RESEARCH SCHOOL OF BIOLOGY

THE AUSTRALIAN NATIONAL UNIVERSITY

NEWSLETTER

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NEWS

ARC FUTURE FELLOWSHIP SUCCESS

RSB has enjoyed spectacular success in the inaugural ARC Future Fellowship round. Of the twenty one Fellowships awarded to ANU, five were to RSB. These were to:

Owen Atkin, Functional Ecology Group: Climate dependence of plant respiration in a warmer, drier world.

Lindell Bromham, BoZo: Exploring evolvability: its causes, consequences and practical applications in a changing environment.

Warwick Hillier, Photobioenergetics: Developing an Essential Research Platform for the Molecular Engineering of Photosystem II.

John Rathjen, Plant Cell Biology: Plant immunity to fungal and bacterial pathogens.

Spencer Whitney, Molecular Plant Physiology: Enhancing plant photosynthesis by engineering the carbon dioxide (CO_2)-fixing enzyme Rubisco.

Owen, Lindell, Warwick and Spencer are already in-post in the School. John will be joining us from the Sainsbury Laboratory, Norwich, UK. His interests are in signal transduction mechanisms in plants, with a particular focus on the interactions between plants and microbial pathogens. John will be in Canberra and giving a seminar in the Robertson Lecture Theatre at 1.00 pm on September 23. All welcome!

Kastoori Hingorani (PhD student, Photobioenergetics), and **Samuel Inverso** (PhD student, Visual Sciences) were among 15 invited guests to have dinner with Prime Minister Kevin Rudd at Burgmann College on 27 August, where the Prime Minister announced plans for a National Security Institute.

NOTICES

RSB SOCIAL COMMITTEE

The RSB Social Committee is now up and running, and is comprised of one or more Academic Staff members, General Staff members and HDR students from each of RSBS, BoZo and BaMBi. Those on the committee are: Dave Rowell, Pat Backwell, Wes Keys, Brian Mautz, Lisa Alleva, Kathy Smith, Sarojini Balkrishna, Paul Waters, Chris Dawson, Shafagh Al Nadaf, Owen Carr. The Committee will be organising some social events in the School, including...

RSB DRINKS & PIZZA

Next Friday, starting at 5pm in Catcheside court, (ground floor of the RSBS building), we will have the inaugural RSB Drinks and Pizza Evening (building on the fine RSBS and BoZo traditions of Friday afternoon drinks). Drinks will be available (beer at cost price) and there will be pizza (supplied on a partial cost-recovery basis, so bring some change). The intention is to have a School-wide drinks evening every second week, with the venue moving between the different areas of the School.

WES WHITTEN BUILDING

The Vice-Chancellor will Opening the Wes Whitten Building on 21 September. The building is named after Dr Wesley Kingston Whitten (b.1918). Wes was ANU's first veterinary officer, serving from 1949 to 1961. Wes was made a Fellow of the Australian Academy of Science in 1982. Two of his discoveries are so significant that his name has been given to them: 'Whitten's Medium' and 'The Whitten Effect'.

This newsletter is distributed fortnightly by email and hard-copy, and is archived at http://insider.rsbs.anu.edu.au/RSBNewsletter. Contact Diane Whitehead to be added to the mailing list and submit material for future issues.

CONGRATULATIONS

Marilyn Ball, Functional Ecology Group, has been promoted to Professor E2. The promotion is in particular recognition of Marilyn's election in March of this year as a Fellow of the Australian Academy of Science, and her being awarded in 2007 Honorary Membership of the Ecological Society of America. This award is an honour bestowed on individuals 'for exceptional contributions to ecology' and is limited to a total population of 20 living recipients. Marilyn is the first woman to receive this award.

Kelly Debono and **Steven Dempsey** have been appointed to the positions of Team Leader of Animal (Kell) and Plant (Steve) Services in the School.

Mae Hingee and **Rob Magrath,** whose new paper 'Flights of fear: a mechanical wing whistle sounds the alarm in a flocking bird' (*Proc. Roy. Soc. B.*) has been the subject of a *Nature* 'Research Highlight' and will be featured in a *Nature* News and Views article in the next issue (see overleaf for more details).

WELCOME

Megan Downie has returned to BaMBi to join the Alleva/Clark lab. For those of you who may not have met Megan, she completed a PhD in the Kirk lab before taking up a two year post-doc in the US. Megan is now back and keen to learn about the world of viruses and cytokines.

The Tscharke Lab welcomes **Bianca Dobson** from University of Otago, Dunedin, NZ, where she did her B.Sc. (Hons) in Genetics. Bianca is not entirely new to ANU having done a Summer Scholarship with the Comparative Genomics Group a couple of years ago. Her PhD project is aimed at attenuating vaccinia virus by removing most of the genes that are required for survival of the virus in a mammalian host, while leaving those needed to grow the virus in cell culture.

PIGEON WINGS SOUND THE ALARM

By Michael Torrice
ScienceNOW Daily News 2 September 2009

When birds make noise, it's not always with their throats. In hummingbirds and manikins, for example, special feathers flutter and vibrate to produce tones and whistles, which impress potential mates and scare off competitors. Now researchers have found that pigeons use wing noise to warn the flock about approaching enemies--the first example of a nonvocalised alarm call in birds.

Not all birds make vocal calls to alert companions, so behavioral ecologist Robert Magrath of The Australian National University in Canberra wondered whether they use flight sounds instead. He reasoned that because a bird takes off faster and at a steeper angle when startled, these different wing mechanics might produce a unique sound that other birds recognise as distress.

Magrath and his student decided to study the crested pigeon (*Ocyphaps lophotes*)--a more handsome relative of the street pigeon--because it produces a distinctive fluttering whistle on takeoff. They set up 13 feeder stations and recorded normal takeoff sounds. To collect sounds of a startled ascent,


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the researchers waited for a solitary bird to start feeding and then threw a glider that looked like a hawk to scare the pigeon. Compared with the sounds of a pigeon's normal, leisurely takeoff, this whistle was louder and faster. (Hear both, in order, here.) "You get this sense of urgency when you listen to it," Magrath says.

The researchers then played the two types of sounds for pigeon flocks at their feeders. None of the 15 flocks did anything when they heard the normal takeoff noise. In contrast, 11 of 15 flocks immediately flew off after hearing the startled takeoff noise.

Because the alarm sound is naturally louder than the normal takeoff sound, the researchers also adjusted the volume of both recordings. When they made the normal takeoff sound louder, the birds just kept eating; when they turned down the volume of the startled takeoff sound, three of 15 flocks fled and the rest perked up and looked around for danger. Thus, the startled whistle's faster tempo, not its volume, encodes the alarm call, the team reports online today in the *Proceedings of the Royal Society B**.

The source of the alarm noise may be a narrow outer feather on the pigeon's wing, Magrath says. He hypothesises that this feather may have shrunk over time to accentuate the sound the birds make during a startled takeoff. But because the whistle's role hasn't been fully characterised, the alarm could just be an additional benefit of some other evolved signal, such as a call to attract mates or to tell the flock which way to turn during flight, Magrath says.

The findings are "the best demonstration yet that such a nonvocal signal functions as an alarm," says behavioral ecologist William Searcy of the University of Miami in Florida. Kimberly Bostwick, an evolutionary ornithologist at Cornell University, says that about half of all pigeon and related dove species have a similarly modified feather: "[These wing whistles] are probably widespread across doves as an alarm call."

*Mae Hingee and Robert D. Magrath
Flights of fear: a mechanical wing whistle sounds the alarm in a flocking bird. *Proc. R. Soc. B* published online before print September 2, 2009, doi:10.1098/rspb.2009.1110

PAPERS ACCEPTED

Alleva, L.M., Cai, C., and Clark, I.A. Using complementary and alternative medicines to target the host response during severe influenza (2009). *Evidence-based Complementary and Alternative Medicine.*

Cazzonelli, C.I., Roberts, A.C., Carmody, M., and Pogson, B.J. (2009). Transcriptional control of SET DOMAIN GROUP 8 and CAROTENOID ISOMERASE during *Arabidopsis* development. *Molecular Plant.*

Choat, B., Gambetta, G.A., Shackel, K.A., and Matthews, M.A. (2009). Vascular function in grape berries across development and its relevance to apparent hydraulic isolation. *Plant Physiology.*

Hardham, A.R., and Blackman, L.M. (2009). Molecular cytology of *Phytophthora*-plant interactions. *Australasian Plant Pathology.*

Hemmi, J. and Merkle, T. (2009). High stimulus specificity characterises anti-predator habituation under natural conditions. *Proceedings of the Royal Society B.*

Megan, C., Shelden, A., Howitt, S.M., Kaiser, B.N., Tyerman, S.D. (2009). Identification and functional characterisation of aquaporins in the grapevine, *Vitis vinifera. Functional Plant Biology.*

Oguchi, R., Terashima, I. and Chow, W.S. (2009). The involvement of dual mechanisms of photoinactivation of Photosystem II in *Capsicum annuum* L. plants. *Plant and Cell Physiology.*

Stephenson, D.P., Moore, R.J., and Allison, G.E. (2009) Comparison and utilisation of repetitive element PCR for typing *Lactobacillus* isolated from the chicken gastrointestinal tract. *Applied and Environmental Microbiology.*

Tan, J.H.K. and O'Neill, H.C. (2009). Hematopoietic stem cells in spleen have distinct differentiative potential for antigen presenting cells. *Journal of Cellular and Molecular Medicine.*

Wevera, W., McCallum, E.J., Chakravortya, D., Cazzonelli, C.I. and Botella, J.R. (2009). The 5' untranslated region of the VR-ACS1 mRNA acts as a strong translational enhancer in plants. *Transgenic Research.*

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