ARC/NHMRC RESEARCH NETWORK FOR
PARASITOLOGY

NEWSLETTER

Issue No. 23 December 2008

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In this issue...

Dear Network Participant,

Once again, members of the ARC/NHMRC Research Network for Parasitology have enjoyed great success in the NHMRC and ARC funding rounds, securing over $13 million worth of research funds. And this in a year where many fine researchers were actually ineligible to apply because of their outstanding results over the past 2 years! Congratulations to all successful people and commiserations to those not so lucky this time round. Details appear elsewhere in this Newsletter but the NHMRC Fellowship winners deserve particular mention: John Reeder; Brian Cooke; Chris Engwerda; Malcolm McConville; Ray Norton; and Tim Davis. Also, particularly noteworthy was the success of consortia to secure some very valuable infrastructure and equipment, particularly in the area of advanced microscopy - the University of Technology Sydney, LaTrobe University, Murdoch University and the Universities of Melbourne, Sydney and WA will all be enjoying some new state-of-the-art facilities in the near future.

Congratulations everyone on an outstanding 2008 and best wishes for the New Year.

Nick

(Nick Smith, Convenor, ARC/NHMRC Research Network for Parasitology; nick.smith@uts.edu.au)

Conference News

Organisation of the Sydney2009 Annual Parasitology Conference is in full swing and a fabulous programme is being put together. Symposia and invited speakers include:

Opening Plenary Lecture

Genevieve Milon (Institut Pasteur, France)

Host Cell Modulation

- John Boothroyd (Stanford University, USA)
- Alan Sher (National Institutes of Health, USA)

Human Helminthiases

- David Dunne (University of Cambridge, UK)
- Ed Pearce (University of Pennsylvania, USA)
- Tom Nutman (National Institutes of Health, USA)
- Jeff Bethony (George Washington University, USA)
- Banchob Sripa (Khon Kaen University, Thailand)
- Don McManus (QLD Institute of Medical Research, Australia)

Malaria Vaccine: Fact of Fantasy?

- Michael Good (QLD Institute of Medical Research, Australia)
- Richard Carter (University of Edinburgh, UK)
- Denise Doolan (QLD Institute of Medical Research, Australia)
- Louis Schofield (Walter and Eliza Hall Institute of Medical Research, Australia)

Immunopathology

- Georges Grau (University of Sydney, Australia)
- Christian Engwerda (QLD Institute of Medical Research, Australia)
- Nick Hunt (University of Sydney, Australia)

Environmental Health

- Steve Williams (James Cook University, Australia)
- Nigel Beebe (university of QLD, Australia)
- Lydden Pollard (University of Saskatchewan, Canada)

Ectoparasites of Livestock

- Peter Willadsen (CSIRO, Australia)
- Shaun Coffey (Industrial Research Ltd, New Zealand)
- Gary Levot (Department of Primary Industries, New South Wales)

The conference will be from **July 12-15, 2009** in the historic Holmes Building and Footbridge Theatre at The University of Sydney, with the Conference Banquet being held in the superb Great Hall at **The University of Sydney**.

This conference will either be the last in the life of the Network or the first in its new genesis - either way, we are determined to make it the most memorable parasitology conference yet seen in Australia, so mark your diaries now.

The website will be up and running in January, 2009 and registration fees have been kept at the same low levels enjoyed for Glenelg2008.

Grant winners

NHMRC: Fellowships

Professor John Reeder (Macfarlane Burnet Institute)

A/Prof. Brian Cooke (Monash University)

Dr Chris Engwerda (QLD Institute of Medical Research)

Prof. Malcolm McConville (University of Melbourne)

Prof. Ray Norton (Walter and Eliza Hall Institute of Medical Research)

Prof. Tim Davis (University of WA)

NHMRC: Projects

John Dalton, Sheena McGowan, Don Gardiner (IBID, UTS and QIMR)

A path to new anti-malaria drug discoveries by understanding enzyme structure

Deb Holt, Shelley Walton, Ben Dunn, Bo Yang Baker (Menzies School of Health Research)

Towards novel therapies for scabies: analysis of aspartic proteases

Katherine Trenholme, Don Gardiner, John Dalton, Chris Brown (QIMR and IBID, UTS)

Analysis of a *P. falciparum* aminopeptidase

Denise Doolan, Philip Felger (QIMR)

Protein microarrays for cross-species malaria vaccine development

Ian Brereton, Tina Skinner-Adams, Luke Gudat, John de Jersey, Lieve Naesens, Antonin Holy (University of QLD and QIMR)

Discovery of new anti-malarial drugs

Tania de Koning-Ward (Deakin University)

Dissecting the contribution of a complex that exports malaria proteins to disease

Malcolm McConville, Spencer Williams (University of Melborne)

Novel metabolic enzyme in *Leishmania* parasites

Stephen Duffull, Julia Simpson, Richard Price (University of Melbourne and Menzies School of Health Research)

Design of antimalarial pharmacokinetic studies

Stephen Rogerson, James Beeson, Mirja Hommel (University of Melbourne and WEHI)

Immunity to malaria during pregnancy

Diana Hansen (WEHI)

NK cell-DC cross-talk in malaria

Georges Grau, Angeles Sanchez Perez (University of Sydney)

Brain endothelial cell membrane stbilisation and its involvement in cerebral malaria

NHMRC: European Union Collaboration Research Program

Georges Grau (University of Sydney)

Research to investigate cerebral malaria

ARC DISCOVERY

A/Prof. DA Carter; Dr J Slapeta (University of Sydney)

Chromera velia a new organism for understanding malaria and related parasitic diseases

ARC LINKAGE INTERNATIONAL

Prof. RB Gasser; Prof. PW Sternberg; Dr W Zhong (University of Melbourne)

Automated, smart genomic data integration for the exploration of developmentally regulated molecules in parasites of major socioeconomic importance

Grant winners cont...

ARC LINKAGE PROJECTS

Prof. RB Gasser; Prof. I Beveridge (University of Melbourne)

Catchment sources of microorganisms developing an integrated strategy for the sustained prevention of waterborne disease outbreaks in humans in Melbourne

A/Prof. UM Ryan; A/Prof. ID Robertson (Murdoch University)

Determining the impact of protozoan pathogens and strongyle worms on prime lamb

ARC Linkage Infrastructure, Equipment and Facilities

A/Prof. CB Whitchurch; Prof. EJ Harry; A/Prof. MR Phillips; A/Prof. MJ Ford; Prof. JP Dalton; A/Prof. PJ Ralph; Dr MA Doblin; A/Prof. NC Smith; Dr N Firth; Prof. J Trewhella; A/Prof. GC Cox; A/Prof. FC Braet; A/Prof. DA Carter; Dr TP Newsome; Prof. NE Dixon; Prof. MJ Walker; Dr JM Mackenzie; Dr E Hanssen; Prof. L Tilley; A/Prof. J Mak; Dr RM Murphy; Dr MT Ryan; Prof. DG Stephenson; Prof. DL Vaux; A/Prof. C Tang; Prof. PR Fisher; Dr AR Gendall; A/Prof. SG Crewther; A/Prof. TA Smith; Prof. RM Robins Browne; Dr EL Hartland (Adminsitering Institution: University of Technology, Sydney)

Microbial and Cellular Imaging and Analysis Facility

Prof. KA Nugent; A/Prof. AG Peele; A/Prof. PC Dastoor; A/Prof. WM Skinner; Dr WP Gates; A/Prof. AF Masters; Prof. L Tilley; Dr PR Heraud; Prof. PA Lay; Dr BC Cowie; Dr DJ Paterson (Administering Institution: University of Melbourne)

Versatile Scanning X ray Microscopy Facility at the Australian Synchrotron

Prof. DD Sampson; Dr JS Croser; A/Prof. M Degli Esposti; Prof. SA Dunlop; Prof. DJ Hampson; Prof. AR Harvey; Dr KA Heel; Dr CM James; Dr C Kahler; Prof. SP Klinken; Prof. PJ Leedman; Prof. BJ Marshall; Prof. AH Millar; Dr AR Murch; Dr JK Phillips; Dr PJ Rigby; A/Prof. UM Ryan; Prof. GA Stewart; Dr PA Stumbles; Prof. RC Thompson; A/Prof. AM Waite; Prof. JM Whelan; Prof. GE Wilcox; Prof. GC Yeoh; Dr M Ziman (Administering Institution: University of WA)

A Core Western Australian Cell Sorting Facility for Ultra Small Objects and Rare Cells

Prof. NJ King; Dr K Gaus; Prof. MA Vadas; Prof. GE Grau; Prof. LM Khachigian; Prof. NH Hunt; Prof. IL Campbell; Prof. W Weninger; Prof. J Black; Prof. WJ Britton; Prof. DR Richardson; Prof. CL Geczy; Prof. BD Fazekas de St Groth; Prof. PW Gunning; Prof. W Jessup; Prof. RS Mason; Prof. RI Christopherson; Prof. G Halliday (Administering Institution: University of Sydney)

7 laser BD LSR II and Cellomics ArrayScan VTi, to enhance capability and throughput for the NSW Advanced Cytometry Facility

Dr SG Solomon; Prof. DG Allen; A/Prof. JW Morley; Dr IS McGregor; Prof. RF Westbrook; Prof. B Dreher; Prof. RA Dampney; Dr E Arabzadeh; Prof. NJ King; Prof. NH Hunt; Dr K Keay; Dr W Phillips; Dr K Cullen; Dr C Leamey; Dr C Koeppl; Dr DA Protti (Administering Institution: University of Sydney)

Multiphoton microscope for cellular imaging in live animals

Congratulations

Congratulations to Prof. Kiaran Kirk, Head of the School of Biochemistry and Molecular Biology (BaMBi) at the Australian National University (ANU) was awarded the 2008 *ASP Bancroft-Mackerras Medal for Excellence* **for his work on the biology of the malaria parasite.**

The research carried out by Professor Kirk and his colleagues at the Australian National University focuses on the molecular mechanisms on which the parasite relies to survive, grow and reproduce within the human red blood cell.

Here, Kiaran talks to Lisa Jones about his research.

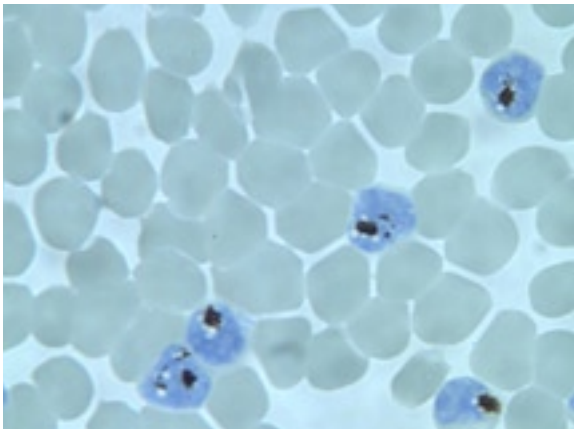


Image of human red blood cells infected with trophozoite-stage malaria parasites (Plasmodium falciparum); courtesy of Dr Richard Allen (ANU).

Congratulations cont...

Kiaran, how long have you been researching the malaria parasite and what lead you to focus on the molecular mechanisms of the parasite?

"I have been working on malaria parasite physiology and biochemistry since the early 1990s when I was a Research Fellow at the University of Oxford. My training and experience was in mammalian cell physiology and biochemistry (I have never formally studied either parasitology or microbiology) and my initial reason for getting into the malaria field was that I felt that with my particular background I could make a contribution to what I thought was an under-studied area of malaria parasite biology."

Kiaran your group is also exploring the possibility that the molecular mechanisms involved might be new drug targets, can you tell us why it is important to look for new drugs to target malaria?

"The malaria parasite has demonstrated a remarkable ability to develop resistance to virtually all of the antimalarial drugs that humans have developed or discovered, and it will no doubt continue to do so. For this reason it is crucial that we continue to develop new antimalarial strategies. In my group we are trying to understand the molecular mechanisms on which the parasite relies for its survival within its human host. In doing so we hope to identify new potential drug targets."

Can you explain why the malaria parasite will not become resistant to these new malaria drugs?

"Unfortunately it is highly likely that any drugs that come from our research, or anyone else's, will ultimately lose efficacy. History has taught us that the malaria parasite has the capacity to develop resistance to any drug. The policy of always using drugs in combinations, thereby ensuring that the parasite would have to develop multiple resistance mechanisms simultaneously in order to survive, is an important and demonstrably successful one. But in the long term, until we have an antimalarial vaccine, it is likely that there will be an ongoing need for new antimalarial drugs, hitting new targets."

In your opinion, who will benefit the most from your malaria research and why?

"There are different answers to this question. My research program is carried out in the context of a University Department and there are numerous students involved. I have been very fortunate that in addition to having excellent collaborators I have had many superb PhD students and postdocs, as well as very many talented undergraduate students who have spent time in the group (the latter often working with the former). For all of these students, the research that goes on in the lab forms an important part of their training and provides them, I hope, with a good grounding in scientific research."

"From another perspective what we do is study the basic biology of a fascinating intracellular organism. Our research adds to the sum of knowledge of biology, and has implications for our understanding of parasitism, and perhaps symbiosis, more generally."

"Last, but certainly not least, is the hope that the work we do will make some contribution to our ability to combat malaria. My lab may or may not identify and validate a successful drug target. But even if new drugs don't come directly from our work, by contributing fundamental knowledge about what sorts of processes the parasite relies on to grow and replicate, and about the molecular mechanisms underlying antimalarial drug resistance, I hope that we are making a meaningful contribution to the long-term global effort to control this disease."

Can you tell us how your research is different to and/or complementary to malaria vaccine development research?

"The ultimate aim of malaria research is, without question, the development of a vaccine – something that stimulates the body's immune system to mount a response to the parasite and thereby generate immunity to the disease. Despite decades of effort we still do not have an effective antimalarial vaccine until we do it is crucial that we have effective drugs. It is this that underpins much of what we do."

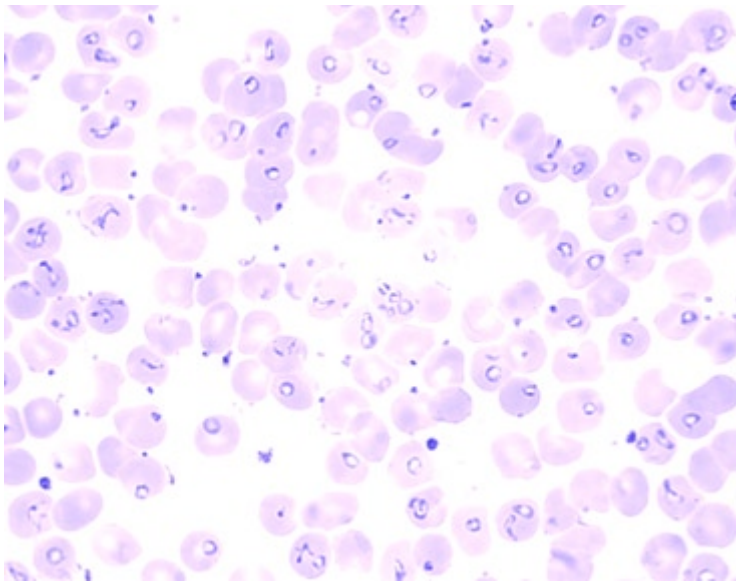


Image of red blood cells infected with ring-stage malaria parasites (P. falciparum); courtesy of Dr Richard Allen (ANU).

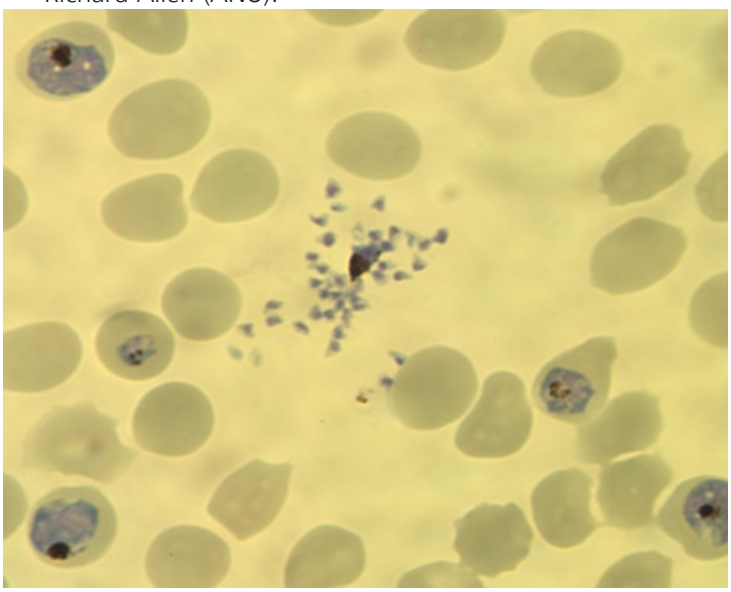
Congratulations cont...

Kiaran, can you tell us what it means to you to be awarded the ASP Bancroft-Mackerras Medal for Excellence*?*

"Receiving the award was a thrilling and humbling experience, and it reflects, of course, the work done by the many students, postdocs and other colleagues with whom I have had the pleasure of working. After learning of the award I spent some time reading what I could of the lives and careers of the people after whom the award was named, in particular Jo (Bancroft) Mackerras and Ian Mackerras who were married to one another and who worked, both together and separately, on a very diverse range of parasites. These two were true parasitologists in a way that I will never be. They had an encyclopaedic knowledge of parasites of all sorts, and over their very long careers they made enormous contributions to numerous areas of parasitology (including, in Jo's case, the mode of action of antimalarial drugs). It was a real honour to receive the award that bears their name."

Thank you so much for your time Kiaran.

Image of a ruptured schizont-stage parasite, showing release of merozoites (P. falciparum); courtesy of Dr Richard Allen (ANU).



Events

Check out the latest parasitology events on the Network website

www.parasite.org.au/arcnet/events

The ASP & ARC/NHMRC Research Network for Parasitology present "Parasites in Focus" photography exhibition

Twenty-six superb photographic prints showing the amazing microscopic world of the parasite.

until February 2009

Perth Zoo

20 Labouchere Rd, South Perth, Western Australia

For more information visit **www.perthzoo.wa.gov.au**

Network Mentorship Scheme

Early career researchers are encouraged to apply to the Network Convenor (nick.smith@uts.edu.au), in strict confidence, for funding to participate in the Network Mentorship Scheme. The scheme allows young investigators to be paired with experienced, successful researchers to discuss, plan, prioritise and set targets for their career. Typically, the early career researcher will fly to the institute of a senior parasitologist and spend a day there. Arrangements for professional development and progress to be reviewed by the pair annually can also be arranged. Importantly, mentors need not be from an individual's home institution but can be drawn from across the Network. The scheme has proved very valuable for several young researchers and their mentors already.

To apply, simply write to Nick with a brief outline of your research interests and aspirations. You can also indicate a preferred mentor or ask Nick for advice on whom amongst the Network participants may be most suitable.

Positions Vacant

Check out the latest parasitology jobs on the Network website

www.parasite.org.au/arcnet/jobs

Postdoctoral Fellow at The Queensland Institute of Medical Research

Applications are invited for a PostDoctoral Fellow to join the Molecular Vaccinology Laboratory at QIMR. This position offers the opportunity to expand on recent advances in genomics, proteomics, and molecular immunology to improve our understanding of the host-parasite relationship on a genome-wide level, dissect the molecular basis of immunity to malaria, and develop an effective malaria vaccine. The position will have a particular focus on cellular immunology, including the role of immunodominance and the interaction between antibody responses and cellular responses on a genome-wide scale. The salary range is $60,412 to $64,848 per annum; this is a full time appointment for three years.

Further Information: Dr Denise Doolan on (61-7) 3362 0382 or Denise.Doolan@qimr.edu.au

Applications should include a curriculum vitae, proof of qualifications, and the names and contact details of three professional referees.

Quote reference # 99/08 and send applications to: vacancies@qimr.edu.au or: Human Resource Officer, Queensland Institute of Medical Research, PO Royal Brisbane Hospital, QLD, 4029.

Applications Close: 5:00pm Friday 19th December 2008

Postdoctoral and Invitation Fellowships in Japan 2009

The Australian Academy of Science, in association with the Japan Society for the Promotion of Science (JSPS), invites applications from Australian researchers to undertake Postdoctoral and Invitation Fellowships in Japan. Postdoctoral Fellowships are for a period of 12 to 24 months, Invitation Fellowships short-term for a period of 14 to 60 days and the Invitation Fellowship long-term is for 2 to 10 months.

Researchers in any field of natural sciences, including technology, engineering and medicine can apply.

Applications in the humanities and social sciences are also accepted but only for the Postdoctoral Fellowships. Please see website for information and guidelines.

Applications close Friday 5 December 2008

Postdoctoral Fellowships: http://www.science.org.au/internat/jspspd.htm

Invitation Fellowship short term: http://www.science.org.au/internat/jspsfst.htm

Invitation Fellowship long term: http://www.science.org.au/internat/jspsflt.htm