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Research School of Biology Newsletter

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ANU COLLEGE OF MEDICINE, BIOLOGY AND ENVIRONMENT

NEWS

Graham Farquhar elected to the US National Academy

Graham Farquhar (PS) has been elected as a Foreign Associate to the US National Academy of Science. This very high honour recognises Graham's many profound contributions to the field of plant sciences.

'Size matters' makes it big

A paper by **Brian Mautz, Michael Jennions** (EEG) and colleagues, reporting on women's preferences for men's body size, proportions, and penis size, has attracted widespread international media coverage (see the RSB highlight for related articles and videos). The paper was published in PNAS and in various media outlets on 8 April. Two days later, articles based on the research were ranked as the 1st and 2nd most popular items on *The Canberra Times* online, receiving over 50,000 hits between them. A video summarising the findings of the study received over 27,000 hits on the ANU YouTube channel on the day of posting, exceeding the previous record of the ANU channel by some 20,000 hits.

CBA conference success

The Centre for Biodiversity Analysis (CBA) hosted its inaugural conference on Biodiversity Genomics in the first week of April. Over 180 delegates participated in the well-received conference and associated workshops. Local and international researchers highlighted the contribution of biodiversity genomics to micro-and macroevolution, ecosystems and metagenomics, and policy, conservation and management.

The conference opened with the official launch of the CBA, a joint ANU-CSIRO research centre, by Professor Ian Young, AO (Vice-Chancellor of the ANU) and Dr Mark Lonsdale (Chief CSIRO Ecosystem Sciences).

(L-R) Scott Keogh, Craig Moritz, and Mark Lonsdale (CSIRO Ecosystem Sciences) at the launch of the CBA and the opening of the Biodiversity Genomics Conference (Photo: Carl Davies).

ANU to host the 2014 International Biogeography Society Meeting

ANU has won a bid to host a meeting of the International Biogeography Society in 7-10 January 2014. The bid was spearheaded by Haris Saslis-Lagoudakis (EEG) and other members of the Centre for Macroevolution and Macroecology, and the Centre for Biodiversity Analysis. The meeting aims to bring together early career and established researchers working on different aspects of biogeography, mainly from the Australasian region. For more information contact the organizing committee at ibsaustralasianmeeting2014@gmail.com.

New Ecological Neuroscience websites

The Ecological Neuroscience group has contributed to the launch of two websites, one on the organization of compound eyes (done with the help of Sharyn Wragg and Thomas Magill (http://biology.anu.edu.au/jochen_zeil/crab_eye_tutorial/)) and the other (done in collaboration with Wolgang Stuerzl and Elmar Mair at the German Aerospace Centre) that provides access to panoramic views at any position in a 3D model of a natural environment. These views can be used to test flight control and navigation algorithms, to map the navigational information content of natural environments and to reconstruct views from the viewpoint of navigating animals (http://www.insectvision.org/).

MEDIA

Chris Fulton and **Danswell Starrs** (EEG) were featured in the ABC's 7:30 ACT news, in a video titled 'Craig's crayfish tale'.

A profile of **Helen O'Neill** (BSB) has been written for the ANU Gender Institute as part of their ANU Inspiring Women project.

The work of the Arkell lab (EEG) was featured in *Australian Life Scientist* magazine as part of a review of the Hunter Cell Biology meeting, at which **Ruth Arkell** was an invited speaker.

Carotenoid-based colouration predicts contest success in the frillneck lizard (see the *Behavioural Ecology* paper by Hamilton DG, Whiting MJ & Pryke SR, under Publications). (Photo: Sarah Pryke).

Stefan Bröer (BSB) was interviewed by *The Canberra Times* on carbohydrate in diets for an article titled 'Beware of the diets that kill'.

CONGRATULATIONS

Haris Saslis-Lagoudakis (Bromham lab, EEG) has been awarded the John C. Marsden Medal 2013 by the Linnean Society. This medal is awarded for the best PhD thesis in biology, for a candidate whose research has been carried out whilst registered at any UK institution.

Rong Chen and **Shin-Ho Chung** (Chung lab, BSB) were awarded a Medical Advances Without Animals (MAWA) Research Fellowship ($30,000) on 8 March 2013 for the project 'Design and evaluation of potential therapeutic agents targeted at biological ion channels using computational tools'.

Jennie Mallela (Jennions lab, EEG) is the recipient of a 2012-13 Australian National University Travel Grant, AU $2,358.

Matthew King (Combined Workshop) has completed ten years of service at RSBS and RSB.

WELCOME

Yit-Heng Chooi has joined the Solomon lab (PS) to begin his DECRA Fellowship. Heng will be working on expressing and characterising secondary metabolites from wheat pathogenic fungi.

Johannes Zanker, Department of Psychology, Royal Holloway, England, is visiting the Zeil lab (EEG), to work on image representation in visual homing.

NEW APPOINTMENTS

Erin Pugh has joined the School as the new HDR student coordinator. Erin will be based in the Biology Teaching and Learning Centre in the Gould building. HDR enquiries that would previously have gone to Madeleine should now be directed to Erin at rsb.studentadmin@anu.edu.au

Lab Leader profile
Peter Solomon (PS)

Lab researching:
Fungal necrotrophic diseases of wheat and barley.

Greatest achievement:
It had always been assumed that these fungal pathogens caused disease on wheat by secreting a battery of lytic and degradative enzymes in the host. We showed that this isn't so and that the pathogen causes disease on wheat by secreting small proteins of unknown function that specifically interact with wheat proteins/genes resulting in chlorosis and necrosis.

Next big thing:
Understanding how these small secreted proteins actually cause disease at the molecular level.

What do you see as future challenges for your field of research?
The challenge for this field is to incorporate these findings into viable disease management strategies. Cereal production is approaching a challenging time, whereby a number of key fungicides are being phased out in due to environmental concerns. Combined with the lack of confidence that exists in many parts of the world in accepting edible GM crops, diseases and other biotic stresses will become a significant challenge to manage in the near future.

Hong Kiat Lim (**Don**) (O'Neill lab, BSB) has continued from Honours to start a PhD. Don will work on stem cell niches in the spleen which support hematopoiesis, and identification of a new component of these niches called perivascular reticular cells. He will work on mesenchymal and hematopoietic stem cell isolation and development.

FAREWELL

Madeleine Haag (BTLC) came from the Modern European Language in 2000 to work as a school administrator in the School of Botany and Zoology. When the school amalgamated into the Research School of Biology, Madeleine took over the role of HDR Student Administration Officer, and remained in this role until she retired on 15 March.

Ashley Moore (Combined Workshops), left to develop his career as a Facilities officer in the public service. He had worked at F&S for six years, then at RSBS and RSB for eleven years.

Weiwei Zhang (Hardham lab, PS) has returned to China to finish writing her PhD thesis on the selective secretion of large peripheral vesicle proteins in *Phytophthora*.

This monthly newsletter is archived at biology.anu.edu.au/newsletter.
Content & layout: Sharyn Wragg
Editing: Kiaran Kirk & Sharyn Wragg

PAPERS ACCEPTED

Arkell RM, Fossat N & Tam PPL, Wnt signalling in mouse gastrulation and anterior development: new players in the pathway and signal output. *Current Opinion in Genetics & Development.*

Callander S, Kahn AT, Maricic T, Jennions MD & Backwell PRY, Weapons or mating signals? Claw shape and mate choice in a fiddler crab. *Behavioral Ecology and Sociobiology.*

Duchene D & Bromham L, Rates of molecular evolution and diversification in plants: chloroplast substitution rates correlate with species-richness in the Proteaceae. *BMC Evolutionary Biology.*

Fulton CJ, Binning SA, Wainwright PC, et al, Wave-induced abiotic stress shapes phenotypic diversity in a coral reef fish across a geographical cline. *Coral Reefs.*

Hamilton DG, Whiting MJ & Pryke SR, Fiery frills: carotenoid-based coloration predicts contest success in frillneck lizards. *Behavioral Ecology.*

Hepler PK, Pickett-Heaps JD & Gunning BES, Some retrospectives on early studies of plant microtubules. *The Plant Journal.*

Holman L & Kokko H, 'Local adaptation and the evolution of female choice', in J Hunt & D Hosken, (eds.), *Genotype-by-Environment Interactions and Sexual Selection.* Wiley-Blackwell.

Hu Y-Y, Fan D-Y, Losciale P, Chow WS, et al, Whole-tissue determination of the rate coefficients of photoinactivation and repair of Photosystem II in cotton leaf discs based on flash-induced P700 redox kinetics. *Photosynthesis Research.*

Lee JRM, Duxbury Z & Wang M-B, Small RNAs and transgenerational epigenetic variation. *American Journal of Plant Sciences.*

Mallela J, Calcification by reef-building sclerobionts. *PLoS ONE.*

McDonald MC, Oliver RP, Friesen TL, et al, Global diversity and distribution of three necrotrophic effectors in *Phaeosphaeria nodorum* and related species. *New Phytologist.*

Niemand J, Burger P, Verlinden BK, Kirk K, et al, Anthracene-polyamine conjugates inhibit in vitro proliferation of intraerythrocytic *Plasmodium falciparum* parasites. *Antimicrobial Agents & Chemotherapy.*

O'Brien CL, Allison GE & Pavli P, The more the merrier: *Faecalibacterium prausnitzii* in Crohn's disease. *Journal of Gastroenterology and Hepatology.*

O'Brien CL, Allison GE, Grimpen F & Pavli P, Impact of colonoscopy bowel preparation on gut microbiota. *Plos One.*

Periasamy P, Petvises S & O'Neill H, Development of two distinct dendritic-like APCs in the context of splenic stroma. *Frontiers in Immunology.*

Purushothuman S, Marotte L, Stowe S, et al, The response of cerebral cortex to haemorrhagic damage: experimental evidence from a penetrating injury model. *PLoS ONE.*

Spillman NJ, Allen RJW & Kirk K, Na^+ extrusion imposes an 'acid load' on the intraerythrocytic malaria parasite. *Molecular and Biochemical Parasitology.*

Starrs D, Ebner BC & Fulton CJ, Can back-calculation models unravel complex larval growth histories in a tropical freshwater fish? *Journal of Fish Biology*.

Vahl W, Boiteau G, de Heij ME, Kokko H, et al, Female fertilization: effects of sex-specific density and sex ratio determined experimentally for Colorado potato beetles and *Drosophila* fruit flies. *PLoS ONE.*

van Schalkwyk DA, Saliba KJ, Biagini GA, Kirk K, et al. Loss of pH control in *Plasmodium falciparum* parasites subjected to oxidative stress. *PLoS ONE*.

von Caemmerer S, Steady state models of photosynthesis. *Plant Cell and Environment.*

Weston LA & Mathesius U, Flavonoids: their structure, biosynthesis and role in the rhizosphere, including allelopathy. *Journal of Chemical Ecology.*