



# NEWSLETTER

Volume 29 Issue No.1 May 2018



Terry Miller (Primary Industries and Regional Development, Western Australia) collecting freshwater fishes in the Cairns region for parasite discovery from endemic and exotic origins with fellow ASP member Rob Adlard (Queensland Museum). Photo credit Rob Adlard and Terry Miller



ANNUAL  
CONFERENCE

# ASP St.Kilda 2018

September 24th – Thursday 27th 2018  
Novotel Hotel, St Kilda, Melbourne, Victoria

Register and submit your abstract online at  
<https://www.conftool.net/parasitology2018/>  
or go to the conference website  
<http://parasite.org.au/2018conference/>  
for more information.

**The early bird deadline is 27th May 2018.**

IJP

INTERNATIONAL JOURNAL FOR PARASITOLOGY



ELSEVIER



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### Dear Members,

The ASP Council and Executive met from the 6th-8th February, 2018 at the Adina Hotel Darling Harbour in Sydney for a Strategic Planning meeting to discuss the 2020-2029 ASP Strategic Plan. The planning across the three days was facilitated by Lisa who did a wonderful job of encouraging the Council to be as creative as possible and to work together to form the plan for the ASP for the next decade. We will have a special June edition of the ASP newsletter which will be dedicated entirely to the outcomes from the recent MTM strategic planning meeting held in February in Sydney and wider discussions that the ASP Executive have had with ASP members. As part of the strategic planning the ASP Council started a review and update of the ASP

constitution. The changes proposed will bring the constitution in line with current practices and we are proposing to add a student representative on ASP Council, and to include gender equity and diversity statements. The proposed revisions to the constitution will be published in the ASP June newsletter and sent to the whole membership for your input and comment. The constitutional changes will go to vote at the ASP AGM in September at the 2018 ASP Conference. If you have any big parasite ideas to share, suggestions, comments, or concerns please email me [president@parasite.org.au](mailto:president@parasite.org.au)

Our 2018 ASP annual conference will take place at the Novotel Hotel, St Kilda, Melbourne from Monday September 24th – Thursday September 27th. Registration and abstract submission for the 2018 ASP

## From the President's Desk continued

Annual Conference will close on 27th May so please add to your plans for September, enlist your new students into the Society and plan your presentation(s).

<http://parasite.org.au/2018conference/>

March 8th was International Womens Day and the campaign theme was #PressforProgress ([www.internationalwomensday.com/PressforProgress](http://www.internationalwomensday.com/PressforProgress)) - committing to a "gender parity mindset" via progressive action. This is particularly important as the World Economic Forum's 2017 Global Gender Gap Report says that gender parity is over 200 years away! ([www.wherewomenwork.com/Career/640/Global-Gender-Gap-WorldEconomicForum](http://www.wherewomenwork.com/Career/640/Global-Gender-Gap-WorldEconomicForum)). In light of this, the ASP is committed to gender equity, which is a major part of our strategic plan. Members can view our "Policy on Gender Equality at the 2018 ASP Annual Conference" on the conference website.

Julie Burel is the winner of the 2017 ASP Sprent prize and this newsletter includes an interview with Julie. Well done Julie!

Sadly, Sir John Sulston, the British face of the international Human Genome Project has died aged 75. The Human Genome Project was an international research effort to determine the sequence of the human genome and identify the genes that it contains. The first draft was published in 2001 with the UK sequencing about a third of the genome, with the US National Institutes of Health (NIH) contributing most of the remainder. The work of the Human Genome Project has allowed researchers to understand the functions of genes and proteins including the genetic basis of more than 6,000 disorders, allowing better tailored treatments and has also led to the development of new medicines for many cancers. In 1976, Sir John described in detail how the cells of the roundworm *Caenorhabditis elegans* divided and matured, and showed that certain cells' deaths were a part of the organism's normal development. He also discovered that the first mutation in a gene that is active in the cell-death process. In 2002, he was awarded the Nobel Prize for this work, which paved the way for innovations in cancer research. In 2017, Sir John was

made a Companion of Honour by the Queen in her birthday honours for his contribution to science and society.

As usual, there is a long list of wonderful contributions of members and their exploits in the outreach and network events and State events. Thanks to each of our State reps and to Lisa and Nick.

Don't forget that annual memberships were due in April so please login online to make your payments.

**Best regards,**

**Una Ryan**  
President of the ASP

[www.parasite.org.au](http://www.parasite.org.au)  
[www.facebook.com/ASParasitology](https://www.facebook.com/ASParasitology)  
[www.twitter.com/AS\\_Para](https://www.twitter.com/AS_Para)



Over 25 experts  
in the field share  
their passion



## Concepts in Parasitology

2018



25 November -  
8 December 2018

Australian  
National  
University  
Kioloa Coastal Campus

**A two-week  
course for  
Postgraduates  
and Early Career  
Researchers**

**Concepts covered:**  
Evolution,  
Drug discovery  
Cell biology,  
Immune responses,  
Diagnostics,  
Bioinformatics  
and many more

**Application deadline  
6th July 2018**

For more information, see our website  
[parasite.org.au/education/concepts-in-parasitology](http://parasite.org.au/education/concepts-in-parasitology)  
or e-mail [alex.maier@anu.edu.au](mailto:alex.maier@anu.edu.au)





# JFA Sprent Prizewinner Julie Burel

**Dr Julie Burel (La Jolla Institute for Allergy and Immunology, U.S.A., formerly at QIMR Berghofer) won the John Frederick Adrian Sprent Prize in 2017 for writing an outstanding PhD thesis in Parasitology. Julie was a PhD student at QIMR Berghofer and her supervisor was Professor Denise Doolan.**

Julie obtained a Master of Sciences degree in 2010 from the Biotechnology Engineering School ESIL (Ecole Supérieure d'Ingenieurs de Luminy, University of Aix-Marseille) in Marseille, France.

She then pursued studies in Australia and graduated from the University of Queensland/ QIMR Berghofer Medical Research Institute in 2015 with a PhD in Immunology. Julie was "looking for the sun" when she was accepted for a 6-month internship in Brisbane. Six months in Australia became six years and Julie turned her internship into a Research Associate job and then became a PhD student. With a love for immunology matching her supervisor Professor Denise Doolan's area of research Julie's PhD used systems immunology to profile human immune responses to the malaria parasite.

Julie's research interests have been focusing on applying systems immunology approaches to decipher the molecular basis of protective immune responses to

infection/vaccination in humans.

Julie said "What I find thrilling in systems immunology is to put together pieces of a puzzle, without knowing in advance what will be the final 'image'. The study design is really important and you need to be organised in systems immunology; It will generate very large datasets, and it can be a bit of a "fishing expedition" unless you know what question to ask of your data.

There are lots of applications not only in immunology but also biochemistry,

individuals with active tuberculosis, latent tuberculosis or in healthy controls following BCG vaccination, as part of the Human Immunology Project Consortium (funded by the National Institutes of Health, <https://www.immuneprofiling.org>). Julie wants to pursue a career in academic research in the field of systems immunology to study human disease, with a specific focus on bridging the gap between immunology and computational biology.

Julie is very happy with her science career, she said, "Opportunities come when you create them, and then everything will fall into place." Her advice to early career researchers is to "stay in jobs/research area that you enjoy and have fun! Enjoy a good work-life balance because work and study can be very stressful. Find out what drives you and you will be the best at those things, find a niche that no one else does and keep moving, changing and innovating all the time."



fundamental biology and physics. Combining with the right informatics tools are key to this research, it needs to be rigorous!"

Directly following her PhD, Julie began working as a postdoctoral research fellow within the Peters laboratory at La Jolla Institute in January 2016. Her research project at LJLI is aiming at characterizing and comparing T-cell immune signatures in

**Image:**

**Julie Burel receiving the 2017 JFA Sprent Prize from Professor David Emery at the ASP Annual Conference in Leura.**



# Jan Šlapeta in Rwanda

**Professor Jan Šlapeta of the University of Sydney recently travelled to Rwanda to study the parasitoses of Mountain Gorillas.**

As some of you may know, Jan Šlapeta is a long-time admirer of *Gorillas in the Mist*. So he didn't take much convincing when he received an offer to join a team that looks into parasitoses of the Mountain Gorillas in Rwanda. Jan travelled to Rwanda in January to initiate a project on parasite monitoring in the national park in the

Virunga Volcano range. Working and training the Gorilla Doctors and Dian Fossey Centre was a rewarding exercise. Jan was able to help upskill the staff with basic yet powerful parasitological tools to undertake monitoring and lab disease investigations on site.

What Jan had not remembered was that the book *Gorillas in the Mist* has a section devoted to a detailed account of parasites detected in the gorillas! This just shows that when he read *Gorillas in the Mist*, Jan was clearly unaware that one day he would be called parasitologist.

Over the two weeks in Rwanda, Jan got his hands well and truly 'dirty' – it felt as if he had processed about a tonne of gorilla poo. Happily, Mountain Gorillas are herbivores who graze the forest, so their poop more closely resembles that of a horse than anything that your imaginations might have visualised.

**The images on this page and the next are courtesy of Jan Šlapeta**





## *Jan Šlapeta in Rwanda continued*





# Fieldwork in Cambodia and Laos

**Nichola Calvani, a PhD student at the University of Sydney reports on work with the Mekong Livestock Research team.**

I became involved in the Mekong Livestock Research team during my honours year in 2015 and was lucky enough to spend six weeks in Cambodia, with some time in rural areas on field trips, researching the prevalence of the common liver fluke. A few years later and I am currently mid-way through my PhD on the molecular diagnosis and control of liver fluke in Southeast Asia and have been back and forth between the two countries several times. However, only recently have I had the privilege to experience the team in action in the field in Laos.

One might assume that these two countries are very similar – however nothing could be more true. From the food, terrain and

climate, the differences are staggering. These differences flow over into the field work and therefore our capacity to interact with farmers and their animals. For one, Cambodia and Laos have very different cattle and therefore animal management practices. Cambodian farmers tend to prefer fewer, larger-framed Brahman cattle, with a couple of the smaller local yellow breed here and there. In Laos, you'd be hard-pressed to find these bigger animals, but they are certainly made up for in number and size by waist-height yellow cattle and water buffalo, respectively.

This difference in animals has an astounding effect on the way the respective in-country teams operate, and the resources required to collect the necessary samples for whatever trial is happening at the time. In Cambodia, the animals are not only bigger, but also tend to be more flighty, while in Laos, you're lucky if an animal has a flight zone at all. In fact, you might even have one sidle

up next to you for a pat and a belly rub. More flighty animals mean a portable cattle crush is often necessary to perform basic vaccination and tagging activities in Cambodia. In Laos, however, a simple bamboo pole wedged next to a tree does the job just fine.

Despite these differences, one thing remains the same - the friendly faces and extraordinary hospitality we are shown by the field team and local farmers. Language barrier or not, we're always able to exchange names over a delicious local meal... and a beer (or 4).

**Top left: Vet student Curtis vaccinating a cow in Laos against FMD**

**Top right: A Cambodian farmer bringing his animal in for ear-tagging**

**Bottom left: Friendly young bull in Laos**

**Bottom right: The team celebrate a hard day's work**

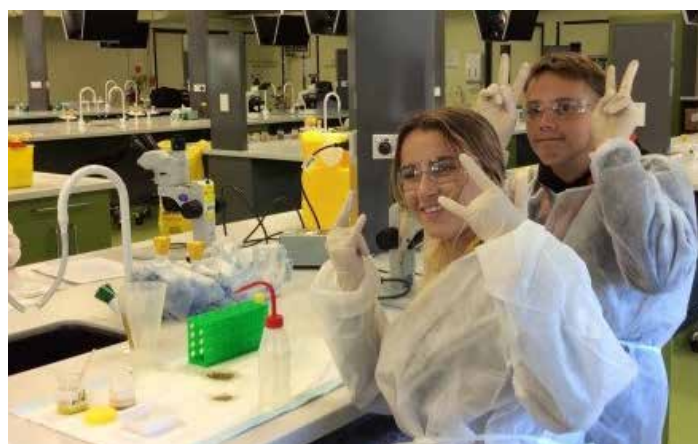




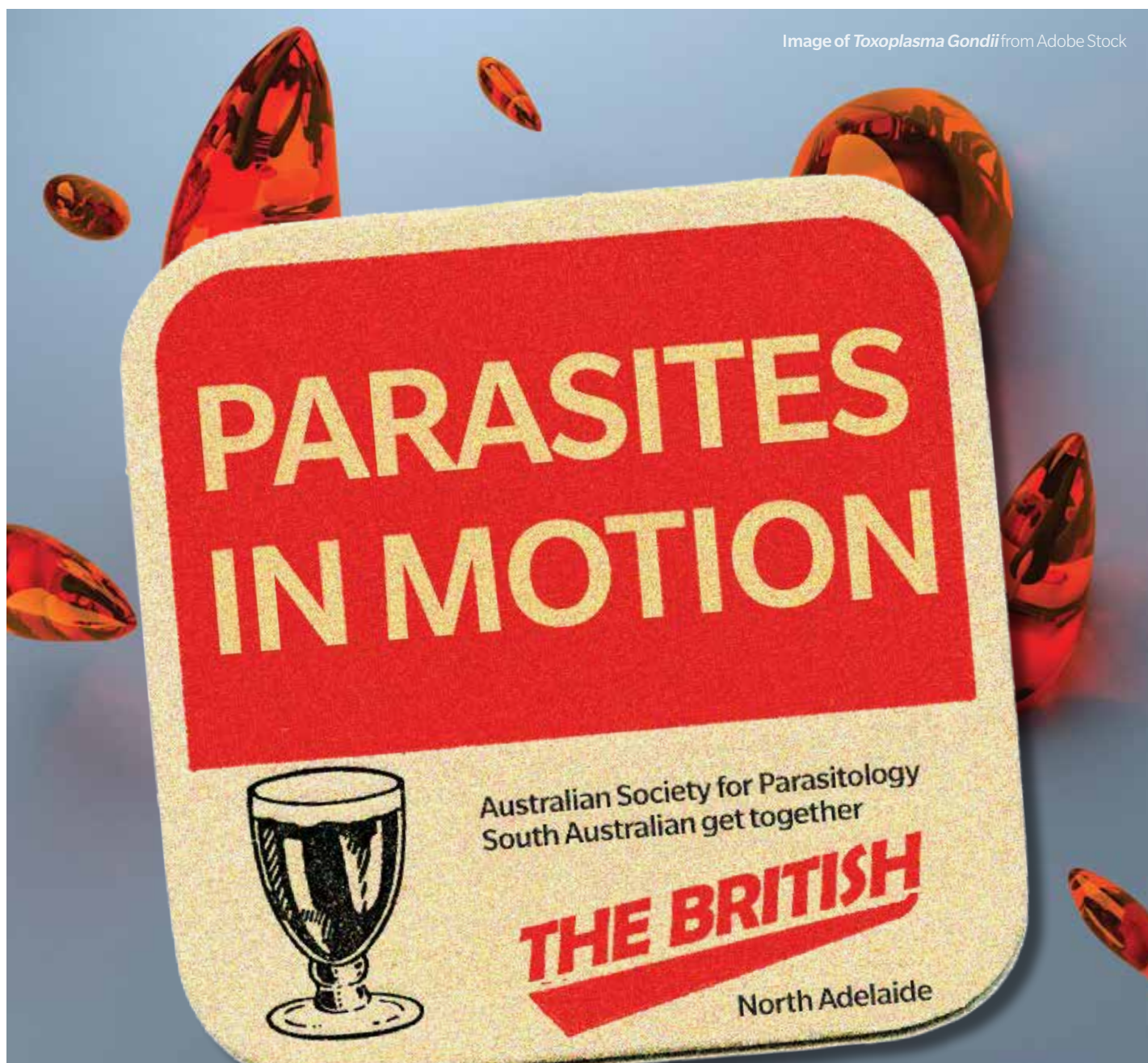
# Wingara Mura - Bunga Barrabugu

## The University of Sydney recently hosted a group of Wingara Mura - Bunga Barrabugu summer students

In January, Veterinary Parasitology joined forces with Veterinary Microbiology to host students from the Wingara Mura - Bunga Barrabugu summer program. The program provides opportunities for Aboriginal and Torres Strait Islander students to experience university life and to engage in fun, educational activities on campus. We had a lot of fun and the time flew. And more importantly parasites were featured prominently. We hope to see some of the students joining veterinary program in the future. Thanks parasitology team - Kate Gilchrist and Nicola Calvani (and William Douglas in orange, our DVM Year 3 student) - for supporting these budding University students!







**Wednesday 21st March 2018 5.30 to 7.30pm**  
**The British Hotel, 58 Finniss St, North Adelaide**

South Australian parasitologists enjoyed an evening of short talks showcasing "parasites in motion" and networking in the first SA ASP Outreach event for 2018.

SA State Representative, Danny Wilson, is co-chair of the 2019 ASP Annual Conference along with Ryan O'Handley and both are looking forward to hosting the ASP Annual Conference in Adelaide in July 2019.





# Science Meets Parliament

**In February, Amanda Ash (ASP Treasurer) and Christina Spry (ACT representative) represented the ASP at Science Meets Parliament 2018.**

The two-day event (held in Canberra) brought together over 240 science, technology, engineering and mathematics (STEM) professionals from across Australia.

The first day was held at the National Gallery of Australia where participants listened to a series of presentations from leading experts in STEM including Australia's Chief Scientist Dr Alan Finkel. After morning tea, where all were spoilt with an artistically presented array of donuts (see photo), participants learned through panel discussions and workshops, the importance of building relationships between scientists, and MPs and Senators, and how best to improve communication with parliamentarians.

The stimulating day of discussion with people from all aspects of STEM, was

followed by a gala dinner at the Great Hall of Parliament House where there was further opportunity to network with STEM colleagues and parliamentarians. Speakers during the evening included Opposition Leader Bill Shorten and Liberal Senator Michaelia Cash (Minister for Jobs and Innovation), who each assured participants that STEM was on the political agenda (of course!).

Day two was spent at Parliament House where all participants had the unique opportunity to put their science communication skills to the test in small group meetings with parliamentarians. Amanda met the Labor member for Braddon, Tasmania Justine Keay and discussed the ASP as a society full of experts in parasitology and the relevance parasites might have for her portfolio of Agriculture and Water.

Christina discussed parasites of medical and veterinary importance as well as other "hot topics" of science with Senator Slade Brockman (Liberal Senator for Western Australia). Both meetings went well and the experience of wandering through the back

corridors of parliament house was a bonus.

After this it was a quick trip to the National Press Club for lunch and the opportunity to listen to an extremely inspiring woman, STEM Professor and Science and Technology Australia President Emma Johnston, who gave a brilliant and motivational address, promoting STEM in Australia. For some added fun, participants were thereafter rushed back to Parliament House for Question Time where all were thoroughly entertained by the schoolyard behavior of naughty parliamentarians - with Barnaby Joyce as their plaything.

Overall this was an action-packed event that provided a whole new perspective on the role of scientists in promoting science to the wider community and local government. We need to continue to raise the profile of STEM, to be loud and proud!

**Left top: the artistic morning tea served at the National Gallery of Australia**  
**Left bottom: Christina with fellow scientists and Senator Slade Brockman**  
**Right: Amanda and Christina grabbing a quick selfie in Parliament House**





# Science and Technology Australia Forum

Christima Spry reports on the recent Science and Technology Australia President and CEO Forum in Canberra.

At the beginning of May, I attended, on behalf of the ASP, the Science and Technology Australia (STA) President and CEO Forum held in Canberra. A major focus of this meeting was to develop a list of priorities for election campaigns for the next federal election.

In conjunction with the forum, STA released a communique calling for science to be a priority platform for the major parties' campaigns in the next federal election (<https://scienceandtechnologyaustralia.org.au/stem-leaders-forge-path-to-stronger-australian-science-and-technology/>).

During the forum STA also introduced a new STEM Ambassador Program,

aimed at connecting science, technology, engineering and mathematics (STEM) professionals with Parliamentarians.

<https://scienceandtechnologyaustralia.org.au/stem-ambassador-program/>

Initially STA will select 10 ambassadors to connect with Parliamentarians in key electorates. If you are interested in participating in this program you can find more information at the following link:





# World Malaria Day at GRIDD

The Griffith Institute for Drug Discovery (GRIDD), Griffith University marked World Malaria Day 2018 by hosting a #readytobeatmalaria BBQ and by orchestrating an online strategy to engage the public.

## World Malaria Day Event – Public Outreach BBQ

The World Malaria Day BBQ was held at the Griffith University, Nathan Campus, on Friday the 27th April. It was attended by ~50 people and included a number of outreach educational activities including a snakes and ladders research game and hang-man activities that facilitated discussions and that were well-received by participants. Malaria word-find puzzles, cross-words, additional information about malaria (including flyers directing people to GRIDD's world malaria day website; see below), together with copies of Kathy Andrew's That's RAD Science! book "My mum is a parasite scientist" were also distributed to attendees. Event specific pens were designed and ordered for the distribution at the BBQ. However, as our order was delayed, we did not receive the pens in time for the event.

## World Malaria Day Online Engagement Strategies

In order to promote malaria and parasitology to the broader community, an online outreach strategy was carried out in the 2 weeks around World Malaria Day (16th-30th April 2018). This strategy included the set-up of a GRIDD world malaria day website (see image) providing malaria related information and activities (<https://thatsradscience.com/world-malaria-day-2018/>), the organization and distribution of social media posts (twitter and Facebook; GRIDD and ASP accounts), the preparation of engaging malaria related videos and the preparation of malaria research (<https://griffithinsight.wordpress.com/2018/03/29/access-griffiths-world-class-malaria-research-via-griffith-research-online/>) and malaria researcher blogs / profiles (<https://griffithinsight.wordpress.com/2018/04/17/malaria-researcher-profiles/>) for online promotion. Activities prepared for the website included malaria cross-word puzzles, malaria finder-words, a malaria maze and a malaria specific quiz.



[com/2018/04/17/malaria-researcher-profiles/](https://griffithinsight.wordpress.com/2018/04/17/malaria-researcher-profiles/) for online promotion. Activities prepared for the website included malaria cross-word puzzles, malaria finder-words, a malaria maze and a malaria specific quiz.

## Outcomes

The #readytobeatmalaria BBQ was well received by those that attended. Outreach events allowed GRIDD staff and students to promote parasitology and malaria research to the public and to Griffith University staff and students. Many Griffith University students were engaged with the planned educational activities ongoing at the BBQ

Griffith University library staff are currently collating statistics relating to Griffith Research Online visits during the online campaign. However, the quiz was performed by ~100 individuals during the online campaign and remains active. The majority of funds provided by ASP \$350/~\$444 was used to purchase malaria educational pens for the BBQ and to facilitate online strategies (quiz hosting and scheduling online posts). The ASP banner was on display during the BBQ and ASP was promoted throughout the online strategy via acknowledgement posts and tags.

**Left: World Malaria Day website**  
**Below: an educational activity at the BBQ**





## Celebrating World Malaria Day 2018 with photos by Pearl Gan

To coincide with World Malaria Day, the Seeing Malaria Asia Pacific Project, by Singaporean photographer Pearl Gan, photo-documents the 'faces' of malaria; from the journey of those suffering from malaria, to the patients, their immediate families and the community care providers.

From this project, conducted over the past two years, Pearl came to see that people who live with malaria in the Asia-Pacific are among the least visible and isolated of the world. She wanted to give them their rightful place and voice through this project and exhibition. This was in collaboration with Professor Kevin Baird, a clinical epidemiologist at Oxford University Clinical Research Unit in Vietnam.

"We hope that the collection of photographs will raise awareness of the malaria burden suffered by the inhabitants of these remote communities. It is important to help people across the world to see into these isolated and impoverished communities in Asia Pacific, and that this new "visibility" will help boost efforts to reduce the suffering." - Pearl Gan

This photography project was supported by OUCRU, Wellcome and the Eijkman Oxford Clinical Research Unit.

### Oxford University Clinical Research Unit in Vietnam (OUCRU)

OUCRU carries out research to help improve the prevention, diagnosis and treatment of infectious diseases. The researchers have a particular focus on the most significant infectious diseases in Vietnam, including dengue, TB and malaria.

OUCRU aims to promote better understanding and communication of science and health issues in the social, cultural and historical context of communities. The OUCRU public engagement team aims to bring the local communities together with the scientists by involving them in the research, and by improving understanding of the public's motivations and perceptions. Initiatives such as science theatre productions and media writing generate dialogue and help to develop appreciation of value and need for scientific research.

### Pearl Gan

Pearl Gan is a Singaporean photographer. She spent most of her adult years in

Australia and completed her postgraduate studies at Murdoch University. Pearl majored in English Literature. Her photographs are mainly documentary and portraiture style. Pearl based her photographic art on her eye for composition and what she sees in her daily life both at home and abroad. She enjoys travelling and talking to the communities she photographs; learning about their culture and listening to their stories.

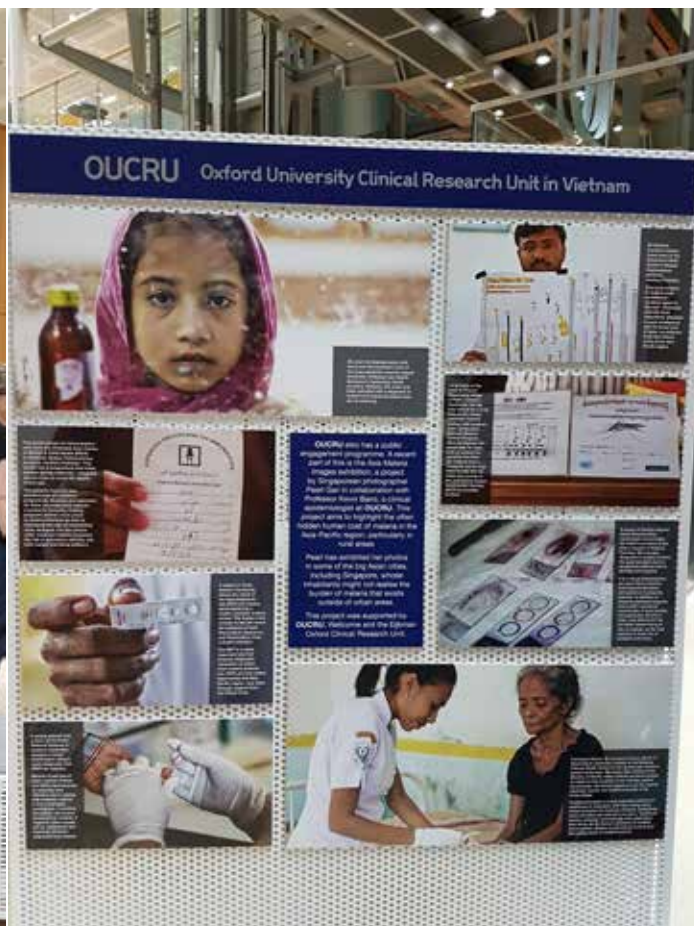
One of her photographs in this Malaria project had won the third prize in the "Care Together" category in the Swiss Malaria Photography Contest in April 2017 and was exhibited in Geneva, Switzerland.

Her article "Picturing Health : Making Malaria Visible in the Asia Pacific" was also published in "The Lancet" in February 2017 along with a ten-page photo spread. This achievement had pushed the awareness for her Malaria project to new heights.

**Images on this and the following 3 pages: Copyright to Pearl Gan in collaboration with Oxford University Clinical Research Unit, Vietnam and Jakarta and The Wellcome Trust**

















# ASP Recruitment event in Tasmania

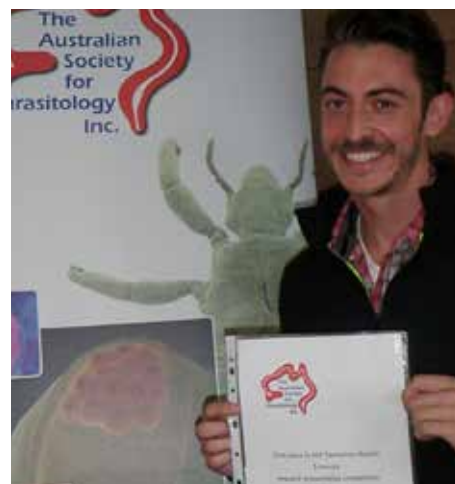
**Prof Barbara Nowak and Dr Scott Carver ran a Tasmanian ASP recruitment event in Launceston on 19 March 2018. The main aim was to increase the number of ASP members in Tasmania and the size of the Tasmanian branch.**

An ASP lunch was organized on University of Tasmania Newnham Campus (Grove). Most attendees involved were PhD students from the University of Tasmania (Zoology and IMAS)

The lunch was followed up by a 5 min talk competition for PhD and Honours students. The competition was judged by three independent academics with parasitology background: Dr Melanie Leef, AProf Sabrina Sonda and visiting scientist Endeavour Executive Fellow Dr Phuoc Nguyen. The first prize went to PhD student David Lizzaraga (Overcoming *Chlamydia pecorum* infection in koalas), the second to Honours student Peter Puskic (Penguin parasites) and the third was awarded to PhD student Angela Hanson (Parasites associated with

feathers of waterfowl). PhD students Tina Oldham, Mai Dang and Jimena Balli Garza received prizes for contributions to ASP in 2017. Promotional information about ASP was provided in the introduction given by Prof Nowak. Promotional material based on the ASP website was printed and distributed to potential members, including information on how to join ASP and benefits to the members, in particular student members. The ASP 2018 conference was also advertised.

This activity promoted the ASP to researchers and students at University of Tasmania. This outreach event resulted in a significant increase in ASP membership in Tasmania. In 2017, all members (with the exception of Dr Scott Carver, Dr Silvana Bettiol and Iain Koolhof) were from Prof Nowak's research group and were based in Launceston. This year we have 17 ASP members, including 6 new student members from Hobart and 2 student members from Dr Lavers research group in Launceston. This activity addressed the urgent need to increase and diversify the membership of ASP in Tasmania.



**Top: David Lizzaraga. Middle: Peter Puskic  
Below: Meeting participants**





# My Mad Scientist Mummy at the Twilight Fair

Rina Fu reports on an ASP-funded "My Mad Scientist Mummy" science stall at the Twilight Community Fair in Beechboro, Western Australia.

As a first time author-illustrator I had the wonderful opportunity to set up an outdoor stall among 80+ other vendors gathered at John Septimus Roe Anglican Community School.

There was a large crowd of 1000-2000 people with plenty of food vans, rides and activities for kids. At the science outreach stall "My Mad Scientist Mummy", I shared some of my early sketches from the storyboard and ran some science themed games for young children. For example, "Home Sweet Home" is a ball tossing game in which toddlers help baby malaria parasites find a red cell home and the "Little Scientist Corner", a big hit, where older children dressed up in lab coats and safety glasses and made their own splashes with real laboratory flasks and tools!

It was an overall success with plenty of public engagement and sharing of my work-in-progress for the children's science picture storybook "My Mad Scientist



Mummy". The strong wind tested the tensile strength of the banners and our team's reaction time and engineering skills! I was also on air @98five Sunshine FM radio, as they were broadcasting live at the event.

Special thanks to the Australian Society for Parasitology (ASP) for sponsoring the event

and the fantastic team of volunteers from John Septimus Roe Anglican Community School and Edith Cowan University. Also I'm grateful to the 'pros' from the Society of Children's Book Writers and Illustrators, who gave me some pointers to help improve my drawings and insights into life as an author!

## Digital storybook and music video



Rina is pleased to announce that she will be signing off the digital proof of her storybook *My Mad Scientist Mummy* with the printers in the coming weeks, and (fingers-crossed) it will be ready at the end of June for the book launch at Scitech!

Another milestone is the completion of a music video for the storybook theme song, "I'm a Little Scientist." This is available for viewing at: [RinaFu.com](http://RinaFu.com) or search for "Rina Fu I'm a little scientist" on Youtube. It was a lot of fun filming with little scientists with

different cultural backgrounds ranging from 2 to 9 years old.



## News from the ASP Network for Parasitology

### Welcome

#### 2018 ASP Annual Conference

**Early-bird registration and abstract submission has been extended to 27th May for the 2018 ASP Annual Conference, which will be held at the Novotel Hotel, St Kilda, Melbourne from Monday September 24 – Thursday September 27.**

Tell all of your parasitology friends and, if you haven't already done so, register and submit your abstract online before the early bird deadline on 27th May 2018 for great value for money <https://www.conftool.net/parasitology2018/> Check the conference website <http://parasite.org.au/2018conference/> for more information.

All eligible ASP Student Members (including those based in Melbourne and regional Victoria) should apply for the ASP Student Conference Travel grant when registering. Please note to be eligible for a 2018 ASP Student Conference Travel

Grant you must have a valid ASP Student membership by 24 June 2018 and meet all of the other [criteria](#).

#### 2018 ASP Conference Invited Speakers

- **Professor Staffan Svärd, Uppsala University, Sweden** - ASP VISITING INTERNATIONAL LECTURESHIP
- **Professor Kai Matuschewski, Humboldt-Universität zu Berlin, Germany** - ASP VISITING INTERNATIONAL LECTURESHIP
- **Professor Annapaola Rizzoli, Fondazione Edmund Mach, Italy** - IJP:PAW INVITED LECTURER
- **Professor Pascal Mäser, Swiss Tropical and Public Health Institute, Switzerland** - IJP:DDR INVITED LECTURER

#### Plenary Speakers Showcase – ASP Kioloa Concepts in Parasitology Course Alumni

- **Dominique Marendy, Elanco Australia**
- **Dr Adelaide Dennis, Australian National University**
- **Dr Andreas Stroehlein, University**

#### of Melbourne

- **Dr Amanda Duarte Barbosa, Murdoch University**

#### Invited Symposium speakers

- **Associate Professor Kathy Andrews, Griffith University** - DRUGS AND DRUG RESISTANCE SYMPOSIUM
- **Professor Alan Lymbery, Murdoch University** - PARASITES AND WILDLIFE SYMPOSIUM
- **Professor Jan Slapeta, The University of Sydney** - GENERAL PARASITOLOGY SYMPOSIUM
- **Professor Rebecca Traub, University of Melbourne, Australia** - PUBLIC HEALTH AND EPIDEMIOLOGY SYMPOSIUM
- **Dr Danielle Stanicic, Griffith University** - IMMUNITY SYMPOSIUM
- **Tony Chiovitti, Gene Technology Access Centre GTAC, Australia** - PUBLIC OUTREACH AND PARASITOLOGY SYMPOSIUM

#### "Fun for everyone"

The conference will begin with a Welcome Reception at Encore, St Kilda Beach from 630pm Monday 24th September and the presentation of new ASP Fellows and conclude with a fun Conference Dinner at Luna Park St Kilda on Thursday 27th September, following the ASP AGM. Sarah Preston from Federation University will be chairing our first ASP Outreach Forum on Thursday 29th June at the 2017 ASP conference so please come to the 2018 ASP Conference with your Outreach ideas to share and/or submit an abstract for the Symposium session dedicated to Outreach. GTAC will be running a school program as part of the conference, if any researchers would like to be mentors and hosts for the secondary students visiting the conference please email [Lisa.Jones1@jcu.edu.au](mailto:Lisa.Jones1@jcu.edu.au) to register your interest.

#### "ECR Breakfast Club"

Our early career researcher evening event





will feature a workshop on “science in the media” and all ECRs are encouraged to meet for the ASP ECR Breakfast Club each morning for more informal networking and mentoring opportunities. Please email [Lisa.Jones1@jcu.edu.au](mailto:Lisa.Jones1@jcu.edu.au) if you would like to be a mentor for the ASP ECR breakfast club.

## Strongyloides Workshop

Conference delegates can also attend the *13th National Workshop on Strongyloidiasis* on Monday 24th September 2018 for an additional registration fee there is more information about the Strongyloides workshop on the conference website (<http://parasite.org.au/2018conference/program/workshop/>).

St Kilda has excellent transport links with the airport bus and Melbourne tram stopping regularly at the front of the

hotel. The Novotel St Kilda Hotel, the Conference Venue, is offering special conference rate, check the advice page for all accommodation options and other helpful advice: [www.parasite.org.au/2018conference/advice/](http://www.parasite.org.au/2018conference/advice/) See the conference website for all the latest conference news: [www.parasite.org.au/2018conference](http://www.parasite.org.au/2018conference)

We would like to acknowledge the generous support of our 2018 ASP conference sponsors, thanks to **Virbac, Elsevier Parasitology and the International Journal for Parasitology (IJP), IJP DDR and IJP PAW.**

Check out the conference website for more information [www.parasite.org.au/2018conference](http://www.parasite.org.au/2018conference) we look forward to seeing you in St Kilda, Melbourne in September 2018!



## ASP Network Researcher Exchange and Travel Awards

This newsletter features five of our JD Smyth Award and Researcher Exchange and Travel Award winners **Shazia Ruybal-Pesántez**, Melbourne University, won the JD Smyth Postgraduate Travel Award in September 2017 and travelled to to Fabián Sáenz's laboratory at the Center for Research on Health in Latin America (CISEAL), Pontifical Catholic University of Ecuador (PUCE), Quito, Ecuador, to apply the “var code” for the first time to malaria parasite populations in an area with lower endemicity than Ghana and that is currently attempting countrywide elimination, such as Ecuador; **Kimberly Evasco**, Murdoch University who completed a training course on live-tick experimental techniques using artificial membranes and other techniques at Neuchâtel University, Switzerland; **Jingyi Tang**, Melbourne University, attended a research training course that was sponsored by OzEMaLaR in November 2015; and **Tina Skinner-Adams** and **Christopher Hart**, who recently visited Andy Thompson and Sam Abraham's Groups at the School of Animal and Veterinary Science, Murdoch University, Perth.

Applications for the next Network Researcher Exchange and Travel Awards round close on 28 September 2018 check the ASP website for guidelines and the application form.

[www.parasite.org.au/awards/jd-smythpostgraduate-travel-awards/](http://www.parasite.org.au/awards/jd-smythpostgraduate-travel-awards/)

## 2018 ASP Conference Invited Speakers

**Clockwise from top left:**

**Kai Matuschewski**  
**Annapaola Rizzoli**  
**Staffan Svärd**  
**Pascal Mäser**



## **Congratulations to all recent ASP Network Researcher Exchange and Travel Awards winners.**

### **JD Smyth Postgraduate Travel Award September 2017**

**Mai Thi Sao Dang**, PhD candidate, University of Tasmania, to attend a short training course on mucosal mapping (Professor Karin Pittman, the inventor of mucosal mapping) and analysis of fish samples at the Department of Biology, University of Bergen, Norway to investigate the interactions between parasites and host mucosal responses.

**Shazia Ruybal-Pesántez**, PhD Candidate, Melbourne University, for a Researcher Exchange to Fabián Sáenz's laboratory at the Center for Research on Health in Latin America (CISEAL), Pontifical Catholic University of Ecuador (PUCE), Quito, Ecuador, to apply the "var code" for the first time to malaria parasite populations in an area with lower endemicity than Ghana and that is currently attempting countrywide elimination, such as Ecuador.

### **JD Smyth Postgraduate Travel Award March 2018**

**Daniel Huston**, PhD Candidate, University of Queensland, for a Researcher Exchange to the Natural History Museum in London, United Kingdom

### **ASP Network Researcher Exchange and Travel Awards September 2017**

**Liriye Kurtovic**, PhD Candidate, Burnet Institute, for a Researcher Exchange to Elke Bergmann-Leitner's laboratory at Walter Reed Army Institute of Research (WRAIR) in Maryland, United States to test human clinical samples from a Phase 2 RTS,S vaccine trial conducted at WRAIR, and characterise the functional antibody response induced by vaccination

**Nichola Calvani**, PhD Student, University

of Sydney, to attend the Parasitology Summer Course (ParSCo) in Basilicata, Italy and Research Exchange at the University of Liverpool with Jane Hodgkinson and Diana Williams

**Kimberly Evasco**, PhD student, Murdoch University for a Training Course on live-tick experimental techniques using artificial membranes and other techniques at Neuchâtel University, Switzerland

**Christopher Hart** (PhD student), GRIDD, Griffith University, for a researcher exchange to visit Aaron Jex, WEHI, Melbourne for anti-Giardia drug discovery research

### **ASP Network Researcher Exchange and Travel Awards March 2018**

**Katharina Stracke**, PhD candidate, WEHI, Jex laboratory for a Researcher Exchange to Thailand for STH research

**Christiane Prosser**, PhD candidate, University of Sydney, for a Researcher Exchange to Thailand for malaria research

**Melanie Ridgway**, PhD student, ANU, to attend Biology of Parasitism Course, Woods Hole, USA from 16 June 2018 and Researcher Exchange to Boston and New York City, USA

**Kate Hutson**, James Cook University, for a Tropical Marine Finfish Parasitology Workshop in June 2018

**Ghizal Siddiqui**, Monash University, for a Researcher Exchange to Becker laboratory, Justus Leibig University Giessen, Germany for malaria research

**Jingyi Tang** (PhD title to be conferred on 11th April 2018), Malaria research fellow, Murdoch University for a Researcher Exchange to Dr Michaela Petter, Mikrobiologisches Institut of Universitätsklinikum Erlangen, (Erlangen, Germany) for malaria research

## **Network Mentorship Scheme**

Network Mentorship Scheme Early career researchers are encouraged to apply to the Network Convenor ([nick.smith@parasite.org.au](mailto:nick.smith@parasite.org.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.

With best wishes,

Nick and Lisa

## **Closing dates for ASP awards**

**ASP Fellowships**  
9 January 2018

**ASP Researcher Exchange, Travel and Training Awards & JD Smyth**  
29 September 2017

**Bancroft-Mackerras Medal for Excellence**  
30 September 2017

More information  
[www.parasite.org.au](http://www.parasite.org.au)



# Upcoming events

## 13th National Workshop on Strongyloidiasis

### "A One-Health Approach to the Prevention and Control of Strongyloidiasis in Australia"

This workshop will take place on Monday 24th September, 2018 from 800am – 430pm at the conference venue, The Novotel St Kilda Hotel, Melbourne.

Cost to attend this one-day workshop is \$200 for regular delegates and \$150 for student delegates and includes morning and afternoon tea and lunch.

Please register online for both the *Strongyloides* Workshop and the 2018 ASP Conference together or you can just register for the *Strongyloides* Workshop

[www.conftool.net/parasitology2018/](http://www.conftool.net/parasitology2018/)

<http://parasite.org.au/2018conference/program/workshop/>

strongyloidiasis caused by *Strongyloides stercoralis*, is endemic in Australia especially in Aboriginal communities in the tropics and subtropics, in both high and low rainfall regions. Prevalences between 5% and 59% have been recorded. Strongyloidiasis is also seen in immigrants, returned service personnel and returned travellers from countries where it is endemic.

Strongyloidiasis is a soil-transmitted helminth and has been classified by the WHO as a Neglected Tropical Disease. Infected individuals can become asymptomatically chronic carriers and help ongoing transmission of the disease. Laboratory diagnosis is difficult because larval output in faeces is low and intermittent. Serological diagnosis also has limitations especially in borderline cases and for follow up after treatment.

The aims of the National Strongyloidiasis Working Group (NSWG) are:

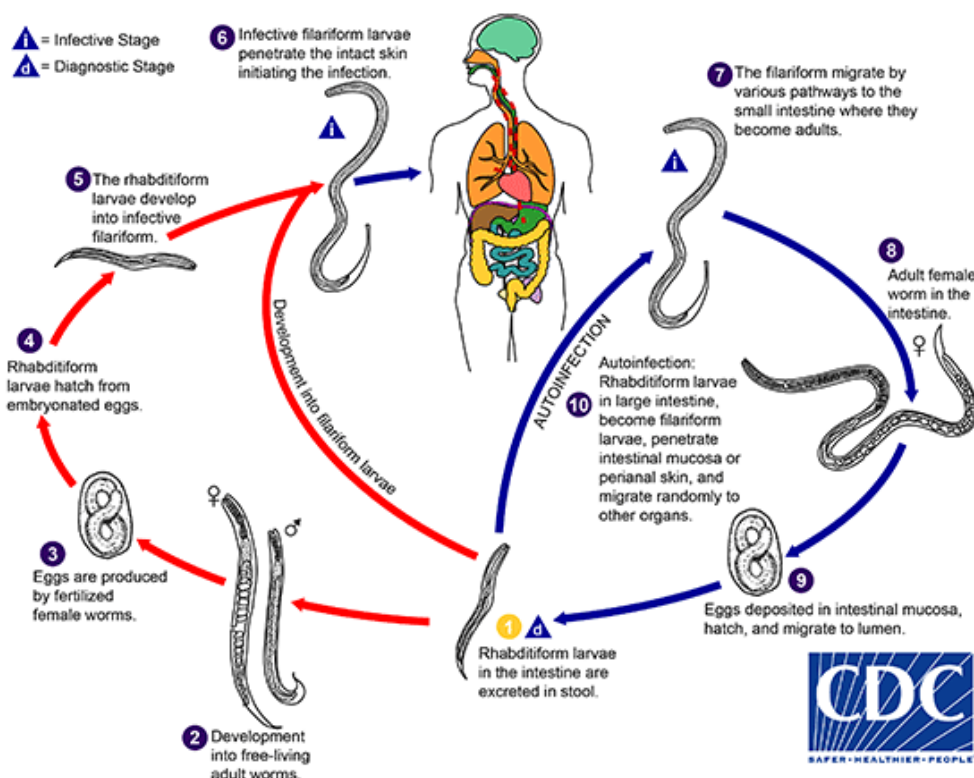
- to raise awareness of strongyloidiasis
- to inform health professionals and

community members about the disease and its diagnosis, treatment, prevention and control

- to advocate on behalf of affected peoples, particularly Indigenous communities in Australia for appropriate changes to government policy in relation to prevention, diagnosis and treatment based upon current research.

The workshop will include presentations of research in the biology of *Strongyloides stercoralis*, prevention, diagnosis and treatment of the disease, as well as panel discussions about gaps in our knowledge and strategies for eliminating the disease in endemic communities.

The ultimate goal of the NSWG is prevention



**Strongyloides LifeCycle**

Courtesy Centers for Disease Control and Prevention



# ASP Network Researcher Exchange, Training and Travel Award Reports

**Dr Tina Skinner-Adams and PhD Candidate, Christopher Hart, recently visited Andy Thompson and Sam Abraham's Groups at the School of Animal and Veterinary Science, Murdoch University, Perth**

This visit in March 2018 facilitated a collaboration between Murdoch University and the Griffith Institute of Drug Discovery (GRIDD) aimed at identifying new anti-Giardia drug leads with potent in vivo activity.

During their visit Dr Skinner-Adams and Mr Hart were able to discuss this project together with additional veterinary drug discovery plans with members of the team at Murdoch.

They also directly observed the in vivo anti-Giardia murine model in use at Murdoch while participating in the

assessment one their leading anti-Giardia drug candidates in this model. This in vivo anti-Giardia model is directly related to Mr Hart's PhD project and will facilitate the establishment of this neonate mouse model at GRIDD in QLD.

While data from the pre-clinical trial with the lead compound assessed in the model during Tina and Chris' visit are still being collated, preliminary assessments are encouraging, suggesting that this lead reduces parasite burden in mice by ~75% at a dose of 0.7mg/kg daily for three days (as a comparison the metronidazole control was administered at 100mg/kg/day for three days).

This exciting data will facilitate further studies in this area and have provided proof-of-concept in vivo data required for patent discussions. Publications are also planned depending on the patent position.

Discussions with team members at

Murdoch re additional drug discovery efforts have also resulted in plans for Murdoch to access the compound libraries deposited at Compounds Australia in GRIDD to facilitate further discovery.

A reciprocal visit by Rebecca Abraham (recently submitted PhD thesis) to GRIDD has also been discussed to facilitate additional drug discovery work in the malaria space.

**Left: Faecal samples collected from mice for *Giardia* cyst assessment**

**Below top: Chris Hart and Rebecca Abraham. Harry Perkin's Research Institute Animal House, Murdoch.**

**Below bottom: Chris Hart with Rebecca Abraham. Murdoch University Laboratories, Murdoch**





## Shazia Ruybal Pesántez of the Bio21 Institute at the University of Melbourne reports on a fruitful trip to the USA and Ecuador.

Thanks to the generous support of the Australian Society for Parasitology through the JD Smyth Postgraduate Travel Award, I was able to travel to the American Society of Tropical Medicine & Hygiene (ASTMH) Annual Meeting in Baltimore, USA and following this, to partake in a researcher exchange in the laboratory of Dr. Fabian Saenz in Quito, Ecuador.

The ASTMH Annual Meeting was held in Baltimore from the 5th to 9th of November, 2017. It is the largest gathering of scientists, public health, industry and government professionals working on global health and infectious diseases with over 4,400 participants from over 100 countries. I was selected to present in the ASTMH Young Investigator Award (YIA) Presentations alongside an international pool of promising young scientists as well as in the regular ASTMH Poster Sessions. I presented my abstract entitled "Var code: a new molecular epidemiology tool for monitoring *Plasmodium falciparum* in a high transmission setting of Ghana, West Africa", consisting of the major results of my PhD thesis, including laboratory and analytical methods recently published in Scientific Reports in September 2017 and unpublished results currently being written up. The selection process for the YIA was based on my abstract and the potential impact of my PhD findings to the malaria field and is highly competitive. Overall, I received considerable exposure to leading malaria researchers and experts in the field and importantly, I received positive feedback on my work as well as had the opportunity to discuss possible postdoctoral opportunities upon my graduation. I have now incorporated several important suggestions from the feedback I received, including new ways to discuss our results in light of cutting-

edge research and novel results from other studies that were presented at this meeting, to improve my manuscript that is close to submission.

Following the ASTMH conference, I traveled to Quito, Ecuador from 13th November 2017 - 14th February 2018 to partake in a researcher exchange in the laboratory of Dr. Fabián Sáenz at the Center for Research on Health in Latin America (CISeAL) at the Pontifical Catholic University. The aim of this exchange was to apply the "var code" to examine *Plasmodium falciparum* malaria parasite populations in Latin America for the first time, specifically in Ecuador where countrywide malaria elimination is being attempted. The "var code", a novel and cost-effective molecular epidemiology tool under development as a direct result of my PhD work, can be applied to genetically fingerprint parasite isolates using var genes, the genes encoding the major variant surface antigen involved in immune evasion, as biomarkers for surveillance. The work from this collaborative research project represents a novel examination of malaria parasite populations in Ecuador using molecular and genetic tools that are not traditionally used for malaria surveillance in Latin America.

When I first arrived I focused on capacity building at CISeAL involving the specific training of the Sáenz laboratory members (MSc and PhD students) on the laboratory protocols and the population genomic analytical framework we have developed in Prof. Day's Research Group at Bio21 Institute/ University of Melbourne (Bio21/UoM) to process parasite isolates collected in the field, focusing on our specific protocols to avoid cross-contamination of field isolates and ensure repeatability and consistency for subsequent epidemiologic analyses. I also presented a series of short lab talks on various topics related to *P. falciparum* var genes, epidemiological var studies, and the applications of the var code, since this is not their area of expertise. This worked out well since there were unforeseen delays in receiving the reagents we needed to complete the laboratory work.

Following this, I genotyped the var genes of Ecuadorian *P. falciparum* isolates that Dr. Sáenz and his research group collected during a malaria outbreak in the coast of Ecuador from 2013-2015. Intriguingly, Ecuador had declared that they were in a malaria pre-elimination phase when *P. falciparum* malaria cases reached a striking low after



2012. Yet in 2013 there was a national malaria outbreak and there has been a considerable spike in *P. falciparum* cases since then. We have the unique opportunity to examine parasite isolates collected during this outbreak.

Towards the end of my exchange, I was invited to give a seminar to CISEAL and all institute members including laboratory heads, principal investigators, undergraduate and postgraduate students. My talk entitled “¿Por qué es difícil controlar la malaria?/ Why is it difficult to control malaria?” was well received. One attendee, a former official from the Ministry of Public Health in Ecuador who was very interested in the applications of the var code and overall scientific findings from my PhD work for malaria surveillance in Ecuador. This talk was live streamed to other institute members and the CISEAL collaborating institution, Ohio University, USA.

Now, we are currently in the process of sending the samples genotyped in Ecuador for illumina high-throughput sequencing that will be completed here in Melbourne since my return.

This exchange has facilitated the establishment of an ongoing collaboration between the research

groups at CISEAL and Bio21/UoM.

Discussions that took place during my exchange have led to new lines of inquiry into this project and relevant questions that need to be answered, which were a direct result of combining their expertise in malaria epidemiology in Latin America and our expertise in genetic epidemiology and population genetics of malaria. We are currently exploring ways in which we can disseminate the results from this work to the malaria community as well as the broader infectious diseases (ID) community. We are also encouraging new avenues for collaborations between the broader ID community in Ecuador/Latin America through CISEAL and Australian researchers interested in conducting ID research in Latin America by circulating information about the 5th International Meeting of Research in Infectious Diseases and Tropical Medicine, to be held at CISEAL in late 2018.

During my exchange, I was also able to successfully network with the broader ID community at other top universities and institutions in Ecuador and disseminate my PhD work through several presentations. I was invited to speak at the highly-regarded University of San Francisco of Quito. Additionally, I was invited to give a talk on malaria at the Ecuadorian Red Cross National Blood Center and lead a training workshop for the laboratory technicians on PCR techniques for their donor blood screening protocols. The blood center is interested in examining the risk of transfusion-transmitted malaria in Ecuador since it hasn't been investigated before. Following these discussions, we are exploring the possibility of applying for a grant through Roche that will fund a pilot study in Ecuador to assess the prevalence of malaria parasites in blood donor samples. Furthermore, I was invited to work as a malaria field epidemiology consultant for the Tropical Medicine Disease Outbreak Team from the Central University of Ecuador, as they were responding to a serious malaria outbreak in the Ecuadorian coast and collecting samples for subsequent genetic and laboratory analyses. Unfortunately, due

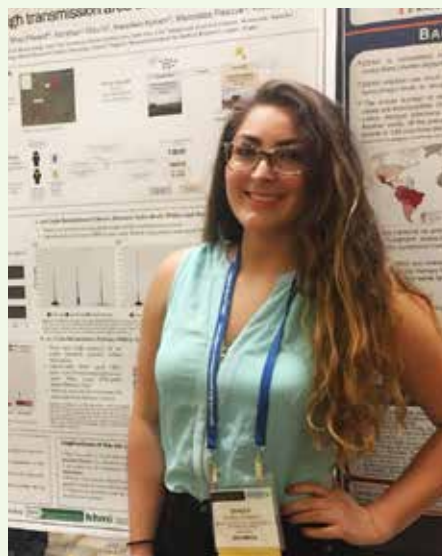
to bomb threats, I was unable to attend, however, we have continued to explore ways to collaborate and for me to provide my genetic epidemiology expertise upon my return to Melbourne.

Overall this exchange was extremely productive and successful. I acquired important skills in communicating my scientific findings to different audiences (and communicating them in Spanish), developing and leading training workshops, as well as establishing important contacts and possible opportunities for future collaborations. The success of the exchange at CISEAL would not be possible without Dr. Fabián Sáenz and his lab members who opened their doors and welcomed this collaboration. Particularly, Ms. Claudia Vera-Arias was extremely helpful in providing all the necessary equipment, reagents and worked alongside me during the genotyping of the samples. In addition, Dr. Saenz and his wealth of knowledge of malaria epidemiology and elimination efforts in Ecuador, has been invaluable for discussions on how to write up the findings from this work to be useful for publication and dissemination to malaria researchers in Latin America, the broader international malaria community as well as the Ministry of Public Health of Ecuador for use in their future malaria elimination strategies. The insights and results we will obtain from this work will be important to better understand malaria transmission patterns in the region, and provide new ways to monitor the source of new malaria cases in Ecuador and to distinguish whether they are due to local or imported transmission. This will be vital information for malaria elimination campaigns in Ecuador. Importantly, through this work we will also validate a cost-effective molecular epidemiology tool that can be incorporated into existing surveillance systems in the Latin American region.

**Next page: more pictures from Shazia's exchange to the USA and Ecuador.**

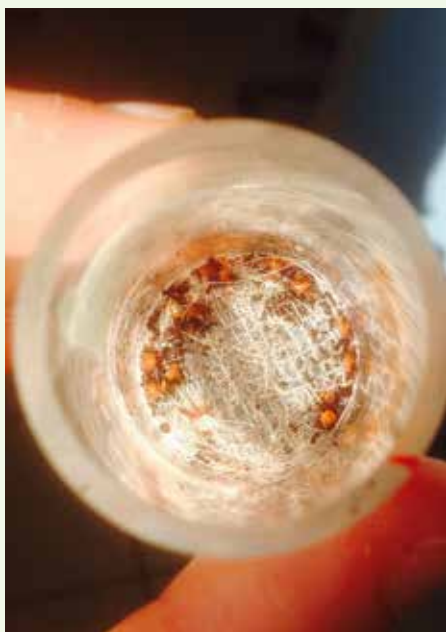






## Kimberly Evasco of Murdoch University describes a visit to Dr Thomas Kröber at the University of Neuchâtel (Switzerland) and visits to the Bayer Crop Science and Freie Universität parasitology labs (Germany).

My PhD involves investigating microbial transmission dynamics in native Australian ticks. Techniques essential to my research include laboratory-based tick-rearing and handling. *In vitro* membrane-based tick feeding systems, mimicking natural skin, are well-developed in the Northern hemisphere, with University of Neuchâtel's researchers world-renowned for their expertise.



**Above: View inside the feeding chamber, showing adult *Ixodes ricinus* ticks voluntarily attached**

**Right: Kimberly with Dr Thomas Kröber (top left), the Institute of Biology at the University of Neuchâtel (top right) and a view of Neuchâtel, Switzerland (bottom).**

Thanks to the ASP, Bayer Animal Health and Murdoch University, I had the privilege of being formally taught by Dr Thomas Kröber and Associate Professor Patrick Guerin at the University of Neuchâtel (UniNe) in Switzerland. Within only a few hours of my plane touching down in Switzerland, we commenced the week-long formal course, covering tick sensory biology, *in vitro* feeding techniques and just as importantly, experiment evaluation principles. I learned how to manufacture the feeding systems and attachment chemostimuli, brushing up on my chemistry in the process.

Within 24 hours of commencing training, adult *Ixodes ricinus* ticks were already attached and actively feeding on my first *in vitro* system! UniNe was kind enough to invite me to speak as part of their regular seminar series, which introduced me to some remarkable scientists, all offering invaluable guidance for my project.

Following the UniNe training, I visited Dr Andreas Turberg's Arthropodocides Research Lab at Bayer Animal Health, based in Monheim, Germany. Dr

Turberg's team offered first-hand insight into 'real-world' commercial applications of *in vitro* tick rearing, comparing *in vitro* and *in vivo* ectoparasiticide screening models. I practiced alternative artificial membrane construction techniques, harvesting engorged ticks, *in vitro* ectoparasiticide screening, microinjection, as well as observing later-stage *in vivo* product screening.

Before departing Germany, Dr Ard Nijhof and the Institute of Parasitology and Tropical Veterinary Medicine (Freie Universität, Berlin) kindly invited me to participate in their tick-related research activities for a few days, chiefly practicing *in vitro* tick rearing.

I am very excited to be applying and sharing my new skills here in Australia. In addition to thanking the host laboratories, my sincerest thanks go to the ASP, Bayer Animal Health Germany and Murdoch University for their generous financial and logistical support.





# OzEMalaR Researcher Exchange, Training and Travel Award Reports

## Jingyi Tang of the University of Melbourne recalls a career-changing trip to Cambridge.

I was fortunate enough to be given the opportunity to attend the Wellcome Trust Chromatin Structure and Function Advanced Course in Genome Campus, Hinxton, Cambridge, UK from the 26th of October to the 4th of November 2015, with the awarded OzEMalaR travel scholarship. I am truly grateful for the funding, without which I would not be able to learn the state-of-the-art bioinformatics that I applied to my sequencing data analyses immediately

upon my return to Melbourne, Australia.

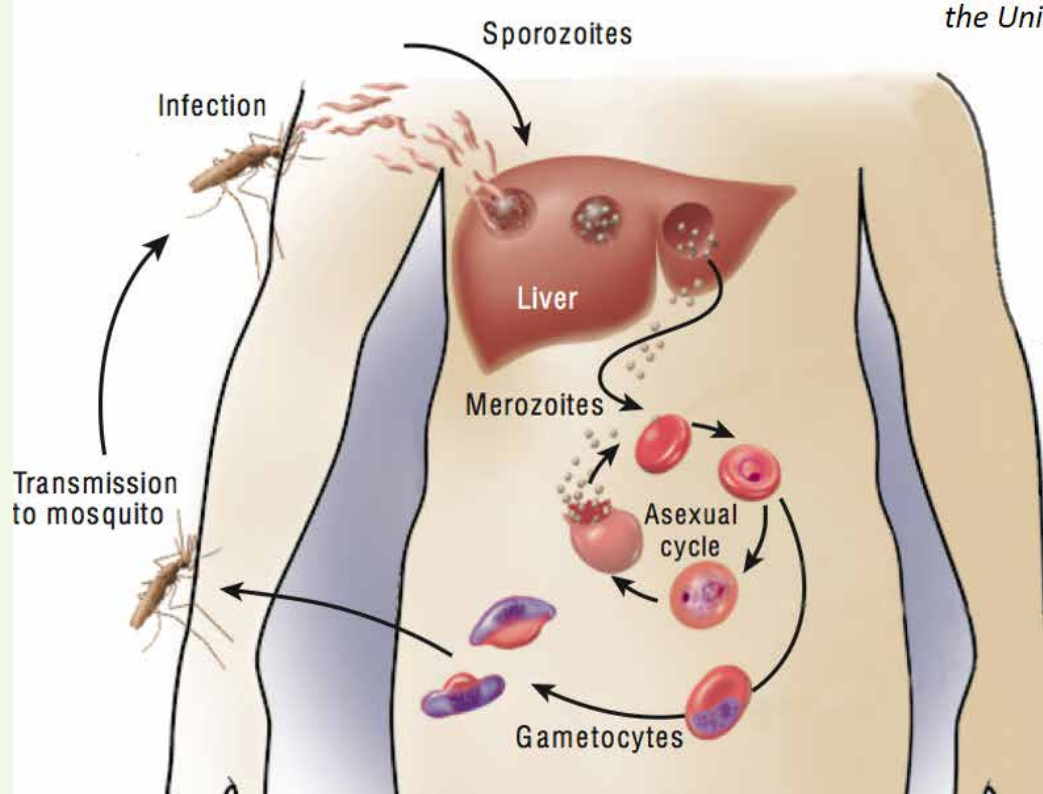
Although it has been over two years, I still remember clearly how the course transformed me from a pure wet-lab PhD student to an office-based data analyst. The course represented my first formal training in bioinformatics. I subsequently discovered that I have a genuine interest in bioinformatics, something which can be both logical and fun!

In 2016, I published a second-author paper that is linked to the training I received (Michael F. Duffy, Jingyi Tang, Fransisca Sumardy, Hanh H.T. Nguyen, Shamista A. Selvarajah, Gabrielle A. Josling, Karen P. Day, Michaela Petter &

Graham V. Brown 2016, 'Activation and clustering of a *Plasmodium falciparum* var gene are affected by subtelomeric sequences', *FEBS J*, vol. 284, no. 2, pp. 237-57.). I am currently employed as a post-doc researcher in my PhD lab, using my bioinformatics skills and studying the chromatin structure dynamics of *Plasmodium falciparum* gametocytes.

During the course, I was also able to learn new experimental techniques and compare our techniques with others. I have shared protocols that I obtained from the course with all lab members, which fostered insightful discussions. Attending this course truly helped shape my career path.

## Identification of Regulatory Elements in the malaria parasite *Plasmodium falciparum*



Jingyi Tang  
Department of Medicine (RMH),  
the University of Melbourne



THE UNIVERSITY OF  
MELBOURNE



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(Miller et al. 2002)

## National Council of Women NSW Award

**Cara Wilson of Charles Sturt University has been recognised with a National Council of Women NSW Australia Day award.**

PhD student and ASP member Cara Wilson, Graham Centre, Charles Sturt University, has been recognised with a National Council of Women NSW Australia

Day award. The award, sponsored by the Sydney Mechanics School of Arts (SMSA) was presented on the 24th of January 2018 at Parliament House in Sydney. The award recognises her leadership and achievement in the study of veterinary epidemiology, investigating the impact of the hydatid tapeworm on the Australian beef industry.

The National Council of Women focuses on recognising and fighting for women's

rights and equal opportunities. Ms Wilson said "I am honoured to receive this award as women play a key role in the agricultural industry."

**Cara Wilson (centre) receiving a National Council of Women NSW Australia Day award**





# IJP

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## 47:13 (November 2017)

### Succinctus

Evidence for an important role of host microRNAs in regulating hepatic fibrosis in humans infected with *Schistosoma japonicum* Sandrine Cabantous, Xunya Hou, Laurence Louis, Hongbin He, Odette Mariani, Xavier Sastre, Martine Daujat-Chavanieu, Yuesheng Li, Alain Dessein

### Original Research Articles

Whipworm kinomes reflect a unique

biology and adaptation to the host animal. Andreas J. Stroehlein, Neil D. Young, Pasi K. Korhonen, Bill C. H. Chang, Peter Nejsum, Edoardo Pozio, Giuseppe La Rosa, Paul W. Sternberg, Robin B. Gasser

Evidence that blood flukes (Trematoda: Aporocotylidae) of chondrichthyans infect bivalves as intermediate hosts: indications of an ancient diversification of the Schistosomatoidea. Thomas H. Cribb, Rowan C. Chick, Wayne O'Connor, Stephan O'Connor, Daniel Johnson, Kim B. Sewell, Scott C. Cutmore

## 47:14 (December 2017)

### Original Research Articles

Characterizing the effect of antimalarial drugs on the maturation and clearance of murine blood-stage *Plasmodium* parasites in vivo. David S. Khoury, Deborah Cromer, Trish Elliott, Megan S. F. Soon, Bryce S. Thomas, Kylie R. James, Shannon E. Best, Rosemary A. Aogo, Jessica A. Engel, Kate H. Gartlan, Jasmin Akter, Ismail Sebina, Ashraful Haque, Miles P. Davenport

Functional genomic exploration reveals that Ss-RIOK-1 is essential for the development and survival of *Strongyloides stercoralis* larvae. Wang Yuan, Huan Zhou, James B. Lok, Weiqiang Lei, Siyuan He, Robin B. Gasser, Rui Zhou, Rui Fang, Yanqin Zhou, Junlong Zhao, Min Hu

## 48:01 (January 2018)

### Review Article

Foodborne cryptosporidiosis. Una Ryan Nawal Hijjawi, Lihua Xiao

### Original Research Articles

Transcriptome and toxin family analysis of the paralysis tick, *Ixodes holocyclus*. Manuel Rodriguez-Valle, Paula Moolhuijzen, Roberto A. Barrero, Chian Teng Ong, Greta Busch, Thomas Karbanowicz, Mitchell Booth, Richard Clark, Johannes Koehbach, Hina Ijaz, Kevin Broady, Kim Agnew, Aleta G. Knowles, Matthew I. Bellgard, Ala E. Tabor

*Plasmodium falciparum* export protein 1



## International Journal for Parasitology continued

PFE60 influences Maurer's cleft architecture and virulence complex composition. Meng Zhang, Pierre Faou, Alexander G. Maier, Melanie Rug

### 48:02 (February 2018)

#### Original Research Articles

Morphological variation in the cosmopolitan fish parasite *Neobenedenia girellae* (Capsalidae: Monogenea). Alexander K. Brazenor, Richard J. Saunders, Terrence L. Miller, Kate S. Hutson

### 48:03/04 (March 2018)

#### Original Research Articles

Characterization of the *Theileria parva* sporozoite proteome. James Nyagwange, Edwin Tijhaar, Nicola Ternette, Fredrick Mobegi, Kyle Tretina, Joana C Silva, Roger Pelle, Vishvanath Nene

### 48:05 (April 2018)

Special Issue – Molecular and Cellular Biology of Helminth Parasites XI

#### Invited Reviews

Advances in *Fasciola hepatica* research using 'omics' technologies. Krystyna Cwiklinski, John P. Dalton

Serine proteases in schistosomes and other trematodes. Jan Dvořák, Martin Horn

#### Original Research Articles

Antigenic cross-reactivity between *Schistosoma mansoni* and pollen allergens from the birch tree (*Betula verrucosa*) and Timothy grass (*Phleum pratense*): involvement of shared glycan epitopes and implications for the hygiene hypothesis. Joseph E. Igetei, Marwa El-Faham, Susan Liddell, Gabriele Schramm, Michael J. Doenhoff

*Heligmosomoides polygyrus* Venom Allergen-like Protein-1 4 (HpVAL-4) is a sterol binding protein. Oluwatoyin A. Asojo, Rabih Darwiche, Selam Gebremedhin, Geert Smant, Jose L. Lozano-Torres, Claire Drurey, Jeroen Pollet, Rick M. Maizels, Roger Schneider, Ruud H. P. Wilbers

Crystal structure of *Brugia malayi* venom allergen-like 1 protein-1 (BmVAL-1), a vaccine candidate for lymphatic filariasis. Rabih Darwiche, Fernanda Lugo, Claire Drurey, Koen Varossieau, Geert Smant, Ruud H. P. Wilbers, Rick M. Maizels, Roger Schneider, Oluwatoyin A. Asojo

TGF- $\beta$  mimic proteins form an extended gene family in the murine parasite *Heligmosomoides polygyrus*. Danielle J. Smyth, Yvonne H Marcus, Madeleine P. J.

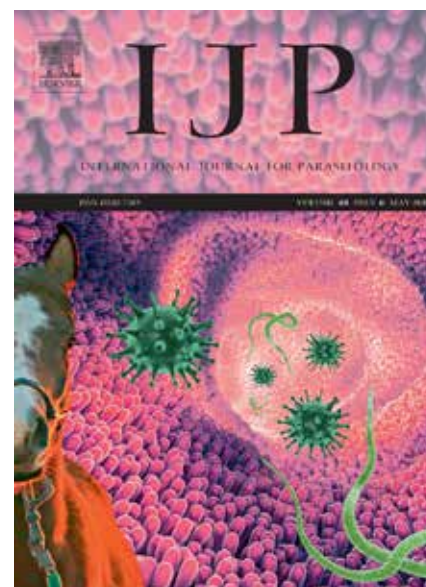
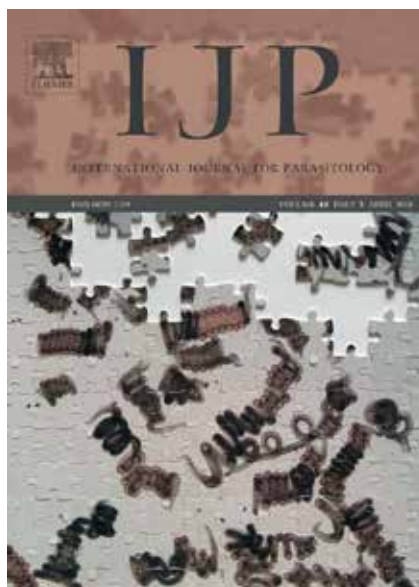
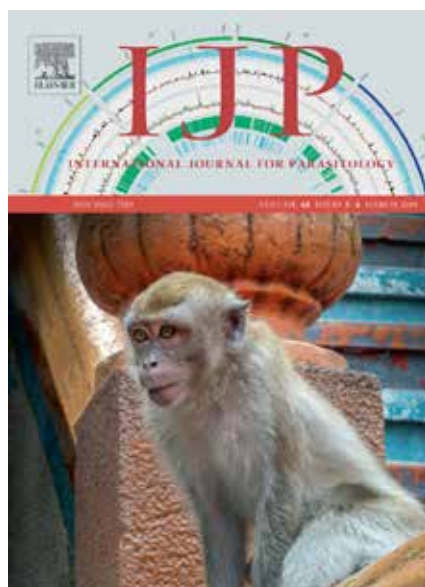
White, William F. Gregory, Janina Nahler, Ian Stephens, Edward Toke-Bjølgerud, James P Hewitson, Alasdair Ivens, Henry J. McSorley, Rick M. Maizels. Clearance of schistosome parasites by resistant genotypes at a single genomic region in *Biomphalaria glabrata* snails involves cellular components of the hemolymph

Euan R. O. Allan, Benjamin Gourbal, Camila B. Does, Anais Portet, Christopher J. Bayne, Michael S. Blouin. Transcriptomic profiling of nematode parasites surviving vaccine exposure. Guillaume Sallé, Roz Laing, James A. Cotton, Kirsty Maitland, Axel Martinelli Nancy Holroyd, Alan Tracey, Matthew Berriman, W. David Smith, George F. J. Newlands, Eve Hanks, Eileen Devaney, Collette Britton

### 48:06 (May 2018)

#### Original Research Articles

RNA-Seq analysis during the life cycle of *Cryptosporidium parvum* reveals significant differential gene expression between proliferating stages in the intestine and infectious sporozoites. Christoph Lippuner, Chandra Ramakrishnan, Walter U. Basso, Marc W. Schmid, Michal Okoniewski, Nicholas C. Smith, Michael Hässig, Peter Deplazes, Adrian B. Hehl







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**Editors: R.C. Andrew Thompson, Susan Kutz**

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*IJP-PAW* has a Facebook page, please check it out and like us and some of our articles so we can promote the journal and all of the wonderful research published through *IJP-PAW*

**We are delighted to welcome Susan Kutz to International Journal for Parasitology: Parasites and Wildlife as Co-Editor-In-Chief from April 2018.**

**Susan is Professor of Ecosystem Public Health at the University of Calgary and brings a wealth of experience and research interests to the journal. These include wildlife parasitology and disease ecology, as well as the conservation of healthy ecosystems in the face of environmental disturbance.**

The following articles were recently published by ASP members and associates in *IJP:PAW*

Pratap Kafle, Lisa-Marie Leclerc, Morgan Anderson, Tracy Davison, Manigandan Lejeune, Susan Kutz, Morphological keys to advance the understanding of protostrongylid biodiversity in caribou (*Rangifer* spp.) at high latitudes, *International Journal for Parasitology: Parasites and Wildlife*, Volume 6, Issue 3, 2017, Pages

331-339, ISSN 2213-2244, <https://doi.org/10.1016/j.ijppaw.2017.08.009>. (<http://www.sciencedirect.com/science/article/pii/S2213224417300810>)

**Abstract:** The *Protostrongylidae* is a diverse family of nematodes capable of causing significant respiratory and neuromuscular disease in their ungulate and lagomorph hosts. Establishing the species diversity and abundance of the protostrongylid fauna has been hindered because the first stage larvae, commonly referred as dorsal spined larvae (DSL), that are shed in the feces are morphologically very similar among several genera. We aimed to determine the protostrongylid diversity and distribution in caribou (*Rangifer tarandus groenlandicus* and *R. t. pearyi*) in the central and high Canadian Arctic. We first developed, tested and validated a morphological diagnostic guide for the DSL of two important protostrongylids, *Parelaphostrongylus andersoni* and *Varestrongylus eleguneniensis*, and then applied this guide to determine the prevalence and intensity of infection of these parasites

in fecal samples from 242 caribou. We found that DSL of *V. eleguneniensis* and *P. andersoni* can be differentiated morphologically based on the structural differences at the caudal extremity. The presentation and morphology of the dorsal spine, and caudoventral bulging at the start of the tail extension were identified as the key identifying features. The two species were found in caribou on the arctic mainland and southern Victoria Island in single and co-infections, but the prevalence and intensity of infection was low. No protostrongylids were detected in caribou from the high arctic islands. Through this study, we provide a simple, efficient, and robust method to distinguish the DSL of the two protostrongylids, and present the current status of infection in different herds of caribou of the central Canadian Arctic. We report new geographic and host records for *P. andersoni* infection in Dolphin and Union caribou herd.

Robert Poulin, Invasion ecology meets parasitology: Advances and challenges, *International Journal for Parasitology: Parasites and Wildlife*, Volume 6, Issue 3, 2017, Pages 361-363, ISSN 2213-2244, <https://doi.org/10.1016/j.ijppaw.2017.03.006>. (<http://www.sciencedirect.com/science/article/pii/S2213224417300391>)



**Abstract:** Biological invasions threaten the diversity and functioning of native ecosystems, and the rate at which species are being introduced to new areas shows no sign of slowing down. Parasites play roles in biological invasions, for instance when native parasites interact with exotic hosts, or when parasites themselves are introduced to new areas. However, publication trends show clearly that research on parasitism in the context of biological invasions is lagging far behind research on biological invasions in general. The different articles in this special issue of International Journal for Parasitology–Parasites and Wildlife on ‘Invasions’ address various aspects of the interface between parasitology and invasion biology, including how invasive free-living species lose or gain parasites on the invasion front as they move away from their site of introduction, how these invasive species affect the dynamics of native parasites, and how exotic parasites become established and impact native hosts. Together, they highlight the challenges facing researchers in this area, and set the agenda for the next few years of research.

Erin Kelly, Amanda D. Barbosa, Susan Gibson-Kueh, Alan J. Lymbery, Haematozoa of wild catfishes in northern Australia, International Journal for Parasitology: Parasites and Wildlife, Volume 7, Issue 1, 2018, Pages 12-17, ISSN 2213-2244, <https://doi.org/10.1016/j.ijppaw.2017.12.002>. (<http://www.sciencedirect.com/science/article/pii/S2213224417301189>)

**Abstract:** Very little is known about the diversity, prevalence, or pathogenicity of haematozoa in Australian freshwater fishes. Blood smears from 189 native catfishes, of six different species, from northern Australia were examined for haematozoa. Haematozoan infections were observed only in fishes from Queensland, at an overall prevalence of 0.191 (95% CI = 0.134–0.265). Intraerythrocytic haemogregarines were present in *Neoarius graeffei* from the Brisbane River at a prevalence of 0.35 (0.181–0.567). Trypanosomes were present in *Tandanus*

species from four rivers, at prevalences ranging from 0.111 (0.020–0.330) to 1 (0.635–1), and in *N. graeffei* from one river in Queensland, at a prevalence of 0.063 (0.003–0.305). The haematozoans observed appeared to have little impact on their hosts. *Tandanus* spp. were significantly more likely to be infected with trypanosomes, suggesting a high parasite–host specificity. This is the first widespread survey of wild Australian freshwater catfishes for haematozoa, resulting in the first report of haemogregarines from Australian freshwater fish, and the first report of trypanosomes from *Neoarius graeffei* and *Tandanus tropicanus*.

Anson V. Koehler, Tao Wang, Shane R. Haydon, Robin B. Gasser, *Cryptosporidium viatorum* from the native Australian swamp rat *Rattus lutreolus* - An emerging zoonotic pathogen?, International Journal for Parasitology: Parasites and Wildlife, Volume 7, Issue 1, 2018, Pages 18-26, ISSN 2213-2244, <https://doi.org/10.1016/j.ijppaw.2018.01.004>. (<http://www.sciencedirect.com/science/article/pii/S2213224417301372>)

**Abstract:** *Cryptosporidium viatorum* is a globally distributed pathogenic species of *Cryptosporidium* that has only ever been recorded from humans, until now. For the first time, we molecularly characterised a novel subtype of *C. viatorum* (subtype XVbA2G1) from the endemic Australian swamp rat (*Rattus lutreolus*) using the small subunit of nuclear ribosomal RNA (SSU) gene and then subtyped it using the 60-kilodalton glycoprotein (gp60) gene. In total, faecal samples from 21 swamp rats (three were positive for *C. viatorum*), three broad toothed rats (*Mastacomys fuscus*) and two bush rats (*Rattus fuscipes*) were tested for *Cryptosporidium*. The long-term, isolated nature of the swamp rat population in Melbourne's drinking water catchment system (where public access is prohibited), the lack of *C. viatorum* from other mammals and birds living within the vicinity of this system and its genetic distinctiveness in both the SSU and gp60 gene sequences from other species of *Cryptosporidium* collectively suggest that

*C. viatorum* might be endemic to native rats in Australia. The current state of knowledge of epidemiological surveys of *Cryptosporidium* of rats and the zoonotic potential are further discussed in light of the finding of *C. viatorum*. Long-term studies, with the capacity to repetitively sample a variety of hosts in multiple localities, in different seasons and years, will allow for greater insight into the epidemiological patterns and zoonotic potential of rare *Cryptosporidium* species such as *C. viatorum*.

Crystal Cooper, Sarah Keatley, Amy Northover, Alex W. Gofton, Frances Brigg, Alan J. Lymbery, Louise Pallant, Peta L. Clode, R.C. Andrew Thompson, Next generation sequencing reveals widespread trypanosome diversity and polyparasitism in marsupials from Western Australia, International Journal for Parasitology: Parasites and Wildlife, Volume 7, Issue 1, 2018, Pages 58-67, ISSN 2213-2244, <https://doi.org/10.1016/j.ijppaw.2018.01.005>. (<http://www.sciencedirect.com/science/article/pii/S2213224417300895>)

**Abstract:** In Western Australia a number of indigenous *Trypanosoma* spp. infect





## IJP:PAW continued

susceptible native marsupials, such as the woylie (*Bettongia penicillata*), brushtail possum (*Trichosurus vulpecula*), and chuditch (*Dasyurus geoffroii*). Two genotypes of *Trypanosoma copemani* (identified as G1 and G2) have been found in the woylie, and G2 has been implicated in the decline of this host species, making its presence of particular interest. Here we used targeted amplicon next generation sequencing (NGS) of the *Trypanosoma* 18S rDNA loci on 70 *Trypanosoma*-positive marsupial blood samples, to identify *T. copemani* genotypes and multiple *Trypanosoma* infections (polyparasitism) in woylies and cohabiting species in Western Australia. Polyparasitism with *Trypanosoma* spp. was found in 50% of the wildlife sampled, and within species diversity was high, with 85 zero-radius operational taxonomic units (ZOTUs) identified in nine putative parasite species. *Trypanosoma copemani* was assigned 17 ZOTUs and was identified in 80% of samples. The most abundant ZOTU isolated (63%) differed slightly from the published genotype of G1, and G2 was the second most abundant ZOTU (14%). Trypanosome diversity was significantly greater in woylies than in

brushtail possums, and parasite community composition also differed significantly between these host species. One novel *Trypanosoma* spp. genotype (*Trypanosoma* sp. ANU2) was found in 20% of samples. A species of Crithidia was detected in a woylie, and two avian trypanosomes (*Trypanosoma avium* and *Trypanosoma* sp. AAT) were identified in woylies for the first time.

Jerald Yam, Sarah Gestier, Benn Bryant, Michelle Campbell-Ward, Daniel Bogema, Cheryl Jenkins, The identification of *Theileria bicornis* in captive rhinoceros in Australia, International Journal for Parasitology: Parasites and Wildlife, Volume 7, Issue 1, 2018, Pages 85-89, ISSN 2213-2244, <https://doi.org/10.1016/j.ijppaw.2017.12.003>. (<http://www.sciencedirect.com/science/article/pii/S2213224417301268>)

**Abstract:** Poaching of both black (*Diceros bicornis*) and white (*Ceratotherium simum*) rhinoceros in Africa has increased significantly in recent years. In an effort to ensure the survival of these critically endangered species, breeding programs were established in the 1990s in Australia,

where a similar climate and habitat is available. In this study we examined blood samples from two *C. simum*, including a 16 yr old female (Aluka) who died in captivity, and a 17 yr old asymptomatic male (Umfana). Bloods from seven healthy *D. bicornis* housed at the zoo were also collected. All samples were tested for the presence of piroplasms via blood smear and PCR. A generic PCR for the 18S rRNA gene of the Piroplasmida revealed the presence of piroplasm infection in both dead and asymptomatic *C. simum*. Subsequent sequencing of these amplicons revealed the presence of *Theileria bicornis*. Blood smear indicated that this organism was present at low abundance in both affected and asymptomatic individuals and was not linked to the *C. simum* mortality. *T. bicornis* was also detected in the *D. bicornis* population (n = 7) housed at Taronga Western Plains Zoo using PCR and blood film examination; however only animals imported from Africa (n = 1) tested *T. bicornis* positive, while captive-born animals bred within Australia (n = 6) tested negative suggesting that transmission within the herd was unlikely. Phylogenetic analysis of the full length *T. bicornis* 18S rRNA genes classified this organism outside the clade of the transforming and non-transforming *Theileria* with a new haplotype, H4, identified from *D. bicornis*. This study revealed the presence of *Theileria bicornis* in Australian captive populations of both *C. simum* and *D. bicornis* and a new haplotype of the parasite was identified.





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## Drugs and Drug Resistance

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*IJPP-DDR* has a Facebook page, please check it out and like us and some of our articles so we can promote the journal and all of the wonderful research published through *IJPP-DDR*

The following articles were recently published by ASP members and CIP participants in *IJPP-DDR*

Madhu Sundaraneedi, Ramon M. Eichenberger, Rafid Al-Hallaf, Dai Yang, Javier Sotillo, Siji Rajan, Phurpa Wangchuk, Paul R. Giacomini, F. Richard Keene, Alex Loukas, J. Grant Collins, Mark S. Pearson, Polypyridylruthenium(II) complexes exert in vitro and in vivo nematocidal activity and show significant inhibition of parasite acetylcholinesterases, *International Journal for Parasitology: Drugs and Drug*

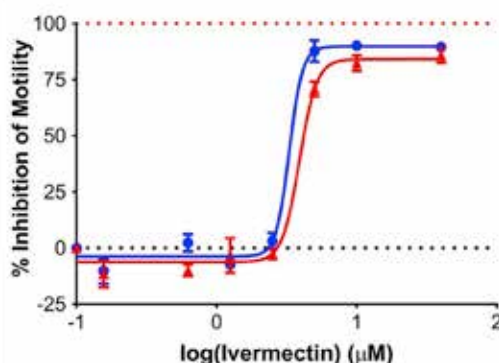
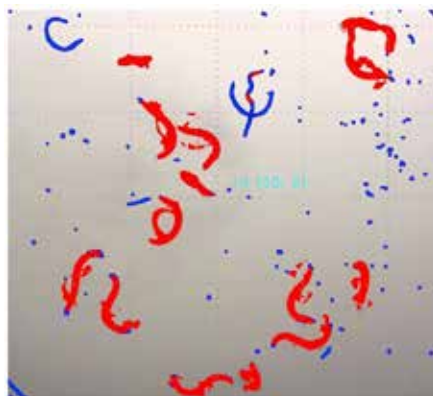
*Resistance*, Volume 8, Issue 1, 2018, Pages 1-7, ISSN 2211-3207, <https://doi.org/10.1016/j.ijppdr.2017.11.005>. (<http://www.sciencedirect.com/science/article/pii/S2211320717301082>)

**Abstract:** Over 4.5 billion people are at risk of infection with soil transmitted helminths and there are concerns about the development of resistance to the handful of frontline nematocides in endemic populations. We investigated the anti-nematode efficacy of a series of polypyridylruthenium(II) complexes and showed they were active against L3 and adult stages of *Trichuris muris*, the rodent homologue of the causative agent of human trichuriasis, *T. trichiura*. One of the compounds, Rubb12-mono, which was among the most potent in its ability to kill L3 ( $IC_{50} = 3.1 \pm 0.4 \mu M$ ) and adult ( $IC_{50} = 5.2 \pm 0.3 \mu M$ ) stage worms was assessed for efficacy in a mouse model of trichuriasis by administering 3 consecutive daily oral doses of the drug 3 weeks post infection with the murine whipworm *Trichuris muris*. Mice treated with Rubb12-mono showed an average 66% reduction ( $P = 0.015$ ) in faecal egg count over two independent trials. The drugs partially exerted their activity through inhibition of acetylcholinesterases, as worms treated in vitro and in vivo showed significant decreases in the activity of this class of

enzymes. Our data show that ruthenium complexes are effective against *T. muris*, a model gastro-intestinal nematode and soil-transmitted helminth. Further, knowledge of the target of ruthenium drugs can facilitate modification of current compounds to identify analogues which are even more effective and selective against *Trichuris* and other helminths of human and veterinary importance.

Melissa M. George, Lorraine Lopez-Soberal, Bob E. Storey, Sue B. Howell, Ray M. Kaplan, Motility in the L3 stage is a poor phenotype for detecting and measuring resistance to avermectin/milbemycin drugs in gastrointestinal nematodes of livestock, *International Journal for Parasitology: Drugs and Drug Resistance*, Volume 8, Issue 1, 2018, Pages 22-30, ISSN 2211-3207, <https://doi.org/10.1016/j.ijppdr.2017.12.002>. (<http://www.sciencedirect.com/science/article/pii/S2211320717301070>)

**Abstract:** Motility is a commonly used in vitro phenotype for assessing anthelmintic activity of candidate compounds, and for detecting anthelmintic resistance in nematodes. Third-stage larvae (L3) of parasitic nematodes are commonly used in motility-based assays because L3 are simple to obtain and can remain viable in storage for extended periods. To improve the measurement of motility of microscopic stages of nematodes, our laboratory developed the Worminator, which quantitatively measures motility of parasites. Using the Worminator, we compared the dose-response characteristics of several avermectin/milbemycin (AM) compounds using L3 from both AM-susceptible and AM-resistant *Cooperia* spp. (abamectin, doramectin, eprinomectin, ivermectin, moxidectin) and *Haemonchus contortus* (eprinomectin, ivermectin, moxidectin). Concentrations tested with the Worminator ranged from 0.156 to 40  $\mu M$ . Differences in  $EC_{50}$  between



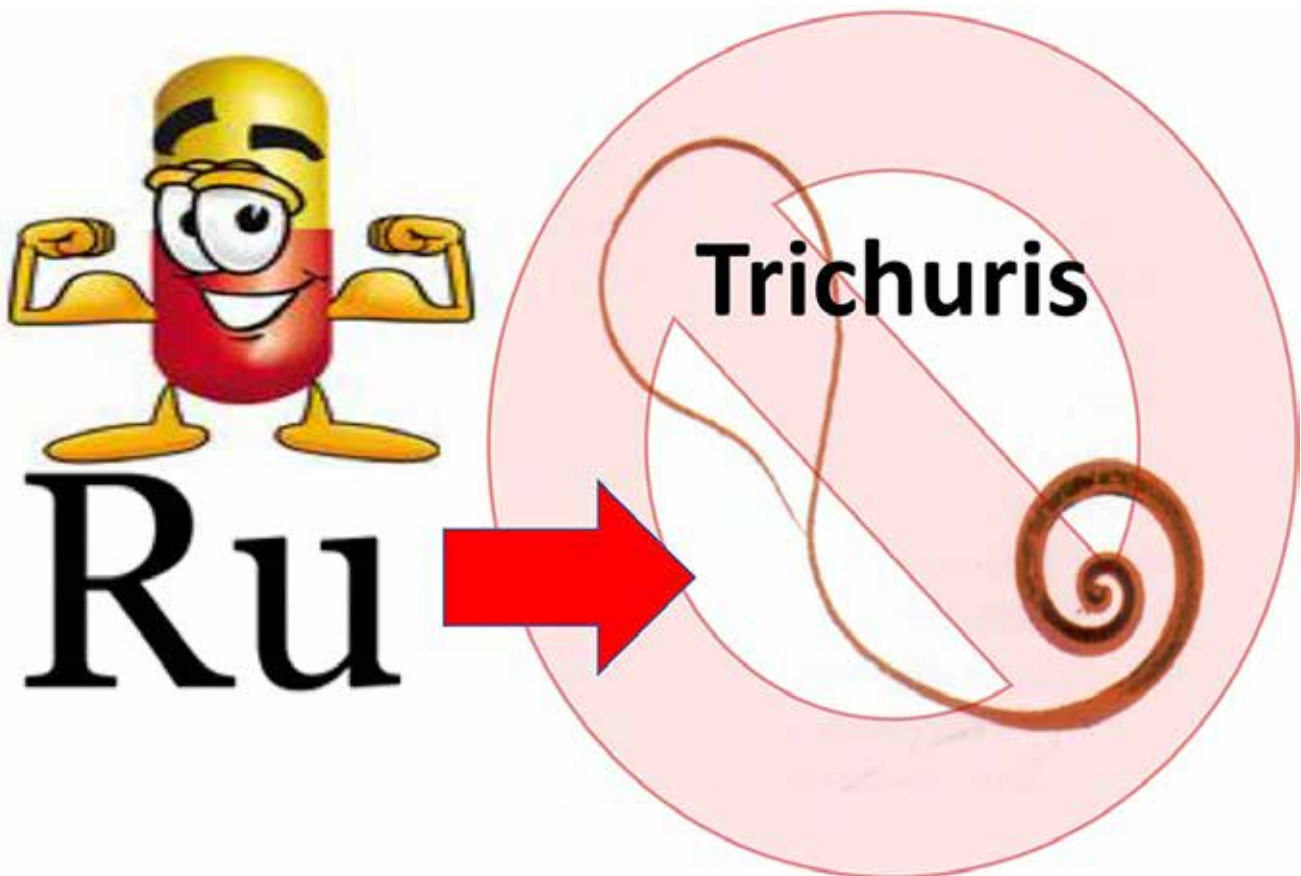


*IJP:DDR* continued

AM-susceptible and AM-resistant isolates of *Cooperia* spp. and *Haemonchus contortus* were small, with resistance ratios ranging from 1.00 to 1.34 for *Cooperia* spp., 0.99 to 1.65 for *Haemonchus contortus*. Larval migration inhibition assays were conducted using the same isolates and were equally ineffective for detection of resistance with resistance ratios less than 2.0. These results contrast with those

of the Larval Development Assay where we obtained a resistance ratio of 16.48 using the same isolates of *Haemonchus contortus*. Moreover, even at the highest concentration tested (40  $\mu$ M), 100% inhibition of motility was never achieved and EC50 for Worminator assays were more than 100 $\times$  higher than peak plasma levels achieved in vivo following treatment. These data demonstrate that dose-response

characteristics for inhibition of motility in L3 of gastrointestinal nematodes of livestock do not significantly differ for AM-susceptible and AM-resistant isolates. These data challenge the suitability of motility as a phenotype for detecting and measuring resistance to AM drugs in gastrointestinal nematodes of livestock.



### \$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 2017 prizes must be made by the eligible University to the ASP Treasurer by the 30th September 2017. Please complete the online application form:**

[www.parasite.org.au/awards/asp-undergraduate-prizes/](http://www.parasite.org.au/awards/asp-undergraduate-prizes/)

# State News

## Queensland

### Griffith University

#### Griiffith Institute for Drug Discovery (GRIDD)

PhD student **Eva Hespig** is an entrant in the 2018 Queensland Women in STEM prize. Eva's video is titled 'Malaria Drug Discovery – A small cog in a large wheel'. To view and vote for Eva's entry please follow this link: [https://www.thinkable.org/submission\\_entries/k8WaoBqO](https://www.thinkable.org/submission_entries/k8WaoBqO)

The Tropical Parasitology Laboratory welcomes Honours Students **Douglas Ross** and **Anjana Rai**. Doug will be Investigating the mode of action and in vivo efficacy of several slow action antiparasitoid drug leads. Whilst Anjana will use various phenotypic/genotypic methods to determine the mode of action of a panel of fast acting antiparasitoid hit compounds. Anjana and Doug will be carry out their Honours projects at GRIDD under the supervision of Professor **Katherine Andrews**, Dr **Tina Skinner-Adams** and Dr **Gillian Fisher**.

### University of Queensland

#### Centre for Animal Science – Queensland Alliance for Agriculture & Food Innovation

Well, Ala has almost recovered from TTP9 and now together Dr **Rodriguez Valle** (now University of Melbourne) are Editors for 2 Special Issues resulting from the conference: 'MPDI Veterinary Sciences' (a conference sponsor) and the 'Tick and Tick-borne Diseases Journal'. Dr **Peter James** and Prof **Ala Tabor** (both QAAFI-UQ) have joined forces in a new MLA Donor Company project which addresses the identification of host biomarkers for resistance to cattle ticks,

buffalo flies and buffalo fly lesions using several different approaches (2017-2021). We are also collaborating with bovine geneticists to follow the genetic marker holy grail. We have been assessing cattle to improve methods for counting ticks and buffalo flies in order to accurately phenotype cattle. (See image of Hereford cow).

We welcome **Ali Raza** who has commenced as the project post-doc scientist, Ali recently completed his PhD with **Andrew Kotze** from CSIRO (just upstairs!) thus well placed to take on this position. We are still recruiting PhD students to this exciting project.

**Tom Karbanowicz** is busy finalising his research and publications towards his PhD – all things proteomics (paralysis tick and cattle tick) and yeast display (paralysis tick) – his 2 recent papers below. The paralysis tick vaccine is still awaiting investment to move forward into industry. My friends with pets keep asking for it !!!!! The cattle tick vaccine research has moved to a new phase of investment and is very exciting with a full patent application submitted (watch this space!).



**Although hard to see the ticks – this Hereford appears to attract both flies and ticks.**

Key publications in the last year include:

Constantinoiu, C., Lew-Tabor, A., Jackson, L.A., Jorgensen, W.K., Piper, E.K., Mayer, D.G., Johnson, L., Venus, B., Jonsson, N.N. (2018) Local immune response to larvae of *Rhipicephalus microplus* in Santa Gertrudis cattle. *Parasite Immunology* 2018;e12515. <http://dx.doi.org/10.1111/pim.12515>

Piper, E., Jonsson, N., Gondro, C., Vance, M., Lew-Tabor, A., Jackson, L. (2017) Peripheral cellular and humoral responses to infestation with *Rhipicephalus microplus* in Santa-Gertrudis cattle. *Parasite Immunology* 39(1): e12402. <http://dx.doi.org/10.1111/pim.12402>

The above 2 papers were from a trial study we did almost 10 years ago! After students and key researchers moved to other organisations finalising these publications took some time. The sera and cells collected during these experiments subsequently underpinned screening of novel tick vaccine candidates. The conclusions from these experiments also help guide our new research outlined above.

Tabor, A.E., Ali, A., Rehman, G, Rocha Garcia, G., Zangirolamo, A.F., Malardo, T., & Nicholas N. Jonsson, N.N. (2017) Cattle tick *Rhipicephalus microplus*-Host interface: A review of resistant and susceptible host responses. *Frontiers in Cellular and Infection Microbiology* 7 (Article 506), 1-18, Invited review. doi: 10.3389/fcimb.2017.00506

The above paper reviews all gene expression studies, genetics and immune mechanisms associated with cattle tick:host interactions. With the completion of this review – this also provides guidance for the new research above.

Karbanowicz TP, Lew-Tabor A, Rodriguez Valle M. Purification of Biotinylated Cell Surface Proteins from *Rhipicephalus microplus* Epithelial Gut Cells. *J Vis Exp.* 2017 Jul 23;(125). doi: 10.3791/55747. <https://www.jove.com/video/55747/purification-biotinylated-cell-surface-proteins-from-rhipicephalus>

The above paper is PhD student Tom's first video methodology – the experience was an interesting one! If you need guidance in tick



*State News continued*

dissection – this is the video for you!

Rodriguez-Valle M, Moolhuijzen P, Barrero RA, Ong CT, Busch G, Karbanowicz T, Booth M, Clark R, Koehbach J, Ijaz H, Broady K, Agnew K, Knowles AG, Bellgard MI, Tabor AE. Transcriptome and toxin family analysis of the paralysis tick, *Ixodes holocyclus*. *Int J Parasitol*. 2018 Jan;48(1):71-82. <http://dx.doi.org/10.1016/j.ijpara.2017.07.007>.

The above paper is one of the main penultimate outputs of the associated ARC Linkage project. This project involved many researchers, collaborators and students ! The title is self-explanatory!

Karbanowicz T, Dover E, Mu X, Tabor A, Rodriguez-Valle M. Extracellular expression of the HT1 neurotoxin from the Australian paralysis tick in two *Saccharomyces cerevisiae* strains. *Toxicon*. 2017 Dec 15;140:1-10. <http://dx.doi.org/10.1016/j.toxicon.2017.10.013>.

Here PhD student Tom has managed to produce one of the paralysis tick toxins on the surface of brewer's yeast !

## Queensland Museum

**Rob Adlard** recently gave an interview with RN presenter Ann Jones (ABC radio) Download the PODCAST of "Intimate aliens" <http://www.abc.net.au/radionational/programs/offtrack/parasites-within/9633602>

**Pictured right is the companion piece to our cover image. Rob Adlard (Queensland Museum) and fellow ASP member Terry Miller (Primary Industries and Regional Development, Western Australia) collecting freshwater fishes in the Cairns region for parasite discovery from endemic and exotic origins. Photo credit Rob Adlard and Terry Miller**





## Western Australia

### Murdoch University

#### Vector & Waterborne Pathogens Research Group

Congratulations to Dr **Amanda Barbosa** for completing her PhD titled 'Diversity, clinical impacts and zoonotic potential of blood-borne and enteric protozoan parasites in Australian native mammals' supervised by Professors Una Ryan and Peter Irwin, A/Professor Kris Warren, and Dr Andrea Paparini. Amanda has also accepted a Post-Doc position in our lab.

Our lab is also happy to have **Siobhon Egan** begin her PhD supervised by Dr Charlotte Oskam, and Professors Peter Irwin, Una Ryan and Peter Banks (USyd). Siobhon completed her honours (first class) research in 2017 with the title 'Profiling the bacterial microbiome of ticks that parasitise bandicoots in Australia'.

PhD student **Cindy Palermo** was recently in the media spotlight with her discovery of the Asian fish tapeworm (*Bothriocephalus acheilognathi*) in feral fish caught in Perth. Read more here: <http://media.murdoch.edu.au/invasive-tapeworm-discovered-in-a-perth-waterway>

PhD students **Khalid Al-Habsi**, **Telleasha Greay**, **Siew May (Kim) Loh**, and **Alireza Zahedi** have made a great start to the year with a number of publications:

Al-Habsi, K., R. Yang, S. Abraham, U. Ryan, D. Miller, and C. Jacobson. 2018. "Molecular characterisation of *Salmonella enterica* serovar Typhimurium and *Campylobacter jejuni* faecal carriage by captured rangeland goats." *Small Ruminant Research* 158:48-53. doi: 10.1016/j.smallrumres.2017.11.011.

Greay, T. L., A. W. Gofton, A. Paparini, U. M. Ryan, C. L. Oskam, and P. J. Irwin. 2018. "Recent insights into the tick microbiome gained through next-generation sequencing." *Parasites and Vectors* 11 (1). doi: 10.1186/s13071-017-2550-5.

Greay, T. L., A. Zahedi, A. S. Krige, J. M. Owens, R. L. Rees, U. M. Ryan, C. L. Oskam, and P. J. Irwin. 2018. "Endemic, exotic and novel apicomplexan parasites detected during a national study of ticks from companion animals in Australia." *Parasites and Vectors* 11 (1). doi: 10.1186/s13071-018-2775-y.

Loh, S. M., A. Paparini, U. Ryan, P. Irwin, and C. Oskam. 2018. "Identification of *Theileria fuliginosa*-like species in *Ixodes australiensis* ticks from western grey kangaroos (*Macropus fuliginosus*) in Western Australia." *Ticks and Tick-borne Diseases* 9 (3):632-637. doi: 10.1016/j.ttbdis.2018.02.001.

Zahedi, A., G. K. C. Lee, T. L. Greay, A. L. Walsh, D. J. C. Blignaut, and U. M. Ryan. 2018. "First report of *Cryptosporidium parvum* in a dromedary camel calf from Western Australia." *Acta Parasitologica* 63 (2):422-427. doi: 10.1515/ap-2018-0049.

Zahedi, A., P. Monis, A. W. Gofton, C. L. Oskam, A. Ball, A. Bath, M. Bartkow, I. Robertson, and U. Ryan. 2018. "Cryptosporidium species and subtypes in animals inhabiting drinking water catchments in three states across Australia." *Water Research* 134:327-340. doi: 10.1016/j.watres.2018.02.005.

## New South Wales

### Charles Sturt University

**David Jenkins** recently appeared on ABC Radio talking about tapeworms, following recent media interest in the subject. He may now have a cult following.

<http://www.abc.net.au/radio/adelaide/programs/drive/parasite/9358982>

CSU welcomes **Juliet Masiga** and **Michelle Williams**.

**Juliet Masiga** graduated from Kenyatta

University, Nairobi, Kenya with a BSc. in biotechnology. She has worked in veterinary vaccine production, in the quality control and R&D department and currently on study leave to pursue a Master of Animal science at Charles Sturt University. Her research project *Cormorants' parasites and their significance for aquaculture* with Dr. **Shokoofeh Shamsi** as the supervisor is ongoing. She is looking forward to completing the degree and plan on the next career and academic step.

**Michelle Williams** has had a long career within the animal industry and returned to University as a mature aged student. Michelle was awarded her Master of Animal Science in 2016 from Charles Sturt University and a scholarship to undertake a PhD in 2018. Her experience is varied and extensive. Highlights include working alongside Angus McKinnon as Reproduction Manager at Goulburn Valley Equine Hospital and within Veterinary Medicine Research and Development. Michelle has had a life time fascination with all things 'parasitic' and 'fishing' and combines both areas of interest for her PhD under supervision of **Shokoofeh Shamsi** and **Marta Hernandez-Jover**.



Left:  
**Juliet Masiga**

Right:  
**Michelle Williams**





## State News continued

## University of Sydney

**Laboratory of Veterinary Parasitology @ McMaster Building.**

In January, Veterinary Parasitology joined forces with Veterinary Microbiology to host students from the Wingara Mura - Bunga Barrabugu summer program. Details of this visit are featured earlier in this newsletter as is a memorable visit to Rwanda by Professor **Jan Šlapeta**.

Two Honours students started their lab work. **Gemma Rush** is working with our collaborator Dr Mike Raynolds on trichomonosis and beef production systems in Northern Territory. **Nicole Crkvencic** is aiming to elucidate the curious disparity of cat flea genotypes across the tropical top end of Australia.

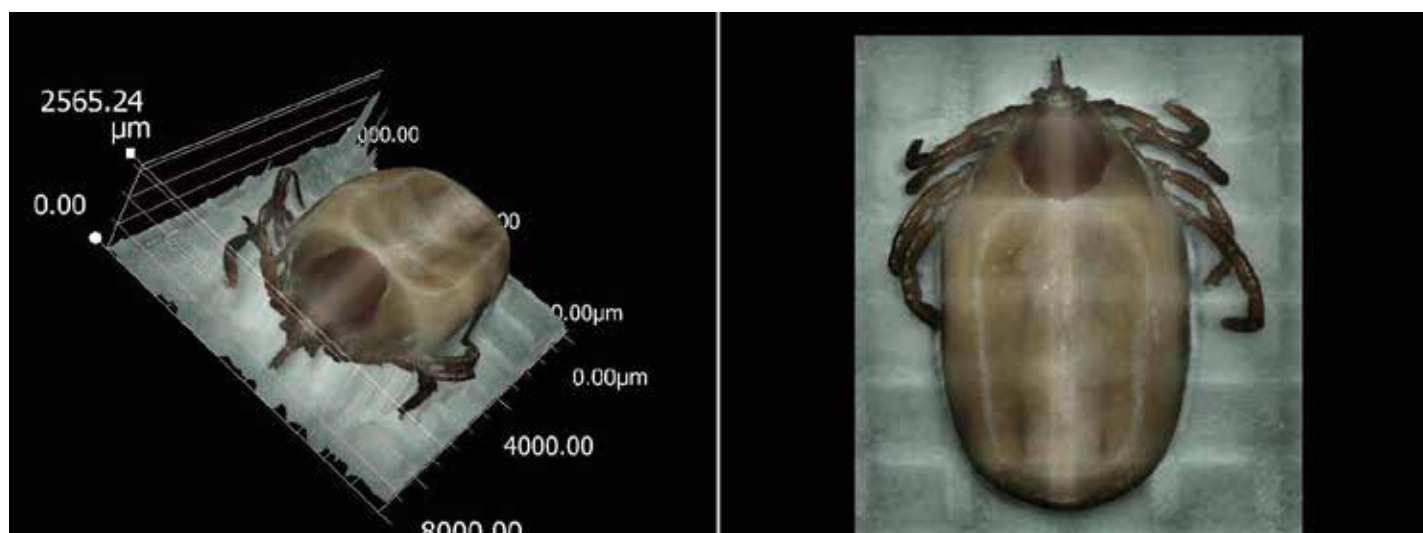
**Nichola Calvani** (PhD student) has been mastered all show could about how to bash, mill, break etc. Fasciola eggs and quickly has become the go to person for all you need to now about fasciolosis. Nichola has been selected for a ParSCo workshop in southern Italy to advance her skills and knowledge in the area of field parasitology in Mediterranean. With further support from ASP, Nicola while in Europe is heading to Liverpool to join the team of Dr Jan Hodgkinson and learn few tricks around fluke

and functional transcriptomics.

**Clarencia Lie** (PhD student) has been making discoveries in the sphere of the little known amphibian and reptilian *Entamoeba* spp. together with the ecologist Dr Greg Brown and pathologist Dr Cathy Shilton. Shona Chandra (PhD student) looks forward to the upcoming tick season while processing here last year data.

The Parasitology Lab at the University of Sydney just got a brand spanking new toy – a digital microscope, Keyence VHX-6000! Futuris-tick digital microscope leaves nothing to the imagination. Capable of 3D tiling (a combination of 3D measurements and image stacking) and image stitching, this allows us to create 3D models of most of the parasites that enters our doors. With this, we can create high quality image models of parasites, complete with measurements, which displays exactly how the parasite looked when we got it! This is especially useful for those pesky parasites whose exoskeletons tend to be damaged during the process of DNA isolation.

**Below: 3D tiling images of a female *Ixodes cornuatus* retrieved from a wombat in Tasmania, created using VHX-6000. LHS: depth measurement across X,Y,Z planes of *I. cornuatus*. RHS: image stitching of *I. cornuatus*.**



# Employment and research opportunities



## PhD opportunity in the HPI Lab, Brno, Czech Republic

**Title: Epidemiology of helminth infections in great apes with emphasis on mountain gorillas in Virunga Massif in Rwanda**

The Laboratory for Infectious Diseases Common to Humans and Non-Human Primates (HPI-Lab) based at the Institute of Vertebrate Biology Czech Academy of Sciences and University of Veterinary and Pharmaceutical Science Brno is searching for a PhD candidate for highly ambitious topic with applications to conservation of critically endangered iconic mountain gorillas.

**Background:** In non-human primates gastrointestinal parasites are typically asymptomatic, but habitat reduction and fragmentation can alter the transmission and increase host susceptibility, which may exacerbate the effects of infection. There is considerable concern that in fragile or threatened non-human primate populations, these cascading effects can significantly affect species survival. Due to effective conservation efforts, the population of critically endangered mountain gorillas (*Gorilla beringei beringei*) at Virunga has been steadily increasing. Fast increase of the whole population and increase in the home range overlap in particular can lead to elevated risks of changes in pathogens' epidemiology.

**Project:** The student will investigate the dynamics of parasite-host system and impact of parasites in several gorilla populations at individual and population level and causal-effects events with focus



on mountain gorillas at Virunga in Rwanda as recent increased fatalities among gorillas have been preliminarily linked to strongylid and tapeworm infections. The study will benefit from (i) complex sampling design conducted on Rwandan, Ugandan and Congolese populations of mountain gorillas in collaboration with Mountain Gorilla Veterinary Project and Dian Fossey Gorilla Fund International and (ii) our previous long-term research on western lowland gorillas, providing extensive set of genomics/metagenomics data for planned statistical analyses.

**Funding:** research costs and partial salary (in add to a governmental stipend) covered by a grant by Czech Science Foundation.

**Qualifications:** Applicants with master degree in biological, veterinary or possibly agricultural sciences should have fair background in statistics and at least basic knowledge of molecular methods.

Parasitological background, experiences with processing of next generation sequencing data are highly advantageous, but not requested. Previous experience with ape or non-human primate research is not needed. We expect strong motivation and commitment, willingness to quickly learn new methods, analytical thinking, good communication skills and ability for both independent and team-work. The successful candidate will participate in a PhD program at Masaryk University in Brno ( parasitology). The starting date is fall 2018.

**Important note:** this is not a PhD with a strong field component, most of the work is focused on laboratory and data analyses.

### Further information

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*Employment and reasearch opportunities continued*



### **Professorship in Parasitology/Zoonoses**

**UNIVERSITÄT GIESSEN, The Faculty of Veterinary Medicine, invites applications for a W3 Professorship in Parasitology/Zoonoses as of October 15, 2018. Proficient knowledge of German is expected.**

The successful candidate will represent the faculty in research and teaching. We are searching for an internationally qualified specialist with proven expertise in the field of parasitology. Innovative research programs are expected with a scientific focus on zoonoses in the areas of soil-, food-, and/or water-parasitoses, preferably regarding metazoan pathogens. With respect to the scientific environment working at the intersection of basic and applied research, candidates are anticipated to work with in vitro models. This professorship is central part of DRUID (Novel Drug Targets against Poverty-Related and Neglected Tropical Infectious Diseases), a newly established research center funded by the Hessian government to reinforce scientific and economic excellence (LOEWE, Landes-Offensive zur Entwicklung Wissenschaftlich-ökonomischer Exzellenz). Therefore, we expect the candidate's willingness for interdisciplinary cooperation within the Faculties of Veterinary Medicine, Human Medicine, and Biology and Chemistry, the Goethe-University Frankfurt, the Paul-Ehrlich-Institute Langen, as well as in the Research Campus Central Hessen ([www.fcjh.de](http://www.fcjh.de)). Autonomous, successful fund raising activities and high-ranked international publications are obligatory. Furthermore, we expect the candidate to actively participate in relevant international

activities of the faculty, to further promote the faculty's international profile, and to strengthen JLU's international network.

Obligatory prerequisites for applicants are a Ph.D and equivalent scientific achievements in the field of parasitology (e.g. habilitation). Teaching covers the field of Veterinary Parasitology according to the „Tierärztliche Approbationsverordnung“ (TAppV). It is an advantage to have teaching experiences in English.

Active involvement in the support of early career researchers as part of the Giessen Graduate Centre for the Life Sciences (GGL) and the combined Ph.D. program of the Faculties of Veterinary Medicine and Human Medicine is expected. A participation in teaching activities within the Master Program "Bioinformatics and System Biology" is possible.

The Justus Liebig University Giessen (JLU) aims to employ more women in academic research. We therefore particularly encourage female candidates to apply. JLU also pursues the goal at faculty leadership level of increased competence in dealing with gender and family-related issues. JLU is regarded as a family-friendly university. Applicants with children are very welcome. Applications from disabled people of equal aptitude will be given preference.

Please send your letter of application (no e-mails, please) with a CV and a documentation of your qualifications and teaching competence to: The President of Justus Liebig University Giessen, Erwin-Stein-Gebäude, Goethestrasse 58, 35390 Giessen, Germany, quoting reference number 0-22/18. Applications must be

received by May 31st 2018 at the latest.

Candidates are strongly recommended to refer to our webpage on application procedures at <http://www.uni-giessen.de/stellenmarkt/merkblatt.pdf>. Please only submit copies of your application documents as they cannot be returned after the application procedure has been completed.

Please send us digital additional information on our application form [http://www.uni-giessen.de/fbz/fb10/dekanatfb10/mat\\_beruf](http://www.uni-giessen.de/fbz/fb10/dekanatfb10/mat_beruf)

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