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The Australian Society for Parasitology Inc.

NEWSLETTER

Volume 32 Issue No.3 October 2021

IMAGE *Ancylostoma caninum* image courtesy Alex Loukas (JCU) see interview page 32.

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The Australian Society for Parasitology Inc.

NEWSLETTER

Volume 32 Issue No.3 October 2021

IN THIS ISSUE

From the President's Desk

Dear Members,

I would like to start by acknowledging Barbara Nowak (President), Nathan Bott (Treasurer) and Shokoofeh Shamsi (Secretary) for all their efforts in keeping the ASP wheel's turning despite the challenges of covid-19 restrictions on their already jam-packed academic workloads. Barbara of course will continue to her role as Vice President. I would also like to thank the outgoing ASP Council members and welcome current and new members to Council. The current members include Barbara Nowak (Vice-President), Vito Colella (Treasurer), Clare Anstead (Executive Secretary), Michelle Power (NSW), Ali Raza (QLD), Mike Gardner (SA), Deborah Holt (NT), Cibelly Goulart (ACT), Sarah Preston (VIC), Nick Fountain-Jones (TAS), Narelle Dybing (WA) and of course Ian Beveridge who continues in his valued role as Fellows Representative and Jill Chmielewski who replaces Coralie Boulet as Student Representative.

Brian Cooke continues as Editor-in-Chief and Alex Loukas and J. Šlapeta as Deputy Editors

of the IJP while Maria Meuleman as Editorial Assistant. On behalf of the ASP, I wish to thank and congratulate the Editorial team for their dedication, passion and hard work which saw yet another increase in impact factor for the IJP rise from 3.53 to to 3.981. The journal's novel initiative to establish an ECR Advisory Editorial Board is also in progress and exemplar to the ASP's mission to train, mentor and support the next generation of parasitologists. Do keep a look out for the soon-to-be-published Special Issue of invited reviews that celebrate 50 years of the IJP!

The IJP sister journals the IJP-DDR, with Andrew Kotze and Kevin Saliba as Editors-in-Chief, and IJP-PAW, with Andy Thompson as Editor-in-Chief, have also done us proud with both journals recording rises in impact factors, to 4.077 and 2.674, respectively. IJP-DDR has also recently pledged to improve diversity on the editorial team that aims to increase the proportion of currently underrepresented groups. On behalf of ASP, I sincerely thank all Editors and Editorial Board members for their major contributions to our journals.

I would also like to thank the Concepts in Parasitology (CIP) Coordinator Stuart Ralph for leaving 'no stone unturned' in ensuring all potential options to run the CIP course in the face of the covid-19 havoc were exhausted before 'calling it a day'. Thank you to Abdul Jabbar (ASP Educator Convenor), Haylee Weaver (ASP Archivist) and Leann Tilley (BMM Convenor) for their continued service to the Society. Last but not least, Lisa Jones (ASP Secretary and Executive Officer) and Nick Smith (ASP Research Network Convenor) for their continued efforts in promoting and supporting the ASP's research, education and outreach activities.

In this edition of the ASP newsletter, we remember and farewell ASP Fellow Prof Christopher Bryant and Prof Akira Ito, two long standing members of Society

From the President's Desk continued

whose legacies will continue to inspire future scientists and parasitologists for many years to come. The ASP wishes to extend our sincere sympathy to their families and friends.

This newsletter is packed to the brim with news on member accomplishments, outreach activities and initiatives. It is incredible how 'active' the ASP community continues to remain, despite these challenging times.

On behalf of the ASP, I'd like to congratulate our 2021 ASP Fellows, Professor Una Ryan and Associate Professor David Jenkins, whose full nominations are outlined herein. Congratulations also to Don McManus who was awarded the Peter Doherty Investigator Grant Award (Leadership) from the NHMRC and Siobhon Egan (Murdoch University) for winning the Sinnecker-Kunz Award for ECRs at the 14th International Symposium on Ticks and tick-borne diseases.

Rina Fu (aka Rina Wong) must also be commended on receiving a Federal National Science Week Grant for her project on MicroToons, launched in WA in August. Rina is untiring in her delivery of outreach activities aimed at promoting STEM to young children through her highly innovating and inclusive educational tools. In other outreach news, our QLD member Ali Reza has also been busy dissecting ticks with high school students and Lisa Jones, Kate Miller, Michelle Power and Mike Gardner playing parasite Play-Doh with middle school kids! At the University level, the ASP Seminar series organized by Stuart Ralph, Ali Raza and Sarah Preston keep proving a popular means to engage with colleagues across the nation, attracting quite a healthy number of participants.

In August, following consultation with ASP leaders as well as early-to-middle career researchers representing diverse fields of parasitology, I took the initiative to write to Professor Sue Thomas, CEO of the Australian Research Council on behalf of the ASP, to express concern about the recent amendment to the ARC rules to deem ineligible grant applications referencing preprints anywhere in the application. Reference to DOI-linked preprints on verified servers, in particular BioRxiv, MedRxiv and F1000Research, are increasingly utilized by members of ASP, in particular ECR and MCRs. These preprints provide reviewers the opportunity to independently review key data outlining the latest developments in research pertaining to the grant, that would otherwise not be accessible while publications await review. Moreover, for ARC to enforce this rule places applicants at a disadvantage compared to their NHMRC counterparts that are permitted to cite preprints. Our letter was kindly acknowledged by Prof Thomas. As a result of overwhelming pressure from the scientific community, the ARC as we now know, did reverse its position on the preprint issue for future funding rounds.

I also recently represented the ASP at Science Technology Australia's President and CEO Forum that aimed to engage the nation's senior STEM sector leadership to set the agenda heading into the election year. Insufficient overall investment in R & D compared to other OECD countries, STEM workforce job insecurity, the need for an inclusive and diverse scientific workforce and declining STEM rankings in schools were just some of the policies discussed for advocacy prioritization. Cibelly Goulart also kindly represented the ASP at the Medical Research Future Fund (MRFF) Health and Medical Early to Mid-Career Researcher (EMCR) Stakeholder Roundtable this month.

I look forward very much to serving the society and welcome any constructive ideas and thoughts from the current membership on how the Council can better serve our community of parasitologists.

Best regards,

Rebecca Traub

President of the ASP

www.parasite.org.au
www.facebook.com/ASParasitology
www.twitter.com/AS_Para

Vale Akira Ito (1947-2021)

Obituary – Akira Ito

8 March 1947 – 9 September 2021

Above: Akira Ito

Akira Ito (8/3/1947-9/9/2021) was born in Sendai Miyagi, Japan where he attended both school and university. He graduated school with the School President's Award in Science, and completed BSc, MSc and PhD degrees from Tohoku University. His PhD research topic was the *Immunobiology of cestode infections*. His research interest in cestode immunology continued throughout his 50-year long involvement in scientific research. Professor Ito began his academic career at Showa University, which continued at Gifu University (1979-1998), and completed his career at Asahikawa Medical University (1998-). He was a major figure in the field of cestode immunology, diagnostics and post-graduate training. He was an adept in vivo experimentalist especially understanding immunity against *Hymenolepis* spp. and development of animal models for *Taenia* spp cysticercosis.

After taking up the Chair of Parasitology at Asahikawa Medical College in 1998, Professor Ito developed an impressive cestode focused laboratory with outstanding Japanese and visiting scientists that made major contributions to the fields of molecular diagnostics and epidemiology. He applied laboratory tools to undertake a longstanding programme of research into the epidemiology of cestode zoonoses in Asia particularly *Taenia* and *Echinococcus* spp. He was a member of the first international team in 1995 to investigate echinococcosis in eastern Tibet (Qinghai and Sichuan Provinces) and to show that both human cystic and alveolar echinococcosis were major public health problems in those isolated communities. Later in 2003 his research team and Chinese collaborators discovered a new *Echinococcus* species (*E. shiquicus*) in wildlife (Tibetan fox and plateau pika) on the eastern Tibetan Plateau. Amongst many field investigations he notably helped describe endemic transmission of T*aenia asiatica* in northern Sumatra and western Thailand. He was also one of the few foreigners to make research trips into Irian Jaya (Papua) to investigate the high rate of *Taenia solium* transmission amongst native tribes. His many collaborative field trips to western Sichuan in China showed that *T. solium* cysticercosis was a major problem in lower altitude Tibetan communities. During his years in Asahikawa, his laboratory trained many parasitologists especially from China and southeast Asia who later made major contributions in their own countries. Professor Ito organized and obtained funding for several outstanding international Cestode Symposia and workshops where many of the papers were published in prestigious parasitology journals.

Professor Ito was awarded the title of Emeritus Professor, Asahikawa Medical College, from 2012 and continued working and writing manuscripts throughout the subsequent 9 years. He held positions as Visiting Professor at numerous international universities, was elected an Honorary International Fellow of the American Society of Tropical Medicine and Hygiene and received the "Erdene-Ochir" award by the President of the Mongolian National University of Medical Sciences. Professor Ito published almost 450 scientific papers in English in internationally refereed journals as well as a further 150 papers in the Japanese language. Professor Ito made major contributions to understanding the biology and immunology of cestode infections and the epidemiology, diagnosis and control of echinococcosis and cysticercosis. He was an inspirational laboratory head and mentor to postgraduate students and researchers in many countries. Professor Ito was predeceased by his wife Hikari of almost 40 years, and is survived by two children and three grandchildren.

Marshall Lightowlers & Phil Craig

16 September 2021

Vale Christopher Bryant (1936-2021)

Remembering ASP Fellow Professor Christopher Bryant AM (9th August 1936 – 15th August 2021)

Left: Chris Bryant

Chris Bryant was born in 1936 at Hampstead, North London. He attended schools at Buckingham College, Harrow, and Haberdashers' Aske's, Hampstead and in 1955 gained a County Award to Kings College London where he graduated BSc with Honours in Zoology in 1958. After completing an MSc at University College London, he moved to King's College Hospital to work for his PhD on the effects of anti-inflammatory drugs on subcellular metabolism in animal tissues, supervised by Mervyn Smith.

While working for his PhD, Chris married Anne Roberts, an Australian nurse and upon graduation he applied for academic positions in Australia. Chris had several offers from which he chose to accept a lectureship in zoology at ANU.

The Zoology Department at ANU had been established in 1959 under the headship of the noted parasitologist, Desmond Smyth, and Chris was quickly impressed with the quality of both staff and students. Desmond, Warwick Nicholas, John Clegg, Mike Howell, and Chris soon established the ANU as a highly regarded centre for parasitological research in Australia. With generous funding directly from the Commonwealth Government, Chris established a research laboratory studying the adaptive biochemistry of parasitic cestodes, trematodes and nematodes. He was a pioneer in this field, with some of his early work on intermediary metabolism being published in Nature. He ultimately published over a hundred research articles and reviews, and three books. Chris was also a pioneer in translating fundamental research into practical outcomes, linking with industry in the 1980s to develop new treatment strategies for parasitic worm infections. This research resulted in a patent and subsequent commercialisation of a series of new sheep drenches.

Chris led an extremely collegial, happy research team for three decades. Regular socialising at and away from work was a feature. His students were also often in the laboratory very late at night, very early in the morning and on weekends, not necessarily because they had to be but because they wanted to be. They were driven by a passion they shared with Chris for their research and by the camaraderie they found in Chris' team; there was almost always someone else sure to be in the laboratory at odd hours. If there was no-one else there, the decoration of the laboratory with pearls of wisdom such as, "Absence of evidence is not evidence of absence", "Nothing in biology makes sense except in the light of evolution" and "Just because you're not paranoid doesn't mean they're not out to get you" helped pass the time.

Chris encouraged his staff and students to be independent and bold and to communicate clearly. He always showed them great trust and provided the support they needed, when they needed it. This gave them security and confidence to succeed and he was always delighted – but never surprised – when they did. One student recalls arriving at Canberra airport on return from a conference, a few minutes ahead of Chris, to be greeted by Chris' wife, Anne, who asked how the conference had gone. In response to the somewhat noncommittal answer, "Good", Anne probed further, wanting to know, "How good?" With the student's eventual admission that they had won a prize, Anne said, "Oh, I am delighted, Chris phoned me yesterday to say he thought you would win!"

Chris was an influential member of the Australian Society for Parasitology (ASP). He joined the ASP's Council during its formative years in the mid-1960s, played a major role in the development of that Society and served to 'sow the seed' that has led to it being the highly successful professional body it is today. Chris was the voice of reason on the ASP Council – not necessarily jumping in with his opinion at the start of an issue but often being the one who grounded a prolonged discussion or controversial issue. He was questioning, critical but constructive, persuasive yet always affable and he never made an issue personal. He led many initiatives on Council and was pivotal in instilling in the ASP its primary role in supporting young scientists. More than a few ASP members, over many years, describe Chris as a fantastic mentor and role model.

Chris also considered that the ASP should help in projecting Australian research internationally and, to this end, upon election as the President of the Society in

Vale Christopher Bryant (1936-2021) continued

1982, he championed the hosting of the International Congress of Parasitological Associations in Brisbane in 1986. Once hosting rights were secured, Chris was instrumental in fund-raising and planning for the conference. He was a member and editorial advisor to the International Journal for Parasitology, the Journal of Molecular and Biochemical Parasitology, and the annual series Advances in Parasitology.

Chris continued to serve Australian parasitology faithfully and with distinction well after his retirement, as a member of the International Advisory Board for the Australian Research Council and National Health and Medical Research Council Network for Parasitology from 2005-2010, bringing the same unselfish thoughtfulness and wisdom to this initiative that had characterised his contributions to the ASP. In 1986, Chris was made a Fellow of the Australian Society for Parasitology, in recognition of his contributions to research, teaching and training, and for his service to the discipline.

Chris was an innovative teacher. He played a large part in the establishment of a multi-media laboratory for teaching first year Zoology classes in which students were able to learn at their own pace and he was instrumental in incorporating biochemical experiments in undergraduate field-courses, notably at Booligal in western NSW. His many Honours and PhD students in zoology and in science communication remember him as a wise and sympathetic supervisor who set the bar high.

In 1974, Chris was promoted to Reader in Zoology and became Head of Department, then Professor, in 1983. He remained Professor of Zoology until 1994, including a stint as Dean of Science from 1986 to 1990. From 1983 to 1990, Chris served two terms as a Member of Council of ANU.

During his Deanship, with the creative help of Peter Scardoni, he oversaw the rationalisation of the Science Faculty's underused building stock, allowing the release of stalled Government funding for new building projects. This included the reorganisation of the three biological departments of the Faculty of Science, Biochemistry, Botany and Zoology, into two 'divisions', whimsically called BAMBI (Biochemistry And Molecular BIology) and BOZO (BOtany and ZOology).

After BAMBI and BOZO were established in 1991, Chris somewhat reluctantly agreed to serve as head of BAMBI but after only three years he resigned his headship. He had become somewhat disillusioned with the pressure to reduce academic staff and increase student numbers. He had little time for research.

Throughout a long friendship with Dr Michael Gore (Founding Director of Questacon) whom he had met on arrival in Canberra in 1963, he had been involved at the periphery of planning Questacon (a name coined by Chris) and the associated ANU-Shell Questacon Science Circus. The Circus' popularity with the public and with the ANU graduate staff who took it to outback Australia was quickly established.

In 1988, great interest in the Circus persuaded Chris to ask the ANU Graduate School to create a graduate program in Science Communication, not without resistance from senior members of the ANU bureaucracy. Initially, a Graduate Certificate, later a Graduate Diploma, was agreed; but soon he was inundated by applications for Masters and PhD degrees which were quickly incorporated into the programme. When in 1994 with few regrets he resigned his Chair, he was able as Emeritus Professor to maintain his research laboratory on external funding, at the same time continuing to work on a contract basis for ANU, supervising the Graduate Program. The following years proved to be among the best of his career and he was grateful to the ANU for allowing him that opportunity.

By 1996 it was clear that further academic expertise was needed in the Graduate Program. Dr Sue Stocklmayer was appointed as the first Lecturer in Science Communication in Australia. She and Chris immediately set about establishing the ANU Centre for Public Awareness of Science (CPAS). Chris became the inaugural Director of CPAS until, in 1998, he handed over to Sue. He continued to contribute to the Centre as a Visiting Professor, a PhD adviser and an author and researcher in Science Communication.

In 1999, the Federal Government recognised Chris Bryant's scientific and educational contributions in both

Right: Chris Bryant presented at the opening session of the 2014 ASP Annual Conference in Canberra.

Vale Christopher Bryant (1936-2021) continued

parasitology and science communication by award of the Order of Australia (AM).

Chris Bryant died on August 15, 2021. He is survived by Anne, his wife of nearly 60 years who was a great support for Chris throughout his career, by their two children, Tim and Caroline, and by their five grandchildren in whom Chris took great pleasure and of whom he was very proud.

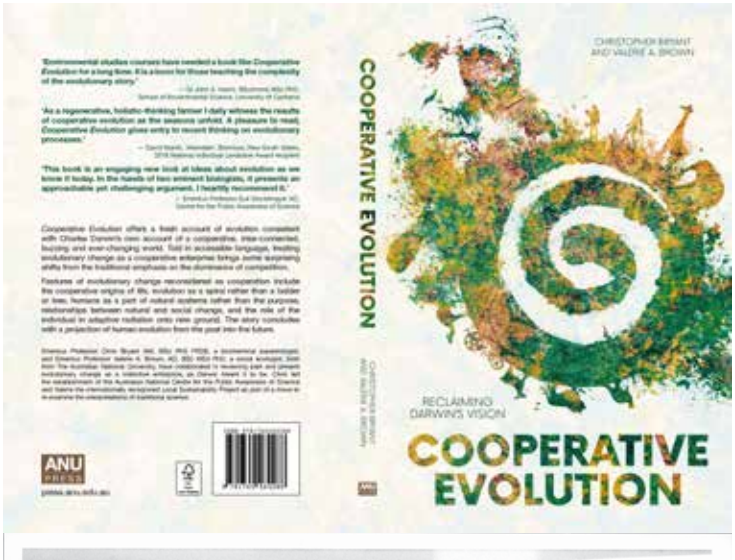
Chris continued to write until shortly before his death. His last book, written with Val Brown takes a fresh look at evolution from a cooperative, inter-connected perspective. As with everything he wrote, it is innovative and thought provoking. Chris had wide ranging interests and was exceptionally knowledgeable about a wide range of subjects. A youthful passion for Rupert Bear led to his last whimsical publication, a monograph about Rupert's influence on Chris' career in science.

Published by the ANU Press, this book can be downloaded free of charge using this link:

https://press.anu.edu.au/publications/cooperative-evolution

Chris Bryant was a big man, a brave man, a superb scholar, a sympathetic ear, a good colleague and a staunch friend. He was justifiably proud of his own achievements but even prouder of the achievements of his colleagues and students – at a dinner in Australia's Parliament House in 2007, surrounded by former students, he memorably told them so. He will be missed.

Peter Janssens, Nick Smith, Peter Stewart, Sue Stocklmayer, Mike Gore, Andy Thompson and Eva Bennet-Jenkins, September 22, 2021



Left: Chris Bryant and Val Brown's book "Cooperative Evolution" takes a fresh look at evolution from a cooperative, inter-connected perspective.

Left: Kerry Moore and Dr Chris Bryant with a Shinglebacked Skink. (1988) Credit ANU Archives; ANU Photographic Services; Photographer Pauline Hawke.

2021 Australian Society for Parasitology Annual General Meeting

The 2021 Australian Society for Parasitology Annual General Meeting was held online on Thursday 29th July, 2 – 5pm AEST. Download the minutes and reports from the 2021 ASP AGM from the members resources page on the WildApricot website https://asp.wildapricot.org/memberresources

Business conducted

The following business was conducted at the 2021 Annual General Meeting of the Society:

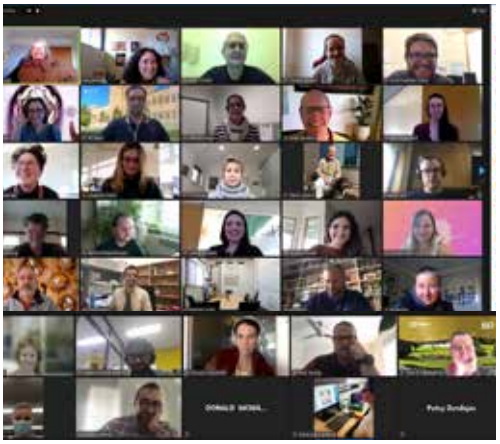
- received the Society's financial statement, and audit report, for the last reportable financial year;
- presented the financial statement and audit report to the meeting for adoption;
- as part of the Treasurer's Report Members voted yes to the budget where current financial ASP members will get 12 months free membership in the 2021/2022 financial year;
- elected members of the Council;
- appointed an auditor for the present financial year;
- announcement of ASP Awards and Prizes;
- receipt of reports from Editors, Convenors, Archivists, Secretariat and subcommittees; and

Welcome to our newly elected ASP Council; **Rebecca Traub** - President, **Barbara Nowak** - Vice-President, **Vito Colella** - Treasurer, **Clare Anstead** - Executive Secretary, **Michelle Power** – NSW State Rep, **Ali Raza** – QLD State Rep, **Mike Gardner** – SA State Rep, **Deborah Holt** – NT State Rep, **Cibelly Goulart** – ACT State Rep, **Sarah Preston** – VIC State Rep, **Nick Fountain-Jones** – TAS State Rep, **Narelle Dybing** – WA State Rep, **Ian Beveridge** - Fellows Representative and **Jill Chmielewski** - Student Representative.

At the 2021 ASP AGM the Treasurer's Report, which included a budget where all ASP members who are financial will receive one year of free membership (2021/2022) was accepted; 73 members voted to accept the report and 2 voted not to accept the report so the motion to accept the Treasurer's Report was carried.

The ASP is an inclusive organisation. We encourage nominations to the ASP Council from Indigenous Australians, people with disability, people from diverse cultural and linguistic backgrounds, parasitologists of all ages and career stages and LGBQTI people. The Society is also committed to achieving gender equality across all its Committees including, but not limited to, the ASP Council. The Society recognises and values the wealth of talent, creativity and discoveries achieved by women in parasitology. We acknowledge that women continue to be under-represented in the field, particularly at senior levels. The Society is, therefore, committed to gender equality in our discipline and in the Society and hence we encourage nominations from women for ASP Council positions. (Read about Gender Equality within the ASP Principles, By-Laws and Guidelines https://www.parasite.org.au/the-society/constitution/).

To download the meeting minutes and reports for the 2021 ASP AGM and all ASP Council meetings please log onto your Wildapricot account https://asp.wildapricot.org/ and check the members resources or send theSecretary an email secretary@parasite.org.au to request the reports.



Meet the President - Professor Rebecca Traub

At the 2021 Australian Society for Parasitology Annual General Meeting, Thursday 29 July 2021 the new ASP Executive was sworn in and we will hear now from Rebecca Traub, ASP President and Professor at the University of Melbourne.

Above: Professor Rebecca Traub in Cambodia in 2016

Rebecca, tell us a bit about yourself and about your background?

Although I was born here in Australia, I was raised and completed most of my secondary education in Calcutta, India. My father had hopes of me following in the family footsteps of dentistry, however following a brief, yet impactful stint as his nursing assistant during my early teens, I decided that the 'oral cavity' was not my calling!

Our family migrated to Australia in 1989, where I completed my final two years of high school and enrolled in the course of my dreams at the tender age of 17. In 1997 I graduated with a Bachelor of Veterinary Medicine and Surgery (Hons) and following this, I worked as a small animal emergency clinician in Perth.

While continuing to work night shifts as a veterinarian, I commenced my PhD on a self-initiated project that would allow me to return to my roots in India. So, under the primary supervision of Emeritus Professor Andrew Thompson at my alma mater, I commenced my thesis titled 'Dogs, humans and gastrointestinal parasites: unravelling epidemiological and zoonotic relationships in endemic tea-growing communities in northeast India". Just over a year later, I met Dr Norbert Mencke, who took a keen interest in my research project and through whom I was gratefully awarded a Bayer Animal Health postgraduate scholarship.

Immediately following my PhD in 2004, I was fortunate to receive an ARC Postdoctoral Fellowship (Industry) as part of an ARC Linkage Project with Bayer Animal Health, that allowed me to expand

Meet the President continued

Left: Professor Rebecca Traub conducting fieldwork in Cambodia.

my research on canine parasitic zoonoses to Southeast Asia.

In 2007, I secured my first academic appointment as a Lecturer in Veterinary Public Health at the Veterinary School, University of Queensland. In 2014, I moved to the Melbourne Veterinary School as an Associate Professor of Veterinary Parasitology.

Tell us how you became involved in parasitology?

As a child growing up in Calcutta, I learnt at an early age that parasites were serious cause of morbidity and mortality among my flock of pet chickens, dogs, and ever-growing colony of rescue cats. Unfortunately, since most veterinarians in India at the time were trained in livestock medicine, I helplessly watched my pets suffer. The death of my closest companion, an Alsatian called Bruno, of what I later realized was heartworm disease, had a significant impact and set me on the course of wanting to become veterinarian. Of course, mosquito-borne illnesses like dengue, Japanese encephalitis virus and malaria were commonplace. As a kid my Mother always checked me for headlice and pinworm (not going into detail on the latter!), and I always took a keen interest to check the toilet bowl for 'worms' following regular doses of 'Combantrin'! This may well have also influenced my career choice - parasitology, veterinary public health and tropical medicine.

What keeps you motivated as a parasitologist?

As a PhD student and early career researcher my primary drive was to make a positive contribution to the health and welfare of companion animals and people in resource poor communities, by focusing on an area of research that was largely neglected - parasitic zoonoses. Engaging with the community and their animals as well as veterinarians and medical doctors first-hand through fieldwork and outreach activities throughout Asia, provides me a constant reminder of the true impact of parasitic diseases and the importance of the research we do. Of course, there is also that 'natural high' that accompanies a novel discovery – and yes, it is addictive! Even more so, when it is shared. A large driver for my motivation in parasitology is my amazing research team of highly motivated postgraduate students, research assistants and postdoctoral fellows that keep me on my toes. To observe their passion and expertise grow and translate to positive impacts and contributions as the next generation of parasitologists in fields of academia, industry or government is a highly rewarding aspect of my career.

How do you see your research developing in the future?

To date, much of my research spanning the last decade has focused on closing knowledge gaps with regard to the diagnosis, epidemiology, and distribution of soil-transmitted parasitic and vector-borne zoonoses in the Asia Pacific. Now and in future, I aim to translate my findings

Meet the President continued

to the development of improved point-of-care-based diagnostics, and large field interventional trials that generate evidence-based One Health control options for the neglected zoonoses.

What has been the highlight of your science career so far?

At the time of assembling articles for my PhD thesis, I stumbled across a few reports spanning back to the early 1900s on a relatively unfamiliar parasite called Ancylostoma ceylanicum. A few reports indicated that this naturally occurring hookworm occurred in dogs and cats in South and Southeast Asia and the Far East. More excitingly, it was also reported in humans, albeit rarely and mostly as light infections and therefore not considered of any public health significance. Nevertheless, through the development and application of molecular diagnostic assays to field studies across the Asia Pacific, to my utter surprise, the hookworm emerged to reveal itself not only as a dominant hookworm species in dogs, but also as the second most common hookworm infecting humans. A tattoo to commemorate my favourite parasite is now etched on my arm following another massive highlight of my career – being awarded the Bancroft Mackerras Medal in 2019!

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

By serving as ASP President, I look forward to working with an amazing team comprising the Executive, Council, journal Editors and all members to build on the many benefits it already confers; be it through the provision of local and international platforms to communicate research, mentorship, networks that result in collaborations and life-long-friendships, education and outreach, recognition, and advocacy to build a more inclusive and diverse Society that supports and shapes tomorrow's leaders. Oh! And of course, I am really looking forward to having the opportunity to utilize the iconic and super cool ASP gavel (hammer) and block at the next AGM, to be held in gorgeous Cairns. It is undoubtedly going to be an epic conference and well-deserved opportunity for us all to travel, share, network and socialize! Bring it on!!

Below: Rebecca Traub winner of the ASP 2019 BMM, in this photo from left Patsy Zendejas Heredia, Lucas Higgins, Rebecca Traub, Luca Massetti, Cassandra Davitt

Una Ryan, 2021 Fellow of the ASP

Congratulations to 2021 Fellow of the Australian Society for Parasitology, Una Ryan!

Above: Una Ryan, 2021 Fellow of the Australian Society for Parasitology.

Professor Una Ryan is an internationally recognised expert in molecular epidemiology of protozoan parasites and vector-borne diseases and she is the leader of the Vector and Waterborne Pathogens Research Group at Murdoch University. Una obtained her PhD in 1996 from Murdoch University and progressed rapidly through the academic ranks at Murdoch University from Lecturer in 2001 to Senior Lecturer in 2002, Associate Professor in 2004 and Professor in 2010.

Una is an exceptional leader and mentor. She has mentored over 15 post-doctoral and academic staff and has supervised to completion over 25 honours and 16 PhD students. Her laboratory currently includes one senior lecturer, three postdoctoral fellows, five PhD students, and two honours.

Una has been awarded over 40 research projects valued at >$12M in cash and >$13M in-kind over the course of her career. In addition to success with the National Health and Medical Research Council (NHMRC) and the Australian Research Council (ARC), particularly Linkage grants, Professor Ryan played a key role in the formation of the ARC/NHMRC Research Network for Parasitology (awarded over $2.4 million for 5 years beginning in 2004). Una has served on the Network Executive Committee ever since, helping to revitalise and further the aspirations of Australian parasitology, especially the development of its young researchers.

Una has converted that funding into over 314 papers (more than 125 published in the last 5 years), which have been cited more than 13,157 times. She has published with over 220 co-authors. Una has a H-index of 59 (ie, 59 of her papers have been cited more than 59 times), and a field-weighted citation index of 1.98 for her research on Cryptosporidium (meaning her research has been cited 98% more than the world average). Una's prominence in parasitology has resulted in several editorial roles, including Parasitology Research (Co-Editor in Chief 2018-on), Experimental Parasitology (Specialist Editor 2009-on), Guest Editor for a 2010 Special Issue of Experimental Parasitology on Cryptosporidiosis and International Journal for Parasitology (Specialist Editor from 1999-2002).

Una's research has had a real impact. She was a pioneer of molecular epidemiology, especially of *Cryptosporidium*, discovering unsuspected environmental and zoonotic threats to human health and suggesting simple, practical ways to minimise these threats. Most startling, perhaps, was her team's discovery that *Cryptosporidium* possesses a series of novel lifecycle stages that have more in common with gregarines than other, parasitic Apicomplexa and raising the alarming prospect that *Cryptosporidium* could reproduce and multiply in fresh water invertebrates. Her work has led to two patents and the development of new diagnostic tests, not just for *Cryptosporidium*, but also for a range of other parasites to which she has applied her skills in recent years. Her research continues in molecular epidemiology of infectious agents, using the latest genotyping tools for studying transmission dynamics, including using a 'gut on a chip' for the detection and viability of waterborne pathogens, and the application of Next Generation Sequencing for studying the microbiome of ticks and environmental samples.

In addition to successful research grants, Una has been the receipent of several high profile honours. In 2001, she was awarded

Una Ryan, 2021 Fellow of the ASP continued

one of Australia's highest scientific honours, the Minister's Prize for Achievement in Life Sciences. In 2014, Una was the recipient of the Bancroft-Mackerras Medal from the Australian Society for Parasitology for excellence in research. Una has also received a certificate of excellence in reviewing by Experimental Parasitology in recognition of an outstanding contribution to the quality of the journal in 2012, and in 2016, she received the Vice Chancellor's Excellence in Research Award for Distinguished and Sustained Achievement at Murdoch University. In recognition for her contribution to the field of protozoan taxonomy, a species of *Cryptosporidium* was named in her honour; *Cryptosporidium* ryanae.

Una has been a member of the Australian Society for Parasitology (ASP) since 1989 and during that time she has made a major contribution to the ASP. Una was an integral member of the ARC/NHMRC Research Network for Parasitology Management Committee, valued for her integrity, perception, and compassion. Between July 2017 – July 2019, Una was the president of the ASP and Vice-President from July 2019-2020. In her role as president of the ASP, she helped set the research direction for parasite research nationally. Una was instrumental to driving the 2019 ASP Constitutional changes and the accompanying Principles, By-Laws, and Guidelines, including the Inclusion Principles and Gender Equality Principles, which ensures the ASP achieve gender equality across all its committees. Una has also been a diligent and highly valued "expert faculty member" of the Concepts in Parasitology ASP Course since 2015.

In view of her outstanding contributions to science, parasitology and the Society, Prof Una Ryan is an extremely worthy recipient of the title Fellow of the Australian Society for Parasitology.

Below: Newly sworn in ASP Executive at the 2017 ASP Annual Conference in the Blue Mountains. From left, Charlotte Oskam, Una Ryan, Amanda Ash.

David Jenkins, 2021 Fellow of the ASP

Congratulations to 2021 Fellow of the Australian Society for Parasitology, David Jenkins!

Above: David Jenkins, 2021 Fellow of the Australian Society for Parasitology.

David Jenkins is Associate Professor (Veterinary Parasitology), School of Animal and Veterinary Sciences, Charles Sturt University and Part-time lecturer in parasitology, Research School of Biology, Australian National University.

David began what is now a 40+ year career as a parasitologist, beginning in the late 1970's in Java while working on an Australian government-funded aid project. Subsequently, he undertook a PhD with Mike Rickard at the University of Melbourne on serological responses to taeniid cestode infections in dogs. David has been a member of the ASP for almost 40 years, having joined the society in 1981 when he began his PhD studies. He has been an active member of the Society throughout, attending the majority of ASP's conferences since he joined and being jointly responsible with Andrew Thompson for organizing the 1996 annual scientific meeting of the Society. David has served as a member of ASP Council for 7 years as representative member for the ACT, Secretary and President of the Society. He has also been involved in teaching terrestrial wildlife parasitology as part of the ASP's annual "Concepts of Parasitology"course at Kiola, NSW from its beginning in 2014.

Apart from his contribution to the ASP, David has made numerous outstanding contributions to the science of parasitology both nationally and internationally. In what could be considered a more typical academic sense, David has in excess of 100 internationally refereed research papers and book chapters, has attracted numerous research grants and funding from commercial sources, has mentored many honours and post-graduate students, and made many invited and other international and national conference presentations. However, a number of other aspects of his career as a parasitologist set his contribution apart.

David Jenkins could be described as a field parasitologist, a great communicator and a great survivor. Described by Michael Gemmell as a "gum-boot parasitologist", a breed of parasitologist that Michael considered was becoming a "threatened species" in Australia. Throughout his career David has been a scientist who gets his hands dirty. He has maintained aspects of his research program which have seen him regularly on-farm, in the bush and at the abattoir doing the practical work as a parasitologist himself. He established a research program on the epidemiology of echinococcosis in wildlife in Australia, particularly down the eastern seaboard. He revealed the seriousness of Echinococcus granulosus prevalence and intensity in the wild dog and dingo populations in national parks and state forests. He detailed evidence for the transmission of the parasite from wild dogs to sheep on properties adjoining forest areas and the associated risk for re-establishment of transmission in a domestic cycle of the parasite. David led a hydatid control program in southern NSW and the ACT in which he developed educational materials, supervised program staff, organised and attended schools and community open days often dressed as a black and white dog, appropriately named "Wally" (Wally-the-Wonder-dog), to help promote the hydatid control story to school children and the general public. He provided education about hydatid disease transmission and its prevention for state and federal government feral animal control staff involved in wild dog control mainly in NSW and the ACT but also Victoria. He used his own funds and a small grant from NSW Department of Health to create an educational DVD concerning hydatid disease, its transmission and prevention in Australia. Through a personal friendship, the presenter of the movie was Robin Williams, of the ABC's Science Show fame. There is no doubt that David's work in these areas has contributed to a heightened awareness of hydatid disease in rural south-eastern Australia and contributed to a reduction in the incidence of human cystic echinococcosis in Australia, particularly in

David Jenkins, 2021 Fellow of the ASP continued

rural NSW and the ACT.

After a period when David was supported by the NHMRC, he found it necessary to rely on his own resources when that support did not continue. He established a private company, Parasitech. He was supported by the NSW, ACT and Federal Departments of Health which provided him with some modest funding but most importantly, laboratory and office space in a facility at Fyshwick in Canberra. He was also supported by the ANU which allowed him to utilise laboratory and animal house facilities, for a small fee, at a field station just outside the Canberra city boundary. Through Parasitech he undertook anthelmintic and acaricide trials in dogs, cats and foxes for a number of international commercial veterinary pharmaceutical companies according to international Good Clinical Practices requirements. The work supported his income and, through his own personal resources he financed his ongoing field and laboratory work on the epidemiology of hydatid transmission in Australia. More recently, he secured an academic position at Charles Sturt University, where he has continued that work as well as expanding to include a wide variety of other research topics in the area of parasitology.

David Jenkins' reputation as a science communicator with the general public is legendary. Hardly a week goes by without a radio or TV station, or film crew, seeking his contribution. In 1999 he has been awarded the "Unsung Hero Award of Australian Science Communication" by the Australian Science Communicators, the peak body for science communicators and science journalists in Australia with over 1650 subscribers and 450 financial members. He has represented Australian science, and parasitology in particular, on 5 occasions at Science meets Parliament event held each year in Canberra.

In view of his outstanding contributions to science, parasitology and the Society, Prof Una Ryan is an extremely worthy recipient of the title Fellow of the Australian Society for Parasitology.

Above: Associate Professor David Jenkins. Below: A/Profs Ryan O'Handley and David Jenkins.

ASP Climate Focus Group for Parasitology

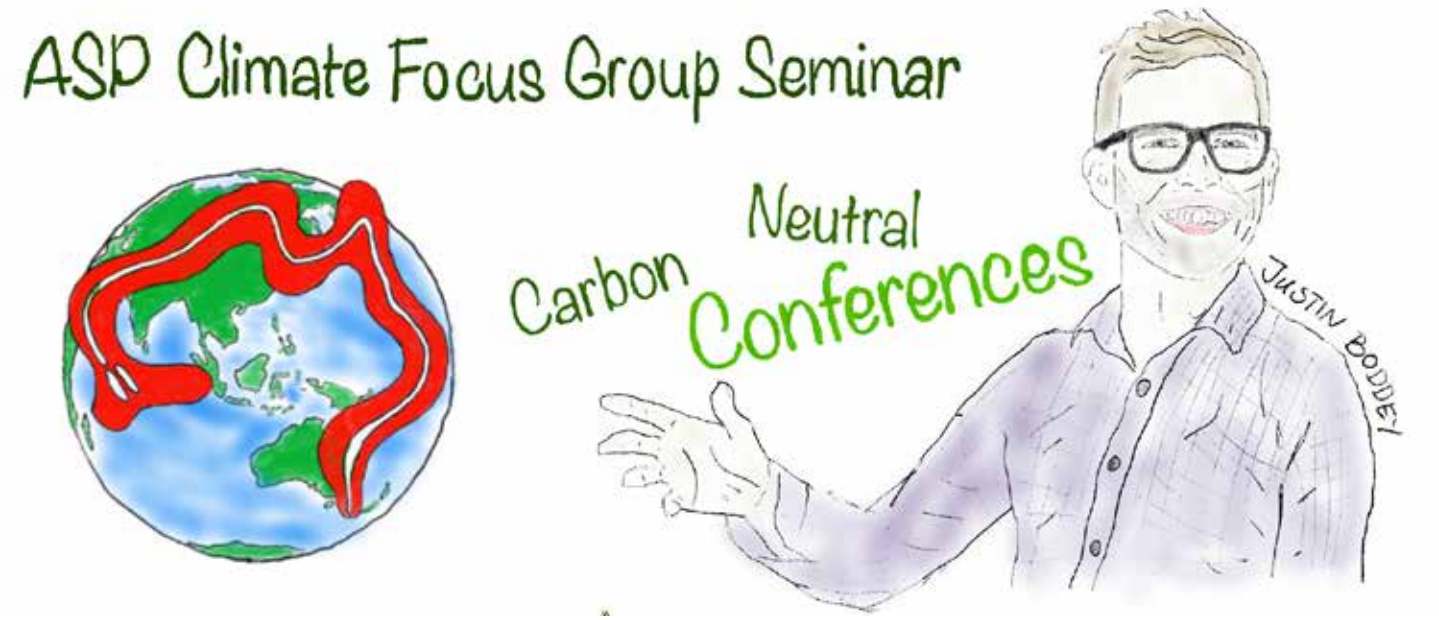


Illustration by the very talented artist Thorey Jonsdottir, PhD Candidate, Malaria Virulence and Drug Discovery Group, Burnet Institute.

Associate Professor Justin Boddey from the Walter and Eliza Hall Institute delivered an awesome seminar "Carbon Neutral Conferences" on Thursday 9th September 1-2pm (AEST). Justin focused on the 2020 Molecular Approaches to Malaria (MAM) Conference which was certified Carbon Neutral by the Australian Government's Department of Industry, Energy, Science and Resources.

If you missed this seminar you can watch it on the ASP You Tube channel https://www.youtube.com/watch?v=S270hop80vk

Don McManus wins NHMRC Leadership Award

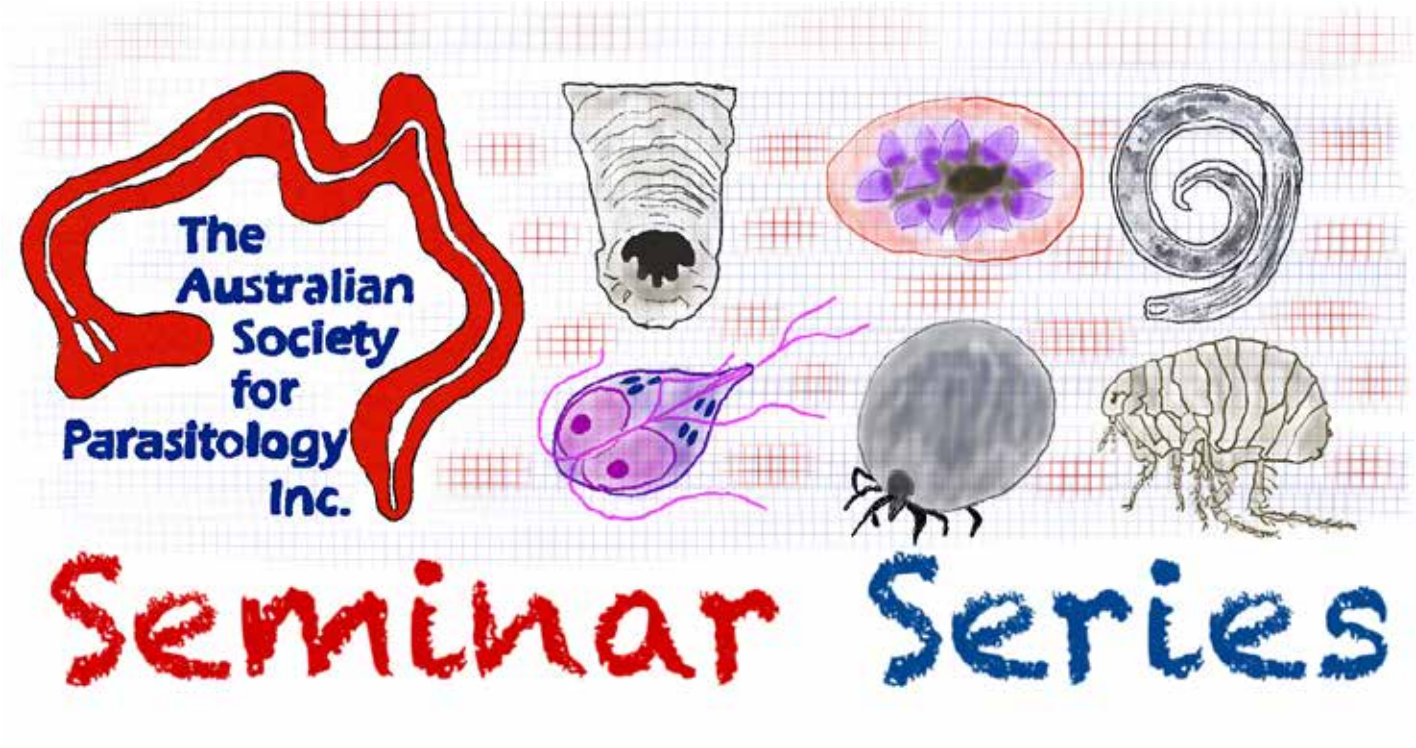
QIMR Berghofer Senior Scientist Professor Don McManus has been awarded the Peter Doherty Investigator Grant Award (Leadership) from the National Health and Medical Research Council (NHMRC).

Congratulations to ASP member and QIMR Berghofer Senior Scientists Professor Don McManus who recently won the Peter Doherty Investigator Grant Award (Leadership) from the NHMRC. The Award – which honours the Australian Nobel Laureate Professor Peter Doherty AC – is given to the top-ranked application in the Leadership Category of the NHMRC Investigator Grant scheme in the previous year (2020).

Professor McManus's study is titled 'A worm-free world: Defeating parasitic helminths via global integrated control'. It will use an arsenal of diagnostic tools and public health measures, combined with effective surveillance measures, to try to eliminate schistosomiasis and other neglected tropical diseases from Asia and Africa and to consign these persistent diseases to history.

Right: Prof Don McManus was presented with the award by The Hon Greg Hunt MP Minister for Health and Aged Care at the NHMRC Research Excellence Awards Dinner in Canberra earlier this year.

ASP Seminar Series



The third event in our online ASP Seminar Series took place on Friday 27th August at 1pm AEST by Zoom.

Co-chairs Ali Raza (University of Queensland) and Sarah Preston (Federation University) introduced researchers Roland Ruscher from James Cook University, spoke about "High throughput screening of hookworm secreted proteins reveals novel anti-inflammatory biologics" and Muhammad Noman Naseem from University of Queensland spoke about "Buffalo fly lesions; are Stephanofilaria to blame?" Friday 27th August 2021 at 1pm AEST.

Dr. Ruscher obtained a German Diploma (~MSc) from the University of Cologne and the German Aerospace Center (DLR) in Germany, and a PhD in 2014 in the field of immunology from the University of Queensland, Translational Research Institute in Australia. He then joined the University of Minnesota (UMN) Center for Immunology in the USA as a Postdoctoral Fellow, and returned to Australia in 2018, where he currently holds a Research Fellow position in Prof. Alex Loukas' group at James Cook University. Dr. Ruscher's research interests encompass mucosal and T cell immunology. An exciting arm of his research investigates how molecules secreted by intestinal parasites modulate immune responses in their mammalian hosts, and how they could be used to combat inflammatory diseases.

Noman is a last-year PhD student at Centre for Animal Science QAAFI, The University of Queensland. He graduated with a Doctor of Veterinary Medicine (DVM) and have a Master's (M.Phil.) in Veterinary Pathology. He has five years of experience in teaching and veterinary pathology services." In his PhD, he is investigating the pathogenesis of buffalo fly lesions in Australian cattle.

Our awesome seminar series image was created by Thorey Jonsdottir from the Burnet Institute.

Our last two seminars for 2021 will take place in November and December. If you have ideas for speakers, themes or chairs for future ASP Seminar Series presentations please email secretary@parasite.org.au with suggestions. See the ASP website and social media channels for information about the ASP Seminar Series.

Meet the WA State Rep Narelle Dybing

Dr Narelle Dybing BSc BSc(Hons), PhD is a Research Associate at TESS: Harry Butler Institute, Medical, Molecular and Forensic Science at Murdoch University, and the new Western Australian State Representative for the ASP.

I started out studying conservation biology and biomedical science in my undergraduate years. This is where my love of parasites began. My postgraduate, doctoral and postdoctoral work is in parasitology, primarily of invasive animals. My honours research was looking at the gastrointestinal parasites of red foxes and feral cats in southwest Western Australia. After this my PhD was investigating the parasites of feral cats and black rats on Christmas Island, Dirk Hartog Island and southwest Western Australia. Both research projects explored the ecology of parasites in these introduced animals and what risks these parasites may pose to native animals, livestock, domestic pets and humans. After I completed my PhD, I have been involved in multiple research projects, including parasites of wild dogs in Western Australia and urban red fox parasites in Perth, Western Australia.

Much of my work involves working with the community and industry to obtain samples and to talk to the community about the risks that these parasites pose. I love being involved in outreach programs and showing both children and adults the amazing world of parasites, and science in general. Being able to talk to the community, especially groups that could be directly impacted by parasites in invasive animals is such an important aspect of the work I do. I am passionate about studying the parasitological impacts of invasive animals and I believe it is an underrated and overlooked impact of these animals.

ASP members in Western Australia please email me (N.Dybing@murdoch.edu.au) with any queries.

Right: Narelle Dybing

Meet the Tasmanian State Rep Nick Fountain-Jones

Dr Nicholas Fountain-Jones is the Tasmanian ASP State Representative from the University of Tasmania.

I'm a disease ecologist at the University of Tasmania in the School of Natural Sciences. I'm interested in particular in how modelling can be used to better understand parasite ecology. I work in a variety of systems but have a focus on carnivores in order to better manage disease in species in decline globally and heavily impacted by anthropogenic development. I try to bridge the gap between community ecology, network theory and phylogenetics by using one to inform the other. I use this combined approach, for example, to explore questions related to parasite transmission, phylogeography and community assembly. In particular, I develop machine learning, network methods and Bayesian phylogenetic approaches to address these questions.

In my spare time, I'm a mad home-brewer and love to get out biking and hiking as much as possible.

Tasmanian ASP members please email me (nick.fountainjones@utas.edu.au) with any queries.

Right: Nick Fountain-Jones

Meet the NSW State Rep Michelle Power

Michelle Power is Associate Professor at Macquarie University and the ASP State Representative for New South Wales.

I have been a member of the ASP since my PhD years in the late 90's. This is not the first time I have been part of the ASP Council with previous roles as State Rep and Newsletter Editor in the early 2000s, and more recently as a member of the Concepts in Parasitology organising committee. I held several jobs in the fields of microbiology / parasitology prior to my PhD when my research career primarily started with investigating the epidemiology of *Cryptosporidium* in marsupials in the Sydney Water Catchment just after the Sydney Water Crisis when infectious *Cryptosporidium* stages were identified in Sydney's drinking water.

For many years I focussed on *Cryptosporidium*, but soon started to see gaps in molecular understanding of *Eimeria* and *Giardia* in Australian wildlife. Thus I expanded my studies to include these organisms. Over time I worked towards establishing a wide base of parasite targets, and also now bacterial targets, to focus research efforts on parasite transmission at the wildlife : human interface that is centred on zoonoses and reverse zoonoses. I have purposefully shifted from the traditional approaches of one host – one parasite studies towards models of co-infection. I work on a wide array of hosts that have been selected due to their close connectivity with people, mainly through urban adaptation or conservation management. The main species dominating my current research are flying fox, possums, Tasmanian devils and pinnipeds, and extensive collaborations with ecologists and veterinarians make this work possible.

I am passionate about science communication and engaging the public in research, including citizen science initiatives where people have collected possum scats for pathogen surveillance. I have taught an array of undergraduate subjects and I currently play a major role in course design and delivery of the Bachelor of Medical Sciences at Macquarie University. I am also an advocate for equity and diversity and ensuring visibility, support and opportunity for scientists that are part of minority groups. I achieve this through roles with the Queers in Science Network and University Equity, Diversity and Inclusion committees, and also by ensuring understanding if cultural competence in the students I teach and supervise. If you identify as LGBTQIA+ or if you are an Ally and would like to be part of any QueersInScience events and for all NSW ASP enquiries and ideas please contact me (email: michelle.power@mq.edu.au).

Below and top right: Michelle Power

QUEERS IN SCIENCE

Meet the ASP Student Rep Jill Chmielewski

Jill Chmielewski is the ASP Student Representive and a PhD Candidate in the Wilson Group, Malaria Biology Laboratory, at The University of Adelaide in South Australia.

I completed my Bachelor of Science (Biomedical Science) degree at the University of Adelaide, majoring in Biochemistry and Microbiology/Immunology. I began my postgraduate study at the University of Adelaide through the Master of Philosophy pathway and upgraded to PhD under the supervision of Dr Danny Wilson. My research project is focused on the malaria parasite species *Plasmodium falciparum*, and Plasmodium knowlesi. Using molecular biology techniques, I am hoping to contribute to a better understanding of the parasites surface proteins during invasion of human red blood cells.

During my time away from the lab, I enjoy reading, listening to podcasts, visiting the wineries and pubs of SA and hanging out with my cats."

I'm hoping to continue Coralie's good work as Student Representative! So if you have any suggestions or queries, please let me know (email: jill.chmielewski@adelaide.edu.au).

LETTER from Jill:

I hope you are all doing OK during what is a tumultuous time to be a graduate or post-graduate student! If you have been feeling the pressure, I've linked an article written by Dr Shane Huntington (an Australian scientific communicator) below which I think has a lot of helpful ideas and thoughts about completing your degree during COVID-times.

https://medium.com/@DrShaneRRR/how-to-survive-a-phd-during-a-pandemic-3a460e83af42

Building on his 'Goal #3: Stand Together', I always find it helpful to remember that there are many other students around the country and the world encountering the same situations, problems and thoughts as me. Despite the diversity of our research niches, we can help and relate to each other and find a comfort in our commonality. So, remember to reach out to those around you (within the ASP, or your own institution) when things get tough!

Some of you may remember a survey sent out by Coralie last year. It is super helpful to hear from you about what you are most interested in/looking for through your ASP membership, so I have built on her survey and hope you can take the time to complete it. Ultimately, it will help build a society which better benefits us students!

There will be an ASP council meeting at the end of October, so I'd love to be able to bring any of your thoughts or queries to the table at that time. Please complete the survey by Wednesday, October 20th.

Link to survey:

https://www.surveymonkey.com/r/PBN7NNL

Thank you for your time!

Best wishes,

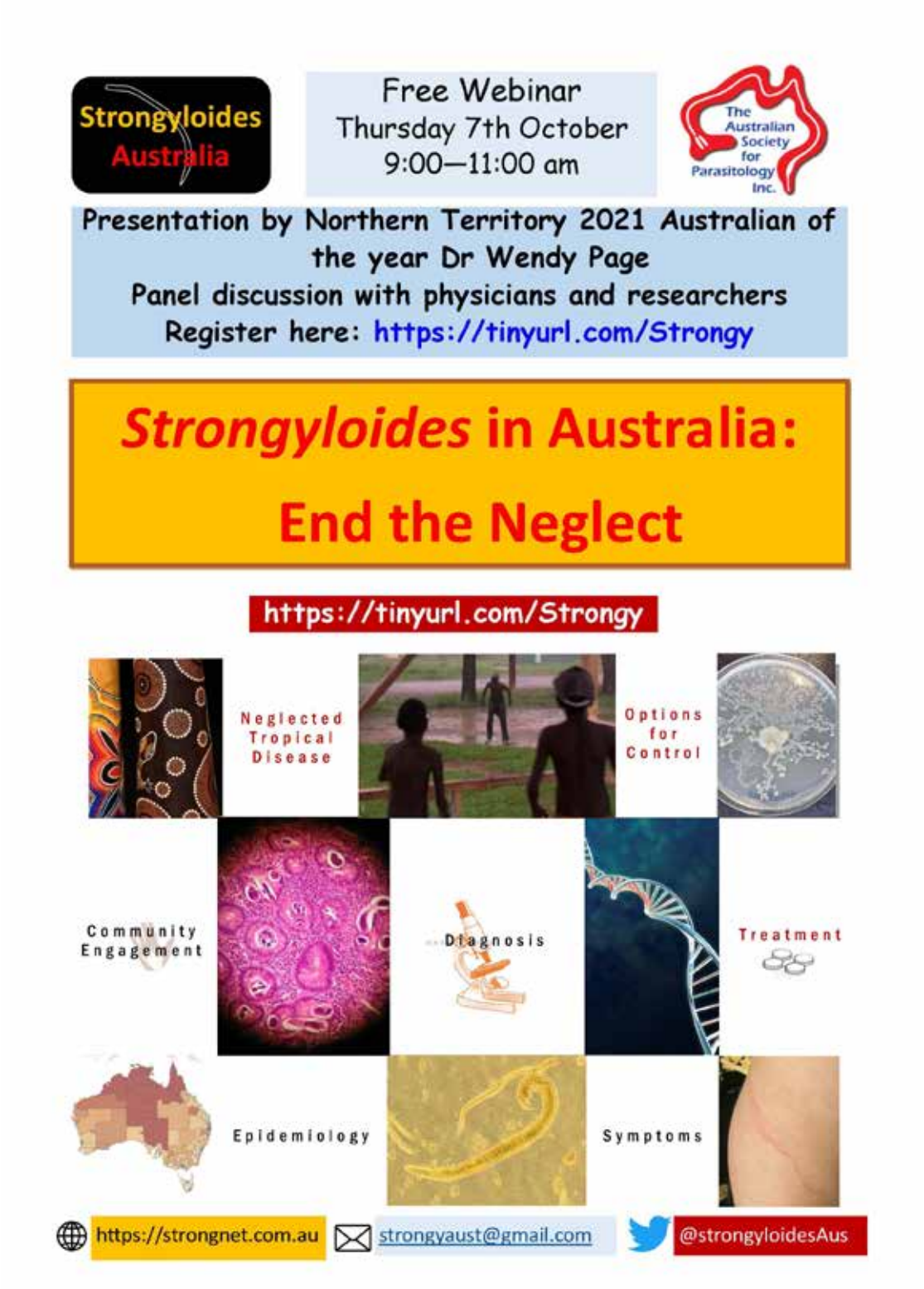
Jill

ASP Student Representative

Below: Jill Chmielewski

Strongyloidiasis in Australia: End the Neglect

Strongyloides Australia presented a free webinar "*Strongyloides* in Australia: End the Neglect" on 7 October 2021 featuring Dr Wendy Page and a panel discussion with physicians and researchers. If you were unable to attend or would like to view the recording, it is now available on YouTube https://youtu.be/9ugCicrP-xQ



Outreach activities in Western Australia

ASP member RIna Fu has been busy with outreach activities in Western Australia with MicroToons and Book Week!

MicroToons:

Congratulations to ASP member, **Rina Fu (aka Rina Wong),** as one of four WA recipients of the Federal National Science Week Grant for her project MicroToons, an animated cartoon about cells & microbial world. The uniqueness is the inclusivity of the project where the artwork and animation is developed by talents with autism. The launch event on 9th August was a sold-out event (200 ticket holders), with hands-on activities including parasites under the microscope, with attendees from the general public with varying physical and intellectual abilities. Rina and little scientists performed 'The Bug Song' - the music track recording for which was sponsored by The ASP outreach funds (see photo). Rina is amazed and touched by the in-kind contributions devoted to the animation production and launch event. The MicroToons project was also mentioned in a recent issue of the Australian Teacher Magazine which is circulated to all schools in Australia for its contribution to STEM education.

Watch MicroToons Here (please leave a comment at the site / email: Rina@RinaFu.com with your thoughts -your input will support our next steps): https://www.youtube.com/watch?v=j7VuVGNHX8A

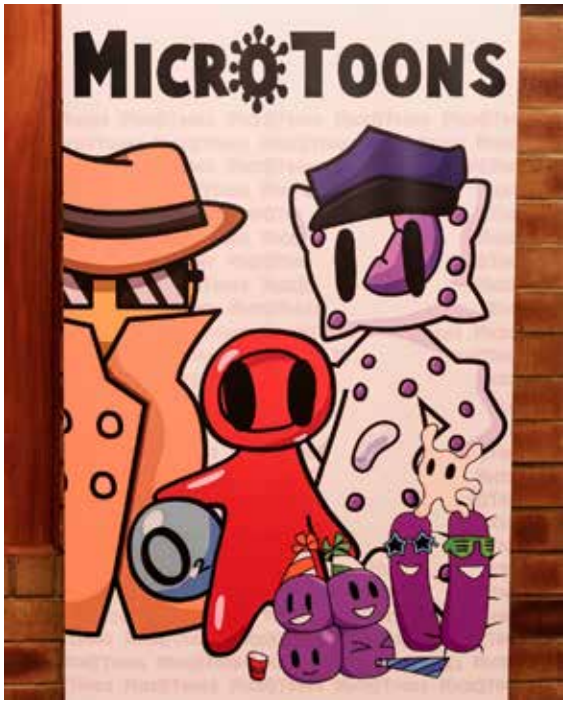
See Rina in the news:
Stirling Times Newspaper: "Science Cartoon MicroToons Awarded National Science Week Grant" (https://www.perthnow.com.au/community-news/stirling-times/science-cartoon-microtoons-awarded-national-science-week-grant-c-2649235)
Particle Article: "Inclusive Production Is Making STEM Shine" (https://particle.scitech.org.au/people/inclusive-production-is-making-stem-shine/)
Australian Teacher Magazine (Education HQ):"MicroToons Cartoon Introduces Kids to Blood Cells & Nasty Microbes (https://educationhq.com/news/microtoons-cartoon-introduces-kids-to-blood-cells-and-nasty-microbes-99005/)

Above: Dr Rina Fu delivering MicroToons

WA outreach continued

Toddlers:

Rina Fu (aka Rina Wong) and her team engaged toddlers as young as 2.5 years old learning about cells, microbes and parasites at Unicare Early Childhood Education, Crawley on 17th August. Through an interactive story-session, children learned about life as a scientist culturing cells and parasites. Rina is the author and illustrator of 'My Mad Scientist Mummy', an 'edutaining' picture storybook supported by The ASP outreach, happily signed a copy for the director of Unicare early childhood centre for continued engagement.



Above: Rina delivering the MicroToons program

Above: Dr Rina, author & illustrator of My Mad Scientist Mummy with Ralph Southall, director of Unicare Early Childhood Education with signed book.

WA outreach continued

Clockwise from above left: Toddlers aged 2.5 year to 4 years old engaged with Dr Rina for an interactive story session before experiments. Toddler's at the bug station where young children were introduced to big bugs, small bugs and microscopic bugs. Rusty (Inspire Radio host), Aaron Welch (Director of Red Bird Creative), Rina Fu (scientist-author-artist), Geoff (4lifeskills client & radio co-host), Claire Linnen (4lifeskills Coordinator)

98five FM:

Radio Stations:

Inspire Radio:

Rina and her MicroToons project collaborators were interviewed on Inspire Radio on 3rd August 2021. The radio host saw the music script at the back of Rina's storybook and requested her to sing the theme song 'I'm a Little Scientist' live on radio! Rina obliged but made the host and the rest of the team her backup singers with the 'dum dum dum dums' in the background. It was hilarious!

98five FM:

Rina Fu was the guest scientist on 98.5 fm from 17th August to 20th August for National Science Week. It was her first time doing experiments on radio and interviewed about how Rina ended up being coined as 'the Mad Scientist Mummy'! Rina is grateful to the ASP's ongoing support for her community outreach, as catalysed by her debut picture storybook 'My Mad Scientist Mummy', a storybook supported by The ASP. Listen/Watch here: https://98five.com/?s=rina+fu

WA outreach continued

CBCA Book Week:

Dr Rina Fu (aka Rina Wong) was invited to Claremont Community Hub and Library for CBCA Book Week! As an author, illustrator, Rina made the most of this year's theme 'Old Worlds, New Worlds, Other Worlds' to bring the 'Microscopic World' into the lives of primary school age children and their parents! One of the parents took photos from absolutely everything. A teenager thought the bugs were 'disgusting' and the favourite part of the workshop for a 7 year old was microscopy (a choice over hands-on experiments)! It was the first time for them to see *Plasmodium falciparum*!

Thea Woodward, a former microbiology student from Rina's class at Edith Cowan University, was on crutches and thought she wouldn't be of much help. On the contrary, Thea did an amazing job at the microscopy station "I found a worm!! This is the highlight of my week!"

Images on this page: Rina Fu at CBCA Book Week

QLD outreach

Ticks under the microscope in Parasitology Masterclass

Dr Ali Raza, from the Queensland Alliance for Agriculture and Food Innovation based at the University of Queensland, was invited to deliver a lecturer on Parasites and demonstrate tick dissection to year 9 Agricultural Technology students in August this year. A small group of year 9 Agricultural Technology students began their 'Masterclass' in Parasitology. The session kicked off with an investigation into the effect ticks have on cattle health and the negative impact this can have in terms of lost production and decreased profits. Ali then guided the students through a tick dissection, where students examined the ticks' sucking mouthparts, salivary glands and reproductive organs under a microscope. This gave students a new insight as to why ticks are important parasites.

Dr Ali Raza, explaining the tick feeding activity to students at Corinda State High School

Design a parasite that will live in the desert

ASP members **Lisa Jones (ASP/JCU), Kate Miller (James Cook University, Michelle Power (Macquarie University) and Mike Gardner (Flinders University)** delivered an Outreach event for National Science Week at Peace Lutheran College in Cairns on Thursday 19th August 2021.

Kate and Lisa delivered the face-to-face program whilst Mike and Michelle gave online talks to the students using Zoom.

Lisa and Kate set up hands-on parasitology activities in the classroom, they had microscopes, our Polly-parasitosis model (with stick-on parasites), and craft on tables to make your own parasite. The students first listened to a short presentation by UNSW "What is a scientist?" https://www.science.unsw.edu.au/what-is-a-scientist

https://twitter.com/i/status/1427027322209714182

Kate introduced parasites to the students, she covered Hosts, Lifecycles, Appearance, Detection and Treatment.

The students had the task set to "Design a parasite that will live in the desert". They had to decide What does it look like? What is the lifecycle of the parasite? Where does it live? How can you find it? How can you treat it?

To help them prepare the students talked online to two parasitologists who both work on parasites that live in animals that live in the desert, Mike Gardner from Flinders University SA and Michelle Power from Macquarie University NSW. The students loved talking with scientists over Zoom and had lots of great questions. They really loved the hands-on activities afterwards and created some very special parasites out of modelling clay. The day ended with students decorating and consuming parasite themed cupcakes, delicious!

This was a fabulous morning of outreach, great fun to deliver and the students were very excited to take part.

QLD outreach continued

Images on this page: Peace Lutheran school students creating their own parasites that can live in the desert.

Herminthology

Promoting the work of female parasitologists

ASP member and University of Sydney alumni **Nichola Calvani** has recently launched a social media initiative, Herminthology, that aims to provide a platform for women in parasitology to share their stories and successes across Instagram, Twitter and Facebook. The goal of Herminthology is to provide a place for female parasitologists to give some background about themselves (why they got into parasitology, what they do), while also sharing a photo of themselves in action (in the lab or field) and a recent publication that they are proud of. The hope is to provide a voice and face to women in parasitology and demonstrate the possibilities available to young women looking to get into science.

As part of this initiative, she has teamed up with Elsevier, the International Journal for Parasitology and Trends in Parasitology, among other leading journals in the field, to post short profiles of female lead authors of articles in press as part of a series titled #womenbehindthework. The initiative is fully supported by the ASP, with plans for future collaborations and initiatives to support female parasitologists around the world.

The platform aims to be as inclusive as possible, profiling female parasitologists from a variety of backgrounds and at all stages in their careers. As part of this inclusiveness, women are encouraged to write their contributions in both English and another language, should they speak one. If you think you, or someone you know, deserves to be featured get in contact by emailing herminthology@gmail.com for more details.

Twitter: https://twitter.com/herminthology
Instagram: https://www.instagram.com/herminthology/
Facebook: https://www.facebook.com/herminthology/

Herminthology

Herminthology is a social media initiative demonstrating the possibilities for young women in science by profiling female parasitologists across all career stages.

If you think you, or something you know, deserves to be featured please contact herminthology@gmail.com for details.

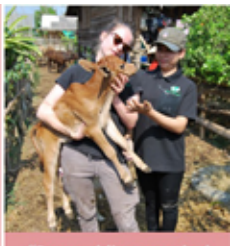
Follow @herminthology

Herminthology founder, **Dr Nichola Eliza Davies Calvani**, has a PhD in molecular diagnosis and species differentiation of ***Fasciola* spp.** in livestock in Southeast Asia from **The University of Sydney, Australia**. Nichola moved to Ireland in January to commence a postdoc with the Molecular Parasitology Lab at **The National University of Ireland, Galway**, where she works on parasite protein characterisation and the development of vaccines against ***Fasciola hepatica*** in sheep. She was inspired to create *Herminthology* during COVID, where networking opportunities have been so severely limited – particularly for female early career researchers working in stem.

Nichola first became interested in parasitology after returning from a trip to Southeast Asia, where she began to think about how she could use her Animal and Veterinary Bioscience degree to help people and animals in the region. She returned to Cambodia and Laos during her honours year, and later during her PhD, to work with local farmers and their livestock – an area that she is keen to return to in the long term.

"The thing I love most about parasitology is its potential to help so many vulnerable people – particularly women – in low- and middle-income countries. I am lucky to have grown up in Australia where people often forget that parasites affect the lives of millions of people and animals each day, even those in our own backyard! By providing practical and sustainable solutions to diseases caused by helminths, as well as other parasites of human and veterinary concern, we have the ability to substantially help those most in need."

Understandably, her favourite parasites are ***Fasciola hepatica*** and ***Fasciola gigantica***. As you can see in the photo, Nichola loves how hands-on parasitology can be, whether you're in the lab or in the field, and thinks it's an area of science that has something for everyone. The paper she is most proud of is her recent opinion in Trends in Parasitology on hybridisation between *Fasciola* spp. (available at https://doi.org/10.1016/j.pt.2020.09.008).



"By providing practical and sustainable solutions to diseases caused by helminths, as well as other parasites of human and veterinary concern, we have the ability to substantially help those most in need"

Undergraduate prizes

ASP undergraduate prize winner Amy Dohrmann gave a testimonial.

Congratulations to 2019 prize winner **Amy Dohrman** from The University of Adelaide, 2019 ASP undergraduate prize.

$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 2022 prizes must be made by the eligible University to the ASP Treasurer by the 30th September 2022. Please complete the online application form:**

www.parasite.org.au/awards/asp-undergraduate-prizes/

THE UNIVERSITY of ADELAIDE

School of Animal and Veterinary Sciences

Faculty of Sciences

AUSTRALIAN SOCIETY FOR PARASITOLOGY PRIZE

2019 Winner – Amy Dohrmann

"I am truly grateful to be the recipient of the Roseworthy Old Collegians Association Prize in Veterinary Bioscience and the Australian Society for Parasitology Prize. I greatly appreciate the acknowledgement of the effort that I have dedicated to my studies. These awards have given me encouragement and motivation to assist me through my Doctor of Veterinary Medicine degree."

Thank you for being a part of the 2019 Prizes and Awards in the School of Animal and Veterinary Sciences.

adelaide.edu.au

CRICOS Provider Number 00123M

Alex Loukas: unlocking the secrets of Helminth secretomes

Congratulations to Professor Alex Loukas, from AITHM, James Cook University, who was recently awarded $3.3 million over 5 years from the NHMRC Research Investigator grants scheme! Lisa Jones recently caught up with Alex to find out about how the grant will help his research.

Lisa: Congratulations Alex, you must be pretty excited about your recent NHMRC funding success, what will you be doing with the grant?

Alex: Absolutely, it has been a great year for publications and grants! This NHMRC Research Investigator grant is vital for our research program; the unifying theme of this wide-reaching program is Helminth secretomes, which are all of the molecules that parasitic worms secrete into the infected host tissues. This funding will help my team develop vaccines and diagnostics from worm molecules in a bid to combat parasitic infections in developing countries. We are also exploring these worm molecules as a new platform of anti-inflammatory therapeutics for use in industrialised nations. We will be utilizing a three-pronged approach to:

1. Develop vaccines against Neglected Tropical Diseases (NTD) like hookworm and liver fluke.

2. Advance diagnostics for NTDs schistosomiasis and liver fluke infections. The team will pilot test a urogenital schistosomiasis diagnostic test and compare with other tests to establish whether it will be useful for large scale fieldwork. NTD elimination programs in Africa need post-elimination sensitivity tests and this test checks for antibodies in the urine. Read the team's recent publication in *The Lancet Microbe*.

Mark S Pearson, Bemnet A Tedla, Gebeyaw G Mekonnen, Carla Proietti, Luke Becker, Rie Nakajima, Al Jasinskas, Denise L Doolan, Abena S Amoah, Stefanie Knopp, David Rollinson, Said M Ali, Fatma Kabole, Cornelis H Hokke, Akim A Adegnika, Matt A Field, Govert van Dam, Paul L A M Corstjens, Takafira Mduluza, Francisca

Above: Professor Alex Loukas at the AITHM laboratories James Cook University

Alex Loukas interview continued

Mutapi, Claude Oeuvray, Beatrice Greco, Sujittra Chaiyadet, Thewarach Laha, Pengfei Cai, Donald P McManus, Maria Elena Bottazzi, Philip L Felgner, Javier Sotillo, Alex Loukas, (2021) Immunomics-guided discovery of serum and urine antibodies for diagnosing urogenital schistosomiasis: a biomarker identification study, *The Lancet Microbe*, 2021, https://doi.org/10.1016/S2666-5247(21)00150-6.

3. Use worm proteins as anti-inflammatories for inflammatory bowel disease. This work has identified lead candidates and studied the mechanism of action to select some proteins for Inflammatory Bowel Disease (IBD) clinical trials.

Ryan, Stephanie M., Eichenberger, Ramon M., Ruscher, Roland, Giacomin, Paul R., and Loukas, Alex (2020) Harnessing helminth-driven immunoregulation in the search for novel therapeutic modalities. *PLoS Pathogens,* 16 (5). e1008508.

Lisa: Okay Alex, I have to ask – favourite parasite and why?

Alex: *Necator americanus* - even though it's not as cool looking as some other hookworms – it's still my favourite! Hookworms have these awesome cutting plates that can burrow in under gut mucosal wall so that they can latch themselves onto the gut wall and ingest blood with oxygen in it. They're my favourite because hookworms can do anything and cure everything! :)

Above: Image of *Ancylostoma caninum* courtesy Alex Loukas

Lisa: Alex you enjoy a highly successful career as a parasitologist, do you have any advice for our early career researchers and how do you cope with the highs and lows of being a research scientist?

Alex: Thanks Lisa! My advice would be to pick a niche area where you can carve out ownership in that space. I decided to focus my research in an area which was not too competitive. Over the years I've had to learn how to push my ideas, but also know when to drop them. And the research needs to be interesting, people should "give a toss about it". Across my research career I have stuck with with primary love of worms. My initial focus was to develop vaccines for NTDs and in the process I've also jumped onto the idea of using worms as therapeutics.

With regards to the lows of research, yes sometimes it seems like "this is too hard" – when I returned from the first postdoc overseas my first couple of NHMRC applications were unsuccessful and I questioned my career choice. Then I got a job offer in the U.S.A. with Professor Peter Hotez who was at the George Washington University working on vaccines against NTDs, human hookworm infection and schistosomiasis, and this reinvigorated my research in vaccines and worms and since then I've never doubted it!

My advice for early career researchers is to try to get an overseas postdoctoral position. I found mine advertised in the back of an issue of *Nature* magazine, I was looking for jobs and I recognized the name of the researcher, Professor Rick Maizels at the University of Edinburgh, this really helped my career and also gave me connections that helped my get my position in the U.S.A. using Hookworm proteases as vaccine candidates with Professor Peter Hotez.

Lisa: Thanks Alex, we are looking forward to more exciting updates from you and your team on your Helminth secretomes research.

IJP

INTERNATIONAL JOURNAL FOR PARASITOLOGY

www.journals.elsevier.com/international-journal-for-parasitology

Editor In Chief: Brian Cooke

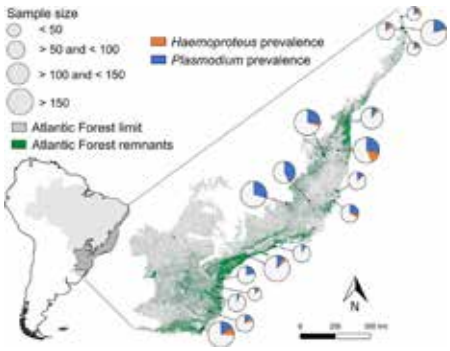
Facebook: www.facebook.com/IJPara
Twitter: @IJPara
Instagram: ijpara

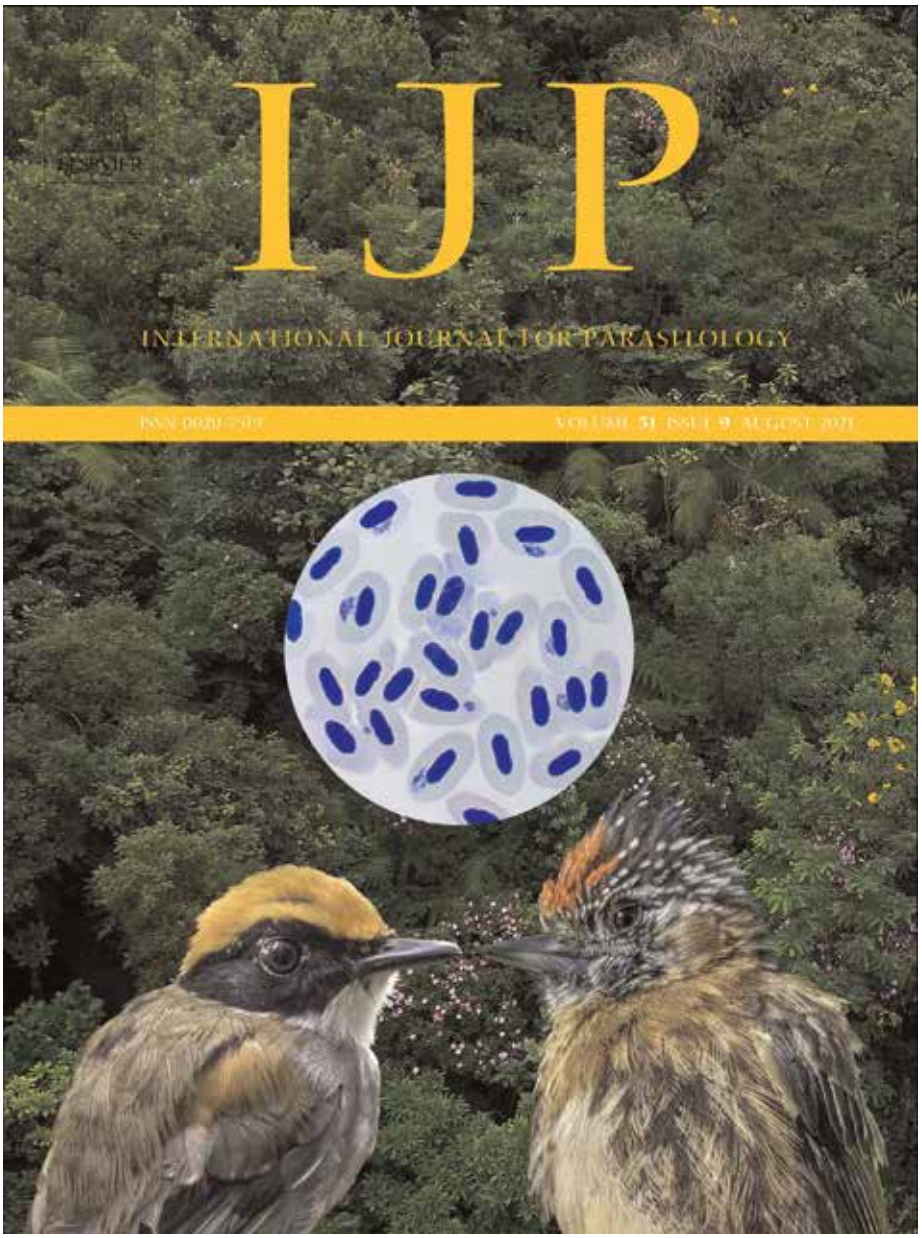
IJP Editor Brian Cooke recommends these recent articles published in IJP and also to keep an eye out for the papers from our Special Issue for the 50th Anniversary of the IJP:

[August (51:09)]

Fecchio, A., Lima, M.R., Bell, J.A., Schunck, F., Corrêa, A.H., Beco, R., Jahn, A.E., Fontana, C.S., da Silva, T.W., Repenning, M., Braga, E.M., Garcia, J.E., Lugarini, C., Silva, J.C.R., Andrade, L.H.M., Dispoto, J.H., dos Anjos, C.C., Weckstein, J.D., Kirchgatter, K., Ellis, V.A., Ricklefs, R.E., De La Torre, G.M., 2021. Loss of forest cover and host functional diversity increases prevalence of avian malaria parasites in the Atlantic Forest. Int. J. Parasitol. 51, 719-728.

https://doi.org/10.1016/j.ijpara.2021.01.001



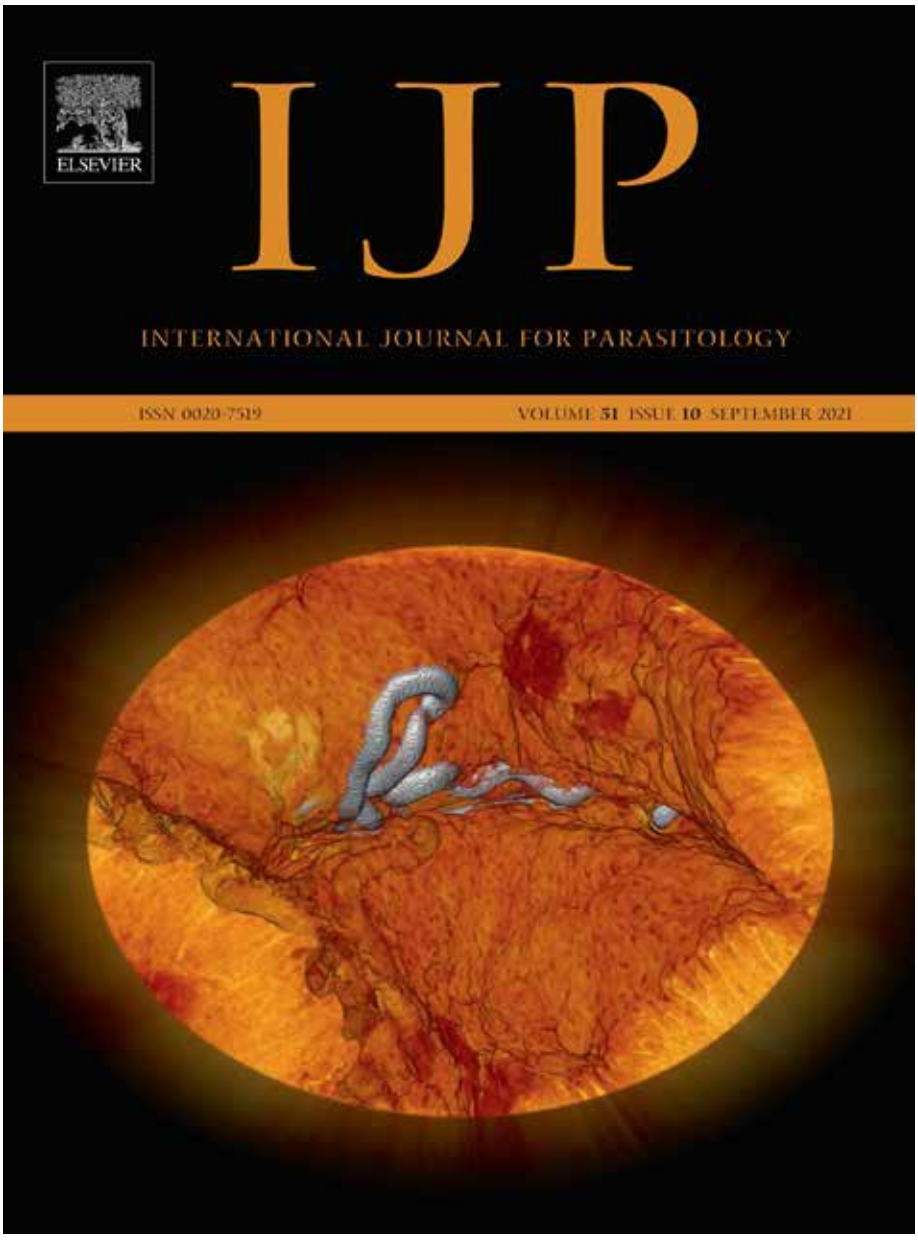


International Journal for Parasitology continued

IJP
INTERNATIONAL JOURNAL FOR PARASITOLOGY

[September (51:10)]

O'Sullivan, J.D.B., Cruickshank, S.M., Withers, P.J., Else, K.J., 2021. Morphological variability in the mucosal attachment site of Trichuris muris revealed by X-ray microcomputed tomography. Int. J. Parasitol. 51, 797-807. https://doi.org/10.1016/j.ijpara.2021.04.006



Parasitic infections can be challenging to study because two dimensional light and electron microscopy are often limited in visualising complex and inaccessible attachment sites. Exemplifying this, Trichuris spp. inhabit a tunnel of epithelial cells within the host caecum and colon. A significant global burden of this infection persists, partly because available anthelminthics lack efficacy, although the mechanisms underlying this remain unknown. Consequently, there is a need to pioneer new approaches to better characterize the parasite niche within the host and investigate how variation in its morphology and integrity may contribute to resistance to therapeutic intervention. To address these aims, we exploited three-dimensional X-ray micro-computed tomography (microCT) to image the mouse whipworm, *Trichuris muris*, in caeca of wild-type C57BL/6 and SCID mice ex vivo. Using osmium tetroxide staining to effectively enhance the contrast of worms, we found that a subset exhibited preferential positioning towards the bases of the intestinal crypts. Moreover, in one rare event, we demonstrated whipworm traversal of the lamina propria. This morphological variability contradicts widely accepted conclusions from conventional microscopy of the parasite niche, showing *Trichuris* in close contact with the host proliferative and immune compartments that may facilitate immunomodulation. Furthermore, by using a skeletonization-based approach we demonstrate considerable variation in tunnel length and integrity. The qualitative and quantitative observations provide a new morphological point of reference for future in vitro study of host-*Trichuris* interactions, and highlight the potential of microCT to characterise enigmatic host-parasite interactions more accurately.

International Journal for Parasitology continued

IJP

INTERNATIONAL JOURNAL FOR PARASITOLOGY

[October (51:11)]

Doussang, D., Sallaberry-Pincheira, N., Cabanne, G.S., Lijtmaer, D.A., González-Acuña, D., Vianna, J.A., 2021. Specialist versus generalist parasites: the interactions between host diversity, environment and geographic barriers in avian malaria. Int J Parasitol. 51, 899-911. https://doi.org/10.1016/j.ijpara.2021.04.003

The specialist versus generalist strategies of hemoparasites in relation to their avian host, as well as environmental factors, can influence their prevalence, diversity and distribution. In this paper we investigated the influence of avian host species, as well as the environmental and geographical factors, on the strategies of *Haemoproteus* and *Plasmodium* hemoparasites. We determined prevalence and diversity by targeting their cytochrome b (Cytb) in a total of 2,590 passerine samples from 138 localities of Central and South America, and analysed biogeographic patterns and host-parasite relationships. We found a total prevalence of 23.2%. *Haemoproteus* presented a higher prevalence (15.3%) than *Plasmodium* (4.3%), as well as a higher diversity and host specificity. We determined that *Plasmodium* and *Haemoproteus* prevalences correlated positively with host diversity (Shannon index) and were significantly influenced by bird diversity, demonstrating a possible "amplification effect". We found an effect of locality and the avian family for prevalences of *Haemoproteus* and *Plasmodium*. These results suggest that Haemoproteus is more specialist than *Plasmodium* and could be mostly influenced by its avian host and the Andes Mountains.

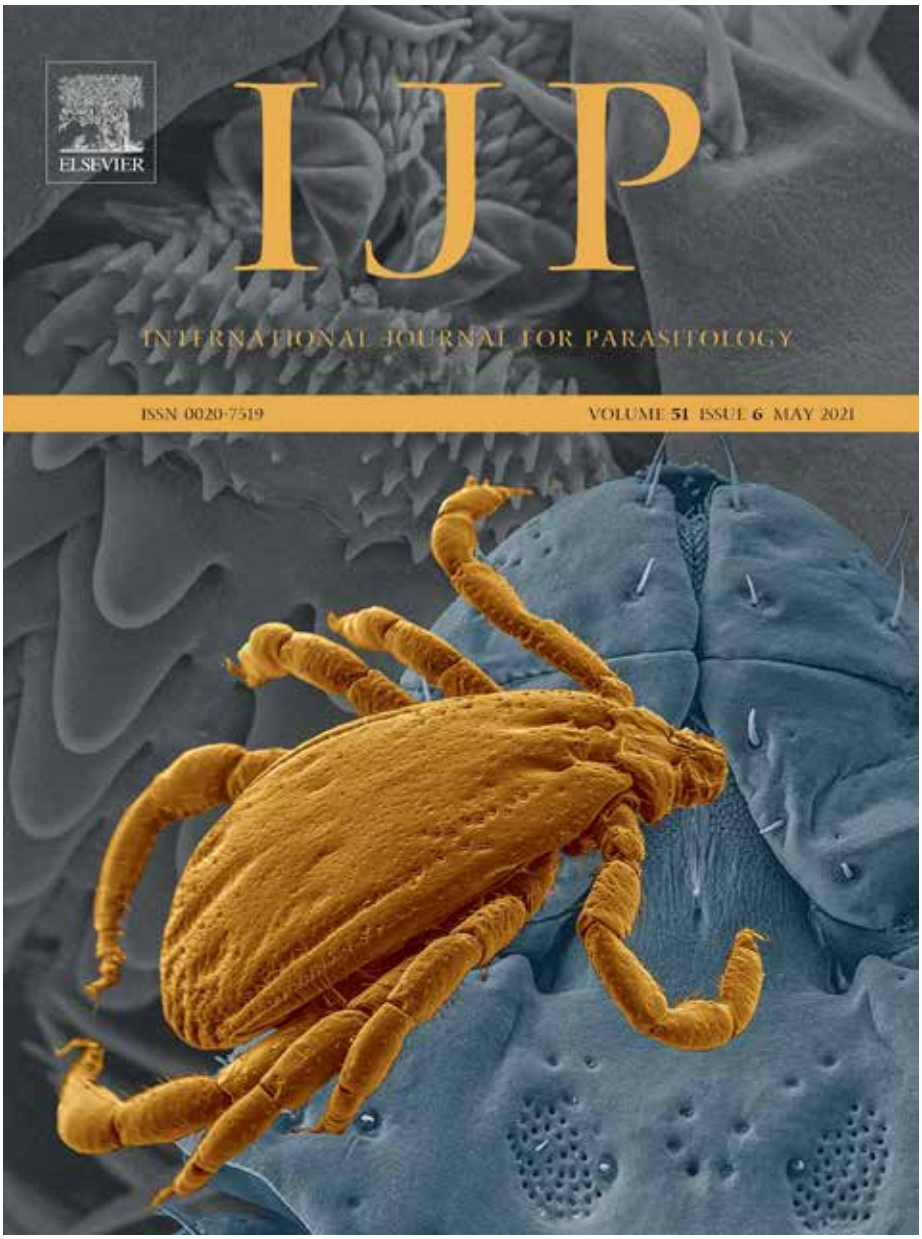
International Journal for Parasitology continued

IJP

INTERNATIONAL JOURNAL FOR PARASITOLOGY

Brian also recommends reading the top-performing social media paper from Boris Stripen (using PlumX statistics) with 172,824 shares.

Érica S. Martins-Duarte, Lilach Sheiner, Sarah B. Reiff, Wanderley de Souza, Boris Striepen, Replication and partitioning of the apicoplast genome of *Toxoplasma gondii* is linked to the cell cycle and requires DNA polymerase and gyrase, International Journal for Parasitology, Volume 51, Issue 6, 2021, Pages 493-504, ISSN 0020-7519, https://doi.org/10.1016/j.ijpara.2020.11.004. (https://www.sciencedirect.com/science/article/pii/S0020751921000473)



Apicomplexans are the causative agents of numerous important infectious diseases including malaria and toxoplasmosis. Most of them harbour a chloroplast-like organelle called the apicoplast that is essential for the parasites' metabolism and survival. While most apicoplast proteins are nuclear encoded, the organelle also maintains its own genome, a 35 kb circle. In this study we used *Toxoplasma gondii* to identify and characterise essential proteins involved in apicoplast genome replication and to understand how apicoplast genome segregation unfolds over time. We demonstrated that the DNA replication enzymes Prex, DNA gyrase and DNA single stranded binding protein localise to the apicoplast. We show in knockdown experiments that apicoplast DNA Gyrase A and B, and Prex are required for apicoplast genome replication and growth of the parasite. Analysis of apicoplast genome replication by structured illumination microscopy in *T. gondii* tachyzoites showed that apicoplast nucleoid division and segregation initiate at the beginning of S phase and conclude during mitosis. Thus, the replication and division of the apicoplast nucleoid is highly coordinated with nuclear genome replication and mitosis. Our observations highlight essential components of apicoplast genome maintenance and shed light on the timing of this process in the context of the overall parasite cell cycle.

IJP INTERNATIONAL JOURNAL FOR PARASITOLOGY
Parasites and Wildlife

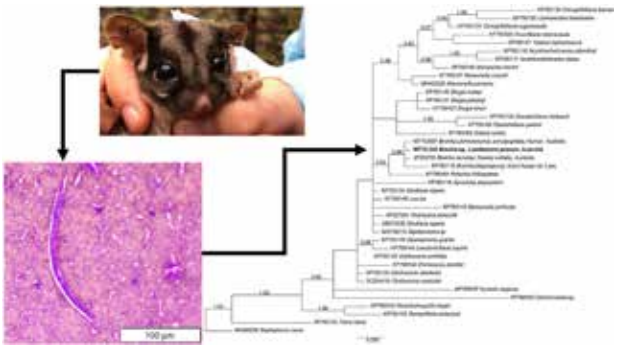
www.journals.elsevier.com/international-journal-for-parasitology-parasites-and-wildlife/

Editor: R.C. Andrew Thompson

Facebook: www.facebook.com/IJPPAW/

Recent IJP:PAW articles Parasites and Wildlife, published by ASP members.

Chloe Steventon, Anson V. Koehler, Elizabeth Dobson, Leanne Wicker, Alistair R. Legione, Joanne M. Devlin, Dan Harley, Robin B. Gasser, Detection of Breinlia sp. (Nematoda) in the Leadbeater's possum (*Gymnobelideus leadbeateri*),International Journal for Parasitology: Parasites and Wildlife, Volume 15, 2021, Pages 249-254, ISSN 2213-2244, https://doi.org/10.1016/j.ijppaw.2021.06.002. (https://www.sciencedirect.com/science/article/pii/S2213224421000687)



The Leadbeater's possum (*Gymnobelideus leadbeateri*) is a critically endangered marsupial in south-eastern Australia. Among other conservation efforts, free-ranging animals in the two remaining geographically separate populations (highland and lowland) have been extensively studied; however, little is known about their health and mortality. Although some wild populations are frequently monitored, cadavers are rarely recovered for post mortem examination. In June 2019, a recently deceased, wild, adult male lowland Leadbeater's possum was collected from a nest box and a comprehensive post mortem examination was conducted. Microfilariae of a filarioid nematode were observed in testes, liver, lung and skin samples in tissue impression smears and upon histopathological examination. No gross or histological changes were seen associated with the parasites, except for a focal area of tissue damage in the skin, suggesting that the possum is a natural host. Using a PCR-coupled sequencing method the filarioid was identified as a species of *Breinlia*. Species of *Breinlia* occur in other Australian marsupials and rodents.

Jose L. Huaman, Carlo Pacioni, David M. Forsyth, Anthony Pople, Jordan O. Hampton, Karla J. Helbig, Teresa G. Carvalho, Evaluation of haemoparasite and *Sarcocystis* infections in Australian wild deer, International Journal for Parasitology: Parasites and Wildlife, Volume 15, 2021, Pages 262-269,ISSN 2213-2244, https://doi.org/10.1016/j.ijppaw.2021.06.006. (https://www.sciencedirect.com/science/article/pii/S2213224421000729)

Wild animals are natural reservoir hosts for a variety of pathogens that can be transmitted to other wildlife, livestock, other domestic animals, and humans. Wild deer (family Cervidae) in Europe, Asia, and North and South America have been reported to be infected with gastrointestinal and vector-borne parasites. In Australia, wild deer populations have expanded considerably in recent years, yet there is little information regarding which pathogens are present and whether these pathogens pose biosecurity threats to humans, wildlife, livestock, or other domestic animals. To address this knowledge gap, PCR-based screening for five parasitic genera was conducted in blood samples (n = 243) sourced from chital deer (*Axis axis*), fallow deer (*Dama dama*), rusa deer (*Rusa timorensis*) and sambar deer (*Rusa unicolor*) sampled in eastern Australia. These blood samples were tested for the presence of DNA from *Plasmodium* spp., *Trypanosoma* spp., *Babesia* spp., *Theileria* spp. and *Sarcocystis* spp. Further, the presence of antibodies against *Babesia bovis* was investigated in serum samples (n = 105) by immunofluorescence. In this study, neither parasite DNA nor antibodies were detected for any of the five genera investigated. These results indicate that wild deer are not currently host reservoirs for *Plasmodium, Trypanosoma, Babesia, Theileria* or *Sarcocystis* parasites in eastern Australia.

IJP INTERNATIONAL JOURNAL FOR PARASITOLOGY
Drugs and Drug Resistance

www.journals.elsevier.com/international-journal-for-parasitology-drugs-and-drug-resistance/

Editors In Chief: Andrew Kotze & Kevin Saliba

Facebook: www.facebook.com/IJPDDR/

Inclusion and Diversity Pledge - International Journal for Parasitology: Drugs and Drug Resistance and recent IJP DDR article, Drugs and Drug Resistance, from ASP Members.

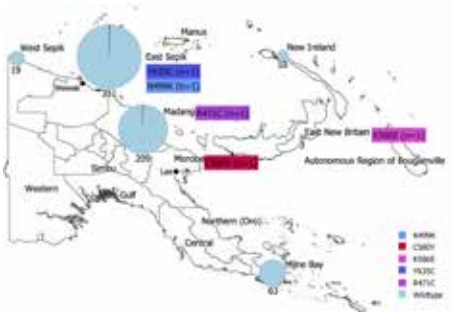
11 August 2021

Inclusion and Diversity Pledge - International Journal for Parasitology: Drugs and Drug Resistance

International Journal for Parasitology: Drugs and Drug Resistance pledges its commitment to improving diversity on the editorial team and in 2021 and 2022 we aim to increase the proportion of currently underrepresented groups. This sits within Elsevier's broader ongoing inclusion & diversity efforts (https://www.elsevier.com/inclusion-and-diversity). Equity and inclusion in publishing is critically important for scientific excellence and innovation. We believe passionately in the power of an inclusive publishing environment, not only to do what is right, but to enrich, strengthen and advance us all.

Dulcie Lautu-Gumal, Zahra Razook, Tamarah Koleala, Elma Nate, Samuel McEwen, Diana Timbi, Manuel W. Hetzel, Evelyn Lavu, Nakapi Tefuarani, Leo Makita, James Kazura, Ivo Mueller, William Pomat, Moses Laman, Leanne J. Robinson, Alyssa E. Barry, Surveillance of molecular markers of *Plasmodium falciparum* artemisinin resistance (kelch13 mutations) in Papua New Guinea between 2016 and 2018, International Journal for Parasitology: Drugs and Drug Resistance, Volume 16, 2021, Pages 188-193, ISSN 2211-3207, https://doi.org/10.1016/j.ijpddr.2021.06.004. https://www.sciencedirect.com/science/article/pii/S2211320721000312

Plasmodium falciparum resistance to artemisinin-based combination therapy (ACT) is a global threat to malaria control and elimination efforts. Mutations in the *P. falciparum* kelch13 gene (Pfk13) that are associated with delayed parasite clearance have emerged on the Thai-Cambodian border since 2008. There is growing evidence of widespread Pfk13 mutations throughout South-East Asia and they have independently emerged in other endemic regions. In Papua New Guinea (PNG), Pfk13 "C580Y" mutant parasites with reduced in vitro sensitivity to artemisinin have been isolated in Wewak, a port town in East Sepik Province. However, the extent of any local spread of these mutant parasites in other parts of PNG is unknown. We investigated the prevalence of Pfk13 mutations in multiple malaria-endemic regions of PNG. *P. falciparum* isolates (n = 1152) collected between 2016 and 2018 and assessed for Pfk13 variation by sequencing. Of 663 high quality Pfk13 sequences a total of five variants were identified. They included C580Y, a mutation at a previously documented polymorphic locus: N499K, and three previously undescribed mutations: R471C, K586E and Y635C. All variants were found in single isolates, indicating that these Pfk13 mutations were rare in the areas surveyed. Notably, C580Y was absent from Maprik district, which neighbours Wewak where C580Y mutant parasites were previously identified. The single C580Y isolate was found in the port town of Lae, Morobe Province, a potential entry site for the importation of drug resistant parasites into PNG. Although sample size in this location was small (n = 5), our identification of a C580Y mutant in this second location is concerning, highlighting the urgent need for further surveillance in Lae. Other Pfk13 mutants were rare in PNG between 2016 and 2018. Continued surveillance for molecular markers of drug resistance is critically important to inform malaria control in PNG.



Travel Awards

We are very pleased to announce that we have re-opened the Researcher Exchange, Travel and Training Award including a JD Smyth Postgraduate Travel Award scheme. **The next deadline for applications is 10th December 2021.**

In light of the COVID-19 outbreak worldwide we have updated the Travel Award guidelines and the application form, so please ensure that you read the updated guidelines before applying for an ASP Travel Award. https://www.parasite.org.au/awards/jd-smyth-postgraduate-travel-awards/

Congratulations to our JD Smyth and Travel Award winners in March 2021

JD Smyth Award Winner

Swapnil Tichkule, PhD Student, Jex Laboratory, Walter & Eliza Hall Institute for a Researcher Exchange and training to The University of East Anglia, Norwich, England; Istituto Superiore di Sanità (ISS), Rome, Italy and Český Krumlov, Czech Republic or *Cryptosporidium* research.

Travel Award Winners

Peter Puskic, PhD Student, Institute for Marine and Antarctic Studies, & the Centre for Marine Socioecology, University of Tasmania, for a Researcher Exchange to conduct fieldwork on Lord Howe Island, NSW and training with experts from Melbourne University Veterinary School.

Samantha Seah, Honours student, Institute of Marine and Antarctic Studies (IMAS), University of Tasmania, for fieldwork to Lord Howe Island for Research data collection. Lord Howe Island (LHI) 5th/ 8th – 25th May 2021 (3 weeks) to study BWPE colonies at Blinky beach and PRPE colonies on Far flats (base of Mount Gower).

Megan Porter, PhD candidate, Charles Sturt University for Training in stable isotope analysis and analysis of project samples with staff at the Griffith University in Brisbane.

Network Mentorship Scheme

Network Mentorship Scheme Early career researchers are encouraged to apply to the Network Convenor (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 academics to discuss, plan, prioritise and set targets for their career. 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 and covers mentorship across all aspects of working in parasitology including research, teaching, leadership, communication and outreach and other areas of professional development. In light of the COVID-19 outbreak worldwide travel may not be possible however the Network will still be able to introduce ECR researchers to mentors and they will be able to meet virtually during the COVID19 pandemic.

ASP Conference

We hope to see you all at the 2022 ASP Annual Conference which is planned as a face-to-face event for 4-7 July 2022 at the Shangri-La Hotel in Cairns, Queensland.

With best wishes,

Nick and Lisa

https://www.youtube.com/user/ASPParasiteNetwork
www.parasite.org.au
www.facebook.com/ASParasitology
www.twitter.com/AS_Para

Closing dates for ASP awards

ASP Fellowships
1 January 2022

ASP Researcher Exchange, Travel and Training Awards & JD Smyth
10 December 2021

John Frederick Adrian Sprent Prize
30 September 2022

Bancroft-Mackerras Medal for Excellence
30 September 2022

More information
www.parasite.org.au

State News

Victoria

University of Melbourne

Sad news...**Dr Andreas Stroehlein** is leaving us (for now!)

We would like to take this opportunity to say "good luck" and "good bye for now" to **Dr Andreas Stroehlein**. Andreas is taking some time away from parasitology to travel. Andreas started his PhD in 2014 in Parasite Genomics with **Dr Neil Young and Prof Robin Gasser,** at the University of Melbourne, Faculty of Veterinary and Agricultural Sciences. His PhD thesis was awarded the "rare as hens teeth" Chancellor's Prize which highlights just how exceptional he is. Following his PhD, in 2017, he started a postdoc with Neil and Robin continuing his work in parasite genomics. As an early career researcher, he has made huge contributions to the field of parasite genomics, including more than 21 peer reviewed journal papers (already!) covering a broad range of parasite groups (all of our favourites except malaria!). He has been a great contributor at ASP conferences in both the scientific and social aspects, particularly in demystifying the black box of bioinformatics to biologists. He has also been a great ambassador for Australian parasitology research at numerous international conferences. We wish him well in his future endeavours and hope to see him back in the parasitology world as soon as possible.

Top: Andreas Stroehlein (right) at the 2019 ASP Conference in Adelaide
Bottom: Andreas (right) at the 2017 ASP Conference in the Blue Mountains, NSW

State News continued

ASP Fellow Em. Prof. Emanuela Handman and her husband, also a scientist, Dr **Jim Goding** have managed the five lockdowns in Victoria quite well, although they are finding the most recent one a little more trying. They have kept busy with projects and Jim writes:

"We are having a great time in retirement. We are incredibly lucky to have enough money, good health and all the time to do whatever we please. For me, that often means activities in what Emanuela calls "the best equipped workshop in the southern hemisphere".

I attach a few examples of what I have been up to. As you will see, some activities have been useful, while others rejoice in being totally useless (except for amusing children and provoking laughter).

Best wishes from Jim Goding and Emanuela Handman"

JOURNEY TO THE CENTRE OF THE EARTH
(It's all done with mirrors)

Emanuela's button box


Lid removed and sides added


Finished product


Ladder


View from the top

Left: Jim Goding's infinity box

Next two pages show Jim's awesome Silver cleaning machine

State News continued

Letters and emails should contain complete name, address and daytime phone number. Letters to the Editor are submitted on the condition that Silicon Chip Publications Pty Ltd may edit and has the right to reproduce in electronic form and communicate these letters. This also applies to submissions to "Ask Silicon Chip", "Circuit Notebook" and "Serviceman".

Silicon Chip July 2021

Cleaning silver with electricity

By harnessing the power of electrons, silver cleaning can be quick, easy and efficient.

The most popular way to clean tarnished silver and silver-plated objects is using a paste containing ammonia and a mild abrasive. But it gradually removes the silver, which is particularly bad for silver-plated items. Another method uses acidified thiourea, which tends to leave a yellowish residue.

Alternatively, the silver object can be placed in direct contact with an aluminium pot or a sheet of aluminium foil, and immersed in a hot solution of sodium bicarbonate, setting up an electrolytic cell. While this method works quite well, it is fairly slow and works best with small objects.

This method can be sped up enormously and made much more efficient by the simple application of an electric current, as explained in the video at https://youtu.be/57iwtmT4LNQ

Tarnish is silver sulphide, generated over time by hydrogen sulphide in the air, or perhaps from contact with egg yolks. The reaction is:

$$4Ag + 2H_2S + O_2 \rightarrow 2Ag_2S + 2H_2O$$

The reaction can be reversed by electrons, with a reduction potential of -0.69V. In a mildly alkaline solution, the sulphide remains ionised and soluble in water:

$$Ag_2S + 2e^- \rightarrow 2Ag + S^{2-}$$

The reduction of aluminium ions involves a potential of -1.66V:

$$Al^{3+} + 3e^- \rightarrow Al$$

This reaction is also reversible under certain conditions. When these metals are in contact with each other in a mildly alkaline solution, an electrolytic cell is set up.

The difference in reduction potential facilitates oxidation of aluminium and liberation of electrons to silver sulphide, forcing its reduction to metallic silver. The sulphide ions travel to the aluminium, which is converted into aluminium sulphide.

The reaction can be greatly sped up with the help of a 6V battery. As before, the metals are placed in a solution of hot sodium bicarbonate and table salt, but the aluminium foil and the silver are not in contact with each other. The silver is connected to the negative terminal, and the aluminium is connected to the positive.

The battery facilitates the movement of electrons out of the aluminium and into the silver. The result is dramatic. Within just a few seconds, the blackened silver turns shiny.

The beauty of this method is that the silver sulphide is converted back to metallic silver and redeposited on the item. Since silver ions are positively charged, they can't go anywhere else, and there is no risk of damage to the silver.

But, beware – if you get the polarity mixed up, your precious ancestral silver will be rapidly stripped!

The practical procedure is very simple. Fill a non-metallic bucket or dish with very hot tap water. Add a tablespoon of salt and a tablespoon of sodium bicarbonate (baking soda) and stir to dissolve.

Place a sheet of aluminium foil overhanging the side and connect it to the battery's positive terminal. Then connect the silver item to the battery's negative terminal and dunk it in the liquid – keep the connection point dry and above the liquid. Fizzing will start, and within seconds, the tarnish will disappear, and the silver will be restored.

When you are satisfied with the result, remove the silver item and invert it so that the half that was outside the liquid is now immersed. Then attach the negative end of the battery to the top of the silver item above the liquid. The remaining part will be cleaned in seconds.

Remove the item and give it a gentle rubdown with a damp cloth. Rinse it thoroughly with tap water to make sure that there is no residual salt. That's all there is to it. Silver cleaning need no longer be drudgery!

Jim Goding,
Princes Hill, Vic.

State News continued

1

Bottom half de-tarnished after about 5 seconds

Completed job

Before

After

Above left: Jim's awesome Silver cleaning machine created during the Victorian COVID 19 lockdowns

Right: ANU Parasitology website.

ACT

Australian National University

Outreach

National Science week

ANU Parasitologists focused on online activities for the National Science Week 2021. The ANU-Parasitology website (https://biology.anu.edu.au/research/centres-units/anu-parasitology) exhibited two new activities, a "What parasite are you" game and a "360degree lab tour". The website received over 350 unique visitors during Science Week.

Contributing parasitologists included **Jeremy Dubrulle, Margot Schneider, Samantha Shippley, Tunan (Nicole) Yu (undergraduate students), Soraya Zwahlen, Jenni Hayward, Elise Kellett, Stephen Fairweather and Cibelly Goulart (van Dooren lab), Merryn Fraser (Maier lab), Sarah Shafik (Djordjevic Lab) and Sashika Richards (Whitney Lab), Melanie Rug (Centre for Advanced Microscopy), Giel van Dooren, Christina Spry (Saliba lab), Alex Maier and Sharyn Wragg (webmaster).** The ANU Parasitology website was created last year and generously supported by ASP State Outreach funding.

State News continued

Above: "What parasite are you?" and "360degree lab tour". New games added to the ANU Parasitology website.

Publications

Rajendran E, Clark M, Goulart C, Steinhöfel B, Tjhin ET, Gross S, Smith NC, Kirk K, van Dooren GG. Substrate-mediated regulation of the arginine transporter of Toxoplasma gondii. PLoS Pathog. 2021 Aug 5;17(8):e1009816. https://doi.org/10.1371/journal.ppat.1009816

Fairweather SJ, Rajendran E, Blume M, Javed K, Steinhöfel B, McConville MJ, Kirk K, Bröer S, van Dooren GG. Coordinated action of multiple transporters in the acquisition of essential cationic amino acids by the intracellular parasite *Toxoplasma gondii*. PLoS Pathog. 2021 Aug 25;17(8):e1009835. https://doi.org/10.1371/journal.ppat.1009835

QLD

Department of Agriculture and Fisheries

ParaBoss for Cattle is now live (www.ParaBoss.com.au). This new web-based resource is designed for producers and is focused on economically important parasites of cattle in Australia. It provides a centralised, national, web-based information and management tool for Australian cattle producers following the successful ParaBoss for Sheep model. The site consolidates information on the control of ticks, flies, lice and worms. The site prevents the future loss of information due to the ongoing decline of veterinary parasitology expertise and extension capabilities. ParaBoss for Cattle provides an integrated pest management resource targeted to the needs of producers. It includes technical decision guides and advice, which will deliver quality information to effectively control parasites and improve cattle welfare in a cost-effective manner. The content of the four comprehensive website suites (TickBoss, FlyBoss, WormBoss and LiceBoss) has been compiled over the past four years with the support of many ASP members. A huge thanks to them all. MLA funded the research through DAF, University of Queensland and University of New England.

Jess A.T. Morgan, Department of Agriculture and Fisheries, Queensland (DAF).

Left: Jess Morgan promoting the release of ParaBoss for cattle at Beef 2021 in Rockhampton

Congratulations to QIMR Berghofer Senior Scientist **Professor Don McManus** who has been awarded the Peter Doherty Investigator Grant Award (Leadership) from the National Health and Medical Research Council (NHMRC).

Dr **Peter James's** research group at Centre for Animal Science, Queensland Alliance for Agriculture and Food Innovations, University of Queensland, has recently published a research article on "Development of molecular assays for detection of Stephanfilaria nematode in cattle skin and the vector fly, *Haematobia exigua*" in MDPI pathogens. This paper, led by Mr , a PhD student, reports the first conventional and qPCR assays to detect different life stages of Stephanofilaria in vector fly and definitive hosts, as well as preliminary morphological and phylogenetic analyses for this novel nematode species.The full text can be found here: https://www.mdpi.com/2076-0817/10/9/1211

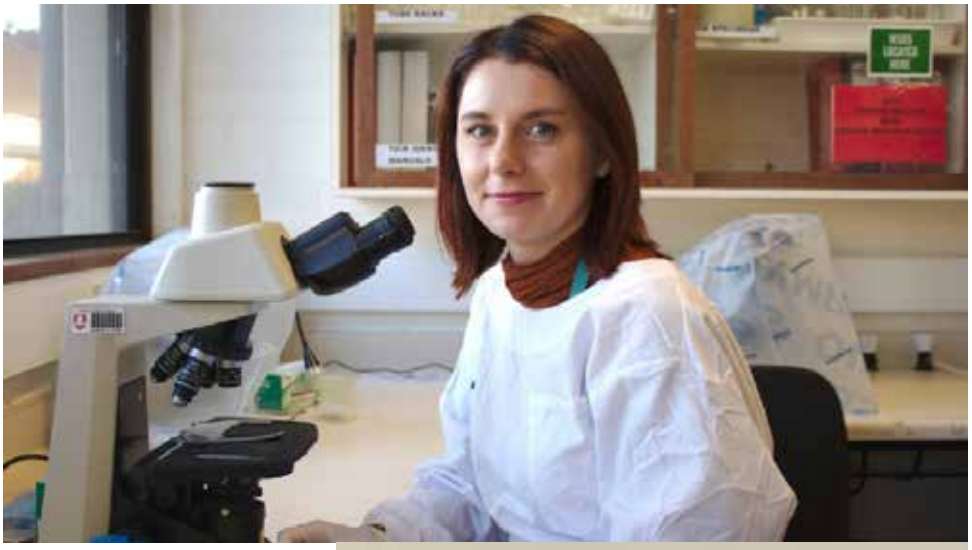
Above: Mr Muhammad Noman Naseem

ASP member in the Gold Coast **Beverley Angus**, although retired, is still interested in parasitology news and pointed out the recent story of the WHO-endorsed malaria vaccine for children at risk. Read about it https://www.who.int/news/item/06-10-2021-who-recommends-groundbreaking-malaria-vaccine-for-children-at-risk or if you have a National Geographic subscription: https://www.nationalgeographic.com/science/article/why-the-who-endorsed-the-first-malaria-vaccine-and-what-to-expect-next

State News continued

WA

Murdoch University



Congratulations to our ASP WA Student members!

Kamil Braima has submitted his PhD thesis entitled "Risk management of waterborne pathogens in public swimming pools and splash parks in Western Australia". Kamil was supervised by **Prof Una Ryan, Dr Charlotte Oskam and Dr Alireza Zahedi** at Murdoch University and by **Associate Prof Simon Reid** at University of Queensland. Kamil has moved to Darwin to take up a Post Doctoral position at the Menzies School of Health Research, working on malaria.

Xavier Barton and Sam Elliot received 1st class honours for their theses.

Sam Elliot: Molecular characterisation of microorganisms within the stump-tailed lizard tick, Amblyomma albolimbatum, in Western Australia. Sam was supervised by Dr Charlotte Oskam, Dr Amanda Barbosa and Dr Jill Austen. Sam also presented some of his findings at the ASP virtual conference.

Xavier Barton: Developing population genetics microsatellite markers from metagenomic shotgun NGS data. Xavier was successful in obtaining a PhD scholarship to continue research into the biology and ecology of ticks in Australia with supervisors Dr Charlotte Oskam and Dr Shane Tobe.

Dr Siobhon Egan has had a fantas-tick year so far! She was awarded the Sinnecker-Kunz Award for ECRs at the 14th International Symposium on Ticks and tick-borne diseases and most recently she was awarded best flash talk at the Global Microbiome symposium in Perth (The bacterial biome of ticks and their wildlife hosts at the urban-wildland interface). https://www.murdoch.edu.au/news/articles/early-career-researcher-wins-international-acclaim-for-tick-research

Dr Siobhon Egan was awarded the Sinnecker-Kunz Award for ECRs at the 14th International Symposium on Ticks and tick-borne diseases and awarded best flash talk at the Global Microbiome symposium in Perth

State News continued

Grants

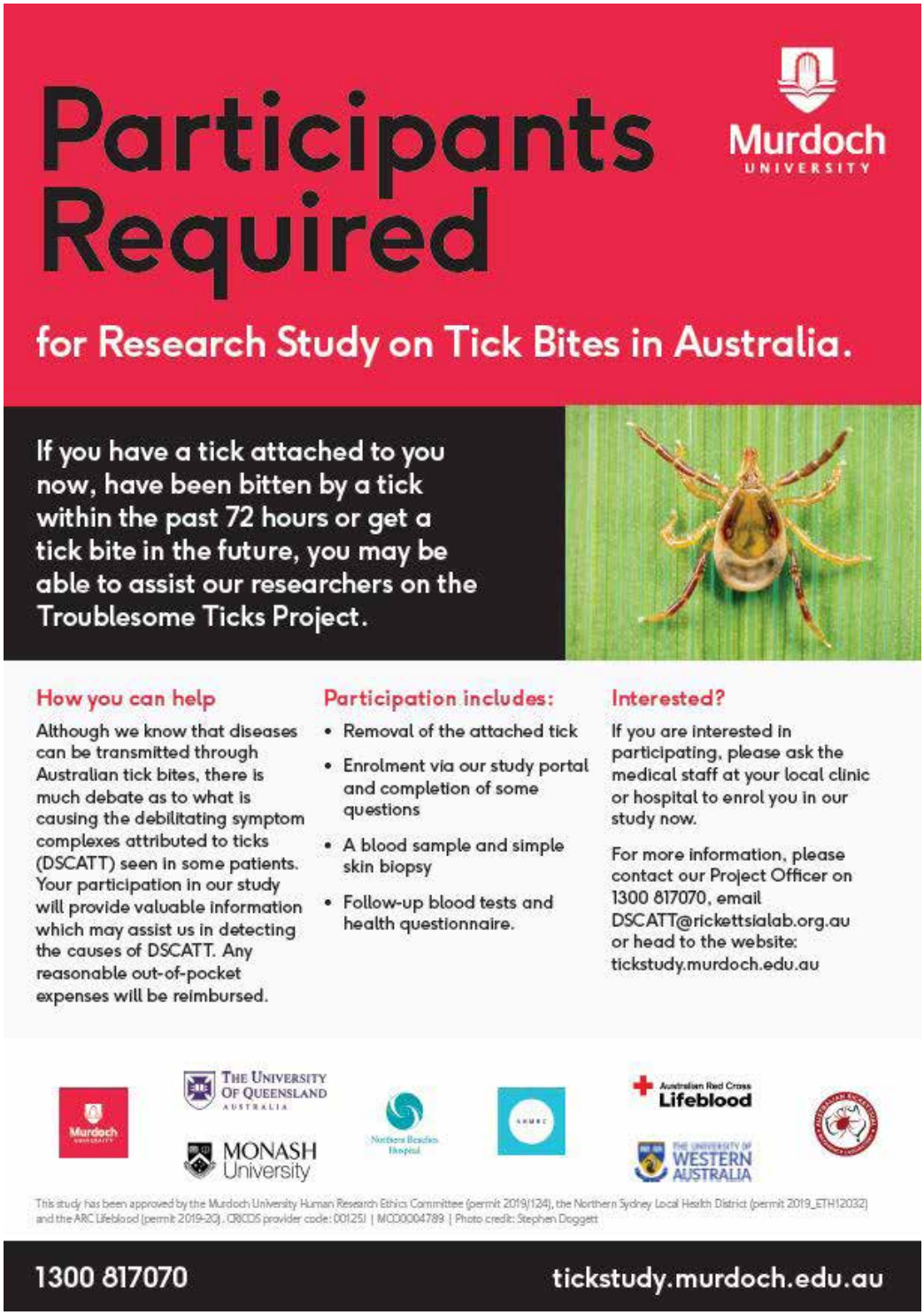
Dr Charlotte Oskam was successful in the latest round of Australian Companion Animal Health Foundation grants: Are Australian veterinarians prepared for Ehrlichia canis? A multidisciplinary investigation into the diagnostic accuracy of canine monocytic ehrlichiosis tests with Prof Rebecca Traub and Em Prof Peter Irwin.

New Project available:

Murdoch University researchers **Emeritus Prof. Peter Irwin, Prof. Una Ryan, Dr Charlotte Oskam, Dr Amanda Barbosa and Dr Jill Austen** are conducting an NHMRC-funded nation-wide medical research to determine the cause(s) of Debilitating Symptom Complexes Attributed to Ticks (DSCATT) in Australia.

The researchers are asking people who have a tick attached to their skin now or have been bitten by a tick within the past 72 hours to consider enrolling in the study. More information including how to enrol and what participation involves can be found on the website www.tickstudy.murdoch.edu.au Please spread the word!

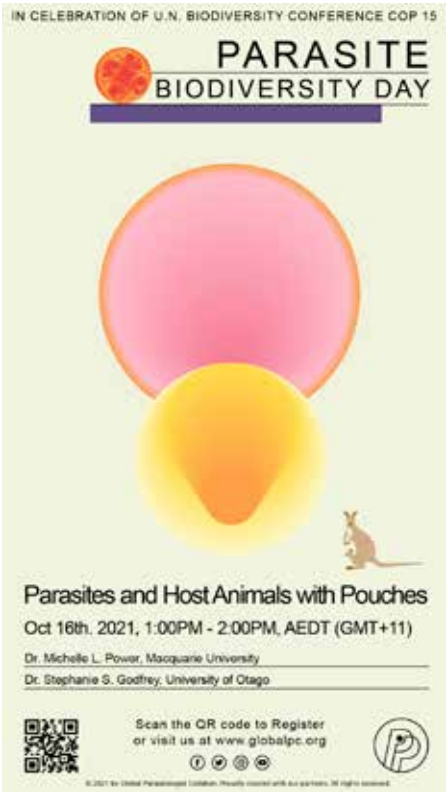
This project is in collaboration with the Australian Rickettsial Reference Laboratory (ARRL), Monash University, University of Queensland, Australian Red Cross Lifeblood, University of Western Australia and Telethon Kids Institute.

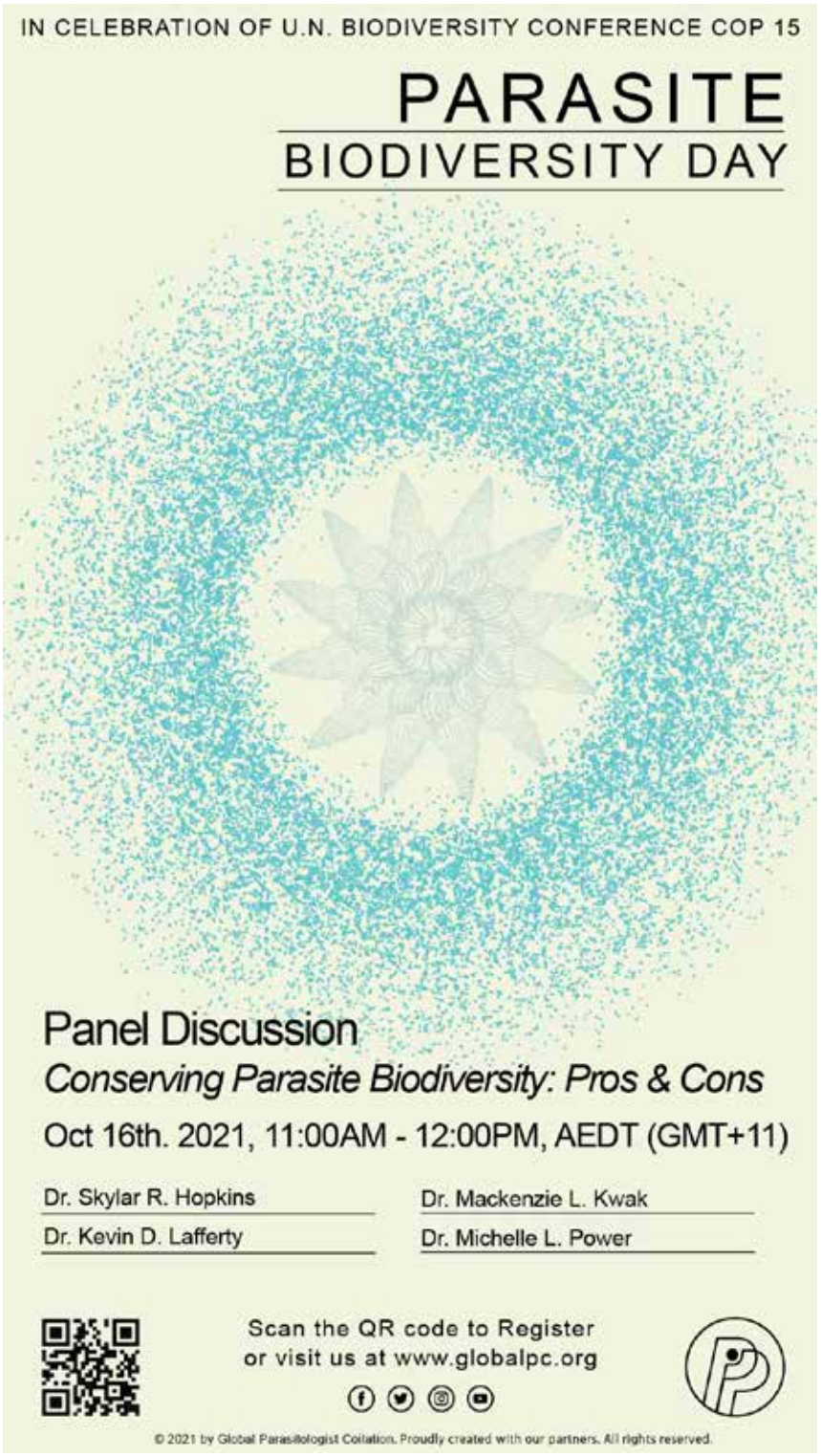


Events in Parasitology

U.N. BIODIVERSITY CONFERENCE COP 15

In celebration of U.N. Biodiversity Conference COP 15, Global Parasitologist Coalition presented this eight-session event covering parasites from all kinds of hosts including insects, whales, bats, kangaroos, and human beings! Interviews with parasitologists, a panel discussion on conserving parasite biodiversity, and a parasite and art section, offered the opportunity to explore different aspects of parasites. Our own ASP members, Associate Professor Michelle Power (Macquarie University) and Dr Stephanie Godfrey at Ottago University in New Zealand were part of this wonderful event. You can see the recording of this Parasite Biodiversity Day event on their website www.globalpc.org





Jobs in Parasitology

Postdoctoral Research Fellow

JCU aims to create a brighter future for life in the tropics world-wide through graduates and discoveries that make a difference.

- Full time, fixed term opportunity to 31 December 2024
- Based in tropical North Queensland, Cairns
- Academic Level A, Step 50 $82,357 p.a. plus 17% super

Be part of an influential team who is supporting the development of new treatments for Type 2 diabetes.

What you can support with accomplishing

The project is looking to develop new treatments for Type 2 diabetes from the protein secretions of parasitic worms. Clinical trials have already explored if parasitic worms, such as hookworms, can protect infected humans from developing Type 2 diabetes by targeting inflammation - a major contributing factor to some metabolic conditions, like Type 2 diabetes.

This project targets these proteins and replicates them in the lab using pharmaceutical industry standards. You will perform research and in vitro screening experiments using human or mouse immune cells to test for hookworm-derived proteins that promote specific cytokine responses as well as using mice to test for hookworm-derived proteins that induce particular immune responses that may be beneficial in Type 2 diabetes.

What you can bring to the role

You will bring a completed doctorate degree with a focus on science, biomedical science, and/or disciplines such as immunology, biotechnology, endocrinology or cell biology. It is also essential to have experience working with research projects involving the use of animal models of disease, and downstream analytical techniques such as flow cytometry, qPCR, ELISA or cytometric bead arrays.

Why JCU

Consistently ranked in the top 2% of universities worldwide, JCU is one of the world's leading institutions focusing on the tropics and offers a culturally diverse working environment with opportunities for professional and personal growth. JCU prides itself on being dedicated to teaching, learning and research that is not only high quality, but also delivers practical benefits to the peoples and industries of the region.

We support our people through the provision of:

- generous superannuation scheme with 17% employer contributions
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How to Apply

Visit the Careers at JCU website - vacancy reference 17652

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