



NEWSLETTER

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Gula Guri Mayin, (Heal the Body) by artist Bernard Lee Singleton

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Dear Members,

Greetings one and all to the new Executive and my first post.

On behalf of the Executive, I firstly must thank the outgoing executive (Robin, Alex and David P) for their ongoing support, both in the changeover and to date. I also thank Drs. Colin Stack and Peter Rolfe for their acceptances, respectively, for the roles of Secretary and Treasurer for this term. We are keen to advance the influence and interests on the ASP, the discipline and ASP members.

The dust has settled on a highly successful joint ASP-NZSP joint meeting in Auckland. Reports and photos are available on the website, but once again, thanks to the organizers on both sides of the trench for a timely and productive get-together. For our part, thanks once again to Lisa, Nick and the Network and for the NZ part, Victoria Chapman and Ian Scott and other colleagues of the local Organising Committee (NZSP), for conference, entertainment and outreach. Food was superb!

The secret highlight of the Auckland meeting (I thought) was the screening of the wonderfully evocative Outreach project arising from the Inspiring Australia-ASP grant "Parasites, People, Art" collaboration <http://parasite.org.au/outreach/gula-guri-mayin/>. Bernard Lee Singelton's magnificent painting, Gula Guri Mayin (which means "Heal the body") is accompanied by digital art from Tai Inoue. The work explores themes of parasites and health, even though most of our beasts result in "ill-thrift"! It is a very moving compilation and the T-shirts are available. There is the offer to utilize the painting in ASP promotions and advertising, so please consider whether it fits with your local exhibitions or outreach projects.



Another highlight of conferences and AGMs is always student prizes for outstanding young achievers and we congratulate all of the recipients (and commend the judges for sustained vigilance and deliberations through the meeting). Award winners on page 33 of this newsletter.

The late Ian Whittington (1960-2014) was honored posthumously as a Fellow of the Society. Ian was an enthusiastic advocate of monogenean parasites, especially tropical marine parasitology, publishing some 170 papers through his career at UQ and at the SA museum as the Head of Biological Sciences at the Museum. Ian notably chaired the International Symposium on Monogeneans and the most recent ASP conference in Adelaide.

Other conference news and other exciting information can be gleaned from www.parasite.org. Indeed, the 2014 Annual report is also available from the ASP website <http://parasite.org.au/publications/annual-reports/> and provides an excellent informative update on all areas of contemporary interest to members.

From the President's desk continued

Moving from the conference, we congratulate Aileen Elliot from Murdoch University for her Thorny-headed winning second prize in the finals of the New Scientist Eureka Prize for Science Photography. This one from the catfish and not that unpronounceable parasite from a pig kidney. Well done Aileen.

The organization of the International Congress of Tropical Medicine and Malaria (ICTMM) 2016, destined for Brisbane



in September 2016, is well advanced (<http://tropicalmedicine2016.com/>).

The Congress is being co-hosted by the ASP and the Australasian Society of Infectious Diseases, and planning and fundraising are in the capable hands on the Management Committee (Mal Jones, Denise Doolan, Kathy Andrews, David Looke, James McCarthy and Paul Griffin) and our thanks go for their efforts. Follow their Facebook page <https://www.facebook.com/XIXICTMM> and Twitter account <https://twitter.com/ICTMM2016>.

Thanks to Alex Maier and the Organising committee (and not to omit the enthusiastic lecturer), the ASP's "Concepts in Parasitology" course is on track for a stint at the glorious south coastal resort of Kioloa. The course this year runs from 29th November to 12th December with 13 registrants and 3 vacancies still available. So if you are interested, enroll at <http://parasite.org.au/blog/applications-open-for-2015-asp-concepts-in-parasitology-course/> or contact Alex asap. Since we seem to be saturating the Aussie market already, the advertising has gone global. Since thanks are due to Vice President, Robin Gasser for achieving promotions across the globe to all International and National Parasitology societies and highlighting the course

at WAAVP. The course is enhanced this year by 8 new compound and 8 new dissecting microscopes: proper Nikon research scopes, supported by ASP. The supplier Coherent Scientific will also help us out with loans of "demonstrator scopes" with imaging capability. Alex is delighted with the enthusiasm, energy and expertise of the lecturers and committee members and we are truly thankful for his leadership in this wonderful venture: success is ensured for 2015 and the weather should be hot!

In concluding, given the interesting financial state of ASP as outlined at the recent AGM, the new Executive is striving to gain reliable legislative advice on the taxable status of charitable organisations such as ASP. This will provide some sound basis to manage the financial inputs and initiatives of the Society into the future and impact on our Strategic Plan.

In addition, my recent discussions with the new Executive for the Australian Entomological Society have also prompted some thought for a combined meeting, highlighting joint interests in the characterisation and control of plant and animal parasites and investigations into mechanisms and management of chemical resistance.

So now you can embark on reading all the really interesting and pertinent bits that follow!

Best wishes,

David Emery.

ASP Website www.parasite.org.au

ASP Facebook www.facebook.com/ASPParasitology

ASP Twitter www.twitter.com/AS_Para

\$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 2016 prizes must be made by the eligible University to the ASP Treasurer or Secretary by the 30th September 2016.** Requests for prizes must include the following for each eligible course:

1. Course name/code/degree year
2. Number of Students enrolled in 2016
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

Incorporating the Australian Society for Parasitology (ASP) Annual Conference 2016

Save the Date for ICTMM 2016

On behalf of the Congress Management Committee, the **Australian Society for Parasitology (ASP)** and the **Australasian Society for Infectious Diseases (ASID)**, we invite you to join us for the **XIX International Congress for Tropical Medicine and Malaria (ICTMM 2016)**. The Congress will be held at the Brisbane Convention & Exhibition Centre from Sunday 18 - Thursday 22 September 2016. The Congress will incorporate the ASP Annual Meeting, as well as a special focus on One Health through the Zoonoses 2016 Conference.

The Congress is an exciting opportunity for delegates to network and share knowledge in the areas of tropical medicine, tropical parasitology, malaria, infectious diseases, zoonoses and veterinary health, travel medicine and more. The program will feature presentations from leading keynote speakers, as well as a growing number of invited speakers:



Prof. Kevin Marsh

Senior Advisor at the African Academy of Sciences and Professor of Tropical Medicine, at the University of Oxford.



Prof. Sharon R. Lewin

Director at the Doherty Institute for Infection and Immunity, University of Melbourne.



Prof. John Reeder

Director of TDR, The Special Programme for Research and Training in Tropical Diseases at the World Health Organization.

For further information, please visit: www.tropicalmedicine2016.com
Like us on Facebook or follow us on Twitter @ICTMM2016 or #ICTMM2016



Fellow of the Australian Society for Parasitology Professor Ian Whittington (1960-2014)



Professor Ian D. Whittington was made Fellow of the Australian Society for Parasitology at the 2015 ASP Annual Conference in Auckland. Ian's son, Matthew Whittington, received the Fellowship Award on behalf of his father.

Ian David Whittington completed his PhD at the University of East Anglia, UK in 1986 with Dr Graham Kearn, a leading authority on Monogenea. Ian moved to Queensland, Australia, in 1987 where he worked at the University of Queensland (UQ) in Brisbane as a Postdoctoral Fellow in the School of Biological Sciences. He won a prestigious Queen Elizabeth II Fellowship in 1990 and continued his work in the Department of Parasitology at UQ before accepting a Lectureship at the same institution (1993-1996). He maintained high research productivity during his Directorship of UQ's Heron Island Research Station (1996 to 1999) and was appointed to Senior Lecturer in 1997. During his 15 years at UQ, Ian built and led the Monogenean Research Laboratory – the only Australian research team dedicated to the study of monogeneans. In July 2001, his group had the honour of hosting the 4th International Symposium on Monogenea, demonstrating significant international recognition for Ian's research during his early to mid-career.

In January 2002, Ian moved his research group to Adelaide, South

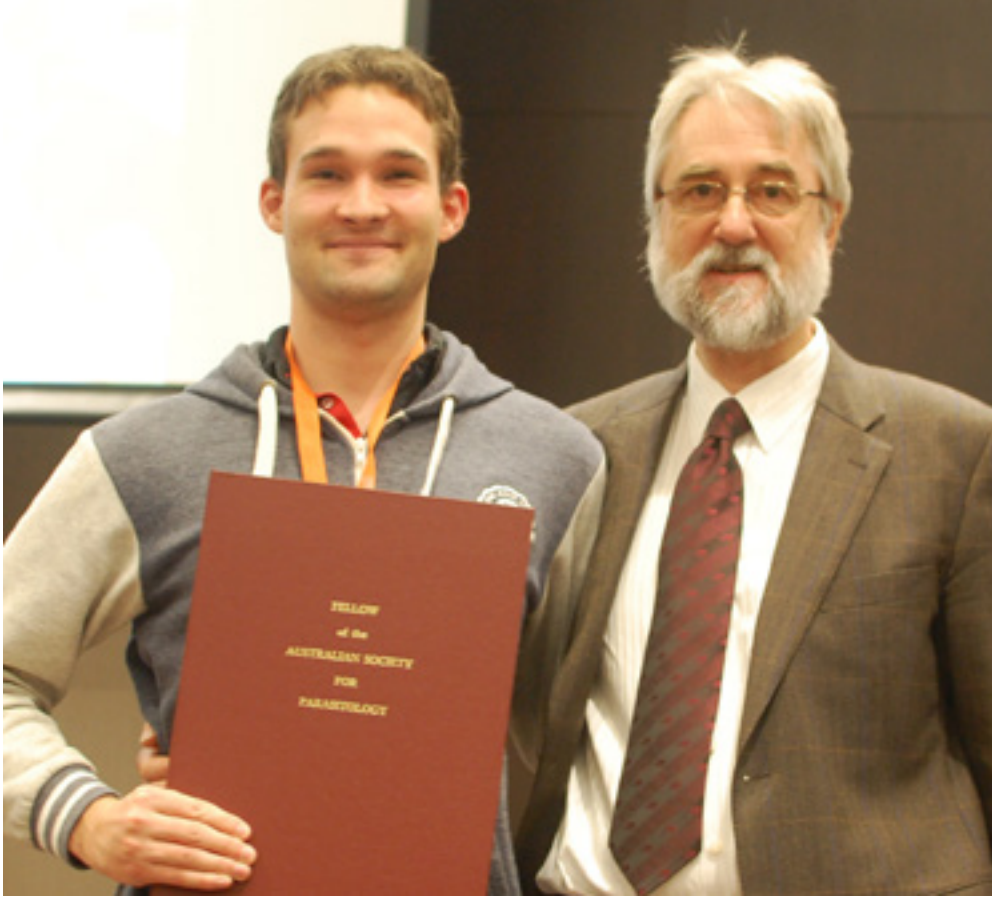
Australia, for a joint appointment as a Senior Research Scientist at the University of Adelaide and head of the Parasitology Section at the South Australian Museum (SAMA). In 2006, he was promoted to Associate Professor/Principal Research Scientist. From 2012 he worked as Head of Biological Sciences at SAMA and was actively engaged in research and administrative duties until his death.

Ian promoted innovative studies of whole parasites to understand parasitism in relation to structure, ecology, life history, systematics and taxonomy and that of their host(s). His holistic studies on live parasite biology, behaviour, life cycles, systematics and evolution included many significant contributions.

Ian published more than 170 peer-reviewed papers over his career and led 25 major research projects (ARC Large, Discovery, Small & Linkage grants) to completion. Ian attracted many students and colleagues through his expertise and knowledge of marine parasites, humorous nature and welcoming personality. He was a dedicated mentor, lecturer and supervisor and provided a supportive, professional environment conducive to productive science and promotion of excellence and exceptional quality. Over his career he supervised and graduated 9 PhD and 16 Honours students and mentored 6 postdoctoral fellows.



Fellow of the ASP Professor Ian Whittington continued



Many of his former students now work in senior roles in aquaculture, academia and government. He received several notable awards during his career including a Queen Elizabeth II Fellowship (1990–1992), a Visiting Professorship Centro de Investigaciones Biológicas del Noroeste, La Paz (2006) and the prestigious Fish Parasitologist of the Month (<http://www.diplectanum.talktalk.net/fish/>).

Ian's research is well respected internationally and he made considerable contributions to the field through service. He received more than sixteen invitations to speak about his research at national and international conferences and contributed more than fourteen invited peer-reviewed publications. He acted as a grant assessor for numerous national (ARC [IntReader], ABRIS, Australian Academy of Sciences) and international (Canada, Czech Republic, Scandinavia, South Africa, UK, USA) schemes. Ian served on the Editorial boards of numerous scholarly journals.



Clockwise from top: Matthew Whittington received his fathers ASP Fellowship award with ASP President, Robin Gasser; Ian Whittington; Andrew Shinn gave the Symposium presentation 'Marine Parasitology & Aquaculture 1: A Tribute to Ian Whittington' at the 2015 ASP Conference in Auckland and is photographed (centre) with Robin Gasser and David Piedrafita (ASP Executive). Watch Andy's presentation online <http://parasite.org.au/the-society/fellows-of-the-society/ian-whittington-fasp-2015/> Previous page images Ian Whittington.



Ian Whittington will be remembered as an inspirational mentor, who changed and shaped the lives of his students and had the admiration and respect of his colleagues. Ian's contribution to the study of the Monogenea, his dedication to training and supporting early career researchers and his service to the ASP make Ian David Whittington worthy to be elected Fellow of the Australian Society for Parasitology.

Meet the ASP President, Professor David Emery, BVSc BSc(Vet) PhD

At the last ASP AGM, Wednesday July 2nd 2015, held in Auckland at the Joint Conference for the Australian and New Zealand Societies for Parasitology, the new ASP Executive was sworn in and today we will hear from David Emery, ASP President and Professor Veterinary Parasitology at The University of Sydney.

David graduated from The University of Sydney and describes himself as an “interloper” from immunology having devoted 25 years of his life to ruminant mucosal immunity, disease pathogenesis and vaccination for exotic and endemic infectious diseases and gastrointestinal nematodes.

David, tell us how you became involved in parasitology?

“I qualified as a Vet in the 1980’s and, after 18 months of working in a practice, I felt the lure of research and joined the John Curtin School of Medical Research to do a PhD in immunology and lymphatic physiology with Professor Bede Morris. Bede was my mentor in immunology and microbiology, and Peter McCullagh was my wonderful and long-suffering PhD supervisor, so I got a really good grounding in lymphatic physiology and transplantation immunology studying the response in single lymph systems.”

“After my PhD, I took a 3 year postdoctoral job in Africa at The International Laboratory for Research on Animal Diseases (ILRAD) in Kenya. ILRAD had just opened and Bede said to me, “Boy, they’re still tramping the red dirt through the door – but I think you’ll do well!” And, he was right – it was an international group and there was a real scientific and cross-cultural buzz working there from the visitations of prominent scientists visiting and giving lectures en route to a game safari!”

In Kenya, David defined cell-mediated cytotoxicity for protective immunity against *Theileria parva* (East Coast fever) and worked on sleeping sickness caused by *Trypanosoma*.

After 3 years in Kenya, David won a Distinguished Scientist Fellowship with the CSIRO and moved to Melbourne to work on foot rot and foot abscess in sheep. He determined protective epitopes for *Dichelobacter nodosus* pili (ovine footrot) and characterised leucocidins of *Fusobacterium necrophorum* (foot abscess).

“After working for the CSIRO in Melbourne for 5 years, I was enticed back to Kenya to work again at ILRAD for 18 months as a visiting scientist working on dendritic cells and antigen presentation, developing the afferent lymphatic model in cattle.”



ASP President, Professor David Emery

David then moved back to Australia to work with the CSIRO in Sydney and led the first project team attempting to develop recombinant vaccines for worm parasites of sheep.

“We produced and trialled several antigens and identified allergic (Th2) responses as a protective mechanism in natural infections. Tantalising protection always around 50-70%, but insufficient for a commercial vaccine”

In 2001, David joined the Animal Biosecurity team in Canberra, addressing import risk analysis and animal health policy but later in 2002, he joined The University of Sydney to work on the Ovine Johnes Disease Project for the next few years.

“I joined the Parasitology Department at The University of Sydney in 2004 to head up the parasitology work within SheepGenomics funded by the MLA and AWI. We were looking for biomarkers across several major areas of sheep production. There were 13 institutions involved in this project, which had a great collaborative spirit and lead to some good findings over the 5 years I was involved in this project.”

From 2009 until 2013, David was Pro-Dean of the Faculty of Veterinary Science at The University of Sydney and supervised PhD students working on worm parasites, liver flukes and *Theileria*. During that time, David was principally looking after Honours, Masters, PhD students and the Doctorate of Veterinary Medicine, which was an integrative curriculum, with David attempting to ensure that

Meet the ASP President, Professor David Emery, continued

parasitological components were effectively integrated and taught, and the discipline was still distinguishable. He was the driving force behind production of the veterinary e-text book, "Australian Animal Parasites Inside and Out" (<http://parasite.org.au/publications/australian-animal-parasites-inside-and-out/>), of which he is very proud, feeling that it highlights the prominence of the discipline of parasitology in Australia. David's current research interests include mucosal immunobiology of infectious and parasitic disease.

What keeps you motivated as a parasitologist?

"Billions of reasons keep me motivated as a parasitologist – parasites cost the sheep and cattle industry in Australia around \$1b every year and I feel a sense of duty to the stakeholders in our research. Within SheepGenomics, we ran an annual field day for producers and industry leaders and the incisiveness of their questions and their quest for effective answers to parasite control humbled me as a researcher."

How do you see your research developing in the future?

"I see my role in the translational end of research and helping the next generation of students to understand why they will provide the rational and cogent advice to clients. To capture the discipline, we need to be linking and facilitating teaching to research and development in parasitology."

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

"I can identify two highlights of my science career. Firstly, my research in Kenya defining cell mediated toxicity for protective immunity against *Theileria parva* (East Coast fever). Secondly, the compilation "Australian Animal Parasites Inside and Out". The textbook was a magnificent effort by parasitologists, academics and editors and the results are a polished professional textbook, made freely available by the generosity of the Australian

Society for Parasitology. This book will do a good job of making parasitology prominent for veterinary students as it gets promulgated through the student community."

What aspects of your role as ASP President are you looking forward to the most?

"I am looking forward to facilitating good ideas put forward by the ASP membership; enabling exciting initiatives for the benefit of the discipline of parasitology and for the ASP members. Parasitology is under stress of merging with other disciplines and I see

part of my role as ensuring the prominence and distinction of parasitology and of parasitologists. I've been approached to look into more industry involvement into the ASP and I'm looking forward to ensuring the strategic plan continues to be operational. But most of all, I'm looking forward to working with a great team!"

Outgoing ASP President, Robin Gasser (left) with Incoming ASP President David Emery





Concepts in Parasitology

"Passion for Parasites" - Reflection on the ASP Advanced Course "Concepts in Parasitology" from the course convenor, Alex Maier



Preparations for the two weeks course "Concepts in Parasitology" (29. Nov.-12. Dec. 2015) are in full swing, which is a great opportunity to reflect on the previous course in 2014:

Sixteen early career researchers from across Australia lived and breathed parasites for two weeks. The course took place in the idyllic surrounding of the New South Wales South Coast at the Kioloa Coastal Campus of the Australian National University. 28 experienced and esteemed ASP members shared their knowledge and perspective on the subject and there was plenty of opportunity for exchanges and getting advice (over 20,000 minutes to be precise).

To start off with, participants made their own portable microscopes, which provided a tool for the best picture competition. The course

spanned an enormous spectrum of organisms, approaches and techniques: Three days were dedicated for modules that required high-end specialist equipment and were conducted in the labs of ANU parasitologists. Here small groups explored themes like "correlative light and electron microscopy", "measuring B-cell responses after vaccination", "HPLC as a tool for high-throughput drug target analysis" and "intracellular pH measurements".

Participants were exposed to a new "Concept" per day, each one presented by 3 experts in the field. All lecturers poured their professional soul into their deliveries and highlighted the immense width and breadth of Australian parasitological research. From dissection to high end imaging, from molecules to ecology, from pathology to diagnostics and prevention, from basic cell biology to drug discovery and development, from tiny protozoa to worms that could not be overlooked, from van-der-waals forces to ecosystems, all was explored, contemplated and discussed. The theoretical exchanges were complemented by hands-on practicals: ticks were collected, animals examined, ELISAs designed, epidemics modeled, high-content drug screens were conducted, bioinformatics

was used for prioritisation and characterisation of drug targets or to explore parasite genomes and transcriptomes, the population genetics of Anopheles vectors in Papua New Guinea was analysed and parasites in tissues, feces and blood were diagnosed.

Even seasoned parasitologists got excited by the parasites that were uncovered during the course. Especially a bench-top scanning electron microscope provided the opportunity to look at the freshly found parasite in great detail.

The early career researchers took advantage of workshops on paper writing, career development, presentation skills and working with and in Industry. An incredible array of creativity was displayed during a Science Fair that was organised as part of a very successful outreach activity. Each course participant presented her/his work to the students at Ulladulla High School.

The same mixture of passion for parasites and ingenuity was also channeled into songs, drawings or found expression in the design of board games with names like "Shit storm". Some people displayed unfathomed knowledge and hidden gems during the trivia night. Last, but not least, there was plenty of opportunity for bonding

Website: www.parasite.org.au/education/concepts-in-parasitology/

Reflection on the ASP Advanced Course "Concepts in Parasitology"

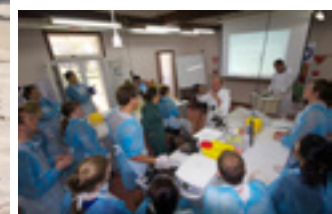
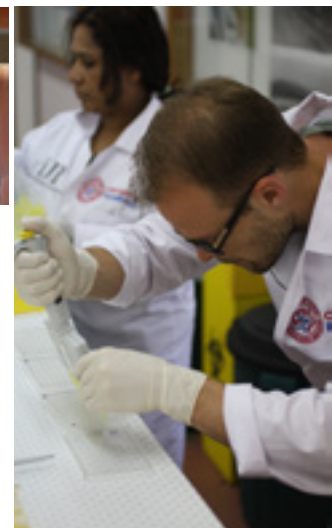
and networking at the beach, during mountain bike rides or around the campfire.

The participants were impressed by the immense efforts and commitment of lecturers, ASP executive, sponsors and ASP membership that went into the realisation of the course. A Society that is able to share the knowledge and enthusiasm with the next generation in such an enjoyable way can only be proud of itself.

If the enthusiasm and potential of the class of 2014 is anything to go by, the future of the Australian Society for Parasitology is in the best of hands. Photos from the 2015 "Concepts in parasitology" course are pictured below.

For more information (including a video) check out the course web site:
www.parasite.org.au/education/concepts-in-parasitology/

If you have any questions, comments or suggestions, please contact the course convenor Alex Maier.
alex.maier@anu.edu.au



Vale Klaus Lingelbach

13.11.1955 – 3.9.2015

It was with great sadness that Klaus Lingelbach's many friends in Australia learned of his death on September 3, 2015. Klaus had been unwell for some time, having been diagnosed with liver cancer in late 2012 and having undergone a series of debilitating treatments. He was just 59 years old.



Klaus Lingelbach with his wife, Claudia

Photograph: David Bowtell

Having completed an undergraduate degree in biology at the University of Heidelberg, Klaus came to Australia as a PhD student in the early 1980s, working initially with Robin Anders at the Walter and Eliza Hall Institute, on malaria, and then with Nick Hoogenraad at La Trobe University, on protein targeting to mitochondria. On graduating from La Trobe Klaus went to work with Bernhard Dobberstein at the EMBL labs in Heidelberg, studying protein secretion. However the pull of malaria drew Klaus back to parasites and he moved from Heidelberg to the Bernhard Nocht Institute for Tropical Medicine in Hamburg where he took up a position as a lab head, working on protein targeting in the malaria parasite. He was well funded and carried out some seminal studies but, now with a young family, the fixed-term nature of his position in Hamburg led him to relocate to Philipps University Marburg, taking up a professorial appointment in the Parasitology Department.

The main focus of Klaus' Marburg laboratory was to understand the biological basis of interactions between intracellular parasites and their host cells, with particular emphasis on the modifications made to the host cells by the parasite. The group established a strong reputation for its rigorous biochemical approaches to difficult cell biology problems in parasitized cells. The presence of the Max Planck Institute for Terrestrial Microbiology, immediately adjacent to the less well-funded Parasitology Department meant that it was not always easy to attract strong research students, and the increasing focus of Marburg University on teaching rather than research presented further challenges. Nevertheless a steady stream of highly talented young scientists passed through his laboratory.

Klaus' skills as an administrator and leader were well recognized and he served both as President of the German Parasitology Society and as Dean of Science at the University. The Australian parasitology community also benefited from these skills, not least when Klaus took on the role of chairing the International Advisory Board for the newly established Lorne Molecular Approaches to Malaria meeting, first held in 2000 and now established as one of the leading international malaria meetings.

Klaus had a very great affection for Australia. He maintained some regret that he had not pursued a career here, and he took every opportunity to visit, and to support Australian science. There was a steady stream of Australian visitors through Marburg, and Klaus welcomed many of them to his family home, with his characteristic warmth and hospitality. He will be very greatly missed.

Written by Kieran Kirk, ANU.



Klaus Lingelbach
Photographs courtesy: David Bowtell

ASP Outreach: Parasitology for kids at University of Tasmania's 2015 Open Day

Another successful parasitology outreach event, organised by members Tina Oldham and Melanie Leef, was held during the University of Tasmania's Open day (August 2015).

This event targeted children between ages 5 to 10 years old who were visiting the University of Tasmania, Institute for Marine and Antarctic Studies 'Open Day' with family members. For this event we had a large fish poster showing location of infection of four species of parasites (amoeba, blood fluke, isopods and copepods) which are researched by the Aquatic Animal Health research group. To encourage active participation we also had foam sheets, pre-cut in the body shape of the parasites presented in the poster, which kids could decorate with a wide variety of materials including glitter glue, pom poms, pipe cleaners, gems and markers. Once completed the parasites were mounted on wooden dowels which allowed them to be used as fancy dress masks and taken home by the children. In addition to making parasites, there was a colouring station with cartoons of the four different parasites discussed and a small amount of information on how they affect their fish hosts. At another station children could look at labelled plasticine models of each parasite to learn more about their anatomy and shape. Finally, if kids completed both the colouring and mask making activity, they were given the opportunity to play a fishing game. A kiddie pool was filled with water and populated with floating fish "infected" by the four parasites of focus. Children were given fishing poles with magnetic lures and allowed to catch fish. If they caught one fish infected with each of three parasites and properly identified the parasites they were allowed to choose a prize from a selection of plush parasites (Giant Microbes – Amoeba & Copepod). Throughout the activities PhD students from the research group worked with participants and provided more information.

The ASP event was very successful with many children joining in the activities. Also some parents participated with their children to make their own parasites, or to help the younger ones. The ASP sponsored funds for this event were used to purchase the materials necessary to construct and decorate at all activities. Many of the resources created will be available for future events including the

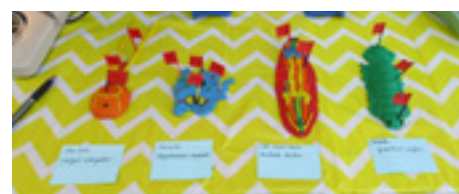
fishing game and colouring sheets. This event was advertised by UTAS and AMC centrally as part of the Open Day. Many children experienced their first exposure to fish parasites and clearly demonstrated the absorption of new knowledge. The interactive participation in activities helped to foster curiosity about parasitology. Being able to take parasites home will help them retain the information and hopefully share the knowledge with other family members. The ASP logo was printed on all colouring sheets and informational signage used to draw in participants. Additionally a large ASP banner was on display at the Aquatic Animal Health station amidst all of the activities. We received very good feedback from the visitors and from IMAS staff regarding all of the activities.



Photos: Student members Jessica Johnson-Mackinnon (above) and Tina Oldham (top-right, the event organiser promoting the ASP with take-home parasite fancy dress mask.

Middle: Labelled plasticine models of each parasite to learn more about their anatomy and shape.

Bottom: Floating fish "infected" by parasites. Children were given fishing poles with magnetic lures and allowed to catch fish. If they caught one fish infected with each of three parasites and properly identified the parasites they were allowed to choose a prize from a selection of plush parasites (Giant Microbes – Amoeba & Copepod).



ASP Outreach: Parasites in Focus with GTAC

On August 21st 2015 89 students of Years 10 & 11 and 10 teachers from Victorian schools attended the "Parasites in Focus" program held at the Gene Technology Access Centre (GTAC) in Melbourne.

The program was supported by an ASP Outreach grant. Robin Gasser (University of Melbourne) gave the opening address followed by three rotating laboratory workshops.

Using preserved specimens as demonstrations, Robin provided students with an engaging introduction to the field of parasitology. He discussed parasite diversity, life cycles, and their global impacts on livestock and on humans. At the conclusion of the presentation, students asked Prof. Gasser probing questions about parasites, how they are studied, and how the conditions they cause are managed. Some of the questions reflected the personal experience and understandings of the rural students. The audience feedback was great, " Really great lecture, not only discussing his work but pathways to get into parasites as well." and " Amazing to hear from such a passionate scientist"

During the three rotating 1-hour laboratory workshops students worked in small groups of ~7 students mentored by practising scientists.

• Hooked on Parasites

Students used microscopy to explore how endoparasites locate, attach, feed and reproduce in their hosts. Particular case studies included equine bot fly larvae and tape worms, plus chemotaxis experiments with live nematodes.

• A Case of Cross-Border Detection

An exploration in the application of biotechnology to medical parasitology, students used PCR and gel electrophoresis to diagnose which *Plasmodium* species was infecting a patient recently returned from an adventure holiday.

• Parasites Getting it Under Control

Using the NetLogo simulation software, students modelled the impacts of the parasitoid wasp, *Trichogramma carverae* to assess it as a potential biological control for the agricultural pest, the light brown apple moth.

Report provided by Tony Chiovitti, GTAC



Top images: students in action at "Parasites in Focus". Left image: Prof. Robin Gasser with GTAC workshop co-ordinators, Tony Chiovitti (left), Rachael Rutkowski, and Chris Szwed.



News from the ASP Network for Parasitology

Welcome

In this newsletter we feature photos from the 2015 Joint Conference of the New Zealand and Australian Societies for Parasitology, held in Auckland, New Zealand, from June 29th - 2nd July.

With funding from Inspiring Australia, the Australian Society for Parasitology has entered into a unique partnership with a group of artists in Far North Queensland. (www.parasite.org.au/outreach/gula-guri-mayin/) The project, which centres around Indigenous artist Bernard Lee Singelton's magnificent painting, *Gula Guri Mayin* (which means "Heal the body"), explores themes of parasites and health. In addition to Bernard's painting the project is captured through digital art by Tai Inoue <https://youtu.be/oW7e2j1S-EA> where Bernard describes the process he went through to create *Gula Guri Mayin* and a performance piece which incorporated work by Bernard, Tai and Dave Masters https://youtu.be/ZFRCsDq_kf4. The project represented the final part of a larger national \$30K Inspiring Australia grant that the Australian Society for Parasitology won to host free public events to explore the world of parasites. The work formed a central part of James Cook University's National Science Week activities in August, and was part of the Cairns Children's Festival in May – both at the Tanks Arts Centre in Cairns. It was also exhibited to Rural and Remote Nurses Conference in October. Over 4500 visitors have enjoyed *Gula Guri Mayin* this year so far and we hope that other venues across Australia will host the art piece over the next few years. Email Lisa if you have ideas for other venues for the artpiece and/or Parasites in Focus exhibition.

The **2014 ASP Annual report** is available to download from the ASP website <http://parasite.org.au/publications/annual-reports/>

Annual Conference

The **2016 Annual Conference will be part of the International Congress for Tropical Medicine and Malaria 2016 (ICTMM) 16-22 September, at the Brisbane Convention & Exhibition Centre**. We hope to see you all next September for, what promises to be, another wonderful event. See conference information on page 5 of this newsletter. <http://tropicalmedicine2016.com/>

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
Executive Officer, ASP Network for Parasitology

ASP Outreach Funding

ASP members are encouraged to apply for ASP funding to support outreach in their state. Up to \$500 per event is available with a total per state or territory of \$2000 per calendar year. Initiatives should foster outreach by members and advance the field of parasitology. ASP President Robin Gasser would like to emphasise that the funds can be used to support a wide range of activities - from seminars, symposia to "beer and nibbles" networking sessions of State members or any other parasitology-related event.

Submit your proposal to your ASP State/Territory Representative for consideration.



An Australian Government Initiative



ASP Network Researcher Exchange, Training and Travel Award: Adelaide Dennis

Adelaide Dennis (PhD candidate, Kirk Laboratory, ANU), recently spent a week in the Vicky Avery Laboratory in the Eskitis Institute for Drug Discovery at Griffith University. This report by Adelaide Dennis, The Australian National University

During my week in the Avery Lab, I had the fortune of working closely with Sandra Duffy (Senior research assistant, Avery Laboratory) and Sasdekumar Loganathan (Research assistant, Avery Laboratory).

This visit was part of Researcher Exchange award, where previously John Holleran (former Research Fellow at the Avery laboratory) visited the Kieran Kirk Laboratory at the ANU and worked closely with Adele Lehane (post-doctoral fellow, Kirk Lab) and myself.

Outcomes

The researcher exchange award helped foster collaboration between the Avery and Kirk laboratories. The two skills of the two labs are complementary and should, if all goes to plan, lead to joint publications.

I enjoyed my time in the Avery laboratory, where I developed new skills and gained a different perspective on the study of malaria. Sandra Duffy taught me her method for attaining tightly synchronous parasites, allowing stage dependent analysis of the malaria parasite with an age spread of half an hour. Sas Loganathan showed me the high-throughput splenic filtration assay using the OPERA system to measure parasitaemia.

It is hoped that data obtained from the visit will be included in a joint publication between the Kirk and Avery laboratories.

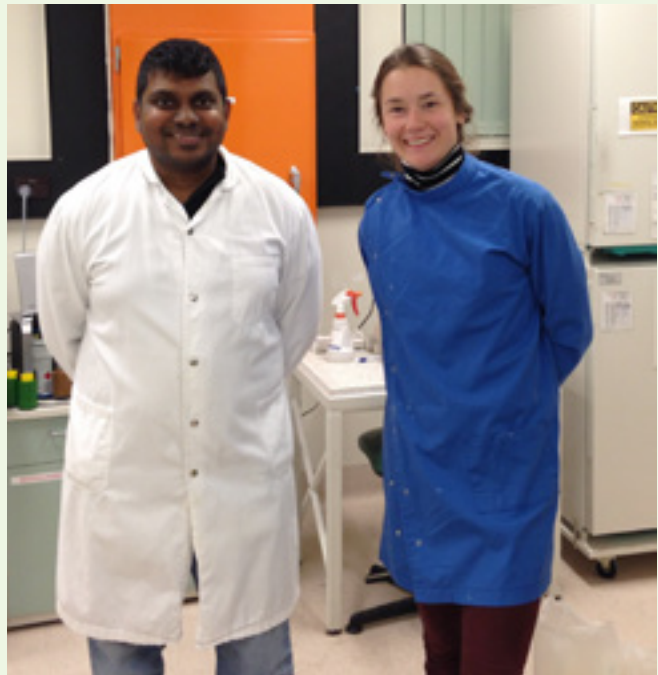


Photo of Sas Loganathan and Adelaide Dennis in the Avery Lab, Griffith University.

Closing dates for ASP awards

ASP Fellowships

9 January 2016

ASP Researcher Exchange, Travel and Training Awards & JD Smyth

17 March 2016

29 September 2016

Bancroft-Mackerras Medal for Excellence

30 September 2016

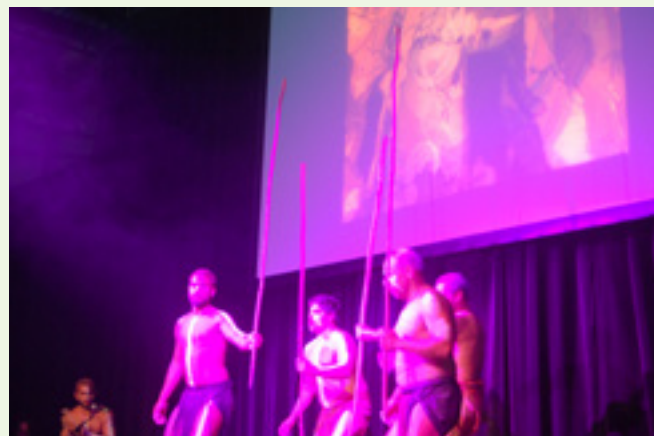
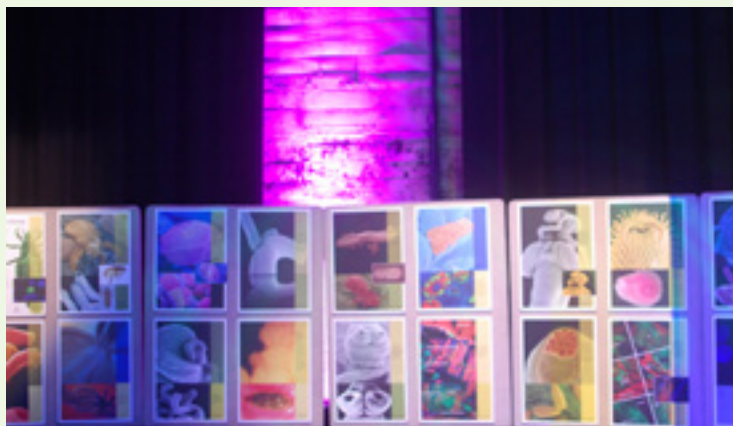
John Frederick Adrian Sprent Prize

30 September 2016

More information

www.parasite.org.au

Photos from "Gula Guri Mayin" "Parasites, People and Art" collaborative project funded through Inspiring Australia



Images from 2015 National Science Week at the Tanks (clockwise from top) Parasites in Focus; Nick Smith; for the launch the Wuba dancers (Red Ochre) performed a traditional piece against the backdrop of Gula Guri Mayin; audience enjoying hands-on science with a flea lifecycle; parasite mask making; microscopes; parasite-artists Bernard Lee Singleton and Tai Inoue.



Gula Guri Mayin (Heal the Body) by Bernard Lee Singleton



Image: Gula Guri Mayin (heal the body) by Bernard Lee Singleton

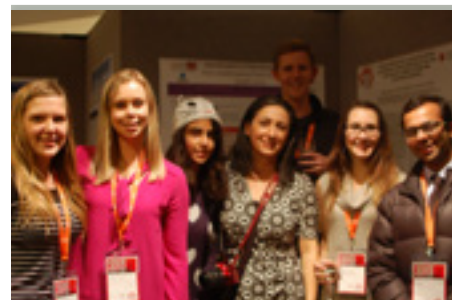
Bernard Lee Singleton is an artist born in Cairns and raised in the small Aboriginal community of Coen, Cape York. Bernard's mother is a Djabuguy woman born in Mona Mona mission and his father is an Umpila (east coast Cape York)/Yirrkandji man from Yarrabah mission.

In this painting, Bernard explores the life of parasites, their environment and how they are transmitted to people and cause disease. It is an interpretation of parasitic lifecycles and it gives the message that people live in the world of the parasite, not the other way around; by understanding and accepting this fact, we can then see how to avoid infection. The painting gives an overview of eight parasites that affect people in Australia, most particularly our Indigenous communities. From top left, clockwise, the parasites depicted are: *Strongyloides stercoralis* (a roundworm); *Pediculus humanus capitis* (the head louse); *Cryptosporidium hominis*; *Giardia duodenalis*; *Sarcoptes scabiei* (the scabies mite); *Hymenolepis nana* (the dwarf tapeworm); *Ancylostoma duodenale* (the hookworm); and *Trichuris trichiura* (the whipworm).

www.parasite.org.au/outreach/gula-guri-mayin/

We encourage all ASP members to share this beautiful educational art piece widely. Please email Lisa.Jones1@jcu.edu.au to organise a print or digital copy of the painting and for ideas and resources for Outreach activities.

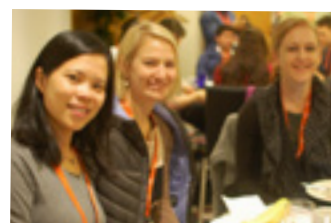
Photos from the 2015 Joint Annual Conference of the New Zealand and Australian Societies for Parasitology



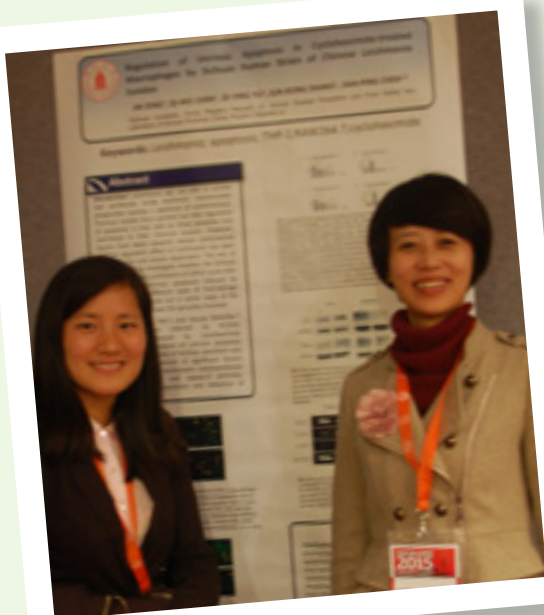
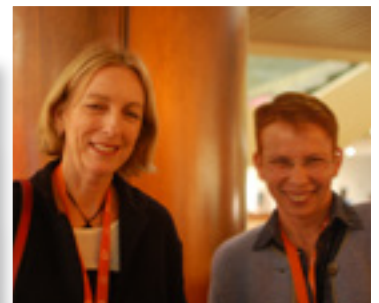
Photos from the 2015 Joint Annual Conference of the New Zealand and Australian Societies for Parasitology



Photos from the 2015 Joint Annual Conference of the New Zealand and Australian Societies for Parasitology



Photos from the 2015 Joint Annual Conference of the New Zealand and Australian Societies for Parasitology



Photos from the 2015 Joint Annual Conference of the New Zealand and Australian Societies for Parasitology



Photos from the 2015 Joint Annual Conference of the New Zealand and Australian Societies for Parasitology



News about Australia/Europe Malaria Research Cooperation

As our OzEMalaR grant comes to a close at the end of 2015 we are gearing up for the final report highlighting the OzEMalaR funded Researcher Exchanges for Australian malaria researchers to EviMalaR laboratories.

I would like to thank our hard-working team who managed the assessment process of the OzEMalaR grant applications behind the scenes, providing many hours of their valuable time and a wealth of expertise. Thanks to **Christian Engwerda** (QIMR Berghofer MRI), **Dominique Soldati-Favre** (University of Geneva), **Denise Doolan** (QIMR Berghofer MRI), **Andy Waters** (Glasgow University), **Kevin Saliba** (Australian National University), **Nick Smith** (James Cook University), **Ric Price** (Menzies School of Health Research, NT) and the late **Klaus Lingelbach** (Philipps-University).

Like our facebook page, www.facebook.com/ozemalar and follow us on twitter twitter.com/OzEMalaR

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

The 5th Molecular Approaches to Malaria Conference, February 21-25, 2016 in Lorne, Australia aims to highlight the latest molecular advances in our understanding of:

- host cell invasion
- virulence mechanisms
- immunity and pathogenesis
- drug resistance

- drug and vaccine discovery
- population biology
- transmission
- epidemiology
- host-parasite interactions (including vector)
- all human malaria parasite species

Visit the MAM2016 website www.mamconferences.org for more details and to register your interest and don't forget to 'like' our facebook page www.facebook.com/MAMconference and follow us on twitter twitter.com/MAMLorne

Geoff McFadden
Convenor, OzEMalaR
OzEMalaR Travel Award Scheme

Congratulations to our latest OzEMalaR Travel Award winners:

- **Michaela Petter**, University of Melbourne, Department of Medicine, Peter Doherty Institute, Duffy Lab for a Researcher Exchange to Prof. Egbert Tannich at the Bernhard Nocht Institute, Department of Molecular Parasitology, Hamburg, Germany.
- **Jingyi Tang**, Department of Medicine (RMH) of the University of Melbourne to attend the Wellcome Trust Chromatin Structure and Function Advanced Course in Genome Campus, Hinxton, Cambridge, UK.
- **Andrew Teo**, PhD student, University of Melbourne,

Department of Medicine, Rogerson Laboratory for a Researcher Exchange to 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.



Malaria in Melbourne meeting (MiM2015) Prize Winners

The Malaria in Melbourne meeting was held at Monash University on 1st and 2nd October 2015. The International Journal For Parasitology, Elsevier BV and the Molecular Approaches to Malaria committee (MAM) were proud to support a number of awards and prizes for the best oral and poster presentations at the close of the meeting.

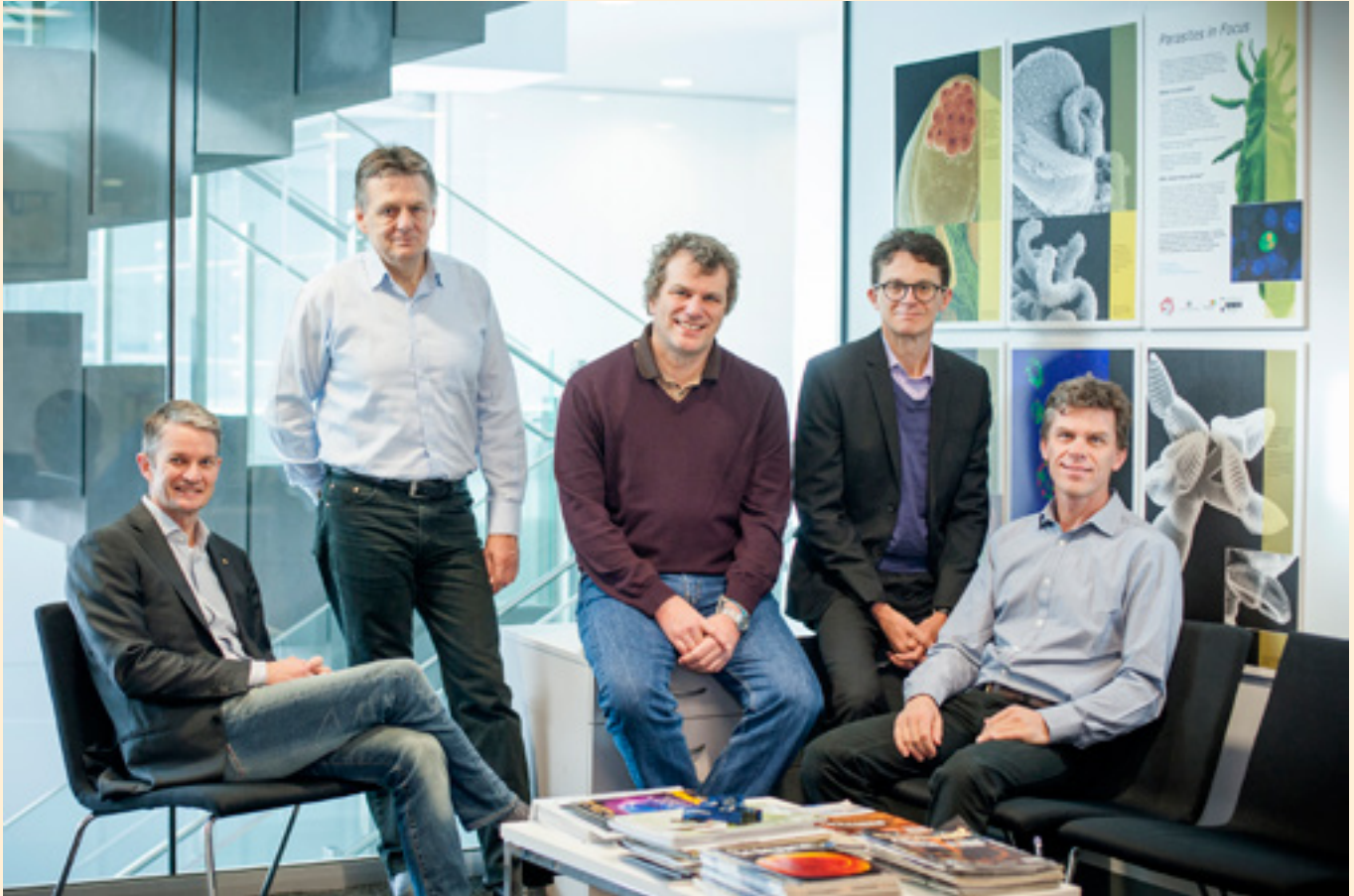


Front row, the prize winners (left to right): **Upeksha Rathnapala** (Elsevier Best Student Poster Presentation), McFadden Lab, The University of Melbourne. 'Determining the role of heme biosynthesis in the liver stages of the rodent malaria parasite *Plasmodium berghei*'. **Alex Kennedy** (MAM Prize), Tham Lab, The Walter & Eliza Hall Institute), 'Surviving a hostile environment: *Plasmodium falciparum* complement evasion strategies'; **Jess Bridgford** (IJP Best Student Oral Presentation), Tilley Lab, The University of Melbourne), 'Dihydroartemisinin induces stress pathways in the malaria parasite *Plasmodium falciparum*'; **Ricardo Ataide** (IJP Best Post-doctoral Oral Presentation), Fowkes Lab, The Burnet Institute), 'Changes in malaria transmission and immunity and the emergence of artemisinin resistance in Thailand from 2001-2011'; **Herbert Opi** (not pictured) (Elsevier Best Post-doctoral Poster Presentation), Beeson Lab, The Burnet Institute), 'The role of complement in antibody-mediated immunity against malaria in pregnancy'. Back Row (left to right), Co-Chairs MiM 2015, **Jack Richards** (The Burnet Institute) and **Teresa Carvalho** (Monash University) and **Brian Cooke** (Editor-in Chief, IJP).

Congratulations to all the winners, presenters and participants at MiM 2015.

News about Australia/Europe Malaria Research Cooperation

Malaria researchers awarded NHMRC highest honours



Professor Alan Cowman and his malaria research team recently received 2014 NHMRC Research Excellence Award.

The malaria research team received the NHMRC's top-ranked program grant in 2014. The program aims to develop improved strategies to prevent and treat malaria and brings together chief investigators Professor Cowman and Professor Ivo Mueller from the Walter and Eliza Hall Institute, Professor Brendan Crabb and Dr James Beeson from the Burnet Institute and Dr Stephen Rogerson from the University of Melbourne.

Professor Cowman said the team would focus on the biology, transmission and public health effects of malaria, with a view to developing effective vaccines, new drugs and therapeutics, and other interventions and surveillance tools to advance malaria control and elimination.

"As a community, we are starting to bring malaria under control," Professor Cowman said. "The possibility that we can use our research discoveries on the malaria parasite to one day eliminate it completely is a major source of inspiration for all our team."

Professor Cowman and his colleagues have spent more than 30 years investigating the *Plasmodium* parasite, which causes one of the world's most significant health problems: malaria. Among their many discoveries was identifying important drug targets for treating of malaria, and developing the first vaccine using weakened *Plasmodium falciparum* parasites, which is currently being tested in clinical trials. For this he has also been recognised through election to the Royal Society and the Australian Academy of Science.

Source: Walter & Eliza Hall Institute <http://www.wehi.edu.au/news/institute-researchers-honoured-top-nhmrc-awards>

Photo (L-R): Professor Brendan Crabb (Burnet Institute), Professor Alan Cowman (Walter and Eliza Hall Institute), Professor Ivo Mueller (Walter and Eliza Hall Institute), Dr Stephen Rogerson (The University of Melbourne) and Dr James Beeson (Burnet Institute). Image source WEHI.

ASP Outreach: QIMR Berghofer Medical Research Institute

Thanks to funding from the Lowitja Institute, and with additional financial help from the Australian Society of Parasitology, the scabies research group from the QIMR Berghofer Medical Research Institute delivered "Science and young minds: youth engagement in skin health" high school education workshops to two schools located in remote northwest Queensland.

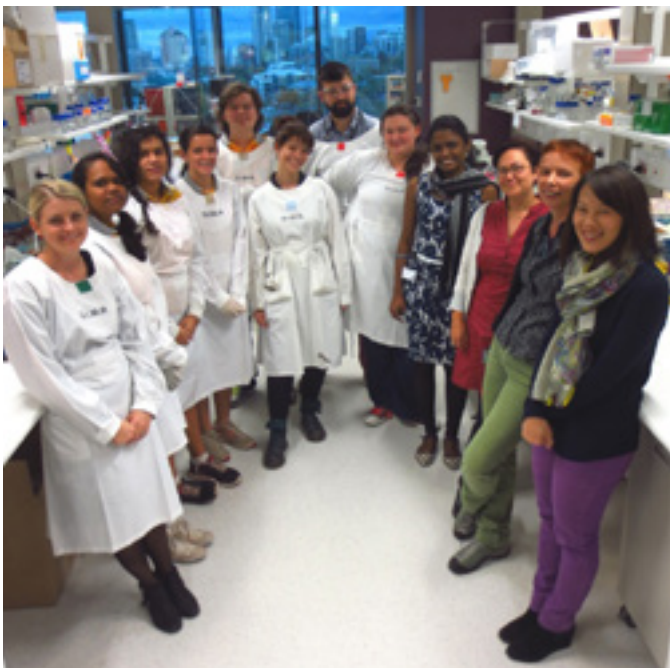
This region has a population of less than 1% of the state's total, with over 25% of the population identifying as indigenous. The infrastructure is not like in metropolitan regions and the health burden of infectious skin conditions in this region is significant, in particular regarding scabies and associated pyoderma. This project aims to relay the value of medical research and health related professions to senior high school students, particularly targeting engagement of students with Indigenous background.

For two and half days each school's classroom was transformed into a 'real-life' research lab with everyone in lab coats and protective wear. Students did 'hands on' experiments in the areas of molecular parasitology and microbiology. They enjoyed a series of presentations about Medical Parasitology and Microbiology, a 'Parasite Quiz' and a 'Career in Health and Medical Research' workshop, which stimulated many interesting discussions. In late July a few lucky students will visit us in Brisbane for a week long 'work experience' at the QIMR Berghofer Medical Research Institute, including various orientation activities in Brisbane's major Universities.

Report provided by Katja Fischer, Scabies Group, QIMR Berghofer MRI



Photos of QIMR Berghofer MRI researchers working with students from remote rural communities in northwest Queensland To engage young people in discussions, learning and hands on activities about skin health and medical research.



IJP

INTERNATIONAL JOURNAL FOR PARASITOLOGY

45:08 (July)

A quantitative proteomic analysis of the tegumental proteins from *Schistosoma mansoni* schistosomula reveals novel potential therapeutic targets

Javier Sotillo, Mark Pearson, Luke Becker, Jason Mulvenna, Alex Loukas

Cytometric analysis, genetic manipulation and antibiotic selection of the snail embryonic cell line Bge from *Biomphalaria glabrata*, the intermediate host of *Schistosoma mansoni*

Gabriel Rinaldi, Hongbin Yan, Rafael Nacif –Pimenta, Pitchaya Matchimakul, Joanna Bridger, Victoria H. Mann, Michael J. Smout, Paul J. Brindley, Matty Knight

Gone with the flow: current velocities mediate parasitic infestation of an aquatic host

Francisca Samsing, David Solstorm, Frode Oppedal, Frida Solstorm, Tim Dempster

45:09/10 (August)

Succinctus

Neoparamoeba perurans loses virulence during clonal culture

Andrew R. Bridle, Danielle L. Davenport, Philip B.B. Crosbie, Mark Polinski, Barbara F. Nowak

Differences in the faecal microbiome of non-diarrhoeic clinically healthy dogs and cats associated with *Giardia duodenalis* infection: impact of hookworms and coccidia

Jan Šlapeta, Scot E. Dowd, Abdullah D. Alanazi, Mark E. Westman, Graeme K. Brown

45:11 (September)

Using the local immune response from the natural buffalo host to generate an antibody fragment library that binds the early larval stages of *Schistosoma japonicum*

Christopher G. Hosking, Patrick Driguez, Hamish E. G. McWilliam, Leodevico L. Ilag, Simon Gladman Yuesheng Li, David Piedrafita, Donald P. McManus, Els N. T. Meeusen, Michael J. de Veer

45:12 (October)

Excretory/secretory products of the carcinogenic liver fluke are endocytosed by human cholangiocytes and drive cell proliferation and IL6 production

Sujittra Chaipaydet, Michael Smout, Michael Johnson, Cynthia Whitchurch, Lynne Turnbull, Sasithorn Kaewkes, Javier Sotillo, Alex Loukas, Banchob Sripa

Galectin-11: a novel host mediator targeting specific stages of the gastrointestinal nematode parasite, *Haemonchus contortus*

S.J.M. Preston, T. Beddoe, S. Walkden-Brown, E. Meeusen, D. Piedrafita

45:13 (November)

Succinctus

Sensitivity of partial carcass dissection for assessment of porcine cysticercosis at necropsy

M.W. Lightowlers, E. Assana, C. Jayashi, C. G. Gauci, M. Donadeua



<http://www.journals.elsevier.com/international-journal-for-parasitology-drugs-and-drug-resistance/>

Recent papers from Australian authors:

5:03 December 2015

Profiling the anti-protozoal activity of anti-cancer HDAC inhibitors against *Plasmodium* and *Trypanosoma* parasites

Jessica A. Engel, Amy J. Jones, Vicky M. Avery, Subathdrage D.M. Sumanadasa, Susanna S. Ng, David P. Fairlie, Tina S. Adams, Katherine T. Andrews

Viability of developmental stages of *Schistosoma mansoni* quantified with xCELLigence worm real-time motility assay (xWORM)

Gabriel Rinaldi, Alex Loukas, Paul J. Brindley, Jeff T. Ireland, Michael J. Smout

The malaria parasite cation ATPase PfATP4 and its role in the mechanism of action of a new arsenal of antimalarial drugs

Natalie Jane Spillman, Kieran Kirk



<http://www.journals.elsevier.com/international-journal-for-parasitology-parasites-and-wildlife/>

4:02 August 2015

Parasites of wildlife – Special issue

R.C. Andrew Thompson, Lydden Polley

Interest in parasites of wildlife has increased significantly in recent years. Pleasingly, the role of wildlife as the source of emerging infectious diseases has been countered by reasoned and balanced responses from ecologists and conservationists concerned about the dearth of knowledge of the infectious agents harboured by wildlife, their impact on wildlife health, the factors, both natural and anthropogenic, that might cause perturbations in the host–parasite relationships, and the need for ongoing surveillance of wildlife populations. In essence, wildlife should be seen as a critical component of the One Health triad on an equal footing to humans and domestic animals – not just a source of disease. In its short history, we hope that *International Journal for Parasitology: Parasites and Wildlife* has contributed to this re-positioning of wildlife within One Health by promoting the broad scope of wildlife parasitology through the diversity of papers published to date.

We were therefore delighted to accept an invitation to be joint editors of a special issue of *Trends in Parasitology* on wildlife parasitology. A series of broad-ranging reviews and opinion articles was solicited to provide the broad parasitological community with an insight into both neglected and emerging areas of wildlife parasitology, as well as fields in need of rejuvenation. We hope this will help to stimulate research on wildlife parasitology, especially by the development of multidisciplinary groups, and importantly direct authors to seek a dedicated forum for publishing their findings – *International Journal for Parasitology: Parasites and Wildlife*.

Recent papers from Australian authors:

4:02 August 2015

Epidemiology and molecular phylogeny of *Babesia* sp. in Little Penguins *Eudyptula minor* in Australia

Ralph Eric Thijl Vanstreels, Eric J. Woehler, Valeria Ruoppolo, Peter Vertigan, Nicholas Carlile, David Priddel, Annett Finger, Peter Dann, Kimberly Vinette Herrin, Paul Thompson, Francisco C. Ferreira Junior, Érika M. Braga, Renata Hurtado, Sabrina Epiphanyo, José Luiz Catão-Dias

Host–parasite interactions during a biological invasion: The fate of lungworms (*Rhabdias* spp.) inside native and novel anuran hosts

Felicity B.L. Nelson, Gregory P. Brown, Catherine Shilton, Richard Shine

4:03 December 2015

Helpful invaders: Can cane toads reduce the parasite burdens of native frogs?

Felicity B.L. Nelson, Gregory P. Brown, Catherine Shilton, Richard Shine

Tracking transparent monogenean parasites on fish from infection to maturity

Alejandro Trujillo-González, Constantin C. Constantinoiu, Richard Rowe, Kate S. Hutson

A survey of *Angiostrongylus* species in definitive hosts in Queensland

Mahdis Aghazadeh, Simon A. Reid, Kieran V. Aland, Angela Cadavid Restrepo, Rebecca J. Traub, James S. McCarthy, Malcolm K. Jones

IJP Feature Story: Avian Malaria in Eastern Australia

An invasive bird species is carrying, and potentially spreading, a high prevalence of avian malaria throughout its range in eastern Australia.

Nicholas Clark found that up to 40% of Indian Mynas in the South East Queensland region can carry malaria parasites. While they can't infect humans, the parasites pose a significant threat to native wildlife.

"Mynas carry some malaria strains exotic to Australia, the spread of the Myna could put our native birds such as parrots, magpies and butcher birds at risk," Nick said.

Nick started his PhD in 2012 with the School of Environment, at Griffith University and is investigating avian malaria in birds. Nicholas took samples from birds that were part of a community trapping program all along the Queensland coast. Blood samples were taken at clinics to identify avian malaria using a standardised PCR protocol. His research found a high prevalence of malaria parasites in Indian Myna birds in Australia.

"Malaria parasites are common in Australian birds but through the use of genetic techniques I have discovered they are more diverse than originally thought and found strains of avian malaria that haven't previously been found in Australia," Nick said.

Nicholas said that some of the malaria parasites found in Australia were probably introduced from other countries and are now being spread by the Myna, which was brought to Australia in the 1800s to control insect pests on crops. But today they are considered an aggressive pest that has the potential to cause significant negative impacts on biodiversity.

"These malaria parasites seem to have little effect on the Mynas but could be harmful to native birds as they come in contact with each other," Nick said.

Nick says Australia hasn't been well sampled with relation to birds and Nick plans to expand his research to other invasive species of birds such as starlings and sparrows.



Nick Clark, photo credit Sonya Clegg

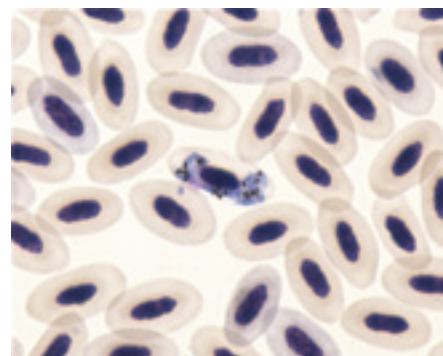
Read the full research publication online.

Publication

Nicholas J. Clark, Sophie Olsson-Pons, Farah Ishtiaq, Sonya M. Clegg. *Specialist enemies, generalist weapons and the potential spread of exotic pathogens: malaria parasites in a highly invasive bird. International Journal for Parasitology*, Article in press doi:10.1016/j.ijpara.2015.08.008

<http://www.sciencedirect.com/science/article/pii/S0020751915002519>

Article source Griffith University (<https://app.secure.griffith.edu.au/news/2015/10/22/invasive-birds-spreading-avian-malaria-in-eastern-australia/>) and interview with Lisa Jones.



malaria parasite, photo by Nick Clark

ASP Conference Awards

Congratulations to ASP Conference Award winners at the 2015 Joint Conference of the New Zealand and Australian Societies for Parasitology, held in Auckland, New Zealand, from June 29th - 2nd July.

And the winners were...

Best ASP Student Poster: Stephanie Ryan, James Cook University "High-throughput approach for the screening of Immunotherapeutics in Hookworm Excretory/Secretory (ES) Products".

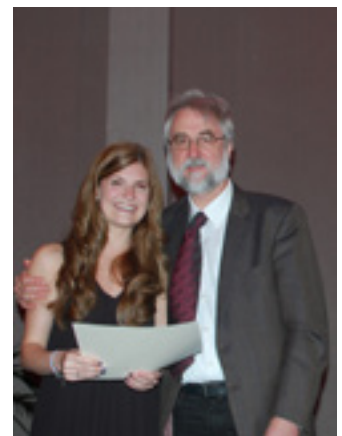
Best ASP Student Presentation – 2 minute Poster Presentation: Kate McSpadden, Charles Sturt University " Occurrence and prevalence of parasites of wild canids in south-eastern Australia with emphasis on *Linguatula serrata*".

Best ASP Student Presentation – Contributed Paper: Andrea Lawrence, University of Sydney " Integrated morphological and molecular identification of cat fleas (*Ctenocephalides felis*) and dog fleas (*Ctenocephalides canis*) vectoring *Rickettsia felis* in central Europe".

Best ASP Early Career Researcher Presentation: Clare Anstead, University of Melbourne "*Lucilia cuprina* genome and transcriptomes – critical resources to underpin biological investigations and biotechnological outcomes".



Images top right: Stephanie Ryan, James Cook University with Robin Gasser, ASP President; second row from left to right Kate McSpadden, Charles Sturt University, with Robin Gasser, ASP President; Andrea Lawrence, University of Sydney, with Robin Gasser, ASP President and Clare Anstead, University of Melbourne with Robin Gasser, ASP President.



New Zealand Society for Parasitology

News

After a very enjoyable and successful joint NZSP and ASP conference please see the latest NZSP Newsletter August 2015 with some "Aussie" news.

http://parasite.org.au/wp-content/uploads/2015/08/NZSP-News_Aug2015.pdf

Jobs

www.parasite.org.au/jobs/

Biostatistician

Based at Elanco's international R&D Centre,
Yarrandoo (Kemps Creek, NSW)

ELANCO is a global leader in the discovery and commercialisation of technology that improves animal health including the efficiency of livestock production.

Elanco is seeking to appoint a motivated Biostatistician to support scientists from the Global Aqua and Sheep Product Development Team, and other teams as required, in the design, analysis and interpretation of mainly efficacy and safety studies (GCP, GLP and non-GxP).

Reporting to the Director – Product Development (Aqua and Sheep) and working as part of a motivated team, you will also play a key role in ensuring scientific, regulatory and quality requirements are met through interaction with Development team members and the wider global R&D team.

You will have a Masters level qualification or better in statistics or biostatistics backed by at least 5 years statistical experience preferably in the veterinary/ product development field and in a Quality environment as well as expert knowledge of SAS statistical software.

Excellent communication, problem solving and strong presentation skills are crucial for success in this role, as are high levels of self-motivation, creativity and a positive, 'can-do', attitude.

This position may include up to 5% travel.

Interested to apply or keen to know more? Visit the careers page on www.lilly.com.au

For further questions contact:

Tanya Lupica – Talent Acquisition Consultant

02 9325 4607

t.lupica@lilly.com

Clinical Trials Manager

QIMR Berghofer MRI, Brisbane

Clinical Tropical Medicine investigates how parasites such as the malaria parasite, hookworm, threadworm and scabies cause disease and how they become resistant to drugs used to treat them. The group is undertaking a program of human clinical trials testing malaria drugs and vaccines.

In this role, you will be responsible for creating, implementing and maintaining documentation and procedures for multiple clinical trials, ensuring compliance with relevant regulations, e.g. clinical protocols in accordance to ICH GCP. You will also be producing written reports of study results for supervisors, collaborators and external organisations and assisting in the management of clinical trials, ensuring they are conducted efficiently.

To be successful in the role, you will have a minimum of a Bachelors degree coupled with a high level of written communication skills, particularly in preparing documents and reports. You will also have a high level of organisational, project management skills and attention to detail for handling data and record keeping. It would be desirable to have experience writing medical reports or clinical studies, or experience in a research environment. Interested to apply or keen to know more?

To apply visit <http://www.qimrberghofer.edu.au/careers/positions-vacant/>

Closing date 8 November 2015

Events

www.parasite.org.au/news-events

TropAg2015

Tropical Agriculture Conference 2015

Meeting the Productivity Challenge in the Tropics

16-18 November 2015 | Brisbane Convention & Exhibition Centre

Control of tropical livestock parasites into the future

Resistance to parasiticides is compromising the efficiency of control programs and global warming is expected to increase the impacts of parasites and arthropod borne diseases. This symposium will explore new technologies and approaches to livestock parasite management.

Sponsored by



Conveners:

*Assoc. Prof Ala Lew-Tabor, Centre for Animal Science, QAAFI, The University of Queensland
Dr Peter James, Centre for Animal Science, QAAFI, The University of Queensland*

This ASP-sponsored symposium takes place on the morning of 18th November 2015.
Please register online <http://tropagconference.com.au/>

Events

www.parasite.org.au/news-events

Fish Histopathology Workshops 2015

23 November 2015 Introduction to Fish Histology
24-26 November 2015 Fish Histopathology Workshop

Instructors
Dr Judy Handler, IMAS, University of Tasmania
Dr Brian Jones, MPI New Zealand
Dr Graeme Knowles DPIWE
Dr Mark Adams, IMAS, University of Tasmania
Professor Barbara Nowak, IMAS, University of Tasmania

Small groups, personalised delivery for diverse backgrounds,
suitable for beginners to advanced participants

For more information about the workshops
please contact Barbara Nowak
B.Nowak@utas.edu.au

Aquatic Animal Health

IMAS   **UNIVERSITY of TASMANIA**



Join Us for the 2016
Keystone Symposia conference on:

Drug Discovery for Parasitic Diseases

January 24–28, 2016
Granlibakken Resort | Tahoe City, California | USA

Scientific Organizers:
Leann M. Tilley | Philip J. Rosenthal | Kelly Chibale

Discounted Abstract Deadline: Sep 28, 2015
Scholarship Deadline: Sep 28, 2015
Abstract Deadline: Oct 28, 2015
Discounted Registration Deadline: Nov 23, 2015

KEYSTONE SYMPOSIA
on Molecular and Cellular Biology
Accelerating Life Science Discovery
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Events

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3RD INTERNATIONAL WORKSHOP ON SYMBIOTIC COPEPODA

HERON ISLAND AUSTRALIA
10-16 JULY 2016

This 7-day taxonomic workshop, led by experts in the field, will include:

- Lectures
- Discussions
- Research presentations
- Dissection and identification techniques
- Lab tutorials
- Illustration techniques
- Field collections from the Great Barrier Reef
- One day dedicated to symbiotic isopods

Tutors:

Professor Geoff Boxshall, Natural History Museum, U.K.

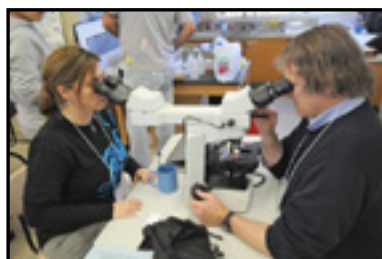
Professor Rony Huys, Natural History Museum, U.K.

Professor Nico Smit, North-West University, South Africa

Professor Niel Bruce, Museum of Tropical Queensland, Australia



For more information, please visit <https://sites.google.com/site/iwosc2016/> or contact Dr Kate Hutson (Email: kate.hutson@jcu.edu.au; Tel. +61 7 478 16216).



Organizing committee:


Dr Kate Hutson, James Cook University, Australia

Dr Julianne Kalman Passarelli, Cabrillo Marine Aquarium, U.S.A.

Dr Danny Tang, Orange County Sanitation District, U.S.A.



Cairns
Singapore
Townsville



Disease in Tropical Aquatic Animals

Gain certification in the only course worldwide dealing with diagnosis, control and management of disease in aquaculture.

11 — 23 JANUARY 2016
TOWNSVILLE, AUSTRALIA

About this opportunity

This is a 12-day intensive course delivered by six leading researchers in aquaculture, biomedical sciences, and marine and environmental sciences. All accommodation, breakfasts and lunches, and field trips are included. This course results in a Certification in Aquatic Animal Disease Diagnosis and Biosecurity upon successful completion of a written examination.

Background

The Agriculture Organisation of the United Nations has stated that "Aquaculture [is] probably the fastest growing food-producing sector [and] now accounts for nearly 50% of the world's food fish". JCU is providing an opportunity for any Veterinarians, Operators, Managers, and Students in the Aquaculture Industry to attend a unique international course in aquatic animal disease diagnosis and biosecurity.

Internationally, aquaculture, particularly in the tropics, is the fastest production sector in the world. However, diseases (particularly viruses) cause considerable loss to the aquaculture industry and pose latent risks to continued production. The global shortage of technical expertise in aquatic animal health is a threat to the industry and needs to be addressed through an expansion of training opportunities for specialists at the veterinarian level, or for people with experience with diagnosis.

Who is this course for?

This course is aimed for Operators, Managers, and Students in the Aquaculture Industry, who have an interest in aquatic animal disease diagnosis and biosecurity. This is a unique opportunity for training aquatic animal health experts to an international level.

Why should I take this course?

- Several world-renowned aquaculture and disease experts will deliver the course
- This is the only course worldwide delivering comprehensive content addressing fish and crustacean disease diagnosis and biosecurity
- The course is competitively priced, and is all-inclusive
- The venue for the course is based in the dry tropics of Townsville, a beautiful area of Far North Queensland, close to the Great Barrier Reef
- A combination of theoretical and practical activities will take place in the lecture theatre, in the laboratory, and over several field trips
- You will gain invaluable knowledge through visits to the Centres of Australian Marine Science and Great Barrier Reef Marine Park Authority.

CRICOS Provider Code: 00171

Events

www.parasite.org.au/news-events

ANTHELMINTICS: FROM DISCOVERY TO RESISTANCE II



Marina Village, San Diego, CA

February 9th-12th, 2016

Organizers: Richard Martin, Adrian Wolstenholme & Conor Caffrey

**An international symposium discussing all aspects of anthelmintic
discovery, use and resistance**

**Oral and poster contributions are invited; abstract submission deadline
December 18th 2015**

Registration, Abstract submission and more details:

[http://www.extension.iastate.edu/registration/events/conferences/
membrane/index.html](http://www.extension.iastate.edu/registration/events/conferences/membrane/index.html)

State News

New South Wales

Charles Sturt University

Life at CSU Wagga Wagga is as busy as it can be!

After completing a very productive Master research project on zoonotic parasites of Australian seafood, **Jaydip Suthar** now is back to India and has a happy life in his home country. He is enjoying farming with his father, loves to be back to local food and attending in festivals with his family and friends. He keeps in touch with Parasitology group regularly and hopes to pursue a career or further study in the field of parasitology soon.

Masoumeh Ghadam, a visiting academic from Iran, **Anita Poupa** and **Brenton Kilby** are well on their way into their research.

Kate McSpadden and **Sara Baker** have been in the media for their novel findings on Australian tongue worms and had several public presentations. Kate won student prize in ASP/NZSP joint conference in July.

Thomas Williams PhD candidate is in Pakistan undertaking field and lab work on his project. This is his second trip. He finds Pakistan an amazing country with warm and inviting people.

Shokoofeh Shamsi was invited and sponsored by Fish Parasitology Department of University of Rome for a research visit in September. She also attended the 9th International Symposium on Fish parasites (9ISFP) held in Valencia, Spain where she presented her work on Australian anisakids and also **Anita Poupa's** Honours project on her behalf on parasites of aquatic animals from New Caledonia. **Anita** is supervised by **Shokoofeh Shamsi** and Jean-Lou Justine from Paris Natural History Museum.

Western Sydney University

News from Stack lab at Western Sydney University: What was formally known as the University of Western Sydney (UWS) has now had it official rebranding to Western Sydney University (WSU). Since the last news update **Colin Stack** has had his arm "gently twisted" into becoming the Secretary of the Society by **David Emery (ASP President)** and is looking forward to working with **David and Peter Rolfe (ASP Treasurer)** and the rest of the team. **Leah Stoud** is coming to the end of her lab work for her PhD and will be busy writing up papers and her thesis over the next few months (no pressure!). **Farnaz Eghanian** is six months into her Masters and busy learning all the techniques before Leah leaves the lab. **Priya Kumar** is finishing her honours project and is currently writing up her thesis. Priya has learned a tremendous amount and a big thanks to Leah (the "2D Queen") for helping Priya. We wish Priya the best of luck with her future endeavours and don't be a stranger, come back and visit us.

The University of Sydney

On the Sydney scene, the new executive is settling into the business now that the financial logistics have been sorted through. At Sydney Uni, **Jan Šlapeta** waves from across the waves on his study leave in the USA, while his charges sustain the activities on site. **Andrea Lee Lawrence** gave a presentation about her flea research at a Medical Entomology Symposium hosted by Westmead Hospital, and with Dr. **Cameron Webb**, ran a session teaching a large group of Sydney school students about fleas and the plague, and how fleas helped shape the urban design of The Rocks area of Sydney.

Christie Foster submitted her PhD Thesis on *Chromera velia*; CONGRATULATIONS Christie!! **Scott Hackett** also handed in his MSc on ectoparasitocides while **Jade Hammer**

is in the final throes of completing his MVSc on *Theileria orientalis*. Meanwhile **Victoria Morin-Adeline** completed a two-week research exchange at Queens University in Belfast, Ireland, in **Prof. John P. Dalton's** lab, and presented her PhD research at both the 25th international conference of the World Association for the Advancement of Veterinary Parasitology (WAAVP) held in Liverpool, UK, and the joint VII ECOP/ISO conference in Seville, Spain. There are no reports of the extra-conference exploits as yet! **Sarah George** presented her work at WAAVP while on a 6-week international exchange at Elanco in Switzerland.

The papers keep on rolling out;

- **Donahoe S.L.**, Krockenberger M., Lindsay, S.A., Phalen, D., and **J. Šlapeta** (2015). A review of neosporosis and pathologic findings of *Neospora caninum* infection in wildlife. International Journal of Parasitology: Parasites and Wildlife 4 (2):216-238. (Invited Review Article)
- **Donahoe S.L.**, Peacock C. S., Choo A.Y.L., **O'Donoghue P.**, Crameri S., Vogelnest L., Gordon A.N., Scott J., and K. Rose (2015). A retrospective study of *Babesia macropus* associated with morbidity and mortality in eastern grey kangaroos (*Macropus giganteus*) and agile wallabies (*Macropus agilis*). International Journal of Parasitology: Parasites and Wildlife 4(2): 268-276. (Invited Review Article)
- **Holz P.H.**, **Portas T.**, **Donahoe S.**, and A. Kropf (2015). Mortality in northern corroboree frog tadpoles (*Pseudophryne pengilleyi*) associated with Tetrahymena-like infection. Australian Veterinary Journal 93(8):295-297. DOI: 10.1111/avj.12337
- **Hii, S. F.**, **Lawrence, A. L.**, **Cuttell, L.**, **Tynas, R.**, **Rani, P. A. M. A.**, **Šlapeta, J.**, & **Traub, R. J.** (2015). Evidence for a specific host-endosymbiont relationship between '*Rickettsia* sp. genotype RF2125' and *Ctenocephalides felis* orientis infesting dogs in India. Parasites & vectors, 8(1), 169. DOI 10.1186/s13071-015-0781-x
- **Lawrence, A. L.**, **Hii, S. F.**, **Jirsová, D.**, **Panáková, L.**, **Ionic, A. M.**, **Gilchrist, K.**, **Modry, D.**, **Mihalca, A. D.**, **Webb, C. E.**, **Traub, R. J.** & **Šlapeta, J.** (2015). Integrated morphological and molecular identification of cat fleas (*Ctenocephalides felis*) and dog fleas (*Ctenocephalides canis*) vectoring

State News continued

Rickettsia felis in central Europe. Veterinary parasitology, 210(3), 215-223. doi:10.1016/j.vetpar.2015.03.029

• **Morin-Adeline, V., Fraser, S. T., Stack, C., & Šlapeta, J.** (2015). Host origin determines pH tolerance of *Tritrichomonas foetus* isolates from the feline gastrointestinal and bovine urogenital tracts. Experimental parasitology, 157, 68-77. doi:10.1016/j.exppara.2015.06.017

• **Mueller, K., Morin-Adeline, V., Gilchrist, K., Brown, G., & Šlapeta, J.** (2015). High prevalence of *Tritrichomonas foetus* 'bovine genotype' in faecal samples from domestic pigs at a farm where bovine trichomonosis has not been reported for over 30 years. Veterinary parasitology. doi:10.1016/j.vetpar.2015.08.010

• **Morin-Adeline, V., Mueller, K., Conesa, A., & Šlapeta, J.** (2015). Comparative RNA-seq analysis of the *Tritrichomonas foetus* PIG30/1 isolate from pigs reveals close association with *Tritrichomonas foetus* BP-4 isolate 'bovine genotype'. Veterinary parasitology. doi:10.1016/j.vetpar.2015.08.012

• **Hammer Jade, Emery David,** Bogema Daniel, Jenkins Cheryl Detection of *Theileria orientalis* genotypes in *Haemaphysalis longicornis* ticks from southern Australia. Parasites & Vectors.2015, 8:229 DOI: 10.1186/s13071-015-0839-9.

University of New England

Tommy Leung & Parasite Outreach

UNE's **Tommy Leung** has been busy getting The Conversation on the ecological impact of parasitic barnacles on crabs:

<https://theconversation.com/the-crab-castrating-parasite-that-zombifies-its-prey-27200>

This article recently got picked up by the IFLScience site and it ended up getting >190000 views:

<http://www.iflscience.com/plants-and-animals/crab-castrating-parasite-zombifies-its-prey>

<https://theconversation.com/how-some-parasites-can-end-up-in-your-eye-and-turn-you-blind-29293>

<https://theconversation.com/meet-the-parasitic-worm-that-kills-giant-pandas-36786>

Both of them racking up >88000 and >94000 views respectively and were republished on IFLScience.

And Ed Yong recommended Tommy's blog on the TED website :)

http://www.ted.com/talks/ed_yong_suicidal_wasps_zombie_roaches_and_other_tales_of_parasites/recommendations

Western Australia

Murdoch University

Parasitology Group

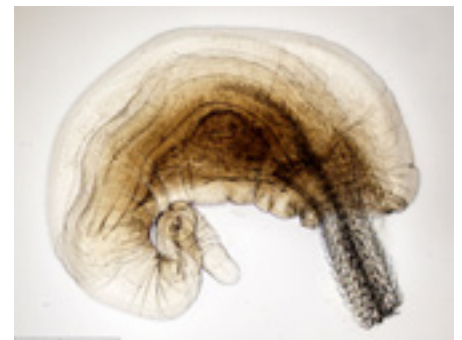
Wildlife Day

Murdoch University is a hub for wildlife research with many scientists dedicated to saving some of the world's rarest animals. Murdoch's field scientists often work in far flung places so it is rare for the wildlife research community to all come together but that's exactly what happened on Monday 28 September at Murdoch University Wildlife Day.

Wildlife Day was attended by members of the public including families and high school students, collaborators as well as past and current undergraduates, postgraduates and staff. The event showcased the exciting breakthroughs being made here in a wide range of wildlife fields. Wildlife parasitology featured heavily in the program and poster display. Speakers included ASP members: **Krista Jones, Amanda Ash, Alison Hillman, Stephanie Godfrey and Stephanie Hing.** They spoke about the effect of bushfire on

wildlife parasites, parasite diversity in captive and wild African painted dogs, parasites in pets, people and wildlife in Perth and the effects of social networks and stress on parasite infection dynamics. Presentations covered wildlife parasites in host species ranging from lizards to bandicoots. Posters included **Kim Loh** and wildlife ticks, **Narelle Dybing** with the parasites of invasive species on Christmas Island, **Marina Hassan** from the Fish Health Unit with diginean infections in freshwater cobbler and **Steph Hing** with parasites of critically endangered woylies.

Huge thanks to the Australian Society for Parasitology for sponsoring the Wildlife Day morning tea. The break periods were valuable times to foster communication between researchers in different groups as well as encouraged future and current students and the community to get involved. It was great to receive so much positive feedback from attendees about how the day filled them with inspiration and newfound admiration for the variety of life on Earth including wildlife and their parasites.



Congratulations to **Aileen Elliot** from for her Thorny-headed worm image making it to the finals of the **New Scientist Eureka Prize for Science Photography**

Seeing amazing life forms, such as this thorny-headed worm (phylum Acanthocephala), has the power to turn a mundane day in the lab into one of sheer brilliance. While dissecting a bland peritoneal cyst from an Eel Tailed Catfish, *Tandanus tropicanus*, Aileen Elliot was surprised when out popped this incredible little worm. With this image, Aileen gets to share her modern day Darwinian moments of discovery with others and hopes to excite and inspire the next generation of budding

State News continued

parasitologists.

Watch Aileen's finalist video (<https://www.youtube.com/watch?v=rTC88yMXrj0&feature=youtu.be>)

Public Seminar on Wednesday 8th July 2015 at Murdoch University given by ASP Invited Lecturer – Dr Eric Hoberg

This event involved a lunch-time seminar given by Dr Eric Hoberg (USDA, USA) on "Climate Cascades and Dynamic Perturbation: Implications for Host-Parasite Diversity in Space and Time". In addition to advertising through Murdoch University's events listing, and the ASP Western Australian membership, the seminar was jointly advertised as the first in our new School Seminar series to further promote attendance at the school level.

Approximately 40 people attended from both within the school, outside the school and external to the University. The audience included people from a range of backgrounds outside of the discipline of parasitology, including marine biology and ecology. Questions were asked after the seminar, and the provision of food after the event promoted discussions amongst attendees which was very beneficial.

The seminar was of great benefit and interest to a broad range of attendees, and helped to promote interest in the discipline of Parasitology. One attendee from the Office of the Vice Chancellor was so inspired that she later contacted me to get in touch with Dr Hoberg about including some of his work in the Second Murdoch Commission on food security, trade, partnerships and Australia (and WA's) role in Asian food systems. Thank you to the Australian Society for Parasitology for supporting this event.

Queensland

James Cook University

QTHA/AITHM

Loukas Laboratory

Five members of the Loukas lab have just returned from the joint ASP/NZSP conference in Auckland that was choice bro. PhD student **Steph Ryan** took out the best student talk and poster prize for "Adieu to the poo"; her work involving the identification of novel hookworm compounds to treat Inflammatory Bowel Disease. All in all a great conference: thought-provoking science washed down with good kiwi food and drink!

Leon Tribolet was awarded his PhD on June 29 for his thesis entitled "Hookworm Na-ASP-2: putative functions, allergenicity and vaccine development". As well authoring 4 publications directly related to his thesis, Dr Tribolet has been the first to functionally characterize one of the most successful recombinant human hookworm vaccine antigens that has ever been discovered. Well done, Leon!

The Loukas lab welcomes **Bemnet Tedla**, a microbiology and biochemistry lecturer from the University of Gondar in Ethiopia, who has just started a PhD on schistosomiasis vaccinology under the supervision of **Mark Pearson and Alex Loukas**.

Marine Parasitology Laboratory

There have been several exciting conferences for members of the Marine Parasitology Laboratory over the past few months. **Kate Hutson** presented an overview of recent research discoveries in the Marine Parasitology Laboratory at the ASP/NZSP joint conference in Auckland. Following the conference, she joined PhD students **Alexander Brazenor, Giana Gomes, Alejandro Trujillo-González and David Vaughan**, Masters students **Soranot Chotnipat and Joshua Allas** and

undergraduate students **Marie Tan and Jonathan Zhe Chew** at the third Australasian Conference for Aquatic Animal Health in Cairns. All HDR students gave excellent oral presentations, and **Alejandro** received first prize for the best oral student presentation.

Kate, Alex and Alejandro then travelled to Valencia, Spain, for the International Symposium for Fish Parasites (ISFP). Immediately prior to the conference they went to a workshop on parasites on aquaculture fishes, coordinated by **Barbara Nowak** and Francisco Montero. **Kate** gave an invited overview presentation on the key parasitic diseases of aquaculture fishes in tropical Australia. Unfortunately the workshop clashed with **Tom Cribb's** trematode workshop which also had terrific reviews. The conference programme included captivating posters and oral presentations and we were treated to a visit to L'Oceanogràfic (the largest aquarium complex of its type in Europe) for a tour and the conference dinner in the 'underwater' restaurant. **Tom** made a successful bid for the 10th ISFP to be held in Brisbane, Australia, in 2019! We are looking forward to the international fish parasite community descending on Queensland for the conference.

Kate is currently on sabbatical and is working at the Natural History Museum, London, with copepod specialist, Professor Geoff Boxshall for six weeks. She and Geoff are working on a revision of the Australasian argulid fauna (parasitic branchiura) which are poorly known. **Kate** has identified 30 lots of previously unidentified argulids from Australian museums and completed pencil drawings for seven species (including new males for two species). She looks forward to inking them (with pens to the astonishment of several lab members) when she returns to Australia. Meanwhile, she is enjoying the company of **Ian Beveridge** (University of Melbourne) and **Vanessa Glennon** (previously University of Adelaide) who are also visiting London. Kate returns to Australia next week via Brisbane to accept a National Citation for Outstanding Contributions to Student Learning for career-focused curriculum development in the aquaculture discipline!

The laboratory has two recent welcomes

State News continued

and a farewell. The lab welcomes **David Vaughan** and his family who have moved to Townsville from South Africa. David has had a long love affair with Monogenea and has previously collaborated with several Australian scientists, most notably **Leslie Chisholm** (South Australian Museum). David's PhD will examine the ecology of cleaner shrimp (using a monogenean experimental model), but we are sure he will keep the love alive with some monogenean taxonomy during his candidature. We just can't seem to get rid of **Alejandro** who is continuing on in the laboratory (following the award of his MSc) for his PhD research on the parasites of ornamental fishes. **Alejandro** is currently working in Spain with Ariadna Sitjà-Bobadilla at the Instituto de Acuicultura de Torre de la Sal, on protozoan parasites of ornamental fishes with financial support from an ASP travel grant. The lab farewelled **Terry Miller**, who moved to Perth for a new position as Senior Research Scientist, Fish Health Laboratory, Dept. of Fisheries Western Australia Teaching. **Terry** is still involved in collaborative projects in the lab, even if he couldn't get further enough away from us while still living in Australia!



Photo: **Alexander Brazenor (left), Alejandro Trujillo-González (middle) with Iain Barber (right)**, the president of the Fisheries Society of the British Isles. Alex and Alejandro both received student support grants from FSBI to travel to the 9th ISFP in Valencia, Spain.

Department of Agriculture and Fisheries

Biosecurity Sciences Laboratory

Leanne Nelson has been busy processing National Arbovirus Monitoring Program (NAMP) samples. **Leanne** is the Queensland entomologist for the National Arbovirus Monitoring Program - a surveillance program which monitors the distribution of economically important arboviruses and their vectors (*Culicoides spp.*) in Australia. She will be presenting an overview of the state's vector status at the upcoming NAMP Annual Technical Committee Meeting in August held at the Health and Food Sciences Precinct in Coopers Plains, Brisbane and has also been involved in a number of recent wildlife disease investigations, identifying parasites across a range of hosts including macropods, birds and bats.

Leanne and Christine McCarthy enjoyed attending the Human, Animal and Ecosystem: Infectious Outcomes of Global Changes seminar at The University of Queensland.

Christine is the Laboratory Technician within the Parasitology section and has "run" diagnostics for the past 18 years, primarily carrying out diagnostic procedures associated with parasitic infection in production animals. She has also been involved in a number of surveillance programs, in particular the National Port Surveillance for Asian Honey Bees (*Apis cerana*), following the discovery of this exotic pest in 2007. The ongoing monitoring of *A. cerana* combs and bees for exotic mites resulted in a positive submission (*A. cerana* infected with varroa mites, *V. jacobsoni*) in April this year.

Interesting submissions for diagnostics also included tissue samples (tongue and diaphragm) from a wild boar from *The Northern Australia Quarantine Strategy* (surveillance) (NAQS) requiring testing by **Ralph Stutchbury** for the presence of *Trichinella*, the most likely threat being *T. papuae* which is endemic in wild pigs and

crocodiles in Papua New Guinea. **Ralph** is the Senior Technician in Parasitology with 25 years of experience in the department. In addition to Ralph's expertise in routine diagnostics, Ralph maintains the culture strains of cattle tick at QASP and conducts acaricide testing to determine the resistance status of field strains of cattle tick submitted to the laboratory. As part of ongoing skills proficiency and NATA accreditation requirements, **Ralph, Leanne and Christine** recently participated in the VLA QA program, run from the University of Prince Edward Island in Canada. All enjoyed the challenge of working with samples from the sometimes exotic North American wildlife. **Ralph, John Allen, Cath Covacin and Louise Jackson** recently met with **Matthew Ball and Stewart Meatheringham** from Virbac to discuss queries regarding resistance testing.

Cath Covacin began working at Biosecurity Sciences Laboratory (BSL) in February, as the Senior Scientist and Section Leader for Parasitology, filling in for **Louise Jackson** who has been acting manager of BSL. **Cath** makes a welcome addition to the team at BSL and is currently working to restore and maintain the Parasitology specimen collection. Although restoring and organizing the collection is still a work in progress, it has been very interesting with the oldest samples, ticks (*Amblyomma triguttatum*), collected on the 03.02.1898 and in 1899! Name changes are also noteworthy including an *Ixodes tasmani* collected in August 1902 from a "native bear" known today as a koala.

Louise Jackson is currently busy managing the Biosecurity Sciences Laboratory. **Louise** is involved with the operation and development of BSL ensuring the provision of an efficient and reliable veterinary diagnostic service for commercial livestock, aquaculture and wildlife species for Queensland. Although Louise is busy managing BSL, Louise continues to remain enthusiastic in all things parasitology and did manage to escape for a few days to attend the 2015 ASP conference in New Zealand. Louise is also preparing for a visit from Landmark trainees in July. Louise and David Waltisbuhl will introduce the trainees to the state veterinary diagnostic laboratory that includes a presentation on the role of

State News continued

Biosecurity Qld in overseeing the investigation and diagnosis of animal disease in the state and a tour of the BSL laboratories.

Griffith University

Eskitis Institute

Avery Laboratory

Congratulations to PhD student **Bilal Zulfiqar**, who attended the Sao Paulo School of Advanced Science on Neglected Diseases Drug Discovery- focus on Kinetoplastids course (SPSAS- ND3) in Brazil from 14-24th June 2015.

Congratulations to Dr **Melissa Sykes** who was awarded an ASP Student Conference Travel Grant to attend the 2015 NZSP & ASP Annual Conference, which was held at Crowne Plaza Auckland, New Zealand between 29th June and 2nd July 2015.

Congratulations to Dr **John Holleran** who was awarded an ASP Network Researcher Exchange, Training and Travel Award for a Researcher exchange to Professor **Kieran Kirk's** laboratory at the Australia National University, Canberra. Congratulations to Dr **Amy Jones** who has been awarded an ASP Network Researcher Exchange, Training and Travel Award to visit Dr De Rycker's Laboratory, Drug Discovery Unit, College of Life Sciences, University of Dundee, Dundee, Scotland, UK.

Dr **Gillian Fisher** from **Tropical Parasitology** Lab at the Eskitis Institute for Drug Discovery, Griffith University has recently been awarded her PhD in malaria drug discovery. Gillian was also a finalist, and the winner of a special Highly Commended Award, in the 2015 Queensland Women in Technology (WIT) PhD Career Start category. Well done on both counts Gillian! **Jessica Engel**, a current PhD student in the same lab as Gillian, has been highlighted in the Rising Stars of Queensland Science campaign. Check out the ASP Facebook page to read about Jess's motivation as a malaria researcher (<https://www.facebook.com/ASPParasitology>)



University of Queensland

Readers may be interested to know that retired parasitologist Professor **Paul Procriv** has recently given an interview on ABC radio with The Conversation's Richard Fidler. The piece is full of fascinating stories from Paul's personal history and a career dedicated to parasitology. Listen to it at <http://www.abc.net.au/local/stories/2015/06/04/4248031.htm>

Marine Parasitology Laboratory

The UQ Marine Parasitology Lab, headed by Assoc Prof **Tom Cribb**, has been awarded an ABRIS Taxonomy Grant for three years' funding. Titled 'Parasites of Commercial Fishes of Moreton Bay', this project aims to take a multi-disciplinary approach to assess the parasite richness of Moreton Bay commercial fishes. The project will involve summer and winter surveys, beginning in January 2016, and will bring together researchers from around the world, covering a wide breadth of expertise with different

fish and parasite groups: Dr **Robert Adlard** (Queensland Museum; myxozoans), Prof **Mike Bennett** (UQ; elasmobranch parasites), Prof **Ian Beveridge** (University of Melbourne; cestodes), Prof **Geoffrey Boxshall** (Natural History Museum, UK; copepods), Dr **Rod Bray** (Natural History Museum, UK; trematodes), Prof **Delane Kritsky** (Idaho State University, USA; monogeneans), Dr **Terrence Miller** (Dept of Fisheries, Western Australia; trematodes), Dr **Shokoofeh Shamsi** (Charles Sturt University; nematodes) and Prof **Nico Smit** (North-West University, South Africa; isopods). Dr **Scott Cutmore** will be employed as a post-doctoral fellow under the terms of the grant, which will also use the expertise of local fishermen to help comprehensively assess and characterize the ichthyoparasite fauna of the Moreton Bay region.

The focus on Moreton Bay's undersurveyed parasite fauna has extended to other students in the Cribb lab. A new PhD student, **Daniel Huston**, has arrived from the USA on a prestigious UQ International Postgraduate Research Scholarship and is working on elucidating trematode life cycles in the Moreton Bay region, with a particular focus on the intermediate stages infecting intertidal snails. Two Honours students have also been working in the lab; **Kristine Crouch** has been assessing the trematode fauna of the tripodfish *Tripodichthys angustifrons*, while **Nicholas Wee** has been working on the taxonomy and host-specificity of species of the fellodistomid genus *Proctoeces* in Moreton Bay. Both Daniel and Nicholas were recently awarded Moreton Bay Research Station Fellowships, which provide in-kind support in use of the station's facilities.

PhD candidate **Derek Sun** has submitted his thesis, titled 'Parasites and Cleaning Behaviour in Damselfishes'. One facet of Derek's work, which demonstrated the beneficial relationship between cleaner wrasse presence and settling damselfish, was featured on ABC News and popular science blog IFLS. Finally, Dr **Olena Kudlai's** (Czech Academy of Sciences, Ceské Budejovice, Czech Republic) work on Australian microphallid trematodes has just been published. This work was performed with Dr **Scott Cutmore** and Assoc Prof **Tom Cribb**, while on a one-month visiting

State News continued

researcher stint earlier this year.

Queensland Alliance for Agriculture & Food Innovation

Jess Morgan has finished her gnathiid isopod project but is still trying to unravel the mysteries of working with crustacean DNA.

Manuel Rodriguez Valle and Ala Lew-Tabor are continuing with all tick research including the Australian paralysis tick and cattle tick. Since our last report, Ms. **Beibei Chen** supervised by Dr. **Manuel Rodriguez Valle** and A/Prof **Ala Lew-Tabor** achieved a 7 for her research Masters associated with paralysis tick monoclonal antibody development. **Tom Karbanowicz** (PhD candidate) attended the 25th International Conference of the World Association for the Advancement of Veterinary Parasitology in the UK with his presentation entitled 'Development of a yeast surface display library cell line to examine tick: host interactions' following his win for the 'Elanco Early Career Researcher Award' following his Honours research. Honours students **Mitchell Booth** (2015) and **Sonia McAlister** (2015-2016) are continuing to examine paralysis tick transcriptomes and anti-paralysis tick monoclonal antibodies respectively. We also welcome to the laboratory Ms. **Anqi Yu** who is examining toxin sequence variations for geographically distinct *Ixodes holocyclus* ticks. This year in November, QAAFI is organising the inaugural TropAg conference (<http://tropagconference.com.au/>), together with Dr **Peter James** (also QAAFI), **Ala and Peter** have secured a parasitology symposium entitled 'Control of Tropical Livestock Parasites into the Future' which has been supported by the Australian Society for Parasitology as well as Virbac, for the program see <http://tropagconference.com.au/d/symposia/Livestock%20Agenda.pdf>.

Cattle tick vaccine research is on-going with recent trials showing great promise. In July 2015, A/Prof **Ala Lew-Tabor** and Dr **Manuel Rodriguez Valle** were invited to participate in a Bill & Melinda Gates funded workshop in Morocco to develop cattle tick vaccines applicable to Africa.



Photo From Left to Right: Prof Jose de la Fuente (SaBio. Instituto de Investigación en Recursos Cinegéticos IREC, Ciudad Real, Spain; Center for Veterinary Health Sciences, Oklahoma State University, Stillwater, OK, USA); Dr Juan Mosqueda (Profesor de Tiempo Completo, Facultad de Ciencias Naturales Universidad Autónoma de Querétaro, MEXICO); Dr Glen Scoles (Research Entomologist, Agricultural Research Service, USDA, USA); Prof J.H. Pattaroyo (Laboratory of Biology and Control of Haematozoa and Vectors, BIOAGRO/Veterinary Department, Federal University of Viçosa, Brazil); Dr Peter Willadsen (emeritus – CSIRO, Australia); A/Prof **Ala Lew-Tabor** – UQ/QAAFI; Dr. Petr Kopacek (Institute of Parasitology, Biology Centre ASCR, Ceské Budejovice, Czech Republic); A/Prof Christine Maritz-Olivier (Ticks and Tick-borne Diseases Laboratory; Department of Genetics, Faculty of Natural and Agricultural Sciences, University of Pretoria, SOUTH AFRICA); Dr **Manuel Rodriguez Valle** – UQ/QAAFI; Dr Theo Schetters – ProtActivity (<http://protactivity.com/>); Dr Robert Miller (Research Entomologist, USDA, USA); Dr Nick Juleff (BMGF); Dr Richard Bishop (Principal Molecular Biologist, International Livestock Research Institute (ILRI) Nairobi, Kenya).

QIMR Berghofer Medical Research Institute

Scabies Laboratory

Thanks to funding from the Lowitja Institute, and with additional financial help from the Australian Society of Parasitology, the scabies research group from the QIMR Berghofer

Medical Research Institute delivered once more high school education workshops to two schools located in remote northwest Queensland. See story on page 29 of this newsletter.



ACT

The Australian National University

Research School of Biology

2015 has been busy for the ACT parasitology community. From June to August, **Erick Tjhin (Saliba lab)** attended the prestigious Biology of Parasitism (BoP) course in Woods Hole, Massachusetts. Here he joined 15 other students from around the world for 7 weeks of lectures from some of the world's leading parasitologists. He also undertook four intensive experimental modules that introduced him to some cutting edge techniques in modern parasitology. **Esther Rajendran (Kirk and van Dooren labs)** and **Giel van Dooren** also participated in BoP 2015, running the first experimental module of the course.

Elinor Hortle and Patrick Lelliott (Burgio, McMorran and Foote labs) recently graduated from their PhD degrees from Macquarie University. Elinor's thesis was titled "ENU mutagenesis and the quest for a malaria host-directed therapy", and Patrick's was titled "Investigation of a novel host-directed therapy for malaria through ENU mutagenesis".

Patrick is about to depart to Japan to join Cevayir Coban's laboratory at the Immunology Frontier Research Center (IFREC) at Osaka University, where he will be supported by a

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two-year Kishimoto fellowship.

Vincent Aw (van Dooren lab) and **Jonathan Fu** (Saliba lab) recently completed their Honours projects. Both were awarded first class honours, while Vincent received the top mark of his class and was awarded a University Medal. Both Jonathan and Vincent are now undertaking Doctor of Medicine and Surgery degrees at the ANU.

In September, **Adelaide Dennis** (Kirk lab) escaped the cool Canberra climate and spent a week in **Vicky Avery's** Laboratory in the Eskitis Institute for Drug Discovery at Griffith University. Here, she worked closely with **Sandra Duffy** (Senior research assistant, Avery Laboratory) and **Sasdekumar Loganathan** (Research assistant, Avery Laboratory). The trip was funded by an ASP Network Research Exchange Award.

Victoria

The University of Melbourne

Faculty of Veterinary Science

Professor **Marshall Lightowlers** and colleagues published a landmark paper on the diagnosis of cysticercosis: **M.W. Lightowlers, E. Assana, C.M. Jayashi, C.G. Gauci, M. Donadeu**, 2015. Sensitivity of partial carcass dissection for assessment of porcine cysticercosis at necropsy. *International Journal for Parasitology*. In Press

Professor **Robin Gasser** gave a plenary talk on the evolution of *Trichinella* spp. during the 14th International conference on Trichinellosis held in Berlin, Germany in September 2015.

Dr **Abdul Jabbar** received 2015 Odile Bain Memorial Prize in Veterinary Parasitology during the WAAVP conference in Liverpool in August 2015. <http://blogs.biomedcentral.com/bugbitten/2015/10/30/parasitology-odile-bain-memorial-prize-2015/>

Piyumali Perera, supervised by **Abdul Jabbar and Robin Gasser**, completed her PhD and joined the University of Peradeniya as a lecturer in the Department of Zoology. Piyumali published the following seven papers during her PhD:

- **Perera, P.K., R.B. Gasser**, D.J. Pulford, M.A. Stevenson, S.M. Firestone, A.M.J. McFadden, and **A. Jabbar**, 2015. Comparison of the performance of three PCR assays for the detection and differentiation of *Theileria orientalis* genotypes. *Parasites and Vectors* 8, 192.
- **Perera, P.K., R.B. Gasser**, E. Read, J. Malmo, H. Nguyen, S. Nyein, A. Cheng, **A.R. Jex**, G. Rawlin, **T.W. Spithill and A. Jabbar**, 2015. Use of multiplexed tandem PCR to estimate the prevalence and intensity of *Theileria orientalis* infections in cattle. *Infection, Genetics and Evolution* 32, 68-73.
- **Perera, P.K., R.B. Gasser and A. Jabbar**, 2015. Assessment of sequence variability in a p23 gene region within and among genotypes of the *Theileria orientalis* complex from Australia. *Ticks and Tick-borne Diseases* 6, 123-128.
- **Perera, P.K., R.B. Gasser**, S. Firestone, L. Smith, F. Roeber and **A. Jabbar**, 2015. Semi-quantitative Multiplexed-Tandem PCR for the Detection and Differentiation of Four *Theileria orientalis*. *Journal of Clinical Microbiology* 53, 79-87.
- **Perera, P.K., R.B. Gasser**, S.M. Firestone, G.A. Anderson, J. Malmo, G. Davis, D.S. Beggs and **A. Jabbar**, 2014. Oriental theileriosis in dairy cows causes a significant milk production loss. *Parasites & Vectors* 7, 73.
- **Perera, P.K., R.B. Gasser**, G.A. Anderson, M. Jeffers, C.M. Bell and **A. Jabbar**, 2013. Epidemiological survey following oriental theileriosis outbreaks in Victoria, Australia, on selected cattle farms. *Veterinary Parasitology* 197, 509-521.
- Gebrekidan, H., **R.B. Gasser, P.K. Perera**, S. McGrath, S. McGrath, M.A. Stevenson, and **A. Jabbar**, 2015. Investigating the first outbreak of oriental theileriosis in cattle in South Australia using multiplexed tandem PCR (MT-PCR). *Ticks and Tick-Borne Diseases* 6, 574-578.

LaTrobe University

Prof **Terry Spithill** presented a talk "High prevalence of Fasciolosis and evaluation of drug efficacy against *Fasciola hepatica* in dairy cattle in the Maffra and Bairnsdale districts of Gippsland, Victoria, Australia" at WAAVP in Liverpool in August.

Tim Elliott, supervised by **Terry Spithill**, completed his PhD and joined Elanco. His thesis title was: "Studies on the prevalence and nature of triclabendazole resistance in liver fluke populations from cattle in Australia"

A PhD student **Jane Kelley**, supervised by **Terry Spithill**, won the competitive Rural Finance Ian Morton Memorial Scholarship with payments of up to \$6,000 per annum for a maximum two-year period while completing postgraduate studies. **Jane** is studying the prevalence of liver fluke and triclabendazole resistance in dairy cattle in Victoria.

Jane Kelley gave an invited talk "The resurgence of liver fluke in dairy cattle in irrigated regions of Victoria" at the College Science Week 2015 for the Australian & New Zealand College of Veterinary Scientists (ANZCVS) Cattle Chapter in Brisbane in August.

Three members of **Spithill's lab** (**Tim Cameron, Jane Kelley and Hayley Toet**) gave presentations at the Annual Conference for the Australian Society for Parasitology in Auckland in August.

Gene Technology Access Centre (GTAC)

The ASP partially sponsored the 'Parasites in Focus' Student program held at GTAC from 9.30 am to 2.45 pm on Friday, 21st August 2015.

The program was attended by 89 students of Years 10 & 11 and 10 teachers representing various Victorian schools. The program comprised an opening presentation by Prof **Robin Gasser** followed by three rotating

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laboratory workshops. During these workshops, students worked in small groups of ~7 students each mentored by practising scientists. The three workshops were:

- Hooked on Parasites (workshop co-ordinator: Dr Tony Chiovitti, GTAC)
- A Case of Cross-Border Detection (workshop co-ordinator: Dr Rachael Rutkowski, GTAC)
- Parasites Getting it Under Control (workshop co-ordinator: Chris Szwed, GTAC)

Mackenzie Kwak, bachelor of honours student at the Faculty of Veterinary and Agricultural Sciences, University of Melbourne, attended workshop to discuss endoparasites with visiting students.

A report prepared by Dr Tony Chiovitti, GTAC, is on page 15 of this newsletter.



Walter and Eliza Hall Institute

New publications:

Evaluation of traps and lures for mosquito vectors and xenomonitoring of *Wuchereria bancrofti* infection in a high prevalence Samoan Village. Limb K Hapairai, Catherine Plichart, Take Naseri, Ualesi Silva, Lameko Tesimale, Paulo Pemita, Hervé C Bossin, Thomas R Burkot, Scott A Ritchie, Patricia M Graves, Wayne Melrose and **Hayley Joseph** *Parasites & Vectors* (2015) 8:287
DOI 10.1186/s13071-015-0886-2

2015 Malaria Social Media Awards

Congratulations to Christopher Weir who has been nominated for the 2015 Malaria Social Media Awards in the Young Leaders category. You can endorse the nomination Chris received online:

<http://www.socmedawards.com/malaria2015/user/profile/christopher-haggarty-weir-1>

Tasmania

The University of Tasmania

Welcome our new student ASP member **Tina Oldham**. Tina is doing research on the effects of hypoxia on AGD and her project is part of a collaboration between University of Melbourne (Dr **Tim Dempster**) and University of Tasmania (Prof **Barbara Nowak**). She has already run her first ASP community event together with another PhD student ASP member **Jessica Johnson-Mackinnon** (please see Parasitology for kids).

Congratulations

Congratulations to **Melanie Leef**, who is now laboratory manager for the Institute for Marine and Antarctic Studies (IMAS) Launceston, an institute within the University of Tasmania. IMAS Launceston has a number of highly productive research labs and Melanie is enjoying her role which includes managing compliance and work health and safety issues.

Parasitology for kids

This ASP sponsored event targeted children between ages 5 to 10 years old who were visiting the University of Tasmania, Institute for Marine and Antarctic Studies 'Open Day' with family members. The ASP event was very successful with many children joining in the activities such as making parasite masks (see photo above). Floating fish "infected" by parasites. Children were given fishing poles with magnetic lures and allowed to catch fish. If they caught one fish infected with each of three parasites and properly identified the parasites they were allowed to choose a prize from a selection of plush parasites (Giant Microbes – Amoeba & Copepod). Also some

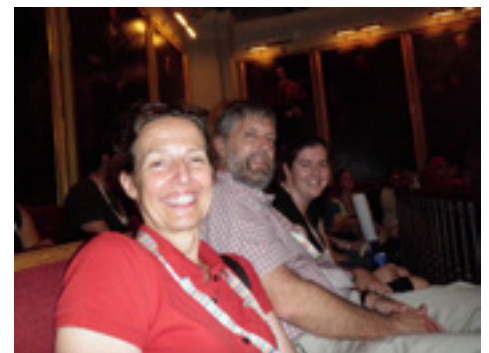
parents participated with their children to make their own parasites, or to help the younger ones. See page 14 of this newsletter for the full report.



International conferences

PhD student **Catarina Norte dos Santos** and **Barbara Nowak** attended International Symposium on Fish Parasites in Valencia Spain and then European Association of Fish Parasitologists conference in Las Palmas de Gran Canaria Spain. Both conferences were very successful and well attended by researchers from many countries, including Australia.

Catarina presented results of her research on interbranchial lymphoid tissue in Atlantic salmon during Amoebic Gill Disease.



Opening of International Symposium on Fish Parasites, **Isaure de Buron**, **Tom Cribb** and **Kate Hutson**.

Barbara Nowak was an invited speaker at ISFP conference and presented a keynote on Parasitic Diseases in Mariculture. Together with **Francisco Montero** she also organised a workshop on Parasitic diseases affecting

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farmed fish in which she talked about parasitic diseases in fish farmed in temperate Australia (**Kate Hutson** presented on tropical Australia) and on diagnosis of parasitic diseases.

Barbara Nowak was one of ten members of 9ISFP Student Awards Committee and has joined International Committee for International Symposia on Fish Parasites.



Tom Cribb and Barbara Nowak at ISFP conference.

Inspired by a Brazilian delegate (who also prepared Australian presentation) **Tom Cribb** put in a last moment bid for Brisbane as the location for 2019 International Symposium on Fish Parasites (ISFP) and despite little preparation won against USA and Czech Republic. This is a great success and will be a fantastic opportunity for Australia.



ISFSI conference dinner was in an oceanarium, the restaurant was in the middle of a tank and we were surrounded by a school of fish swimming in a clockwise direction.

European Associate of Fish Pathologists (EAFP) conference was the biggest ever, attended by over 400 delegates. At the EAFP conference **Barbara Nowak** run three workshops (Fish Histopathology, Scientific Writing, Amoebic

Gill Disease), all were very well attended and successful. She also gave three presentations: Mucus proteomics in AGD affected fish, Epitheliocystis in grouper and Host-parasite interactions in blood fluke infections in tuna.



EAFP fish histopathology workshop organisers – from left **David Bruno, Diane Elliott, Barbara Nowak and Patricia Noguera**

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