



NEWS

John Evans, FAA



John Evans (PS) has been elected a Fellow of the Australian Academy of Science.

John's work has involved analysing photosynthesis from the perspective of

how much nitrogen needs to be invested by the plant to achieve a given rate of photosynthesis. Together, the protein complexes that bind pigments to capture sunlight, and the proteins in photosynthetic enzymes that fix carbon dioxide, account for the majority of nitrogen in leaves. As leaf nitrogen is relatively easy to measure, it can be used to predict photosynthetic capacity of leaves or vegetation. Photosynthesis also requires carbon dioxide. To investigate CO₂ diffusion into leaves, John developed a technique based on stable isotopes.

Now that John is the proud owner of a tuneable diode laser spectrometer, such measurements can be made much more easily than in the past when CO₂ had to be frozen out of the air and transferred to a mass spectrometer. Several areas of his expertise have now come together to contribute towards improving photosynthesis in order to raise crop yields to assist with world food security.

Graham Farquhar awarded a Honorary Doctorate



Graham Farquhar (PS) has been awarded an honorary doctorate by Wageningen University, in the Netherlands, as part of its 95th anniversary celebrations.

Graham's award was made on the basis of his significant contribution to understanding water efficiency in plants, photosynthesis, and the role of plants in carbon and water cycles. Graham developed the 'Farquhar formula' on which many vegetation and carbon models are based, and he served on the UN's Intergovernmental Panel on Climate Change.

MEDIA

Malaria under the pump



A recent [paper](#), based on the PhD work of **Natalie Spillman** (Kirk lab, BSB) and published in *Cell Host & Microbe* generated significant media publicity, including pieces in [The Canberra](#)

[Times](#), [The Age](#), [SMH](#) and [ABC News](#) (online and radio) as well as numerous websites. The paper reported the presence on the surface of the intracellular malaria parasite of a molecular pump that extrudes Na⁺ ions, and showed that the pump is inhibited by 'spiroindolones', a new class of antimalarials now in Phase II clinical trials. In an accompanying [press release](#) the Na⁺ pumping protein was described as a salt pump, with the inhibitory spiroindolones causing a 'salt overload'. Some media outlets had some interesting interpretations of the findings - being some way from what the authors had in mind. The finding was reported on the Arab Emirates '[Top News](#)' [website](#) under the headline 'Salt Overdose Enough to Kill Malaria, Claims Study', going on to explain that malaria could "be defeated by the use of salt alone" and showing the accompanying picture of a salt shaker.



Owen Atkin (PS) was [interviewed by ABC online](#) for his research on the impact of climate change on tropical forests. The [paper](#), published in *Nature Geoscience*, and on which both Owen and **Patrick Meir** (PS) are contributing authors, concludes that climate-induced damage to tropical forests

may be lower than previously thought.

The results of the study were also reported in [News Ltd](#) and the [Sydney Morning Herald](#).

A [study](#) by **Amanda Padovan** and colleagues in the Foley Lab (EEG) has been featured in [ABC Science](#) and [LabSpaces](#). The study describes how some *Eucalyptus* trees accumulate mutations, resulting in 'mosaic' foliage with chemotypes that are differentially favoured by insect and vertebrate herbivores, resulting in susceptible and resistant branches in the same canopy.



CONGRATULATIONS

Barbara van Leeuwen has been appointed to the position of Professor, and Director of Science Education in the Colleges of Science.

Farid Rahimi has been appointed the position of STO for BSB, after acting in the role for the last two months.

Laura Gunn (Whitney lab, PS) has been awarded the student poster prize for protein engineering at the 38th Lorne Conference on Protein Structure and Function, for her poster entitled 'New tools for identifying nature's solutions for improving CO₂ fixation'.

WELCOME

Staff

EEG - The Moritz lab is joined by **Gaye Bourke** as a Technical Officer and **Charlotte Jennings** as an occupational trainee. **Xia Hua** has joined the Bromham lab, having just finished her PhD in Stony Brook NY on theoretical modelling of ecological and evolutionary processes.

Lab Leader Profile

Spencer Whitney (PS)



Lab researching:
Fundamental and applied research of the photosynthetic CO₂-fixing enzyme Rubisco.

Greatest achievement:
Demonstrating the

feasibility of transplanting alternative mutant Rubisco isoforms into plant chloroplasts and the correlative changes to leaf photosynthesis and plant growth.

Next big thing: Implementing newly developed bioengineering technologies to identify structural solutions for improving Rubisco catalysis in leaf chloroplasts.

Science hero: I have admiration for many scientists, but definitely no heroes. Worthy of mention is the impressive achievements by Professor Mo Cleland (University of Wisconsin) who championed the use of kinetic studies to decipher enzyme mechanisms (including Rubisco). Unfortunately Mo recently passed away on the 6th of March. His leading insights and understanding of enzyme kinetics will be sorely missed.

PS - Diane Purcell has joined the Price lab to work on aviation biofuels from cyanobacteria.

Tom Davis joins IT Client Services.

PhD students

EEG - Virginia Abernathy has joined the Langmore lab to work on the exploitation of naive hosts by brood parasitic koels. **Liam Bailey** has also joined the Langmore lab to work on the impact of extreme climate events on Eurasian oystercatchers.

Masters students

PS - Zihui Zheng has joined the Millar lab, working on the topic 'are all microRNA targets silenced equally?'

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Email BSB.newsletter@anu.edu.au to submit content or to be added to the distribution list.

Visitors

BSB - Emma Hodges is visiting the Kirk lab, and **Hamid Mahmoodian** the Callaghan lab.

EEG - Matthew Brandley is visiting the Moritz lab, and **Kim Jaatinen** the Kokko lab.

PS - Caroline Chong is visiting the Borevitz lab, **John Liggins** the Chow lab, and **Katharina Siebke** the Badger lab.

FAREWELL

BSB - Leon Lin has submitted his thesis and leaves the Tschärke lab to take up a postdoctoral position working on vaccines for tuberculosis at the Centenary Institute in Sydney. BSB has also farewelled **Russell Graham**, the Divisional Technical Officer.

EEG - Wendy Dimond, a research officer who worked on the co-evolution between cuckoos and their hosts, is leaving the Langmore lab.

Rim Kadi is leaving the role of IT Manager to take the position of CMBE/CPMS IT Manager. **Alam Mansoor** has left IT to take up a position in Melbourne.

PAPERS ACCEPTED

Atkin OK, Turnbull MH, Zaragoza-Castells J, Fyllas N, Lloyd J, Meir P & Griffin KL. Light inhibition of leaf respiration as soil fertility declines along a post-glacial chronosequence in New Zealand: an analysis using the Kok method. *Plant and Soil*.

Bolton J, Backwell PRY & Jennions MD. Density-dependence and fighting in species with indeterminate growth: a test in a fiddler crab. *Animal Behaviour*.

Busch FA. Opinion: The red-light response of stomatal movement is sensed by the redox state of the photosynthetic electron transport chain. *Photosynthesis Research*.

Hayes CL, Booksmythe I, Jennions MD & Backwell PRY. Does male reproductive effort increase with age? Courtship in fiddler crabs. *Biology Letters*.

Hayward DC, Dosztányi Z & Clark-Walker GD. The N-terminal intrinsically disordered domain of Mgm101p is localized to the mitochondrial nucleoid. *PLoS ONE*.

Kahn AT, Dolstra T, Jennions MD & Backwell PRY. Strategic male courtship effort varies in concert with adaptive shifts in female mating preferences. *Behavioral Ecology*.

Kahn AT, Schwanz L & Kokko H. Paternity protection can provide a kick-start for the evolution of male-only parental care. *Evolution*.

Kelly CD, Folinsbee K, Adams DC & Jennions MD. Intraspecific sexual size and shape dimorphism in an Australian freshwater fish differs with respect to a biogeographic barrier and latitude. *Evolutionary Biology*.

Lin LCW, Flesch IEA & Tschärke DC. Immunodomination during peripheral vaccinia virus infection. *PLoS Pathogens*.

Munday CI, O'Loingsigh T, Tapper NJ, De Deckker P & Allison GE. Utilisation of Rep-PCR to track microbes in aerosols collected adjacent to their source, a saline lake in Victoria, Australia. *Science of the Total Environment*.

Mustafa S, Hannagan J, Rigby P, Pfleger K & Corry B. Quantitative FRET efficiency measurements using simultaneous spectral unmixing of excitation and emission spectra. *Journal of Biomedical Optics*.

Periasamy P, Petvises S & O'Neill HC. Kit+Lin-Sca1+Flt3- hematopoietic stem cells require stromal cell contact for development of a novel cross-presenting dendritic cell. *Frontiers in Immunology*.

Pitcher WR, Brooks RC, Jennions MD, Tregenza T, Dworkin I & Hunt J. Limited plasticity in the phenotypic variance-covariance matrix for male advertisement calls in the black field cricket *Teleogryllus commodus*. *Journal of Evolutionary Biology*.

Roche DG, Binning SA, Bosigner Y, Johansen JL & Rummer JL. Finding the best estimates of metabolic rates in a coral reef fish. *Journal of Experimental Biology*.