old friends and new faces, and relaxed. Good to be back!

And our monthly School morning teas have recommenced and thanks to BSB for hosting the first morning tea, for what seemed a very long time between coffee and cake.

You may have noticed photographs in Catcheside Court in the RN Robertson Building. This exhibition is part of the 75 Years of the ANU celebrations and showcases incredible photographs of University buildings and the campus across the last 75 years.

Congratulations



Congratulations to Alexander (Sasha) Mikheyev (E&E) for being successful in his ARC Linkage Project 21 application for Conservation genomics of a critically endangered insect.

And congratulations to **Justin Borevitz** (PS) named as a CI on a successful ARC Linkage Project 21 application for *Embedded emissions accounting: frameworks for trade in a net-zero world.*



The team at ARC Centre of Excellence for Translational Photosynthesis, led by **Florence Danila** and **Susanne von Caemmerer** (PS) recently had their suberin paper featured in Microscopy Australia Research Highlights 2021.





Lydia Murphy (Cooper Group, E&E), Andras Keszei (BTLC) and Paul Cooper had their submission *Resistant grapevines produce anthocyanins to control scale insects* to the Australian Wine Industry Technical Conference accepted for presentation at the Conference in Adelaide in June. The presentation is based on Lydia's Honours project.

PhDs submitted

Congratulations to **Aaron Smith** (Pogson Group, PS) for submitting his PhD thesis titled From cradle to grave: The influence of mRNA metabolism on plant stress responses. While waiting for thesis reviews, Aaron is keeping himself busy with a position at IP Australia.





Congratulations to **Tanuka Sen** (Verma Group, BSB) Study of the functional role of hypothetical proteins in the virulence of Shigella flexneri serotype 1c.

Congratulations to **Veronica Alozie-Chidi** (Gordon Group, E&E) Why do some human associated escherichia coli strains lack antibiotic resistance?





Congratulations to **Kalya Subasinghe** (Langmore Group, E&E) who has submitted her PhD thesis on *Avian Morphometrics and Climate Change* and will soon be returning to Sri Lanka to take up a lectureship at the University of Kelaniya. She will be very much missed

and we wish her the best of luck!

Congratulations to **Tomas Fuenzalida** (Ball Group, E&E) on the submission of his PhD thesis *Plant hydration dynamics: measurement and uptake pathways.*



PhDs awarded

Congratulations to **Munazza Imran Rajput** (Verma Group, BSB) Study of O-acetyltransferase B (oacB) and three novel orfs encoded by Sf101 bacteriophage of Shigella flexneri.

Congratulations to **Helmut Simon** (Huttley Group, E&E) *Mutation, polymorphism and population genetic inference.*

PhDs commenced

Diego de Moura Campos (Head Group, E&E) Thomas Hanley (Nicotra Group, E&E) Jiansi Long (Leyton Group, BSB) Capella Maguire (van Dooren Group, BSB) Matthew Mortimer (Pogson Group, PS) Ryan O'Donnell (Linde Group, E&E) Kate O'Hara (Moritz Group, E&E) Hosna Ara Chowdhury Nisha (Linde Group, E&E) Alexander Penning (Maier Group, BSB) Saishyam Ramesh (Maier Group, BSB) Salma Sarker (Linde Group, E&E) Kwong Sum Shea (Maier Group, BSB) Hong Ting Tsang (Pogson Group, PS) Pablo Recio (Noble Group, E&E) Jack Wess (Rathjen Group, PS) Suyan Yee (Chan Group, PS)

Farewell

After three years as a Postdoc, **Megan Outram** (Williams Group, PS) is leaving to take up an exciting postdoc

opportunity at CSIRO Agriculture (Black Mountain). During her time at RSB, Megs has made significant contributions to the research output and training within the Williams group. Megs also served the RSB community as an organiser of the Plant Science seminar series and coordinator of the RSB PhD mentor scheme. We are going to miss Megs, but



I'm sure she will be a frequent visitor to the Little Pickle and RSB socials into the future.

Papers

2

Aich U, Chowdhury S & Jennions MD. Separating the effects of paternal age and mating history: evidence for sex-specific paternal effect in eastern mosquitofish. *Evolution.*

Bröer S. Amino acid transporters as modulators of glucose homeostasis. *Trends in Endocrinology & Metabolism.* https://doi.org/10.1016/j.tem.2021.11.004.

Bromham L. Meaning and purpose: using phylogenies to investigate human history and cultural evolution. *Biological Theory.*

Brown GJ, Cañete PF, Wang H, Medhavy A, Bones J, Corry B, Vineusa CG *et al*. TLR7 gain-of-function genetic variation causes human lupus. *Nature*.

Buss W, Wurzer C, Manning DAC, Borevitz J *et al.* Mineral-enriched biochar delivers enhanced nutrient recovery and carbon dioxide removal. *Communications Earth and Environment.* <u>https://doi.org/10.1038/</u> <u>s43247-022-00394-w</u>

Butler EE, Wythers KR, Flores-Moreno H, Ricciuto, Atkin OK *et al.* Increasing functional diversity in a global land surface model illustrates uncertainties related to parameter simplification. *Journal of Geophysical Research – Bio geosciences.* <u>https://doi. org/10.1029/2021JG006606.</u>

Chen X, Ye GF, Zhong YX, Morgan IG et al. Prevalence, incidence, and risk factors for myopia among urban and rural children in southern China: protocol for a school-based cohort study. *BMJ Open*. <u>https://doi.org/10.1136/bmjopen-2021-049846</u>.

Chiou PT, Ohms S, Board PG, Casarotto MG *et al*. The antiviral drug efavirenz in breast cancer stem cell therapy. *Cancers* (Basel). <u>https://doi.org/10.3390/</u>cancers13246232.

Clark IA. Chronic cerebral aspects of long COVID, post-stroke syndromes and similar states share their pathogenesis and perispinal etanercept treatment logic. *Pharmacol Res Perspect*. <u>https://doi.org/10.1002/prp2.926</u>.

Flom H, Adamska M, Lami R *et al.* Digital Marine: An online platform for blended learning in a marine experimental biology module, the Schmid Training Course. *BioEssays.* <u>https://doi.org/10.1002/</u> bies.202100264.

Hsiao Y & Pollock DA. Morphology-based phylogeny of oval palm and flower beetles (Coleoptera: Mycteridae: Eurypinae), with descriptions of new genera and species from Australia. *Zoological Journal of the Linnean Society*. <u>https://doi.org/10.1093/zoolinnean/</u> <u>zlab122</u>

Hua X, Cardillo M & Bromham L. Adapting to extremes: reconstructing evolution in response to changing climate over time and space in the diverse Australian plant genus Acacia. *Journal of Biogeography*. <u>https://</u> doi.org/10.1111/jbi.14339

Kershaw F, Bruford MW, Funk WC, MacDonald AJ *et al.* The coalition for conservation genetics: working across organizations to build capacity and achieve change in policy and practice. *Conservation Science and Practice.* <u>https://doi.org/10.1111/csp2.12635</u> Lawes MJ, Crisp MD, Clarke PJ, Murphy BP *et al.* Appraising widespread resprouting but variable levels of postfire seeding in Australian ecosystems: the effect of phylogeny, fire regime and productivity. *Australian Journal of Botany.* <u>https://doi.org/10.1071/BT21110</u>

Liang J, Farquhar GD, Ball MC. Water use efficiency in mangroves: conservation of water use efficiency determined by stomatal behaviour across leaves, plants and forests. *Advances in Botanical Research*. <u>https://doi.org/10.1016/bs.abr.2022.02.017.</u>

Liao C-C, Ding T-S & Chen C-C. The formation of "megaflocks" depends on vegetation structure in montane coniferous forests of Taiwan. *Ecology and Evolution*. <u>https://doi.org/10.1002/ece3.8608</u>

Lin YC, Buyan A & Corry B. Computational studies of Piezo1 yield insights into key lipid–protein interactions, channel activation, and agonist binding. *Biophysical Reviews*. <u>https://doi.org/10.1007/s12551-021-00847-0.</u>

Matuschewski K & Maier AG. Pas-de-deux: African Plasmodium falciparum adaptations to sickle hemoglobin. *Trends in Parasitology*. <u>https://doi.org/10.1016/j.</u> pt.2022.01.009.

Ortiz-Catedral L, Wallace CJ, Heinsohn R, Langmore NE *et al.* A PCR-based retrospective study for beak and feather disease virus (BFDV) in five wild populations of parrots from Australia, Argentina and New Zealand. *Diversity.* <u>https://doi.org/10.3390/d14020148</u>

Pavón-Vázquez CJ, Esquerré D & Keogh JS. Ontogenetic drivers of morphological evolution in monitor lizards and allies (*Squamata: Paleoanguimorpha*), a clade with extreme body size disparity. *BMC Ecology and Evolution*. <u>https://doi.org/10.1186/s12862-022-01970-6</u>

Rahimi F, Darvishi M & Abadi ATB. Highly contagious but less severe COVID-19 caused by new SARS-CoV-2 sublineages may abate the pandemic. *International Journal of Surgery*. <u>https://doi.org/10.1016/j.ijsu.2022.106584</u>.

Rahimi F & Abadi ATB. The Omicron subvariant BA.2: Birth of a new challenge during the COVID-19 pandemic. International Journal of Surgery. <u>https://doi.org/10.1016/j.</u> ijsu.2022.106261.

Rahimi F & Abadi ATB. Omicron: A highly transmissible SARS-CoV-2 variant. *Gene Report*. <u>https://doi.org/10.1016/j.</u> genrep.2022.101549.

Rahimi F & Abadi ATB. WHO prequalified tocilizumab and vaccine boosters against COVID-19. International Journal of Surgery.

Ramm T & Roycroft E. Digest: Drivers of diversification in Indo-Australian monitor lizards. Evolution. <u>https://doi.org/10.1111/evo.14447</u>

Rixen C, Høye TT, Macek P, Arnold PA, Slatyer R. *et al.* Winters are changing: snow effects on Arctic and alpine tundra ecosystems. *Arctic Science*. <u>https://doi.org/10.1139/</u> AS-2020-0058 Sen T & Verma NK. YfiB: an outer membrane protein involved in the virulence of *Shigella flexneri*. *Microorganisms*.

Spies M, Borkent A, Cranston PS, Lin X et al. A home at last! Changania choui Tseng, 1965 belongs to Thienemanniella Kieffer, 1911 (Diptera: Chironomidae: Orthocladiinae). CHIRONOMUS Journal of Chironomidae Research. <u>https://</u> doi.org/10.5324/cjcr.v0i35.4596

Sundararaj S, Seneviratne S, Williams SJ, Enders A, Casarotto MG. The molecular basis for the development of adult T-cell leukemia/lymphoma in patients with an IRF4K59R mutation. *Protein Science*. <u>https://doi.</u> org/10.1002/pro.4260.

Tao E & Corry B. Characterizing fenestration size in sodium channel subtypes and their accessibility to inhibitors. *Biophysical Journal.* <u>https://doi.org/10.1016/j.bpj.2021.12.025.</u>

Thanweer F & Verma NK. Identification of critical residues of the serotype modifying O-acetyltransferase of *Shigella flexneri*. *BMC Molecular and Cell Biology*. <u>https://doi.</u> org/10.1186/1471-2091-13-13.

Thomson K, Game J, Karouta C, Morgan IG & Ashby R. Correlation between small-scale methylation changes and gene expression during the development of myopia. *The FASEB Journal*. <u>https://doi.org/10.1096/fj.202101487R</u>.

Tse EG, Aithani L, Anderson M, Kirk K, Lehane AM, Lindblom JCR *et al.* An open drug discovery competition: Experimental validation of predictive models in a series of novel antimalarials. *Journal of Medicinal Chemistry*. <u>https://</u> doi.org/10.1021/acs.jmedchem.1c00313.

Wang S, Chen J-X, Liu M-C, Arnold PA *et al.* Phenotypic plasticity and exotic plant invasions: Effects of soil nutrients, species nutrient requirements, and types of traits. *Physiologia Plantarum*. <u>https://doi.org/10.1111/ppl.13637</u>

Wang S, Feng W-W, Liu MC, Arnold PA, Nicotra AB *et al.* Inherent conflicts between reaction norm slope and plasticity indices when comparing plasticity: a conceptual framework and empirical test. *Oecologia*. <u>https://doi.org/10.1007/s00442-022-05122-x</u>

Wu P, Head ML, Liu C. *et al.* The high invasion success of fall armyworm is related to life-history strategies across a range of stressful temperatures. *Pest Management Science*. https://doi.org/10.1002/ps.6867

Yang YH, Chen WB, Xu A, Morgan IG *et al*. Spatial technology assessment of green space exposure and myopia. *Ophthalmology*.

3