ARC/NHMRC RESEARCH NETWORK FOR
PARASITOLOGY

NEWSLETTER

Issue No. 21 August 2008

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We gratefully acknowledge the support of our Network Newsletter Sponsor, BioAustralis.

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Dear Network Participant,

Another annual conference has come and gone and, as was the case with the Gold Coast and Canberra conferences, this year's conference in Glenelg was an outstanding success, attended by 220 keen and eager parasitologists and characterized by exceptionally high quality presentations by our invited speakers and by those who contributed papers – especially our students. I'd like to congratulate and thank you all for contributing so energetically to the meeting. I'd also like to congratulate the local organizing committee, ably headed by Ian Whittington, for putting together an innovative, enjoyable meeting. Don't forget to give your feedback about this year's ASP & Network Annual Conference at Glenelg by completing the conference survey:

Copy and paste the following link into your browser

http://surveys.uts.edu.au/index.cfm?surveyid=4008

And, start preparing for the 2009 ASP & ARC/NHMRC Research Network for Parasitology Annual Conference, which will be held from 12 to 15 July at The University of Sydney.

As always, please don't hesitate to provide feedback and supply us with news stories, grant successes, job ads, notices of upcoming events etc etc.

In the meantime, best wishes,

Nick

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

Congratulations

Congratulations to Prof Michael Good who was awarded Officer of the Order of Australia on the 9th June 2008 for "service to medical research, particularly in the fields of infectious disease immunology and vaccine technology, through leadership roles at the Queensland Institute of Medical Research and contributions to education."

Congratulations to the winners of the ARC/NHMRC Research Network for Parasitology Early Career Researcher Award for the best presentation:

Alex Maier (Walter and Eliza Hall Institute/LaTrobe University) for his presentation on "The malaria parasite *Plasmodium falciparum* holds several keys to gain entry into human erythrocytes";

Julie-Anne Fritz (Australian National University) for her poster and poster talk on "pWormgateMulti: Tissue-speciic RNAi using Gateway hpRNAi vectors."

Congratulations to the winners of the 2008 ASP Student Awards:

Traditional Poster

Robert Summers, Australian National University "Reversing chloroquine resistance in the malaria parasite *Plasmodium falciparum***".**

Cinzia Cantacessi, The University of Melbourne "Transcriptional conservation between *Ancylostoma caninum* **and** *Haemonchus contortus* explored by microarray and bioinformatic analyses".

2-minute Oral Poster Presentation (Speed Dating)

Natalie Spillman, Australian National University "Regulation of intracellualr pH by the intraerythrocytic malaria parasite does not involve a Na+/H+ exchanger".

Philippa Sharman, University of Technology, Sydney "The identification of subtilsin-like serine proteases in *Eimeria tenella*".

15 minute Oral Presentation

Neil Young, The University of Tasmania "Does *Neoparamoeba perurans* down-regulate antigen processing machinery in the gills of amoebic gill diseases-affected Atlantic salmon?".

Adele Lehane, Australian National University "Mutations in PfCRT give rise to the chlorquine-associated H+ leak from the digestive vacuole in chloroquine-resistant malaria parasites".

Congratulations to the ASP Fellows of the Society awarded at the 2008 ASP & Network Conference

A/Prof Nick Smith from University of Technology, Sydney and

A/Prof David Blair from James Cook University

In the upcoming Network Newsletters we will feature profiles of Nick and David.

Congratulations to Prof Kiaran Kirk from The Australian National University for winning the 2008 ASP Bancroft-Mackerras Medal for Excellence.

Kiaran and his team's work on the biology of the malaria parasite, a single-celled organism which invades the red blood cells of its human victims, causing hundreds of millions of cases and over one million deaths each year. There is no vaccine to prevent the disease and most of the drugs that are available to treat the disease are becoming increasingly ineffectual as the parasite develops mechanisms of drug resistance.

The research carried out by Kiaran 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. The group's work has shed new light on the mechanisms by which the hungry parasite scavenges nutrients from the blood of its victim, how it gets rid of the potentially toxic waste products of the parasite's hyperactive metabolism and how the growing parasite maintains a healthy internal ion balance. The group is exploring the possibility that the molecular mechanisms involved in these various processes might be new drug targets, thus providing new ways to kill this deadly parasite. Drugs that knocked out one or more of these mechanisms could potentially starve the parasite to death, poison it with its own waste products, or cause a lethal ion imbalance in the parasite.

Kiaran's group is also investigating how the parasite has become resistant to existing antimalarial drugs. For certain types of antimalarials the parasite has developed the ability to "spit" the drugs out, thereby rendering these drugs largely useless. "We are investigating the molecular mechanisms involved, with the aim of "plugging" the parasite's spitting mechanism, thereby rendering it once again susceptible to the antimalarial effects of the drugs." Kiaran says.

Congratulations

Award winning team addressing the cattle tick problem in Queensland's cattle industries

Ticks cost Queensland cattle industries $175 per annum in costs. Dr Louise Jackson (DPI&F) is the project immunologist on the tick vaccine project funded by the Beef CRC and the Qld Government's Smart State Innovation Fund led by Dr. Ala Lew (DPI&F). This is addressing the tick problem by the development of novel solutions to control ticks.

Emily Piper, supervised by Dr. Louise Jackson (DPI&F) and Assoc Prof Nicholas Jonsson (UQ), was awarded the Early Career Scientist award at the Cooperative Research Centre's Association Annual

Conference last week. The CRC Association represents 58 CRCs which specialise in a broad range of sciences, technologies and industries.

Emily's research is part of the CRC for Beef Genetic Technologies and thus Emily is the winner out of 8 finalists from all 58 CRCs in Australia.

Together with Emily and project staff, Louise has been elucidating how cattle develop immunity to ticks. This could lead to an immune assay that can be used to predict tick resistance or susceptibility. Understanding cattle immunity is also important for screening tick vaccine candidates and, thus, also crucial for the development of the new vaccine.

Emily is putting her prize towards attending and presenting at the VI International Conference on Ticks and Tick-borne Pathogens (TTP-6) to be held later this year in Argentina. The tick vaccine research team which includes DPI&F, The University of Qld, Murdoch University and the US Department of Agriculture are all proud to have Emily as part the team.

Dr Louise Jackson, Emily Piper, Assoc Prof Nick Jonsson, Dr Ala Lew

Cell publication for WEHI researchers

Congratulations to Alan Cowman, Alex Maier, Ross Coppel, James Beeson and Brendan Crabb and their research teams for their discovery identifying and disrupting key elements of malaria's "sticky sack" adhesion strategy that lead to a publication in the prestigious international journal, Cell.

Once the malaria parasite infects the healthy red blood cells of humans the cells are transformed into "sticky sacks" containing up to 32 new daughter parasites. The hijacked red blood cells stick to blood vessel walls, thereby avoiding being flushed through the spleen and being destroyed there by the body's immune system.

WEHI scientists have identified eight new proteins that transport the parasite's major adhesion factor, PfEMP1, to the surface of infected red cells, where it promotes the formation of sticky knobs. They have shown that the removal of just one of these proteins disrupts the ability of the parasite bag to stick to the blood vessel walls.

WEHI researchers believe that this discovery might lead to new drugs that target the "stickiness factors"; the inability of the parasite to prevent its transport to the human spleen would lead to the parasite's natural destruction.

"Exported Proteins Required for Virulence and Rigidity of Plasmodium falciparum-Infected Human Erythrocytes" A. G. Maier *et al.* Cell, Vol 134, 48-61, 11 July 2008

Grant Winners

Congratulations to Prof Andy Thompson and his research team who will receive approx. $3m from the Drugs for Neglected Diseases Initiative (DNDi) over the next three years for a project to optimise new drugs to treat Chagas disease (*Trypanosoma cruzi*). This will be in collaboration with the Murdoch-based medicinal and synthetic chemistry company Epichem. The project will start on July 1st.

Andy's team have also been established as a drug screening centre for DNDi, to complement the role of the Swiss Tropical Institute in Basel and thus increase global capacity. In addition to *T. cruzi*, they have established assays for African trypanosomes and *Leishmania* species.

Network Researcher Exchange, Training and Travel Awards

Congratulations to the most recent Network Exchange, Training and Travel Award Winners:

Prof Andrew Thompson, Murdoch University, and **A/Prof Nick Smith**, UTS, to fund a Researcher Exchange for the visit of Prof Michael Grigg from the National Institutes of Health, USA, for collaborative work on *Toxoplasma* strain characteristaion.

Dr Alan Dargantes, Murdoch University, Melbourne to fund a Researcher Exchange to visit Dr David Piedrafita at Monash University to enhance his skills in molecular diagnosis of parasites and attend a workshop on diagnostics at CSIRO AAHL (Geelong).

Michael Lees, UTS, to fund a Researcher Exchange to visit Prof Rima McLeod's lab at the University of Chicago Illinois, USA, to collaborate on a project investigating early immune responses to *Toxoplasma*.

Alex Umbers, The University of Melbourne, to fund a Researcher Exchange laboratory of Julie Moore, Centre for Tropical and Emerging Diseases, Georgia for training in the isolation of fresh placental primary syncytiotrophoblasts.

Dr Shelley Walton, Menzies School of Health Research (Darwin), to fund a three day workshop to bring together national collaborators involved in a coordinated program of scabies research.

Ming Kalanon, The University of Melbourne, to attend the Biology of Parasitism Course at the Marine Biology Laboratory in Woods Hole, USA.

Remaining application dates in 2008

The Network Researcher Exchange Training and Travel Award scheme continues to prove to be an outstanding success and young researchers are particularly encouraged to apply for assistance. In 2008, there will be just two more application rounds with the following deadlines:

Friday September 26
Friday November 28

Applications will be assessed by a specific assessment committee and applicants will be advised of the outcome, where possible, within 4 weeks.

Guidelines for the Network Researcher Exchange, Training and Travel Awards can be found at www.parasite.org.au/arcnet/funding

Fiona McCallum during her Network Researcher Exchange Travel Award to Kenya Medical Research Institute in Kilifi, Kenya for her malaria research.

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.

18 to 31 August 2008

The Muse Gallery

Building C,TAFE Ultimo College, Cnr Mary Ann and Harris Street, Ultimo (Opposite intersection of Harris Street & Ultimo Road), Sydney

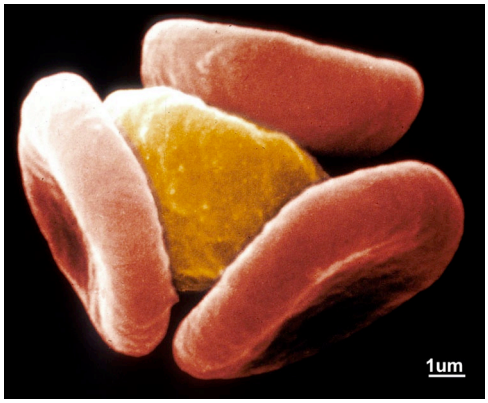
Dr Sheila Donnelly (UTS) presents "Revenge of the Bodysnatchers. "

Thursday 28 August 2008 from 6pm until 8pm at The Muse Gallery

Parasites have snatched our bodies! Parasites infect billions of people worldwide, mostly in under-developed countries. Parasites can multiple their numbers at a phenomenal rate, for example liver and blood flukes can produce 30,000 off-spring per hour! Find out how scientists will combat these parasites in this gory presentation by parasitologists from the ARC/NHMRC Research Network for Parasitology and UTS.

Free entry to the Muse Gallery

For more information visit www.ultimosciencefestival.com



"Malaria Rosette" part of Parasites in Focus at The Muse Gallery, Sydney

This is an image of a red blood cell infected with malaria, surrounded by healthy red blood cells.

Malaria is a disease that kills a child every 30 seconds. It is caused by a single-celled parasite, *Plasmodium falciparum*, which infects red blood cells.

Infected cells (shown in yellow) become knobbly and sticky – normal red blood cells will stick to them.

Infected cells will also stick to the blood vessels of the brain causing the most serious and deadly form of malaria – cerebral malaria.

"Any parasite that shares our brain with us is worth studying" (Bill Hutchison, notable Scottish parasitologist, 1924-1998).

Events continued...

The ASP and the Network are co-sponsoring symposia at the Australian Health and Medical Research conference at the Brisbane Convention Centre, November 16 – 21 2008

http://www.ahmrcongress.org.au

The invited speakers sponsored by the ASP and the Network are:

- Charles King, USA
- Giovanna Raso, QIMR
- Ian Riley, UQ
- Scott O'Neill, UQ,
- Malcolm McConville, University of Melbourne
- Andreas Hofmann, Griffith University
- Tina Skinner-Adams, QIMR

Other societies are also sponsoring speakers with parasitological interests, so there will be a major focus on parasites of medical importance at the congress.

Registration and abstract submission is now open for the 4th AHMRC.

Deadlines

Abstracts

Oral presentation submission deadline is Friday 15th August, 2008

Poster Only presentation submission deadline is Friday 19th September, 2008

Registrations

Deadline for Early Bird Registration is Friday 15th August, 2008

This meeting represents a fantastic opportunity for Australasian researchers, particularly students, to attend an international quality meeting at low cost.

We welcome and encourage you all to attend and actively participate in this meeting that happens only every second year.

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.

Network IT Initiative

The Network IT Initiative continues in 2008 and Network Participants are encouraged to contact it's chair, Ross Coppel of the Victorian Bioinformatics Consortium at Monash University, to explore any and all their bioinformatic needs including:

- Microarray analysis/storage
- Sequence analysis/storage
- Comparative genomics
- Custom software development
- Online project collaboration
- Data visualization
- Computer hardware selection

So, don't hesitate to contact Ross to explore how he and his team can assist you:
http://www.vicbioinformatics.com/parasitology.shtml

Announcements

"Laboratory Diagnosis of Malaria: From Conventional to High Technology" - International workshop in Bangkok, Thailand
Presented by the Department of Protozoology (Faculty of Tropical Medicine) at Mahidol University, this five-day workshop takes place between 18th and 22nd August 2008

Download the flier for more information http://www.parasite.org.au/arcnet/events/tropmedicine.pdf