

NEWSLETTER

ISSUE 14 | 5 MARCH 2010

NEWS

BIOLOGY TEACHING & LEARNING CENTRE WEBSITE

The Biology Teaching and Learning Centre has launched its new [website](#), with access via the [RSB home page](#).

HE DOES IT AGAIN!



As in previous years, Paul Helliwell, EEG, outclassed the competition during the Royal Canberra Show and received the highest award for his bee-related products. Apparently, his mead was a real killer, but an exemplary brood frame previously used for one of the experiments also

impressed the judges. Between the shows, Paul continues making an important contribution to the Molecules to Memory project by providing beekeeping expertise, designing behavioural paradigms and training students.

NEWS FROM EEG

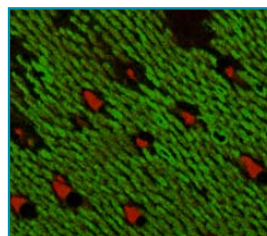
Scott Keogh, EEG, has just started a three year appointment to the Ecology, Evolution, and Behaviour Panel of Experts for the Marsden Fund in New Zealand.

Visiting Professor Kevin Omland, University of Maryland, USA, and Professor Scott Keogh, EEG, ran a very successful two-week Master Class in Speciation in February. Sixteen honours and postgraduate students, eight of whom came from outside ANU, and five postdocs participated. Prof. Omland's visit was supported by the Vice-Chancellor's Travel Fund and by the Graduate Program in Ecology, Evolution and Genetics.

CONGRATULATIONS

Anton Wasson completed his PhD on the role of secondary metabolites called flavonoids in root development. Anton's research provided genetic evidence for flavonoids as auxin transport regulators in root nodulation, and resulted in a model for distinct roles of flavonoids in different root organogenesis programs.

Wiebke Ebeling, EEG, submitted her PhD thesis *Colour Vision in Marsupials* on 26 February.



Immunohistological preparation of a wallaby retina by Wiebke Ebeling.

WELCOME

Craig Daniells, who has started as an IT Client Services Officer. He has over ten years experience as an IT professional, including at CSIRO and the University of Canberra.

Jonathan Stefaniak, who will be starting as an IT Infrastructure Specialist. He comes from the Medical and Health Sciences IT area within CMBE, and has experience both as a client services officer and as a server and network administrator and Information Technology.

Veronica Briceño, who has just arrived in the Nicotra lab, EEG, to begin her PhD on the ecophysiology of dioecious plants. She has come from University of Concepción in Chile.

Dr Riichi Oguchi, who returns to the ANU, this time on a Japanese Society for the Promotion of Science Postdoctoral Fellowship for Research Abroad. For the next two years, Riichi will work with members of Fred Chow's lab, PS, in the Robertson Building on the mechanisms to high-light stress on photosynthesis and recovery from the stress. He previously spent a productive 15 months in Fred's lab while holding a JSPS Research Fellowship for Young Scientists.

Sarah Gourmaud, Intern Student from the Ecole Supérieur Normale, Paris, is working on Bullant Vision and Navigation until June, with Jochen Zeil (EEG).

Professor Willi Ribi, University of Liechtenstein, who is working with Ajay Narendra and Sam Reid, Zeil lab, EEG, on the Neuroanatomy of the Visual System of Day and Night active Bullants until April. Supported by the ARC Centre of Excellence in Vision Science (ACEVS).

NOTICES

ANU SCHOOL HOLIDAY PROGRAMS

If you have interest in a possible School Holiday Programs on campus, please click the following link and complete a 10 min Survey, closing 12 March. <https://apollo.anu.edu.au/default.asp?pid=4456>

Any queries contact

Amanda.lundmark@anu.edu.au or phone x 55966.

HAPPY HOUR

Friday, 5 March from 4.30pm. The RSB joint Happy Hour will be held in the EEG tea room, ground floor Banks Building. Beer and wine \$2. Soft drinks \$1. Nibbles free. ALL WELCOME

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

DISTANCE NO DRAMA FOR DESERT ANTS: STUDY

A lost desert ant will use the distance of its foraging excursion to work out a sophisticated search pattern to get home safely, according to new research from The Australian National University.

The analysis, conducted by Dr Tobias Merkle of the ANU Research School of Biology and Rüdiger Wehner of the University of Zürich, Switzerland, shows that desert ants are highly adaptable in finding their nests. If no visual landmarks are available to guide them home, the ants use the maximum distance of their outbound journey to calibrate search circles.

Dr Merkle said that the adaptive search techniques used by the ants enable them to find their nests as quickly as possible, making them less of a target for potential predators and far less vulnerable to heat.

"The maximum distance they have ventured out is used for the calibration of their search patterns," said Dr Merkle. "That is, the larger the distance has been, the wider the search loops. They remember this distance as they

remember where they have found food and – if this has been a rewarding food site – return to that place during their next foraging excursion."

He added that the ants use a technique called path integration to get them close to their nest, and then start



Dr Tobias Merkle studies ants in the Tunisian desert.

their systematic search for the nest. "Our research shows that – if they have ventured out far from the nest – they use larger loops from the beginning rather than search one small area with high intensity. The latter they do after very short foraging excursions when they are sure that they are close to the nest entrance," Dr Merkle said.

While a similar behaviour has been documented in desert isopods and cockroaches, this study of desert ants, finally

identifies the key factor that calibrates the search patterns. The research paper, 'Desert ants use foraging distance to adapt the nest search to the uncertainty of the path integrator', is published in the latest Behavioral Ecology.

To test the ants' abilities to find their way back to the nest, Dr Merkle and his team drew enormous grids around the ants' nests to map their journeys home. The work was done in North Africa in cooperation with the universities of Bonn, Germany, and Zürich, Switzerland.

"We compared ants whose foraging excursions were very different – long and tortuous, or straight and short. All groups of ants, however, had ventured out the same maximum distance from the nest. All different groups of ants showed very similar search patterns. This led to our conclusion that the distance determines the extension of their searches, because that's the only factor that was the same for all of them," he said.

Friday 19 February 2010
Source: [ANU Media Release](#)

WELCOME (Continued)

Professor Eric Warrant, University of Lund, Sweden, who is working with Jan Hemmi, Sam Reid and Joshua van Kleeft, EEG, on Photoreceptor Properties in Bullants, until April. Supported by ACEVS.

Associate Professor Stephane Viollet, CNRS/University of the Mediterranean, Marseille, who is working on the Control of Head Orientation in Insects until June. Supported by the Centre for Visual Sciences (CVS) and hosted by Jochen Zeil, RSB and Robert Mahony, Faculty of Engineering.

Emma Birnbaum, whose project will aim to record and describe the structure of turn back and look behaviours in jack jumper ants. Emma is from La Trobe University and her visit has been funded by the ARC Centre of Excellence in Vision Science.

Alisa Sannikova, who will assist in carrying out field experiments and video analysis to determine the navigation strategies of nocturnal bullants. Alisa is visiting us from the University of Sydney.

Lauren Du Fall has started her PhD studies in PS, Peter Solomon's lab. Lauren will be studying the wheat metabolome during fungal toxin exposure. **Liam Cassidy** has also joined Peter Solomon's lab, PS, where he will complete the final two years of his PhD. Liam is studying the proteome of fungal pathogens during sporulation using iTRAQ technology.

PAPERS ACCEPTED

Aguilar-Orsorio G., vanKuyk P.A., Seiboth B., Blom D., Solomon P.S., Vinck A., Wösten H.A.B., de Vries R.P. Spatial differentiation of mannitol dehydrogenase and mannitol-1-phosphate dehydrogenase in *Aspergillus niger*. *Eukaryotic Cell*.

Ball E.E., Miller D.J. Putting placozoans on the (phylogeographic) map. *Molecular Ecology*.

Cazzonelli C.I., Pogson B.J. A balance between source and sink: regulation of carotenoid composition in plants. *Trends in Plant Science*.

Rutar M., Provis J., Valter K. Brief exposure to damaging light causes focal recruitment of macrophages and long-term destabilization of photoreceptors in the albino rat retina. *Current Eye Research*.

Valter K., Åkerlind G. Introducing students to ways of thinking and acting like a researcher: a case study of research-led education in the sciences. *International Journal of Teaching and Learning in Higher Education*.

Velten J., Chakir C., Cazzonelli C.I. A spontaneous dominant-negative mutation within a 35S::AtMYB90 transgene inhibits flower pigment production in tobacco. *PLoS ONE*.

Weber A., von Caemmerer S. Plastid transport and metabolism of C₃ and C₄ plants – comparative analysis and possible biotechnological exploitation, *Current Opinion in Plant Biology*.