



Bio21 Institute Update

A quarterly review of highlights and news

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Message from the Interim Director, Professor Tony Bacic.

The importance of providing appropriate infrastructure and services that are fundamental to supporting research has been a key focus over the last few months at Bio21. On the local front, the Bio21 Institute is actively involved in initiatives aimed at developing a comprehensive plan for platform technologies within the broader "Parkville Precinct". The initiative led by Deputy Vice Chancellor (Research) Professor Peter Rathjen, brings together representatives from neighbouring research centres, medical research institutes and hospitals to identify synergies and opportunities. As a major site for platform technologies within Parkville, the Institute is keen to contribute to these strategic relationships.

Internally, a number of projects have been delivered including refurbished meeting rooms in our incubator accessible to Bio21 industry and research members, installation of UniWireless in the majority of our complex and installation of new Optus mobile communication services. On an international front, the University's leading role in the emerging area of metabolomics has duly been recognized. At a recent international Metabolomics Conference in Edmonton, Canada, I was invited to present on the NCRIS funded Metabolomics Australia national facility. The prominence of our facility is significant as it is one of only two national metabolomics facilities in the world.

From within our Bio21 community, we are delighted to acknowledge a number of key achievements and awards. Congratulations to Professor Eric Reynolds and fellow researchers of the CRC for Oral Health Science for the \$31.6m funding received for work toward the discovery and development of new preventive products and treatments for oral diseases. Work conducted by Professor Hoffmann and colleagues has again made headlines with findings that some species are unable to adapt to climate change due to their genes. Their research was published in the prestigious journal *Science*. The caliber of talented early career researchers at Bio21 was also recognised with a number of prestigious awards. Congratulations to Drs Matt Perugini, Stuart Ralph and John Gehman who received ARC Future Fellowships; Dr Alison Funston who was awarded a Young Tall Poppy Science Award and Dr Sally Gras for receiving a Victoria Fellowship. The most recent research group to join Bio21, the Women's Centre for Infectious Diseases led by Professor Suzanne Garland, officially launched their new identity in their new home. A joint centre of the Royal Women's Hospital and the University of Melbourne's Department of Obstetrics and Gynaecology (Faculty of Medicine, Dentistry and Health Sciences) provides opportunities for collaboration with a clinical research group working from the 'bench to bedside and back again'.

Our standing as a leading centre for science continues in the space of outreach and knowledge transfer. With visitors ranging from hosting senior members of the Chinese Academy of Science to partnership events with L'Oréal Australia to host 140 secondary school students for the 'Girls in Science' program, highlight the breadth of our audiences and the importance of engaging our community. I invite you to read on about more about what's making news at Bio21. Tony.



Women's Centre for Infectious Diseases launched. Hosted by the Institute in July, the celebrations for the official opening of the Women's Centre for Infectious Diseases (WCID) included the launch of their new name. The group headed up by Professor Suzanne Garland moved to Bio21 in late 2008/early 2009. The co-location of WCID forms a partnership that will provide opportunities for sharing of equipment, economies of scale and feedback in ideas and application "bench to the bedside and back again". They are the first clinical group to join the Bio21 Institute, sharing our vision of recruiting research leaders who work towards improving

health through biotechnology in the management and research of infections in women and infants, both here and abroad. Their strong focus on training and mentoring aligns with the Institute's purpose to provide an environment that helps broaden the minds and careers of our early career scientists. [Read more.](#) (Photo by Royal Women's Hospital).

'Girls in Science' at Bio21 – L'Oréal Fellowship Award School Visit. The Institute hosted 140 girls from among eight secondary schools across Melbourne taking part in a 'Girls in Science' event designed to encourage more females to consider a career in science. Organised by L'Oréal as part of its 2009 For Women in Science programme, the event included a panel with past and present winners of the L'Oréal Australia for Women in Science Fellowships, which were awarded the previous night, followed by tours of the Bio21 Institute, hosted by our female students and researchers. Professor Tony Bacic, welcomed the students and highlighted the importance of these types of events for inspiring future generation scientists. [Read more](#)

Australian dental health set to improve with \$31.6m funding boost. Australians will benefit from improved dental health due to the \$31.6m funding for a new Oral Health Cooperative Research Centre (Oral Health CRC). Announced by Federal Minister for Innovation, Industry, Science and Research, The Hon Kim Car, the new CRC will work toward the discovery and development of new preventive products and treatments for oral diseases such as caries (dental decay) and periodontitis (gum disease) which currently cost Australians some \$6 billion a year. It also seeks to identify the links between dental and general health. The CRC will be based at the University of Melbourne and will further the work of the existing CRC for Oral Health Science located at Bio21 Institute and the School of Dental Science, University of Melbourne. Anti-decay technology developed within the current CRC is already being used in food and drink and oral care products around the world. "This really is an investment in Australia's reputation as a world-leader in oral health research. The contributions by government and the CRC collaborators will result in substantial benefits to Australia both by reducing the burden of oral disease and in developing world-first knowledge and intellectual property," says Professor Eric Reynolds. Find out [more](#) about the CRC.



Bio21 Institute Platform Technology Forums. The Institute houses several platform technologies which scientists from the broader scientific community can access. To help promote the technology, its applications and techniques, and bring together like-minded users (new and potential) the Institute runs a series of forums.

As one of Australia's leading Nuclear Magnetic Resonance (NMR) spectroscopy facilities our NMR Forum brought together scientists, technical specialists and existing and new NMR users. A special feature was a seminar by international expert Dr Wolfgang Bermel, Senior NMR Applications Specialist from Bruker who talked about advances in the technology and new applications. Forthcoming platform technology events include *Mass Spectrometry 101* lectures and *Metabolomics: A 'hands-on' workshop*. To keep up to date, check the [events](#)

listing on our website. (Photo by Joe Vittorio).

Awards and Fellowships aplenty at Bio21. A number of awards and fellowships were received by early career researchers at Bio21 from chemistry, biochemistry and engineering.

Dr Sally Gras (Chemical and Biomolecular Engineering) was the recipient of the prestigious Victoria Fellowship. The award provides funding for Sally to visit dairy-based industrial and research centres in Ireland, the UK and Europe to learn about their product microstructure and functional food research. Information will help research into building Victoria's capability in cheese production ensuring it remains internationally competitive by boosting quality and decreasing waste.

Dr Alison Funston (Chemistry) received a Young Tall Poppy Science award which goes to young researchers for outstanding achievements in science and in communicating their work to the community. A postdoctoral fellow with the Nanoscience group at Bio21, Alison's research involves the investigation of the unique, interesting and often useful properties of materials at the nanoscale. Work recently published in *Nature Nanotechnology* was highlighted by the Royal Society of Chemistry as one of the biggest chemical breakthroughs of 2008. Alison is also active in outreach activities, supporting initiatives that encourage participation of women in science.

Dr John Gehman (Chemistry) and Dr Matt Perugini and Dr Stuart Ralph (Department of Biochemistry & Molecular Biology) have each won a highly prestigious Australian Research Council *Future Fellowship*.

John will conduct research with global implications aimed at considerably expanding the fundamental capability of experimental techniques for the materials in the solid state using NMR spectroscopy. This will have important implication for life -therapeutic strategies aimed at pharmaceutical targets embedded in cell membranes, research into protein misfolding disorders like Alzheimers and Huntington's, and 'green' plastics and advanced polymers.

Matt's research will provide insight into the sustainability of marine microorganisms that play an important role in Australia's diverse ecosystem, the development and applications of frontier technologies including high-performance computing on the world's largest supercomputer facility for life science research, and knowledge impacting on the discovery of novel antibiotics that target pathogenic bacteria, like Golden Staph.

Stuart will further research Malaria, a major worldwide infectious disease. Stuart will study a new class of parasite drug targets, the transfer ribonucleic acid (tRNA) synthetase enzymes to find novel inhibitors. Compounds blocking these enzymes may lead to new drugs to combat malaria.



Nowhere to hide: some species are unable to adapt to climate change due to their genes. Professor Ary Hoffmann from the Centre for Environmental Stress and Adaptation Research (CESAR), Bio21 Institute, says findings from a new study suggest specialist species (e.g. from restricted environments like the tropics) have a fundamental evolutionary limit, and will be unable to respond to future climate changes. The work was conducted by a team of Melbourne and Monash University researchers from CESAR, and the paper 'Fundamental Evolutionary Limits in Ecological Traits Drive *Drosophila* Species Distributions'

was published in the journal *Science*. Read the article in [Melbourne Newsroom](#) (Photo by Andrew Weeks)