



# NEWSLETTER

Volume 27 No. 1 May 2016



*Image courtesy Charlie Jennison, Walter and Eliza hall Institute*



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### Dear Members,

Firstly, after 10 months of sheer persistence for the benefit to all our membership and the sanity of future treasurers, Peter Rolfe has finally managed to get Combank, our electronic banking system, to work!!

So, just as most retail outlets are wondering whether winter will arrive to enable shifting of woollies and snow-gear, ASP is certainly focussed on events in the upcoming Spring and Summer and even into next year. The main event is our annual ASP conference, this year **ICTMM 2016 in Brisbane, 18-22 September**.

Please heed the dates for (early bird registration and for the late breaking abstracts deadline as I write- June 1st). We hope to see you all in September for, what promises to be, another wonderful conference:

[www.tropicalmedicine2016.com](http://www.tropicalmedicine2016.com)

Our ASP AGM will be held at the QLD Museum on the evening of Tuesday 20th September. ASP student members (come on supervisors, sign them up!) can apply for **ASP Student Conference Travel Grants by June 19th** online:

[www.parasite.org.au/awards/asp-student-travel-award](http://www.parasite.org.au/awards/asp-student-travel-award)

ASP is providing foundational support for ICTMM and we have also joined with IJP in sponsoring some regional ECR attendees at Brisbane.

Please contact [Lisa.Jones1@jcu.edu.au](mailto:Lisa.Jones1@jcu.edu.au) if you want to volunteer at ICTMM 2016 and we can promise a free t-shirt and lots of fun to be part of the conference team.

Further with Malaria, the newsletter also boasts an interview with ASP Member Associate Professor Matthew Todd



who will run the DNDi-MMV Special Symposium: Open Source Drug Discovery at The International Congress for Tropical Medicine and Malaria 2016 in Brisbane. Additional malarial news comes from the McFadden lab at Melbourne University "New hope for malaria treatment as drug resistance found unable to spread for the first time"- check it out as resistance is stock and trade of our parasitic friends!

And while also on the ICTMM and Brisbane, the ASP has committed to sponsorship of the display of the world-class Bayer- Berlin museum exhibition "Parasites life undercover" <http://bayer4animals.blogspot.com.au/2014/02/renowned-parasites-life-undercover.html> This is in negotiations to be exhibited at the Queensland Museum from Aug 2016-Jan 2017, just in time for the ASP to hold its social events and AGM for the ICTMM on site with the display. ASP's own "Parasites, People, Art" collaboration will accompany the Bayer project. Another reason to be at ICTMM in the spring!

And before we leave conferences, the 2017 ASP conference will be held at Leura in the Blue Mountains west of Sydney. Hot toddies, open fires and warm clothing

## *From the President's desk continued*

for a spectacular venue overlooking the Jamieson Valley and trotting distance to the Three Sisters and some notable coffee spots! And parasitic presentation to match! The Executive will be developing a special Industry Symposium for this meeting, so this should be attractive indeed.

On our journals and their contributions to our financial and disciplinary sustainability, I commend your attention to the list of articles published by ASP members in IJP, IJPDDR and IJPAW. In addition, each of our journals has new social media accounts for signing up and following:

IJP – Instagram [www.instagram.com/ijpara/](http://www.instagram.com/ijpara/)  
IJPDDR – FB [www.facebook.com/IJPDDR/](http://www.facebook.com/IJPDDR/)  
IJPAW – FB [www.facebook.com/IJPAW/](http://www.facebook.com/IJPAW/)

### **Concepts in Parasitology ASP Course, 27 Nov – 10**

**Dec 2016** applications are now open <http://parasite.org.au/education/concepts-in-parasitology/> To enhance the presentations and pracs, the ASP Executive has approved \$12,000 to purchase a teaching microscope with video capability and a dissecting microscope with a high-end camera. The course has been advertised overseas through our sister Organisations, so get those applications rolling in at <http://parasite.org.au/blog/applications-open-for-2015-asp-concepts-in-parasitology-course/> Once again, our special thanks to the energy and enthusiasm of Alex Maier and his team. For more information on how to become involved in the course please contact Alex. The ASP has also renewed its support for the course for a further 3 years.

Notable other interesting reading includes;

- ASP State Outreach Event World Malaria Day report from Kathy Andrews, Eskitis Institute for Drug Discovery, Griffith University
- Science Meets Parliament 2016 report, Barbara and Shokoofeh
- The ASP Network Researcher Exchange, Training and Travel Award winners Dhanasekaran Sakthivel, Monash University, Alejandro Trujillo González, James Cook University and Ali Raza, University of Queensland
- OzEMaR Researcher Exchange, Training and Travel Award winner Charlie Jennison from WEHI
- The latest jobs, events and the most enjoyable part, ASP state news.

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

Terry Spithill has retired and is now Emeritus at La Trobe as

of last Thurs he will be keeping the lab going 2 days/week. He joins Andy Thompson in the joyous pursuit of “science sans admin”!

At the ETM and AGM, and important item for discussion is the renewal of the ASP Strategic Plan, to be revised and endorsed at AGM 2017. At the commencement of deliberations, the Executive and Council will be informed from both the 2016 AGM and the results of our recent member survey, so as to solicit the most comprehensive and inclusive views for the Society and its members for the next 5 years- because this determines our priorities for funding support and initiatives. There will be a need for a “working party” to be formed later this year to consolidate these views into a draft strategic plan for presentation to members. We will be asking for volunteers from the broad church of ASP members for this committee.

Other current and upcoming ASP initiatives;

ASP has approved funding of stage 2 of the update of the Para-site website which includes improved and additional, life cycles of important parasites.

As mentioned at the MTM last February, the new Executive has received reliable legislative advice on our tax status that concludes we conform with all legislative requirements. Now, our priorities for funding initiatives can be clearly defined within and through our strategic plan.

Some sad news.....Dr. Terence (Terry) Hopkins passed away on March 29th 2016. Terry was with Bayer Australia for over 30 years from 1970 until 2001, when he retired from active work for the company. He was Director of Bayer Bahr's Hill Research Facility in Queensland, Australia.

Please read on....!

Best wishes to all,

**David Emery on behalf of the Executive**

**Website [www.parasite.org.au](http://www.parasite.org.au)**

**Facebook [www.facebook.com/ASParasitology](http://www.facebook.com/ASParasitology)**

**ASP Twitter [www.twitter.com/AS\\_Para](http://www.twitter.com/AS_Para)**





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

## Wander Down Under for ICTMM 2016

Although great leaps have been made in the prevention and treatment of Malaria, a child still dies every minute in Africa from the disease. Even this month, the world is facing a new epidemic – the Zika Virus.

This is a not-to-be-missed opportunity for delegates to collaborate with like-minded professionals from all around the world and exchange knowledge in the areas of tropical medicine, malaria, parasitology, infectious diseases, zoonoses, veterinary health, travel medicine and much more.

### Three Reasons to attend ICTMM 2016:

#### 1. Australia - Enough said.

#### 2. Scientific Program

Join leading industry experts Professor Peter Hotez, Professor John Reeder, Professor Kevin Marsh, Dr BT Slingsby and Professor Sharon Lewin in Brisbane for this important discussion.

#### 3. Social Program

Cuddle a koala at the Conference Dinner or make new connections at the Welcome reception.

The early bird registration is available for a limited time only. Register today to be a part of this important discussion.

**REGISTER ONLINE TODAY**

[www.tropicalmedicine2016.com/registration](http://www.tropicalmedicine2016.com/registration)

For further information, please visit: [www.tropicalmedicine2016.com](http://www.tropicalmedicine2016.com)  
Like us on Facebook or follow us on Twitter @ICTMM2016 or #ICTMM2016



International Congress for  
**Tropical Medicine  
and Malaria**  
18–22 September  
Brisbane Australia

**2016**



[Register now](#)

[Abstract Submission](#)

[Follow us on Twitter](#)



## Call for Late Breaking Abstracts will open **Wednesday 1 June 2016**

After closing abstract submissions on Friday 15 April 2016 we are pleased to announce that we have received **over 1000 submissions** from around the world, across all program themes.

We would now like to encourage anyone who has late breaking research to prepare an abstract for when the Call for Late Breaking Abstracts opens on **Wednesday 1 June 2016**.

With new themes recently added to the program there is now more opportunity than ever to be a part of this international event. The new themes include:

- [Aquaculture](#)
- [Marine Parasitology](#)
- [Vaccines and Vaccine Preventable Diseases](#)
- [Zika Virus](#)

# IJP

INTERNATIONAL JOURNAL FOR PARASITOLOGY

[www.journals.elsevier.com/international-journal-for-parasitology](http://www.journals.elsevier.com/international-journal-for-parasitology)

Editor In Chief: Brian Cooke

Facebook: [www.facebook.com/IJPara](http://www.facebook.com/IJPara)

Twitter: @IJPara

Instagram: ijpara

December 2015

45:14

Specialist enemies, generalist weapons and the potential spread of exotic pathogens: malaria parasites in a highly invasive bird

**Nicholas J. Clark, Sophie Olsson-Pons, Farah Ishtiaq, Sonya M. Clegg**

Clarke & Clegg et.al.'s paper has had media attention locally and internationally. It has been holding top spot with its altmetric score (calculated on past 6 months)

January 2016

46:01

Succinctus

Extracellular vesicles secreted by *Schistosoma mansoni* contain protein vaccine candidates

**Javier Sotillo, Mark Pearson, Jeremy Potriquet, Luke Becker, Darren Pickering, Jason Mulvenna, Alex Loukas**

Sotillo & Loukas et.al.'s paper has been holding top spot as 'most downloaded in the past 90 days' for some time.

March 2016

46:03

*Amblyomma sculptum* tick saliva: -1 Gal identification, antibody response and possible association with red meat allergy in Brazil

**Ricardo Nascimento Araujo, Paula Ferreira Franco, Henrique Rodrigues, Luiza C. B. Santos, Craig S. McKay, Carlos A. Sanhueza, Carlos Ramon Nascimento Brito, Maíra Araújo Azevedo, Ana Paula Venuto, Peter J. Cowan, Igor C. Almeida, MG., Finn, Alexandre F. Marques**

April 2016

46:04

Characterising granuloma regression and liver recovery 1 in a murine model of schistosomiasis japonica

**Candy Chuah, Malcolm K. Jones, Donald P. McManus, Sujeevi K. Nawaratna, Melissa L. Burke, Helen C. Owen, Grant A. Ramm, Geoffrey N. Gobert**

Check out the International Journal for Parasitology Australian Society for Parasitology 50th Anniversary Special Issue Volume 44, Issue 12, Pages 847-968 (15 October 2014)

<http://www.sciencedirect.com/science/journal/00207519/44/12>





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

**Editors: R.C. Andrew Thompson, Lydden Polley**

**Facebook: [www.facebook.com/IJPPAW/](http://www.facebook.com/IJPPAW/)**

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

April 2016

5:1

Public health significance of zoonotic *Cryptosporidium* species in wildlife: Critical insights into better drinking water management

**Alireza Zahedi, Andrea Paparini, Fuchun Jian, Ian Robertson, Una Ryan**

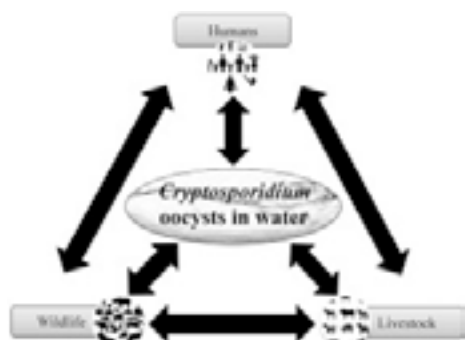


Image copywrite Alireza Zahedi, Andrea Paparini, Fuchun Jian, Ian Robertson, Una Ryan

Is *Toxoplasma gondii* a threat to the conservation of free-ranging Australian marsupial populations?

**Alison E. Hillman, Alan J. Lymbery, R.C. Andrew Thompson**



Morphological and molecular characterization of *Eimeria purpureicephali* n. sp. (Apicomplexa:Eimeriidae) in a red-capped parrot (*Purpureicephalus spurius*, Kuhl, 1820) in Western Australia

**Rongchang Yang, Belinda Brice, Una Ryan**

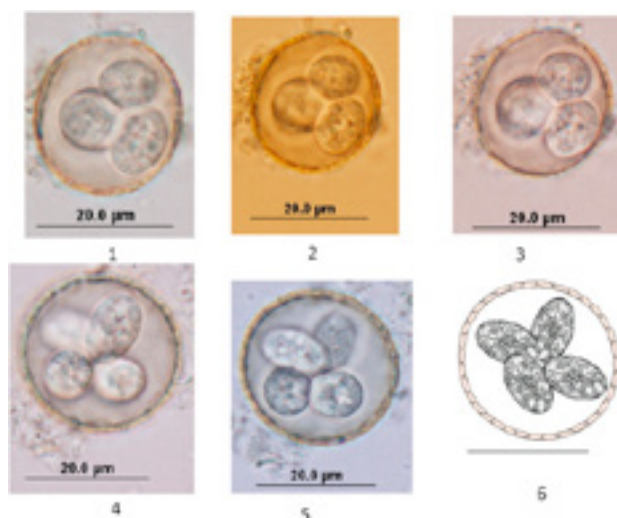


Image copywrite Rongchang Yang, Belinda Brice, Una Ryan

Confirmation of a unique species of *Giardia*, parasitic in the quenda (*Isodon obesulus*)

**Alison Hillman, Amanda Ash, Aileen Elliot, Alan Lymbery, Catherine Perez, R.C. Andrew Thompson**



Image copywrite Alison Hillman, Amanda Ash, Aileen Elliot, Alan Lymbery, Catherine Perez, R.C. Andrew Thompson

Image (left) copyright Alison E. Hillman, Alan J. Lymbery, R.C. Andrew Thompson.





[www.journals.elsevier.com/international-journal-for-parasitology-drugs-and-drug-resistance/](http://www.journals.elsevier.com/international-journal-for-parasitology-drugs-and-drug-resistance/)

**Editors In Chief: Andrew Kotze & Kevin Saliba**

**Facebook: [www.facebook.com/IJPDDR/](http://www.facebook.com/IJPDDR/)**

*IJP-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 *IJP-DDR*

December 2015

5:3

Histone deacetylase enzymes as drug targets for the control of the sheep blowfly, *Lucilia cuprina*

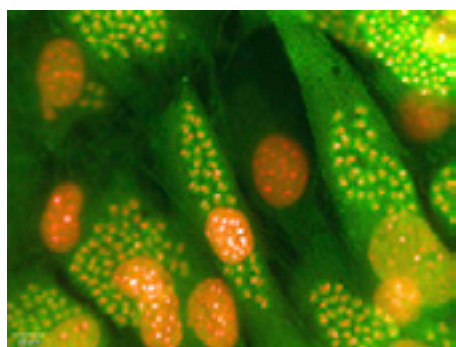
**Andrew C. Kotze, Barney M. Hines, Neil H. Bagnall, Clare A. Anstead, Praveer Gupta, Robert C. Reid, Angela P. Ruffell, David P. Fairlie**

Selection for anthelmintic resistant *Teladorsagia circumcincta* in pre-weaned lambs by treating their dams with long-acting moxidectin injection

**D.M. Leathwick, C.M. Miller, K. Fraser**

Development and application of a sensitive, phenotypic, high-throughput image-based assay to identify compound activity against *Trypanosoma cruzi* amastigotes

**Melissa L. Sykes, Vicky M. Avery**



*Image copyright Melissa L. Sykes, Vicky M. Avery*

## Closing dates for ASP awards

### ASP Fellowships

9 January 2017

### ASP Researcher Exchange, Travel and Training Awards & JD Smyth

29 September 2016

### Bancroft-Mackerras Medal for Excellence

30 September 2016

### John Frederick Adrian Sprent Prize

30 September 2016

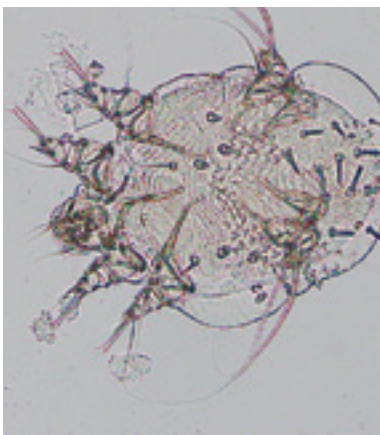
More information

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

## ASP Outreach Funding

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

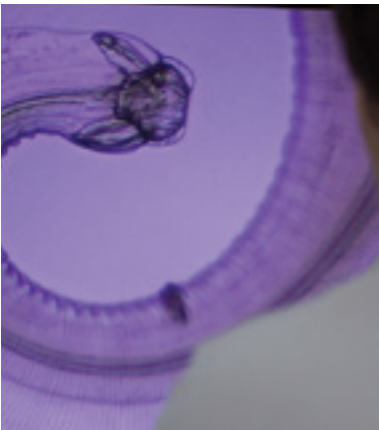
**Submit your proposal to your ASP State/Territory Representative for consideration.**



Over 25 experts  
in the field share  
their passion



# Concepts in Parasitology



A two-week  
course for  
Postgraduates  
and Early Career  
Researchers



**27 November -  
10 December 2016**

Australian  
National  
University  
Kioloa Coastal  
Campus

**Application deadline  
1st July 2016**

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)



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





# Concepts in Parasitology 2015 course photos

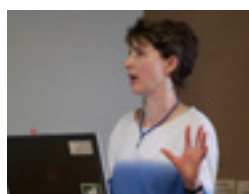




# Concepts in Parasitology 2015 course photos



Photos from the 2015 Concepts in Parasitology Course on this page and previous two courtesy Alex Maier.



# ASP State Outreach Event World Malaria Day

On the 26th April the Griffith University Eskitis Institute for Drug Discovery and Australian Society for Parasitology (ASP) co-sponsored a public outreach event around World Malaria Day 2016. This event focused on two activities – a series of short talks to promote awareness of malaria and a primary school outreach component to promote malaria awareness through distribution of “What is malaria?” activity packs.

The World Malaria Day Event attended by ~40 people including representatives from the community, Lions Club of Brisbane Central, QEII Jubilee Hospital, Cullens Patent and Trade Mark Attorneys, RESULTS International Australia, undergraduate and post graduate students and staff from Griffith University. Topics discussed were “Malaria Status: Successes and Challenges” (A/Prof Kathy Andrews; Eskitis Institute for Drug Discovery, Griffith University), “Malaria Drug Discovery” (Prof Vicky Avery; Eskitis Institute for Drug Discovery, Griffith University), “Towards Elimination: Chemoprophylactic Drugs” (Dr Tina Skinner-Adams; Eskitis Institute for Drug Discovery, Griffith University) and “Malaria in Our Region: An Australian Armed Forces Perspective” (Prof Dennis Shanks; Australian Army Malaria Research Institute). The one hour event was followed by morning tea and tours of the Andrews and Avery malaria laboratories, including viewing of malaria parasite culture and malaria parasites under a microscope. The majority of ASP funds (~\$450) were used to cover morning tea catering costs while the Eskitis Institute for Drug Discovery provided the venue free of charge as well as all audio visual equipment. The ASP banner was prominently displayed at the event and ASP sponsorship acknowledged at the start and end of the event.

## “What is malaria?” primary school outreach packs

In order to promote malaria and parasitology to the broader community, an outreach activity targeted to primary school age children (6-12 years) was carried out in the 2 weeks around World Malaria Day on the 26th April (coordinated by Dr Tina Skinner-Adams and A/Prof Kathy Andrews). “What is malaria?” awareness packs (see photo) containing a short story about malaria, malaria crossword, malaria find-a-word sheet, malaria fact sheet, mosquito colouring in sheet, spot the difference sheet and find the hidden mosquito sheet were assembled and distributed (10x class pack for 30 students (also containing a pack of highlighters as a prize; ASP funded) and 30x individual packs (also containing a Chupa Chup; ASP funded) were distributed, including to the following school classes: St Peter's Primary School, Rochedale

(grade 3 and grade 6), Sunnybank Hills State School (grade 5), Ormiston College (grade 6), and before and after school care at St. Catherine's Catholic primary school, Wishart.

Overall the outreach event was a great success with positive feedback given on the talks and >250 primary school children receiving the “What is malaria?” awareness activity packs. This event will now be carried out annually at the Eskitis Institute, with different age groups of children to be targeted in 2017.



“What is malaria?” primary school outreach packs

## \$400 Undergraduate Prizes

The Australian Society for Parasitology is pleased to announce that it will be offering undergraduate student prizes of \$400 each to Australian Universities identified as offering a suitable course in parasitology, for presentation to the best undergraduate student in parasitology (highest passing mark/grade). The course(s) must be taught by a financial member of the ASP (of more than one year standing), and must comprise at least 30% parasitology. **Requests for 2016 prizes must be made by the eligible University to the ASP Treasurer or Secretary by the 30th September 2016. Please complete the online application form:**

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



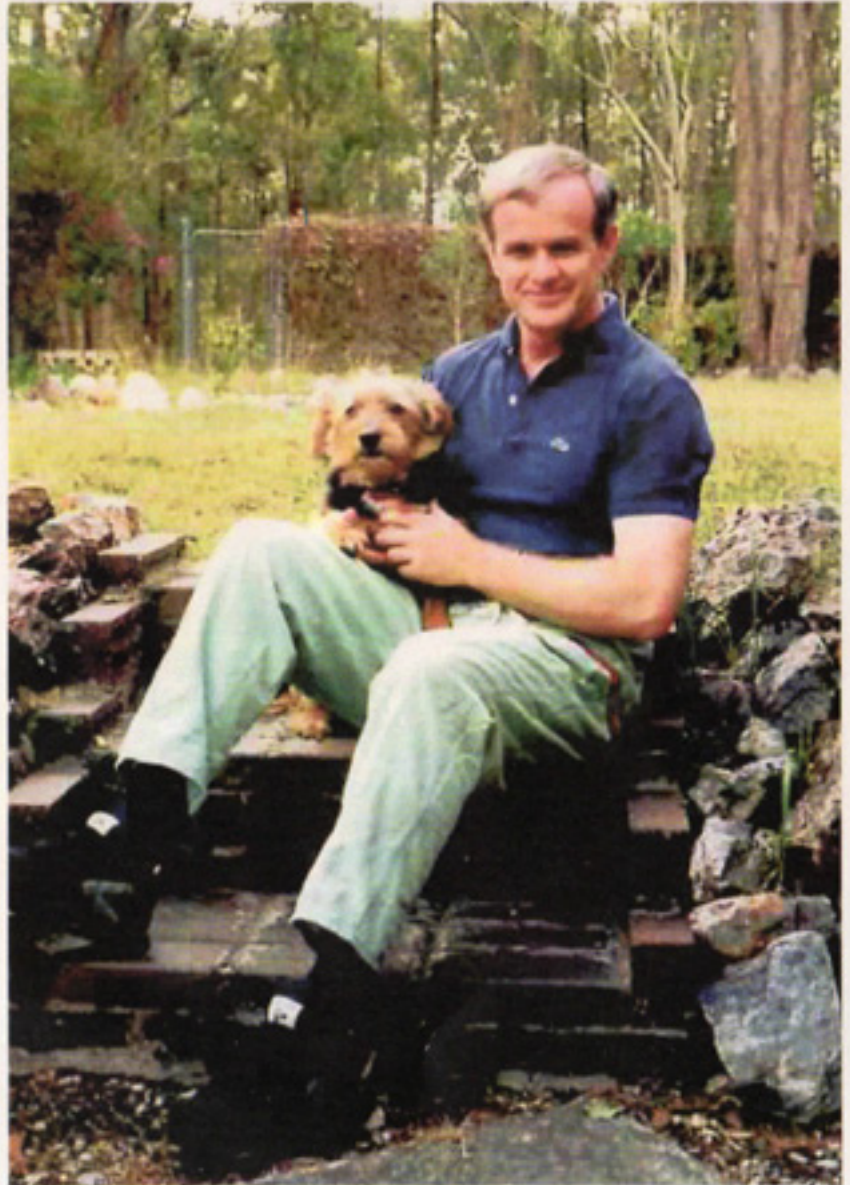
# Sad passing of Dr. Terence (Terry) Hopkins

It is with great sadness that we received the unfortunate news of Dr. Terence (Terry) Hopkins' passing on March 29th 2016.

Terry was with Bayer Australia for over 30 years from 1970 until 2001, when he retired from active work for Bayer. He was Director of Bayer Bahr's Hill Research Facility in Queensland, Australia.

He will be remembered as a great and innovative parasitologist who went off the beaten path in his research activities, and who dared to think beyond the given assumptions. His research, and discovery that imidacloprid controlled fleas on dogs, was the basis for Bayer flagship products of the Advantage Family. With this knowledge, he went on to develop a formula to treat flea infested dogs. It was also for Terry that the DrontalPlus allwormer concept was discovered and finally developed, which made Drontol one of the leading companion animal anthelmintic brand even until today. Terry received the Otto Bayer Medal for excellence in scientific research at Bayer in 1993 for his work on Drontal and in 1997 for his work on Advantage. He is among a select few who received this international accolade twice.

This sad news about Terry's passing comes at a time when Bayer is preparing to mark the 20th anniversary of the launch of Advantage, his most important development, which remains one of Bayer's flagship brands after these many years. Please join in honoring Terry' contributions to parasitology and veterinary science in general.



**WHITE LADY**  
**FUNERALS**

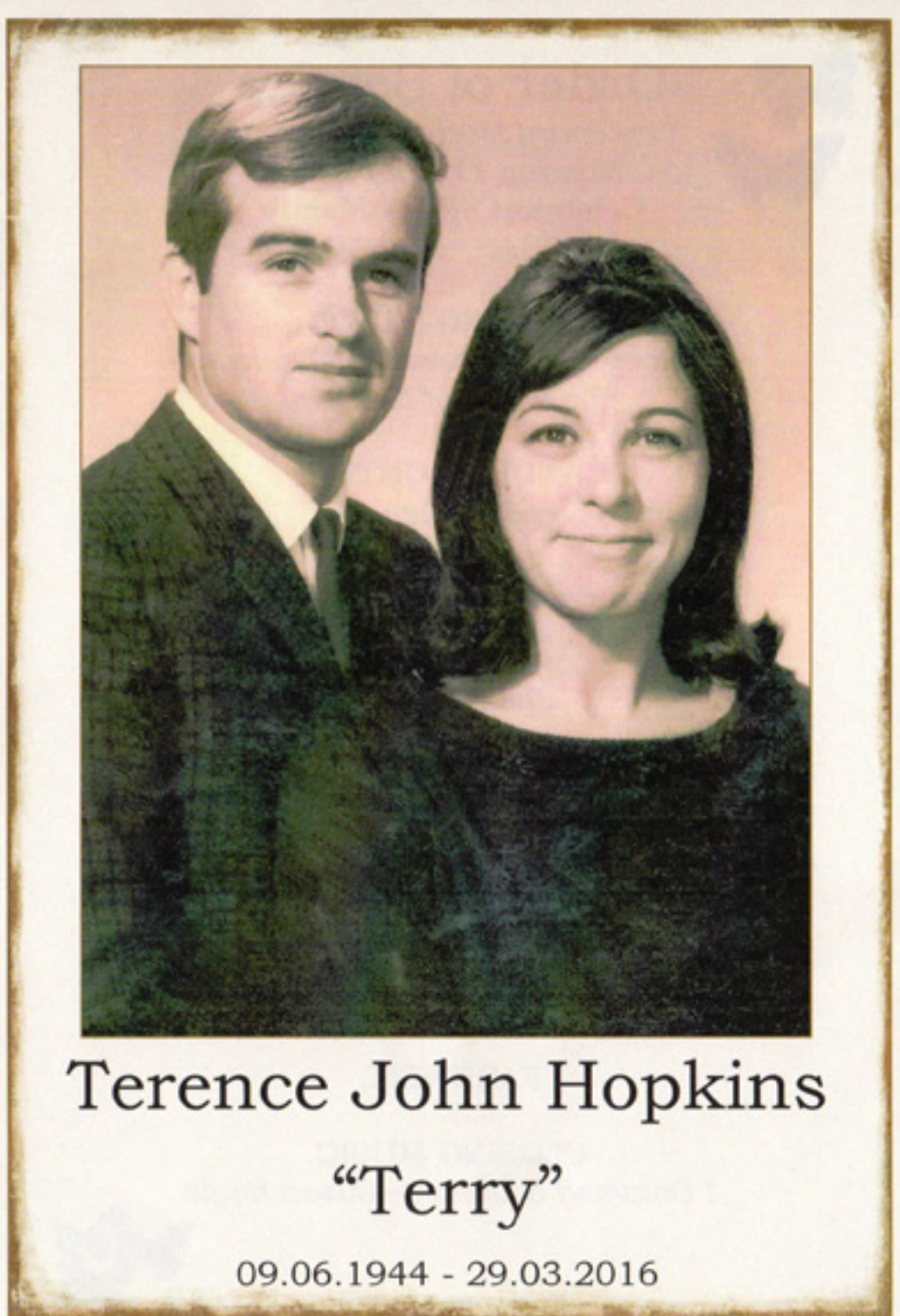
*a woman's understanding*

PROUD MEMBER OF INVOCARE

Acknowledgement: AMCOS, ARIA, Copyright Agency Limited Licensed Copy



# Sad passing of Dr. Terence (Terry) Hopkins



# Open Source Drug Discovery: Matthew Todd

Associate Professor Matthew Todd, Dr Robert Don, Dr Jeremy Burrows and Professor Matt Cooper will run the DNDi-MMV Special Symposium: Open Source Drug Discovery at The International Congress for Tropical Medicine and Malaria 2016 in Brisbane where they will examine the successes and challenges of several exemplar projects that have experimented with open source drug discovery. [www.tropicalmedicine2016.com/symposium-sessions/](http://www.tropicalmedicine2016.com/symposium-sessions/)

ASP member Associate Professor Matthew Todd from the University of Sydney is an organic chemist coordinating the Open Source Malaria project <http://opensourcemalaria.org> that is trying a different approach to curing malaria using Wikipedia, Firefox and Linux as models for research collaboration. The project is aimed at finding new medicines for malaria using open source principles, everything is open and anyone can contribute, embodied in the 6 Laws of Open Research, the most important of which are:

- 1) All data and ideas are shared openly
- 2) Anyone may take part
- 3) There are no patents

Matthew Todd has been promoting open source for more than ten years and was originally inspired by the internet and how open source was used to quickly fix any computer or software issues. "Anyone could come along and contribute to open source software and I thought, imagine if you could do that with science," Matthew said. "We successfully achieved this in 2010 with an ARC Linkage project with the World Health Organisation to solve a problem to do with making the Schistosoma drug "Praziquantel" as a single enantiomer. When this problem came up I thought this was a perfect opportunity to test out the theory that open source could speed things up. The project was successful and the problem was solved quickly because experts we didn't know in the field of science contributed openly on the website. These people, often from companies in the pharmaceutical industry, provided strategic advice and ran experiments free of charge. Science should have an "arena" feel to it and the schisto project achieved that through these outside contributors," he said.

Currently most of work involves the synthesis of analogs of compounds originally identified by big pharmaceutical companies, with the aim of improving their potency while making the molecules more "druggable", and this is what is known as a "hit-to-lead" campaign. From the Open Source Malaria Landing Page scientists can see



Image courtesy Matthew Todd

the most recent activity; there is a "To do List" and experiments from all contributors are recorded in the electronic laboratory notebooks. The Open Source Malaria (OSM) Consortium is like "Linux for Malaria Research".

Sharing is a fundamental theme in Matthew's approach to science, not just with collaborators but with the general public too. He believes that open science has the benefit of showing other researchers the complete research methodology, where you made mistakes and, because of the real-time nature of the project, where the project can go next. "In traditional research practices you don't share what your lab is doing: you would do work in the lab and then you would distil out a certain



# Open Source Drug Discovery cont...

amount of the stuff you have done and then publish that as a paper in a peer reviewed journal rather like a press release," Matthew said, "The crucial distinction (of open models) is that you're not telling people what you've done, you're telling people what you're going to do in the future."

OSM has grown in recent years. In 2011 the Todd lab at The University of Sydney received funding for a pilot project in open source drug discovery from the Medicines for Malaria Venture (MMV). The project champion at the outset was Tim Wells. Jeremy Burrows and Paul Willis came on board and led the suggestion to go after a few of the actives that had been placed in the public domain in 2010 by GlaxoSmithKline and others. Work got underway in the lab in August 2011. The team were successful in securing further funding from two Australian Research Council Linkage grants in 2012 and 2015. The current frontrunner compounds, in what is known as Series 4, are highly promising because two members of the series have been shown to be active in a mouse model of malaria. Matthew explained why he thinks

open source drug discovery is the way forward when he said "I want a drug to be found for malaria as quickly as possible and I don't really care who does that. The work is important, not who does it. You do it because you want to do good work, and for that to be of the widest possible use to humanity. I think the many talented contributors to the OSM consortium would agree with that."

*This article has been adapted from Tim Groenendyk's story "OPEN SOURCE DRUG DISCOVERY" published on the University of Sydney website <http://sydney.edu.au/research/spotlight/toddosdd.shtml>*

Join Associate Professor Matthew Todd, Dr Robert Don, Dr Jeremy Burrows and Professor Matt Cooper for their DNDi-MMV Special Symposium: Open Source Drug Discovery at The International Congress for Tropical Medicine and Malaria 2016 in Brisbane. [www.tropicalmedicine2016.com/symposium-sessions/](http://www.tropicalmedicine2016.com/symposium-sessions/)

## Terry Spithill retires

Long term ASP member and past ASP President Terry Spithill has retired and is now Emeritus at La Trobe University. Terry will be keeping the lab going 2 days a week with 3 PhD students and 2 postdocs and a new ARC Linkage with Virbac for fluke vaccine work. Terry and his wife Maureen, ASP Secretariat plan to spend more time with their four grandchildren, two live in Melbourne and two live in San Francisco, U.S.A. The photo (right) shows Terry and Maureen with their new grandson Emrys.





# News from the ASP Network for Parasitology

## Welcome

### Annual Conference

The **2016 Annual Conference will be part of the International Congress for Tropical Medicine and Malaria 2016 (ICTMM) 16-22 September, at the Brisbane Convention & Exhibition Centre**. Late breaking abstract submission opens 1st June 2016 for anyone who hasn't yet submitted their abstracts.

Submit your application for ASP Student Conference Travel Grants by June 19th online <http://parasite.org.au/awards/asp-student-travel-award/> and please contact [Lisa.Jones1@jcu.edu.au](mailto:Lisa.Jones1@jcu.edu.au) if you want to volunteer at ICTMM.

We hope to see you all in September for, what promises to be, another fabulous, not-to-be-missed, event.

**[www.tropicalmedicine2016.com/](http://www.tropicalmedicine2016.com/)**

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

Congratulations to recent ASP Award winners.

#### JD Smyth Travel Award winner

- **Alexander Kennedy**, PhD Candidate, WEHI, to attend XXVI International Complement Workshop, Kanazawa, Japan, 4-8 September and for a Researcher Exchange to Rayner group at the Wellcome Trust Sanger Institute, Hinxton, Cambridge, UK. 11 - 30 September

#### ASP Network Travel Award winners

- **W. Deepani D Fernando**, PhD student, QIMR Berghofer MRI, for a training course ESCMID summer school tropical and infectious diseases and clinical microbiology, Seville Spain, 2 – 9 July 2016
- **Md Abdullah Al Mamun**, PhD

student, Monash University/ Federation University, for a 16S Metagenomic sequencing analysis workshop at University of Alberta, Edmonton, Canada 9-13 May 2016

- **Thi Hong Hanh Nguyen**, PhD candidate, Bio21 Institute, for a training course Malaria Experimental Genetics, Wellcome Trust Genome Campus, UK 8 – 14 May 2016
- **Sarah Preston**, Post-Doctoral Researcher, Melbourne University, Gasser Laboratory for a Researcher Exchange to The University of Georgia, Ray Kaplan's laboratory 12-29 February, 2016
- **Michelle Power**, Senior lecturer, Biological Sciences, Macquarie University, for a Researcher Exchange to Max Planck Institute Berlin, Germany, to visit Kai Matuschewski to analyse Haemsporidia from Australian flying fox species, August 10, 2016 to September 14 2016

### Congratulations to new ARC Linkage grant winners.

**Professor Terence Spithill; Dr Travis Beddoe; Dr Robert Dempster; Dr Glenn Anderson; VIRBAC (AUSTRALIA) PTY LTD** La Trobe University

This project aims to optimise the formulation of novel fluke vaccine antigens by constructing combination hybrid recombinant antigens and using a protein adjuvant to improve immunogenicity, and test new antigens expressed in young flukes as vaccines and evaluate their ability to synergise with hybrid vaccines. Fasciola (fluke) infections cause serious economic losses to livestock production and fluke drug resistance threatens control, so new therapies such as a vaccine are needed. These vaccines should be evaluated in cattle trials. The major outcome plan is validation of hybrid antigens for commercial vaccine development for fluke control in cattle,

leading to more sustainable beef and milk production in Australia.

**Professor Peter Irwin; Professor Una Ryan; Dr Charlotte Oskam; Dr Liisa Ahlstrom; Associate Professor Peter Banks; Professor Roy Hall; Dr Sonja Hall-Mendelin; Dr Bettina Schunack** BAYER AUSTRALIA LTD; BAYER HEALTHCARE; QUEENSLAND HEALTH; Murdoch University \$290,000

This project aims to determine the bacterial, protozoal and viral biodiversity in wildlife ticks and their native mammal hosts, and provide new information about the biology and transmission dynamics of these microorganisms and their potential to cause disease in wildlife, domesticated animals and humans. Anticipated outcomes are improved diagnostic tests and management protocols for tick-borne disease in Australia.

### Australia Day Honours

Congratulations to **Dr Peter Anthony HOLDSWORTH AM**, Wanniasa, ACT For distinguished service to veterinary science, particularly to animal parasitology and pharmaceutical development, and to professional scientific organisations.

### 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 has proved very valuable for several young researchers and their mentors already. To apply, write to Nick Smith ([nick.smith@parasite.org.au](mailto:nick.smith@parasite.org.au)) with a brief outline of your research interests and aspirations.

### Nick Smith, Convenor, ASP Network for Parasitology

**Lisa Jones, Executive Officer, ASP Network for Parasitology**

# ASP Network Researcher Exchange, Training and Travel Award: Dhanasekaran Sakthivel

Dhanasekaran Sakthivel, Monash University, travelled to Japan to attend Protein Crystallography (CCP4), hands on training Crystallography School at Okinawa Institute of Science and Technology. This report by Dhanasekaran Sakthivel.

*"The present rate of progress [in X-ray crystallography] is determined, not so much by the lack of problems to investigate or the limited power of X-ray analysis, as by the restricted number of investigators who have had a training in the technique of the new science, and by the time it naturally takes for its scientific and technical importance to become widely appreciated."*  
Sir Lawrence Bragg, Australian-English physicist and X-ray crystallographer, Nobel laureate for Physics in 1915 in his concluding remark in Lecture (1936) on "Forty Years of Crystal Physics"

In my PhD program, I aim to examine the role of carbohydrate recognizing proteins of sheep (galectin 11 and 14 which have novel anti-parasitic activities in resistant animals) and how they interact with glycan's present on the parasites surface in order to provide better insights in host immune resistance and for the design of a glycan based vaccine. In the early of 2015, I obtained the diffraction patterns of Galectin-11 of sheep and complexes of galectin-11 with carbohydrate molecules for the first time. Though the X-ray data of Galectin-11 collected, I needed appropriate training to define how these host glycans interact with parasites. Hence, I attended the crystallography school organized by Okinawa Institute of Science and Technology, Japan, in order to gain hands on training to analyse X-ray crystallographic data, which was kindly sponsored in part by the ASP Network Researcher exchange program. I was the only student from Australia to get a boarding pass, among 16 international students selected by the committee to attend the third joint Okinawa Institute of Science and Technology (OIST) Okinawa Island, Japan and Comprehensive Computing suite for Protein



Photo courtesy Dhanasekaran Sakthivel

Crystallography (CCP4), hands on training Crystallography School.

During the first day of my stay at Okinawa Institute of Science and Technology, I had the chance to present my research findings among students and scientists from various institutions. I also gained understanding regarding the collection of X-ray diffraction patterns of proteins in more innovative ways. In this platform I was trained to deal with critical structure solution processes in macromolecular crystallography, starting from data processing, through phasing and refinement, and ending with validation and deposition. I learned to use the next generation tools such as Mosflm, Scala, Refmac, ArpWarp, Phaser, Coot, Crank, SHELXC/D/E, Balbes, Mrbump, Buccaneer and many more popular programs used for data processing and structure solution with the team of those world's leading software developers. Apart from the direct help this award has given me to enable completion of my thesis, for a graduate student like me, travelling overseas was also an excellent way to expand my academic networks. Following the successful completion of my workshop, I travelled to Kyoto, where there are thousands of ancient Buddhist temples, as well as gardens, imperial palaces, Shinto shrines and traditional wooden houses. My international contacts certainly helped me meet Professor Hiroshi Sugiyama's research group,





**3<sup>rd</sup> CCP4-OIST Workshop, 2-7 November 2015, Okinawa, Japan**

Photo courtesy Dhanasekaran Sakthivel

members of Kyoto University. Prof's Sugiyama group is defining the chemical principles underlying the recognition, reactivity and structure of nucleic acids. Here, I discussed with his Post Doctoral fellows Dr. Gengo Kashiwazak, Dr. Junetha Syed Jabarulla and Dr. C. Anandhakumar of biological inorganic chemistry division, about the design of highly efficient sequence-specific DNA acting agents and a suitable in vivo delivery method. Currently we are keen on a long-term goal to develop an artificial genetic switch for targeted treatment of selected parasite diseases.

The present drug resistant scenario in animal parasites requires novel as well as more efficient approaches to improve our understanding of host-parasite interactions and control options. *Haemonchus contortus* is a globally well-known and widespread gastrointestinal nematode (GIN) of sheep and goats. The parasite causes severe production losses due to a range of physiologic impacts including reduced feed intake, digestion problems, anaemia, reduced fecundity, poor weight gain, reduced milk production and increased mortality. *H. contortus* is ubiquitous and strongly influences livestock farm profits in tropical countries. It is estimated that 30% to 50% of production losses are caused by parasites and their treatment, where GIN infection are a significant issue. Even in the setting of Australian livestock

industry where modern diagnostics and treatment are widely available, production losses and cost of drug treatment for GIN infections is estimated more than 1 billion dollars per annum.

Glycan and glycopeptide based vaccines are emerging candidates to reduce the significant burden of parasitic disease. Ultimately, progress in innovative research to develop cutting-edge diagnostic methods and vaccine development requires greater opportunities to work with world leaders. Indeed, my Travel to Okinawa institute of Science and Technology and Kyoto University has helped me formulate new ideas, exciting innovative ways to analyse and understand my data and I have learnt an enormous deal. This would not have been possible without the generous support of Australian society for Parasitology through the ASP Researcher Exchange, Training and Travel Award. I thank the Australian Society for Parasitology for considering me for this prestigious award and financial support. It's my immense pleasure to also extend my sincere thanks to Associate Professor Fadel. A. Samatey, Group Leader, Trans-Membrane Trafficking Unit, for providing additional necessary support throughout the workshop. Included are some pictures of me "hard at work".





Photos courtesy Dhanasekaran Sakthivel, at the Okinawa Institute of Science and Technology (OIST) Okinawa Island, Japan and Comprehensive Computing suite for Protein Crystallography (CCP4), hands on training Crystallography School



# ASP Network Researcher Exchange, Training and Travel Award: Alejandro Trujillo González

Alejandro Trujillo González, James Cook University, travelled to Spain for a researcher exchange at the Institute of Aquaculture "Torre de la Sal" (IATS) in Castellón with Dr Ariadna Sitjà-Bobadilla and Dr. Oswaldo Palenzuela. This report by Alejandro Trujillo González.

The contribution I received from the Australian Society for Parasitology allowed me attend to the 9th International Symposium of Fish Parasites (9ISFP) and a month long research exchange in the Institute of Aquaculture "Torre de la Sal" (IATS) in Castellón, Spain, from the 1st of September to the 12th of October. The 9th ISFP was held at the University of Valencia Campus, where researchers from all over the world presented ground-breaking research in various areas of fish parasitology. As a first year PhD student, this was a unique opportunity to meet new people and learn about what its currently being done in research laboratories around the world. As I meet more researchers and new techniques, I questioned my research approach and found better ways to accomplish my objectives during my PhD. During the conference, I gave an oral presentation "Tracking transparent monogenean parasites on fish from infection to sexual maturity" where I showed how fluorescent labelling can be used to study parasite ecology.

Following the conference, I started my research exchange with Dr Ariadna Sitjà-Bobadilla and Dr. Oswaldo Palenzuela in IATS, a public research centre that belongs to the Consejo Superior de Investigaciones Científicas (CSIC) in Spain. During this time I aimed to analyse samples from my current PhD project, in which I will identify strategic approaches to detect pathogens of quarantine concern associated with the importation of ornamental fish to Australia. Dr Sitjà-Bobadilla is a world-renowned expert of myxozoan, coccidian and monogenean parasites of farmed fish and Dr. Palenzuela is a specialist of *Cryptosporidium* and *Enteromyxum* species infecting



From left to right: Kate S. Hutson, Ana Delgado, Alejandro Trujillo, Alexander K. Brazenor at the 9th ISFP in Valencia, Spain.

marine fish.

During my month working in the Institute, I was trained in molecular and morphological identification of myxosporean and cryptosporidian parasites. I also learned techniques to maintain an *in vivo* culture of *Enteromyxum leei* infecting gilthead sea bream, *Sparus aurata*, as part of ongoing experiments in the facilities of the Institute. Specifically, I learned to develop nested PCR protocols to identify *Cryptosporidium* species in samples collected from infected fish. I honed my skills in histopathology and learned to identify myxozoan, myxosporean and cryptosporidian parasites found in different fish organs.



# ASP Network Researcher Exchange, Training and Travel Award: Alejandro Trujillo González



Aquatic Pathology Laboratory team. From Left to right: Dr Oswaldo Palenzuela, Alberto Fernandez, Raquel del Pozo, Dr Ariadna Sitjà-Bobadilla, Inmaculada Vicente, Nahla Hossam Eldin Ahmed and (below) doing an anal swap on gilthead seabream, *Sparus auratus* infected with myxozoan parasite, *Enteromyxum leii*.



Raquel del Pozo (Senior lab technician) was invaluable in my understanding of the nested PCR protocols and Dr Carla Piazzon (PostDoc researcher) helped me to identify potential issues in PCR protocols and what stages could be modified to increase the sensitivity of the protocols. Inmaculada



The "Olive Preparation Team (OP Team)". From left to right: Rosario Gauchia Gual, Alejandro Trujillo González, Inmaculada Vicente

Vicente (Senior animal husbandry assistant) and Alberto Fernandez (lab technician) showed me the re-circulating and flow-through systems they had established to maintain different species of fish, and what stages were of critical importance to maintain experimental infections and avoid cross-contamination between tanks. This knowledge greatly increased my understanding in animal husbandry and gave me essential skills I will use later in my PhD.

Most importantly, I learned how to cure and prepare olives for consumption. This was a small side project I had during my spare time, and as Rosario (the gatekeeper of the Institute) said: "olives are an essential component of Spanish culture".

I would like to thank the ASP for their funding and encouragement of students to seek out international opportunities. My research exchange established the first collaboration between James Cook and IATS, paving the way for future exchange students to have more opportunities to travel and get involved in other research projects. With the help of the APS and IATS in Spain, Australian students have the opportunity to develop research in Europe, with new techniques, new fish species, and innumerable opportunities to learn something new.

## ASP Network Researcher Exchange, Training and Travel Award: Ali Raza



Photo courtesy Ali Raza

**Ali Raza, University of Queensland, travelled to Canada for a Researcher Exchange to University of Montreal and then on to San Diego, for an Anthelmintics: Discovery to resistance II workshop. This report by Ali Raza.**

I had the opportunity to spend about 4 weeks in Prof. Roger Prichard's laboratory at the Institute of Parasitology, McGill University, Montreal, Canada, in early 2016. I received a warm welcome by the freezing cold of Montreal when I landed there. I was very excited to be making this trip because this laboratory is one of the world's leaders in research into anthelmintic resistance. The work carried out in this lab is well aligned to my own interests. The people working in the institute were very friendly and cooperative, and they cordially welcomed me to visit their labs. My main purpose was to learn some

techniques in proteomics and genomics as Prof. Prichard's group works on drug transport proteins, ion channels and drug targets in nematodes and their roles in anthelmintic resistance.

During my visit, I was invited to not only attend the weekly seminars in the institute and hear about the on-going projects by different research groups, but also to present my research work and promote the Australian research on anthelmintic resistance. In addition, I also had an opportunity to work on a high-throughput technique, "pyrosequencing" to measure the frequency of single

nucleotide polymorphisms (SNPs) in resistant and susceptible isolates of *Haemonchus contortus* collected from different sheep farms across Canada. This project is focusing on detection of the SNPs in beta-tubulin and dyf-7 genes responsible for resistance to benzimidazole and ivermectin in *H. contortus*. Using this technique, we can investigate and identify the possible markers that can be used to diagnose nematode population resistant to anthelmintics in field conditions. I also attended a short training session on basic bioinformatics and the use of software for phylogenetic analysis.



## ASP Researcher Exchange cont...



Photos courtesy Ali Raza



Prof. Tim Geary, the director of the institute is a great personality, who allowed me to work in his lab where I learned about the use of fluorescent microscopy to investigate the effects of flubendazole on the cuticle of *Brugia malayi*. Meghan O'Neil (a PhD student) also helped me to differentiate between anatomical structures of this nematode and understand its handling and storage. Researchers in Prof. Geary's group are also working on associating nematode ion channel activity with anthelmintic sensitivity. Different drug target proteins (glutamate-gated chloride ion channels and nicotinic acetylcholine receptors) are expressed in *Xenopus* oocytes and the effects of drugs on opening and closing of the ion channels are studied in a voltage-clamp technique. I was fortunate to learn about this technique and also assisted in a surgical procedure to harvest the oocytes from frogs. It was quite interesting for me to inject RNA in these tiny round 'balls' (oocytes) using a microscope and very fine microneedles.

I also participated in the actual electrophysiology experiments performed using a well-established system. I was also interested to learn the protein modelling and Mark (a PhD student) helped me to understand the basics of protein modelling and the use of different software for this purpose. The working experience on such advanced techniques which I acquired during this visit is a valuable addition to my career portfolio.

During my visit, I also participated in an international symposium entitled "Anthelmintics: Discovery to Resistance II" held in San Diego, CA, USA, and presented my research work. I had good discussions on future research directions in the area of anthelmintic resistance with leaders in my field of research. In addition, I also discussed on some future postdoctoral career opportunities with different research groups

In short, my visit to the institute and drug resistance symposium, albeit for

few weeks, was highly successful and most enjoyable. I really enjoyed the chilling weather of Montreal, company of my colleagues and the new networks that I created. In concluding,

I would like to acknowledge Prof Roger Prichard, Prof Tim Geary and all the staff and students in the institute especially Kathy Keller (senior technician) for their cooperation and amazing hospitality throughout my stay. Furthermore, I would especially extend my gratitude to Mr. Shoaib Ashraf (ex-PhD student from the lab) for his wonderful hospitality and kind cooperation in arranging my accommodation and welcoming me to his house for delicious meals quite often. I successfully represented the ASP and the University of Queensland, and promoted Aussie research on anthelmintic resistance in Canada and the USA. I am greatly thankful to the ASP and the Graduate School, University of Queensland for the financial support that allowed this fruitful visit to take place.

## News about Australia/Europe Malaria Research Cooperation

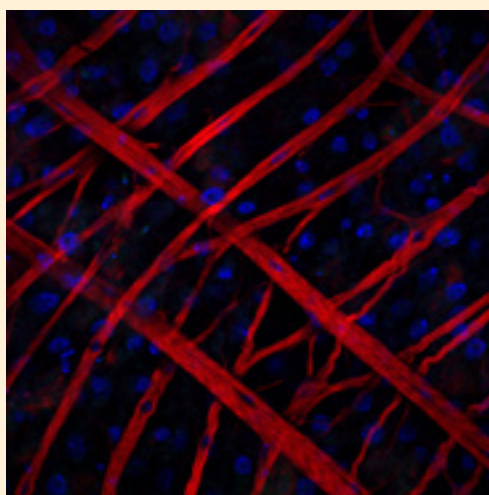
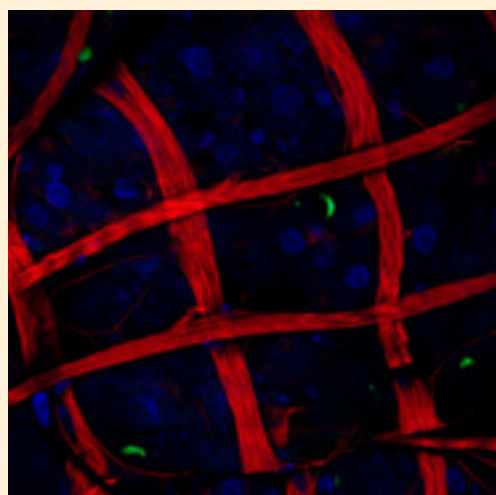
Please enjoy the following report by OzEMalaR Researcher Exchange winner Charlie Jennison, WEHI

Geoff McFadden, Convenor, OzEMalaR

[www.facebook.com/ozemalar](http://www.facebook.com/ozemalar); [twitter.com/OzEMalaR](https://twitter.com/OzEMalaR); [www.ozemalar.org.au](http://www.ozemalar.org.au)

# OzEMalaR Researcher Exchange, Training and Travel Award: Charlie Jennison

Charlie Jennison travelled to the London School of Hygiene and Tropical Medicine, the Instituto de Medicina Molecular, Lisbon, and Johns Hopkins School of Public Health, Baltimore, June-September 2015 for his OzEMalaR Travel Award.



Photos courtesy Charlie Jennison show the network of actin fibres that surround the midgut. The left image shows where ookinetes have traversed through the midgut epithelium to the basal lamina, where they can continue the lifecycle, developing into oocysts. The right image is an IFA of a mosquito midgut, the red actin fibres surround the gut epithelium like a basket. Contact [Jennison@wehi.edu.au](mailto:Jennison@wehi.edu.au) before sharing images.

### Instituto de Medicina Molecular, LISBON

During the time I spent at the Laboratory of Maria Mota in Portugal, I was working on two projects.

The role of PEXEL mediated protein export in Liver Stage (LS) development

Using WEHI-842, a compound known to block PEXEL processing and consequent export through the inhibition of the aspartyl protease Plasmepsin V (PM5) and the mouse malaria model *P. berghei*, I investigated the importance of protein export in LS. WEHI-842 is known to be active against *P. vivax* and *P. falciparum* PM5 and kills *P. falciparum* blood stage parasites through the blockage of protein export. I confirmed the compound's activity against *P. berghei* PM5 using an in vitro bloodstage assay.

I then checked the effect of 842 on LS parasite growth and survival using high throughput methods well established in the Mota laboratory, as well as immunofluorescence microscopy. The data from this work will feed into collaborative publications from our labs.

The role of an ookinete stage protein in midgut invasion is a collaborative project between the Mota and Boddey labs. I dissected and processed mosquito midguts after bloodfeeding to further investigate the role of this protein. This work will be completed and published following another researcher exchange in February, when Jennifer Armistead from the NIH will come to WEHI for three weeks. I have included some of the images I obtained from this work in Lisbon.

During my time in Lisbon I optimized a difficult

IFA protocol for the investigation of midgut traversal by ookinetes, which can now be done in both the Boddey and Mota labs, I also learnt high throughput techniques we can use in Melbourne to investigate liver stage biology of *P. berghei* that can also be adapted for work with *P. falciparum*.

### Johns Hopkins School of Public Health, BALTIMORE

During my time in the Laboratory of Prof. Rhoel Dinglasan I shadowed *P. falciparum* HC04 invasion assays to confirm methodologies were consistent between our laboratories. I also visited the laboratories of the Walter Reed Army Institute of Research and our collaborator Jennifer Armistead at the laboratories and insectary of the



# OzEMalaR Researcher Exchange, Training and Travel Award: Charlie Jennison



Photo Charlie Jennison, WEHI.  
Please contact [Jennison@wehi.edu.au](mailto:Jennison@wehi.edu.au) before sharing images.

National Institutes of Health, Bethesda, Maryland.

I have taken away techniques for *P. falciparum* invasion of HC04 cells as well and alternative methods for mosquito rearing.

## Meeting at the LSHTM

I gave a presentation to the group of Colin Sutherland at the London School of Hygiene and Tropical Medicine, presenting work to his group, as they are interested in moving towards liver stage work, sharing methodologies and also visiting the extensive LSHTM insectaries.

*Lisa Jones interviewed Charlie about his trip. Charlie what was the best thing about your OzEMalaR Researcher Exchange and what inspired you the most?*

My lab based scientific career has been almost solely based at WEHI, so it was a great experience to see how other institutes

and research groups work, in both Lisbon and Baltimore. In Melbourne I mainly work on *P. falciparum* liver stage biology, however in the lab of Prof. Maria Mota they work primarily with *P. berghei*, so I got to branch out and use their high throughput assays to investigate protein export in liver stage. While in Lisbon I was also working on a project looking at ookinete traversal of mosquito midguts, dissecting mosquitoes post feed and processing them to generate 3D reconstructions of the midgut invasion process. Unfortunately there wasn't enough time to finish this, but I managed to optimise the dissection and staining protocol with the help of the imaging team at the Instituto de Medicina Molecular and produced some useful images we can continue working from. Maria's lab is big and works very well as a unit so the atmosphere in lab meetings was probably the most inspirational aspect of the trip.

## What's next for your research?

I'm currently setting up experiments to finish the aforementioned ookinete work with a collaborator and I'm looking forward to the Molecular Approaches to Malaria Conference this February in Lorne. Then the main goals this year are to finish my PhD and ideally line up a postdoc position.

## Any suggestions for other researchers who are thinking about applying for funding to support a Researcher Exchange?

Well, obviously go ahead and apply. It's important to agree on a research plan with your hosts that's not overly ambitious, ideally tailored to their areas of expertise. To get the most of the exchange I'd try and be flexible and let the research follow the results more than the plan, especially if your hosts are involved in the decision making. This way you'll see the different ways people approach problems and it'll be a better learning experience. In my opinion at least.

# Research: New hope for malaria treatment as drug resistance found unable to spread for the first time

Resistance to a key anti-malarial drug cannot be passed on by mosquitoes in a breakthrough scientists believe could drastically improve the way we battle the disease.

The discovery could potentially shut down the avenue for mass drug resistance to spread, making malaria treatment significantly more effective for the 3.2 billion people at risk worldwide.

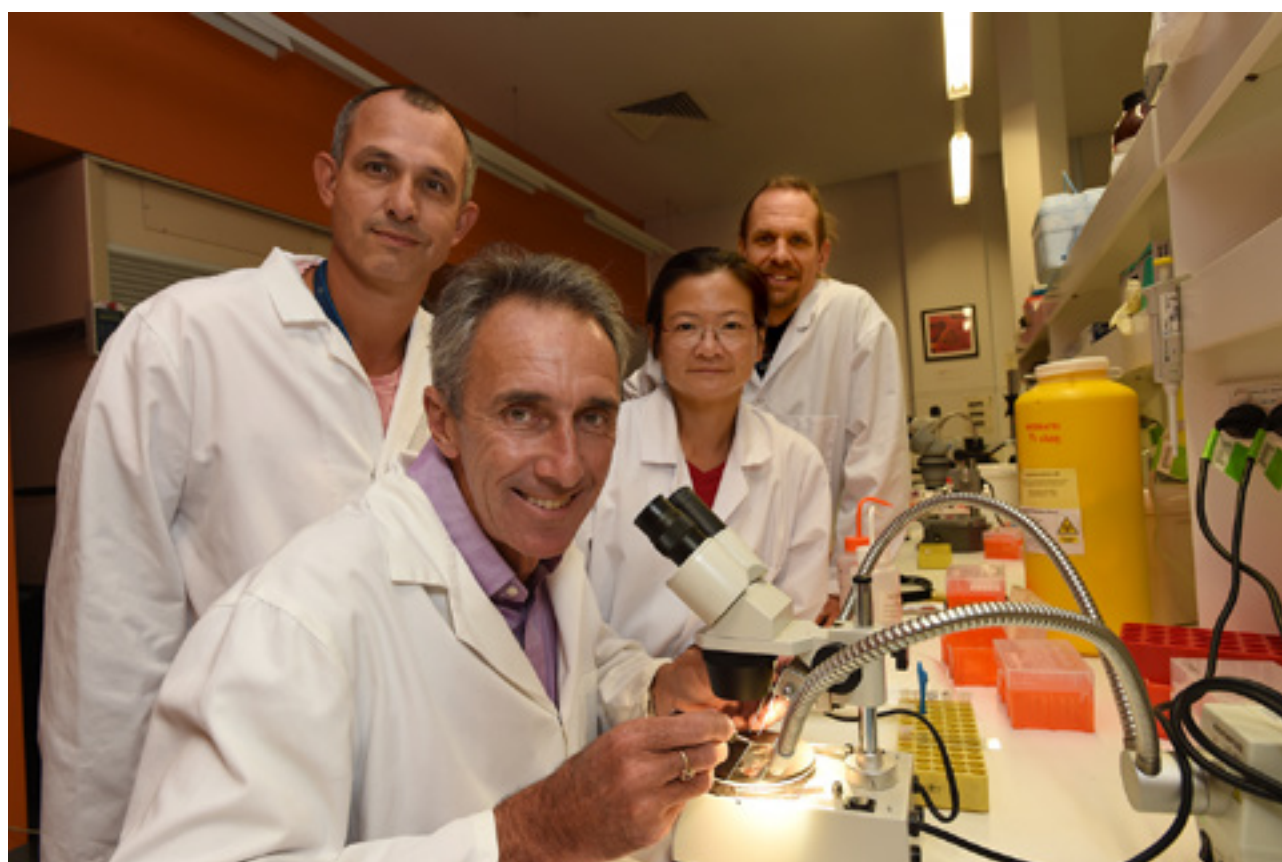


Image: McFadden laboratory team. images next page Mosquitoes (top), Geof McFadden (bottom, left), Vanessa Mollard (bottom, right).  
Credit: The University of Melbourne

The international research project was led by the University of Melbourne and focused on the drug atovaquone.

Atovaquone was introduced in 2000 and is safe for pregnant women and children, so it is one of the few anti-malarials that can be used in mass administration approaches.

It was largely phased out of use because resistance was initially observed.

But as published in the journal *Science*, the new study reveals that although some malaria parasites had developed a genetic

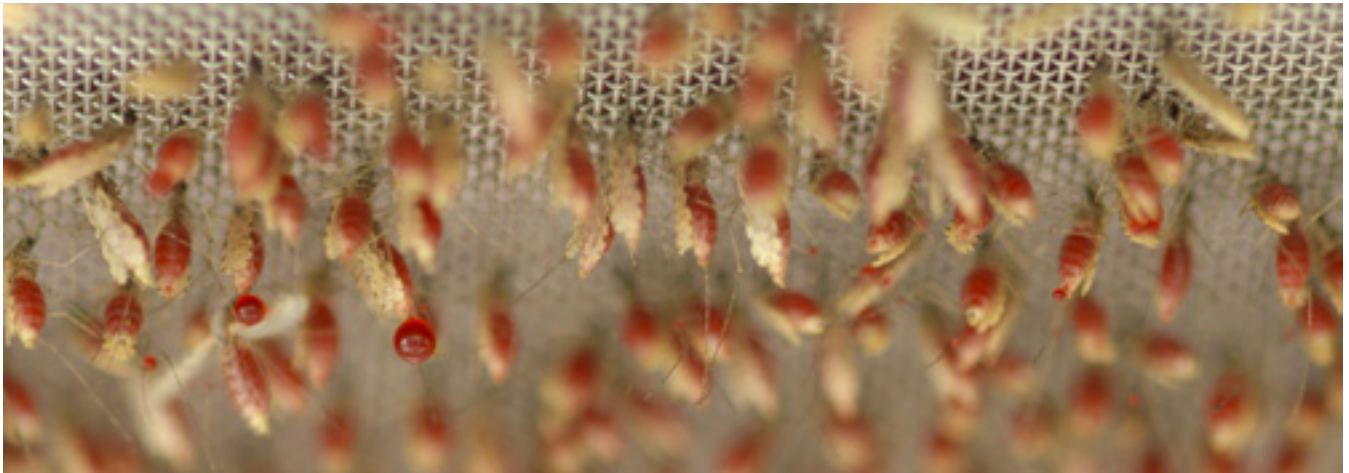
mutation that protected them against the drug in early life, the mutation eventually killed the parasites by stopping production of an essential type of energy as they grew.

Lead authors Professor Geoff McFadden and Dr Dean Goodman are calling it a 'genetic trap' that could prove to be a significant step forward in the anti-malaria fight.

The pair, along with long-term collaborator Vanessa Mollard, have led a team investigating the evolution and life cycle of the malaria parasite for the past six years.



# New hope for malaria treatment cont...



"These results are very exciting because the spread of drug resistance is currently destroying our ability to control malaria," said Prof McFadden from the School of Biosciences at the University of Melbourne.

"We now understand the particular genetic mutation that gave rise to drug resistance in some malaria parasite populations and how it eventually kills them in the mosquito, providing new targets for the development of drugs."

"So the development of drug resistance may not be a major problem if the resistance cannot spread, meaning the drug atovaquone could be more widely used in malaria control.

The team also included colleagues in Indonesia, US and Japan who have been growing and studying billions of malaria parasites used to infect thousands of mosquitoes.

The researchers studied a model strain of rodent malaria and a deadly strain of human malaria to confirm the resistant parasites could not be spread by mosquitoes, thereby preventing the re-infection of humans.

"It is very rewarding that our fascination with basic biology has produced such significant results."

"We are the first group to follow the drug resistant malaria

parasite through its entire life cycle to understand what happens after drug resistance initially develops and whether they pass on resistance."

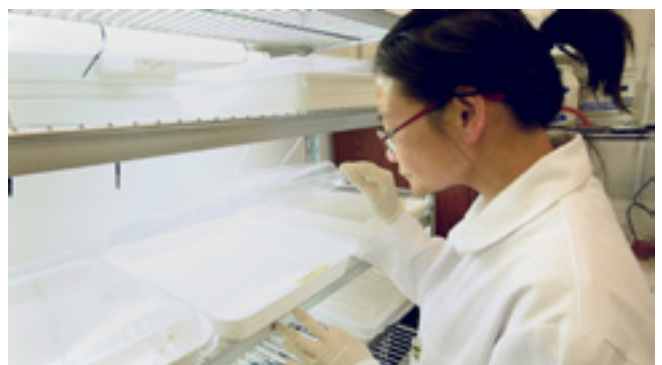
"Our next challenge will be to look for any spread of this drug resistance in field settings such as Kenya and Zambia. We are hopeful that with the development of cheaper generic forms of the drug atovaquone, that there is a new hope in the treatment of malaria."

*"Parasites resistant to the antimalarial atovaquone fail to transmit by mosquitoes", Christopher D. Goodman, Josephine E. Siregar, Vanessa Mollard, Joel Vega-Rodríguez, Din Syafruddin, Hiroyuki Matsuoka, Motomichi Matsuzaki, Tomoko Toyama, Angelika Sturm, Anton Cozijnsen, Marcelo Jacobs-Lorena, Kiyoshi Kita, Sangkot Marzuki, Geoffrey I. McFadden. Science, 15 Apr 2016:Vol. 352, Issue 6283, pp. 349-353, DOI: 10.1126/science.aad9279*

<http://science.sciencemag.org/content/352/6283/349>

Story source: Dr Nerissa Hannink, The University of Melbourne  
<http://newsroom.melbourne.edu/news/new-hope-malaria-treatment-drug-resistance-found-unable-spread-first-time>

Read the Pursuit article and watch video footage here: <https://pursuit.unimelb.edu.au/articles/trapping-malaria-in-a-gene-net>



# Science Meets Parliament 2016: Barbara Nowak and Shokoofeh Shamsi



Photos clockwise from left: Professor Barbara Nowak, University of Tasmania (pictured left) and Dr Shokoofeh Shamsi (right), Charles Sturt University represented the ASP at Science meets Parliament 2016 in Canberra. Shokoofeh with Hon Christopher Pyne Minister for Industry, Innovation and Science; Shokoofeh and Barbara with Hon Bill Shorten MP, Leader of the Opposition. Photo Credit: Mark Graham, Science meets Parliament 2016

**Professor Barbara Nowak, University of Tasmania and Dr Shokoofeh Shamsi, Charles Sturt University represented the ASP at Science meets Parliament 2016 in Canberra. This report by Barbara Nowak.**

Science meets Parliament was organised on 1 and 2 March by Science and Technology Australia. This is an annual event with the first day run in the Hotel Realm and the second in the Parliament House.

On the first day after welcome and overview, Prof Brian Schmidt AC, ANU gave the opening address. There were a couple of presentations from the sponsors, including CropLife and ANSTO. Ms Sue Weston, Deputy Secretary DIIS talked about National Innovation and Science Agenda. There was a lot of information provided by journalists. In Meet the Media the chair Kylie Walker AAS discussed turning science into news with Paul Bongiorno AM, contributing editor to Network Ten and Alison Carabine Political Editor ABS RN Breakfast. There was some discussion

about translating science into policy and what it requires. That afternoon was used to prepare scientists for the meetings with parliamentarians. This was achieved by presentations from former participants and rehearsing organised by Dr Rod Lamberts ANU and Dr Will Grant ANU. In the evening we attended Gala Dinner in the Great Hall of Parliament House. Bernie Hobbs ABC science broadcaster was the MC, presentations were given by a number of guest speakers including The Hon Christopher Pyne MP, Minister for Industry, Innovation and Science and The Hon Bill Shorten MP, Leader of the Opposition. I shared my table with The Hon Alannah MacTiernan MP member for Perth (ALP) who was very interested in aquaculture and made a real effort to talk to all scientists around the table. Senator Janet Rice (VIC, AG) was also sitting at our table.



# Science Meets Parliament 2016 cont...



Photos left: Professor Barbara Nowak, University of Tasmania outside of Parliament House; Dr Shokoofeh Shamsi (right), Charles Sturt University with Hon Christopher Pyne Minister for Industry, Innovation and Science. Photo Credit: Mark Graham, Science meets Parliament 2016

Next morning we joined a long queue to Parliament House. I (together with Dr Sophie Lewis ANU, Dr Danielle Martin ANSTO and Dr Maxine Roberts ANSTO) met with The Hon Julie Collins MP, member for Franklin (ALP), who was concerned about current cuts at CSIRO and was very interested in equal opportunities including gender equity and supporting more women going into science. I have talked about outreach activities sponsored by ASP and their role in encouraging young people to study science. The timing of my meeting with parliamentarian meant that I missed presentations from Prof Ian Chubb and Senator Kim Carr. After my meeting it was time for lunch at National Press Club. The National Press Club address was delivered by Dr Alan Finkel AO, Chief Scientist for Australia. Following lunch we returned to Parliament House to attend Question Time. Last session of the day was a Parliamentary Forum (Science and politics, how do they mix) with Prof Aidan Byrne CEO ARC, The Hon Karen Andrews MP, The Hon Richard Marles MP and The Hon Adam Bandt MP chaired by Genevieve Jacobs and followed by drinks and closure of the event. The Hon Alannah MacTiernan MP found me during the drinks to give me a copy of *Scaling Up – Inquiry into Opportunities for Expanding Aquaculture in Northern Australia* prepared by Joint Select Committee on Northern Australia which she is Deputy Chair.

I learnt a lot and was inspired by some of the presentations, in particular Prof Brian Schmidt and Dr Alan Winkel gave excellent talks. It was also good to get a general feel for political climate for science and the increasing importance of collaboration with industry and research innovation. There was a lot of great advice helpful not only in contacts with parliamentarians. I really enjoyed the dinner and Leader of the Opposition's address. There were amazing opportunities for networking and I met people I have not seen since I was doing my PhD. I would like to thank ASP for sending me to Science meets Parliament 2016.

I encourage more Early Career Researchers who are members of the ASP to participate in the future. I thought it was really beneficial to send an ECR and a more experienced researcher.

*Since returning from Science Meets Parliament Barbara was instrumental in developing our new ASP promotional flyers for members to use. [www.parasite.org.au/publications/marketing/](http://www.parasite.org.au/publications/marketing/)*

# Tropical Agricultural Conference 2015

The inaugural TropAg15 conference (<http://tropagconference.com.au/>) showcased eight specialist symposia on Wednesday 18 November 2015 including 'Control of tropical livestock parasites into the future' sponsored by the Australian Society for Parasitology.

Control of tropical livestock parasites into the future Parasites of livestock cause diseases of major socioeconomic and animal welfare importance worldwide. The annual cost of parasitic disease is >\$1b annually to the Australian beef cattle and sheep industries, and >\$10b worldwide. Resistance to parasiticides is compromising the efficiency of control programs and global warming is expected to increase the impacts of parasites and arthropod borne diseases. This symposium will explore new technologies and approaches to livestock parasite management. Delivery of the symposium will be through local short talks to address issues such as parasite control under a changing climate, 'One Health' and zoonotic disease, parasite vaccines, livestock genomics and parasite resistance, trends in chemical control and genetic manipulation of parasite genomes. This symposium aims to forge new partnerships to address the global issue of tropical livestock parasite control.

Conveners:

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



Symposium speakers from left: Dr Peter James, A/Prof Ala Lew-Tabor, A/Prof Simon Reid, Dr Brown Besier, Dr Andrew Kotze, Dr Wayne Johnston

Approximately 35 participants attended the symposium including representatives from Meat & Livestock Australia. Please note that the ASP logo was used at the symposium, the TropAg website, and in the conference proceedings as requested. The sponsorship supported the use of the facilities and part day registration for the invited speakers who were not registered at the TropAg three day conference.

A discussion was held as to whether it may be feasible to meet locally once a month to have an informal local ASP parasitology group. This has occurred in the past at various times and for different reasons ceased to continue. All in attendance agreed the validity of drawing together such a group, where students and or scientists could give short presentations. We thank ASP for the support of this symposium.

Ala and Peter, QAAFI  
The University of Queensland



Poster presenters: from left: Dr Manuel Rodriguez Valle, Mr Geoff Brown, Ms Brogan Amos, Mr Stephen Rice, Mr Thomas Karbanowicz, Mr Jason Yim, Dr Jess Morgan



# Studentships

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

Commonwealth Scholarships for PhD and split-site (PhD) study – developed Commonwealth country citizens

Applications close 17th June 2016

<http://cscuk.dfid.gov.uk/apply/scholarships-developed-cw/>

## Parasitology in the news

Professor John Sprent, who passed away in 2010, bought an old dairy farm at Moggill in 1954 and restored 5.5ha to valuable bushland, planting more than 10,000 trees and reconnected areas to the Brisbane River. Brisbane City Council purchased the land in 2010 and unveiled it as the renamed "John Sprent Reserve" in February 2016.

Source Westside News, Wednesday February 24th 2016

MORE STORIES ONLINE: [questnews.com.au/west](http://questnews.com.au/west)

**MOGGILL**

# Professor's green legacy

## COUNCIL PREPARES TO BEGIN MASTERPLAN FOR ENVIRONMENTAL PROPERTY

Douglas Estwick

A PIONEER of bushland regeneration will be celebrated on Saturday at the unveiling of John Sprent Reserve.

Professor John Sprent bought a degraded 23ha dairy farm at Moggill in 1954. He single handedly restored 25 per cent of the property, which was chosen as the first Land for Wildlife in Queensland in 1997.

Prof Sprent, an internationally renowned expert of parasites, planted more than 10,000 trees, restoring 5.5ha of cow paddock to valuable bushland and reconnected areas to the Brisbane River.

Prof Sprent passed away in 2010, aged 66.

Brisbane City Council purchased the Livesay Rd land that same year and councillor Margaret de Wit (Pullenvale) said it would be a "very significant environmental asset for the people of Brisbane".

Cr de Wit was elected the same year as the property was chosen as the first Land

for Wildlife and said she had often visited Prof Sprent to tour his land.

"I also had to have a lot of battles with council, trying to stop developments encroaching. It was a long battle to protect his property. I was over the moon when council purchased the whole property. This is an opportunity not seen in Brisbane for a long time – to create a special area."

Cr de Wit said the council was preparing a masterplan for the property to decide future use, including public access and education opportunities.

Saturday's unveiling at 3pm will include displays from Land for Wildlife, the Pullen Pullen Catchments Group and The Hut Environment and Community Association, children's activities and a sausage sizzle.




Brisbane City councillor Margaret de Wit tours the John Sprent Reserve, which will be officially renamed on Saturday, and (inset) Professor John Sprent, pictured at a Land For Wildlife launch in 1998.

Main picture: JOHN GASS

# State News

## New South Wales

### Charles Sturt University

**Nick Sangster** has moved to MLA as Program Manager for Grassfed Productivity in the beef industry where he will be working toward advancing research and adoption in the red meat industry and with researchers and producers. **Nick** has been greatly acknowledged for his leadership during his term as the head of School of Animal and Veterinary sciences since 2011 and the his significant contribution to the school before his role as the head of school. **Nick** will hold an adjunct position with CSU.

**David Jenkins** has recently had a number of international visitors to his laboratory at CSU.

**Associate Professor Alessandro Massolo** from the vet school at the University of Calgary spent 3 months of his of his sabbatical year with **David** learning about *Echinococcus granulosus* transmission in Australia. Alessandro works on the transmission of *Echinococcus multilocularis* in urban environments in Canada. His work focuses on the large urban coyote population in the city of Calgary. During this time, **Dr Thomas Romig** from the University of Hohenheim, Germany and Dr Ortwin Aschenborn from the Ministry of Environment and Tourism, Namibia also visited David's laboratory. Thomas is an internationally recognised researcher on *Echinococcus* and although his laboratory is in Germany, he has a large multicentre *Echinococcus* research program running in several parts of Africa. **Ortwin** is a vet who is doing a PhD supervised by **Thomas**, working on the species of *Echinococcus* infecting African wildlife and trying to elucidate their transmission pathways. **Ortwin** is also closely involved in rhino preservation activities. All three visitors gave after-hours seminars at CSU that were well supported by our veterinary and animal science students interested in wildlife. **Thomas** talked about *Echinococcus* species in African wildlife, **Alessandro** talked about coyote biology and his work collaring coyotes to obtain data on how they use the environment and their potential for spreading eggs of *E. multilocularis* within their

home ranges. **Ortwin** avoided parasites giving a talk about Namibian wildlife and some of his rhino conservation work. The talks were recorded and filmed and have been uploaded onto Youtube. If you are interested, **the links for the talks are Calgary Urban Coyote Project: [https://youtu.be/jpD\\_njvhY-k](https://youtu.be/jpD_njvhY-k); African Wild Dog in Namibia: [https://youtu.be/r3HQmXCW\\_zU](https://youtu.be/r3HQmXCW_zU); Echinococcus in Africa: [https://youtu.be/iWqvYtDU6\\_Y](https://youtu.be/iWqvYtDU6_Y)**



**David** continues to work with **Marshall Lightowlers** and **Charles Gauci** on studies with vaccines against cestodes in sheep and is also still monitoring Australian wild canids as hosts for *Taenia ovis* funded by Meat and Livestock Australia. **David**, with **Shokoofeh Shamsi** are jointly supervising a PhD student, **Thomas Williams**, who is working on parasites of water buffalo in Pakistan and Australia. **David**, (with colleagues **Dr Robert Woodgate** and **Dr Allan Gunn**, CSU and **Dr Victoria Brooks** University of Sydney) have recently taken on a new PhD student, **Cara Wilson**, who is working on the financial impact of hydatid disease and liver fluke infection on the Australian cattle industry and revisiting the risk factors and livestock management practices associated with the special distribution of these parasites in Australia today.

In **Shokoofeh Shamsi's** lab, December was the month to celebrate the graduation of **Jaydip Suthar (Master of Animal Science)**, **Kate McSpadden**, **Brenton Kilby**, and **Sara Baker (Honours)**. In 2016, we welcome **Eleanor Steller**, **Ashleigh Kilgannon** and **Isaac Kane**. **Eleanor Steller** is doing Honours and completing her 4th and final year of a Bachelor of Animal Science. She has a great interest for wildlife conservation and ecology as well as for disease and food biosecurity. Her honours project encompasses many of her interests and is

based on the occurrence of zoonotic nematode parasites in selected fish species from Moreton Bay, Australia (part of an ABRIS funded research project led by **Tom Cribb** from University of Queensland). **Ashleigh Kilgannon** and **Isaac Kane** are doing undergraduate research project on seafood borne parasitic diseases and on freshwater fish parasites, respectively.

**Anita Poupa** is coming toward the end of her honours project and have been offered the APA scholarship to do her PhD under **Shokoofeh's** supervision. This was seen as a great academic story by CSU as she was a class member of the very first pathways course in 2010, so her story will be featured on the course site and various other media outlets.

**Thomas Williams** Endorsement of Candidature took place smoothly in February and he is busy working on a short manuscript. From our alumni, **Sara Baker** completed her Bachelor of Animal Science Honours in the field of veterinary parasitology, exploring "The occurrence of *Linguatula serrata* in domestic livestock in South-Eastern Australia" under joint supervision of **Shokoofeh Shamsi** and **David Jenkins**. After graduating in December 2015, **Sara Baker** is now a Territory Manager at Elanco Animal Health for Northern Victoria/Southern NSW working in the field of dairy health. She along with **Eleanora Hodgkinson** who also worked in the field of Parasitology under **Rob Woodgate's** supervision also recently received Dean's award for first class Honours. **Kate McSpadden**, the 2015 ASP student presentation prize winner who also worked on *Linguatula serrata*, but in wildlife is enjoying living in Canberra and working in RSPCA. **Jaydipbhai Suthar** is working as a veterinarian back home in India.

Two of **Shokoofeh** and **Jaydip's** joint work have been published recently:

Shamsi, S., Suthar, J. 2016. Occurrence of *Terranova* larval types (Nematoda:



## State News continued

Anisakidae) in Australian marine fish with comments on their specific identities. *PeerJ* 4:e1722 <https://doi.org/10.7717/peerj.1722>.

Shamsi, S., Suthar, J. 2016. A revised method of examining fish for infection with zoonotic nematode larvae. *International Journal of Food Microbiology* 227: 13–16.

This year the ASP Undergraduate prize winners for highest mark in Parasitology were **Eleanor Steller (Animal Science) and Carly Brownlow (Veterinary Science)**.



ASP undergraduate prize winners and award recipients for first class Honours; From left to right: **Shokoofeh Shamsi, Eleanor Steller, Eleanora Hodgkinson, Carly Brownlow, Sara Baker and Prof Tim Wess** (Executive Dean of the Faculty of Science)

In January **Shokoofeh** along with **Eleanor and Isaac** spent two weeks in University of Queensland's research station in North Stardbroke Island to join the team of world's renown taxonomists and students for identification of parasites from marine fish in the region. This work is led by **Assoc Prof Tom Cribb**. **Em Prof Lesley Warner** spent two weeks in November and then later two weeks in March in **Shokoofeh's** lab as part of her research on Freshwater fish Acanthocephala funded by ABRs.

**Shokoofeh** along with **Professor Barbara Nowak** from University of Tasmania were nominated by the Australian Society for Parasitology to attend the 2016 Science Meets parliament which was held 1-2 March. **Shokoofeh met Hon Warren Entsch** who was specifically

interested in the field of Parasitology and also had opportunity to talk to **Hon Christopher Pyne Minister for Industry, Innovation and Science and Hon Bill Shorten MP, Leader of the Opposition** during the dinner in the Parliament House. After this great experience sponsored by ASP, **Shokoofeh** is looking forward to work with local members of Parliaments from NSW and Riverina Region to promote Science and in Particular Parasitology among policy and decision makers. See page 30 of this newsletter for the full story with pictures.

## The University of Sydney

As of 2016, we are now part of the School of Life and Environmental Sciences (SoLES).

**Jan Šlapeta** has returned from his sabbatical and his stint at The Center for Tropical and Emerging Global Disease, University of Georgia where he explored the newly developed CRISPR/Cas9 system for *Cryptosporidium* in **Boris Striepen's** lab in Athens, GA and working towards a more amenable experiment model for cryptosporidiosis. Great experience and time in the Southern US!

In December three of our students graduated. **Christie Foster** graduated with her Doctor of Philosophy (PhD) – her Thesis entitled "Studies on the Biology of *Chromera velia*: Flagellar assembly, In Vitro growth improvement and novel pigmentation". **Madalyn Cooper** graduated with a Bachelor of Animal and Veterinary Bioscience (AVBS) degree with first class honours, and was awarded the University Medal and the Dean's List for Academic Excellence. **Madie** has had her Honours on genotyping of *Toxoplasma* and application of NGS diversity profiling already published in *Veterinary Parasitology*. **Emily Onizawa** who was the recipient of an Australian

Wool Education Trust Scholarship, graduated with AVBS degree with first class honours. Congratulations to and we wish them well in their new endeavours.

**Vicky Adeline-Morin** (PhD student) has published her thought on anaerobic metabolism of trichomonads in *Parasitology*. **Vicki** has been finishing her Thesis and we keep the fingers crossed! She returned from her home in Seychelles looking after her farm animals and by March she was finished with her Thesis! Well done, Vicki.

Over the last month, **Shannon Donahoe** (PhD student) has been successfully culturing *Toxoplasma gondii* tachyzoites to understand their effect on fat-tailed dunnarts, a native carnivorous marsupial. Now with hand full of real-timePCR assays to explain the host response to both *Toxoplasma* and *Neospora*.

**Andrea Lawrence** (PhD student) has won the Annual Student Award for the Appreciation for the Biology of Insect Pests with her FEMS Microbiology Ecology paper by the TREE Foundation in Sarasota, FL.

Three AVBS and one BVSc students are starting their Honours. **Chloe Nguyen and Wei Ling Koh** will be working on dog heartworm with the supervisory assistance of **Andrea Casteriano**. **Clarencia Lie** will be developing diagnostic assay for tracing some emerging protists in Cane Toads. **Shona Chandra** will continue our lab efforts to map global diversity of cat fleas.

Last but not least, we had a Brazilian veterinary exchange students **Rodrigo Prandini da Costa** in the lab over December/January. **Rodrigo** has done a great job with confirming neosporosis in Bernese Mountain dogs litter and discovering that dam can pass multiple different strain to *Neospora* it its litter. The findings are already published in *Veterinary Parasitology*.

Over last many years we worked with Taronga Zoo and their veterinary and conservation team on the project to safeguard one of the most endangered birds in Australia – the Regent's Honeyeater. After lot of culturing and studying we finally were

## State News continued

able to publish in *Parasitology* a description of *Trypanosoma thomasbancrofti* based on studies on ~100 birds. Hey this represents around a quarter of the entire remaining population of the species!

Here are the references to those papers!

Rodrigo Prandini da Costa Reis R, Crisman R, Roser M, Malik R, Šlapeta J (2016). Neonatal neosporosis in a 2-week-old Bernese mountain dog infected with multiple *Neospora caninum* strains based on MS10 microsatellite analysis. *Veterinary Parasitology* 221:134-138 [<http://dx.doi.org/10.1016/j.vetpar.2016.03.023>]

Šlapeta J, Morin-Adeline V, Thompson P, McDonnell D, Shiels M, Golchrist K, Votycka J, Vogelneust L (2016). Intercontinental distribution of a new trypanosome species from Australian endemic Regent Honeyeater (*Anthochaera phrygia*). *Parasitology* [<http://dx.doi.org/10.1017/S0031182016000329>]

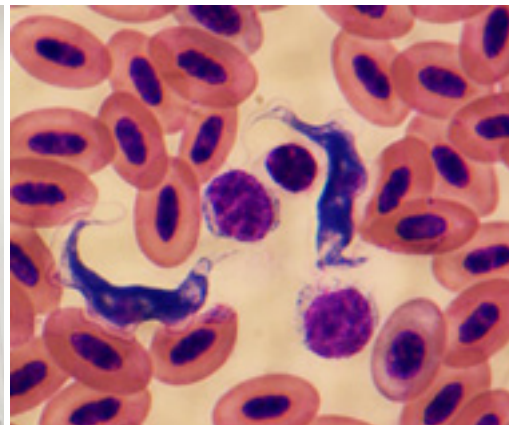
Morin-Adeline V, and Šlapeta J (2016). The past, present and future of fluorescent protein tags in anaerobic protozoan parasites. *Parasitology* 143(3): 260-275 [<http://dx.doi.org/10.1017/S0031182015001663>]

Cooper MK, Phalen DN, Donahoe SL, Rose K and Šlapeta J (2016). The utility of diversity profiling using Illumina 18S rRNA gene amplicon deep sequencing to detect and discriminate *Toxoplasma gondii* among the cyst-forming coccidian. *Veterinary Parasitology* 216: 38-45 [<http://dx.doi.org/10.1016/j.vetpar.2015.12.011>]

Cooper MK, Šlapeta J, Donahoe SL, and Phalen DN (2015). Toxoplasmosis in a pet peach-faced lovebird (*Agapornis roseicollis*). *Korean Journal of Parasitology* 53(6):749-753 [<http://dx.doi.org/10.3347/kjp.2015.53.6.749>]

Lawrence A, Hii SF, Chong R, Webb C, Traub R, Brown G, and Šlapeta J (2015). Evaluation of the bacterial microbiome of two flea species using different DNA isolation techniques provides insights into flea host ecology. *FEMS Microbiology Ecology* 91(12): fiv134 [<http://dx.doi.org/10.1093/femsec/fiv134>]

Images below clockwise from left: *Trypanosoma thomasbancrofti* type material (left) now at Queensland Museum, thanks to **Rob Adlard**. On the right are the parasites themselves. University of Sydney Quadrangle in December after the graduation, Madie (left) and Christie (right) graduation!



## Western Sydney University School of Science and Health

PhD candidate **Leah Stroud** has finished up her lab work and is busy writing up her thesis and hopefully a few manuscripts so it will be a busy but rewarding few months ahead for **Leah**. The Stack lab would like to welcome its new recruits for the year **Dylan Druery** and **George Tsiotsioras**. **Dylan and George** are both starting their masters in research which has replaced honours at our University and they will be working on host-parasite interactions of *Tritrichomonas foetus* and *Trichomonas vaginalis*.

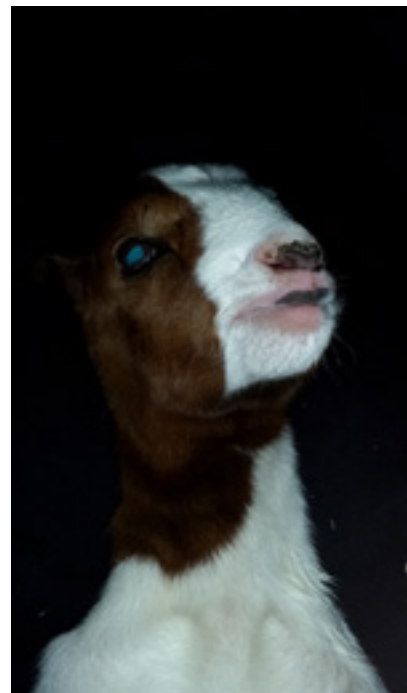
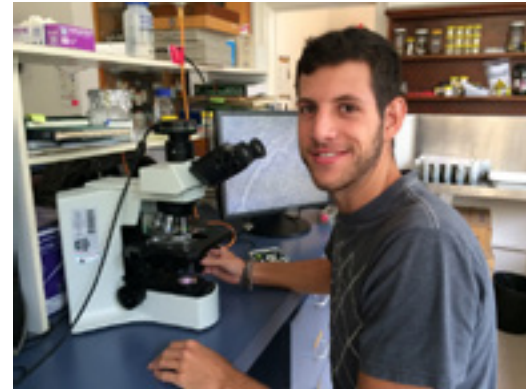


## State News continued

University of Sydney

This page top row (left - right) **Christie** celebrating! **Madie** receiving her Faculty Award (December 2015) **Rodrigo** checking his *Neospora* immunohistochemistry slides (January, 2016); bottom row (left - right) **Vicki** submitting her PhD Thesis (on-line only these days...) and immediate thumbs up from **Wei-Ling** (March 2016) Goat from Seychelles. Who knows if Vicki has been doing any parasitology on the goats, but I would not be surprised she has done this already!

Next page Jan with family at a ball game – Go Braves! (Turner Field in Atlanta, GA).





State News continued





## State News continued

Jan and Boris in Athens, GA & The Center for Tropical and Emerging Global Disease.



# Western Australia

## Murdoch University School of Veterinary and Life Sciences

Congratulations to **Kimberly Miller, Daniel Fielding and Isabelle Connor** who were the recipients of the ASP Undergraduate Prizes in Parasitology in Animal Science, Biomedical Science and Veterinary Science.

Australian Society for Parasitology Prize for  
Parasitology in Biomedical Science awarded to  
Daniel Fielding by  
Stephanie Godfrey  
29 April 2015

Australian Society for Parasitology Prize for  
Parasitology in Veterinary Science awarded to  
Isabelle Connor by  
Stephanie Godfrey  
29 April 2015



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