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## In this issue...

Dear Network Participant,

This month we focus on our 2009 Conference by profiling two of our inspirational invited speakers, John Boothroyd and Alan Sher, and the newest fellow of the Australian Society for Parasitology, Maria Meuleman.

Another exciting piece of news coming out of the conference was the decision by the ASP Council to provide funding to continue the ARC/NHMRC Research Network for Parasitology for at least another two years. A formal letter of offer has been made to the University of Technology, Sydney, inviting them to continue to host the Network and inviting Lisa and I to continue to serve you as Communications and Strategic Development Coordinator, and Convenor. We are looking forward to the challenge very much and more information will be included in our next newsletter as planning evolves further.

In the meantime, parasitology in Australia continues to go from strength to strength...

We congratulate Michael Good who was awarded the 2009 CSIRO Eureka Prize for Leadership in Science. We nominated Michael for this highly prestigious award on behalf of the Network and were delighted by this well-deserved result. Michael featured recently in *The Weekend Australian* interviewed by Helen Francombe along with other Network Malaria researchers, and congratulations to Rowena Martin and Kieran Kirk (ANU) whose research news also featured in *The Australian* this week.

Congratulations also go to Network Participants who won ARC Future Fellowships in Parasitology: Stuart Ralph, James Beeson, Kathy Andrews, Yuesheng Li and Chris Peacock. A fantastic result!

On a sadder note, Lisa and I bid farewell to Wendy Relf recently. Wendy has been an integral part of the Network team for the past couple of years and Lisa and I will miss her enormously and wish her all the very best for the future.

Finally, grab a copy of the latest issue of "Cosmos" Issue 29 Oct/Nov 2009, Australia's #1 science magazine, which features images from our "Parasites in Focus" exhibition.

Best wishes,

Nick

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

# Congratulations

**Congratulations to Professor Michael Good, Director of the Queensland Institute of Medical Research (QIMR) who was awarded the 2009 CSIRO Eureka Prize for Leadership in Science.**

The Eureka Prize for Leadership in Science is awarded to an Australian individual who has demonstrated an outstanding role and impact in science.

Read the full interview with Michael on the Network website [http://www.parasite.org.au/arcnet/news/news\\_good\\_aug09.html](http://www.parasite.org.au/arcnet/news/news_good_aug09.html)

Michael also featured recently in *The Weekend Australian* (26-27 September 2009) in an interview by Helen Francombe along with other Network Malaria researchers, Rowena Martin and Kieran Kirk (Australian National University), Alan Cowman (Walter and Eliza Hall Institute), Robin Anders (La Trobe University) and visiting ASP lecturer Richard Carter (University of Edinburgh). Read the full news story online <http://www.theaustralian.news.com.au/story/0,25197,26119541-23289,00.html>

**Congratulations to Network Participants who were recently awarded ARC Future Fellowships in Parasitology**

**Stuart Ralph** (The University of Melbourne)

Transfer ribonucleic acid (tRNA) synthetases as drug targets in *Plasmodium falciparum*

**James Beeson** (Walter and Eliza Hall Institute of Medical Research)

Identifying the major targets of protective antibodies against malaria

**Kathy Andrews** (Griffith University and QLD Institute of Medical Research)

New drugs for malaria that target histone deacetylases

**Yuesheng Li** (QLD Institute of Medical Research)

Development of new interventions and treatment for schistosomiasis morbidity control

**Chris Peacock** (The University of WA)

Genomic and molecular characterisation of a novel Australian *leishmania* pathogen.

# Research News

**Congratulations to Rowena Martin and Kieran Kirk, Australian National University**, who published their paper "*Chloroquine Transport via the Malaria Parasite's Chloroquine Resistance Transporter*" Rowena E. Martin, Rosa V. Marchetti, Anna I. Cowan, Susan M. Howitt, Stefan Bröer, Kieran Kirk, 25 September 2009, Vol 325, Science. An interview with Rowena by Wendy Zukerman appeared in *The Australian, Higher Education* October 7, 2009 and we will feature an interview with Rowena in the next Network newsletter. Read *The Australian* news story online <http://www.theaustralian.news.com.au/story/0,25197,26173986-12332,00.html>

# Profiles



Professor John Boothroyd at the 2009 ASP & Network Annual Conference in Sydney

**John Boothroyd is Professor of Microbiology & Immunology at Stanford University, in the U.S.A. and has been researching the parasite *Toxoplasma gondii* for the past 25 years. At the recent 2009 ASP & Network conference in Sydney John spoke about how *Toxoplasma* interacts with its host and here talks to Lisa Jones.**

*Toxoplasma gondii*, a protozoan parasite, is an arch manipulator, playing with the immune system and the mind of its hosts. Its hosts are many – it is arguably the most successful parasite on the planet, able to infect almost any warm-blooded animal, including humans. One-third of the world's people are infected with *Toxoplasma* without even realising it. But, it can cause disease, particularly in the immunocompromised (eg, AIDS patients, transplant recipients), and has drastic effects on unborn babies if the mother gets infected for the first time during pregnancy it can kill the baby *in utero* or cause severe disabilities including mental retardation and eye disease that become

## Profiles continued...

obvious later in life. As many as 40 million people may be the victims of sight problems caused by the normally benign *Toxoplasma gondii*.

John said, "*Toxoplasma gondii* can infect both humans and animals and there are three main clonal types. Sometimes the parasite causes severe diseases in humans; immunocompromised humans are the most affected."

John said his underlying research question is, "Why does *Toxoplasma gondii* sometimes cause extreme disease, and at other times mild? Is it to do with the genetic strain of the parasite or the host or both?" When asked, "Does virulence lead to death?" John said, "Occasionally, *Toxoplasma* can lead to death, when it is in the wrong host – which can sometimes be humans."

As an undergraduate, John studied unicellular algae, and as a postgraduate student, bacteriophage T7 and transcription. He then went on to research Foot & Mouth Disease and African trypanosomes with the Wellcome Trust in the UK. John describes trypanosomes as a "Goldmine of molecular phenomena – in terms of gene expression, the first protozoan parasites examined in molecular detail." He continued working on trypanosomes at Stanford University for 15 years. When looking for another parasite to work on that was amenable to genetics, an intracellular parasite (with amazing biology), and medically relevant, John found that *Toxoplasma* was the perfect fit! In 1983, at Stanford University, John started working on *Toxoplasma* at a molecular level.

Twenty-five years on, John says, "I expect to answer my question – but incompletely. While we know vastly more about *Toxoplasma* now than 25 years ago, most of that knowledge concerns *Toxoplasma* as a self-contained entity and an intracellular infectious agent – rather than a parasite".

John is still highly motivated in his *Toxoplasma* research. He said he enjoys "The mix of incredibly cool biology with medical relevance. We all want to do good things in life, and if you are working with animals you have a moral obligation that there be a goal of achieving substantial good through your research."

John is therefore particularly pleased that his group's research has led to the development of tests for *Toxoplasma* which takes the major antigen cloned from the parasite and uses this recombinant protein for diagnostics. Previously testing for *Toxoplasma* used to kill 200,000 mice per year and, now that the test uses yeast, those 200,000 mice are not necessary.

Currently, John's research group is determining the correlation between strain type and disease outcome. They have found that some strains of *Toxoplasma* may be highly virulent in humans, and that may be why some people get a particularly nasty form of ocular disease. Likewise, in some pregnant

women in their first trimester, the parasite can cross the placenta and cause either death of the foetus or no symptoms – this might also depend on the strain of parasite they're infected with." John explained how the test will work: "Take the pregnant women who have seroconverted and use a non-invasive test to look at their blood. Then work out the strain of *Toxoplasma* based on the antibodies in the women's blood. By typing the parasite this will help those women and their physicians know how to best treat their infection (i.e. with drugs or not)."

*So what brought John to Australia?*

"Part of my job is to be a spokesperson and to promote the work of my group, which is part of the reason I enjoy attending meetings like the ASP & Network Annual Conference." John also enjoys the chance to be stimulated about his own work in different ways based on the things he hears in different conference sessions. He finds these sessions intrinsically interesting and thinks about how other's research relates to *Toxoplasma*. John said, "My group's research depends on getting good people as part of the team and by giving talks at conferences I get a large number of applications from post docs."



Professor Alan Sher and Professor Nick Smith at the 2009 ASP & Network Annual Conference in Sydney

**Professor Alan Sher is Chief of the Laboratory of Parasitic Diseases at the National Institutes of Health, USA, where some of the most cutting-edge immunological research in the world is done. At the recent 2009 ASP & Network conference in Sydney Alan compared the immune response of the host to *Toxoplasma* and *Schistosoma* infection and here talks to Lisa Jones.**

Alan said of his early years as a graduate student who studied basic immunology he was looking for a field under-represented in the challenges of human disease research. Alan said, "In the 1970's the surgeon general of the US declared infectious disease was a thing of the past because of the

## Profiles continued...

advent of good antibiotics and vaccines for smallpox, polio and other viral and bacterial diseases etc. But," Alan said, "Parasitic diseases were left – there were no good drugs or vaccines for parasitic diseases that affected humans, like schistosomiasis". He was awarded a postdoctoral fellowship from the NIH, USA and moved to Mill Hill, UK.

As a young post-doctoral researcher Alan worked in the next laboratory to fellow immunologist Bridget Ogilvie. Alan found Bridget to be a great inspiration and mentor both during his time in the UK and subsequently. During her own science career, Bridget was former chief of the Wellcome Trust and prominent researcher on parasite immunology; and today is Dame Bridget Ogilvie, Companion of the Order of Australia for services to science policy and parasitology. She is still an inspiration to young science researchers across the globe.

Alan moved from the UK back to the US and worked on *Schistosoma*, a parasite that infects more than 200 million people, mainly in the tropics, whilst at Harvard. He brought this work to the NIH in 1980 when he joined the Laboratory of Parasitic Diseases and eventually transferred it to a talented post-doc, Tom Wynn. Bridget and others had recommended working on *Leishmania*, a parasite that causes a spectrum of terrible diseases - ranging from skin lesions to multi-organ failure - throughout the tropics and sub-tropics. The *Leishmania* parasite is ingenious – it has worked out how to live in macrophages, one of the most important cells of our immune system. Alan recruited two young scientists, David Sacks and Phil Scott to work on *Leishmania* with him and both have since gone on to be leaders in this area. David is now a Senior Investigator NIH and Phil is now Vice Dean and Professor at the University of Pennsylvania, Veterinary School. Alan's current work in parasitology is largely focussed on the study of host resistance to *Toxoplasma* infection.

Alan said he wants to know, "Why do we mount such radically different immune responses to helminths and protozoa? Parasites are the world's best immunologists. They have been studying the immune system for millions of years. We are novices in comparison!"

The ultimate goal of Alan's work at NIH's Laboratory of Parasitic Diseases is immunologic disease intervention in the form of vaccination or immunotherapy. Alan said, "At the same time, our research on the host response to infection has provided insights into the effector functions and regulatory mechanisms utilized by the vertebrate immune system."

In the future, Alan wants to turn his research toward the human immune response to parasites. Alan is also involved in studying the immune response to *Mycobacterium tuberculosis*. A separate AIDS program examines mechanisms by which co-infection with intracellular pathogens may promote HIV-1 disease. Alan and his team are also trying to understand the mechanisms underlying immune

reconstitution inflammatory syndrome in AIDS patients – an illness that is particularly common in patients who are co-infected with TB.

Alan said that his motivation as a researcher is his "Enjoyment of science itself but also as vehicle for interacting with people. He is particularly proud of the successful investigators who have trained in his lab and considers them his most important product".

*We were very fortunate that both John and Alan were able to attend and present at the 2009 ASP & Network Annual Conference. We wish them and their respective research teams all the best in the future and look forward to more news about their work.*



*Maria Meuleman, IJP, at the 2009 ASP & Network Annual Conference in Sydney*

**Maria Meuleman is the Editorial Assistant for the International Journal for Parasitology (IJP), and was made a Fellow of the Australian Society for Parasitology at the recent 2009 ASP & ARC/NHMRC Research Network for Parasitology Conference in Sydney. Maria talks to Lisa Jones about her work with the IJP and her interest in parasitology.**

*Maria, tell us about your work with the International Journal for Parasitology and how you first became involved in with the ASP?*

Maria began her association with the ASP in 1995 whilst working as a personnel officer for CSIRO and studying Arts (Maths major) at The University of Sydney. Alan Donald, who worked at CSIRO in North Ryde became the IJP editor-in-chief and Maria worked part-time for Alan helping with the journal for a few months after the McMaster Laboratory moved to Prospect. She enjoyed it, so took the opportunity to return to work with the journal when Alan Johnson, then based at UTS, became the IJP editor-in-chief in 1997 and, apart from

## Profiles continued...

nine months in 1999 when Maria had time away from the journal, she has been working for the IJP ever since.

The IJP produces 14 issues per year; one per month with two special issues (6 months apart). Maria's job involves manually checking general formatting of submitted manuscripts before passing these to the editor-in-chief. She liaises with the author and maintains personal contact, processing the manuscript and doing the final editing for journal style before submitting it to Elsevier for formatting and publication.

Maria says, "I enjoy interacting with people and building relationships with editors, referees and authors. This job is just right for me - I love the autonomy and independence while still being part of a team."

Maria has worked with different editor-in-chiefs and says, "I enjoy the sense of comradeship with editors and when they move on there is a sense of sadness – but I enjoy building new relationships as the new editor joins."

*Tell us what the most rewarding part of your job is?*

Being made a Fellow of the Australian Society for Parasitology, Maria said, is her proudest moment, "Even more so because I am not a science person and I am truly touched that the ASP value my contribution enough to make me a Fellow," she said. "I feel very passionately about what I do, and the journal, and I love contributing in this way to the ASP and to ASP students."

Over the past few years, Maria has seen the IJP increase in worth both financially and in terms of its impact factor. Maria says, "Regular changes to the journal have helped to keep me interested and motivated in my work and I've loved being part of the evolution of IJP."

*Favourite parasite?*

Maria couldn't decide on her favourite parasite. "I love them all," she said. But she admits to feeling itchy when she reads some papers and said she is often fascinated by articles.

Maria said she is a convert to parasitology. "I am constantly amazed by the variety, number and form parasites take and how well they survive and function. My new bedtime reading material is 'The History of Parasitology', she said.

## Conference News

Thank you for your feedback about this year's conference at The University of Sydney, to read the results of the **2009 ASP & Network Annual Conference Survey** please click on the survey link or copy and paste the url into your browser:

<http://www.parasite.org.au/arcnet/conference/2009ConfSurveyReport.pdf>

**The XIIIth International Congress of Parasitology (ICOPA)** will be held in Melbourne, Australia, from 15-20th August 2010 at the new Exhibition and Convention Centre.

## Events

This month's **Cosmos**, Australia's #1 Science Magazine, issue 29 Oct/Nov 2009 (<http://www.cosmosmagazine.com>) features six images from our "**Parasites in Focus**" exhibition.

**"Parasites in Focus"** Twenty-six superb photographic prints showing the amazing microscopic world of the parasite accompanied by three hands-on parasite exhibits: parasite game show "Who's my host?", "Virtual Microscope" and "Real Microscope" to view parasites close up in all their glory.

Check Network Events on our website to find out when Parasites in Focus will be at a venue near you, or contact Lisa ([Lisa.Jones@uts.edu.au](mailto:Lisa.Jones@uts.edu.au)) if you would like to host the exhibition.

<http://www.parasite.org.au/arcnet/events>



## Network Mentorship Scheme

Early career researchers are encouraged to apply to the Network Convenor ([nick.smith@uts.edu.au](mailto: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](http://www.parasite.org.au/arcnet/jobs)

**PhD Project  
Wildlife Disease Ecology Group  
James Cook University**

**Risk of spill over of disease from wild dogs in the Wet Tropics**

Our research group has an opportunity for a PhD candidate to determine (1) the disease burden of wild dogs in the Wet Tropics of North Queensland and (2) mechanisms and risk of transmission of diseases of wild dogs to wildlife, domestic animals and humans in the Wet Tropics. It is expected that this research will lead to better control of these diseases and improved management of wild dogs.

The successful candidate will be enrolled through the Schools of Marine and Tropical Biology and Public Health, Tropical Medicine and Rehabilitation Sciences under the supervision of Prof. Chris Johnson, Dr. Lee Skerratt and Dr. Brad Congdon with additional supervision provided by Dr. James Butler, CSIRO. Candidates with experience in wildlife diseases will be preferred. Candidates should be comfortable with working in the field and sampling wildlife and be able to develop further ideas on studying mechanisms of transmission. The candidate will gain broad skills and knowledge in epidemiology, parasitology, ecology, emerging wildlife diseases and scientific publishing. The scholarship stipend is an Australian Postgraduate Award Industry (APAI) at \$26,669 per annum (tax free).

Please contact: Dr Lee Skerratt to apply or for additional information, e-mail: [lee.skerratt@jcu.edu.au](mailto:lee.skerratt@jcu.edu.au), phone (W) 07 4781 6065, (M) 0427155537.

**See full advertisement on the Network website**  
<http://www.parasite.org.au/arcnet/jobs/job065.html>

**Post-doctoral Scientist (Madang, Papua New Guinea)**

A position is available for a postdoctoral scientist attached to a large malaria prevention study in Madang, PNG, being carried out by the University of Melbourne and the Papua New Guinea Institute of Medical Research. This study is funded by a research grant from the Malaria in Pregnancy Consortium, which receives funding from the Bill and Melinda Gates Foundation.

The occupant will be employed through the University of Melbourne and based in Madang, and will oversee the laboratory studies to be undertaken as part of the trial, participate in training junior scientific, technical and administrative support personnel, and ensure that implementation of the laboratory aspects of the study proceeds in accordance with the trial protocol, and is conducted in compliance with principles of Good Clinical Practice (GCP).

There will be opportunities to spend some portion of the time (approximately 25%) in the Malaria Laboratory in the Department of Medicine, carrying out laboratory work which cannot presently be performed on site. Travel costs for this will be covered. There is an excellent opportunity to use this study to develop an independent research career, and the successful applicant will be strongly encouraged and mentored to develop critical research skills as needed.

Accommodation in Madang and return airfares will be provided. The position is currently advertised on the University of Melbourne's website.

**Closing date for applications: 18 October 2009**

For further details please contact A/Prof Stephen Rogerson email: [sroger@unimelb.edu.au](mailto:sroger@unimelb.edu.au) or telephone: 03 8344 3259

**See full advertisement on the Network website**  
<http://www.parasite.org.au/arcnet/jobs/job013.html>