ARC/NHMRC RESEARCH NETWORK FOR PARASITOLOGY

Monday, 5 March 2007

Dear Network Participant,

The March edition of the ARC/NHMRC Research Network for Parasitology Newsletter holds the following items for you:

[1] 2007 Network Participant Annual Survey

We would like to know what you think about being part of the ARC/NHMRC Research Network for Parasitology; with your feedback and comments we can continue to monitor and improve the current activities of the Network and help to shape the future of the Network.

Once again, we would like to survey all Network participants about being part of the Network, and its current and future activities. The survey should not take more than a few minutes to complete and results will be published on our website and in our annual report as part of our ARC grant requirements.

To complete the survey please click on the following survey link (or copy and paste the url into your browser)
http://surveys.uts.edu.au/index.cfm?surveyid=2354

Please email Lisa.Jones@uts.edu.au or telephone 0295144006 if you have any difficulties completing this survey or do not have access to the internet.

The 2007 Network Participant Annual Survey will close on Friday 23 March 2007 at 5pm.

[2] 2007 ASP & ARC/NHMRC Research Network for Parasitology Annual Conference will take place from Sunday 8 – Wednesday 11 July at the Marque Hotel*, Canberra

There is just under a month before early registration and abstract submission closes for the annual ASP & Network conference in July 2007. This year we will open the conference at Questacon – The National Science and Technology Centre with a cocktail reception, parasite photography exhibition and interactive science experiences that mix circus rides, earthquake simulators and some code cracking.

photography exhibition….
Do you have some beautiful images of parasites? We are looking for images for our parasite photography exhibition, please contact Lisa for more information lisa.jones@uts.edu.au or telephone 02 95144006.

early career researchers and students…
The Network are organising and sponsoring a **free early career researchers and students breakfast** on Monday 9 July 2007 to enable researchers and students to speak to prominent parasitologists about their career and to meet like-minded peers. **To attend this breakfast please confirm your booking with Lisa Jones by email lisa.jones@uts.edu.au or by telephone 02 95144006 by 11 May 2006.**

Don't forget if you are an early career researcher giving a presentation at the conference you should register with Lisa (lisa.jones@uts.edu.au) for the early career researcher prize. Students who have a poster or who are presenting at the conference should register with Lisa (lisa.jones@uts.edu.au) so that they are eligible for the ASP student prizes.

Registration

	ASP Members+		Non-Society Members	
	Student	Regular delegate	Student	Regular Delegate
Early Bird registration on or before 30/03/06	$200	$350	$300	$450
Registration after 30/03/06	$300	$450	$400	$550

+ Or another parasitological society (COST B22, COST 857, BioMalPar, Quebec Centre for Host-Parasite Interactions, NZSP) please specify which society when registering.

Conference Registration will close after 11 May 2006.

Please register online for this conference
http://www.parasite.org.au/arcnet/conference

Registration fees are quoted in Australian dollars and include: Entrance to all sessions; meals from 9/7/07 – 11/7/07 inclusive which means evening meals, lunches, and morning and afternoon teas; Entrance to Poster Viewing sessions with free drinks and snacks; the Conference Dinner with pre dinner drinks; the evening Welcome reception on 8 July; and other social events.

Please note that registration does not include accommodation. Conference delegates must book their own accommodation for this conference. For accommodation options please check the advice pages on the conference website
http://www.parasite.org.au/arcnet/conference/advice.html

Don't forget that student ASP members are eligible for generous financial assistance to attend the conference from the ASP provided they have been members for a minimum period before the conference – so download an ASP membership application form now from the ASP website
http://www.parasite.org.au/member.htm

Abstracts

To submit an abstract for this conference you will first need to register as a participant and then, once you have logged on, submit a contribution through the online conference system.

To register and submit an abstract, please visit our online conference system at www.conftool.net/parasitology2007

Participants who wish to contribute a paper are requested to register and submit an abstract online before 30 March 2007. The Organising Committee will be responsible for selection of the final form of presentation (either poster or oral) but if you do not wish to give an oral presentation you may request to submit a poster display only. You may also request to give an oral poster presentation rather than a contributed paper presentation.

Please check the website for all matters regarding the conference, including additional tickets for guests, hotel accommodation, the social programme and submitting an abstract. Details about the conference will also be sent by post to ASP members.

[3] Travel Bugs public presentation on parasites, travellers' health and tropical diseases, Tuesday 27th March at 7pm at QIMR

ARC/NHMRC Research Network for Parasitology members based at QIMR are holding "Travel Bugs," a public presentation on parasites, travellers' health and tropical diseases, on Tuesday 27th March at 7pm.

Speakers for the evening are:

- A/Prof Nick Smith on the ARC/NHMRC Research Network for Parasitology
- Prof Michael Good on malaria
- Dr Malcolm Jones on schistosomes
- Dr Alex Loukas on hookworms
- Ms Charlene Willis on scabies
- Dr Jacqui Upcroft on *Giardia*

This is a free public forum so please introduce family and friends to the weird and wonderful world of parasitology. Some drinks and food will be provided and the presentation will end with a discussion forum / question and answer session. This will be a fun and informative night for all in attendance.

Public lectures are a great way to raise funds for and the profile of parasitology. Support your colleagues and be involved with the Network's public outreach program.

RSVP to Mandie Quince by Tuesday 13th March either by E-mail: Mandie.Quince@qimr.edu.au or phone 3362 0430

This presentation will be held at the Westpac Auditorium on E floor of the Bancroft Building, QIMR.

Program:

Drinks and finger foods 6:30pm – 7:00pm
Lecture 7:00pm – 8:00pm
Panel open for questions and discussion 8:00pm – 8:30pm
Coffee, tea and biscuits 8:30pm – 9:00pm

To download the "Travelbugs" event poster or flyer (with map included) visit the Network website www.parasite.org.au/arcnet/events

[4] Network Technology & Resources

The Network established an IT team with staff at the Victorian Bioinformatics Consortium (Monash University) and in the Computational Research Support Unit (Faculty of Science, the University of Technology, Sydney) - a member of the Australian Partnership for Advanced Computing (APAC) Grid Program. The 2005 activities and progress of the IT team are summarised below:

EST Database Development

As a proof of capabilities exercise, the Network IT team undertook a project to develop a Sarcoptes scabiei EST Database. An NHMRC Medical Genomics Grant had provided initial funding to sequence an EST library generated from mRNA obtained from scabies mites, however, bioinformatics activities were not adequately funded by the grant and the Network took over the analysis, construction of database and public release of the information. This has required a great deal of work as the project had to start from scratch, processing the raw sequencer reads for quality and assembling raw reads into contigs.

The scientific leader of the project is Deborah Holt who provided The Network IT team with two lots of sequences of three different size fractions from the original cDNA library. Half of the fractions were cloned without normalisation, the three other fractions were made from the cDNA pool, but came from using a long PCR procedure and normalisation.

After checking the data integrity, the IT team called the bases and assembled the ESTs using Phred/Phrap programs. This led to the formation of 6962 Contigs (EST assembly) and 3720 singlets (single sequence).

In order to store and process the ESTs, a database called EST-PAC (which stands for EST package), was developed. EST-PAC was designed to be a sequence managing database, where either nucleic or protein sequences in a FASTA format can be entered. Users are able to upload groups of sequences, then jobs can be applied to these groups. For now, jobs are restricted to the BLASTALL programs, PFAM searches and ESTScan2 predictions.

The contigs and singlets were first blasted against the non-redundant database from NCBI. The search was made with the default values usually used with BLAST. From the 6962 Contigs, 4006 sequences have a hit and 2956 sequences have no similarity to sequences present in the database. For the singlets 1040 have a hit, whereas 2680 don't. We also did some blasts against a database containing DNA or protein drug targets. 1281 translated contigs show similarity with protein and 32 with DNA sequences.

To easily be able to view the quality of the Contigs, a schematic drawing of the assembly was developed. After having uploaded the assembly file (.ace file), users can browse either through all the contigs or choose to see the assembly with or without blast hits. All the sequences are represented by bars, which facilitates the interpretation of the assembly.

A database demo is publically accessible at :
http://vbc.med.monash.edu.au/~yvan/est-pac-demo/login.php »
Username: guest Password: guest DB: EST-1

Results can be queried through the Query link. This page allows powerful searches based on any term inside the database. To use this page, users don't need to know the relations between the tables, it is sufficient to select the table with results of interest and choose what field should be displayed. The current set-up of the database allows any user to perform jobs or even to delete data. To avoid loss of data, the IT team is planning to create a user, who is only able to search the results without the right to perform jobs or manipulate data. To even further restrict access to our data, a simpler version of the database is envisaged. This database would only have the query feature.

For gene discovery groups who want to have EST-PAC locally installed, we provide scripts and instructions for downloading and installation of the database at following address:
http://vbc.med.monash.edu.au/~yvan/download.html »

The database runs under Linux, Mac OS X, and Windows XP operating systems and further descriptions will be sent for publication and will acknowledge the Network.

Currently, the IT team are developing procedures to maintain and clean the database by writing a 'cleaning' program, which will be activated each time the database is used. The team is also planning to recalibrate the ESTScan matrix using the programs provided by their developers. Finally, assembly and blast hit displays will be graphically displayed and we will develop a method to store and retrieve good quality annotations.

Network Bioinformatics Services

Advanced genomics and functional genomics platforms have been made available to Network scientists by arrangement with the Victorian

Bioinformatics Consortium:

The Wasabi genome annotation system
Wasabi was designed to facilitate the rapid annotation of prokaryotic or eukaryotic genomes, and to allow browsing and searching of the annotated genomes. The main features of interest are protein coding regions, so Wasabi performs various analyses on the proteins beforehand. These analyses are used to provide an initial automatic annotation. They are also presented in a summarised form for use in manual curation; the annotator can easily verify or modify the automatic annotation. Multiple annotators can work on a genome simultaneously, and the annotations can be exported to standard file formats such as Genbank/EMBL, GFF and FASTA.

Wasabi has the idea of a "genome" that consists of one or more chunks of DNA, denoted "chromosomes" but could be any DNA sequence, such as a plasmid or contig. Each chromosome has many "features" (e.g. CDS, tRNA, rRNA, repeat_unit) which are wholly defined by their coordinates (stop,start) on a chromosome. These features may be annotated using standard labels such as "product", "function", "subcellular_location" and so on.

Usually a large set of features is imported into Wasabi when commencing a new genome annotation. Common sources for CDS features are from gene prediction software like GeneMarkS and Glimmer2, and tRNA-scan-SE is often used to get a list of candidate tRNAs. It is possible to add individual features later using the web interface. Another source of annotations is from an existing (possibly primitive) annotation in an EMBL or Genbank file, which may be imported.

There are two types of annotators, normal and heads. Head annotators have the ability to add and delete features and assign features to annotators (i.e. dole out the work). Each feature can be independently annotated by each annotator. This is useful when it is desired to get two or three times coverage on a genome. The individual annotations are then "merged" into a primary annotation at the end for publication.

The main characteristic of Wasabi that separates it from other feature annotation software is the large number of preliminary searches it does for you. When the user goes to annotate an ORF say, they are presented which a summarised set of evidence to help them make a decision as to what this feature does. The full search reports are also only a click away. The evidence currently provided for CDS features is:

- The amino acid sequence
- The DNA bases immediately upstream of the start codon
- Various biochemical measures of the sequence such as weight and pI
- rpsblast search results
- blastp against Genbank "nr" protein database
- blastp searches against other related peptide sequences

- tblastn searches against other related nucleotide sequences
- PSORT, PSORT-B and CELLO for the prediction of protein localization sites
- LipoP prediction of lipoproteins and signal peptides in Gram- bacteria
- SignalP predicts the presence and location of signal peptide cleavage sites
- TMHMM for prediction of transmembrane helices in proteins
- TMpred makes a prediction of membrane-spanning regions and their orientation
- InterProScan identifies protein domains

This set of analyses can be extended by a plug-in-type architecture. It is also possible to bootstrap the annotation process by using these analyses to automatically perform an initial annotation. The human annotator then only needs to verify and possibly correct the automatic annotation. This saves much typing and expedites the annotation process.

Parasitology network scientists using the VBC installation of Wasabi only need a modern standards compliant web browser, e.g. Mozilla, Firefox, IE. From a users point of view it is platform independent. The Victorian Bioinformatics Consortium is able to host Network participants' genome data on its Wasabi server. It would only be visible and annotatable by specified users and is password protected. Access to the system is obtained by contacting torsten.seeman@infotech.monash.edu.au.

Microarray Tools

The VBC provides, to participants in the ARC/NHMRC Research Network for Parasitology, computing infrastructure to support microarray experiments and also provides statistical expertise particularly for the analysis of microarray data.

The VBC maintains computer servers that allow researchers to store microarray data securely and share the data with collaborators anywhere in the world. Researchers are able to store their microarray experiment results, and perform analysis all via a standard Web interface. Currently, the VBC microarray server contains the results of hundreds of experiments.

The VBC has provided, and continues to provide expertise in the rigorous statistical analysis of microarray data. This is generally performed using Open Source Software. Microarray analysis includes: appropriate normalisation of the data to remove as much bias as possible; the calculation of differentially expressed genes using appropriate statistical test; cluster analysis; visualisations such as Principal Component Analysis, or Multi-Dimensional Scaling.

Access to this service is via contacting david.powell@med.monash.edu.au.

[5] Reminder about Network Initiatives and Opportunities for Network Participants

The start of the year is a good time to remind people about the various initiatives and opportunities your Network has to offer (in addition to an enhanced and cheaper annual conference).
Funding Assistance is available to ARC/NHMRC Research Network for Parasitology Participants for a variety of activities including:

- Researcher Exchanges;
- Training Courses (eg the Woods Hole Biology of Parasitism Course);
- Visiting International Lectureships;
- Workshops; and
- Grant Writing Retreats.

Several Network Participants report that they have benefited enormously through Researcher Exchanges during 2006. You can download the Funding Assistance Application form and Guidance from the Network website http://www.parasite.org.au/arcnet/funding/index.html

January is grant writing time for many of us. The ARC/NHMRC Research Network for Parasitology is one of only 24 research Networks in Australia. Thus, Participants can potentially enjoy an advantage (albeit slight) from the increased prominence and publicity that parasitology is gaining through the Network and its activities in formulating their statements of National Benefit in grant applications. A couple of examples that could be adapted to suit individual applications and research priorities are presented below. Following the examples is a list of the Network research priorities, formulated during the workshops held in 2003 and 2004 as part of the bid for formation of the Network, and stated on the Network website at http://www.parasite.org.au/arcnet/about/aims.html

These Network research priorities are deliberately designed to target Australia's National Research Priorities, and to recognise and emphasise the diversity of Australia's parasitology research effort and the significant contribution it makes to Australia's research priorities. There is, of course, no obligation to specify these priorities in your grant applications but, if your research does fit into the themes developed by the Network, there may be some profit to be had…..

Example 1:
Elucidating the factors involved in parasite virulence will enable us to develop novel drugs or immunotherapies to prevent or combat the diseases they cause, which may lead to the creation of novel biomedical and veterinary export products. This contributes directly to research themes prioritised by the ARC/NHMRC Network for Parasitology, most particularly, "better understanding host-parasite relationships" in order to "discover and develop sustainable parasite control strategies", under the National Research Priority, "Promoting and Maintaining Good Health".

Example 2:
There is widespread concern about the use of antibiotics in the animal health industry, and the associated potential repercussions for antibiotic resistance in human health. Thus, the discovery of new, parasite specific targets for therapy or prophylaxis would be a major social benefit, providing substantial peace of mind for producers and consumers. This contributes directly to research themes prioritised by the ARC/NHMRC Network for Parasitology, most particularly, to “discover and develop anti-parasite vaccines and therapies”, under the "Frontier Technologies" National Research Priority.

ARC/NHMRC Research Network for Parasitology Research Priorities:

The following is extracted from the application to the ARC/NHMRC for formation of the Network.

The researchers brought together by the ARC/NHMRC Research Network for Parasitology represent a wide spectrum of research interests and expertise, reflecting the multi-disciplinary nature of parasitology. This expertise includes internationally renowned experts in: immunology and vaccine development; cell biology and biochemistry; pathogenesis; genomics, proteomics and functional genomics; molecular modelling and bioinformatics; evolutionary biology; molecular and population genetics; epidemiology; spatial analysis (eg Global Positioning and Geographic Information Systems – GPS and GIS); biodiversity and taxonomy; diagnosis and biosurveillance. The Network will build on this strong and diverse framework to further enhance and focus Australia’s parasitology research effort to make major contributions to all of Australia’s National Research Priorities. At a series of national workshops held on December 17-18, 2003 and February 17, 2004, the following research themes were developed for the ARC/NHMRC Research Network for Parasitology in order to achieve these priorities:

An Environmentally Sustainable Australia
By assessing the susceptibility to, and monitoring the prevalence of, parasitic disease in wildlife the Network will generate new information that will assist in the management of terrestrial and marine ecosystems. The specific objectives of the Network are to enhance and focus Australia’s parasitology research effort in order to:

- assess parasite diversity in Australian fauna; and
- ensure the sustainability of wildlife and ecosystem health.

Promoting and Maintaining Good Health
The young and the elderly are the most susceptible to parasitic diseases, both in the developed and the developing world. To address this, the Network will focus on the development of new vaccines and treatments for local and global populations and the creation of new technologies to monitor and prevent contamination of waterways with infectious stages of zoonotic parasites (a key source of disease). The specific objectives of the Network are to enhance and focus Australia’s parasitology research effort to:

- better understand host-parasite relationships; and
- discover and develop sustainable parasite control strategies.

Frontier Technologies
A central goal of the Network is the development of new molecular tools and information resources. This includes the development of new databases and data management systems to enable the Network's researchers to harness the vast quantity of information being generated by a growing number of genome sequencing projects. Developing new bioinformatic tools will create unprecedented opportunities to identify new vulnerabilities/targets for control in parasites. The specific objectives of the Network are to enhance and focus Australia's parasitology research effort to:

- discover and develop molecular and bioinformatics tools for studying parasite biology; and
- discover and develop anti-parasite vaccines and therapies.

Safeguarding Australia
The Network will lead to the development of new technologies (eg sophisticated biosensors) to aid in the surveillance of our border areas and neighbours for exotic, emerging and re-emerging parasitic diseases. Thus, the specific objectives of the Network are to enhance and focus Australia's parasitology research effort to:

- better understand the epidemiology and transmission dynamics of parasites; and
- discover and develop better surveillance systems.

Awards

[6] Network Travel Award application dates for 2007/08

For planning purposes we have set the following dates for submission of your Network Travel Award application. Following each of these dates the applications will be assessed by the Network Management Committee and applicants will be advised of the outcome where possible within three weeks.

2007/08 dates for submission of Network Travel Award applications

- **Friday 1 June 2007**
- **Friday 31 August 2007**
- **Friday 30 November 2007**
- **Friday 29 February 2008**

[7] Network Travel Award Winners

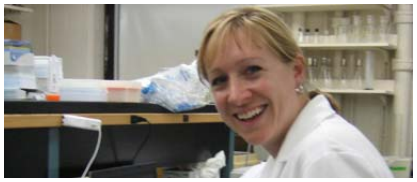
Congratulations to the most recent Network Researcher Exchange, Training and Travel Award winners:

- **Darren Krause**, from the Australian Army Malaria Institute, for a Researcher Exchange to work in Prof. Leann Tilley's lab to do live cell staining from Monday 5 - 9 March 2007;
- Dr **Rogan Lee**, Senior Scientist, Institute of Clinical Pathology and Medical Research, Westmead Hospital for a Researcher Exchange and Visiting International Lectureship to bring Dr Colin Sutherland from London School of Hygiene & Tropical Medicine, London, UK to Australia from 1 June – 31 August 2007;
- Dr. **Michelle Power**, Postdoctoral Research Fellow at Macquarie University for a one-month Researcher Exchange to visit the Laboratories of Dr Donald Duszynski at the SouthWest Museum of Biology and Assoc Prof. Rob Miller at the University of New Mexico, both in Albuquerque, USA to learn methodology for describing new *Eimeria* species, obtain samples of *Eimeria* from North and South American marsupials, to isolate and extract DNA from these samples and ship back to Australia and to establish a collaboration to investigate co-evolution of *Eimeria* and marsupials; and
- **Jennifer M Covello**, PhD Candidate at School of Aquaculture, University of Tasmania for a Researcher Exchange to visit the Scottish Fish Immunology Research Centre in Aberdeen, Scotland to investigate molecular aspects of the striped trumpeter immune response as it relates to host-parasite interactions under the direction of Prof. Chris Secombes from May-June 2007.

Interview

[8] Network Travel award for PhD candidate Joanne McCoubrie

Joanne McCoubrie is a PhD student at The Walter and Eliza Hall Institute working as part of Dr Brendan Crabb and Professor Alan Cowman's groups. In 2006 Joanne won a Network Travel Award which helped her to attend the Biology of Parasitism: Modern Approaches summer course held at the Marine Biological Laboratory in Wood's Hole. Joanne talked to Lisa when she returned and was full of enthusiasm for the course and her parasitology research.



Tell me about your area of research?

Currently I am doing my PhD in the field of malaria and my research looks at the function of the serine repeat antigens in *Plasmodium falciparum* blood

stages as well as using this gene family to investigate mechanisms of transcriptional control in this organism.

What interests you about working in this area?

I chose this area because I wanted to take part in helping treat or create a vaccine for a disease that is so devastating. Whilst I often find it frustrating that research can proceed quite slowly, I still feel that every day we gain more important knowledge about the organism so that in the future we may succeed in finding drugs for the prevention or treatment of malaria.

How do you see your research developing in the future?

Hopefully my project will be successful in identifying proteases responsible for parasite egress from or invasion of red blood cells. If this happens then I see the project expanding in the long term to develop new drug targets for therapy against malaria.

How has the Network travel award helped your research develop?

The Biology of Parasitism course in Woods Hole is very intensive and has a reputation for attracting world-renowned scientists to run courses and give lectures. These people have taught me a broad range of techniques and I now consider myself to have a sound knowledge of parasites other than *Plasmodium*. The expertise I gained has already been beneficial to the experimental design of my PhD work and I have also passed on protocols to my fellow workers. The course was also a particularly good opportunity for networking and I am confident I will be setting up collaborations with people from the course as part of my PhD in the coming months.

What advice do you have for other Network scientists who want to apply for a travel award?

Don't hesitate in applying! The Network was really helpful and everything went very smoothly.

What advice do you have for science students who are considering parasitology as a career?

Hopefully everyone will be able to find an area of research that they are passionate about. I returned to the field of parasitology after working in the areas of cancer and HIV research, and the return has undoubtedly shown me that parasitology is indeed the field in which my passion for research resides. The fantastic thing about this field is that there are options for whatever science you are interested in such as cell biology, immunology, molecular biology, biochemistry or structural biology.

What do you see as the benefits of being part of the Network?

The Network is a great way to be kept informed of current research that other groups are doing, as well as conferences and positions available. This information fosters exchanges in expertise and collaborative work, aspects I believe are an essential part of today's research. The funding support offered by the Network is also an integral part of this as it enables people to gain expertise from opportunities overseas and bring that expertise back to Australia.

Tell me about the highlight of your science career so far?

Definitely attending the Biology of Parasitism course!

What would you like to do in the future? (What are your aspirations?)

First and foremost I want to complete my PhD which should happen sometime in 2007. After this I would like to do a post doc overseas and I am sure that I will be visiting several of the Biology of Parasitism visiting lecturer's and module leaders when investigating post-doctoral positions. After that I envisage that I will return to Australia and would like to stay in the area of molecular parasitology.

We wish Joanne all the very best in her PhD and research career in parasitology. The picture below shows fellow Network Award winners at the Biology of Parasitism course in 2006 Najju Ranjit, Joanne McCoubrie and Nicholas Proellocks.

Conferences

[9] COSTB22 annual congress

The deadline for abstracts for the COSTB22 annual congress is 9th March 2007. Full information is available on the website www.costb22.dundee.ac.uk

[10] Centenary Conference of the Royal Society of Tropical Medicine and Hygiene ONE HUNDRED YEARS OF TROPICAL MEDICINE Meeting the Millennium Development Goals

13-15 September 2007 • London, UK

www.rstmh.elsevier.com

The following speakers will present at the conference:

- Pedro Alonso, Universitat de Barcelona, Spain
- Richard Adegbola, MRC Laboratories, Gambia
- Staffan Bergström, Karolinska Institute, Sweden
- Zulifqar Bhutta, Aga Khan University Hospital, Pakistan
- David Bradley, London School of Hygiene and Tropical Medicine, UK
- Stephen Collins, Valid International and Institute of Child Health, UK
- Majid Ezzati, Harvard School of Public Health, USA
- Anthony Harries, Ministry of Health, Malawi
- Janet Hemingway, Liverpool School of Tropical Medicine, UK
- Stephen Hoffman, Senaria Inc., Maryland, USA
- Salim Karim, University of KwaZulu-Natal, South Africa
- Joy Lawn, Institute of Child Health, South Africa
- Myrone Levine, University of Maryland School of Medicine, USA
- Anne Mills, London School of Hygiene and Tropical Medicine, UK
- Hassan Mshinda, Ifakra Health Research Centre, Tanzania
  Peter Mwaba, University Teaching Hospital College of Medicine, Lusaka, Zambia
- Jeffrey Sachs, Earth Institute, Columbia, USA
- Rebecca Stoltzfus, Cornell University, USA
- Cesar Victora, Federal University of Pelotas, Brazil
- Nicholas White, Mahidol University, Thailand
- Mark Walport, The Wellcome Trust, UK

Positions vacant
Check the Network website for all current vacancies
http://www.parasite.org.au/arcnet/jobs

[11] PhD Scholarship at Murdoch University

A PhD scholarship funded by the Environmental Biotechnology CRC is available in the Parasitology group, School of Veterinary and Biomedical Sciences, Murdoch University.

The project is concerned with the proteomic characterisation of the enteric protozoan parasite *Giardia*, and will build on the successful results obtained during the first three years of the CRC. We are particularly interested in exploiting novel proteins as vaccine candidates or new drug targets, as well as using proteomic data to better understand both host-parasite and evolutionary relationships.

A stipend of $25,000 per year tax-free for 3.5 years will be provided which includes fees for Australian and New Zealand citizens and permanent residents. Allowances in addition to the scholarship include laboratory expenses, personal development and education along with local and overseas conference travel and assistance with thesis costs.

Contact:
Dr Ryan O'Handley or Professor Andrew Thompson
School of Veterinary and Biomedical Sciences
Murdoch University
South Street, Murdoch,
Western Australia 6150
Fax: (61-8) 9310 4144 Phone: +618 9360 2457/2466
Email: R.Ohandley@murdoch.edu.au or A.Thompson@murdoch.edu.au

[12] PhD Studentship: Parasites and Diseases of Threatened West Australian Wildlife

An ARC funded PhD studentship (APAI) is available to investigate the diversity and ecology of wildlife diseases within rare and endangered native animal populations.

The studentship will be based at the School of Veterinary Biology and Biomedical Science at Murdoch University and will work closely with the Department of Environment and Conservation. It is envisioned that the project will involve a considerable amount of fieldwork, thus requiring the successful applicant to be willing to spend extended periods camping in remote areas.

The project will also require a high degree of computer literacy and will provide an opportunity to develop a range of laboratory-based molecular skills. Therefore, in addition to fieldwork and laboratory experience, the

successful candidate must be competent in, or willing to learn, appropriate animal handling methods including how to set traps, administer anaesthetics and take and process biological samples.

In general, the project aims to establish and contrast the parasite composition and disease status affecting a range of wildlife species from diverse environments and locations throughout Western Australia. The survey component of the project will utilise the infrastructure established by DEC and will encompass several off shore island and mainland locations.

All areas under investigation vary to some degree with regards to management practices, with some populations being intensively managed for predator control and others established from captive bred or relocated individuals, through to indigenous populations. The species of interest include, amongst others, woylie, chuditch, koomal, quenda and quokka. The collection and cataloguing of biological samples (blood, tissue and faeces) and ectoparasites (fleas, ticks, mites and lice) will form a central part of the project, as will the development and application of molecular tools to probe samples for various pathogens. More specific project details will be developed in conjunction with the interests and abilities of the successful candidate, along with the general requirements and aims of the project.

The studentship is available from January 2007.

Contact:
Professors Andrew Thompson or Alan Lymbery on (08) 9 360 2466/2729 or email an application, including a full CV and an introductory letter describing any relevant experiences that would make you a suitable candidate, together with contact details for two referees, to Dr Andrew Smith at andy23x@gmail.com

If you have any parasitology news stories please contact me by email Lisa.Jones@uts.edu.au or telephone 02-95144006.

Please send me items for the next newsletter by 30 March 2007.

Best wishes,

Lisa
Communications Coordinator,
ARC/NHMRC Research Network for Parasitology