

From the President's Desk

Dear Members,

Welcome to the April edition of the ASP Newsletter. I wish those members who have been occupied with applications for NHMRC or ARC research support or people support success with their applications, and hope that everyone is enjoying getting back to real science!

Registration is still open for the 2013 ASP Conference which is being held in conjunction with the 24th International Conference of the World Association for the Advancement of Veterinary Parasitology (WAAVP) in Perth from 25-29th August 2013 (see <http://www.waavp2013perth.com>). This conference will cover a wide variety of topics spanning unicellular and multicellular parasites and including parasites of medical, veterinary, wildlife or marine importance. It will highlight themes, concepts and problems that bridge the gaps between human, animal, fish and other parasites and features an excellent line-up of international and national speakers. Two workshops will be run in conjunction with this meeting, on *Wildlife Parasites and Bioinformatics and Phylogeny*, to be held at Murdoch University on Sunday August 26th, just before the conference starts. Workshops for Early Career Researchers and research students will also be conducted during the conference. Students can apply for an ASP Student Conference Travel Grant to support their attendance. Early-bird registration for the conference has been extended to 17th May and 2013 ASP Student Conference Travel Grant Applications (<https://www.surveymonkey.com/s/2013ASP>) close on 24th May.

Upcoming closing dates to be noted for other 2013 Awards are 17th May 2013 for OzEMalaR Travel Awards and 26th July 2013 for ASP Network Researcher Exchange, Travel and Training Award and



JD Smyth Awards.

A reminder that next year we will be celebrating the 50th year anniversary of ASP, and all members are encouraged to contact Chris Peatey, head of the "Anniversary Celebration Working Group" or Lisa Jones with any ideas you may have to celebrate this occasion.

The Mid Term Meeting of Council was held on 28th February 2013, in Brisbane. Minutes of this meeting are available on the Wild Apricot site. Particularly notable were the reports by State representatives on State Outreach Activities. It appears that the initiative approved by Council in 2012 to provide a set amount of funds for each State/Territory of \$2,000/calendar year (up to \$500/event) to support ASP Outreach events has been successful. Members are reminded that these funds are very flexible and can be used for a wide range of events; all applications should be coordinated with your State/Territory representative. Remember that ASP is your Society so please take advantage of it!

Council also reviewed the results of the member survey about the proposed ASP Parasitology Course which was circulated after the 2012 AGM. The response rate for this survey was 24.4% of active members,

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From the President's desk continued

including 21.6% of active student members. Council is now considering next steps, in consultation with the ASP Parasitology Course Working Group, with the intention that the course would be launched in conjunction with the 50th Anniversary of the Society in 2014.

Council also considered the preliminary outline and scope of a proposed report on Parasitology in Australia by Deloitte Access Economics and discussed alternative strategies. This is an ongoing action item.

The organization of the *International Congress of Tropical Medicine and Malaria 2016* which will be held in Brisbane in September 2016 co-hosted by the ASP and the *Australasian Society of Infectious Diseases* was discussed. Malcolm Jones, ex-ASP President who has led this successful bid, has been co-opted Council while the planning and execution of the Congress is underway. Legal structure, professional conference organiser, and funding/sponsorship strategies are all under discussion. Members are encouraged to take the opportunity of attend this high profile Congress with approximately 3000 attendees expected, so please save the date.

The *IJP* spin-off journals, *IJP-Drugs and Drug Resistance (IJP-DDR)*, *IJP-Parasites and Wildlife (IJP-PAW)* are now well established and submissions from scientists in Australia as well as overseas are encouraged for all three journals. In response to submission statistics and issues, Council has now approved a budget for both *IJP-DDR* and *IJP-PAW* to specifically avoid loss of high quality papers through inability of authors

to pay the journal fee. Also of note is the introduction of an award for the best paper published in *IJP* each year by a student member of ASP. The paper will be selected by the *IJP* senior editors and the award will be presented at the annual ASP conference. The ASP journals are featured in this edition of the newsletter.

In previous editions of the Newsletter, I have asked for expressions of interest from members with an interest in science policy or related activities, to assist Council in raising the profile of Parasitology in Australia. If you or anyone you know have interest in this area, please do not hesitate to contact me. Members of Council have been asked to be proactive in identifying potential interests.

The updated Constitution and By-Laws (including recent changes) with updated lists of ASP Office Bearers and Award recipients is now downloadable from the ASP Website, for the convenience of members. Many thanks to Rob Adlard!

In other areas, I would like to make a special mention of the "ASP Register of Living Parasite Cultures" which is maintained by the Queensland Museum, with Dr Robert Adlard and Dr Mal Bryant the official Curators of the register. This register is intended primarily as a service to financial members of the ASP who can obtain starting cultures of parasites of interest (together with relevant data) or list their own cultures. The register is currently being updated by Neil Young, and all members who have previously been listed on this register or who have cultures to add are encouraged to help with this update by

contacting Neil Young:

nyoung@unimelb.edu.au

A direct link to this Register is to be included on the WildApricot site. The Register was last published in the April 1998 ASP Newsletter.

Finally, members are also invited to submit to Council nomination for Fellows of the Society, and for nominations to the Australian Academy of Science. Such appointments would be excellent to raise the profile of Parasitology in Australia.

Best wishes

Denise Doolan

Closing Dates for Awards

ASP Network Researcher Exchange, Travel and Training Award and JD Smyth Award

Friday 26 July 2013

Friday 29 November 2013

Bancroft-Mackerras Award

30 September 2013

(for award in 2014)

Sprent Award

30 September 2013

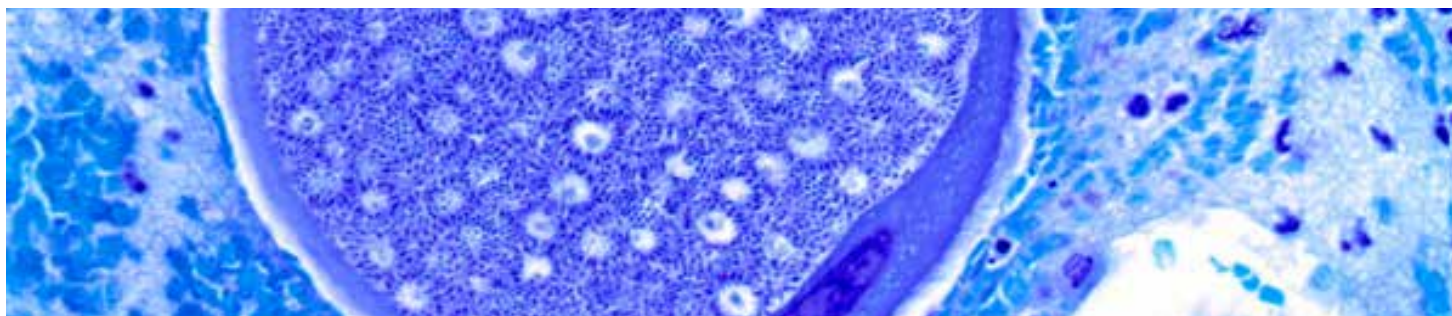
(for award in 2014)

ASP Fellowships

9 January 2013

For more information, visit the ASP website:

www.parasite.org.au



Outreach

Parasite Awareness Month at Camden Small Animal Veterinary Clinic, University of Sydney, in November 2012

What is a parasite? Veterinarians use that word 'parasite' often. But do clients actually know who the parasites are? Veterinarians at the University Veterinary Teaching Hospital, Camden, have decided to change that and educate clients. In November 2012, a take charge veterinarian, Dr Jenny Green organised a great event called "Parasite Awareness Month"! Jenny, Chris and Kim from the Camden Clinic have been running daily explanation sessions showing some of the fascinating parasite examples ranging from roundworms to the ubiquitous

fleas. As part of this event a free diagnostic service was offered to clients, because the motto was education and knowledge is foundation for a sound prevention or control. As part of the campaign there was an 'Ask the Vet' article in local newspaper written by students and for the month each week had a different theme - fleas, worms (including heartworm), mites and ticks.

As part of the campaign Jan Šlapeta, who lectures veterinary parasitology at the Faculty of Veterinary Science presented an evening lecture "Weird and wonderful world of pet parasites" for clients of the veterinary clinic. Jan introduced some of the well know as well as lesser known parasites. The evening lecture and the

discussion afterwards brought together clients with veterinarians, academics as well as representatives of pharmaceutical companies.

It can be confidently said that the goal of improved awareness was met. It can be reported that not only the clients but the educators benefited. For a moment, we were forced to think like a client. The enthusiasm is there and the opportunity never better. In the rapidly changing face of Australian Universities, events like "Parasite Awareness Month" enable engagement of the academia with the public in a mutually beneficial way!

We all look forward to a sequel in 2013!



Parasite campaigners at the University of Sydney Camden Small Animal Veterinary Clinic, from left Kim Le BVSc, Michelle Siskovic (SA Nurse), Jenni Green BVSc and Chris McIver BVSc. Cats from the left Sheldon, Flea and Claude. Chris is holding a jar with horse roundworms (=parasite)!

Outreach Funding

ASP members are encouraged to apply for ASP funding to support outreach in their state. Up to \$500 per event is available with a total per state or territory of \$2000 per calendar year. Proposals are to be submitted for consideration by State Representatives. Initiatives should foster outreach by members and advance the field of parasitology. This pool of funds has not yet been widely accessed and ASP President Denise Doolan would like to

emphasise that the funds can be used to support a wide range of activities - from seminars, symposia atc to "beer and nibbles" networking sessions of State members or any other parasitology-related event.

Proposals are to be submitted for consideration by State/Territory Representatives.

The Magic Glasses

Researchers at the Queensland Institute of Medical Research, the University of Queensland and Hunan Institute of Parasitic Diseases have reported huge success with a cartoon DVD promoting hygiene across rural China.

"The Magic Glasses" movie has been shown in schools in Hunan province, showing children how to avoid parasitic worm infection, a major issue in rural communities.

Professor Don McManus and PhD student Franziska Bieri, from QIMR's Molecular Parasitology Laboratory, Dr Darren Gray and Prof Gail Williams from UQ's School of Population Health and Dr Li Yuesheng from Hunan Institute of Parasitic Diseases showed that infection rates halved when the 10 minute cartoon was played in schools.

"Sometimes it just takes a simple change in behaviour and attitudes to make a drastic difference in the spread of disease," Professor McManus said.

"In this case, we've managed to make a real difference with a fun cartoon in Mandarin which explains the importance of hand washing, wearing shoes, covering food and using lavatories."

Intestinal worms such as roundworm, whipworm, and hookworm are a major issue in rural Chinese communities and can lead to malnutrition and stunted growth and cognitive development in children. Worldwide, 2 billion people are infected with parasitic worms.

In the cartoon DVD, when a small child puts on "magic glasses" they can suddenly see worm eggs and larvae in bright colours.

"The research was a major part of my PhD and included a cluster-randomized intervention trial where about 1700

children aged 9-10 were followed during one school year, and we screened the cartoon in some schools but not others," Ms Bieri said.

"We assessed the children's knowledge of infection before and after viewing the DVD and compared the effectiveness of the cartoon, against traditional posters.

"We found that tailoring the message to the children made an enormous difference to disease rates. There is an accessible cure for these worms, but the problem is reinfection because of poor hygiene," Ms Bieri said.

The team has just secured 1.5 million Swiss Francs from the UBS Optimus Foundation to expand the educational program into other regions of China. They'll work also with the Research Institute of Tropical Medicine in Manila, to make a similar DVD for schoolchildren in The Philippines.

"Worm infections are also a considerable public health problem in Australia's indigenous communities and this cartoon has enormous potential to make a difference at home," Professor McManus said.

"The Magic Glasses" can be viewed at http://www.qimr.edu.au/page/Home/Magic_glasses

ABC news have covered this research story and can be viewed online: <http://www.abc.net.au/news/2013-04-25/qld-cartoon-reduces-parasitic-worm-infection-in/4651846?section=qld>

This research has been published in the current issue of the New England Journal of Medicine.

This research is funded the UBS Optimus Foundation, Switzerland and by Australia's NHMRC.

News story source: QIMR http://www.qimr.edu.au/page/News__Events/Media_Centre/Media_Releases/Researchers_use_Magic_Glasses_to_beat_disease/

Publication:

Franziska A. Bieri, M.Sc., Darren J. Gray, Ph.D., Gail M. Williams, Ph.D., Giovanna Raso, Ph.D., Yue-Sheng Li, Ph.D., Liping Yuan, Ph.D., Yongkang He, M.P.H., Robert S. Li, B.Inf.Tech., Feng-Ying Guo, B.A., Sheng-Ming Li, B.A., and Donald P. McManus, D.Sc. "Health-Education Package to Prevent Worm Infections in Chinese Schoolchildren" The New England Journal of Medicine, 368;17, April 25, 2013





Previous page: The winners of the drawing competition (Photo: Yongkang He)

This page top: Chinese schoolchildren watching the cartoon (Photo: Franziska Bieri)

This page bottom: Schoolchildren washing their lunch bowl (Photo: Franziska Bieri)

Researcher News

New drug puts malaria under the pump

Researchers have discovered how a new class of antimalarial drugs kills the malaria parasite, showing that the drugs block a pump at the parasite surface, causing it to fill with salt.

In work conducted at the Research School of Biology (RSB) at The Australian National University (ANU), and published in *Cell Host & Microbe*, Dr Natalie Spillman (pictured) showed that the malaria parasite has at its surface a protein that serves as a molecular salt pump, pushing sodium ions out of the parasite.

"It was within a week or two of our identification of the pump protein that a paper came out reporting the discovery of the spiroindolone antimalarials," Dr Spillman said.

"The authors of the spiroindolone study identified the pump protein as being of particular interest from the point of view of how the spiroindolones might work, but the exact mechanism was a mystery.

Linking up with members of the spiroindolone-development team in Singapore (Novartis Institutes for Tropical Diseases) and the US (Genomics Institute of the Novartis Research Foundation), Dr Spillman showed that spiroindolones block the parasite's salt pump, causing the cell to fill rapidly with salt.

"We believe the spiroindolones kill the parasite by causing a salt overload," Dr Spillman said.

RSB Director Professor Kieran Kirk, the senior author on the study, says this vulnerability in the parasite's physiology can be exploited to develop much needed new antimalarial drugs.

"The malaria parasite's salt pump would seem to be an Achilles heel for the parasite, particularly vulnerable to attack. Knowing this, we can now look for other drugs that block this pump. We can also start to investigate how the parasite might be able to change the shape of the pump and thereby develop resistance

"We desperately need new antimalarials and the spiroindolones, now in advanced clinical trials, are looking extremely promising," Professor Kirk said.

"Understanding how these compounds kill the parasite gives us a tremendous advantage."



The malaria parasite is a single-celled organism that invades the red blood cells of its human host, killing more than a million people each year. It is becoming increasingly resistant to most of the antimalarial drugs that are currently in use.

Story courtesy Australian National University
<http://news.anu.edu.au/2013/02/14/new-drug-puts-malaria-under-the-pump/>

Publication:

Natalie J. Spillman, Richard J.W. Allen, Case W. McNamara, Bryan K.S. Yeung, Elizabeth A. Winzeler, Thierry T. Diagana, Kieran Kirk
"Na⁺ Regulation in the Malaria Parasite *Plasmodium falciparum* Involves the Cation ATPase PfATP4 and Is a Target of the Spiroindolone Antimalarials" *Cell Host & Microbe* 13(2) pp. 227 – 237

to this class of drugs. Both of these aspects are going to be very important in our ongoing battle with the parasite."

The spiroindolones are the first genuinely novel class of chemicals to be tested in malaria patients for over 20 years.

<http://download.cell.com/cell-host-microbe/pdf/PIIS1931312813000358.pdf?intermediate=true>

Researcher News continued

PhD student Christopher Weir is fulfilling his goal of a research career in infectious diseases and malaria.

Christopher has recently started a joint PhD in molecular parasitology and structural vaccinology (malaria) at the Walter and Eliza Hall Institute under the supervision of Professor Alan Cowman and Dr Wai Hong Tham, and the University of Edinburgh under the supervision of Professor Paul Barlow. His current work is focused on the atomic resolution dissection of *Plasmodium falciparum* invasion ligands and their erythrocyte receptors. In 2012 Christopher was part of the ASP Network for Parasitology Mentorship program.

"I had a great outcome participating in the mentorship program and would recommend it to other early career researchers," said Christopher

In 2012 Christopher completed a Masters Degree in Molecular Biology at The

University of Queensland and worked as part of the King Group, Division of Chemistry & Structural Biology, at the Institute for Molecular Bioscience. Christopher's Masters project focussed on novel vector control and peptide-based drug discovery, which started as a summer research scholarship. The research was aimed at genetically engineering the entomopathogenic fungus, *Metarhizium anisopliae*, with spider toxin peptides for controlling the spread of malaria and other vector borne diseases.

Last year Christopher won 3rd prize for best presentation at the UQ School of Chemistry and Molecular Bioscience 8th Annual Research Symposium and at the ASBMB he won 2nd prize for best presentation and the 1st prize People's Choice Award. <http://www.scmb.uq.edu.au/index.html?page=189243>

We look forward to hearing more from Christopher as his PhD research progresses and wish him all the best."



Above:
Christopher Weir receives the 1st Prize People's Choice Award at the 2013 ASBMB

Ten Rules for Describing a New Parasite

We have all heard about the "taxonomy crisis." We are losing biodiversity that we don't even know exists or that we know but have not had the time to record. This applies to parasites too. With every organism that becomes extinct, an unknown number of parasites is lost as well. One way to improve this situation is to enthuse a new generation of taxonomists. Jan Šlapeta (pictured below) of the University of Sydney has used his experience with taxonomy and nomenclature to compile a guide for those planning to publish a new name - "TEN SIMPLE RULES FOR DESCRIBING A NEW (PARASITE) SPECIES" - to be published soon in the IJP:PAW. Here is a preview of Jan's paper.

Ten Simple Rules for Describing a New (Parasite) Species	
Rule 1	Start with an optimal specimen
Rule 2	Get familiar with the jargon – don't mix nomenclature with species concepts
Rule 3	Aim high – the new species deserves it!
Rule 4	All previously described names must be considered
Rule 5	State why you are describing a new species
Rule 6	Send your description to a journal that will make your description visible to your audience
Rule 7	Don't put the cart before the horse!
Rule 8	Use illustrations and photographs effectively
Rule 9	Tell the world how to objectively differentiate your new species from other similar species
Rule 10	Give a memorable name



News from the ASP Network for Parasitology

2013 ASP Annual Conference

Our 2013 Annual Conference will be a joint-meeting held with WAAVP 2013 in Perth, 25-29 August at the Perth Convention Centre and is shaping up to be a fantastic conference with a terrific program.

Early bird registration has been extended and will close 5pm WST Friday, 17 May. All authors will be informed about the status of their abstracts by Friday, 3 May 2013.

Support for Students

Research students are reminded that the ASP is, once again, generously supporting your attendance at the meeting with funding available to eligible ASP student members to help pay for your travel, accommodation and registration. To read the conditions of the 2013 ASP Student Conference Travel Grant and to apply please click on the following link (or copy and paste the url into your browser) - <https://www.surveymonkey.com/s/2013ASP>

Workshops

Once again, the ASP will be funding and organising workshops for Early Career Researchers and research students. We

can already confirm that there will be workshops on Wildlife Parasites and Bioinformatics and Phylogeny, to be held at Murdoch University on Sunday August 25, just before the conference starts. We'll be staging other exciting events throughout the meeting. Contact Lisa Jones (lisa.jones1@jcu.edu.au) for details.

Program

Our conference will feature the Best International and Australian Speakers, a very exciting invited speaker program, with something for everyone, is being put together. Invited speakers this year include:

ASP Presidential Address, Professor Denise Doolan

ASP Invited International Lecturers:

- Professor John Dalton is a Canada Research Chair in Infectious Diseases at the Institute of Parasitology, McGill. He is also a Professor in Biotechnology and Director of McGill's Graduate Program in Biotechnology.
- Professor Julie Fitzpatrick is the Scientific Director of the Moredun Research Institute and Chief Executive of the Moredun Group.
- Dr Susan Little is Regents Professor and Endowed Chair in Veterinary Parasitology at the Center for

Veterinary Health Sciences, Oklahoma State University, where she is active in parasitology teaching and oversees a research program that focuses on tick-borne diseases.

Elsevier Lecturers:

- IJP Lecturer - Professor Adrian Hehl is a Professor in the Institute of Parasitology at the University of Zurich.
- IJP:DDR Lecturer - Professor Tim Geary is the Director of the Institute of Parasitology at McGill University, Canada.
- IJP:PAW Lecturer - Dr Susan Kutz is an Associate Professor at the University of Calgary Faculty of Veterinary Medicine, Calgary, Alberta. Dr. Kutz also holds positions as an Adjunct Professor, Department of Biological Sciences, Faculty of Science, University of Calgary, Research Associate, Arctic Institute of North America, University of Calgary, Research Associate, Canadian Circumpolar Institute, University of Calgary.

Plenary Lecturers

- A/Professor Brown Besier is a principal veterinary parasitologist with the WA Department of Agriculture and Food and a research leader in the CRC for Sheep Industry



Innovation.

- Professor Ian Beveridge is Professor of Veterinary Parasitology in the Faculty of Veterinary Science at the University of Melbourne.
- Emeritus Professor Dr. Dr. h. c. Johannes Eckert, graduated from the University of Veterinary Medicine Hannover, Germany, was Professor of Veterinary and Medical Parasitology at the University of Zurich, Switzerland from 1968 until 1997. His scientific interests have covered a broad field of parasitoses of animals and humans, including parasitic zoonoses with emphasis on echino-coccosis. He was member of the WHO Advisory Panel on Parasitic Diseases (1972-1997) and Chairman of the WHO Informal Working Groups on Echinococcosis (1985-1995). In 1963 he joined WAAVP, and has served for 14 years as member of the Executive Committee or as president (1983-1987). He was recipient of WAAVP Honorary Membership (1995), the WAAVP/Pfizer Award for Excellence in Teaching of Veterinary Parasitology (1999) and many other international honorary awards.
- Dr Doug Gray has been a research scientist and manager, most recently with the Australian Centre for International Agricultural research with interests in livestock diseases

of regional significance, including transboundary diseases, zoonotic diseases, diseases affecting production and diseases affecting trade and market access.

- Dr Ronald Kaminsky is presently working at Novartis Animal Health in Switzerland where he is responsible for the parasitology research.
- Professor Dr. Norbert Mencke, is Head of Global Veterinary Services, Global Marketing Companion Animal Products at Bayer Animal Health.
- Dr Yaowalark Sukthana is Dean of the Faculty of Tropical Medicine, Mahidol University, and Director of SEAMEO TropMed Centre, Thailand.
- Professor Paul Torgerson is chair of Veterinary Epidemiology at Zurich University

We will hold our second series of Inspiring Australia events during WAAVP in collaboration with Perth Zoo and Scitech. These events are currently in the planning stage along with our 2014 Inspiring Australia events (to be held in Canberra) please contact Lisa (lisa.jones1@jcu.edu.au) if you want to be involved.

Nick Smith
Convenor, ASP Network for Parasitology

Lisa Jones
Communications Coordinator



Speakers at the ASP 2013 Annual Conference will include (Left to Right):

Professor John Dalton (McGill University)
 Professor Julie Fitzpatrick (Moredun Research Institute)
 Dr Susan Little (Oklahoma State University)
 Professor Adrian Hehl (University of Zurich)
 Emeritus Professor Dr. Dr. h. c. Johannes Eckert

Below: Two of our partners in Perth: Inspiring Australia and Perth Zoo. See page 14 of this newsletter for more information about the public event "The Hidden Zoo"



**Closing dates
 in 2013 for ASP
 Network for
 Parasitology
 Travel Awards**

Friday 26 July 2013
 Friday 29 November 2013

Researcher Exchange Report

Alexander Brazenor, PhD student from James Cook University, Townsville won an ASP Network for Parasitology Travel Award for a Researcher Exchange to visit Dr Terry Bertozzi at the South Australian Museum and Associate Professor Ian Whittington at The University of Adelaide and the South Australian Museum. Alexander reports here on his very successful Researcher Exchange.

Flatworms of the genus *Neobenedenia* (Monogenea: Platyhelminthes) are recognised as serious and virulent parasites of tropical and subtropical marine finfishes. *Neobenedenia* spp. have been linked to a number of epizootic outbreaks in wild and farmed fishes. Understanding the host specificity of species within *Neobenedenia* is crucial to being able to predict and manage future outbreaks. Little is known about which species of *Neobenedenia* infect fish in Australian waters. The absence of distinguishing morphological characters between isolates hinders the ability to distinguish between species based on morphological examination (Whittington, 2004). As such, the aims of this exchange trip to Adelaide University were to determine how many species of *Neobenedenia*, pathogenic or otherwise, there are in tropical north Australia and which fish they parasitize. Investigation into the genetic relationships within and between *Neobenedenia* species will aid in distinguishing species that cause disease and epizootic events from those that do not. This will be crucial in being able to manage these parasites in aquaculture and aquaria.

I travelled to the University of Adelaide/South Australian Museum between the 1st and the 29th of March, 2013 in order to work on the population genetics of *Neobenedenia* isolates from wild and farmed fish. As part of this trip to Adelaide University, I took *Neobenedenia* isolates from 11 wild and 12 captive fish host species from a variety of locations across northern Australia and sequenced two nuclear genes, histone H3 and 28S, for five fluke individuals from each population. These genes were chosen so that my sequences could be integrated with that of Perkins et al. (2009), which has the best molecular framework for identification of capsalids. Assoc Prof Ian Whittington provided additional specimens from five different host fish for comparison.

Dr Terry Bertozzi possesses extensive knowledge in the molecular genetic analysis of capsalid monogeneans and his careful instruction ensured that I learnt how to extract DNA, perform PCR amplifications, run gel electrophoreses and analyse species sequence information obtained from

the preserved *Neobenedenia* specimens. Assoc Prof Ian Whittington assisted in the morphological identification of many of the samples to genus level and also in slivering smaller specimens for DNA extraction. Extracting DNA from all preserved specimens occupied most of the first week in Adelaide with few complications. The remaining time was spent performing PCRs and fine tuning the parameters for maximal DNA amplification for the genes of interest. I also tried to build on a preliminary genetic framework for *Neobenedenia* based on the mitochondrial gene cytochrome B, however this study is in its infancy and I was not able to amplify my samples due to an incompatibility of the primers available. The work on this gene is being continued by Dr Terry Bertozzi and myself in correspondence. I was able to obtain sequences from the nuclear genes histone H3 and 28S for the majority of capsalid samples. Sequencing results are currently being compiled and analysed. This research significantly adds to broader questions that both Dr Terry Bertozzi and Assoc Prof Ian Whittington intend to work on pertaining to capsalid genetics.

The skills obtained during this trip will be useful not only in my PhD but for the rest of my scientific career. Both Dr Terry Bertozzi and Assoc Prof Ian Whittington offered unique and integral scientific educational experiences to developing and improving my knowledge of Monogenea and overall research abilities. The work undertaken during this researcher exchange trip contribute to the proposed publication, "Identifying *Neobenedenia* distribution and host-specificity by molecular characterisation" intending to be published in *Molecular Phylogenetics & Evolution*. This work comprises a major component of my PhD thesis on *Neobenedenia* sp. ecology, biology and physiology and represents the first of six data chapters in my PhD. I plan to continue to develop this research and present the results gained from this researcher exchange at the 2014 ASP conference in Canberra.



Communications

Professor Alan Cowman, President of the World Federation of Parasitologists would like to hear from ASP members to help populate the WFP's website and facebook page.

The World Federation of Parasitologists website is available at the following address: <http://www.wfpnet.org>

They have also set up a facebook page at <https://www.facebook.com/groups/worldfederationofparasitology/> with WFP

news events and information

Please e-mail your contributions to Lisa Jones (lisa.jones1@jcu.edu.au) for inclusion in the following areas:

- Highlighted Feature
- Educational Articles
- Meetings
- Jobs and Funding
- Products and Treatments

Your information may also be included on the ASP website and/or newsletter.

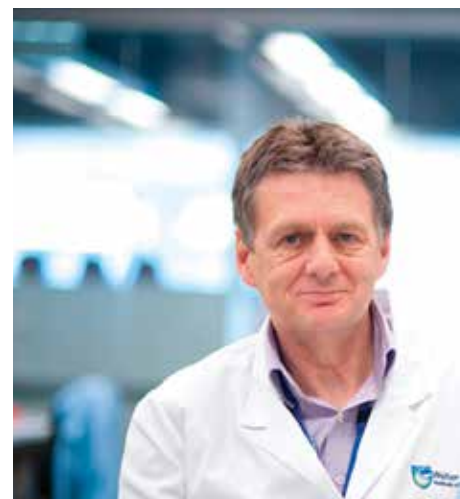


Image of Alan Cowman courtesy of WEHI.

Student Prizes



*Above:
Amanda Pettett-Willmetts, a Veterinary Science student at James Cook University, accepts an ASP Undergraduate prize from Dr Constantin Constantinoiu.*

\$400 Undergraduate Prizes

The Australian Society for Parasitology is pleased to announce that it will be offering undergraduate student prizes of \$400 each to Australian Universities identified as offering a suitable course in parasitology, for presentation to the best undergraduate student in parasitology (highest passing mark/grade). The course(s) must be taught by a financial member of the ASP (of more than one year standing), and must comprise at least 30% parasitology.

Requests for 2013 prizes must be made by the eligible University to the ASP Treasurer or Secretary by the 30th September 2013. Requests for prizes must include the following for each eligible course:

1. Course name/code/degree year
2. Number of Students enrolled in 2013
3. Number of hours dedicated to parasitology (and total number of hours for the course)
4. Name of financial ASP member (of at least 1 year standing) teaching course

News about Australia/Europe Malaria Research Cooperation

World Malaria Day

World Malaria Day was Thursday, April 25 this year and the theme for 2013 and the coming years is: Invest in the future. Defeat malaria.

The World Health Organization campaign reflects on malaria mortality rates and highlights the need for continued investment and sustained political commitment for malaria prevention and control.

Invest in the future. Defeat malaria.

"Over the last decade, the world has made major progress in the fight against malaria. Since 2000, malaria mortality rates have fallen by more than 25%, and 50 of the 99 countries with ongoing transmission are now on track to meet the 2015 World Health Assembly target of reducing incidence rates by more than 75%. A major scale-up of vector control interventions, together with increased access to diagnostic testing and quality-assured treatment, has been key to this progress.

"But we are not there yet. Malaria still kills an estimated 660 000 people worldwide, mainly children under five years of age in sub-Saharan Africa. Every year, more than 200 million cases occur; most of these cases are never tested or registered. A recent plateauing of international funding has slowed down progress, and emerging drug and insecticide resistance threaten to reverse recent gains.

"If the world is to maintain and accelerate progress against malaria, in line with Millennium Development Goal (MDG) 6, and to ensure attainment of MDGs 4 and 5, more funds are urgently required."

Source and to find out more: World Health Organization
<http://www.who.int/campaigns/malaria-day/2013/event/en/>

OzEMalaR Travel Award winners:

Congratulations to our latest OzEMalaR Travel Award winners:

- **Katherine Jackson**, Melbourne University, Bio21 will attend the Wellcome Trust Malaria Experimental Genetics workshop at Wellcome Trust Genome Campus, Hinxton, Cambridge.
- **Shamista Selvarajah**, Department of Medicine, RMHWH, University of Melbourne will travel to The Netherlands for a Research Exchange with Dr Richard Bartfai and Prof Hendrik Stunnenberg at the Department of Molecular Biology, Radboud University, Nijmegen and the Center for Molecular Life Sciences, Nijmegen for a collaborative project on the ATP-dependent chromatin remodelling SWR1 complex in *Plasmodium falciparum*.

Since 2010 we have funded 42 Australian malaria researchers a total of \$341,064 through the OzEMalaR Travel Awards scheme to participate in researcher exchanges and training programs to European laboratories within EviMalaR.

OzEMalaR funding runs until the end of 2014 and we want to see lots of applications in the next two years to make the most of such a fantastic opportunity.

Closing dates in 2013/14 for OzEMalaR Travel Awards are:

Friday 17 May 2013
Friday 12 July 2013
Friday 13 September 2013
Friday 15 November 2013
Friday 10 January 2014

Visit our website www.ozemalar.org to find out how you can apply for OzEMalaR Travel Awards to support early career malaria researchers (PhD and postdocs) from Australia to work and be trained in top European laboratories within EviMalaR

(=BioMalPar) for malaria research. To check which laboratories are eligible as hosts visit www.evimalar.org.uk

Download funding guidelines from the OzEMalaR website and start planning your researcher exchanges to utilise this great opportunity. We hope to see lots of new applications in 2013.

Lisa will be contacting laboratory heads in the OzEMalaR Network shortly to distribute information about malaria laboratories in EviMalaR and in Brazil. If you are not currently but would like to be part of the OzEMalaR Network please contact Lisa with your details.

Please email Lisa with any news, jobs or events you have for the website (lisa.jones1@jcu.edu.au) or with your comments and suggestions.

Geoff McFadden
Convenor, OzEMalaR



World Malaria Day. Image: WHO/S.Hollyman

Australian-made malaria vaccine to enter human trials

Australian researchers have developed the first malaria vaccine that can be tailored to combat the many variants of malaria that exist around the world. Human trials of the vaccine will begin next year.

The new vaccine uses a genetically-modified strain of the malaria parasite to protect people who are at risk from malaria infection. It has been developed by a team of researchers led by Dr Krystal Evans, Professor Louis Schofield and Professor Alan Cowman from the Walter and Eliza Hall Institute's Infection and Immunity division, and Professor James McCarthy from the Queensland Institute of Medical Research.

The vaccine being trialled targets the blood stage of malaria infection – the stage that is responsible for symptoms such as headache, fever, shivering and joint pain.

Dr Evans said the design of the genetically attenuated parasite (GAP) vaccine was based on many years of research at the Walter and Eliza Hall Institute which had identified critical molecules in the malaria parasite that can be recognised by the immune system.

The manufacture and trial of the GAP vaccine is being supported by an Australian National Health and Medical Research Council (NHMRC) Development Grant.

"The funding will allow us to firstly manufacture the vaccine in sufficient quantities, and to high enough standards for human trials," Dr Evans said.

Dr Krystal Evans.



"We will then have the opportunity to test how effective the vaccine is in inducing a protective immune response against malaria. If these trials are successful, the next stage will be to develop the vaccine further, by adding additional features to prevent malaria transmission, such as modifying it to match regional and species variants of the malaria parasite."

The genetically attenuated parasites to be used in the trial are being manufactured at the Walter and Eliza Hall Institute, which has the only facility worldwide capable of producing genetically-altered malaria parasites that comply with the good manufacturing practice guidelines required for human clinical trials.

Professor Schofield said the GAP vaccine represented an important new approach to combatting malaria. "There is a clear need for a vaccine against malaria," he said. "In many parts of the world, the malaria parasite has developed resistance to antimalarial medications.

"An effective vaccine could offer people in malaria-endemic regions long-lasting protection against this devastating disease. The GAP vaccine has the ability to be modified to suit the variability that occurs in malaria between regions and over time.

"The NHMRC Development Grant scheme is allowing us to develop vaccine research projects from the laboratory through to clinical trials, a stage of research that is traditionally difficult to find support for. We are also grateful for the support of the Bill & Melinda Gates Foundation, which provided seed funding that was vital for the early stages of the project."

Professor Schofield's malaria vaccine research was featured in a public lecture on April 30, as part of the Walter and Eliza Hall Institute's recognition of World Malaria Day, a day that highlights the global efforts to control malaria.

Story and image source: WEHI

Events

Aquatic animal health events associated with WAAVP2013.

The 24th International Conference of the World Association for Veterinary Parasitology, will be held in Perth, Western Australia from 25-29 August 2013. The conference will feature special sessions on aquatic animal health, with a particular focus on the problems of parasitic infections in aquaculture.

A satellite workshop on Fish Diseases will be held prior to the conference from 22-24 August.

For more information and registration:
<http://www.waavp2013perth.com/>

6th ASEAN Congress of Tropical Medicine and Parasitology (ACTMP), Kuala Lumpur 2014

The Malaysian Society of Parasitology and Tropical Medicine (MSPTM) extends a warm invitation to and the 6th ASEAN Congress of Tropical Medicine and Parasitology (ACTMP) which will be held in Kuala Lumpur, Malaysia, from 5-7 March 2014. The theme for the congress, which coincides with the the Golden Jubilee of the MSPTM, is *GLOBAL CHALLENGES IN TROPICAL DISEASES: Bridging Gaps and Building Partnerships*.

For more information, kindly contact:
6th ACTMP 2014 Congress Secretariat

c/o AOS Conventions & Events Sdn Bhd
39 & 40, Jalan Mamanda 9, Ampang Point, 68000, Kuala Lumpur
P: +603 4252 9100 F: +603 4257 1133

E: secretariat@actmp2014.com
W: www.actmp2014.com

The Hidden Zoo



Explore the world of parasites at Perth Zoo in August

Parasites are part of everyone's life. They infect our pets, the meat and crops we eat, and us. They also infect our iconic marsupial wildlife and the fish in our unique oceans and reefs, sometimes with devastating consequences. Join us

on Saturday 24th August for an adventure through the fascinating world of parasites. Activities suitable for everyone to enjoy, zoo patrons can get "under the skin" of Australia's parasitologists.

This Inspiring Australia initiative is supported by the Australian Government through the Department of Industry, Innovation, Science, Research and Tertiary Education in partnership with the Australian Society for Parasitology Inc. and Perth Zoo.

The images are courtesy of Cath Covacin, Stephen Barker and Rick Webb, University of Queensland.





Malaria has plagued humans from before the time of the pharaohs...

But can malaria be eradicated?

Join us to learn more about current efforts to rid the world of this ancient foe.

Free public lecture and tours

For World Malaria Day, the Walter and Eliza Hall Institute of Medical Research is holding a public lecture and tour, with malaria experts speaking about their latest discoveries.

When: Tuesday 30 April 2013

Where: Walter and Eliza Hall Institute,
1G Royal Parade, Parkville VIC 3052

Free tours 5–6pm

Free public lecture 6–7:30pm

Registrations are essential. Call 03 9345 2555
or book online at www.wehi.edu.au/worldmalariaday.



Walter+Eliza Hall
Institute of Medical Research

TOWARDS OUR CENTENARY IN 2015



facebook.com/WEHIresearch



[@WEHI_research](https://twitter.com/WEHI_research)

IJP Feature Interview

Sejal Gohil & Brian Cooke

Sejal Gohil, Lev Kats, Torsten Seemann, Kate Fernandez, Ghizal Siddiqui and Brian Cooke (Monash University) recently published their International Journal for Parasitology article "Bioinformatic prediction of the exportome of *Babesia bovis* and identification of novel proteins in parasite-infected red blood cells". Sejal and Brian talk to Lisa Jones about their *Babesia bovis* research.

1. Tell us about the history of your *Babesia bovis* research and how it led to the identification and characterisation of the three novel exported parasite proteins in your recent IJP publication.

After more than a decade of research on *Plasmodium falciparum*, the Cooke

laboratory also focused its interests to study a related parasite (*Babesia bovis*) that causes a disease similar to human malaria in animals – especially cattle. Sejal Gohil found out about this as an undergraduate student and joined Brian's group, first to do honours and then her PhD. 'We soon found out why no one else seemed to be doing much work on this parasite' Sejal said – 'no way to culture the parasite reliably in vitro, no way to synchronise or purify it, very few reagents to work with, no genomes, no molecular tools for genetic manipulation – I am surprised that I ever agreed to it!'. Now, 4 years on, it is a completely different story. We have set up *in vitro* culture systems, developed transfection tools and protocols, generated antibodies and reagents for the study of this parasite and learned much more about its overall basic biology – but we still have a long way to go. One of the exciting discoveries (reported in this current paper) was to use bioinformatics to identify exported parasite proteins that are likely to have roles in the pathogenesis of bovine babesiosis. We think that the proteins identified using this approach would be located in appropriate places in the infected cell and have features

that make them suitable as targets for the development of novel vaccines

2. What is Babesiosis and is there any cure or vaccine available to protect animals and humans from developing it?

Babesiosis is of major national and international importance. *Babesia spp.* are tick-transmitted protozoan parasites that replicate inside red blood cells (RBCs) of a number of species and cause severe disease and death in susceptible hosts, particularly cattle, horses and dogs. As many as half a billion cattle worldwide are at risk of infection by *Babesia* parasites and the economic consequences, particularly for beef and dairy industries are enormous. In Australia, *B. bovis* is the major causative agent of babesiosis in cattle. Transmission of the parasite between infected cattle by the ixodid tick *Rhipicephalus microplus* is endemic throughout the northern half of our continent and reduces the profitability of the beef and dairy cattle industry in Australia by up to \$30m annually.

In the case of *B. bovis* infection, infected-

Sejal Gohil and Brian Cooke. Source: Murdoch University



RBCs sequester in post-capillary venules in a variety of organs, including the brain, for the majority of the parasites intra-erythrocytic lifecycle. For the parasite, sequestration of PRBCs is likely necessary to avoid their destruction in the spleen, but for the host, it is highly detrimental and is associated with the development of severe clinical syndromes such as cerebral babesiosis, that unless treated promptly are frequently fatal. In 2007, our laboratory showed that sequestration occurs as a result of infected-RBCs becoming abnormally adhesive for vascular endothelial cells and significantly more rigid. Associated with these alterations is the appearance of ridge-like structures on the surface of *B. bovis*-infected RBCs that resemble the knob-like protuberances on the surface of human RBCs infected with the malaria parasite, *Plasmodium falciparum* and we have demonstrated that these *Babesia* ridges are related to the parasites ability to cause severe disease.

For almost 50 years, a chilled or frozen live attenuated vaccine has been made in Queensland at the Tick Fever Centre and deployed worldwide for the control of bovine babesiosis. We truly believe, however, that sustainable control of this disease will require the development of recombinant or subunit vaccines to eliminate the current difficulties associated with a live attenuated vaccine.

3. What impact will your results have for animals and humans at risk or suffering from Babesiosis?

Unfortunately, despite our and others

significant advances in the field, we still know very little about the virulence determinants of this important pathogen at the molecular level. So much so, that the vaccine currently in use has been developed without any rational genetic basis and therefore has a number of limitations associated with the use of live attenuated parasites. We envisage that our work will significantly increase our understanding of the biology of *Babesia* parasites and will lead to the development of a better vaccine – one that could be deployed without the need for a cold chain.

4. Tell us about your supporters and how they have helped your research progress.

None of this work would ever have got off the ground without the early support and tremendous encouragement from Bob Dalglish, Bert DeVos, Wayne Jorgensen, John Molloy, Russel Bock and numerous others from The Animal Research Institute and Tick Fever Centre (Tick Fever Research Centre as it was known then) in Queensland. With Peter Rolls now at the helm, their support remains unwavering. In addition, none of the work described in our recent paper would have been possible without the support of the ARC, who awarded us with a Discovery grant to enable this work to go forward.

5 Tell us what happens next in your Babesia bovis research?

Clearly we have learned a lot over the past few years but there is a very long way to go yet. We are currently sequencing and

analysing the genomes, transcriptomes and proteomes of Australian *Babesia* isolates to increase our knowledge of this parasite and how it causes disease. In combination with our established cellular and molecular biology techniques, we are convinced that we will be able to identify suitable novel proteins as the targets for the next generation of vaccines both for *Babesia* and other important apicomplexan diseases of animals. Whether this happens of course depends on whether the lab can continue to get funding. 'Times are tough', Brian said 'and with shrinking budgets, basic research like this, particularly in the veterinary sciences, is no doubt going to suffer a bit more than our human work. We will plough on though. Given that the majority of the global burden of this disease is borne by Australia and South America, it should be our responsibility and priority to do something about it - because we can.

"Bioinformatic prediction of the exportome of Babesia bovis and identification of novel proteins in parasite-infected red blood cells" Sejal Gohil ^a, Lev M. Kats ^a, Torsten Seemann^b, Kate M. Fernandez ^a, Ghizal Siddiqui ^a, Brian M. Cooke ^a, International Journal for Parasitology 43 (2013) 409–416

^a Department of Microbiology, Monash University, Victoria 3800, Australia

^b Victorian Bioinformatics Consortium, Monash University, Victoria 3800, Australia

New IJP "Best Paper" Award for Students

To promote the highest quality research published in IJP by an ASP student member, the journal has instigated a new "best paper" award. To qualify for the award, the first author of the paper must have

been an active student member of the ASP during the year that the paper was published. The best paper each year will be selected by the senior editors and the winner notified early in the following year.

A \$500 prize will be presented to the winner at the ASP annual conference.

IJP



INTERNATIONAL JOURNAL FOR PARASITOLOGY

January 2013

Invited Review

Michelle J Boyle, Danny W Wilson, James G Beeson, **New approaches to studying *Plasmodium falciparum* merozoite invasion and insights into invasion biology**

Original Research Articles

Anna R Renwick, Xavier Lambin, **Host-parasite interactions in a fragmented landscape**

February 2013

Special Issue: International Meeting on Apicomplexan Parasites in Farm Animals (ApiCOWplexa) 2012

Original Research Articles

Michael P Reichel, M. Alejandra Ayanegui-Alcérreca, Luís F P Gondim, John T Ellis, **What is the global economic impact of *Neospora caninum* in cattle? - the billion dollar question**

G. Schares, M.C. Langenmayer, J.C. Scharr, L. Minke, P. Maksimov, A. Maksimov, S. Schares, A. Bärwald, W. Basso, J.P. Dubey, F.J. Conraths, N.S. Gollnick, **Novel tools for the diagnosis and differentiation of acute and chronic bovine besnoitiosis**

C. Silverlås, H. Bosaeus-Reineck, K. Näslund, C. Björkman, **Is there a need for improved *Cryptosporidium* diagnostics in Swedish calves?**

Yingling Huang, Yu-Ping Xiao, David R.

Allred, **Unusual chromatin structure associated with monoparalogous transcription of the *Babesia bovis* ves multigene family**

M. Witschi, D. Xia, S. Sanderson, M. Baumgartner, J.M. Wastling, D.A.E. Dobbelaere, **Proteomic analysis of the *Theileria annulata* schizont**

Richard D Oakes, Dominic Kurian, Elizabeth Bromley, Christopher Ward, Kalpana Lal, Damer P Blake, Adam J Reid, Arnab Pain, Robert E Sinden, Jonathan M Wastling, Fiona Tomley, **The rhoptry proteome of *Eimeria tenella***

Invited Reviews

Hill and Dubey on **Toxoplasma in farm animals**; Müller and Hemphill on ***In vitro* culture systems**; Gohil, Herrmann, Günther and Cooke on **Bovine babesiosis in the 21st century**

March 2013

Double Special Issue: Translatability of Helminth Therapy

Original Research Articles

Elsenoer J. Klaver, Loes M. Kuijk, Lisa C. Laan, Helene Kringel, Sandra J. van Vliet, Gerd Bouma, Richard D. Cummings, Georg Kraal, Irma van Die, ***Trichuris suis*-induced modulation of human dendritic cell function is glycan-mediated**

Emilia Daniłowicz-Luebert, Svenja Steinfelder, Anja A. Kühn, Gennadiy Drozdenko, Richard Lucius, Margitta Worm,

Eckard Hamelmann, Susanne Hartmann, **A nematode immunomodulator suppresses grass pollen-specific allergic responses by controlling excessive Th2 inflammation**

Justyna Rzepecka, Ivonne Siebeke, Jennifer C. Coltherd, Dorothy E. Kean, Christina N. Steiger, Lamyaa Al-Riyami, Charles McSharry, Margaret M. Harnett, William Harnett. **The helminth product, ES-62, protects against airway inflammation by resetting the Th cell phenotype**

Current Opinion

Severine Navarro, Ivana Ferreira, Alex Loukas, **The hookworm pharmacopoeia for inflammatory diseases**

Invited Reviews

Hernandez, Leung and McKay on **Cestode regulation of inflammation**; Weinstock and Elliott on **Translatability of helminth therapy**; Leung and Loke on **a role for IL-22**; Fleming on **Helminth therapy and Multiple Sclerosis**; Croese, Gaze and Loukas on **changed gluten immunity in celiac disease**; Robinson, Dalton, O'Brien and Donnelly on ***Fasciola hepatica***; Khan and Fallon on **Helminth therapies**; McSorley, Hewitson and Maizels on **Immunomodulation by helminth parasites**; Zaccane and Cooke on **Helminth and Type 1 diabetes**; Tilp, Kapur, Loging and Erb on **the pharmaceutical industry and helminths**

IJP: DDR



An update from Andrew Kotze and Kevin Saliba, Editors-in chief of IJP:DDR.

The new journal is off to a good start. A total of 46 papers have now been published, and we are presently compiling Volume 3. The papers have been almost evenly split between unicellular and multicellular parasites, with slightly more in the former. Full length Original Research Articles have been dominant, although we have also published a number of Invited Reviews, as well as Current Opinion articles.

We have been in discussion recently with the organisers of two international conferences and are planning to put together a couple of Special Issues around the papers presented at these meetings for later in the year. The papers published in the journal are indexed under Scopus / Science Direct, as well as Google Scholar, and we have recently submitted an application for indexing in PubMed.

We would like to encourage all ASP members to consider the journal as a place to publish their work in the areas of drugs and drug resistance, and we also ask them to encourage colleagues to consider publishing in the new journal.

Recent papers

Original Research Articles

Jane C. Munday, Karla E. Rojas López, Anthonius A. Eze, Vincent Delespaulx, Jan Van Den Abbeele, Tim Rowan, Michael P. Barrett, Liam J. Morrison, Harry P. de

Koning, **Functional expression of TcoAT1 reveals it to be a P1-type nucleoside transporter with no capacity for diminazene uptake**, Volume 3, Pages 69-76

Marta G. Silva, Ana Domingos, M. Alexandra Esteves, Maria E.M. Cruz, Carlos E. Suarez, **Evaluation of the growth-inhibitory effect of trifluralin analogues on *in vitro* cultured *Babesia bovis* parasites**, Volume 3, Pages 59-68

Ranbir S. Sarai, Steven R. Kopp, Glen T. Coleman, Andrew C. Kotze, **Acetylcholine receptor subunit and P-glycoprotein transcription patterns in levamisole-susceptible and -resistant *Haemonchus contortus***, Volume 3, Pages 51-58.

Bismarck Dinko, Mary C. Oguike, John A. Larbi, Teun Bousema, Colin J. Sutherland, **Persistent detection of *Plasmodium falciparum*, *P. malariae*, *P. ovale curtisi* and *P. ovale wallikeri* after ACT treatment of asymptomatic Ghanaian school-children**, Volume 3, Pages 45-50.

Christelle Doliwa, Dong Xia, Sandie Escotte-Binet, Emma L. Newsham, Sanderson Sanya J., Dominique Aubert, Nadine Randle, Jonathan M. Wastling, Isabelle Villena, **Identification of differentially expressed proteins in sulfadiazine resistant and sensitive strains of *Toxoplasma gondii* using difference-gel electrophoresis (DIGE)**, Volume 3, December 2013, Pages 35-44.

Si-Ming Zhang, Kristen A. Coultas, **Identification of plumbagin**

and sanguinarine as effective chemotherapeutic agents for treatment of schistosomiasis, Volume 3, December 2013, Pages 28-34.

Mercedes Lloberas, Luis Alvarez, Carlos Entrocasso, Guillermo Virkel, Mariana Ballent, Laura Mate, Carlos Lanusse, Adrian Lifschitz, **Comparative tissue pharmacokinetics and efficacy of moxidectin, abamectin and ivermectin in lambs infected with resistant nematodes: Impact of drug treatments on parasite P-glycoprotein expression**, Volume 3, Pages 20-27.

Martha J. Larsen, Elizabeth Ruiz Lancheros, Tracey Williams, David E. Lowery, Timothy G. Geary, Teresa M. Kubiak, **Functional expression and characterization of the *C. elegans* G-protein-coupled FLP-2 Receptor (T19F4.1) in mammalian cells and yeast**, Volume 3, Pages 1-7.

Review Article

Didier Ménard, Valérie Andrianantoanirina, Nimol Khim, Arsène Ratsimbaoa, Benoit Witkowski, Christophe Benedet, Lydie Canier, Odile Mercereau-Puijalon, Rémy Durand, **Global analysis of *Plasmodium falciparum* Na⁺/H⁺ exchanger (pf_{nhe-1}) allele polymorphism and its usefulness as a marker of *in vitro* resistance to quinine**. Volume 3, Pages 8-19.

IJP: PAW



Andrew Thompson describes a successful first six months for IJP:PAW.

I have just returned from an editorial meeting with Lydden Polley, Dale Seaton and Paul-André Genest. The journal is going great guns, with the number of contributions increasingly exponentially! We have only been going for just under 6 months and we are really excited by the way the journal is being received.

In early April, I am attending the British Society for Parasitology Spring meeting in Bristol, where Dale and I will be promoting the journal, WAAVP and the ASP.

We are very keen to receive suggestions for review articles and would like to see more aquaculture/fish health articles being submitted to the journal.

Recent papers

Research Articles

Kaiser E. Dawood, Jess A.T. Morgan, Frances Busfield, Mukesh Srivastava, Taryn I. Fletcher, Jacqueline Sambono, Louise A. Jackson, Bronwyn Venus, Adrian W. Philbey, Ala E. Lew-Tabor, **Observation of a novel *Babesia* spp. in Eastern Grey Kangaroos (*Macropus giganteus*) in Australia**, International Journal for Parasitology: Parasites and Wildlife, Volume 2, December 2013, Pages 54-61.

Gabriel L. Hamer, Tavis K. Anderson, Garrett E. Berry, Alvin P. Makohon-Moore, Jeffrey C. Crafton, Jeffrey D. Brawn, Amanda

C. Dolinski, Bethany L. Krebs, Marilyn O. Ruiz, Patrick M. Muzzall, Tony L. Goldberg, Edward D. Walker, **Prevalence of filarioid nematodes and trypanosomes in American robins and house sparrows, Chicago USA**, International Journal for Parasitology: Parasites and Wildlife, Volume 2, December 2013, Pages 42-49.

Steve Unwin, Julian Chantrey, James Chatterton, Jitka A. Aldhoun, D. Timothy J. Littlewood, **Renal trematode infection due to *Paratanaisia bragai* in zoo housed Columbiformes and a red bird-of-paradise (*Paradisaea rubra*)**, International Journal for Parasitology: Parasites and Wildlife, Volume 2, December 2013, Pages 32-41.

Iva Dyková, Alena Kodádková, Isaure de Buron, Ivan Fiala, William A. Roumillat, **Sinuolinea infections in the urinary system of *Cynoscion* species (Sciaenidae) and phylogenetic position of the type species of *Sinuolinea* Davis, 1917 (Myxozoa: Myxosporea)**, International Journal for Parasitology: Parasites and Wildlife, Volume 2, December 2013, Pages 10-17.

Kadie Anderson, Vanessa O. Ezenwa, Anna E. Jolles, **Tick infestation patterns in free ranging African buffalo (*Syncerus caffer*): Effects of host innate immunity and niche segregation among tick species**, International Journal for Parasitology: Parasites and Wildlife, Volume 2, December 2013, Pages 1-9.

Review Article

Michael J. Yabsley, Barbara C. Shock,

Natural history of Zoonotic *Babesia*: Role of wildlife reservoirs, International Journal for Parasitology: Parasites and Wildlife, Volume 2, December 2013, Pages 18-31.

Brief Report

Diogo Guerra, Maria Teresa Armua-Fernandez, Marta Silva, Inês Bravo, Nuno Santos, Peter Deplazes, Luís Manuel Madeira de Carvalho, **Taeniid species of the Iberian wolf (*Canis lupus signatus*) in Portugal with special focus on *Echinococcus* spp.**, International Journal for Parasitology: Parasites and Wildlife, Volume 2, December 2013, Pages 50-53.

Current Opinion

Ashlie Hartigan, David N. Phalen, Jan Šlapeta, **Myxosporean parasites in Australian frogs: Importance, implications and future directions**, International Journal for Parasitology: Parasites and Wildlife, Volume 2, December 2013, Pages 62-68.

State News

Australian Capital Territory

The Australian National University

A recent paper, based on the PhD work of **Natalie Spillman** and published in *Cell Host & Microbe* generated significant media publicity, including pieces in *The Canberra Times*, *The Age*, *SMH* and ABC News (online and radio). The paper reported the presence on the surface of the intracellular malaria parasite of a molecular pump that extrudes Na⁺ ions, and showed that the pump is inhibited by 'spiroindolones', a new class of antimalarials now in Phase II clinical trials. In an accompanying press release the Na⁺ pumping protein was described as a salt pump, with the inhibitory spiroindolones causing a 'salt overload'. Some media outlets had some interesting interpretations of the findings-being some way from what the authors had in mind. The finding was reported on the Arab Emirates 'Top News' website under the headline 'Salt Overdose Enough to Kill Malaria, Claims Study', going on to explain that malaria could "be defeated by the use of salt alone" and showing a picture of a salt shaker.



Meanwhile, the parasitologists working in the ANU's Research School of Biology have claimed the ANU Science precinct's newly installed sculpture (pictured) as their own, noting its uncanny (albeit stylised) resemblance to a malaria parasite-infected erythrocyte. The sculpture, by British artist Wolfgang Buttress, takes the form of a four metre diameter polished steel sphere, perforated with 9000 holes of varying size, mapping out the stars of the southern sky. Within the 4 m sphere is a second mirror-polished metal sphere, 2 metre in diameter and it too is perforated with a multitude of holes. The sculpture is lit from within by a custom-designed LED lighting system. To the ANU parasitologists the outer sphere represents the infected erythrocyte, and the inner sphere the parasite. The holes are the membrane channels and transporters that are the subject of study of a number of the ANU groups. Although the artist had not designed the sculpture with a parasitized erythrocyte in mind he was pleased to have the similarities drawn to his attention.

New South Wales

University of Sydney

Laboratory of Veterinary Parasitology @ McMaster Building

Jan Šlapeta has resolved a parasitological issue that was haunting the field for over 50 years – what actually is *Tritrichomonas foetus*? He has teamed up with colleagues from Switzerland, Czech Republic, Australia and New Zealand to deliver the most comprehensive DNA analysis, once and for all establishes the identity of *T. foetus*.

The findings have been published in the December issue of IJP [<http://dx.doi.org/10.1016/j.ijpara.2012.10.004>], and the controversy is put to the rest.

Jan has also published a paper on taxonomy in IJP-PAW, "Ten simple rules for a describing a new parasite species", from which an extract is printed in the IJP-PAW section of this newsletter.

Neil Portman (postdoc) spending lot of time on TEM preparing and organising a trip to Vancouver to attend The International Congress of Protistology XIV (ICOP XIV). PhD students **Christie Foster** and **Victoria Morin-Adeline** are working hard towards resolving ITF transport in *Chromera velia* and oxygen metabolism in *Tritrichomonas foetus*, respectively. In addition, **Mark Westman** is using his experience as a veterinarian working for welfare organisations to investigating how many (if any) parasites are in shelter cats destined for rehoming.

This year we welcome a BSc(Vet) student **Stefan Saverimuttu** who is solving the riddles of protozoal disease in monotremes in collaboration with Taronga Zoo. **Andrea Lawrence** an Animal and Veterinary Bioscience Honours student working with fleas on dogs and cats in Sydney, Thailand and Fiji.

Ashlie Hartigan has left the University of Sydney for a post-doc in Astrid Holzer's lab in the Czech Republic to work on fish parasitology (see picture below). As a conclusion of her thesis she prepared a paper that is now published - an opinion article in IJP:PAW summing up our knowledge on myxosporidiosis in Australian frogs [<http://dx.doi.org/10.1016/j.ijppaw.2012.12.002>]. We are still hunting down the sources of emergence of the frog myxozoa around Australia. We found that "parasites go bananas" after discovering a stowaway frog in a Banana shipment and noticing that it was shedding the parasite (now published in *Parasites & Vectors*). We attempted to use "Parasites go bananas" in the title of the paper but the editor kindly suggested we needed a more modest title -

State News continued

and we had no problem changing it. On the note of unusual titles, one title that is out there ... and published in PLoS NTD (not our paper), for those that dare click this link: [www.plosntds.org/article/info:doi/10.1371/journal.pntd.0001969] and be surprised. BTW: The study is excellent and I don't mind the title – it made students laugh when I showed it in the lecture and was a great start for a lecture on reliability of diagnostic tests (Jan).



Ashlie Hartigan mushrooming in the Czech Republic with Dr Ivan Fiala

Last but not least **David Emery** has returned from his sabbatical that was mostly spent on preparing a veterinary parasitology e-textbook. Together with Ian Beveridge they have moved this project incredibly far and the plan is that vet students start using it in 2014. On another note David has also returned from an amazing rafting trip on Franklin in Tasmania, with many unforgettable memories. NB: And for those that know David he returned with couple of cicadas – some hairy looking endemics! (David was very pleased).

The University of Western Sydney

The Stack research group would like to welcome **Allison Gee** who has just

started her PhD on the human protozoan parasite *Trichomonas vaginalis*. Alison will join PhD candidate **Leah Cronin** in the laboratory, who is working on the closely related veterinary parasite *Tritrichomonas foetus*. Two honours, **Mousawi Chau** and **Ananth Kunchapudi**, will be undertaking the research projects with the group. **Colin Stack** is looking forward to getting back into the lab to do some research during his sabbatical this coming spring semester (not sure the students will be happy!). Colin will also be spending a month in the laboratory of Dr. Mark Robinson at Queen's University Belfast as part of his sabbatical.

Charles Sturt University

Walide Saad from Libya started a PhD with Shokoofeh, Peter and Rob at CSU, working on drug resistance in *Haemonchus* in sheep. **Anna Turner** is doing an Honours with Shokoofeh looking at parasites in introduced fish in Murrumbidgee basin. **Leah Brunt** and **Tom O'Brien**, undergraduate veterinary science students received summer scholarship from EH Graham Centre to work on a parasitology related topic over 10 weeks. Leah's work was mainly on acanthocephalans from marlins under Shokoofeh and **John Harper's** supervision and Tom looked at parasites in cormorants from Riverina region under Shokoofeh, Nigel and Rob's supervision.

Queensland

The University of Queensland

School of Veterinary Science, Gatton Campus

It's been a busy few months at the Gatton Vet School with dynamic changes in our postgraduate entries and exits. We congratulated and farewelled **Dr Puteri**

Azaziah Megat Abd Rani who returned to Malaysia to take up a Lectureship in Internal Veterinary Medicine at the University of Putra after successfully graduating with her PhD late last year. Her project, on the epidemiology of canine vector-borne diseases in India was funded by Bayer Animal Health and the Malaysian Government and supervised by **Rebecca Traub**, **Glen Coleman** and **Peter Irwin** (Murdoch). **Sze Fui Hii**, supervised by **Steven Kopp**, **Rebecca** and **Mary Thompson** is in the very final stages of writing up her Bayer Animal Health-supported project on canine vector-borne diseases in Australia in an attempt to submit her thesis within the week! **Leigh Cuttell** is also in the final stages of writing up her Australian Biosecurity CRC funded PhD supervised by **Rebecca**, **Paul Vanderlinde** (DAFF) and **Louise Jackson** (Biosecurity Qld) on surveillance and risk assessment for non-encapsulated *Trichinella* on mainland Australia while juggling her job as a part time Technical Officer at the Vet School. PhD student **Robyn Nagel** supervised by **Rebecca** and **Helle Bielefeldt-Ohmann** is busily finishing off a pilot study evaluating the usefulness of triple antibiotic therapy in eradicating *Blastocystis* infection in diarrhoea-predominant IBS patients. She will use Western blotting techniques to compare antibody responses in this group to healthy volunteers positive and negative for *Blastocystis* carriage. **Wenqi Wang** supervised by **Helen Owen**, **Rebecca**, **Helle** and **Leigh Cuttell** in the interim, is looking through umpteen sections of pig guts in an attempt to investigate the suitability pigs as an animal model for human blastocystosis. We welcome **Tawin Inpankaew** to our laboratory. Tawin, a Lecturer in Veterinary Parasitology at Kasetsart University, Bangkok is currently undertaking his PhD at the University of Copenhagen with Anders Dalsgaard. He will be spending the next 12-15 months with Rebecca to ascertain the role of pigs and dogs as reservoirs of human parasitic diseases in Cambodia. We also welcome **Phoebe Chapman** to our group. Phoebe is undertaking her PhD on an ARC-Linkage funded project investigating the health impacts of spirorchid flukes in marine

State News continued

turtles in Moreton Bay and is supervised by **Rebecca, Paul Mills, Thomas Cribb, Mark Flint** and **Myat Kyaw-Tanner**. Rebecca has just returned from Timor Leste, where she conducted a three-day workshop on faecal parasite detection at the Ministry of Health as part of an NHMRC partnership (Water Aid) funded project lead by Archie Clements at the School of Population Health, UQ. The trip was definitely an 'eye-opener' and has provided Rebecca the motivation to keep working on research into NTDs.

Anne Beasley, Postdoctoral Research Fellow, is up to her eyeballs in horse manure! She's received an overwhelming response from horse owners following her request for samples which will help her with her investigation into the prevalence of Macrocytic Resistance in small strongyles and *Parascaris equorum* on Australian horse farms. She hopes to move out of the parasitology lab soon and into the molecular lab to optimise an assay that will allow simultaneous detection of the 13 most common small strongyle species, and also to develop some *in vitro* diagnostic tools." Anne, along with Prof. **Glen Coleman**, and Dr **Andrew Kotze** (CSIRO Livestock Industries) are working together on this project which is funded by the RIRDC.

Sujeevi Nawaratna, student of **Mal Jones, Geoff Gobert** and **Don McManus**, and based at QIMR, submitted her PhD thesis in January. Sujeevi's work involved a comprehensive transcriptomic analysis of specific schistosome organs as a means to antigen discovery and spent many happy(?) hours using a microdissection microscope to pick out those organs from the minute parasites. Sujeevi is now working with **Kathy Andrews** from Griffith University and QIMR on drug discovery for malaria control. **Mal Jones** travelled to Nong Lam University in Vietnam to teach veterinary parasitology to their English-language Advanced Veterinary Program. Travelling with his wife Alison, Mal arrived just in time for the Western New Years' Eve celebrations, which were a lot wilder than expected, with millions of people cramming just about every street in downtown Ho

Chi Minh City. The interaction with the small class of students was great fun. The students were keen to learn and all gave some very high-quality presentations on infectious agents of animals. Unfortunately, Mal won't get to return to Nong Lam Uni to teach, but he has added a tour through Vietnam to his list of future holidays. Mal has welcomed a new student, **Mahdis Adhazadeh**, to his lab. Mahdis is investigating angiostrongyliasis in SE Qld and spends much of her time collecting rats and slugs looking for these rather pretty, but pathogenic, lungworms.

UQ-QAAFI and Queensland Government DAFF - Applied Biotechnology Livestock Group

The University of Queensland St. Lucia Campus

Jess Morgan and **Rosie Godwin** welcome **Elmabruk Gamag** to the Cocci lab to help them with their research on *Eimeria* population genetics. Elmabruk will be developing *Eimeria maxima* microsatellites as part of his Masters degree through UQ. Tao Xu, supervised by **Manuel Rodriguez Valle** (as primary supervisor) and **Ala Lew-Tabor** is rocking with his cattle tick (*Rhipicephalus microplus*) serpin expression and characterization, now in his 3rd year. We welcome to the lab this year PhD candidate **Greta Busch** and Science Honours student **Eric Dover** - both working on different aspects of paralysis tick (*Ixodes holocyclus*) vaccine development (supervised by **Manuel** and **Ala**). Ala still works on the bacterial cause of cow 'clap' (venereal diseases) with Lea Indjein recently submitting her PhD and we welcome **Yusra Nordin** who is undertaking Honours

(Biotechnology) developing molecular diagnostic assays based on our new genomic studies. Last January we farewelled **Rodrigo Cunha** from EMBRAPA Brazil who undertook 6 months training in our lab with Manuel towards his cattle tick vaccination PhD studies. This year QAAFI has obtained RHD enrolment status which is great for our new Institute and our group in general. Hope to catch up at WAAVP!

James Cook University

Townsville Campus, Marine Parasitology Laboratory

Teaching began in February for **Kate Hutson** who coordinates and teaches a summer intensive subject, *Sustainable Aquaculture*. Undergraduate students had the opportunity to sample parasites on wild fishes that associate with aquaculture farms as part of the course. **Terry Miller** (Cairns campus) also got involved in the course delivering guest lectures and helping with fieldwork. In addition to her teaching commitments, Kate has recently finalised a book chapter on infectious diseases of Asian sea bass.

Postgraduate students in the laboratory have been industrious. PhD student **Alexander Brazenor** is currently working at the South Australian Museum with **Ian Whittington** and **Terry Bertozzi** on the systematics of capsaid monogenea. Alex's travel was enabled by a recent ASP travel award. Masters of Applied Science student **Alejandro Trujillo** (supervised by Kate and **Constantin Constantinoiu**, School of Veterinary and Biomedical Sciences) recently submitted his thesis examining primary and secondary defense mechanisms of fish against ectoparasites. Alejandro plans to expand his research work and complete a Masters by Research degree this year. **Thane Militz** was awarded the School of Marine and Tropical Biology Prize for Best BSc Honours student for his thesis 'Efficacy

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of garlic on *Neobenedenia* sp. (Monogenea) infecting barramundi (*Lates calcarifer*).¹ Congratulations Thane! He has since written a manuscript which has accepted for publication. Thane will commence his PhD research later this year.

South Australia

South Australian Museum / University of Adelaide

Michael Reichel and team from the University of Adelaide Vet School at Roseworthy Campus, are currently involved in a preliminary study that will establish the status of the *Besnoitia* species involved in clinical cases in western grey kangaroos. Should *B. besnoiti* (which is emerging as a pathogen of cattle in Europe) be confirmed as the cause, further work will be carried out to determine the risk to cattle populations in this country. This requires further determining the level of the infection (prevalence) in the wild animal population, as well as an assessment of the association between that prevalence and the antibody reactions previously observed in cattle.

Our proposed study will establish whether or not *B. besnoiti* may have a wildlife reservoir and present a risk to cattle populations in Australia. Should the study identify the wildlife-associated species as *B. besnoiti*, the sero-prevalence work will establish the extent and distribution of infection in the wildlife population, a preliminary assessment of the risk posed to cattle in South Australia and possibly further, nationally allowing some risk

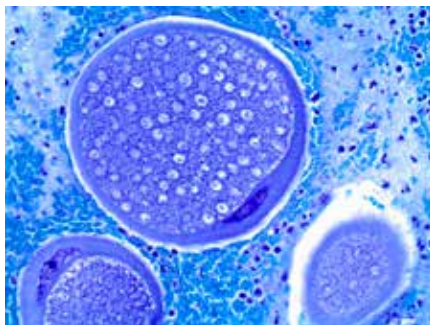
prevention and mitigation strategies to be developed in the future, if needed.



Taking a nasal swab from a Western grey kangaroo

Owners of a property near the Taillem Bend area of South Australia that had been reporting clinical signs in Western Grey kangaroos (epistaxis) suspicious of *Besnoitia* infection, provided animals to be examined at the School of Animal and Veterinary Science at Roseworthy. Nasal tissue samples and serum samples were collected under general anaesthesia. A *Besnoitia*-like organism was visualised in swabs from three individuals.

In addition, we were able to sample a further 20 kangaroos located at the property that had previously shown signs of epistaxis (nose-bleeding), obtained nasal swabs and tissue samples for examination and blood samples for future serology.



We are still looking for more clinical cases to isolate the organism, if anybody has a nose-bleeding 'roo, please contact **Wayne Boardman** on 08-83131246.

Sarah Catalano, third year PhD student at the University of Adelaide, is in the final months of her project investigating

the dicyemid parasite fauna of southern Australian cephalopods. In her studies, she surveyed 10 cephalopod species from six families and found seven host species to be infected by dicyemid parasites. A total of 11 new dicyemid species were documented, with formal descriptions of 10 of these new species complete. Sarah also used dicyemid parasites as biological tags to assess the population structure of *Sepia apama* (giant Australian cuttlefish) in southern Australian waters. Four sub-sets/populations of *S. apama* were identified from differences in dicyemid parasite fauna at each locality and dicyemid genetics between species at each locality. In the remaining months Sarah will be focusing on writing up her molecular phylogenetic chapters and drafting her thesis for submission mid-year. She is also preparing to attend the 88th Annual Meeting of the American Society of Parasitologists, held in Quebec City, Canada at the end of June, and hopes to add a research visit to Santa Barbara Museum of Natural History on the way home to work with the Curator of Malacology in stabilising dicyemid type material within their collection.

Ian Whittington has been mostly steeped in administration at the South Australian Museum. Presently he is one of a selection panel that also includes **Leslie Chisholm**, to appoint a new 2-year fixed term Collection Manager in Terrestrial Invertebrates with an emphasis on the extensive arachnid collection which of course includes mites and ticks. The new appointee will be responsible for relocating the large slide collection of arachnids, into new, purpose-built storage facilities. Leslie has already completed this task for all registered slides in the Australian Helminthological Collection. The new storage compactus that houses the arachnid and helminth collections has space for more than 70,000 slides, so now there is room to accession plenty of new material in both collections! The new 'space' has been renamed the *Parasitology & Arachnology Slide & Reprint Research Facility*. All specimens stored in spirit remain in the extensive spirit collection.

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Alex Brazenor, a PhD student from **Kate Hutson's** Marine Parasitology Laboratory at James Cook University in Townsville has spent March in Adelaide working in the *South Australian Regional Facility for Molecular Evolution & Ecology*, an ARC LIEF-funded central node between the University of Adelaide, Flinders University and the South Australian Museum. Alex, under the watchful eye of **Terry Bertozzi** of the SA Museum's *Evolutionary Biology Unit* has been busy doing PCRs and sequencing several *Neobenedenia* isolates and other capsalid monogeneans to commence his PhD studies. Ian has been helping out with the morphological side of the story, by slivering tiny specimens so that there is a voucher specimen that links the sequenced tissues and interpreting trees. Alex's project is part of a larger scheme that Ian and Terry are planning to make sense of *Neobenedenia* species globally. In a nutshell, Alex aims to try to put a name to the isolates of *Neobenedenia* that he will work on throughout his PhD that are established in aquaria at JCU Townsville.

workshop was attended by approximately 40 people including representatives from the Tasmanian salmonid industry. Following the workshop attendees were taken on a tour of the NCMCRS facilities including the Aquaculture centre and research laboratories.



Images from the ASP Parasitic Diseases in Fish Mariculture Workshop. Top: ASP student member Mr Mark Polinski presenting results from his PhD research. Middle: Mr Alistair Brown from TASSAL (left) and Mr Paul Hardy-Smith from Panaquatic Health Solutions (right) Bottom: Dr Mark Adams showing Professor Tom Cribb, Dr Nathan Bott and Professor Kazuo Ogawa the NCMCRS Aquaculture centre research facilities.

ASP student member **Melissa Martin** has recently given a *Discover More Talk* entitled "Hollywood Tongue Biter: Separating Fact from Fiction" at the Museum of Tropical Queensland, Townsville. Melissa used the recently released fictional movie "The Bay" as her basis for discussion about buccal-attaching parasitic fish crustaceans. The horror movie is about how contaminated waters resulted in the creation of mutant fish crustacean isopods that unleashed a deadly plague upon the community of Chesapeake Bay, USA. In her presentation, Melissa explained what was fact and what was fictional about the movie and discussed buccal-attaching parasitic fish crustaceans and the significance of this topic to her PhD research. Her presentation was well received from a wide group of audience consisting of aquarist, students, and even senior veterans. Ms Martin was also featured in the Townsville *Bulletin* which gives a synopsis about the existence of fish parasitic isopods and her research input to a better understanding of the Australian fauna.



Melissa Martin presenting at the Museum of Tropical Queensland, Townsville.

Congratulations to ASP student members **Mark Polinski, Victoria Valdenegro Daw** and **Megan Stride**. Mark has received international travel support from the Fisheries Society of the British Isles (FSBI) and University of Tasmania (UTAS) to attend the first conference of the International Society of Fish and Shellfish Immunology to be held this coming June in Vigo, Spain. Mark will be presenting work concerning the identification and transcriptional regulation of immune related genes of Bluefin tuna, as well as methods

Tasmania

The University of Tasmania

The University of Tasmania's National Centre of Marine Conservation and Resource Sustainability (NCMCRS) recently hosted the ASP Parasitic Diseases in Fish Mariculture Workshop. The workshop, held in February was organised by **Professor Barbara Nowak** and included presentations by renowned fish parasitologists including **Professor Tom Cribb**, from the University of Queensland, Dr Sho Shirakashi from Kinki University Fisheries Laboratory Wakayama, Japan and Kazuo Ogawa from Meguro Parasitological Museum Tokyo, Japan. ASP student members including **Mark Polinski, Victoria Valdenegro** and **Stewart Dick** were also afforded the opportunity to present their research to these eminent parasitologists. The

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for differential qPCR detection of *Cardicola* blood flukes and their distribution in ranched Southern Bluefin populations. Additionally, Mark will be travelling to the Laboratory of Dr. Simon Mackenzie at the Autonomous University of Barcelona to gain insight into the immunological role of the nucleated erythrocytes which can be found in fish, for which he hopes to utilize the knowledge that he gains in elucidating host-parasite interactions between *Cardicola* blood fluke species and the economically important Southern Bluefin tuna ranched here in Australia. Victoria also received international travel support from the FSBI and will similarly attend the conference in Spain to present her research on the mucosal immune response of fish vaccinated against amoebic gill disease (AGD). Megan also received both FSBI and UTAS international travel support to attend the European Association of Fish Pathologists (EAFP) 16th International Conference of Fish and Shellfish Diseases in Tampere, Finland as well as a workshop on *Chlamydia* hosted by Prof. Gilbert Greub at Lausanne, Switzerland. Megan has also been selected by the Australian Maritime College (AMC) to be one of two students to attend the 2013 National Student Leadership Forum (NSLF). The forum provides an opportunity for the emerging generation to discuss the significance of faith and values as foundations for effective leadership. The Forum will take place in Canberra at the end of a parliamentary sitting week.

Congratulations also to **Dylan Belworthy Hamilton** and **Stewart Dick** who graduated in December with first class Masters Degrees from the University of Tasmania. Dylan was also the recipient of the David Sterrett medal for excellence in postgraduate studies. He has now started a PhD project at Massey University New Zealand investigating larval mortality in a new species of cultured fish in New Zealand, Hapuku (*Polyprius oxygeneios*). Stewart is currently working at a smolt producing facility for the Tasmanian salmonid industry.

The 2012 ASP sponsored "Best

Undergraduate Student Prize in Parasitology" was won by Mr Jesse Caulfield. As ASP state representative Dr Melanie Leef awarded the prize during the ASP Parasitic Diseases in Fish Mariculture Workshop. Jesse was not able to attend the workshop however Stewart Dick, accepted the prize on his behalf.



Dr Melanie Leef awarding the ASP 'Best Undergraduate Student Prize in Parasitology' to Stewart Dick who accepted the prize on behalf of the winner Jesse Caulfield.

Finally Tasmanian ASP members would like to welcome our newest member **Miss Ylenia Pennacchi, Kingsley Tam** and **Melissa Ting**. Ylenia joined the Aquatic Animal Health research group in November last year to start a PhD project under the supervision of Prof. Barbara Nowak, Dr Melanie Leef, and Dr Andrew Bridle. Kingsley and Melissa have also joined the Aquatic Animal Health group as Honours students.

Victoria

La Trobe University

Terry Spithill provides us with news from La Trobe. He is happy to report that his group has now moved in to the new \$288M Centre for AgriBioscience on La Trobe's Bundoora campus, a joint venture with the Victorian DPI. They are happy in their well-equipped, light-filled space, a lovely new home after the old Reid building. **Hayley Toet** continues her postdoc with

Terry looking at surface associated proteins on liver flukes and characterising certain tegument protein gene families identified in our proteomic analyses. Hayley is also busy assisting Terry with the teaching of our 3rd year Animal Health class. Terry had 4 new Honours students join the group: **Jane Kelley, Elizabeth Read, Tim Merritt, and Kim Loh**. Jane and Elizabeth are doing field work on dairy farms in Gippsland looking at roundworm/fluke levels or *Theileria*, respectively. Elizabeth is co-supervised by Grant Rawlin at DPI. Tim is looking at culturing juvenile flukes to induce them to develop to immature forms *in vitro* and performing bioinformatic analysis on certain tegument proteins expressed in immature flukes. Kim is cloning and expressing some tegument proteins from *F. hepatica* under Hayley's supervision. Terry now has three PhD students. **Tim Elliott** is looking at triclabendazole-resistant liver flukes, performing fluke genotyping and examining the extent of resistance on dairy farms in Victoria. **Vignesh Rathinasamy** joined Terry in 2012 from Chennai, funded by a Victoria-India Doctoral Scholarship. Vignesh is cloning and expressing Annexin and Tetraspanin sequences from liver flukes and performing quantitative PCR to confirm expression levels in different fluke stages. **Tim Cameron** started his PhD this year after completing Honours in 2012. He will define and characterise tegument antigens recognised by sera from resistant livestock. Terry's group has welcomed **Paul McCusker** a visiting PhD student (and part time orchestra conductor) from Aaron Maule's lab in Queen's University, Belfast. Paul is here for 4 months learning some protein expression skills and helping Vignesh set up RNAi analysis in juvenile flukes. Paul survived his shark diving trip to Port Lincoln without losing an arm which is just as well since there is little demand for one armed conductors! In February, Terry attended the International Symposium on "The Control of Helminth Parasites with Emphasis on Liver Fluke" organised by the Department of Zoology, Aligarh Muslim University, Aligarh, India. This Symposium is part of an international collaboration between Queen's University, Belfast; the University of Aberystwyth, U.K.

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and TANUVAS, Chennai. The Symposium is under the auspices of a BBSRC-UK CIDLID funded collaborative research project on "Developing a validation portfolio to exploit key virulence proteins in *Fasciola* species for parasite control". Terry spoke on "Liver fluke vaccines: antigen discovery using proteomic analysis of the tegument of *Fasciola hepatica*".

The University of Melbourne

We congratulate **Philippe Boeuf** and colleagues for their recent publication in PLoS Pathogens, *Plasmodium falciparum* Malaria Elicits Inflammatory Responses that Dysregulate Placental Amino Acid Transport. (PLoS Pathog 9;2: e1003153). Malaria in pregnancy negatively affects foetal growth and is responsible for over 600,000 low birthweight deliveries each year. The pathogenetic mechanisms underlying foetal growth restriction in malaria in pregnancy are not understood. By showing that placental malaria infection triggers inflammatory responses that deregulate transplacental amino acid transport, their study is the first to identify a mechanism linking placental malaria and foetal growth restriction.

Congratulations to **Abdul Jabbar** who was recently awarded the 2013 Science and Innovation Awards for Young People in Agriculture, Fisheries and Forestry (Category: Dairy). The award was for the project: Establishment of a molecular test for the rapid diagnosis of bovine theileriosis in Australia.

The Walter and Eliza Hall Institute

As part of World Malaria Day, the Walter and Eliza Hall Institute of Medical Research is holding a public lecture and tour, with malaria experts speaking about their latest discoveries.

Find out more at :

www.wehi.edu.au/worldmaliaday.

Western Australia

Conference News

A Preparations for the joint WAAVP/ASP conference in Perth in August are well advanced, with an exciting line up of topics and speakers. The abstract deadline has recently been extended, so make sure you check out the website at:

<http://www.waavp2013perth.com>

Murdoch University

Congratulations to two new PhD graduates.

Rob Steuart was recently awarded his PhD for research on *Giardia* proteomics, and **Mike Klunzinger** for his study of the life history of the freshwater mussel, *Westralunio carteri* (which, like all freshwater mussels, has a larval stage which is parasitic on fish).

The Murdoch parasitology group recently said farewell to **Craig Thompson** who with wife Eileen has returned to Queensland and family in time for the birth of their first child. Craig has made major advances in our understanding of the life cycle and taxonomy of trypanosomes in woylies, and plans to finish writing his thesis prior to the birth!

The Murdoch group recently hosted a three day drug discovery workshop attended by colleagues from DNDi (Drug Discovery for Neglected Diseases Initiative) in Geneva and the USA, the Centre for Drug Candidate Optimisation at Monash, Epichem and the University of Western Australia. In addition to reviewing latest results on potential candidates for Chagas disease, Human

African Trypanosomiasis and Leishmaniasis, the group determined the most appropriate *in vitro* and *in vivo* models for evaluating drug efficacy.

Andy Thompson recently visited Lydden Polley at the University of Saskatchewan for their first IJP-PAW Editorial meeting, along with Dale Seaton and Paul-Andre Genest who TC'd in from the Editorial office in New York. There was also time for discussions with Emily Jenkins about collaborative research on echinococcosis and other zoonoses of mutual interest, some of which took place on a road trip to the snow (see picture below). Andy will also attend the BSP meeting in Bristol in early April followed by a quick stopover in Zurich to see Peter Deplazes.



Professor Andrew Thompson and colleagues, IJP-PAW Editorial meeting, University of Saskatchewan

The Murdoch group recently welcomed **Samantha**, who will join the drug discovery group, and **Samuel**, who is commencing Honours.

Jobs

Postgraduate Positions in Drug Development for Helminths

**The Aroian Group,
University of California San Diego**

Research Area:

Soil-transmitted helminths (intestinal roundworms) like hookworms, whipworms, and *Ascaris* are leading world-wide causes of disease burden in children and pregnant women,

with >400,000,000 children infected. New and superior anthelmintic treatments are urgently needed as current drugs are incomplete in their efficacy and prone to resistance-development. The Aroian Group is pioneering the use of roundworm-active Crystal proteins made by the soil-bacterium *Bacillus thuringiensis* as safe, novel, and potent anthelmintics (e.g., see Hu et al. 2012 PLoS NTD 2012, Hu et al. 2010 PNAS, Hu et al. 2010 PLoS NTD). Postdoctoral position available to further develop crystal proteins and novel delivery systems as next generation anthelmintics.

Applicant should complete their PhD soon or be within 2 years of completing their PhD.

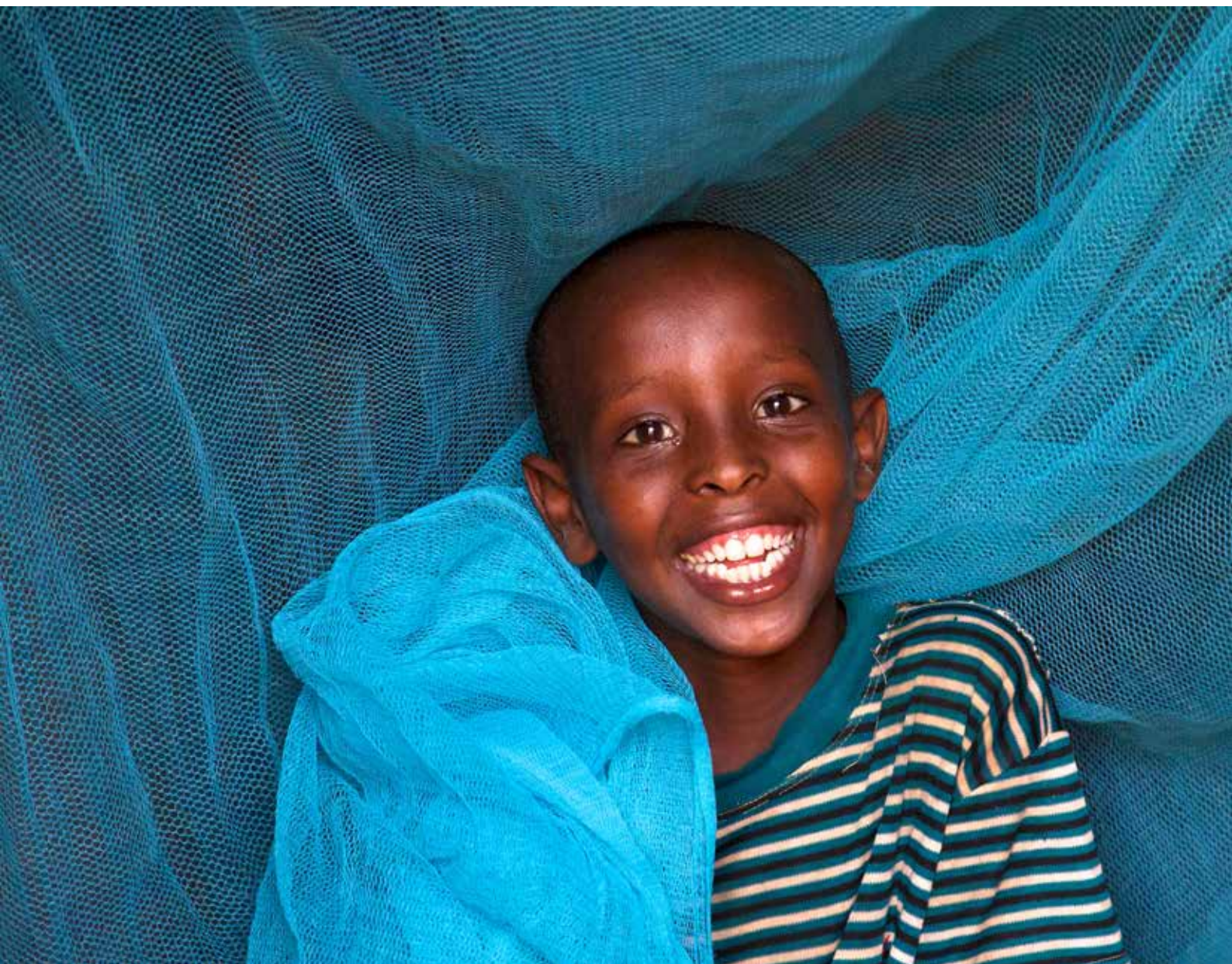
More information at:

<http://aroianlab.ucsd.edu/>

Salary: Commensurate with candidate training and NIH guidelines.

Contact: Send cover letter and CV with 2-3 references to raroian@ucsd.edu.

World Malaria Day. Image: UNHCR/S.Hoibak



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