

Research School of Biology Newsletter

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ANU COLLEGE OF SCIENCE

NEWS

Farquhar tapestry unveiled at University House

Australian

National University

A tapestry in honour of **Graham Farquhar's** (PS) Kyoto prize was unveiled at a ceremony at University House this month (see main photo). The tapestry represents Graham's life's work in plant biophysics and photosynthesis and includes equations, plant cells and plant parts, worked in a delicate water colour effect by artist **Valerie Kirk**, from the ANU School of Art and Design textiles workshop.

The tapestry, which took four months of full-time weaving to make, hangs in the foyer of University House hall next to the work created by Valerie to commemorate the work of ANU VC **Brian Schmidt**, and the four other ANU Nobel Prize winners.

'It's deeply satisfying and a great honour,' said Graham. "It makes me think more and realise more about what must have been behind the discoveries that led to the prizes of the other people."

People often tend to think of the one person who has won the accolade, he said. "But of course there's a whole organisation behind them."

Ralph Slatyer medal awarded



June Slatyer presents the Ralph Slatyer Medal to Geoff McFadden. "I really enjoyed the talk," she told him, and Ralph would have enjoyed it too." Photo Sharyn Wragg, ANU.

The 2019 Ralph Slatyer medal was awarded at a ceremony this month to **Geoff McFadden**, from the University of Melbourne School of Biosciences. Geoff heads a research group that discovered the remnants of a plant-like chloroplast in the malaria parasite, which led to a paradigm shift in understanding the evolution of the



Graham Farquhar at the unveiling of the tapestry in recognition of his Kyoto Prize, at University House. Graham holds his Little Pickle coffee card, upon which he wrote the equation at the bottom of the tapestry for the tapestry artist Valerie Kirk. She returned the card to him at the ceremony. (See: News Item) Photo Lannon Harley, ANU.

parasite and in the treatment of malaria and other related diseases.

The ceremony, attended by ANU VC **Brian Schmidt**, ANU College of Science Dean **Kiaran Kirk**, members of the Slatyer family and many others, was held in the Robertson Lecture Theatre, with a reception in Catcheside Court to follow.



RSB Director Allen Rodrigo, Ralph Slatyer Medal winner Geoff McFadden, Geoff's partner Ceridwen Filer and ANU VC Brian Schmidt, after the medal ceremony. Photo Sharyn Wragg, ANU

Congratulations

Susan Howitt (PS, BTLC)



has been appointed to the Academy of Science National Committee for Biomedical Sciences. This committee has been tasked with developing

a Decadal Plan for Bioscience Education.

Jono Henshaw, formerly of the Jennions group (E&E) has been awarded a JG

Crawford Prize for 2017, for his PhD thesis. The Crawford prize is the most prestigious ANU prize awarded to PhD and Masters students.



Jono (pictured above) is an evolutionary biologist who uses statistical models to understand the evolution of mating systems, and develops statistical tools to quantify natural and sexual selection. He is currently a postdoc at the University of Idaho.

Indigenous art unveiling

The Joint Colleges Admin team, as part of its committment to Reconciliation, has decided to decorated its work areas with art created by local Indigenous artists. Five pieces destined for the Robertson Hub were unveiled this month, at a ceremony featuring Ngambri Elder **Matilda House**, CHM Dean **Russell Gruen** and live music from local Indigenous band, Dale Robert Huddleston and the Riverbank Band. The artists are:

Dale Huddleston (Wiradjuri) - Men's Business

Linda Huddleston (Wiradjuri/Talbragar) and Gregory Joseph (Yidinji) - WaterLilly Dreaming

Rayne Huddleston (Ngardi) - Tracking Down The Serpent

Megan Daley (Ngunnawal/Wiradjuri)

Peggy Hector - Witchery Grub/Honey Ants.

The works are now hanging on the walls in the Robertson Hub, on the ground floor of the RN Robertson building 46.



College of Science Senior Finance Officer Yana Rahmani and RSB Director Allen Rodrigo with one of the artworks purchased by the Joint Colleges Administration team. Photo Sharyn Wragg.

Teaching and Learning Colloquium

Stefan Bröer (BSB), Juliey Beckman (BTLC), Angela Stoddard (Honours student, PS) and Susan Howitt (BSB) were all invited panellists at the Science, Health and Medicine Teaching and Learning Colloquium on 4th June. They presented briefly about their innovative teaching practices (covering flipped classrooms, interactive lectures and inquiry-based learning) and then responded to audience questions.

Outreach News Goethe-Institut Girls' Day



RSB Superstar of STEM Jennie Mallela helping students from Canberra Grammar and Daramalan schools to extract strawberry DNA. Photo Mel Norris, ANU.

Women are not generally well-represented in STEM professions, with women making up only 24.5% of STEM graduates in Australia (source: Goethe Institute). To encourage female students to consider working in STEM, the Goethe-Institut Australien organised Girls' Day, to give them an opportunity to meet and interact with women working in science. **Jennie Mallela** (Rodrigo group, CBBU) hosted the day, which included a session where the girls filmed video interviews with women scientists, a practical session in the teaching lab, and a Zoom conference with other participating groups around Australia.

Many thanks also to **Susan Howitt** (BSB, BTLC), **Uli Mathesius** (PS), **Angela McGaughran** (Moritz group, E&E), **Xia Hua** (Bromham group, E&E) and **Dani Way** (Visiting Fellow, Atkin group, PS) who participated in the interview session, and **Tory Clarke** (von Caemmerer group), who ran the practical session with the help of **Jennie Mallela** and **Angela McGaughran**, using experiments designed by **Alisha Duncan** (Education and Events Officer, CoETP).



Tory Clarke (centre) explaining the strawberry DNA extraction activity to Girls' Day participants. CGS teacher Pip Golding looks on. Photo Jennie Mallela, ANU.

Parasitology Curriculum workshop in Berlin



Alex Maier gave a talk at Urania Berlin, wearing a ringmaster costume.

Alex Maier (BSB) and Denise

Higgins (Howitt group, BSB) along with colleagues in Germany recently organised a workshop on the Parasitology Curriculum, held at Humboldt Universität Berlin. The workshop was attended by colleagues from Germany and the USA, and participants discussed challenges, approaches and the latest developments in parasitology teaching. The workshop also included a press conference and the production of short videos to be used in teaching. Alex also gave a public lecture at Urania in Berlin, based on his collaboration with Anna-Sophie Jurgens (CASS), entitled 'The Hidden Circus - unbelievable abilities of parasites'. This was Alex's first talk wearing a costume (see image above).

Teaching Plant Science in a primary school

Xin Hou from the Pogson group (PS) has been working with Year 3-4 students at Palmerston Primary School to teach them about plants in an interactive way. In a project to grow two lemon trees, students learned different parts of a plant and their functions. They applied citrus fertilisers and discussed why plants need nutrients, and what nutrients they need. They harvested 150 ripe fruits from the two trees and raised funds by selling lemons for future projects. In the coming semester, students will grow bean sprouts from soy beans followed by a dark-light shift, from which they will learn about germination and why leaves turn green in light. Xin Hou will also grow Australian native plants with the students and discuss how a plant may interactive with the environment. The tailored and interactive learning activities will inspire students' curiosity in nature and science and help build their critical thinking abilities. - Xin Hou (Pogson group, PS).

World Oceans Day



Jennie Mallela (Rodrigo group, E&E) spoke about the importance of caring for our oceans, to 66 Kinder students at Kaleen Primary school (see image above).

Grants

Members of the Corry group (BSB) have received two grants from the ANU Replacing Animals in Medical Research Fund. **Ben Corry** and undergraduate research student **Josiah Bones** have been awarded \$10,000 for 'Developing sodium channel inhibitors for the treatment of chronic pain, replacing the need for in-vivo and animal testing', and **Amanda Buyan** has been awarded a travel bursary of \$5,000.

IN THE MEDIA

Benjamin Schwessinger (PS) was interviewed on German national radio about issues with reproducibility in science and fixing science. You can listen, and read a transcript of the interview, here.

Research co-authored by **Megan Head** (E&E) suggesting that ethnicity and socioeconomic status are bigger barriers to career success than gender, was reported in Nature Index.

Research by **Anna MacDonald** (Moritz group, E&E) and collaborators, about the taxonomy and suspected extinction of a species of grassland earless dragon, was reported in several outlets. These include The Guardian, The Canberra Times, the Smithsonian magazine, National Geographic and the Riotact.com. An article about the research also appeared in The Conversation.

WELCOME

New CBA Knowledge Broker appointed The Centre for Biodiversity Analysis (CBA) is very pleased to introduce and welcome their newly appointed Knowledge Broker, Paula Doyle. Paula comes to



the CBA from a science education background and will use her wideranging communication and relationship-building skills at the interface

of CBA research and environmental science policy. She will play a key role in making connections to facilitate a twoway exchange of information between knowledge producers (biodiversity scientists at ANU, UC and CSIRO) and those who use this knowledge (environmental policy makers and managers), with the ultimate goal of influencing positive biodiversity conservation outcomes.

Paula will be based at the Institute of Applied Ecology at the University of Canberra and will be available Monday-Wednesday (paula.doyle@canberra.edu. au). She is looking forward to meeting scientists, learning about their research and ideas, perspectives and experience with environmental management and policy. - **Claire Stephens**, CBA co-ordinator.

PHDS SUBMITTED

Melanie Ridgway (Maier group, BSB) 'Sex-specific biology of the malaria parasite *Plasmodium falciparum*.' Estee Tee (Pogson group, PS) 'Investigating the protein interaction and signalling mechanisms involved in 3'phosphoadenosine 5'phosphate stress response pathway.'

PHDS AWARDED

Florence Danila (von Caemmerer group, PS) 'The role of leaf plasmodesmata in C4 photosynthesis.'

Eleanor Stalenberg (Foley group, E&E) 'Biophysical ecology of the white-footed sportive lemur (*Lepilemur leucopus*) in southern Madagascar.'

Erick Tjhin (Saliba group, BSB) "The pantothenate kinase of the human Malaria parasite *Plasmodium falciparum*."

PAPERS ACCEPTED

Barua A, Mikheyev AS, Many options, few solutions: over 60 million years snakes converged on a few optimal venom formulations, *Molecular Biology and Evolution*.

Chen C, Corry B, Huang L, Hildebrandt N, FRET-modulated multi-hybrid nanoparticles for brightness-equalized single-wavelength barcoding, *Journal of the American Chemical Society.*

Clark IA, Vissel B, Neurodegenerative disease treatments by direct TNF reduction, SB623 cells, maraviroc and irisin and MCC950, from an inflammatory perspective - a Commentary, *Expert Review of Neurotherapeutics*.

Cranston PS, *Riethia* (Kieffer 1917) (Diptera: Chironomidae) revised for the Austro-Pacific region, *Zootaxa*. Hsiao Y, Taxonomic notes on Eustrophinae from the mid-Cretaceous Burmese amber, with description of a new species (Coleoptera, Tetratomidae), *Paläontologische Zeitschrift*.

Hubeau M, Thorpe MR, Mincke J, Bloemen J, Bauweraerts I, Minchin PEH, De Schepper V, De Vos F, Vanhove C, Vandenberghe S, Steppe K, High-Resolution in vivo Imaging of Xylem-Transported CO2 in Leaves Based on Real-Time 11C-Tracing, *Frontiers in Forests and Global Change*.

Jovanovic N, Mikheyev AS, Interactive web-based visualization and sharing of phylogenetic trees using phylogeny.IO, *Nucleic Acids Research*. Malekpour R, Arnold PA, Rafter MA, Daglish GJ, Walter GH, The effects of sublethal phosphine exposure on respiration rate and dispersal propensity of adult females of the stored product pest, *Tribolium castaneum, Journal of Pest Science.*

Melville J, Chaplin K, Hutchinson M, Sumner J, Gruber B, MacDonald AJ, Sarre S, Taxonomy and conservation of grassland earless dragons: new species and an assessment of the first possible extinction of a reptile on mainland Australia, *Royal Society Open Science*.

Noble DWA, Radersma R, Uller T, Plastic responses to novel environments are biased towards phenotype dimensions with high additive genetic variation, *Proceedings of the National Academy of Sciences USA.*

Rivers JY, Truong TT, Pogson BJ, McQuinn RP, Volatile apocarotenoid discovery and quantification in *Arabidopsis thaliana*: optimized sensitive analysis via HS-SPME-GC/MS, *Metabolomics*.

Smith CC, Weber JN, Mikheyev AS, Roces F, Bollazzi M, Kellner K, Seal JN, Mueller UG, Landscape genomics of an obligate mutualism: Concordant and discordant population structures between the leafcutter ant *Atta texana* and its two main fungal symbiont types, *Molecular Ecology*.

Szabo B, Noble DWA, Byrne RW, Tait DS, Whiting MJ, Precocial juvenile lizards show adult-level learning and behavioural flexibility, *Animal Behaviour.*

Warner MR, Mikheyev AS, Linksvayer TA, Transcriptomic basis and evolution of the ant nurse-larval social interactome, *PLOS Genetics*.

Zhang M-M, Fan D-Y, Murakami K, Badger M R, Sun G-Y, Chow W S, Partially dissecting electron fluxes in both photosystems in spinach leaf discs during photosynthetic induction, *Plant and Cell Physiology.*

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