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NEWSLETTER

Volume 25 Issue No. 1 March 2014

Nepalase villagers photographed by Marshall Lightowlers. Read the full report on page 16.



NEWSLETTER

Volume 25 Issue No. 1 March 2014

From the President's Desk

Dear Members,

Welcome to the March edition of the ASP Newsletter.

Many of you have worked hard to meet the deadlines for submission of NHMRC and ARC grants. I wish all of you grant success in 2014!

Registration is still open for the 2014 ASP Annual and Golden Anniversary Conference in Canberra. The program is available at http://parasite.org.au/arcnet/. We thank the ASP Network and Organising committee (including Kiaran Kirk [Chair], Eva Bennett, Melanie Rug, Richard Allen, Giel van Dooren, Kevin Saliba, Ian Cockburn, Alexander Maier, Adele Lehane, Carol Behm, Haylee Weaver, Eva Bennet, Lisa Jones, Nick Smith) for their efforts to date. We also thank Peter O'Donoghue and Lisa Jones for their efforts toward finalising the commemorative booklet for the conference. This conference will cover a wide range of topics spanning unicellular and multicellular parasites in both fundamental and applied areas, including cell biology & development, physiology & biochemistry, host-parasite interactions, drug resistance, ecology, population genetics, evolution, cell signalling and life cycles, drug discovery and vaccines.

At the beginning of the conference, a welcome from Conference Chair and a celebration of Australian Parasitology will take place; at the end, a provocative session on the Future of Parasitology will take place. Professor Graham Mitchell AO will chair both sessions, drawing on the wisdom of some Fellows and Bancroft Mackerras Medallists. There will also be workshop sessions for early career researchers including "Presenting Science" and "ASP Post-Graduate Student Breakfast". On behalf of ASP, I would like to thank Elsevier, the International



Journal for Parasitology, Virbac Animal Health, Meat and Livestock Australia (MLA) and New England BioLabs Inc, for their generous support of this conference.

Excitingly, ASP-Inspiring Australia Outreach events will also be held at the Australian War Memorial in Canberra. The ASP Network will run the first of a two-part public lecture series: "The Parasite War Years" at the Australian War Memorial (AWM) on 29 June and a second lecture on 17 August 2014 at the AWM. Events will also take place at CSIRO Discovery Centre and National Film and Sound Archive in June and July.

Upcoming closing dates to be noted for other 2014 ASP Awards are 2 May for OzEMalaR Travel Awards and 18 July 2014 for ASP Network Researcher Exchange, Travel and Training Award and JD Smyth Awards.

Dr Dale Seaton, Executive Publisher, Biology and Parasitology, Elsevier, has just advised about the Postdoc Free Access Program. This program offering free access to Science Direct for post docs between positions is being run again this year after two successful years. More information is at https://www.elsevier.com/journalauthors/an-opportunity-for-postdoctoral-

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From the President's desk continued

scholars.

The first edition of the parasite e-text book entitled "Australasian Animal Parasitology", led by Professors David Emery and Ian Beveridge, will be available at the 2014 ASP Conference. This first edition of the textbook will provide an invaluable resource for Veterinary students and many others, and the editors are eager for feedback at the ASP Conference in Canberra. This is the first textbook on Veterinary Parasitology for the Southern Hemisphere. On behalf of ASP, I would like to thank David and Ian for their major efforts in completing this very important project and also the authors, reviewers and providers of images and other material. We would also like to thank MLA & AWI for their support, and are extreme grateful that the text is available to students, staff and anyone interested in Parasitology Down Under.

The Mid Term Meeting (MTM) of Council was held on 18 February 2014. The minutes of this meeting are available on the site Wild Apricot. A wide range of issues was covered; notable were the reports by State representatives on State Outreach Activities. Members are reminded of "Outreach Funds" available to support State/Territory events, including networking sessions or any other parasitology-related event; up to \$500/event with a total of \$2,000/calendar year per state/territory. Applications for support are coordinated via your state/territory representative.

As many of you know, ASP will launch a two-week Parasitology course called "Advanced Concepts in Parasitology" (23 November to 6 December 2014) that will offer graduate students and early career scientists a unique opportunity to work with internationally renowned Australian parasitologists to learn advanced, specialist, state-of- the-art techniques and concepts in Parasitology. The course will take place at the Australian National University (ANU), Kioloa Coastal Campus. The objective of the ASP course is to build capacity in Parasitology and equip early career scientists with the latest concepts and technological advances to foster careers in

Parasitology and promote the discipline in Australia. The course will cover key areas of parasite biology, immunology, biochemistry and molecular biology, advances in diagnosis, drugs, vaccines and control interventions, as well as the latest research developments in 'omics' and bioinformatics to meet the challenges of the future in industry and academia. Building on the strength of the Australian community of parasitologists, world-experts from a wide range of disciplines will share their knowledge and insights with 16 course participants. Course registration will be open shortly; supervisors are encouraged to support graduate students and early career scientists to apply early. The program will also focus on aspects of career development, offering workshops to help fine-tune participants' professional tools, and presenting a platform for professional networking. Course participants will also take part in workshops to develop skills in communicating science to a public audience. The ASP website (www.parasite. org.au) will host information about the course and feature a sponsorship page.

The organisation of the International Congress of Tropical Medicine and Malaria (ICTMM) to be held in Brisbane in 2016 is proceeding well. This Congress is planned for mid-end September 2016 will be held jointly with the ASP meeting. Malcolm Jones has been heading the Organising Committee on behalf of ASP, together with representatives of the Australasian Society of Infectious Diseases (ASID). An agreement between ASP and ASID is now in place, and information on ICTMM will be updated on the ASP website. Input from ASP membership on potential Keynote Speakers and themes are welcome, and should be directed to Mal. On behalf of ASP, I thank Mal for his outstanding efforts in putting arrangements in place for this important Congress.

The IJP spin-off journals, IJP-Drugs and Drug Resistance (IJP-DRR), IJP-Parasites and Wildlife (IJP-PAW) are all now well established and submissions from scientists in Australia as well as overseas are encouraged for all three journals. IJP has introduced an award for the best student paper published in the journal, which will be selected by the IJP Editor-in-Chief and Deputy Editors and awarded at the 2014 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.

Adam Bandt is the Greens spokesperson on science, research, innovation and industry and has a long standing commitment to research and has launched the Respect Research campaign to protect research from Budget cuts and grow public support for research in the long term. The Australian Senate backed the campaign and has called on the government to protect research funding from cuts in May's Federal Budget. The more people we get to support the pledge the more our government will know there is strong support for research, making it harder to cut research in the Budget. Please help grow the 'Respect Research' petition: www. respectresearch.com.au

The 2014 Mid Term Meeting (MTM) of Council will be held just before the ASP conference in Canberra at the end of June, so please contact your State/Territory representative if you wish issues to be brought to or raised at MTM. Many thanks.

Kind regards to all of you,

Robin Gasser

2014 Conference

ASP 50th Anniversary Annual Conference 30 June - 3 July 2014, ANU Commons, Canberra

Registration and abstract submission is open for the 2014 ASP Annual Conference, ANU Commons, Canberra, 30th June - 3rd July. This very special conference will celebrate the 50th Anniversary of the ASP. Find out all of the details, register online and submit your abstract through the conference website <u>www.parasite.org.au/arcnet</u> early bird registration has been extended and now closes Wednesday 2 April 2014.

Elsevier Lectures

- IJP Lecture 2014 ASP Invited Lecturer Raffi Aroian (University of California, San Diego, USA)
- IJP Drugs and Drug Resistance Lecture

 David Horn (University of Dundee, UK)
- IJP Parasites and Wildlife Lecture

 Vanessa Ezenwa (University of Georgia, USA)

Plenary and Symposia themes and speakers

- Discovery, Development and Investigation of New Antiparasitics (Helminths) - Tim Geary (McGill University, Canada)
- Discovery, Development and Investigation of New Antiparasitics (Protozoa) – Mike Ferdig (University of Notre Dame, USA)
- 2014 ASP Invited Lecturer **Margaret Mackinnon** (University of Oxford, Nuffield Department of Medicine, Kenya, Kilifi KEMRI-Wellcome Research Programme)
- Cell Biology and Development 2014 ASP Invited Lecturer Boris Striepen (University of Georgia, USA)
- Biochemistry Physiology Audrey R. Odom (Washington University School of Medicine, U.S.A.)
- Vaccines Marshall Lightowlers

(University of Melbourne, Australia)

- Host-Parasite Interactions Wai-Hong Tham (Walter and Eliza Hall Institute, Australia)
- Epidemiology Una Ryan (Murdoch University, Australia)
- Immunoregulation (Protozoa) Ian Cockburn (John Curtin School of Medical Research, Australia)
- Cell Signalling and Parasite Lifecycles Christian Doerig (Monash University)
- Drugs and Drug Resistance Vicky Avery (Griffith University, Australia)
- Ecology Jan Slapeta (University of Sydney, Australia)
- Population Genetics Alyssa Barry (Walter and Eliza Hall Institute, Australia)
- Evolution & Phylogeny Tom Cribb (The University of Queensland, Australia)

Plus we will be staging two celebratory and provocative sessions, at the start and end of the conference. Welcome from Conference Chair and A Celebration of Australian Parasitology will take place 5pm Monday 30th June at ANU Commons (there will be pre-event drinks at 430pm) and The Future of Parasitology will take place at 3pm on Thursday 3rd July (following afternoon tea) at ANU Commons. Professor Graham Mitchell (AO) will chair both these sessions, drawing on the wisdom of some of the



ASP's Fellows for the first and our Bancroft Mackerras Medalists for the closing session.

The ASP acknowledges the generous support of Elsevier, International Journal for Parasitology, Virbac Animal Health, Meat and Livestock Australia, and New England BioLabs Inc, sponsors of this conference.

On Sunday 29th June, 2pm we will feature an exciting ASP-Inspiring Australia outreach event at the Australian War Memorial (AWM) in Canberra. We will run the first in a two-part public lecture series "The Parasite War Years" held at the AWM and the second lecture will take place Sunday 16th August 2014 at 2pm at the AWM.

ECRs are invited to attend a "Presenting Science" event on Monday 30th June, 330-430pm at ANU Commons. ASP Students can follow on from this ECR event with the ASP Post-Graduate Student Breakfast event on Tuesday 1st July from 7am. Register for both events when you complete your conference registration.

Eligible ASP Students are reminded to apply for their 2014 ASP Student Conference Grant through their conference registration, please remember to tick both boxes.

Please contact the Conference Coordinator, Lisa Jones by email (lisa.jones1@jcu.edu. au) or telephone 07 4232 1311 with any queries or for a conference flyer to display in your institution. We look forward to seeing you in Canberra in June and July!

Best wishes from the 2014 ASP 50th Anniversary Conference Organising Committee.

Remembering Georgina Sweet

Assoc. Professor Emanuela Handman is a Fellow of the Australian Society for Parasitology, a Research Associate at the Walter and Eliza Hall Institute, and an Adjunct Associate Professor in the Department of Microbiology at Monash University with an interest in intracellular pathogens and their interaction with the host at the molecular, cellular and organismal levels. Emanuela writes here about Georgina Sweet (1875-1946) a zoologist and parasitologist and one of the unsung heroes of Australian science.

2014 marks the 50th anniversary of the Australian Society for Parasitology, and this got me thinking of what makes our organization so special. Of course, it is the people, and especially those who established Parasitology as an important discipline in the early 20th century. Reading A History of Parasitology in Australia by lan Beveridge and Peter O'Donoghue it struck me that one of the unsung heroes of those early days was Georgina Sweet. Her story encapsulates the difficulties that women scientists faced in those days and I pondered on the extent of change in our time.

Georgina Sweet (1875-1946) is probably Australia's first woman professional scientist. A zoologist and parasitologist, she was one of only three women to graduate with a Bachelor of Science from the University of Melbourne in 1896. She was appointed lecturer in Biology in 1901 and in Parasitology in 1909.

The idea of women as professional scientists would not raise an eyebrow today, but it hasn't always been thus. While for the women of the time broadening one's horizons by acquiring scientific knowledge was acceptable, albeit a bit



eccentric, using it to establish an academic career and economic independence, and to acquire status was a different matter altogether. So, Georgina Sweet's appointment was sufficiently newsworthy to be discussed in the press. Not surprisingly, the journalists did not quite know what to make of her. As Farley Kelly describes it in her book "On the edge of discovery", (1993, ed. Farley Kelley), they found it a bit odd that " laboratory work is as fascinating to her as are frocks and frills to the average woman", but they applauded her area of study in Parasitology which was based on her "housewifely instincts" and addressed the practical problem of a disease afflicting the Australian cattle industry, skin nodules caused by *Onchocerca gibsoni*. To put her achievement in perspective, by the time of her appointment there were only about thirty five lecturers and professors in the

Georgina Sweet continued

entire university of Melbourne. Remarkably, she went on to become Australia's first female acting Professor in 1920, the first female Associate Professor in 1924 and the first woman elected to the University Council in 1936.

Georgina Sweet was born in 1875 in Melbourne and grew up in a family supportive of education and interested in science. Her father was an amateur geologist and a fellow of the Geological Society and became the president of the Royal Society of Victoria. He was a member of the geological expeditions investigating fossils in the Mansfield district and exploring Tuvalu's Funafuti. As a child, Georgina assisted in the geological collections and was probably introduced to a rigorous approach to science.

She was educated at Parkville Ladies' College and the University of Melbourne, where her interest in Biology led her to the newly appointed Chairman of Biology, W. Baldwin Spencer who encouraged women students in his department (Mulvaney and Calaby, 1985). In fact, he was accused by his successor of "the feminisation" of his department, which he proceeded to dismantle when he took over the Chair.

Spencer, who studied biology and medicine at Manchester and Oxford, had broad interests including the new concepts of evolutionary relationships between organisms. The early work of Georgina Sweet was indeed about the anatomical structures of several Australian animals and their potential evolutionary relatedness. Although Parasitology was also of interest to Spencer, he did not seem to have a direct involvement, which allowed Sweet to make this area of research her own. Her most significant contribution was the study of Onchocerca gibsoni, which forms large nodules in cattle. Onchocerciasis was, and still is a problem in northern Australia. Her work attracted considerable attention and won her the prestigious David Syme research prize. She described the biological features of the lesions, and importantly, attempted, albeit unsuccessfully, to experimentally transmit the parasites by

feeding insects on infected cattle. Based on this work and her mounting scientific profile, she was engaged by the Federal government to investigate the disease in neighbouring countries. She showed that the parasites were present in Malaysia, Indonesia, Burma and India. She published widely and was recognised as the country's foremost parasitologist becoming a respected member of the Australian National Research Council.

Unfortunately, that did not seem to be sufficient for her appointment to a Chair at the University of Western Australia. Neither was the strong support that she had from five Melbourne University professors, or the recommendations from both archbishops of Melbourne and from General Monash. Similarly, despite strong national and international support, her application for the Chair of Biology, which became vacant upon Spencer's retirement was not successful. Spencer almost, but not guite, named Sweet as his preferred successor pointing out in a letter to the university council that she "has been doing most valuable research work of a purely and highly scientific nature along the lines which it is now proposed should be stressed", ie applied research on economically important national problems. Engagement with industry and involvement in addressing national problems was Spencer's vision for the future direction of the Biology Department. She was passed over in favour of W.E. Agar. In contrast to Georgina Sweet's work, his studies were on basic research on genetics and on marsupial chromosomes.

Sweet resigned from the university in 1925 and her departure led to the slow demise of parasitology research at the university of Melbourne.

Much of Sweet's life was anchored into the university affairs. The list of her contributions is nothing short of amazing. She served as acting Dean of the veterinary faculty, was a member of the Council of the Graduates' Association, the Executive Committee of the Science Club and the Women's Students Club. She worked hard for the establishment of the University Women's College and was the president of its planning committee.

She was a very high-energy person and in addition to her involvement in the university, she devoted significant energy to professional organisations such as the Association for the Advancement of Science, the Royal Society of Victoria and the Field Naturalists' Club. She was a keen supporter of women's rights; she was president of the Young Women's Christian Association and the vice president of the YWCA. She represented the Victorian Women Graduates' Association on international bodies and became president of the Pan Pacific Women's Association.

Her legacy has been long lasting and it is still felt through two major initiatives. Sweet was one of the founding members of the Catalysts' Society, which is still going strong. The Catalysts' Society developed out of the meetings of nineteen women with broad intellectual interests who planned to establish a Lyceum Club in Melbourne in 1910. The meetings proved so enjoyable that the women decided to continue to meet on a regular basis even after the Lyceum Club was established in 1912. Although the monthly meetings of the Catalysts continue to this day, their motto "Changing but unchanged" is certainly outdated. Not only has the world changed, but the women of today are very much changed. Sweet's second lasting contribution has been the establishment of the Lyceum Club where she was also a founding member. The Melbourne Lyceum Club is the largest of the international Lyceum Clubs and it continues to be a powerhouse of intellectual activities for women from all walks of life.

Georgina Sweet was appointed Officer of The Order of the British Empire in 1935, for services to women's movements.

She died in 1946 and her estate included considerable donations to the University of Melbourne. One of the fellowships for researchers with international reputation is the Georgina Sweet Australian Laureate

Georgina Sweet continued

Fellowship available to a highly ranked female candidate from the science and technology disciplines. Wouldn't it be wonderful if, on the 50th anniversary of ASP, one of our members were honored with a Georgina Sweet Laureate Fellowship?

Selected bibliography

I. Beveridge and P.J. O'Donoghue, 2009. A History of Parasitology in Australia and Papua New Guinea, Australian Society of Parasitology, Raw Publishing, Blackburn Victoria

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D.J. Mulvaney and J.H. Calaby, 1985. So much that is new: Baldwin Spencer (1860-1929). Melbourne University Press

M. MacCallum, Sweet, Georgina (1875-1946). Australian Dictionary of Biography, National Centre of Biography, Australian National University.

The Science Show with Robyn Williams (May 2004). Claire Hooker profiles Georgina Sweet

ASP Annual General meeting



We had a full-house at the 2013 ASP AGM in Perth (picture above by Lisa Jones) and we are hoping for a similar turnout for the next one. The 2014 ASP AGM and induction of new ASP Fellows will take place Wednesday 2nd July, from 5pm at ANU Commons, pre-AGM drinks in the foyer from 430pm. A gentle reminder that ASP Students in receipt of a 2014 ASP Student Conference Grant are required to attend.

\$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 2014 prizes must be made by the eligible University to the ASP Treasurer or Secretary by the 30th September 2014. Requests for prizes must include the following for each eligible course:

- 1. Course name/code/degree year
- 2. Number of Students enrolled in 2014
- 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



The latest newsletter from Science and Technology Australia is available now on the STA website:

http://scienceandtechnologyaustralia. org.au/wp-content/uploads/2014/02/ STA-February-Newsletter-2014.

Researcher Interview: Joel Barratt

Joel Barratt, recent recipient of a UTS Chancellor's Postdoctoral Research Fellowship, talks to Lisa Jones about his work

LJ: Joel, exciting news you have just been awarded a UTS Chancellor's Postdoctoral Research Fellowship, tell us what this means for you and your career in parasitology

JB: I was extremely excited and honoured that UTS granted me this opportunity, especially considering that it is so early on in my career. It means that I can continue to pursue my interests in parasitology research for the next four years. The fact that I could tailor my own project for this fellowship means that I can also expand my research interests to include parasites which I have not worked on previously.

Tell us about your parasitology research.

I've worked with coccidian parasites (mostly Neospora caninum) which was/is a major research interest of my PhD supervisor (Professor John Ellis). More recently my research has focused on gastrointestinal protozoa (mostly Dientamoeba fragilis). My PhD project involved sequencing the D. fragilis transcriptome so it had a large bioinformatic focus. As part of my fellowship, I hope to use these skills in bioinformatics to study the genomes of some trypanosomatid parasites.

What have been the most important career experiences, decisions and influences that have helped you achieve the position you now have?

I think there has been a huge element of luck involved in my career progression. I remember walking into the office of various academics as an undergraduate student and enquiring about the honours projects they had available. I selected a project with John Ellis because he described a project that required me to go out into the field and catch feral rodents and test



them for parasites. At the time I thought this sounded really cool. In hindsight, I probably should have thought more about the criteria I used to select my first research project (i.e. other than sounding really cool) though that is how I initially selected my first research project and supervisor.

As a result of this decision I found myself part of a research group that was extremely productive and, which allowed me to build strong connections with other institutions such as St Vincent's Hospital in Sydney. As a direct result of these connections, I was able to secure my first full time job; as a research assistant at St Vincent's Hospital in Sydney. I was contracted to work at St Vincent's on a project focusing on bowel protozoa for three years under the supervision of Prof. John Ellis and Dr. Damien Stark. These two people have remained my key mentors to this day and contributed hugely to the success of my fellowship application. The productivity of our research group, their good will towards me and a lot of hard work all contributed to this success.

Any tips for upcoming early career researchers in parasitology?

I think it is important to pursue projects which you are likely to be interested in and remain interested in. If you are uninterested in your work, I think you are unlikely to maintain the level of productivity required to remain competitive in research. I would also try to work with a supervisor/team you are likely to get along with. It is difficult to know what it will be like working with people you may not know very well but it is worth considering. Travelling to national and international conferences (i.e. networking) was also key. This is how I met some of my PhD assessors and the referees I used for my fellowship. Milk any opportunity to enrich your CV. Conferences, workshops, competitions and other extra-curricular activities are a really great way to distinguish yourself from the crowd. Try to get a project with teams that have a good track record - look at their online profiles on their institutions' website, linked-in or the NHMRC website. Most importantly, enjoy yourself. If you are enjoying what you are doing it is easier to work hard and remain productive. These tips will probably hold true not just for young parasitology researchers but also early career researchers in other disciplines.



Concepts in **Parasitology**

A two-week parasitology course for postgraduates and Early Career Researchers



In 2014, the ASP will run, for the first time, a two-week parasitology course that will offer sixteen students a unique opportunity to work with prominent Australian parasitologists and learn state-of-the-art cell-biology, immunological, imaging, biochemical, bioinformatic and genetic techniques for parasitology research. Visit <u>parasite.org.au</u> to register.

Objectives

The course will provide a comparative overview of parasitology. It will equip participants with the conceptual framework, technological know-how and skills to meet the challenges of the future.

The program will also help fine-tune the professional toolkit that all young scientists need, fostering a professional network amongst peers and lecturers and offering workshops on communicating science to a public audience.

Themes

- Evolution of Parasites
- Development and Physiology
- Drug Discovery
- Parasites and the Immune System
- Immuno-diagnostics of Parasitic Infections
- Bioinformatics
- Field Aspects of Human Parasitic Diseases
- Veterinary and Wildlife Parasitology
- Vector borne Diseases



Information

Dates: November 23rd – December 6th, 2014

Location: The course will take place at the ANU's Kioloa Campus, a field station, on the NSW south coast. In a beautiful location, surrounded by National Park, the field station offers comfortable cottage-style accommodation and laboratory buildings for practicals and lectures. Course participants will carry out laboratory work in modern, PC2 facilities at The Australian National University (ANU).

Course fee: A\$1,500 includes accommodation, meals and transport to and from the Kioloa Coastal Campus from the ANU. (Participants must organise and cover the cost of travel from their home to Canberra and back.)

Who should attend: Postgraduates and Early Career Researchers who are working in parasitology or studying parasites.

How to register: Registrations will open in April 2014. Please check the ASP website for more information: <u>www.parasite.org.au</u>

Course Convenor: Associate Professor Alex Maier (ANU) Email alex.maier@anu.edu.au; telephone 02-6125 0832.

The course will explore the diversity of parasitic lifestyles, answering questions such as:

- What does it take to be a parasite?
- What are the costs and benefits of parasitism?
- What host defenses have developed?
- What mechanisms have evolved to find vectors and hosts efficiently?
- What is the advantage of having multiple hosts?
- What specific characteristics must an anti-parasitic drug have?
- What are the chances of developing vaccines against parasitic diseases?
- What will the future of parasitology look like?

Faculty

Geoff McFadden (The University of Melbourne)

Nick Smith (James Cook University)

Vicky Avery (Griffith University)

Marshall Lightowlers (The University of Melbourne)

Alex Loukas (James Cook University)

Melanie Rug (The Australian National University)

Denise Doolan (QIMR Berghofer Medical Research Institute)

Peter O'Donoghue (The University of Queensland)

lan Cockburn (The Australian National University)

Margaret Mackinnon (University of Oxford/KEMRI-Wellcome Centre Kilifi, Kenya)

Malcolm Jones (The University of Queensland)

Rob Adlard (Queensland Museum)

Kiaran Kirk (The Australian National University)

lan Beveridge (The University of Melbourne)

Kevin Saliba (The Australian National University)

Stuart Ralph (The University of Melbourne)

Aaron Jex (The University of Melbourne)

Giel van Dooren (The Australian National

Alex Maier (The Australian National University)

For information about the photographers and the beautiful "Parasites in Focus" images on this page visit our Hidden Zoo website www.thehiddenzoo. wordpress.com where you can see these parasite images and more.

News from the ASP Network for Parasitology

Welcome

We are looking forward to all of our special events in 2014 associated with the 50th anniversary of the Australian Society for Parasitology. Our ASP-Inspiring Australia "Parasites in Power" and National Science Week events will be a highlight this year with public exhibitions, presentations, movies and children's workshops taking place across Canberra in June, July and August.

Parasites in Focus will be on display in the Gallery, CSIRO Discovery Centre, North Science Rd, Acton 9 June –3 August 2014, weekdays 9am to 5pm. Everyone is invited to the launch event, which will take place on Thursday 12th June at 530pm at the Gallery. Family members and friends are most welcome.

At the Australian War Memorial (AWM) in Canberra we will run a two-part public lecture series "Parasites: the war years" in June and August.

"War on Parasites" will take place Sunday 29th June, from 2pm at the Australian War Memorial Lecture Theatre. Parasites have been affecting soldiers for centuries in times of both war and peace. In the

Closing dates for ASP awards and ASP Fellowships

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

Friday 28 March 2014 Friday 18 July 2014 Friday 21 November 2014

ASP Fellowships

9 January 2015

More information <u>www.parasite.org.au</u>

first of this fascinating lecture series "Parasites: the war years" scientists will describe some of the devastating effects of diseases caused by parasites such as Schistosoma (the cause of "Snail Fever"), Leishmania (cause of "Aleppo button" disease last year in the war-torn Syrian city) and Strongyloides (a roundworm). Professor Alex Loukas from the Australian Society for Parasitology will discuss the latest research into some of these parasites. Professor Alex Loukas is a Tropical Research Leader at James Cook University in Cairns, QLD and Director of the Centre for Biodiscovery and Molecular Development of Therapeutics (CBMDT) and works on parasitic helminths (wormlike organisms). Dr Graham Mitchell will give an introduction to this fascinating lecture

Our *War Worms* interactive workshop for children aged 5 and over will take place at the Australian War Memorial Tuesday 8th July, 10.30 am – 12.30 pm. Participants in our Young Parasites Science Club will find out about parasites that have been affecting soldiers for centuries. Make larger than life models and masks of parasites and investigate what they look like close up. Bookings are essential through the AWM and close Thursday 3rd July.

"Aliens amongst us" join us on Tuesday 8th July, 5.30 – 8.30pm at the National Film and Sound Archive (NFSA) in the Arc Cinema for a screening of the 1979 cult American science-fiction horror movie Alien directed by Ridley Scott, and starring Sigourney Weaver. Pre-movie parasites discussion "Revenge of the Bodysnatchers" included!

"Malaria in wartime" will take place



An Australian Government Initiative

Sunday 17th August, from 2pm at the Australian War Memorial Lecture Theatre. Parasites have been affecting soldiers for centuries in times of both war and peace. In final of this fascinating lecture series "Parasites: the war years" scientists will describe some of the devastating effects caused by the malaria parasite. Dr Rowena Martin from the Australian Society for Parasitology will discuss the latest malaria research and control strategies. Dr Martin is currently a NHMRC R.D. Wright Biomedical Fellow (2013-16) at the Australian National University (ANU) and works on the biology of the malaria parasite, Plasmodium falciparum.

Look out for parasites at Science in ACTion which will run from about the 15th – 17th August at ANU in Melville Hall and the Manning Clarke theatres.

ASP 50th Anniversary Annual Conference

The ASP 50th Anniversary Annual Conference will take place 30 June – 3 July 2014 at ANU Commons, Canberra. It will be a truly memorable event, celebrating the past, the present and the future of Australian parasitology. We are looking forward to seeing you there www.parasite.org.au/arcnet

Please email Lisa.Jones1@jcu.edu.au for the ASP 50th anniversary logos for use at the bottom of your emails and for promotion of the ASP and Lisa can also email you the conference poster to print out and display in your work area.

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



Congratulations to recent JD Smyth Travel Award and ASP Network Travel Award winners.

JD Smyth Travel Award winner

• Sarah Charnaud, PhD student, Burnet Institute for a researcher Exchange to Sanger Institute, Hinxton, Cambridge, UK for 6 weeks and attending EviMalaR Conference, EMBL Heidelberg.

ASP Network Travel Award winners

- Adebayo Molehin, PhD Student, QIMR Berghofer Medical Research Institute, for Researcher Exchange to visit Prof Paul Brindley, George Washington University, Washington, USA, 9-19 November 2013.
- Victoria Morin-Adeline, PhD Student, The University of Sydney, for Researcher Exchange to visit Genomics of Gene Expression Lab of the Bioinformatics Department at the Centro de Investigacion Principe Felipe (CIPF), Dr. Ana Conesa's laboratory, October – December 2013.
- Elizabeth Zuccala, PhD Student, WEHI, for Researcher Exchange Research placement in the lab of Dr Ashley Toye, University of Bristol, UK, 1 February – 1 April 2014.
- Patrick Lelliott, PhD candidate, Macquarie University to visit several research facilities located in the USA and Canada.
- Samantha Emery, PhD Student Macquarie University for a Researcher Exchange to 3 week researcher exchange to Professor Steve Gygi's lab at Harvard Medical School in Boston, June 2014.
- Melissa Martin, Ph.D Candidate, National Center for Marine Conservation and Resource Sustainability, Australian Maritime College, UTas for a Researcher Exchange to RMIT, Melbourne to the laboratory of Dr Nathan Bott, Jan – April 2014.

- Leah Cronin, PhD candidate,
 University of Western Sydney for a Researcher Exchange to Professor
 John Dalton in the School of
 Biological Sciences at Queen's
 University, Belfast, Northern Ireland.
 May – July 2014.
- Fiona Angrisano, PhD Student, WEHI, for Researcher Exchange to Imperial College London Professor Robert Sinden's laboratory 11th May 2014 – 11th August 2014.

Network Mentorship Scheme

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

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

Nick Smith Convenor, ASP Network for Parasitology

Lisa Jones Communications Coordinator

News from the ASP Network for Parasitology

ASP Network Researcher Exchange, Training and Travel Award

A researcher exchange to the Genomics of Gene Expression Lab, CIPF, Valencia, Spain

By Victoria Morin-Adeline, University of Sydney

My story with the Genomics of Gene Expression Lab at the Príncipe Felipe Research Centre (CIPF) in Valencia, Spain started at the beginning of 2013. As part of my PhD project, I prepared and sent RNA samples from the bovine and feline strain of Tritrichomonas foetus for sequencing. My aim is to extract the UTR regions and to use them in transfection trials to improve the current transfection system in these agriculturally and veterinary important parasites. Additionally, with the raw sequence data set of both T. foetus strains, I will gain a unique opportunity to further explore the expressed genome of these parasites, delivering new insights into expressed differences between the two stains. So RNAseg was to be my world for the next few months of my PhD; a prospect that frankly alarmed me as I had very limited computer skills and no experience handling sequencing data.

At the beginning of 2013, I received an ASP network travel grant to attend a 3-day international course; automated functional annotation and data mining: -From raw sequencing data to a functional annotated genome, in Brisbane. The course was organized by the QFAB Bioinfomatics and CLC-Bio/Blast2GO; both widely used programs in bioinformatics. The workshop was a major success. While I gained a good understanding of *de novo* transcriptome assembly and annotation, gene expression analysis and experimental design for bioinfomatic studies, I had the pleasure of meeting the course organizer, Dr. Ana Conesa, also the head of the Genomics of Gene Expression Lab at CIPF in Spain. We discussed the main

aspects of my transcriptomics analysis, and she extended an invitation for me join her lab to analyse my sequencing data. I was co-funded by the ASP network travel grant to travel to Valencia, Spain in October 2013 for two months.

Working at CIPF turned out one of the steepest learning curve I've been on, but undoubtedly an excellent opportunity for my personal exposure into the field of computational biology. I worked closely with Dr. Conesa and Dr. Rodrigo Lomas (postdoc) to grasp command line and bash scripting, a thought that was initially very daunting. I worked extensively with a variety of common bioinfomatic tools including Trinity, TopHat, Bowtie, Blast2GO, Qualimap and worked in close contact with the authors of the Fulllengthernext and UTRscan algorithms to adapt them for non-model organisms such as *T. foetus* parasites. Over the two month period, I was able to assemble the two T. foetus transcriptomes and accomplish my initial goals, that is, to extract UTRs from several subsets of the T. foetus bovine and feline transcriptomes for transfection comparisons. Equally as exciting is a new line of enguiry which we've developed in the Genomics of Gene Expression Lab regarding the annotation of motifs within the UTRs regions, more interestingly, the 5' UTRs. These motifs are known to add to a layer of gene expression regulation. Additionally, I am currently in the process of preparing a manuscript for publication to present a cell-wide comparison of expressed genes between the bovine and feline *T. foetus* strains. This will address the controversial dilemma of whether the bovine and feline *T. foetus* strains represent the same species.

While in Valencia, Dr. Conesa was extremely generous to provide financial support for me to attend an Emerging Technology (EmTech) conference. EmTech is organized by the Massachusetts Institute of Technology's (MIT) Technology Review magazine and gathers together the most innovative scientist, technology leaders and business gurus to discuss innovative ideas shaping our world today. Coincidently, one of the pressing themes at the conference was 'big data', such as sequencing data, its potential/limitations and its future. The conference was for me the 'icing on the cake' as I am very enthusiastic about the combination of new technology, science and innovation. It was a pleasure to listen to and network with so many people who are passionate to improve the world we live in.

Overall, the experience I've received from my trip in Valencia has been very rewarding. I was hosted with amazing hospitality from colleagues at CIPF made and several potential collaborative connections. As the work I started at CIPF is still not completely finished, I am thankful to for the continued access I have been given to their computer servers and work on my Valencian computer remotely while here in Sydney. In all, I discovered that I enjoyed the 'dry lab' experience and all of its unique optimization challenges just as much as I enjoyed working in a 'wet lab'.

Images from Top:

- 1. Evening out with colleagues
- 2. With Dr Ana Conesa
- 3. Discussing work with postdoc Rodrigo Lomas
- 4. Researchers at CIPF
- 5. Evening out with colleagues

Volume 25 Issue No. 1 March 2014



Marshall Lightowlers in Nepal and India

Top: Nepalese villages

Marshall Lightowlers Melbourne University recently visited Nepal to discuss *Taenia solium* control solutions and India to discuss a vaccine against porcine cysticercosis

During January Marshall Lightowlers travelled to Nepal with representatives from the Global Alliance for Livestock Veterinary Medicines (GALVmed). The purpose of the trip was to visit field sites that may be suitable places to test *Taenia solium* control initiatives that are sustainable and effective in village situations where new hosts (pigs) are constantly born into endemic communities.

After meetings with various Ministry and University groups in Kathmandu, and delivering a presentation to the Nepalese Veterinary Association, they travelled to the west of the country aboard Yeti Airways, flying parallel along the edge of the Himalayan Mountains. In Nepalgunj they were joined by members of the group Heifer International and together travelled to rural areas.

While Nepal no longer adheres officially to the caste system, the system persists and the communities having pigs belong to the so-called untouchable caste. These communities are rarely visited by any persons, including government or NGO groups; only the pig traders go there to purchase animals for the meat trade. "Rice grains" in the meat were noted commonly by the village people and epilepsy was relatively common, although it was a very touchy subject to broach. While the villages seemed ideal for the planned studies, the village people were living in a tragic situation in regard to cysticercosis and almost certainly other diseases of extreme poverty as well.

Dr Meritxell Donadeu from GALVmed and Marshall also travelled to Hyderabad in India to visit scientists at Indian Immunologicals Limited. In collaboration with GALVmed and Marshall the company is going through the process of scaling up and registering the TSOL18 vaccine for prevention of porcine cysticercosis. Middle: Meeting at a village in Nepal where neurocysticercosis is a serious health problem. Bottom: Dr Meritxell Donadeu, Marshall Lightowlers and scientists at Indian Immunologicals Limited.



Significant Publication Lightowlers, M.W., 2013. Cysticercosis and echinococcosis. Current Topics in Microbiology and Immunology 365, 315-35.

News about Australia/Europe Malaria Research Cooperation

World Health Day is celebrated on 7 April every year to mark the anniversary of the founding of WHO in 1948 and the topic for 2014 is vector-borne diseases. World Health Day 2014 will spotlight some of the most commonly known vectors – such as mosquitoes, sandflies, bugs, ticks and snails – responsible for transmitting a wide range of parasites and pathogens that attack humans or animals. The Day provides an opportunity for individuals in every community to get involved in activities that can lead to better health.

http://www.who.int/campaigns/worldhealth-day/2014/en/

April 25, World Malaria Day 2014: Invest in the Future. Defeat Malaria

The global campaign theme for World Malaria Day in the coming years is Invest in the future. Defeat malaria. World Malaria Day was instituted by WHO Member States during the 2007 World Health Assembly. It is an occasion to highlight the need for continued investment and sustained political commitment for malaria prevention and control. It is also an opportunity for new donors to join the global malaria partnership, and for research and academic institutions to showcase their scientific work.

http://www.gbchealth.org/event/316world malaria day 2014 invest in the future. defeat malaria/

If you are running events, programs, public outreach please email details to <u>Lisa.Jones1@jcu.edu.au</u> for additional promotion through the ASP membership.

OzEMalaR Travel Award Scheme

Congratulations to our latest OzEMalaR Travel Award winners:

• Andrew Teo, PhD student, University of Melbourne, Department of Medicine, Rogerson Laboratory, for a Research Exchange to Professor Ali Salanti, Professor Thor Theander and Professor Lars Hviid at the Department of International Health, Immunology and Microbiology, CMP University of Copenhagen, Denmark 9 May 2014 - 27 June 2014

- Sarah Charnaud, PhD student, Brendan Crabb and Paul Gilson laboratory, Burnet Institute, Melbourne, for a Research Exchange to Sanger Institute, Hinxton, Cambridge, UK 6 weeks in May, to coincide with the EviMalaR Conference, EMBL Heidelberg 12-14 May (co-funded with ASP Network for Parasitology Travel Award scheme
- Fiona Angrisano, PhD student, Walter & Eliza Hall Institute – Baum Laboratory, for a Research Exchange to Laboratory of Dr Oliver Billker, Welcome Trust Sanger Institute, Hinxton, Cambridgeshire, UK, 19th May - 19th August 2014
- Clara Lin, PhD Candidate, Walter and Eliza Hall Institute of Medical Research, Infection and Immunity, Cowman Lab, for a Research Exchange to University of Heidelberg, Department of Parasitology, Friedrich Frischknecht 5 May to 3 September 2014 with BioMalPar Conference from 12 May –14 May and visit to EMBL Hamburg for 1 week in between for research exchange with Svergun group.
- Professor James McCarthy, QIMR Berghofer Medical Research Institute, for EviMalaR-funded workshop: "Plasmodium falciparum hostparasite interplay in the Human Bone Marrow" and Research Visit Location: Harvard School of Public Health, Boston, June 23 – 27, 2014
- Professor Leann Tilley, Department of Biochemistry and Molecular Biology, The University of Melbourne, for EviMalaR-funded workshop: "Plasmodium falciparum host-parasite interplay in the Human Bone Marrow and Research Visit Location: Harvard School of Public Health, Boston, June 23 – 28, 2014
- Dr Matthew Dixon, NHMRC Research Fellow, Department of

Biochemistry and Molecular Biology, The University of Melbourne, for EviMalaRfunded workshop: "Plasmodium falciparum host-parasite interplay in the Human Bone Marrow and Research Visit Location: Harvard School of Public Health, Boston, June 23 – 30, 2014

OzEMalaR funding runs until the end of 2014 and we want to see lots of applications this year to make the most of such a fantastic opportunity. *Remember all OzEMalaR Travel Award funds granted to successful applicants must be spent by the end of 2014.

The deadlines for 2014 OzEMalaR Travel Awards* are: Friday 2 May 2014 Friday 4 July 2014 Friday 5 September 2014 Friday 31 October 2014+

*For applications after 31 October 2014 please email Lisa.Jones1@jcu. edu.au

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 2014, our final year of funding for OzEMalaR. 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 or with your comments and suggestions.

Geoff McFadden Convenor, OzEMalaR

OzEMalaR Travel Report

Wellcome Trust Centre for Human Genetics, Oxford, UK and the University of Leipzig, Germany

By Dr Sarah Auburn, Menzies School of Health Research

I was thrilled to receive an OzEMalaR Travel Award in 2013 supporting a researcher exchange to visit the laboratory of Prof Dominic Kwiatkowski in the UK, and to attend the 2nd *Programming for evolutionary biology* course hosted by the University of Leipzig in Germany.

My current research focus entails utilizing information on the genetic make-up of the malaria parasite Plasmodium vivax to gain insights into the biological mechanisms underlying antimalarial drug resistance, and to monitor the parasite's transmission dynamics and spread within and across borders. Ultimately, my goal is to utilize this information to develop global maps of drug resistance and transmission, highlighting major hotspots and key routes of spread, to guide more efficient strategies to contain vivax malaria. To address some of these challenges, in collaboration with Prof Kwiatkowski's groups at the Wellcome Trust Sanger Institute in Cambridge and the Wellcome Trust Centre for Human Genetics (WTCHG) in Oxford, Menzies is facilitating an effort to generate whole

genome sequence data on P. vivax isolates from multiple endemic regions. The resultant data is being used to scan the genome to identify markers which have utility in parasite surveillance, including drug resistance markers, fingerprinting markers, which may be used to distinguish one isolate from another, and geographic markers, which may be used to distinguish local from imported infections.

Leipzig, Germany

My European trip started in Leipzig, with the Programming for evolutionary biology course which ran from April 3rd to 19th, 2013. The 17 day course was intensive but extremely rewarding. Following a "learning by doing" philosophy, the course was very well balanced between lectures and practical programming sessions. An impressive range of topics were covered including an introduction to the Linux operating system, Perl and R programming, analysis of high-throughput sequencing data using reference and nonmodel organisms, comparative analyses of expression data, biological graphs and networks, phylogenomics, population genomics and data management using MySQL (further details are available on the course website: http://evop.bioinf. <u>uni-leipzig.de</u>). With support from a highly gualified and friendly team of assistants,

and the opportunity to revisit challenging practical exercises during evening "buffer" sessions, I left the course feeling very satisfied with the training I had received and knowledge gained.

One of my key objectives in attending the course was to develop skills in Perl programming which could be used to assist in handing genome-wide datasets. Having only dabbled with Perl briefly in the past, I left the course feeling much more confident to use this language to address at least simple problems on my data. With practice, I anticipate that my skills will develop further. I was already familiar with R programming, and had also used the Linux operating system in the past. However, before the course I had never had a formal introduction or formal training in either, and was happy to learn new tips here too.

Regarding the read mapping sessions, I was particularly impressed by the quality of the lectures. The lecturers explained the complex principles behind different read-mapping algorithms very well, and also gave helpful discussion on how these might influence the optimal choice of algorithm and parameters for a given organism, target sequence and study question.

The last three days of the course were assigned to the student projects. I was delighted when my request to run



through some of the procedures we had learnt in the first two weeks on my own *P. vivax* genomic data was accepted as a study topic by the course organizers. For me and the four other students who joined the study, it proved a very helpful approach to review the course topics whilst they were still fresh in our minds.

Oxford, UK

The second leg of my trip involved a study visit to Prof Dominic Kwiatkowski's laboratory in Oxford from April 22nd to May 1st, 2013. Prof Kwiatkowski's teams at the Sanger and the WTCHG use elegant genomic and genetic approaches to unravel the complex molecular mechanisms of host-parasite interactions. One of the key objectives of my visit to the group was to assist with the validation of putative *P. vivax* SNPs identified on the high-throughput Illumina sequencing platforms. Illumina is known to exhibit a higher sequencing error rate than traditional capillary sequencing methods. With difficulties in distinguishing between sequence errors and true alleles, particularly in polyclonal infections, validation of the Sanger P. vivax SNP identification and genotype calling methods was an essential step

prior to any further analyses. During my stay in Oxford, I worked with Dr Kirk Rockett, the WTCHG group Research Manager, and Dr Magnus Manske, Head of Informatics in the Sanger group, to establish SNP multiplexes for comparing genotype calling between the MassARRAY (Sequenom) platform and Illumina. We established five SNP multiplexes comprising approximately 180 SNPs. Samples which had been subject to Illumina sequencing were genotyped at the five multiplexes using the MassARRAY platform. Using R scripts executed in Linux, with a few new tips learnt during the Leipzig course, I compared the Illumina and MassARRAY data using various allele calling measures and thresholds. The results confirmed high consistency in allele calling between the two platforms, validating the current Illumina SNP calling and genotyping methods. During the process of the experiment, I enhanced my knowledge on the pros and cons of MassARRAY genotyping on Plasmodium isolates, and learnt about a new algorithm developed by the WTCHG group to assist in accurate genotype calling on Plasmodium MassARRAY data. This knowledge will be



very helpful in guiding our group in future MassARRAY-based *P. vivax* genotyping studies undertaken in Australia.

The opportunity to visit Prof Kwiatkowski's group for the genotyping study was also invaluable in kick-starting downstream P. vivax genomics studies. Since my visit to the UK, I have maintained communication with the group, with regular meetings to discuss our ongoing collaborative genomic studies. On attending these meetings, I am immediately aware of how well the multi-disciplinary group work together as a team to solve complex problems - researchers with expertise in malaria, molecular biology, informatics and statistics all pitching in – and feel privileged to work with this group. With sequencing nearly complete on a selection of *P. vivax* isolates which have been phenotyped using ex vivo methods to determine chloroquine sensitivity, my research priority over the next few months is to start analyses on a genome-wide association study to identify candidate markers of chloroquine resistance in P. vivax. With the ongoing support of Prof Kwiatkowski's teams at the Sanger and WTCHG, I am confident in our ability to deliver this project with minimal challenges.

I am grateful to OzEMalaR for their important role in supporting Menzies' collaboration with Prof Kwiatkowski's group, and in supporting my career development by enabling me to attend the 2nd Programming for evolutionary biology course.

Previous page: The New Augusteum at Augustusplatz, the main building of Leipzig University and Sarah's classroom in the same building.

This page: Prof Kwiatkowski's laboratory in Oxford, preparing a *P. vivax* MassARRAY genotyping plate

Queenslanders in the Orient

Mahdis Aghazadeh and Mal Jones visit China and Thailand

Last November, Mahdis Aghazadeh, a PhD student at UQ/QIMR Berghoffer, and Mal Jones attended the 3rd international workshop on rat lungworm disease in Guangzhou, China. In this meeting, current problems on *Angiostongylus cantonensis* research were discussed and a list of research priorities for the disease was prepared. Mahdis presented her research on *Angiostongylus* from Eastern Australia and Malcolm talked about the history of research into angiostrongyliasis in Australia.

A major quest for the two Queensland participants at the workshop was to find a

coffee shop. They spent a few unfruitful days, sneaking out during the lunch and tea breaks, and scouring all the roads and alleyways, bar one street just around the corner from the hotel. Sure enough, they found a Starbucks on the last day, and on the only street they hadn't been down.

After the workshop, Mahdis visited Associate Professor Eamsobhana from the Parasitology Department at Mahidol University, Bangkok, to discuss her work and present a talk about her research on *Angiostrongylus* spp. This department was where Professor Manoon Bhaibulaya worked until his retirement some years ago. Professor Bhaibulaya is famous for discovering and describing *Angiostrongylus mackerrasae*, an endemic species of the genus from native bushrats in Australia. Professor Bhaibulaya had planned to attend Mahdis' presentation during her visit to Mahidol University but was unable to do so. As well as visiting the Parasitology lab, she had a great time with parasitology researchers at Siriraj Hospital enjoying the fabulous Thai food! Mahdis also visited the parasitology museum at Siriraj Hospital and was amazed by the great way of educating public about parasites at this museum. Most of the parasitic diseases were shown by a wax sculpture of the patient suffering from that certain parasite. She made new friends and hopes she can do research collaboration with parasitologists at Mahidol University in future.







Тор

Participants at the 3rd International workshop on rat lungworm disease in Guangzhou, China. Mahdis is 4th from right in the front row; Mal is the only bloke in the same row.

Bottom left

Wax sculpture showing a patient with Lymphatic filariasis. Parasitology Museum, Siriraj Hospital, Bangkok, Thailand.

Bottom right:

Mahdis receiving a memorial medal of the Siriraj Hospital from Professor Darawan, the Head of Parasitology Department.

International Journal for Parasitology

January 2014

Invited review

Echinococcus granulosus sensu lato genotypes infecting humans – review of current knowledge. **Cristian A. Alvarez Rojas, Thomas Romig, Marshall W. Lightowlers**

Original Research Articles

Evidence for extensive cryptic speciation 1 in trematodes of butterflyfishes (Chaetodontidae) of the tropical Indo-West Pacific. **M. K.A. McNamara, T. L. Miller, T. H. Cribb**

February 2014 Special Issue 12th International Congress on Toxoplasmosis

Invited Reviews

Tightly regulated migratory subversion of immune cells promotes the dissemination of *Toxoplasma gondii*. Jessica M. Weidner, Antonio Barragan

Toxoplasma gondii within skeletal muscle cells: A critical interplay for food-borne parasite transmission. **Izabela J. Swierzy, Maisalreem Muhammad, Jana Kroll, Anja Abelmann, Astrid M. Tenter, Carsten G. K. Lüder**

New clinical and experimental insights into Old World and neotropical ocular toxoplasmosis. Alexander W. Pfaff, Alejandra de-la-Torre, Elise Rochet, Julie Brunet,

Marcela Sabou, Arnaud Sauer, Tristan Bourcier, Jorge E. Gomez-Marin, Ermanno Candolfi

Exploitation of auxotrophies and metabolic defects in *Toxoplasma* as therapeutic approaches. **Isabelle Coppens**

Emerging roles for protein S-palmitoylation in *Toxoplasma* biology. Karine Frénal, Louise E. Kemp, Dominique Soldati-Favre

Evolutionary repurposing of endosomal systems for apical organelle biogenesis in *Toxoplasma gondii*. **Stanislas Tomavo**

Original Research Articles

GCN2-like eIF2 kinase manages 1 the amino acid starvation response in *Toxoplasma gondii*. Christian Konrad, Ronald C. Wek, William J. Sullivan Jr.

Identification of three novel *Toxoplasma gondii* rhoptry proteins. **Ana Camejo, Daniel A. Gold, Diana Lua, Kiva McFetridge, Lindsay Juliena Ninghan Yang, Kirk D. C. Jensen, Jeroen P.J Saeij**

Succinctus

Co-existence of classical and alternative activation programs in macrophages responding to *Toxoplasma gondii*. Veerupaxagouda Patil, Yanlin Zhao, Suhagi Shah, Barbara A. Fox, Leah M. Rommereim, David J. Bzik, George S. Yap

Elsevier's Postdoc Free Access Program

In November 2012 and again in June 2013 Elsevier launched a programme to support young scholars in between jobs or looking for their first postdoctoral position. Applicants who qualified were granted up to 6 months free access to all Elsevier journals and books on ScienceDirect and were able to use this access to work on grant applications and research projects.

Elsevier were delighted with the response that they got from the community and as the international economic situation continues to be challenging for scientists starting their career, they have decided to re-instate this programme. In order to give more people the option to apply they have extended the application period to 7 months. To qualify, candidates must complete a form verifying their credentials by August 31st, 2014. Once approved, they will receive a personal code allowing access to ScienceDirect.

Further information can be found via the following web site:

http://www.elsevier.com/journal-authors/an-opportunity-for-postdoctoral-scholars

Events

2nd Chromera Meeting

Ceske Budejovice, Czech Republic June 22nd-25th 2014

The 2nd *Chromera* Meeting 2014 will take place in Ceske Budejovice (http://www. cb-info.cz/en/stranky/main.aspx) in the South Bohemia, (http://www.jiznicechy.cz/ en-CZ/main-page.html) Czech Republic.

The Meeting will start on 22nd of June 2014 (welcome party) and will be finished on 25th of June (breakfast and leaving).

Registration will start at March 1st 2014.

For further information, please visit the Meeting website: <u>www.chromera.org</u>

8th Cuban Congress on Microbiology and Parasitology

Havana, Cuba, October 14th-18th 2014

"In view of the impact of the emerging and re-emerging infectious diseases,

and others, the 8th National Congress on Microbiology and Parasitology along with the 5th National Congress on Tropical Medicine and the III Symposium on HIV/ aids infection in Cuba will provide the perfect setting for delegates to update, discuss and exchange on the role of Microbiology and Parasitology facing these diseases.

"During the Congress, delegates will have the chance of participating in master lectures, round tables, symposia, oral and poster presentations dealing with bacterial, Mycotic, viral and parasitic infectious diseases, as well as their epidemiology, diagnosis and pathology."

For further information, please contact:

Dr. Arturo Escobedo Deputy Chairperson, Cuban Society of Microbiology and Parasitology, Academic Paediatric Hospital "Pedro Borras"

Email scobedo@infomed.sld.cu

Website www.sld.cu/sitios/infectologia



Participants in the first Chromera Workshop, Herron Island, November 2012

Outreach Funding

ASP members are encouraged to apply for ASP funding to suport 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 Robin Gasser 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.

State News

New South Wales

University of Western Sydney

The Stack lab would like to welcome **Mouwsai Chau** who will be starting his PhD in March. Mousawi is the recipient of a UWS APA and although not undertaking research in the area of parasitology will be studying the host-pathogen interaction of the fungus Trichophyton rubrum (Colin will convert him to parasites eventually).

PhD student **Leah Cronin** would also like to thank the ASP for funding her overseas research visit to Prof. John Dalton's laboratory at Queen's University Belfast (UK). through the Travel Awards scheme Leah will be undertaking a four month visit later in the year to work on the biochemistry cysteine proteases and large-scale culture of the parasite Tritrichomonas foetus.

Colin Stack made it home from his a very productive sabbatical trip to John Dalton and Mark Robinson at Queen's University and is currently in shock at the prospect having to teach again this coming semester but all good things must come to an end.

University of Technology Sydney

Following the departure of a number of parasitologists from UTS and the subsequent shift of focus from parasitology to microbiology at UTS, a number of researchers have decided to come together to reinvigorate parasitology research in Sydney. A Parasitology Hub has been established and to date we have had two meetings. Current members include John Ellis (UTS), Sheila Donnelly (UTS), Michael Wallach (UTS), Colin Stack (UWS), Jan Slapeta (Usyd), Damien Stark (St. Vincent's Hospital), Joel Barrat (UTS), Sonja Frolich (UTS) and Michael Johnson (UTS). Meetings will be monthly at UTS and are open to any parasitologists interested, it is envisaged that the Hub will provide the opportunity for collaboration and for PhD students to discuss and present their research findings in a supportive environment. A number of invited speakers will also present their work. We would be delighted to hear from any like-minded researchers interested in being involved (e-mail c.stack@uws.edu.au or Sonja. Frolich@uts.edu.au for additional details).

Charles Sturt University

Phoebe Makepeace, 3rd year Animal Science student received an EH Graham Centre for Agricultural Innovations summer scholarship. Graham Centre Summer Scholarships are designed to encourage undergraduate students to engage in research activity. Phoebe is going to work under the supervision of **Shokoofeh Samsi** on morphological and molecular characterisation of fish nematodes from New Caledonia as well as parasites of marlins from Eastern coasts of Australia for next 10 weeks.

Professor Mousa Tavassoli completed his sabbatical. During his visit (6 months) he worked with Shokoofeh on molecular characterisation of ruminant parasites, and Linguatula spp from Iran.

University of Sydney

Laboratory of Veterinary Parasitology @ McMaster Building Clinical Tropical Medicine Laboratory

The University has built a new biomedical building – Charles Perkins Centre – with the state of the art teaching and research facility. **Jan Šlapeta** and **David Emery** are about to start using the teaching facility including both the wet lab as well as dry labs during Semester 1. In January, we have farewelled our technical officer **Denise McDonell**, who has moved to the Charles Perkins Centre. We welcome **Andrea Casteriano** who has joined parasitology team to assist with Semester 1 teaching.

Abdullah Alanazi from the Department of Biological Sciences, Faculty of Science, Shaqra University, Saudia Arabia visited us in November to learn qPCR and analyses some of his horse DNA samples.



Neil Portman (post doc) and Christi Foster (PhD student) have secured the cover of Eukaryotic Cell (pictured above left). Neil and Jan discussion led to a provocative hypothesis in Trends in Parasitology that the apical complex might have origins from flagellarderived structures – "The flagellar contribution to the apical complex: a new tool for the eukaryotic Swiss Army knife?" [http://dx.doi. org/10.1016/j.pt.2013.12.006]. We could not resist and offered a cover for to the Editor, who gladly accepted it! (Above right).

Christi Foster has also won the award for the outstanding oral presentation at the 6th meeting of the Asia and Oceania Society for Photobiology in November in Sydney. In collaboration pigment expert Min Chen, Christi's work is soon to be published in FEMS Microbiology Ecology "Increased growth and pigment content of Chromera velia in mixotrophic culture" [http://dx.doi. org/10.1111/1574-6941.12275].

Victoria Morin-Adeline (PhD student) has wan the First Prize in University wide Poster Competition held by the Australian Centre for Microscopy and Microanalysis (ACMM), Sydney, Australia. Vicki has returned from Spain where she was on ASP co-funded

travel visiting Ana Conesa in the Genomics of Gene Expression Lab, Principe Felipe Centro de Investigacion (CIPF) in Valencia. At CIPF she expanded her skills-set to the field of computational biology and big data analysis including her RNA-seq data.

Shannon Donahoe (PhD student) received all the necessary approvals to proceeds with her infectious trials. In collaboration with Bronwyn McAllan we have great hopes from this inquiry into *Neospora* cyst formation in our fat-tailed dunnart model.

We farewelled **Andrea Lawrence** (Honours student) who has successfully graduated and was awarded an APA to start her PhD journey at the Medical Entomology, Westmead with **Cameron Webb**. Andrea's paper was accepted in Medical and Veterinary Entomology – "High phylogenetic diversity of the cat flea (Ctenocephalides felis) at two mitochondrial DNA markers" [http://dx.doi. org/ 10.1111/mve.12051].

Last but not least, **Alan Marcus** (PhD student, supervised by **Rachael Gray** and **Alan Marcus** at the Faculty of Veterinary Science) has described a new hookworm species from the Australian sea lion to be published in Folia Parasitologica.

Queensland

Central Queensland University

Richard Bradbury has recently taken up a position as Senior Lecturer in Medical Sciences at Central Queensland University after some tie chasing parasites in The Gambia, West Africa. He will be acting as the discipline lead in CQU's new correspondence based Medical Laboratory Science degree. Wasting no time, he has already performed a soiltransmitted helminth survey in the Solomon Islands last December with staff from JCU and contracted malaria in the process (nothing like a parasitologist living the dream). He has presented talks about his African experience to the AIMS Tropical Division meeting and will be presenting posters regarding Acanthamoeba colonising the respiratory tract of a patient in a Tasmanian ICU and another on parasites detected in food sellers in The Gambia at the forthcoming RCPA Pathology Update conference.

Lee Barnett is overjoyed to hear of Richard's recruitment as it means that ASP members on staff have increased by 100% and she is no longer the sole surviving member on campus!

QIMR Berghofer Medical Research Institute

Clinical Tropical Medicine Laboratory

Stacey Llewellyn from the Clinical Tropical Medicine Laboratory at QIMR Berghofer has been hard at work analysing "loads" of samples from The Wash for Worms project. This is a NHMRC-funded collaborative effort between QIMR Berghofer, UQ School of Population Health and WaterAid which aims to determine whether a community based hygiene and sanitation programme is effective at reducing cumulative incidence of gastrointestinal parasite infections. This study has particular aims to quantify the impact of the programme along with MDA on parasite disease burden. Parasite prevalence, as well as infection intensity are being determined by a multiplex real time PCR, testing for Soil-transmitted helminths (STH) (Necator sp., Ancylostoma spp., Ascaris sp., Trichuris sp., Strongyloides sp.) and gastrointestinal protozoa (Giardia duodenalis, Entamoeba histolytica and Cryptosporidium sp.), using an assay adapted from our collaborator Dr Jaco J. Verweij from St. Elisabeth Hospital, Tilburg, The Netherlands. The project began in 2012 in the Liquica district of Timor-Leste across 24 villages. Baseline sampling has been completed with samples currently being analysed; sample

collection currently underway for the first of two follow-up visits to each village. She is looking forward to a preliminary data dump in Canberra later in the year.

Parasite Cell Biology Laboratory

Last November, **Mahdis Aghazadeh**, a PhD student at UQ/QIMR, and **Mal Jones** attended the 3rd international workshop on rat lungworm disease in Guangzhou, China. Mahdis then went on to Thailand where she visited Mahidol University and Siriraj Hospital. Her trip is described in a article earlier in this newsletter.

James Cook University

Cairns campus, Queensland Tropical Health Alliance

Members of the **Loukas** lab, **Jason Mulvenna** from QIMR and **Robin Gasser** from University of Melbourne were heavily involved in the hookworm genome paper that was published in *Nature Genetics* in January 2014. The Queenslanders contributed data on the hookworm proteome and postgenomic application of the genome sequence via construction and probing of the first nematode proteome microarray.

This year, we welcome **Dr Phurpa Wangchuk** to the Loukas lab. Phurpa has a MSc and PhD (which he just finished last year) in medicinal chemistry from the University of Wollongong and was working in R&D at Manjong Sorig Pharmaceuticals in Bhutan before that. He joins Alex's lab to work on the isolation of non-peptide anti-inflammatory compounds from hookworms.

On a final note, Queensland parasitology has gotten a little smaller for a while with the departure of **Cinzia Cantacessi** and **Matt Nolan** to the UK. Both have been seduced by the sunny climes of England with Cinzia taking up a permanent post as a senior lecturer in the veterinary medicine department at Cambridge and Matt going to the Royal Veterinary

College at the University of London to work with Damer Blake. Never fear though, Cinzia will still collaborate with many members of the Loukas lab on parasite bioinformatics projects and there is an open invitation to pop in for a cuppa or nice warm beer whenever you're in town.

Tasmania

University of Tasmania

Welcome to new ASP members **Paul Li** and **Thomas Hill**. Paul is from Singapore and is embarking on a PhD at University of Tasmania. His project will focus on treatment of amoebic gill disease (AGD) in Atlantic salmon. Thomas has also recently joined the University of Tasmania as a PhD student to work on AGD under the supervision of **Professor Barbara Nowak, Andrew Bridle** and **Dr Phil Crosbie**.

Congratulations also to Melissa Martin. Melissa is very grateful to have recently received the ASP Network Researcher Exchange, Training and Travel Award for research exchange training to RMIT, Melbourne. She will be working with Dr Nathan Bott to resolve cryptic cymothoid isopod species by generating molecular and morphological data sets for phylogenetic analysis. In late November 2013, Melissa also secured funding to attend a workshop on "Molecular Mining of Archived Samples" held at the University of Cape Town, South Africa conducted by Dr Declan Schroeder of The Marine Biological Association of the UK. The objective of the workshop was to illustrate techniques in acquiring molecular data from archived marine samples preserved in formalin and buffered ethanol. The DNA extraction protocol was a very important aspect covered in the course. This trip also benefited Melissa to meet Dr Kerry Hadfield from North-West University, whose taxonomic expertise on cymothoid isopods from Africa has helped broaden Melissa's understanding of the

biodiversity of these organisms.



Melissa Martin with Dr Kerry Hadfield and her family at Cape Town, SA



Melissa Martin at the Victoria and Alfred Waterfront, Cape Town, SA

Congratulations again to **Laura Gonzalez** who received best poster award for during one of our outreach events late last year. Laura was in Chile conducting her PhD research at the time of the event so was awarded her prize 'A History of Parasitology in Australia and Papua New Guinea' in early January.



Laura Gonzales with ASP Tasmanian state representative Dr Melanie Leef.

Victoria

The University of Melbourne

Faculty of Veterinary Science

In February 2014, **Dr Rebecca Traub** joined the Faculty of Veterinary Science, The University of Melbourne as an Associate Professor.

Gasser Lab

Mary Shuttleworth completed her Honours project "Cryptic species within the nematode genus Cloacina found in the swamp wallaby" under the supervision of Dr Abdul Jabbar, Professors lan Beveridge, Robin Gasser and Neil Chilton.

Significant publications

Mangiola, S, N.D. Young, P. Korhonen, A. Mondal, J-P. Scheerlinck, P.W. Sternberg, C. Cantacessi, R. Hall, A.R. Jex, R.B. Gasser, 2013. Getting the most out of parasitic helminth transcriptomes using HelmDB: Implications

for biology and biotechnology. *Biotechnology Advances* 31, 1109-19.

Ansell, B.R.E., M. Schnyder, P. Deplazes, P. Korhonen, N.D. Young, R.S. Hall, S. Mangiola, P. Boag, A. Hofmann, P.W. Sternberg, A.R. Jex, R.B. Gasser, 2013. Insights into the immuno-molecular biology of *Angiostrongylus vasorum* through transcriptomics-Prospects for new interventions. *Biotechnology Advances* 31, 1486-500.

Jabbar, A., Beveridge, I., Mohandas, N., Chilton, N.B., Littlewood, T.D.J., Jex, A.R. and Gasser, R.B., 2013. Analyses of mitochondrial amino acid sequence datasets support the proposal that specimens of Hypodontus macropi from three species of macropodid hosts represent distinct species. *BMC Evolutionary Biology* 13, 259.

Mohandas, N1., A. Jabbar, A1., M. Podolska, X.Q. Zhu, T.J. Littlewood, A.R. Jex and R.B. Gasser, 2014. Mitochondrial genomes for *Anisakis simplex sensu stricto* and *Contracaecum osculatum* C – comparisons with selected ascaridoids and other chromadorean nematodes. *Infection, Genetics and Evolution* 21, 252-262. 1 Equal contribution as first author

Jabbar, A., J. Cotter, J. Lyon, A.V. Koehler, R.B. Gasser and B. Besier, 2014. Unexpected occurrence of *Haemonchus placei* in cattle in southern Western Australia. *Infection, Genetics and Evolution* 21, 252-258.

Lightowlers Lab

Marshall Lightowlers travelled to Nepal and India. Text and images from the visit can be found earlier in this newsletter.

McFadden Lab (School of Botany)

Dr **Ross Waller** was promoted to Associate Prof/Reader at the School of Botany. He also accepted half time appointment at Cambridge University.

Dr **Joseophine Siregar** from Eijkman Institute Jakarta visited Prof McFadden's Lab and studied atovaquone resistance.

Professor Geoff McFadden and other

colleagues were successful in securing funding under the ARC Linkage, Infrastructure & Equipment scheme: Heath, Mueller, Hartland, Villadangos, Sloan, Caminschi, Hickey, Rossjohn, McFadden, de Koning-Ward, Crabb, In vivo imaging facility (2-photon confocal microscope); LE140100070; 2014; \$650,000.

Significant publication

McFadden, G.I., 2014. Apicoplast. Curr Biol in press Jan 11 CURBIO 10899 DOI 10.1016/j. cub.2014.1001.1024

McConville Lab (Bio21)

Dr **Simon Cobbold** has recently joined Prof **Malcolm McConville**'s group after completing a post-doc in Manuel Llinas's laboratory at Princeton University. Simon returns with a strong interest in malaria metabolism, metabolomics and anti-parasite drugs.

Significant publication

Prof McConville's group recently published a paper in PLOS Pathogens which they believe represents a significant advance.

Saunders EC, Ng WW, Kloehn J, Chambers JM, Ng M, McConville MJ (2014) Induction of a stringent metabolic response in intracellular stages of Leishmania mexicana leads to increased dependence on mitochondrial metabolism. PLOS Pathogens 10(1) e1003888.

La Trobe University

Spithill Lab

Prof **Terry Spithill**'s group published a paper in JJP DDR reporting triclabendazole resistance in Fasciola hepatica in cattle in SE Australia. This is the first report of fluke drug resistance in cattle and highlights the extent of the fluke control problem facing Australian beef and dairy producers Brockwell, Y.M., T.P. Elliott, G.R. Anderson, R. Stanton, T.W. Spithill, N.C. Sangster, 2014. Confirmation of Fasciola hepatica resistant to triclabendazole in naturally infected Australian beef and dairy cattle. International Journal for Parasitology: Drugs and Drug Resistance 4, 48–54.

Three new Honours students (Jessica Wilkie, Brittney Caruana, Nancy Gomes) have stated in Prof Spithill's Lab in 2014. They will be working on liver fluke vaccine discovery and the transmission of the parasite in dairy cattle in Maffra.

Prof **Alan Wilson**, University of York, visited Spithill's Lab in January to discuss research collaborations.

RMIT University

Dr **Nathan Bott** has joined the School of Applied Sciences, RMIT University, Bundoora

Federation University/ Monash University

Federation University has officially kicked off and consists of the major rural/regional educational centres in Victoria including multiple TAFE campuses, Ballarat University and Monash University's Gippsland campus (SE of Melbourne) where David Piedrafita and Mark Sandeman are located. So, we are enjoying a busy time realigning to a new organisational structure - oh what fun I hear you say - and attempting to keep our unruly bunch of PhD students in line. We seem to have quite an assortment of PhDs at present: 4 Aussies, 1 New Zealander, 4 Bangladeshi, 2 Iragi and 1 from India. Different cultures are keeping the lab vibrant and ticking alone nicely.

Congratulations to **Hamish McWilliam**, now 'Dr' no less after completing his thesis in style. Hamish has been working on schistosomes

in buffaloes with **David Piedrafita**/ **Els Meeusen** in collaboration with **Don McManus/Yuesheng Li** at QIMR. A truly international project, with lots of travelling mainly by Hamish - while his supervisors continued to work hard in his absence. Hamish is now working in **Jose Villadangos**'s laboratory at Melbourne University and we wish him well and expect great things from him.

Congratulations also to **Sarah Preston** who has submitted her thesis for examination working on novel sheep galectins involved in parasite rejection under the supervision of David Piedrafita/Els Meeusen. Well done and Sarah can once again 'have a life'.

We have had three visitors recently from China, Egypt and Thailand studying in our labs and it's always fun to have international guests.

"Lots of playing with sheep guts, worms and other such fun things" says David.

RMIT University

Christian Doerig co-edited a book.

Christian Doerig (Editor), Gerald Spaeth (Editor), Martin Wiese (Editor), Paul M. Selzer (Series Editor), 2013. Protein Phosphorylation in Parasites: Novel Targets for Antiparasitic Intervention. Wiley-Blackwell, ISBN: 978-3-527-33235-9

The Walter and Eliza Hall Institute of Medical Research

Christopher Weir (from Alan Cowman's Lab at WEHI) maintains the <u>facebook page for</u> <u>the World Federation of Parasitologists</u> and is happy to post any news from the Australian parasitologists on the facebook page. His email address is weir.c@wehi.edu.au.

"We have a lot of involvement from parasitology researchers and students from around the world, but little from Australians despite an Australian as the President (Alan Cowman)" says Christopher.

"I am a contributing writer for Mostly Science. com (http://mostlyscience.com/) and write mainly about malaria and the philosophy of science and pseudoscience. I would love a call for interested parasitologists to get in touch with me if they want to write an blog-style article aimed at the public" says Christopher.

Jobs and opportunities

Postdoctoral position in Montreal, Canada

We have a potential postdoctoral position, contingent upon funding, available in the spring or summer 2014. The position is for one year, with possible renewal in the second year. The position will be held in the laboratory of Dr. David Marcogliese, St. Lawrence Centre, Environment Canada, Montreal, Quebec, Canada.

Molecular systematics: This project consists of discrimination of a variety of targeted parasite species belonging to monogenean (Gryrodactylus spp.) and myxozoan (Myxobolus spp.) found in the Canadian fauna using morphological and molecular techniques. The project is one component of a large-scale interdepartmental research program aimed at invasive aquatic fauna. The project focuses on invasive and potentially invasive species of parasites in fish and amphibians. Experience in molecular techniques, including primer development, and molecular taxonomy, including the analysis of molecular data, is required. Experience in morphological identification of fish parasites is an asset. Successful candidates will also have the opportunity to participate in other ongoing projects in our laboratory.

To be placed on the eligibility list, applicants must apply to the Natural Sciences and Engineering Research Council of Canada (NSERC) Visiting Fellowships in Canadian Government Laboratories Program (http:// www.nserc-crsng.gc.ca/Students-Etudiants/ PD-NP/Laboratories-Laboratoires/index_eng. asp). Further information on these awards can also be found on this site. While there are no deadlines, this process may take some time to complete, so early application is encouraged to ensure candidates qualify for the positions.

For more information on the positions and projects, please contact:

Dr. David J. Marcogliese Aquatic Biodiversity Section Watershed Hydrology & Ecology Research Division, Water Science and Technology Directorate, Science and Technology Branch, Environment Canada, St. Lawrence Centre, 105 McGill, 7th Floor, Montreal, Quebec H2Y 2E7, Canada

Tel: 514-283-6499 Fax: 514-496-7398 Email: david.marcogliese@ec.gc.ca

Jobs and opportunities continued

Senior Research Fellow -Australian Institute of Tropical Health & Medicine, Goroka, Papua New Guinea

This position will be funded by the Australian Institute of Tropical Health & Medicine (AITHM) and located with our partner, the Papua New Guinea Institute of Medical Research (PNG IMR). This is a career defining role for a researcher with expertise in public health. The appointee will be responsible for driving the joint

PhD Scholarship in Antimalarial Drug Discovery at Griffith Universiy

Griffith University is offering a PhD Scholarship (for commencement in early 2014), in the field of antimalarial drug discovery. The project will be carried out at the Eskitis Institute (Nathan campus, Griffith University). The PhD Scholarships will be part of an NHMRC-EU project team led by Associate Professor Kathy Andrews. The project will involve investigation of epigenetic inhibitors for malaria, including the development of new phenotype assays and investigating the biology of malaria parasites.

Scholarship value and duration

The stipend is a living allowance valued at

AITHM/PNG IMR TB (Tuberculosis) research agenda; manage a multidisciplinary team and undertake community based studies in order to give country wide coverage for TB research; be responsible for managing public and population health programs/ projects; and oversee projects being undertaken by the Papua New Guinea Institute of Medical Research (PNG IMR).

Employment Type: Appointment will be full-time for a fixed-term to 31 December 2017.

the Australian Postgraduate Award rate (AUD \$25,392 in 2014; tax free) and will be awarded for three years. A research allowance is available. Candidates can also apply on a competitive basis for additional funds for conference presentations and research visits to the laboratories of European partners.

Eligibility

The successful applicant will have an appropriate Honours 1 undergraduate degree in a relevant field of biology, such as molecular biology, parasitology, cell biology, and/or drug discovery. The candidate will be enrolled full-time. This scholarship is available to Australian/New Zealand citizens and Australian/New Zealand permanent residents. **Salary**: Academic Level C - \$99,988 -\$114,785 per annum. Commencing salary will be in accordance with qualifications and experience. Benefits include 5 weeks annual leave, generous employer superannuation contribution and attractive options for salary packaging.

Applications close on 11 April 2014.

Applications must be lodged electronically using the online facility located at www.jcu.edu.au/jobs

Candidates must be eligible for admission to a Griffith University PhD program. Applications must be submitted online to Griffith University's Higher Degree Research Student Centre. Apply now.

It is recommended that you indicate the scholarship name on the online form.

Applications close midnight (AEST), 28 April 2014.

More information please contact Associate Professor Kathy Andrews Email: k.andrews@griffith.edu.au

http://www.griffith.edu.au/higherdegrees-research/research-scholarships/ phd-scholarship-in-antimalarial-drugdiscovery/_nocache

How to apply

Professor David Emery on a new e-textbook

Great news. No more reversing of the hemispheres! We are now in the final stages for the launch of the parasite e-textbook entitled "Australasian Animal Parasitology; inside and out". Ian and I consider this a "penultimate" copy as there will be some further additions (parasite eggs etc) and revision in response to your feedback and that from your students. Please solicit feedback for ASP (Canberra) in July.

It remains to thank you all most sincerely;

all of our authors, reviewers and providers of images- it has been a wonderful and spirited joint effort and we should all be justly proud. To the ASP (esp Rob, Robin and Karen), for its undaunted financial and moral support and to MLA and AWI (Claudia, Tessa and Jane) for their additional faith and financial support, we are very grateful and are extremely pleased to come up with the goods for students and industry stakeholders! We anticipate that we shall have the pdf and download link available shortly, together with operating instructions for the various forms of electronic formats, functionality and operating systems.

Cheers and phew!

David and lan

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