



NEWS

Jenny Graves wins 2017 Prime Minister's Science Prize



Emeritus Professor **Jenny Graves** (E&E) was awarded the 2017 Prime minister's Prize for Science this month.

Jenny has been associated with the ANU for a long time, first as a member of the Research School of Biological Sciences, and after the merger, of RSB. She remains a member of the School and the ANU as an Emeritus Professor.

Jenny has done groundbreaking work on the evolutionary genomics of iconic Australian mammals, and on the evolution of sex chromosomes. Her award is a well-deserved recognition of her contributions to science.

Kai Chan wins Tall Poppy award



Kai Chan and Camille Thomson, General Manager of the Tall Poppy Campaign, Australian Institute of Policy and Science. Image: Bradley Cummings.

Kai Chan (Pogson group, PS) was honoured for his contributions to science in the ACT Tall Poppy Awards this month. The Tall Poppy Campaign was created in 1998 by the Australian Institute of Policy and Science (AIPS) to recognise and celebrate Australian scientific excellence and to encourage younger Australians to follow in the footsteps of our outstanding achievers.

Kiaran Kirk elected Fellow of the **Academy of Health and Medical Sciences** **Kiaran Kirk** (BSB, and Dean of the College of Science) was elected as Fellow to the Australian Academy of Health and Medical Sciences this month, in recognition of his outstanding leadership and contributions



RSB celebrated the election of Kiaran Kirk as Fellow of the Australian Academy of Health and Medical Sciences this month. From left: Stefan Bröer (BSB and Deputy Director, RSB), Susan Howitt (Head of BSB and Deputy head, BTL), Kiaran Kirk (BSB and Dean, College of Science), Allen Rodrigo (CBBU and Director, RSB). Image: Graham Hicks. (See News Item)

to the field in Australia. His primary research interest is in the biology of the malaria parasite, with a particular focus on antimalarial drugs. Kiaran's work has had significant impact in relation to the assessment of new potential antimalarial drugs, to ensure that there is not overinvestment in compounds sharing the same molecular target. RSB celebrated Kiaran's achievement with a function organised by BSB (see main photo).

Promotions

Six early career researchers have been promoted to Level B:
Meisha Holloway-Phillips (Farquhar group, PS), **Jennie-Ann Mallela** (Jennions group, E&E), **Megan McDonald** (Solomon group, PS), **Sally Potter** (Moritz group, E&E), **Susanna Venn** (Nicotra group, E&E) and **Thomas Wong** (Rodrigo group, CBBU).

Food evolution film screening and Q&A

The strongly polarised debate on the use of genetically modified organisms (GMOs) was explored in the documentary Food Evolution, at a screening held by the CoE for translational photosynthesis in Canberra recently. Around 300 people watched the movie, narrated by Neil deGrasse Tyson, and a Skype Q&A with director Scott Hamilton. You can watch the Q&A here.

IN THE MEDIA

Andrew Cockburn (E&E) was interviewed on ABC Radio Canberra this month, talking about the growing number of reports of fairy

wrens getting stuck on flytraps, and dying a slow and painful death. Andrew talked about how and why this happens, and explained that a change in the design of traps and insecticides is needed to address the growing number of death of birds.

WELCOME

Welcome back **Vaughn Dumas**. Vaughn is a former member of RSB IT, and returns in a temporary capacity as a Programmer and Business Analyst. Vaughn is working on migrating RSB to a common job ticketing system, piloting a room/resource booking system, and the support and retirement of Workbooks, among other projects.



PhD student **Jian Chen** joined the Rathjen group (PS) this month. He will be working on identification and characterization of early signalling partners involved in plant TIR-domain immune responses, using protein biochemistry and mass spectrometry approaches.



FAREWELL

Moritz group (E&E) PhD student **Josh Penalba** has left to take up a postdoc in Ludwig Maximilian University in Munich. He will be working on methods to infer the landscape of recombination across the



Group leader profile: Jean Wen (BSB)



Research Background

My background is in Computational Biology and Computer Science. I did my PhD at ANU on discovery of plant long non-coding RNA transcripts.

Group research focus

I just returned to Australia to take an ARC future fellowship (2017-2021). My current research goal is to use genomics, computational/statistical methods, and the power of deep sequencing approaches combined with experimental validation to explore diverse modes of gene regulatory networks, both post-transcriptional gene regulation by small RNAs, structural RNAs, and RNA binding proteins, and transcriptional regulation by transcription factors. For example, my recent study in *Drosophila melanogaster* discovered a class of long endogenous hairpin RNAs co-evolving with their targets and causing severe phenotypic defects in sperm development and male fertility. I am particularly interested in understanding how these RNAs are made, how they evolve, how they regulate their target expression, and do they exist in other insects and higher organisms. In collaboration, we are also interested in studying the potential role of RNA-binding proteins in regulating alternative polyadenylation (APA) events in the central nervous system, and how cell-specific transcription factors interacting with chromatin factors and control neural cell fate specification.

What do you see as challenges for your field of research?

Computational biology has significantly advanced modern biology in the last decades and is accelerating. I feel that a challenge for computational biologists is to maintain close collaboration and feedback between computational and bench scientists at all stages of the scientific method: from hypothesis generation to experimental design and analysis.

Who is your science hero?

Albert Einstein and Charles Darwin. Einstein was the archetypal scientist who dedicated his life to his subject and was also a philosopher who had profound and interesting things to say. And his publication output in 1905 is something we could all aspire to as scientists! Darwin changed our view of the world and is the basis of all we do in biology and particularly, of course, my research area of comparative genomics. He spent years collecting observations on which his research was based, and I have walked along the path he took in the Blue mountains as part of his amazing travels.

What else do you have underway?

Having just started here less than 3 months ago, my next big task is to build a research lab by recruiting students and establishing local collaborations.

genome. The main aim of the project is to understand how genome architecture shapes genome divergence during speciation using a classical crow hybrid zone system in Europe.

PHDS SUBMITTED

Hannah Osborn (von Caemmerer group, PS) 'Understanding CO₂ diffusion in C₄ plants: an investigation of CO₂ permeable aquaporins and carbonic anhydrase in the C₄ grass *Setaria viridis*'.

Joshua Penalba (Moritz group, E&E) 'The genomic origin of species: a case study in the Australasian Meliphagoidea'.

Regina Vega Trejo (Jennions group, E&E) 'Inbreeding depression and a poor start in life'.

PHD AWARDED

Duncan Fitzpatrick (Price group, PS) 'Energetic responses to transient high temperature stress in cyanobacteria: a dynamic system examined *in vivo*'.

Shao-Yu Lin (Solomon group, PS) 'The study of transcriptional regulation of necrotrophic effector genes ToxA and Tox3 in the wheat pathogen *Parastagonospora nodorum*'.

Elisha Thynne (Solomon group, PS) 'Assessing the biology of wheat-infecting *Botryotryphaeria* spp'.

Catherine Young (Backwell group, E&E) 'The causes and consequences of group living in the Crimson Finch (*Neochmia phaeton*)'.

PAPERS ACCEPTED

Brouwer L, van de Pol M, Aranzamendi N, Bain G, Baldassare D, Brooker LC, Brooker MG, Colombelli-Négrel D, Enbody E, Hall ML, Karubian J, Kingma SA, Kleindorfer S, Mulder R, Peters A, Pruett-Jones S, Tarvin K, Thrasher DJ, Varian-Ramos C, Webster MS, Cockburn A, Multiple hypotheses explain variation in extra-pair paternity at different levels in a single bird family, *Molecular Ecology*.

Figueroa M, Hammond-Kosack KE, Solomon, PS, A review of wheat diseases - a field perspective, *Molecular Plant Pathology*.

Ganguly D, Crisp PA, Eichten SR, Pogson BJ, The Arabidopsis DNA methylome is stable under transgenerational drought stress, *Plant Physiology*.

Greenhill SJ, Wu C-H, Hua X, Dunn M, Levinson SC, Gray RD, Evolutionary dynamics of language systems, *Proceedings of the National Academy of*

Sciences of the United States of America (early edition).

Huntingford C, Atkin OK, Heskell MA, Martinez-de la Torre A, Harper AB, Bloomfield KJ, Mercado LM, O'Sullivan OS, Reich PB, Wythers KR, Butler EE, Chen M, Clark D, Griffin KL, Meir P, Tjoelker MG, Turnbull MH, Sitch S, Williams K, Mahli Y, Implications of improved representation of plant respiration in a changing climate, *Nature Communications*.

Liang LL, Arcus VL, Heskell MA, O'Sullivan OS, Weerasinghe LK, Creek D, Egerton JGG, Tjoelker MG, Atkin OK, Schipper LA, Macromolecular rate theory (MMRT) provides a thermodynamics rationale to underpin the convergent temperature response in plant leaf respiration, *Global Change Biology*.

Mohamed AR, Cumbo VR, Harii S, Shinzato C, Chan CX, Ragan MA, Satoh N, Ball EE, Miller DJ, Deciphering the nature of the coral-Chromera association, *ISME Journal*.

Murray KD, Webers C, Ong CS, Borevitz J, Warthmann N, kWIP: the *k*-mer weighted inner product, a *de novo* estimator or genetic similarity, *PLOS Computational Biology*.

Murray TG, Zeil J, Magrath RD, Modified flight feathers produce sounds that are reliable alarm signals, *Current Biology*.

Rodríguez-Calcerrada J, Perdiguero P, Rodrigues AM, António C, Atkin OK, Li M, Collada C, Gil L, A molecular approach to drought-induced reduction in leaf CO₂ exchange in drought-resistant *Quercus ilex*, *Physiologia Plantarum*.

Sonawane BV, Sharwood RE, von Caemmerer S, Whitney SM, Ghannoum O, Short-term thermal photosynthetic responses of C₄ grasses are independent of the biochemical subtype, *Journal of Experimental Botany*.

Vega Trejo R, Head ML, Jennions MD, Kruuk L, Maternal-by-environment but not genotype-by-environment interactions in a fish without parental care, *Heredity*.

Wilding M, Peat TS, Kalyaanamoorthy S, Newman J, Scott C, Jermin LS, Reverse engineering: transaminase biocatalyst development using ancestral sequence reconstruction, *Green Chemistry*.