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The Australian Society for Parasitology Inc.

NEWSLETTER

Volume 32 Issue No.2 July 2021

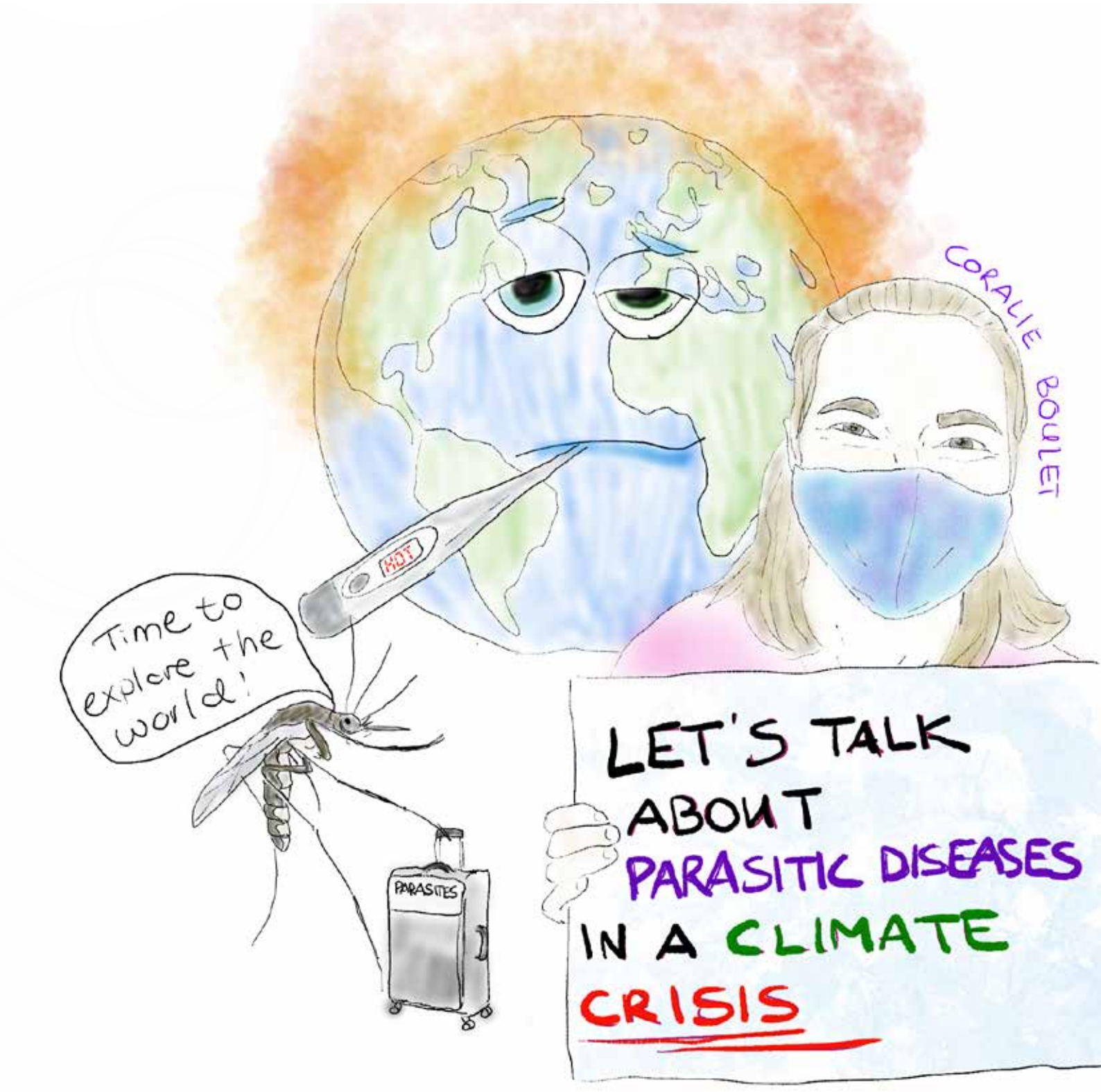

IMAGE Artwork by Climate-Focus for Parasitology Group member Thorey Jonsdottir, Burnet

PARASITRAVAGANZA!

Join us for an online parasite fest

The Australian Society for Parasitology Inc.

ASP ONLINE CONFERENCE

PROGRAM BOOKLET

WEDNESDAY 23 - FRIDAY 25 JUNE 2021

#2021PARASITRAVAGANZA #PARAFEST

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The Australian Society for Parasitology Inc.

NEWSLETTER

Volume 32 Issue No.2 July 2021

IN THIS ISSUE

From the President's Desk

Dear Members,

We have a lot of fantastic stories in the Newsletter featuring achievements and activities or many ASP members. I would like to congratulate everybody whose achievements are covered in this Newsletter. In particular, congratulations to the winners of undergrad prize at JCU and CSU, hope you will continue your passion for parasitology in your further studies or professional endeavors. Congratulations to Michelle Powers for winning NSW Government grant host a Queers in Science event at the Powerhouse in Sydney later in the year. I would also like to congratulate Brendan Crabb and Robin Gasser for being elected as Fellows of the Australian Academy of Science in 2021.

Just a reminder that the 2021 Annual General Meeting for the Australian Society for Parasitology Inc. will take place as an on online Zoom meeting on Thursday 29th July, 2-5 pm AEST. Please register in advance for this meeting, check your Membership email for the registration link or email the Secretary (secretary@parasite.org.au). The agenda and reports for this meeting will be uploaded onto your WildApricot membership site in the member resources section shortly. I am looking forward to seeing all of you at the AGM.

I hope you were able to attend Parasitravaganza 2021 - the 2021 ASP Online Conference, Wednesday 23rd – Friday 25th June 2021 online via Zoom with Student and Early Career Researcher events on Monday 21st and Tuesday 22nd June. This was the second virtual ASP conference and included presentations from BMM 2020 winner, BMM 2021 winner and John Sprent Award winner. I would like to congratulate all three of them. While we would prefer to meet in person, nothing is more important to ASP than the health and safety of our members, their families, and the communities so going virtual is an obvious choice during pandemic. This meeting wouldn't have been possible without a number of people who volunteered to make it happen. I would like to thank the organising committee: Sarah Preston, Ali Raza, Alireza Zahedi, Shokoofeh Shamsi, Abdul Jabbar, Michelle Clark, Lisa Jones, Nick Smith, Michelle Power and Sonja Frolich for all their enthusiasm, hard work and time they put into making sure that the conference is a success. I am really looking forward to meeting everybody F2F again, at ASP conference in 2022.

As this is the last letter I am writing as ASP President I would like to reflect on the last two years. These years were not what we as ASP Executive planned for. After one

From the President's Desk continued

F2F executive meeting in October 2019 and one F2F Council meeting in February 2020, we were forced to move all our activities online and this was only one of many challenges. COVID-19 has been influencing our lives for more than a year now. It affected not only our professional activities including research and teaching but also personal lives. However, we came up to the challenge, whenever possible continued with our activities virtually and came up with new initiatives. For example, I would like to thank Lisa Jones and other ASP members who delivered very successful "Parasites Online" events during National Science Week in 2020, including art competition. ASP Online Seminar Series was established last year and has continued with Cecilia Power from RMIT and Emily Crisafulli from The University of Melbourne giving two wonderful presentations on 28 May. I would like to thank Stuart Ralph, Amanda Duarte Barbosa and Ali Raza for co-chairing this Series and all presenters for their seminars. I would like to thank the ASP Climate-Focus for Parasitology group who have been running Climate-Focus for Parasitology Seminars, the next one is online 9th September 1pm AEST, more details are in this newsletter. There are lots of other examples of successful outreach described in this Newsletter, now more F2F when possible and the risk is low.
I would like to thank all State Reps who worked hard during the pandemic to continue outreach and keep in touch with the members. Despite all COVID related challenges ASP continues to be a vibrant and active society. We are pulling through the pandemic strong and developed new ideas how to interact which no doubt will continue after all restrictions have lifted. We met most of our ASP Strategic Action Plan and you will hear more about this in the President Address at AGM.

I would also like to thank our President Elect Bec Traub and I am looking forward to the next two years of her term as ASP President. I would like to congratulate our new Treasurer Vito Colella and Executive Secretary Clare Anstead who will start from 29 July. I am sure together they will do an excellent job as ASP Executive. I remember Bec's BMM presentation at the ASP conference in Adelaide in 2019. I was inspired by Bec's enthusiasm, her commitment to challenging dogmas and translation of research results. I am sure that with Bec as the President ASP will continue promotion of parasitology through education, communication, support and recognition, and at the same time improving and innovating the way of achieving this goal.

I am most grateful for all the enthusiasm and hard work from the ASP Executive – Nathan Bott, Shokoofeh Shamsi, Bec Traub and Una Ryan, and everybody on ASP Council for their enthusiasm, engagement and support, in particular Lisa Jones, who I would also like to thank for putting this newsletter together. It has been great working with all of you.

Stay safe and thank you all for your support

Barbara

Best regards,

Barbara Nowak

President of the ASP

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

2021 Australian Society for Parasitology Annual General Meeting

Please join the 2021 Australian Society for Parasitology Annual General Meeting which will be an online Zoom meeting on Thursday 29th July, 2 – 5pm AEST. Please register in advance for this meeting:

https://us02web.zoom.us/meeting/register/tZUud-uuqT0vHNVTQwqK-4lW0Ex-3lVG3mdr

After registering, you will receive a confirmation email containing information about joining the meeting.

Business to be conducted

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

- receiving the Society's financial statement, and audit report, for the last reportable financial year;
- presenting the financial statement and audit report to the meeting for adoption;
- as part of the Treasurer's Report Members will be asked to consider and then vote on whether current financial ASP members should get 12 months free membership in the 2021/2022 financial year;
- electing members of the Council (see details below);
- appointing an auditor or an accountant for the present financial year;
- announcement of ASP Awards and Prizes;
- receipt of reports from Editors, Convenors, Archivists, Secretariat and subcommittees; and
- review and debate other actions or decisions by the Council.

If you have any trouble registering for or accessing the AGM by Zoom on the 29th July 2021, or if you want to test out Zoom before the AGM to make sure it works for you please email secretary@parasite.org.au or phone 07 42321311.

The 2021 ASP AGM will be recorded. Other participants will be able to see and hear you if your microphone is on and your video is on. When you first join this meeting your microphone will be muted and your video will be off. We will use polls to vote for AGM matters. If you can't access the poll then you need to let me know straight away so I can give you another option to vote. There is also a chat option so that you can send a message to all. The Executive will address all questions. This chat will also be recorded and saved for viewing afterwards. Please be respectful of everyone when participating in this meeting.

Shape the future, join the ASP Council

Every year the Australian Society for Parasitology (ASP) seeks nominations for positions on the ASP Council. Nominations for the ASP Council for terms beginning 29 July 2021 have opened. To nominate someone you must be a member of the ASP. To be a member of the ASP Council you must be an eligible (under section 61A of the Act) adult and a member of the ASP. Check whether you are a financial member on the ASP membership site (https://asp.wildapricot.org/).

As you may be aware, nominations for the ASP Council for terms beginning 29 July 2021 opened in May 2021 and closed on 29 June 2021. Please see www.parasite.org.au/joincouncil to read about the positions on Council that we will be voting on at the 2021 ASP AGM.

We have received the following nominations for the 2020-2021 Term of the ASP Council and these will be voted on at the 2021 AGM on 29th July 2021:

State and Territory representatives for a 1-year period, from July 2021

the Fellows representative for a 1-year period, from 29 July 2021

the Student representative for a 1-year period, from 29 July 2021

Treasurer from for a 2-year period 29 July 2021

Secretary from for a 2-year period 29 July 2021

Clare Anstead has been nominated for the position of Executive Secretary from 29 July 2021 by Rebecca Traub and Barbara Nowak.

Vito Colella has been nominated for the position of Treasurer from 29 July 2021 by Rebecca Traub and Barbara Nowak.

Sarah Preston has been nominated for the position of Victorian State Representative from 29 July 2021 by David Piedrafita and Rebecca Traub.

2021 Australian Society for Parasitology Annual General Meeting cont...

Michelle Power has been nominated for the position of New South Wales State Representative from 29 July 2021 by Tommy Leung and Barbara Nowak.

Ali Raza has been nominated for the position of Queensland State Representative from 29 July 2021 by Andrew Kotze and Swaid Abdullah.

Deborah Holt has been nominated for the position of Northern Territory Representative from 29 July 2021 by Barbara Nowak and Rebecca Traub.

Nick Fountain-Jones has been nominated for the position of Tasmanian State Representative from 29 July 2021 by Scott Carver and Barbara Nowak.

Cibelly Goulart has been nominated for the position of Australian Capital Territory State Representative from 29 July 2021 by Alex Maier and Christina Spry.

Mike Gardner has been nominated for the position of South Australia State Representative from 29 July 2021 by Danny Wilson and Barbara Nowak.

Narelle Dybing has been nominated for the position of Western Australia State Representative from 29 July 2021 by Amanda Ash and Alireza Zahedi.

Jill Chmielewski has been nominated for the position of ASP Student Representative from 29 July 2021 by Juan Miguel Balbin and Danny Wilson. Jill is a PhD student studying at the University of Adelaide. As a member of Dr Danny Wilson's lab her research is molecular biology focused and aims to better understand the blood stage of malaria causing parasites *Plasmodium falciparum* and *Plasmodium knowlesi*.

Ian Beveridge has been nominated for the position of ASP Fellows Representative from 29 July 2021 by Barbara Nowak and Robert Adlard.

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/).

Please don't hesitate to get in touch if you have any questions. We look forward to electing strong and enthusiastic representatives to the ASP Council.

Left: Some nostalgia for you, Professor Una Ryan handing over the gavel to Professor Barbara Nowak at the 2019 ASP AGM.

Congratulations Bancroft Mackerras Winner 2021

Congratulations Dr. Giel van Dooren, Bancroft-Mackerras Medal for Excellence 2021 winner.

Congratulations to Dr. Giel van Dooren who was awarded the 2021 Bancroft-Mackerras Medal for Excellence from the Australian Society for Parasitology.

Above: Giel van Dooren, winner of the 2021 BMM

Giel van Dooren is a Senior Lecturer at the Research School of Biology, Australian National University, Australia. He is a parasitologist through and through. After graduating from the University of Melbourne with Bachelor of Arts and a Bachelor of Science, he joined the laboratory of Geoff McFadden as an Honours student. He continued as a PhD student in the McFadden lab working on the biology of the mitochondrion of the malaria parasite Plasmodium falciparum. Giel then moved to the University of Georgia to work as a post-doc with Boris Striepen. After spending four successful years in the US, he returned to the University of Melbourne in 2009 as a National Health and Medical Research Council (NHMRC) CJ Martin Research Fellow. In 2012, he moved to the Research School of Biology at the Australian National University (ANU) where he holds a tenured position.

Giel's research interests revolve around the cell biology of apicomplexan parasites and is highlighted by two overarching themes: the function and evolution of parasite organelles (in particular apicoplast and mitochondria) and transporter molecules. Giel's research revealed how proteins are being imported into the apicoplast, having identified the necessary leader sequence and processing enzyme in Plasmodium falciparum. He also unravelled how the apicoplast divides (and that this process differs from plastids in other organisms). Giel also characterised a solute transporter in the apicoplast of Toxoplasma gondii that is crucial for fatty acid and isoprenoid biosynthesis and hence essential for the survival of this important parasite. In recent years his group has identified a novel protein family of cationic transporters in Toxoplasma and Plasmodium and he has characterised several novel amino acid transporters. By characterising the proteome of the Toxoplasma gondii mitochondrion, Giel and his team demonstrated that this organelle contains a whole set of novel proteins that are different from host proteins and hence are potentially suitable drug targets. Currently his team is investigating the unique features of the apicomplexan electron transport chain and ways to selectively disrupt it. These contributions not only provide fundamental insights into the basic biology of apicomplexan parasites, but also – due to their uniqueness – provide the basis of rational drug design to combat the devastating diseases caused by this group of parasites.

Having made all these significant contributions, it is no surprise that Giel has an outstanding bibliometric record. He has published 47 papers in high impact journals, which have been cited over 4,800-times and achieved an h-index of 29. In the last five years alone, he published not only in highly regarded journals in the field of

BMM Winner 2021 cont...

parasitology but also in leading generalist journals such as PLoS Pathogens (2x), e-life (2x), Journal of Biological Chemistry (3x), Blood, Nucleic Acid Research and Nature Communications. In his career Giel has also published in Current Biology (2x), Nature and Science. The interest of these journals in his work are testimony to his scientific intellect: his publications are comprehensive providing seminal contributions to the field. He is a popular invited speaker both at conferences and at research institutions across the world. Giel has attracted research funding in excess of $3.3 million so far and has been recognised by the award of prestigious fellowships like the NHMRC CJ Martin Research Fellowship and the Australian Research Council QEII fellowship. He currently holds an ARC Discovery Grant and an NHMRC Ideas Project Grant as Primary Investigator.

Giel's extraordinary collegiality and passion for parasitology is reflected in his service contributions, including having served as the ACT representative on the ASP council and on several organising committees for conferences. Above all, Giel is an enthusiastic, popular and outstanding teacher and mentor – promoting parasitology within ANU, through participation at international post-graduate courses and at outreach events to the general public. Giel has supervised and mentored 16 graduate students and nine Honours students and provided dozens of undergraduate students with research experiences in his laboratory. He aims to provide undergraduate students with authentic research experiences and regularly incorporates genuine research questions in his courses. His sustained and substantial contributions to both the ASP's "Concept in Parasitology" course as well as the Wood Hole "Biology of Parasitism" course created an ongoing legacy with the participants.

Given the significance of Giel's extraordinary research findings and his tireless contributions to the education of future parasitologists, Giel van Dooren is in our opinion an extremely worthy candidate for the Australian Society for Parasitology's Bancroft-Mackerras Medal for Excellence.•

A reminder from Leann Tilley, BMM Convenor that nominations for 2022 are due 30 September 2021. Please consider suitable nominees and remind your colleagues.

The Bancroft-Mackerras Medal for Excellence allows the Australian Society for Parasitology to recognise outstanding contributions of its members to the Science of Parasitology. It is a medal and certificate to be presented to an Ordinary member or Fellow who, in the opinion of a selection committee appointed by the Council, has made an outstanding contribution to the science of parasitology, particularly in work published during the last 5 years. Nominations are to be called for yearly but the award need not be given every year. The Medal commemorates the contribution of the Bancroft-Mackerras dynasty to the development of the discipline of parasitology in Australia from the 1860s to 1960s. The recipient will deliver an oration at the annual conference of the Society, receive reimbursement of reasonable travel costs to the conference at which the medal is presented and will be a guest of the Society for the duration of the conference. The procedure for selection of the recipient is detailed in the Principles, By-Laws, and Guidelines for Awards, Grants, Journals, Committees and Archives are available to download as a PDF file. Diversity is an essential part of the mission of the Australian Society for Parasitology so nominations of colleagues from gender and culturally diverse backgrounds are encouraged.

Please download and complete the Bancroft-Mackerras Medal Nomination Form and email it to the ASP Secretary (secretary@parasite.org.au)

Applications close 30th September in the calendar year preceding the award of the prize.

https://www.parasite.org.au/awards/the-bancroft-mackerras-medal-for-excellence/

ASP parasitologists recognised among our nation's most distinguished scientists

Congratulations to ASP members, Professor Barbara Nowak, The Institute for Marine and Antarctic Studies (IMAS) and Deputy Associate Dean of Research at University of Tasmania, Burnet Institute Director and CEO Professor Brendan Crabb AC, and Redmond Barry Distinguished Professor Robin Gasser, Parasitologist at the University of Melbourne, who are among 22 scientists acknowledged for their outstanding contributions to science and elected as Fellows of the Australian Academy of Science (AAS) in 2021.

Above: Professor Barbara Nowak.

Professor Barbara Nowak is the current President of the ASP and made a Fellow of the ASP in 2018. Professor Barbara Nowak is an outstanding international leader in the field of aquatic animal health. Her research on the effects of pollutants and environmental factors on fish diseases has substantially advanced understanding of fish health and contributed to sustainable aquaculture. Parasite management strategies proposed by her research have reduced tuna losses. Together with her Norwegian collaborators, she discovered a new type of lymphoid tissue in salmon gills, redefining directions in fish immunology. Professor Nowak has developed methods used worldwide to assess fish health and investigate fish diseases.

Above: Professor Brendan Crabb.

Professor Brendan Crabb won the Bancroft-Mackerras Medal for Excellence in 2009 and was the Editor for the International Journal for Parasitology from 2006-2009. An infectious disease researcher with a special interest in malaria, Professor Crabb's research group develops and exploits genetic approaches to better understand malaria parasite biology, principally to help prioritise vaccine and drug targets. Professor Brendan Crabb has made several discoveries of significance about human malaria. His team discovered the malaria translocon, a protein machine that allows the translocation of malaria proteins into its host cell, a highly vulnerable point in the parasite's life cycle. He was the first to provide an order for the myriad of receptor-ligand interactions that mediate red blood cell invasion by malaria parasites. He is also a pioneer of genetic technologies in human malaria, describing

Above: Professor Robin Gasser

the first gene knockout in this organism, and has made fundamental discoveries in malaria pathogenesis using these and other approaches.

Professor Robin Gasser won the Bancroft-Mackerras Medal for Excellence in 2000 was made a Fellow of the ASP in 2010 and served as the President of the ASP from August 2013 – July 2015. Professor Gasser is an eminent veterinary scientist. His fundamental research has generated deep knowledge and understanding about the biology of parasites, their interactions with their hosts and the diseases they cause by applying and integrating a range of advanced technologies to explore their genomes and function. His achievements include the identification of a range of novel targets for antiparasitic drug development. He has used this extensive fundamental research to underpin the development of innovative methods for the diagnosis, treatment and control of socioeconomically important parasitic diseases of animals and

ASP parasitologists Fellows of the Australian Academy of Science

humans for subsequent translation and commercialisation.

Australian Academy of Science President, Professor John Shine, congratulated the new Fellows for their achievements on the international stage. "These researchers have not only been at the forefront of Australia's scientific community, but have also been leaders in global science," said Professor Shine. "The 2021 Fellows were elected by their Academy peers after a rigorous evaluation. I warmly congratulate and welcome each Fellow on their election and for their extraordinary contribution to science and society."

This year's cohort is made up of 41% women and 59% men. Over the past five years, 35% of the Fellows elected have been women.

The Academy's new Fellows for 2021 are:

ACT

• Professor Dorrit Jacob FAA – Geochemist, Australian National University

• Professor Barry Pogson FAA – Plant biologist, Australian National University

QLD

• Professor Catherine Lovelock FAA – Ecologist, University of Queensland

• Professor Margaret Sheil AO FAA FTSE – Vice-Chancellor and President, Queensland University of Technology (Special Election)

SA

• Professor Ian Reid FAA FTSE – Computer vision researcher, University of Adelaide

TAS

• Barbara Nowak FAA – Fish health researcher, University of Tasmania

VIC

• Professor Steven Chown FAA – Antarctic ecologist, Monash University

• Professor Arthur Christopoulos FAA FAHMS – Molecular pharmacologist, Monash University

• Professor Brendan Crabb AC FAA FAHMS – Microbiologist, Burnet Institute

• Professor Mark Dawson FAA FAHMS – Cancer biologist, Peter MacCallum Cancer Centre

• Professor Robin Gasser FAA – Parasitologist, University of Melbourne

• Professor Rob Hyndman FAA FASSA – Statistician (forecasting), Monash University

• Professor John Sader FAA – Applied mathematician (nanoscale systems), University of Melbourne

• Professor Gordon Smyth FAA – Statistician (genomics), Walter and Eliza Hall Institute of Medical Research

• Professor Svetha Venkatesh FAA FTSE – Computer scientist (machine learning), Deakin University

NSW

• Dr Gregory Clark AC FAA FTSE – Non-Executive Director, NextDC (Special Election)

• Professor Susan Coppersmith FAA – Condensed matter physicist, University of New South Wales

• Professor Yihong Du FAA – Mathematician (differential equations), University of New England

• Professor Glenda Halliday FAA FAHMS – Neuroscientist, University of New South Wales

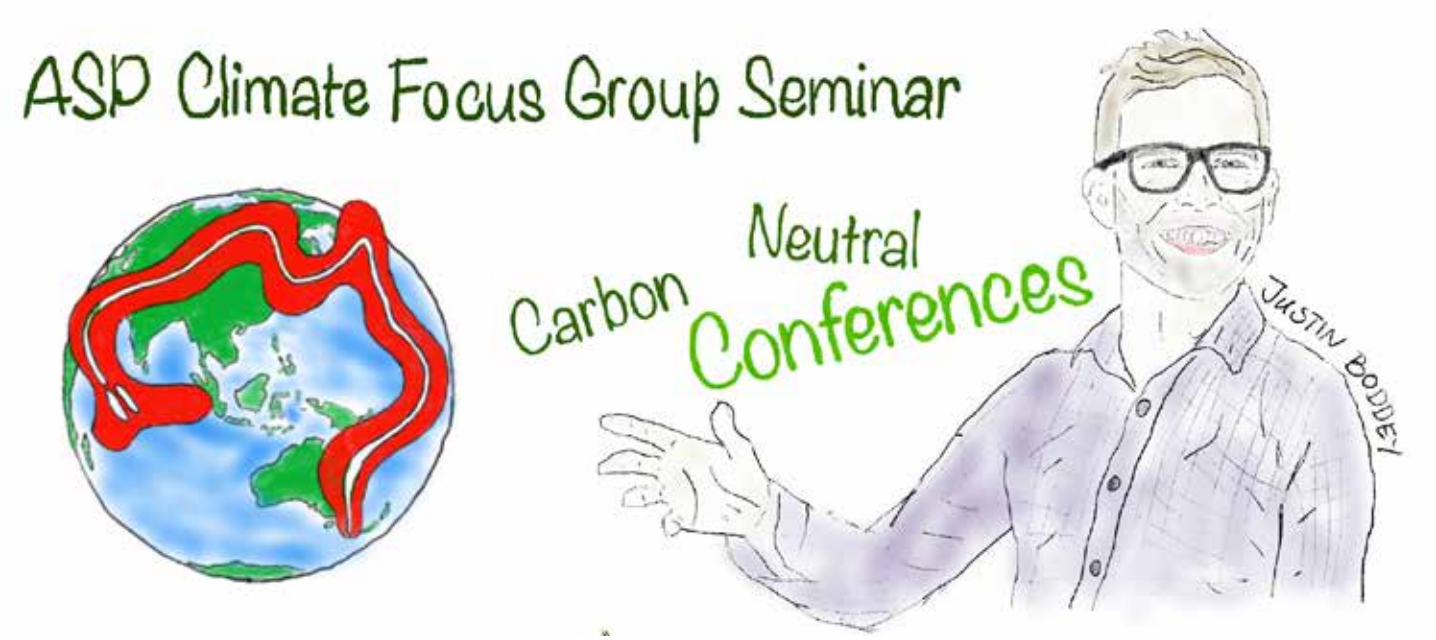
• Professor Andrew Pitman AO FAA – Climatologist, University of New South Wales

• Professor Alison Rodger FAA – Biochemist, Macquarie University

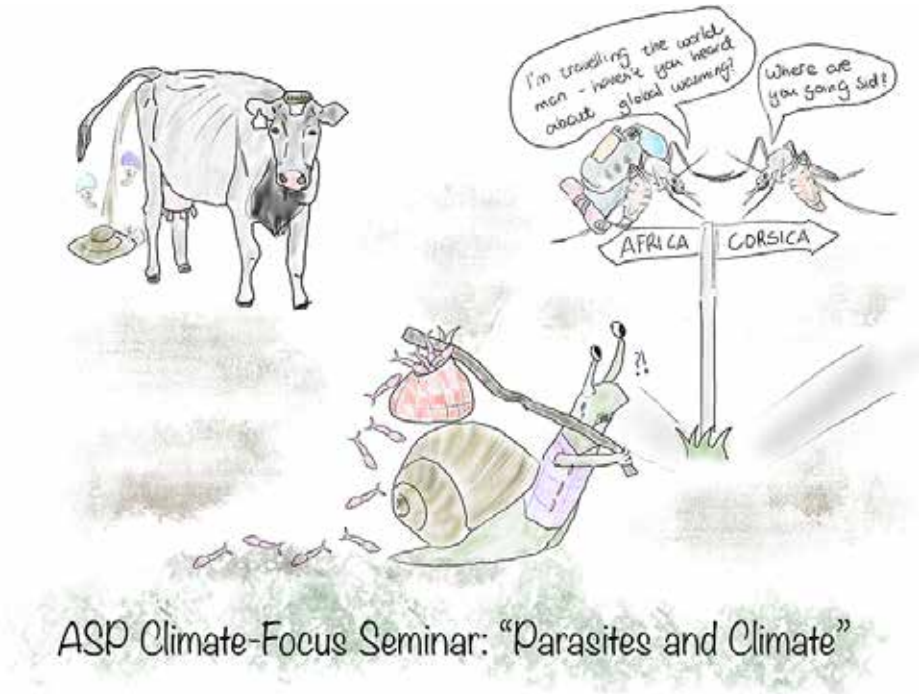
• Professor Hala Zreiqat AM FAA FTSE FAHMS– Biomedical Engineer, University of Sydney

https://www.parasite.org.au/education/asp-education-committee-and-resources/parasites-vr/

ASP Climate Focus Group for Parasitology



Join Associate Professor Justin Boddey from the Walter and Eliza Hall Institute for our next seminar "Carbon Neutral Conferences" on Thursday 9th September 1-2pm (AEST). Justin will focus on the 2020 MAM Conference which was certified Carbon Neutral by the Australian Government's Department of Industry, Energy, Science and Resources. Please register for this ZOOM meeting with this link: https://us02web.zoom.us/meeting/register/tZcof-CgrDgrHdbFOHcK1oLPuccuGVTPXaCi
After registering, you will receive a confirmation email containing information about joining the meeting, please then add the event to your calendar so that the meeting link is available to you. https://www.facebook.com/events/965285107594592/



Illustrations on the front cover and pages 11 & 12 by the very talented artist Thorey Jonsdottir

PhD Candidate, Malaria Virulence and Drug Discovery Group, Burnet Institute.

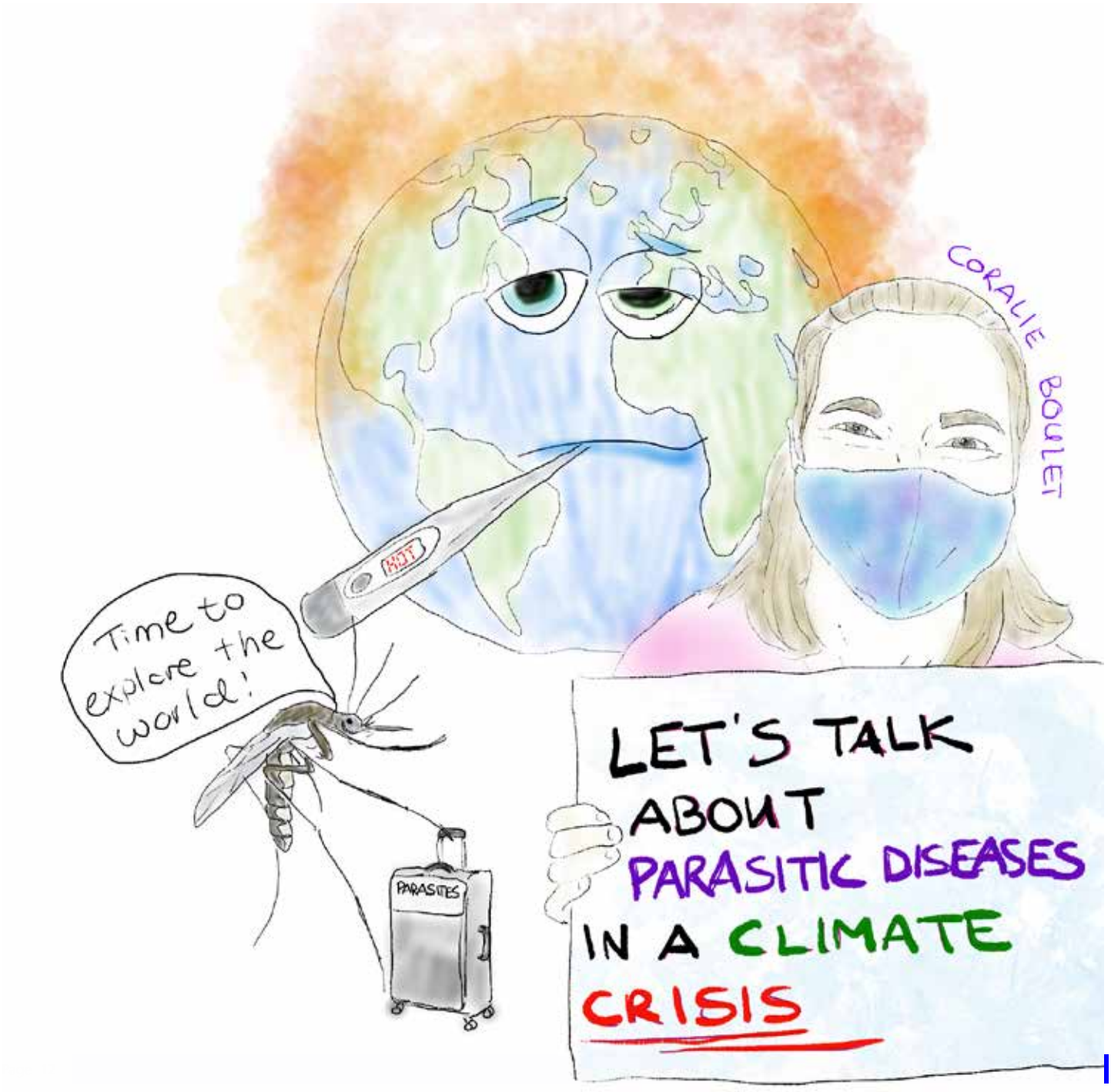
Parasitic diseases in a climate crisis

Dr Coralie Boulet, Burnet Institute, and ASP Climate Focus Group for Parasitology member recently delivered a talk at the 2021 ASP Online Annual Conference - Parasitravaganza on 25 June 2021.

Parasitic diseases in a climate crisis

by Dr Coralie Boulet

Since the Industrial Revolution, humans have emitted enough carbon dioxide that the atmospheric concentration is reaching a peak never experienced in 800,000 years. In turn, this leads to the heating of our planet: in just a few decades, we have already warmed the Earth by over 1°C, and we are already seeing the consequences (e.g. in just the past month we've seend record heatwaves and wildfires in North America, disastrous floods in Germany, Nederlands and China). Without serious action to reduce carbon emissions, the future looks grim: some models now predict that average warming over Australia could reach +7°C by the end of the century. This warming leads to an increase in droughts, but also in extreme weather



Parasitic diseases in a climate crisis

events resulting in floods (since the hotter atmosphere can hold more water), a rise in sea levels, a reduction in food and water availability, an increase in poverty, conflicts and mass population displacement. The impacts on human health are so profound that the World Health Organisation declared that "climate change is the greatest threat to global health". So what does that mean for parasitic diseases?

river blindness disease) and human african trypanosomiasis (or sleeping sickness) by different types of flies and Chagas disease parasites by triatomine bugs. The climate crisis is impact these vector-borne diseases in a variety of ways:

First, warming impacts the distribution of the vectors, which move to new areas that were previously too cold for them. This means moving the parasites they might be

Another impact of global warming is the shift in seasons, with summers starting earlier and finishing later, leading to extended periods during which vectors feed on humans (and therefore transmit pathogens).

Water-borne parasitic diseases will thrive following floods

Many helminths (worms) are transmitted

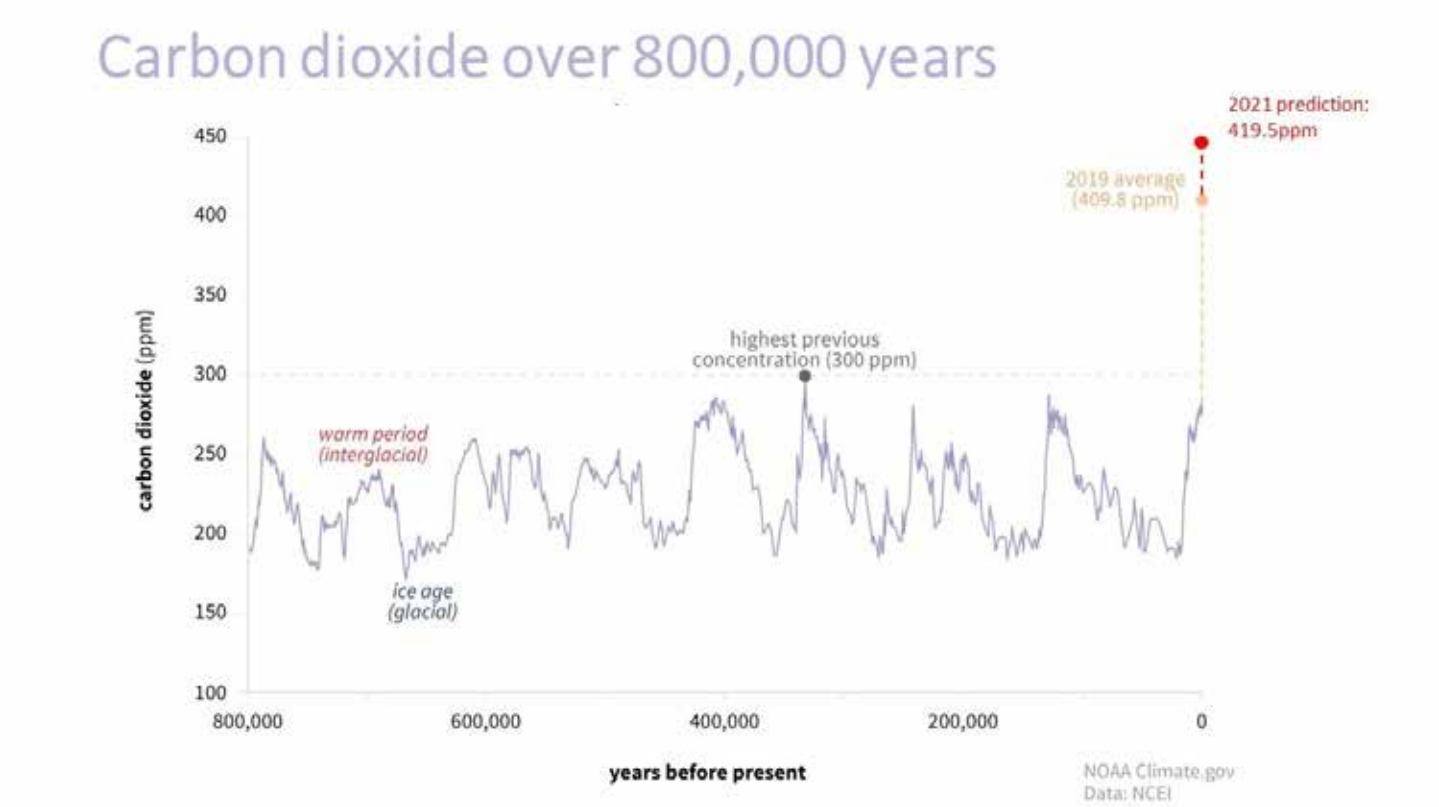


Image: Concentration of carbon dioxide (in particles per million, ppm) in the atmosphere for the past 800,000 years. Adapted from: NOAA Climate.gov

Vector-borne parasitic diseases will likely expand to new areas

Some parasites are transmitted to humans via the bites of infected insects that we call vectors: the parasites causing malaria and lymphatic filariasis (or elephantiasis) are transmitted by mosquitoes, those causing leishmaniasis, onchocerciasis (or

carrying to new areas too!

In addition, many vectors develop faster (and in some cases, in greater numbers) in warmer weather. Not only do mosquitoes and flies develop more at higher temperatures, so do the parasites that develop inside those vectors.

With the increase in extreme weather events, we could see more and more floods, which provide ideal breeding conditions for mosquitoes and flies, potentially leading to resurgence of vector-borne diseases following such events.

through a faecal-oral route, whereby humans ingest the parasites eggs through contaminated water or food, the parasites develop inside the gut, laying eggs that are secreted through the feces. That is the case of roundworms, whipworms, as well as the non-helminth unicellular parasites giardia and cryptosporidium. The hookworm larvae are able to crawl through the skin directly, before reaching the gut! So how does the climate crisis impact these parasites?

Warmer temperatures could promote the survival and development of these water-borne parasites, but droughts could

Parasitic diseases in a climate crisis

negatively impact them (as they require humidity to survive).

However, the most crucial impact of the climate crisis on the transmission of these types of parasitic diseases is probably the increase in flooding events. Indeed, there is a correlation between floods and resurgence in all water-borne infectious diseases, regardless of the level of "development" of a country.

Human health and behaviour in a climate emergency

When studying infectious diseases, it is good to inspect the pathogen (in this case, parasites), but the host response (here, humans) is crucial too. And in the context of climate chaos, the implications are profound:

Sustained extreme heat, along with food shortages and reduced access to clean water will all take a toll on human bodies, and their capacity to fight parasitic diseases.

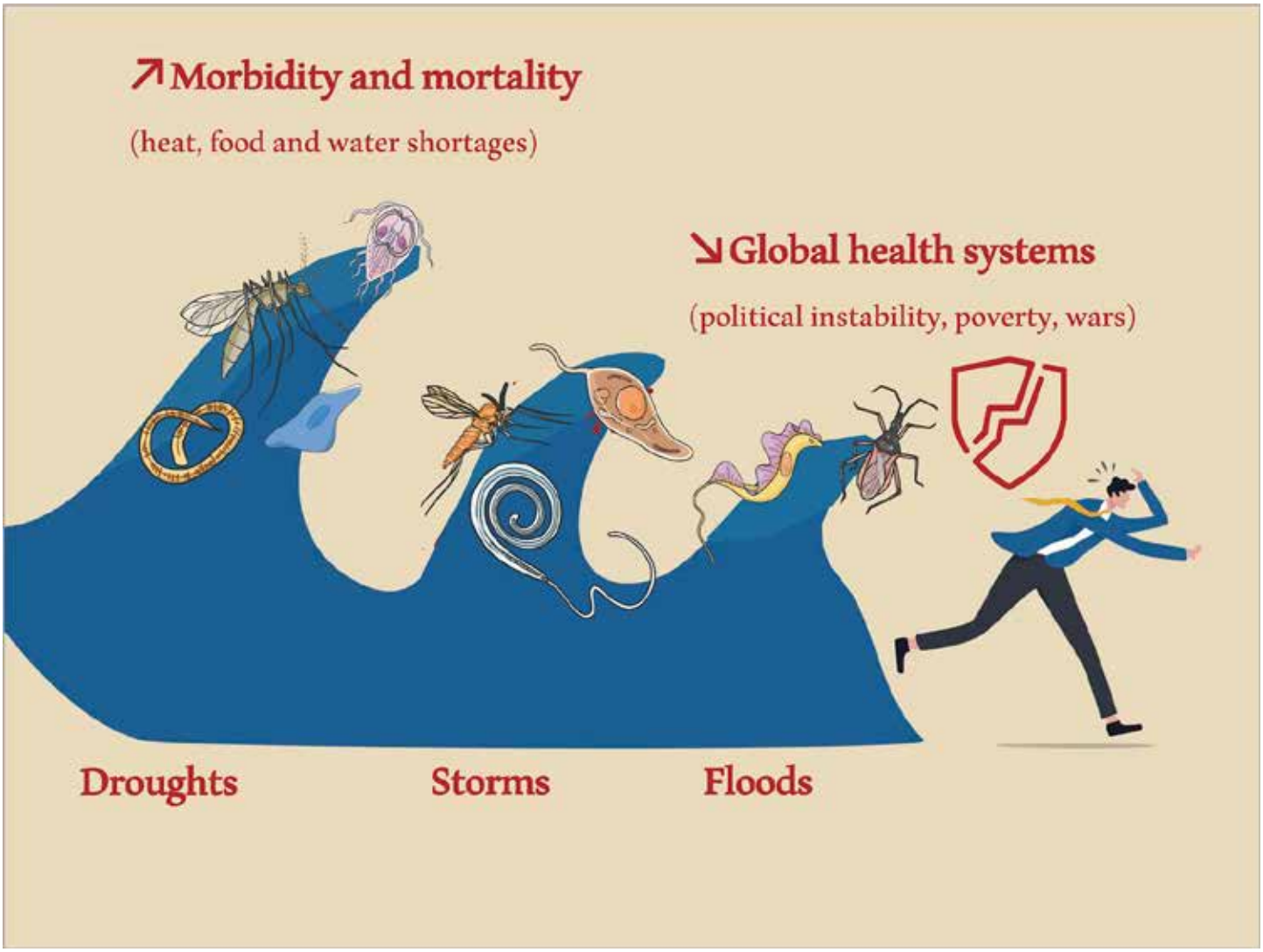
The expansion of vectors to new areas puts at risk local communities that lack immunity against parasites carried by these vectors. Similarly, hundreds of millions of people will be forced to migrate due to rising sea levels (among other causes), potentially moving parasitic diseases with them.

Importantly, the combination of all these impacts (floods, food shortages, migration, heatwaves...) will affect the governance and social development of many (if not all) countries, ultimately negatively impacting global health systems.

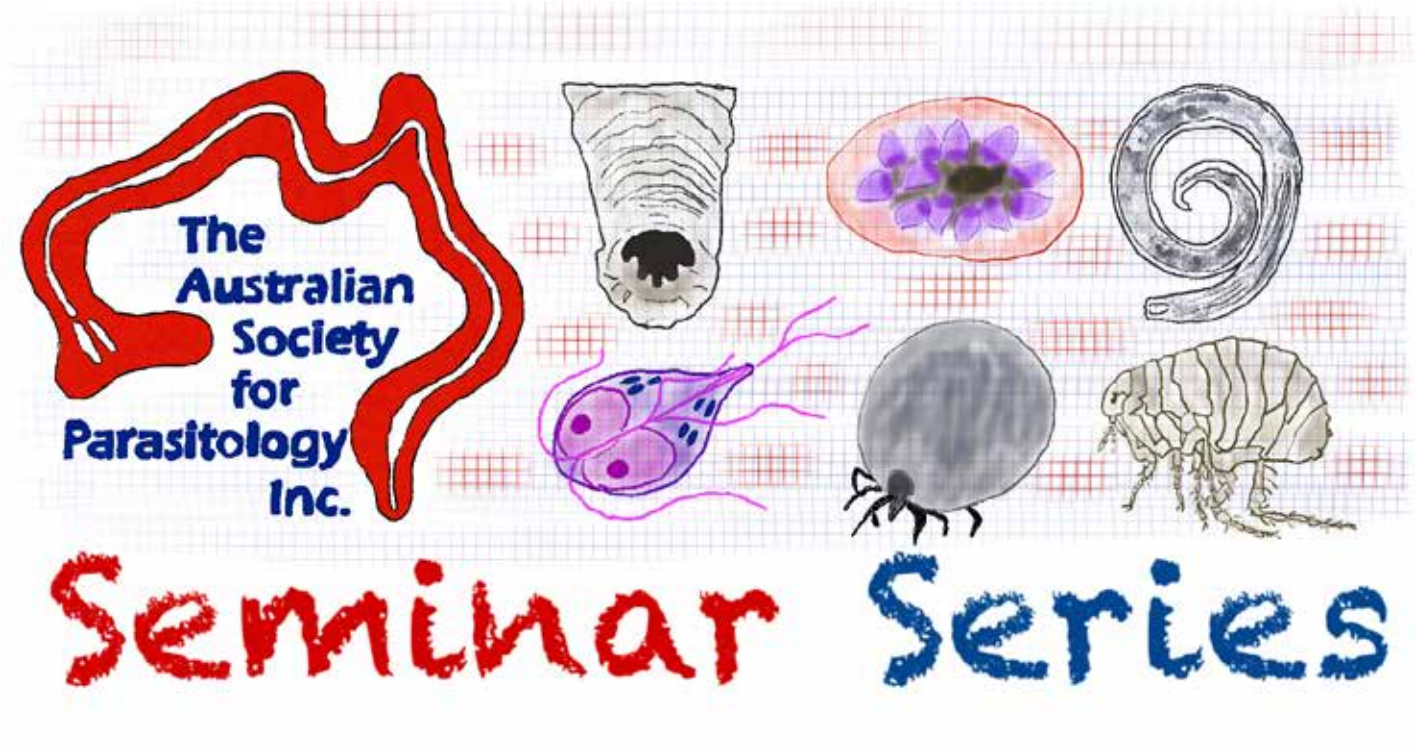
In summary:

Global warming is shifting the distribution of vectors transmitting diseases, putting at risk new people. Outbreaks of parasitic diseases might become more common following natural disasters. Morbidity and mortality might also be exacerbated due to many stresses already faced by human bodies (heat, malnutrition) and due to the lack of access to health care.

Image: Summary figure: Parasitic diseases in a climate crisis



ASP Seminar Series



The third event in our online ASP Seminar Series took place on Friday 28 May at 1pm AEDT by Zoom.

Co-chairs Ali Raza (University of Queensland) and Stuart Ralph (University of Melbourne) introduced researchers Cecilia Power from RMIT, Melbourne, speaking about "Bloody flukes – a look at aporocotylids from cultured Southern bluefin tuna" and Emily Crisafulli from The University of Melbourne speaking about "Drug interactions in malaria parasites: Australia's leading malaria prophylactic behaves antagonistically with a front-line antimalarial".

Cecilia is in her final year of her PhD at RMIT University, and has an interest in industry-focused research, particularly relating to fish health in aquaculture. She will discuss the findings from her PhD work which includes a long-term study of blood fluke infections from cultured Southern bluefin tuna in Australia, as well as the development of a novel on-site diagnostic test to be used by the industry for rapid detection of blood flukes. Emily is a final year PhD student in A/Prof Stuart Ralph's lab at The University of Melbourne. She graduated with a Bachelor of Medical Science (Honours) from The University of Sydney in 2016. Her current research focuses on the pharmacology of front-line antimalarial drugs.

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

The next ASP Seminar Series will take place after the 2021 ASP Online Conference. Please email secretary@parasite.org.au with suggestions for speakers or themes. See the ASP website and social media channels for information about the ASP Seminar Series.

Joint Tasmanian ASP-WDAA outreach event to Maria Island

As we all know, the last 18 months have been disruptive for the capacity to engage with one another in-person. ASP, like many scientific societies, has strived to maintain and promote the connections among its members while national and international conferences are not feasible. While interstate travel remains volatile in Australia, it is fortunate that intrastate travel is generally more reliable. So opportunities to promote engagement among ASP members and members of other like-minded scientific societies are possible and a wonderful opportunity.

On Monday May 31 members of ASP living in Tasmania held a joint mini-conference and fieldtrip to the beautiful Maria Island with Tasmanian members of the Wildlife Disease Association Australasia. The fieldtrip was organised by Scott Carver (ASP State Representative and Chair of WDAA) with both organisations contributing funds to pay for participants ferry ticket, lunch and refreshments.

18 people across both organisations signed up for the day (10 ASP, 10 WDAA – two people in both organisations) and 16 attended. The event included a great range of students, academics and other professional roles. We met at the ferry terminal in Triabunna on Tasmania's east coast, catching the 10am ferry to the island on a beautifully sunny and brisk (14C) autumn/winters day.

Upon arrival we gathered on a hillside and sat on the grass overlooking Darlington Bay, with the Tassie mainland in the background, and celebrated the only in-person scientific conference any of us are likely to have this year. Our conference/engagement event involved each individual giving a two minute presentation, with a prop, on a parasite or pathogen topic they are working on or are interested in. A wonderfully diverse range of talks were given spanning topics such as: toxoplasma in birds, devil facial tumour disease, Hendra virus in flying foxes, dermatitis in rhinos, amoebic gill disease in salmon, plastics and the health of seabirds (petrels and penguins), sarcoptic mange in wombats, avian influenza, and some 'shall not be named' virus we are all sick of hearing about. Creative props were expertly integrated into the talks, with some notable examples including: stuffed animals, the belt from a bathrobe, throwing a jacket at the audience, and a can of whipped cream.

All of this relaxed and entertaining scientific program was enhanced by wildlife roaming around the 'conference venue', including: wombats, cape barren geese, Tasmanian native hens, Bennett's wallabies, kangaroos, and a sea eagle soaring above.

At the conclusion of the scientific program a group lunch was provided and everyone continued to get to know each other before having free time to roam the island. Some people hiked to the top of Bishop and Clerk, others explored the Painted Cliffs or Fossil Cliffs, and one ambitious person hired a bike and explored half the island. To Scott's relief everyone made it back to the

Right: Scott Carver addresses the group of ASP members and potential members as part of the ASP Tasmanian State Outreach event on Maria Island.

Joint Tasmanian ASP-WDAA outreach event to Maria Island

ferry for 4:15 departure ...only just on one case.

A fun day was had by all and new registrations resulted for both ASP and WDAA. All in all a great success.

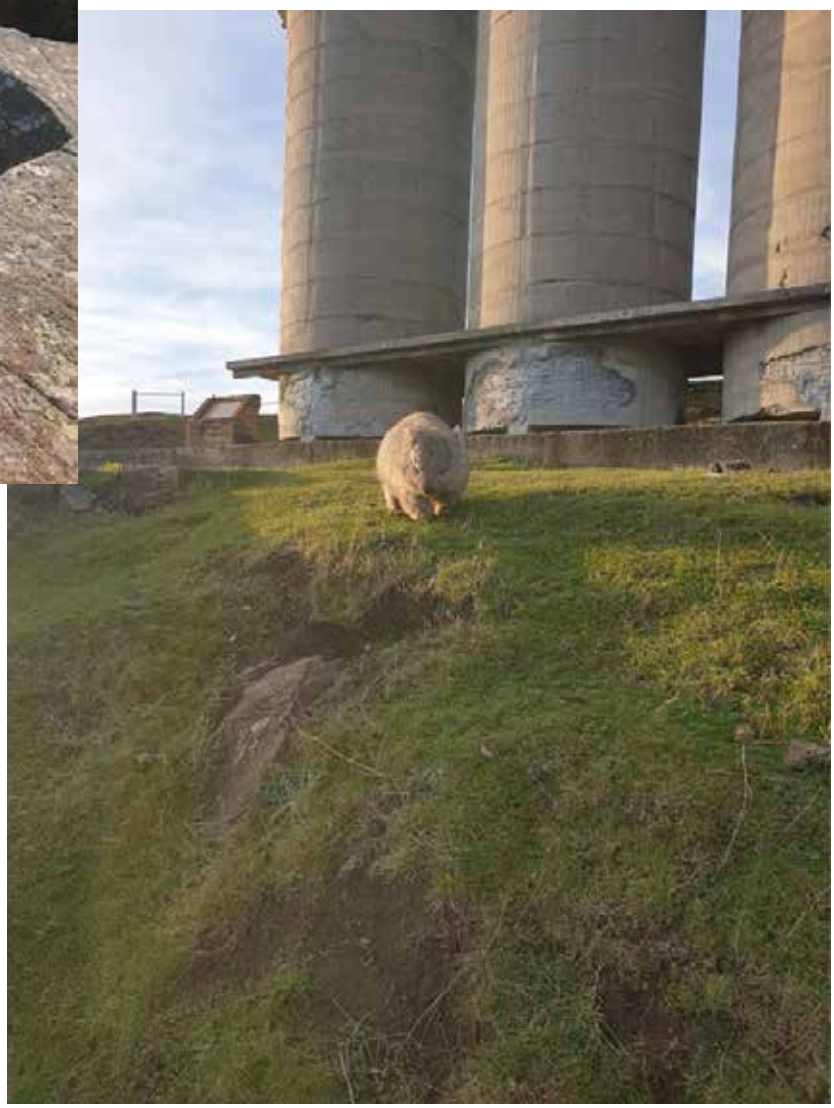
Right: Scott Carver addresses the group of ASP members and potential members as part of the ASP Tasmanian State Outreach event on Maria Island.

Joint Tasmanian ASP-WDAA outreach event to Maria Island

Joint Tasmanian ASP-WDAA outreach event to Maria Island

Right: Scott Carver addresses the group of ASP members and potential members as part of the ASP Tasmanian State Outreach event on Maria Island.

Joint Tasmanian ASP-WDAA outreach event to Maria Island



Event 15th National Workshop on Strongyloidiasis

Strongyloides Australia

15th National Workshop on Strongyloidiasis

CALL FOR ABSTRACTS

NEW DATE

Thurs 7 October 2021

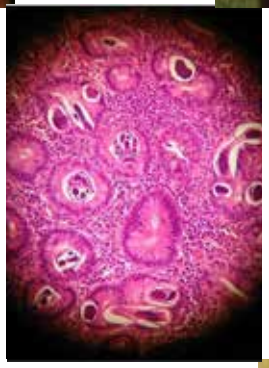
Venue: Australian National University, Canberra ACT

Strongyloides 20 years on: End the neglect

Neglected Tropical Disease

Options for Control

Community Engagement



Diagnosis

Treatment

Epidemiology

Symptoms

Details pages 2-3

strongyaust@gmail.com

Outreach event in ACT

15th National Workshop on Strongyloidiasis

Register online: https://www.trybooking.com/BRZJO by 26 August

Cost: In person: Full: $150, Community, Student, Retired: $50;
Online option: Full: $60; Community, Student, Retired: $30

Abstracts: Submit to: strongyaust@gmail.com by 12th August

Details next page

Programme : 8:15—17:30

Keynote topics and speakers

- *Strongyloidiasis in Australia:* **Dr Wendy Page**, Miwatj Health, 2021 Northern Territory Australian of the Year
- *Community Collaboration and One Health*: **Michael Spry**, Miwatj Health, NT
- *Update on Diagnostics*: **Dr Matthew Watts**, Centre for Infectious Diseases and Microbiology, Pathology West-ICPMR, Westmead, NSW
- *Moxidectin trials for Strongyloidiasis in Laos and Thailand*: **Dr Daniela Hofmann*,** Swiss Tropical and Public Health Institute, Basel, Switzerland
- *Global Perspectives on* Strongyloides: **Dr Dora Buonfrate***, Infectious Tropical Diseases and Microbiology, IRCCS Ospedale Sacro Cuore Don Calabria, Negrar, Verona, Italy

*International speakers will present online

Outreach event in ACT continued…

15th National Workshop on Strongyloidiasis

Guidelines for Formatting Abstracts and Bios

The text of your abstract (excluding the title and name and affiliation of authors) should be no longer than 250 words. Please place the name of the presenting author first. References do not need to be induded in abstract. Please submit in .doc or .docx format. Please follow the example below:

Molecular basis for the abnormal rheological properties of malaria parasite-infected red blood cells.

BM Cooke[1], N Mohandas[2] and RL Coppel[1]

[1]Department of Microbiology, Monash University, Clayton, Victoria 3168, Australia, [2]Life Sciences Division, Lawrence Berkeley Laboratory, Berkeley, CA 94720, USA

Red blood cells infected with mature stages of *Plasmodium falciparum* have grossly abnormal rheological properties…

Please also include a bio of up to 150 words and a photo of the presenter as a .jpg file.

Please submit abstracts direct to Strongyloides Australia Inc at strongyaust@gmail.com

Deadline: 12 August 2021

About Strongyloides Australia Inc

The National Strongyloidiasis Working Group (NSWG) was formed in 2001 at the first National Workshop on Strongyloidiasis held in Nhulunbuy, Northern Territory, in response to a plea from an Aboriginal elder from a group whose prevalence was 60%. He said, "We've had *Strongyloides* for so long, why hasn't something been done?" The first chairperson was the late Emeritus Professor Rick Speare from James Cook University, an internationally recognised expert on strongyloidiasis.

Since then, the NSWG has convened 14 National Workshops.

During 2019, the NSWG became Strongyloides Australia Inc. It is now a multidisciplinary group including parasitologists, veterinary and molecular scientists, pathologists, environmental health officers, medical practitioners, health promotion and prevention professionals, and other interested people. The aims of Strongyloides Australia are:

- to raise awareness of strongyloidiasis;
- to inform health professionals and community members about the disease and its diagnosis, treatment, prevention and control; and
- to advocate on behalf of affected people for appropriate changes to government policy in relation to prevention, diagnosis, and treatment, based upon current research.

Successful outcomes have occurred in a number of Aboriginal communities. Members of the working group have been involved in developing, in partnership with these communities, a number of approaches, including engagement strategies, a clinical audit approach, mass drug administration, infrastructure upgrades. and community-based education programs.

Outreach activities in Western Australia

Bringing Parasites to Home Schooled Children, including those with Special Needs 16th February 2021

MicroToons- First Time - National Science Week Grant 2021 (April 2021)

Children's University - Parasitology workshop 7 April 2021

Bringing Parasites to Home Schooled Children, including those with Special Needs 16th February 2021

Rina was invited to run a series of hands-on workshops for some home-schooled students of ages 3 years to 10 years, including a number of special needs (inattentive ADHD, generalised anxiety, auditory processing issues) and some qualified for mensa! They had lots of fun singing, looking at parasites in jars and under the microscope and doing experiments together. The small group size worked particularly well so Rina could pace and pitch the content to meet individual learning needs.

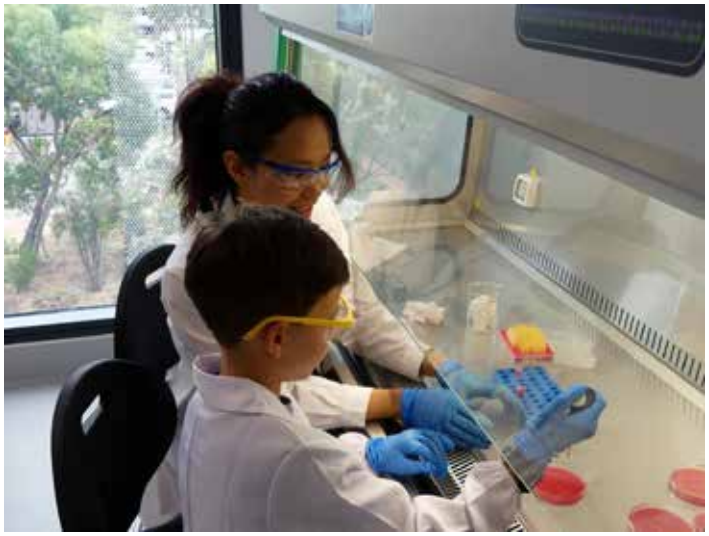
The little children really enjoyed singing and dancing to the ASP sponsored 'The Bugs Song' (lyrics card in the background of the photo). Participating children are holding a fluffy red blood cell and plush parasites for additional sensory engagement.

Children's University - Parasitology workshop 7 April 2021

Rina led her inaugural Children's University at Edith Cowan University engaging children and their guardians in a 'Close up with some Bloody Parasites' workshop'. The initiative is targeted for schools from lower SES areas in the state, to provide children with opportunities that they may not have, to think about university - and parasites!

Right: Dr Rina Fu hands-on workshops for some home-schooled students of ages 3 years to 10 years

WA outreach continued...



Above: Rina led her inaugural Children's University at Edith Cowan University, it was so unique to bring young children into the new Superlabs and teach them how to feed malaria!

Above: Rina was honoured to be featured in the Disability Inclusion Guide for #NationalScienceWeek2021

It was so unique to bring young children into the new Superlabs and teach them how to feed malaria! The workshop was facilitated by professional scientists and microbiology students who had lots of fun (their first time) and got hooked on parasites. At the end of the workshop a little girl came up and threw her arms around Rina to thank her

MicroToons- First Time - National Science Week Grant 2021 (April 2021)

Rina is so honoured to be one of four WA recipients of the Federal National Science Week grant, to support the creation of 'MicroToons', a science cartoon designed around people with #autism. People with autism can struggle to engage with #science, #technology, and #art, so Rina wanted to find a way to bridge that gap.

MicroToons is an animated science cartoon designed to do just that. It is based on her new short #story of nasty #microbes interacting with body #cells. This project is a collaboration with disabilities service provider 4lifeskills, and animation studio Red Bird Creative. MicroToons will showcase the work of @ RedBirdCreative's budding artist Dafa and budding animator Sam, who has autism. The animation will premiere at a launch event involving the @4LifeSkills network and the public, with science activity stations tailored to include people with disabilities.

Rina hopes to apply for the ASP outreach grant to support obtaining some parasite slides and funding to support the MicroToons Launch event in August 2021, as part of the inclusive science activities.

Stirling Times Newspaper:

Lastly- https://www.perthnow.com.au/community-news/stirling-times/science-cartoon-microtoons-awarded-national-science-week-grant-c-2649235

ASP hosted workshop featured in Disability Inclusion Guide:

Rina was absolutely honoured to be featured in the Disability Inclusion Guide for #NationalScienceWeek2021! She gave an interview about the online workshops (as hosted by The ASP) for last year's National Science Week. Specifically, Rina discussed the steps she took to make these events more #accessible, e.g. having an #Auslan interpreter. Lisa is also quoted in this article!

The full guide is available here: https://lnkd.in/g2Bz5Uz (I'm on page 5, 'Interpreting Science for Everyone'!)

WA outreach continued...

STIRLING Times

Science cartoon MicroToon awarded National Science Week grant

Staff Writer | Stirling Times
April 27, 2021 12:04PM

TOPICS Stirling Times | North | Science

DEVELOPERS of a science cartoon designed around people with autism have received a National Science Week grant to launch it.

MicroToons is a collaboration between microbiologist Rina Fu, Red Bird Creative animation studio and disabilities services provider 4lifeskills.

Its goal was to make science more accessible particularly for people with autism who hav difficulty engaging with science, technology art.

Above: MicroToons- First Time - National Science Week Grant 2021

Queers in Science

The QueersInScience Network started in Parkville, Victoria and has expended nationally with a branch established in most States and Territories. QueersInScience aims to champion LGBTQIA+ scientists, and to create an inclusive environment for all LGBTQIA+ people in STEMM. Queer visibility, advocacy and intersectionality are important pillars of the network.

There is still a great deal of work that is required to create safe and inclusive environments for LGBTQIA+ people in STEMM in Australia. Research shows that LGBTQIA+ people still struggle to openly be themselves in their workplaces, and within STEMM have lower retention rates, and students are more likely to withdraw from University than their heterosexual and cisgender classmates. These issues are attributable to a number of things including poor visibility of LGBTQIA+ STEMM professionals.

Michelle Power is a member of the NSW Branch Committee and is encouraging LGBTQIA+ individuals who are ASP members and Allies to join their local branch https://queersinscience.org.au. Opportunities arise each year to take up an office role on state committees with new committees voted in annually.

Each state runs events to foster inclusion for all LGBTQIA+ individuals studying and/or working in STEMM fields. Events so far across the country have included pub gatherings, trivia nights, panels and talks in conjunction with LGBTQIA+ awareness days, picnics, and outreach tents at Midsumma Festival.

Michelle Powers has recently won a NSW Government grant host a Queers in Science event at the Powerhouse in Sydney later in the year so please watch this space for more event details to come.

If you identify as LGBTQIA+ or if you are an Ally and would like to be part of any QueersInScience events please contact Michelle Power (michelle.power@mq.edu.au)

Undergraduate prizes

Recent ASP undergraduate prize winners Samuel Thomas (JCU) and Aimee Owens (CSU) give testimonials.

Congratulations to recent prize winner **Samuel Thomas** from James Cook University, Townsville, 2020 ASP undergraduate prize.

Testimonial from Samuel Thomas:

"I am currently studying Veterinary Science at James Cook University, Townsville. I am in my 4th year out of 5.

When I finish my studies, I wish to work as a veterinarian in a mixed practice somewhere in semi-rural Australia.

Thank you very much for the opportunity and your generosity. This award gives me further incentive to study parasitology.

Samuel"

Congratulations to recent prize winner **Aimee Owens** from Charles Sturt University, Wagga Wagga, 2020 ASP undergraduate prize.

Testimonial from Aimee Owens:

"I was the 2021 recipient of the Australian Society for Parasitology prize at CSU.

I apologise that I was unable to make the awards ceremony this year and wanted to express my gratitude via email. I am extremely thankful to you all for this prize and the difference it will make for me regarding the ability to purchase textbooks and equipment I require for university. I was not even aware that there was a prize for our veterinary parasitology subject so it was a nice surprise after doing well in one of my favourite subjects! I really enjoyed parasitology and this prize has given me encouragement to continue to follow this interest further!

Thank you again! I have attached a photo of me with the award as well.

Kind regards,

Aimee Owens

4th year Veterinary Science student at CSU"

$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 2021 prizes must be made by the eligible University to the ASP Treasurer by the 30th September 2021. Please complete the online application form:**

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

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:

Social Media:

[Plum X metrics: 153,947 social media shares/likes/comments]

Open Access

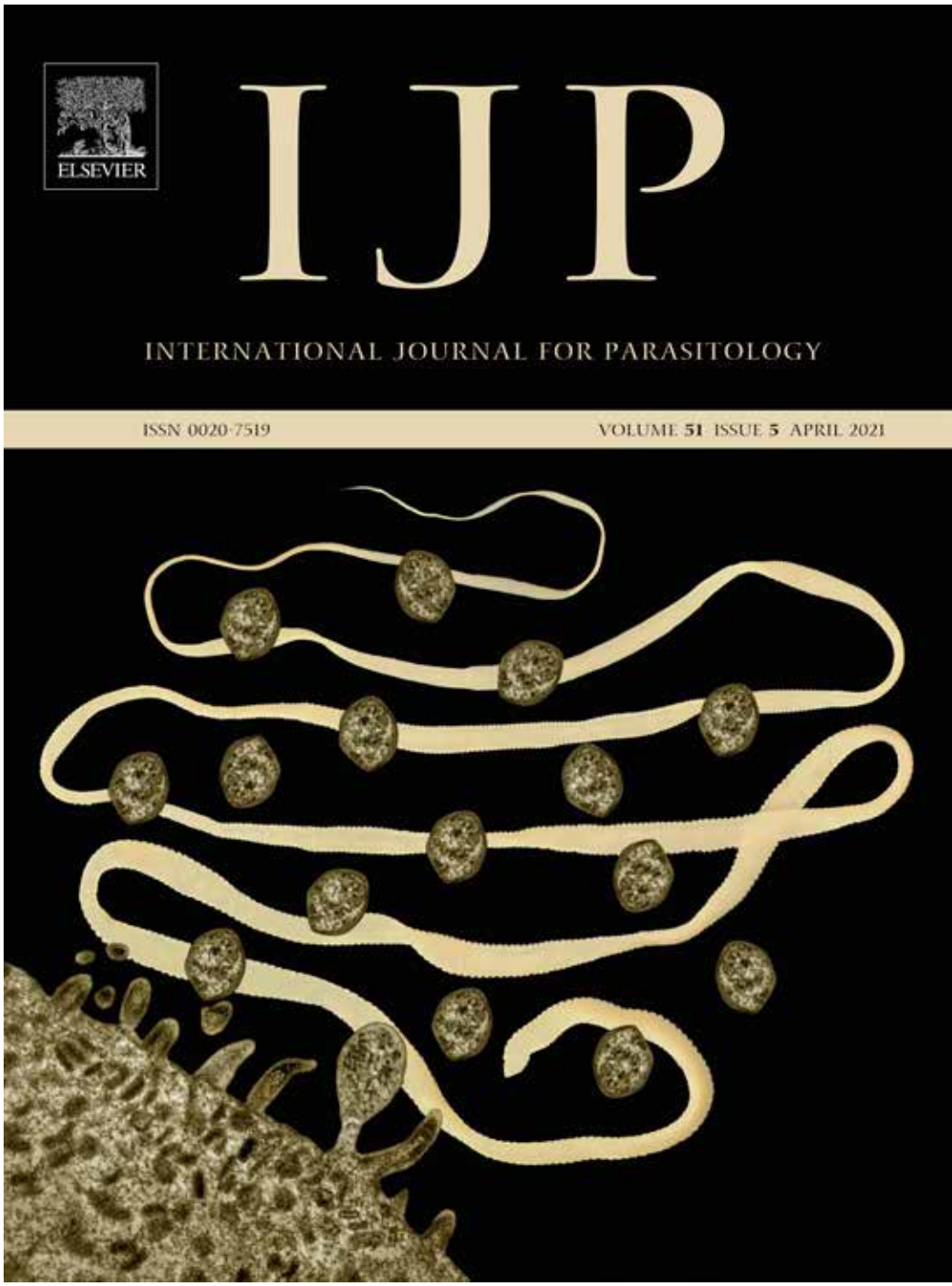
Martins-Duarte, É.S., Sheiner, L., Reiff, S.B., Soua, W., Striepen, B., 2021. Replication and partitioning of the apicoplast genome of *Toxoplasma gondii* is linked to the cell cycle and requires DNA polymerase and gyrase. Int. J. Parasitol. 51, 493-504.

https://doi.org/10.1016/j.ijpara.2020.11.004

April (51:05):

Mazanec, H., Koník, P., Gardian, Z., Kuchta, R., 2021. Extracellular vesicles secreted by model tapeworm *Hymenolepis diminuta*: biogenesis, ultrastructure and protein composition.Int J Parasitol. 51, 327-332.

https://doi.org/10.1016/j.ijpara.2020.09.010



International Journal for Parasitology continued

IJP

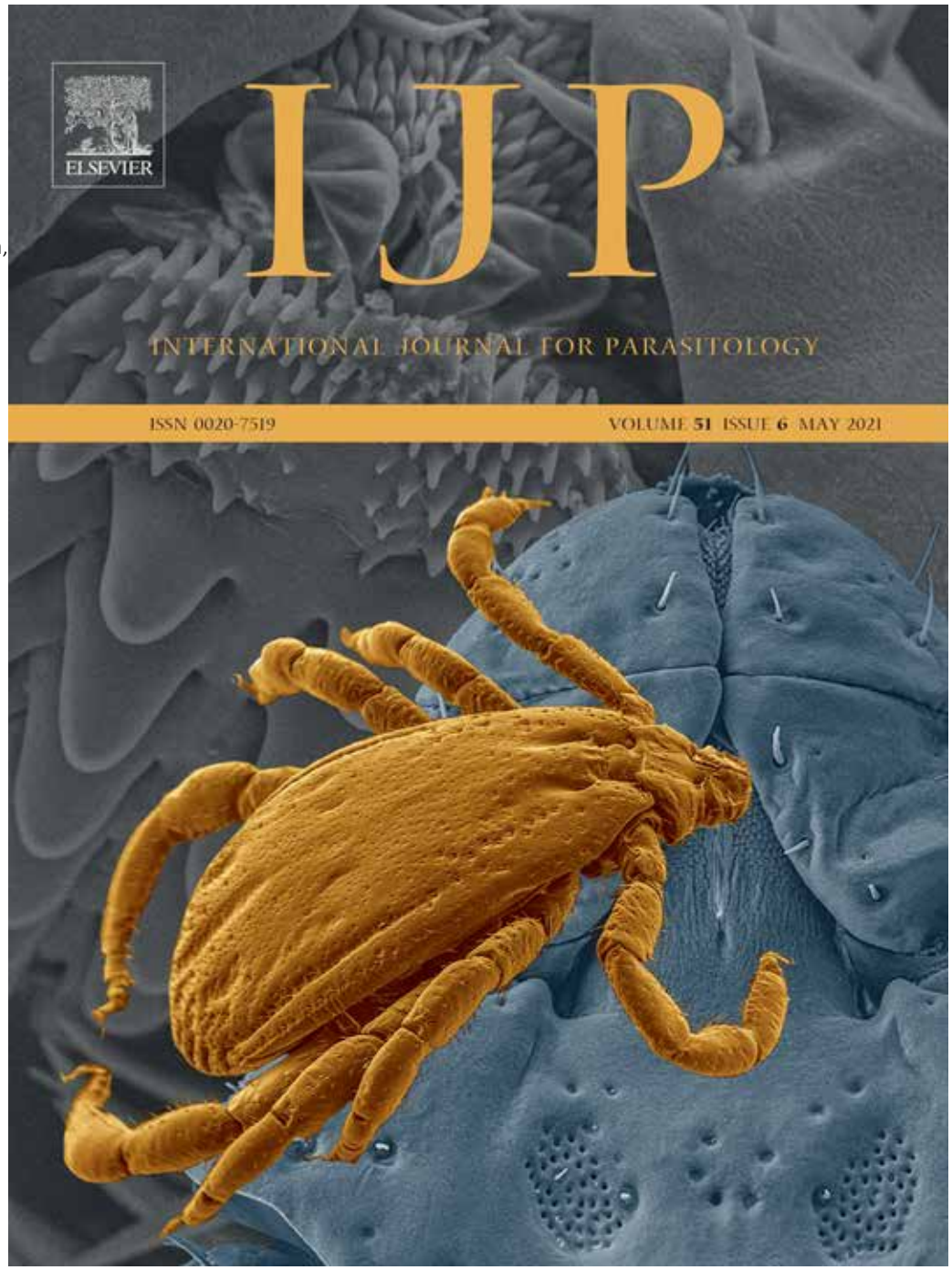
INTERNATIONAL JOURNAL FOR PARASITOLOGY

May (51:06):

Open Access

Šlapeta, J., Chandra, S., Halliday, B., 2021. The "tropical lineage" of the brown dog tick *Rhipicephalus sanguineus* sensu lato identified as *Rhipicephalus linnaei* (Audouin, 1826). Int J Parasitol. 51, 431-436.

https://doi.org/10.1016/j.ijpara.2021.02.001

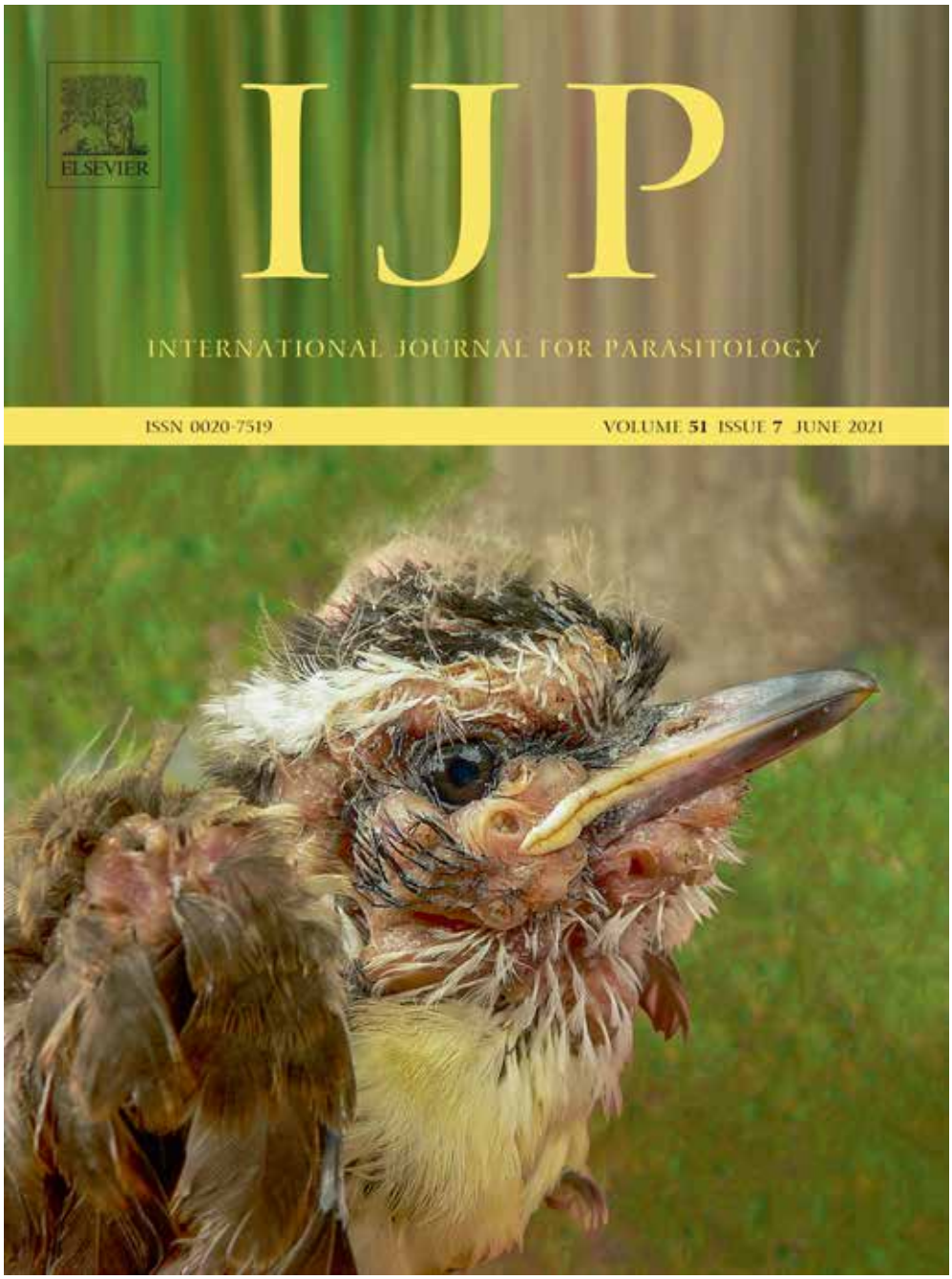


International Journal for Parasitology continued

June (51:07):

Manzoli, D.E., Saravia-Pietropaolo, M.J., Arce, S.I., Percara, A., Antoniazzi, L.R., Beldomenico, P.M., 2021. Specialist by preference, generalist by need: availability of quality hosts drives parasite choice in a natural multihost-parasite system. Int J Parasitol. 51, 527-534.

https://doi.org/10.1016/j.ijpara.2020.12.003



International Journal for Parasitology continued

IJP

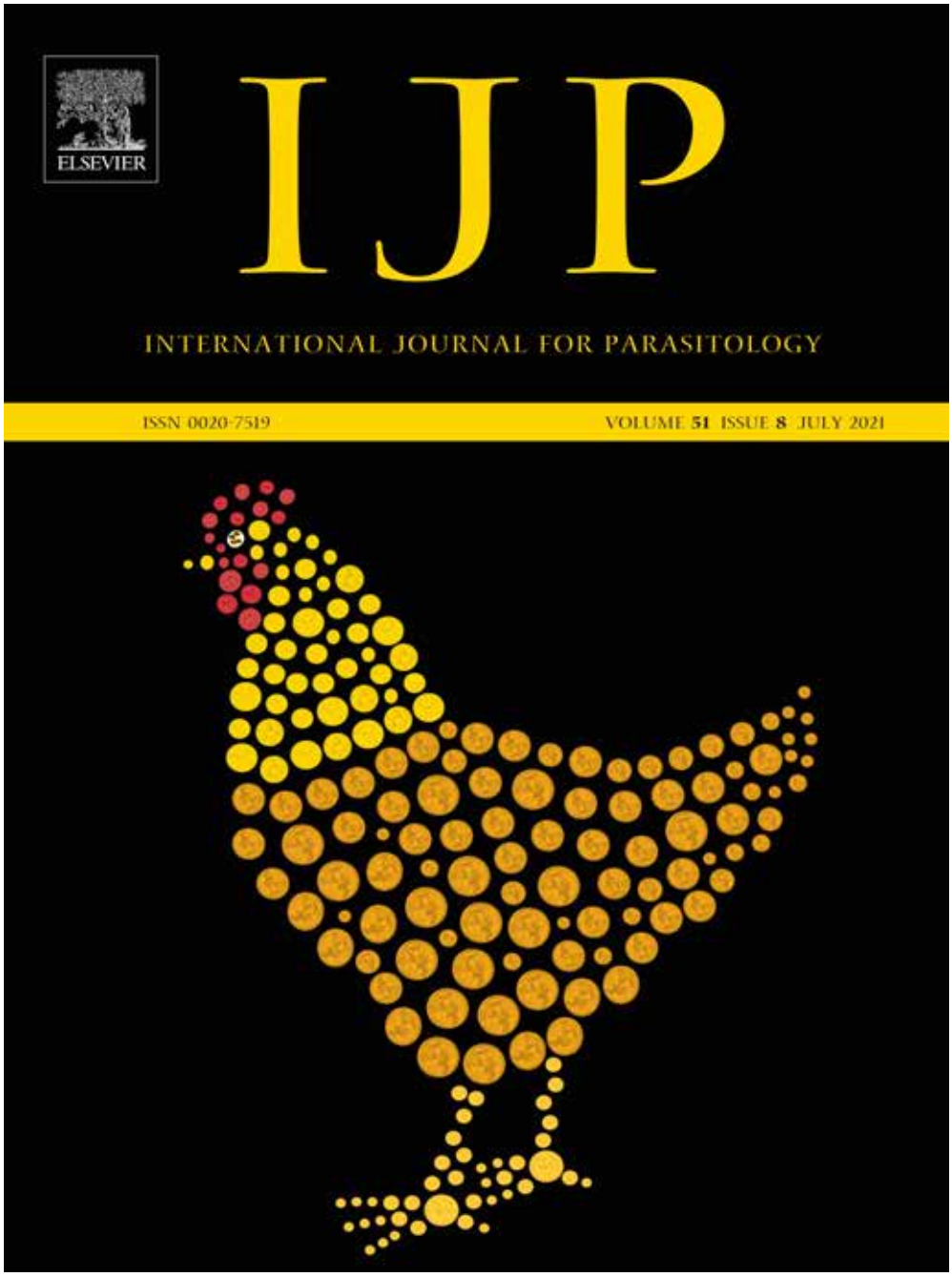
INTERNATIONAL JOURNAL FOR PARASITOLOGY

July (51:08):

Open Access

Blake, D.P., Vrba, V., Xia, D., Danladi Jatau, I., Spiro, S., Nolan, M.J., Underwood, G., Tomley, F.M., 2021. Genetic and biological characterisation of three cryptic *Eimeria* operational taxonomic units that infect chickens (Gallus gallus domesticus). Int. J. Parasitol. 51, 621-634.

https://doi.org/10.1016/j.ijpara.2020.12.004



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/

Andrew Thompson, Editor of IJP:PAW, is excited to let you know about recent articles from the IJP:PAW Special Issue 'Africa-Parasites of Wildlife' starting with a wonderful introduction by Nico Smit (note the great title!) https://www.sciencedirect.com/journal/international-journal-for-parasitology-parasites-and-wildlife/special-issue/10MCNR5SDBR

Smit NJ. A smorgasbord of firsts: Taxonomy, morphology, and ecology of parasites in wildlife - Invited papers from the 4th International Congress on Parasites of Wildlife 2021/2022, Kruger National Park, South Africa. Int J Parasitol Parasites Wildl. 2021 Jun 24;15:276-277. doi: 10.1016/j.ijppaw.2021.06.005. PMID: 34277338; PMCID: PMC8271098.

Nico writes : The majority of papers in this special issue provide us with new insights into parasite diversity of aquatic animals through the description of a total of 20 new taxa. This includes three new blood protozoans from anurans in Brazil (Úngari et al., 2021), five new species of polystome flatworms (Monogenea) from Madagascar tree frogs (Landman et al., 2021) and two new species of filarial nematodes from South African anurans (Kuzmin et al., 2021). Parasites from marine teleost fish hosts were also reported with Christison et al. (2021) describing a new *Gyrodactylus* monogenean from the South African mullet, Van der Wal et al. (2021) providing the first record of branchial attaching fish parasitic isopods from Nigeria through the description of two new species of *Mothocya* (Cymothoidae), and Aneesh et al. (2021) also describing a new fish parasitic isopod, in this case a species of *Anilocra* from India. Freshwater fishes as hosts were also represented in this special issue with the description of two new species of plagiorchioid digeneans infecting turquoise killifish from Mozambique and globe fish collected in the Republic of Guinea (Curran et al., 2021). This special issue not only introduced new species to science but also new genera with the description of two new monotypic genera of fish blood flukes of the family Aporocotylidae infecting banded eagle rays in Borneo, Indonesia (Warren and Bullard, 2021). What is really positive from this special issue is that almost all the papers describing new species used an integrative approach, thus presenting morphological, morphometrical and molecular data.

In addition to the new described taxa of fish parasites, new locality and hosts records as well as molecular characterisation were reported for two gnathiid isopods from the Philippine coral reefs (Shodipo et al., 2021), a branchiuran of the African endemic genus *Chonopeltis* (Argulidae) from South Africa (Van As et al., 2021), and a shark blood trypanosome (Pretorius et al., 2021), also from South Africa. The latter is also the first molecular data for any species of shark trypanosome globally. In the final paper on fish parasites, Honka and Sures (2021) used Japanese and European eels as hosts and Ponto-caspian acanthocephalans and swim bladder nematodes as parasites to demonstrate that a low degree of host-parasite adaptations leads to stronger host stress responses against the parasite.

Current research on parasites of Africa's enigmatic and endangered mammals are also showcased in this special issue. Netherlands et al. (2021) provided the first in-depth molecular data on the very high prevalence of *Hepatozoon* blood parasites in free-ranging African wild dogs from the KNP, South Africa, and Zaffarano et al. (2021) reported on the first case of cystic echinococcosis in the Southern white rhinoceros, also from KNP, South Africa's premier game park.

To conclude, this special issue clearly illustrates that, although the current Covid-19 global pandemic has impacted on our ability to host and attend in-person conferences and meetings, it did not stop the determination of researchers to publish excellent research on wildlife parasitology.

Read the full article and to download the the Special Issue go to IJPPAW Volume 15 https://www.sciencedirect.com/journal/international-journal-for-parasitology-parasites-and-wildlife/vol/15/suppl/C

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/

Recent IJP DDR articles Drugs and Drug Resistance, from ASP Members.

M.S.J. Arnold, J.R. Macdonald, R.J. Quinn, T.S. Skinner-Adams, K.T. Andrews, G.M. Fisher,

Antiplasmodial activity of the natural product compounds alstonine and himbeline,International Journal for Parasitology: Drugs and Drug Resistance, Volume 16, 2021, Pages 17-22, ISSN 2211-3207, https://doi.org/10.1016/j.ijpddr.2021.04.003. (https://www.sciencedirect.com/science/article/pii/S2211320721000178)

Abstract: Malaria, caused by *Plasmodium* parasites, continues to be a devastating global health issue. Despite a decline in malaria related deaths over the last decade, overall progress has plateaued. Key challenges to malaria prevention and control include the lack of a broadly effective vaccine and parasite drug resistance, including to the current gold standard artemisinin combination therapies (ACTs). New drugs with unique modes of action are therefore a priority for both the treatment and prevention of malaria. Unlike treatment drugs which need to kill parasites quickly to reduce or prevent clinical symptoms, compounds that kill parasites more slowly may be an option for malaria prevention. Natural products and natural product derived compounds have historically been an excellent source of antimalarial drugs, including the artemisinin component of ACTs. In this study, 424 natural product derived compounds were screened for in vitro activity against *P. falciparum* in assays designed to detect slow action activity, with 46 hit compounds identified as having >50% inhibition at 10 μM. Dose response assays revealed nine compounds with submicromolar activity, with slow action activity confirmed for two compounds, alstonine and himbeline (50% inhibitory concentration (IC50) 0.17 and 0.58 μM, respectively). Both compounds displayed >140-fold better activity against *P. falciparum* versus two human cell lines (Selectivity Index (SI) >1,111 and > 144, respectively). Importantly, *P. falciparum* multi-drug resistant lines showed no cross-resistance to alstonine or himbeline, with some resistant lines being more sensitive to these two compounds compared to the drug sensitive line. In addition, alstonine displayed cross-species activity against the zoonotic species, *P. knowelsi* (IC50 ~1 μM). Outcomes of this study provide a starting point for further investigations into these compounds as antiplasmodial drug candidates and the investigation of their molecular targets.

Samantha J. Emery-Corbin, Qiao Su, Swapnil Tichkule, Louise Baker, Ernest Lacey, Aaron R. Jex,

In vitro selection of *Giardia duodenalis* for Albendazole resistance identifies a beta-tubulin mutation at amino acid E198K, International Journal for Parasitology: Drugs and Drug Resistance, Volume 16, 2021, Pages 162-173, ISSN 2211-3207, https://doi.org/10.1016/j.ijpddr.2021.05.003. (https://www.sciencedirect.com/science/article/pii/S2211320721000221)

Abstract: Benzimidazole-2-carbamate (BZ) compounds, including Albendazole (Alb), are one of just two drug classes approved to treat the gastrointestinal protist *Giardia duodenalis*. Benzimidazoles bind to the tubulin dimer interface overlapping the colchicine binding site (CBS) of beta-tubulin, thereby inhibiting microtubule polymerisation and disrupting microtubule networks. These BZ compounds are widely used as anthelmintic, anti-fungal and anti-giardial drugs. However, in helminths and fungi, BZ-resistance is widespread and caused by specific point mutations primarily occurring at F167, E198 and F200 in beta-tubulin isoform 1. BZ-resistance in *Giardia* is reported clinically and readily generated in vitro, with significant implications for Giardia control. In *Giardia*, BZ mode of action (MOA) and resistance mechanisms are presumed but not proven, and no mutations in beta-tubulin have been reported in association with Alb resistance (AlbR). Herein, we undertook detailed in vitro drug-susceptibility screens of 13 BZ compounds and 7 Alb structural analogues in isogenic *G. duodenalis* isolates selected for AlbR and podophyllotoxin, another beta-tubulin inhibitor, as well as explored cross-resistance to structurally unrelated, metronidazole (Mtz). AlbR lines exhibited co-resistance to many structural variants in the BZ-pharmacophore, and cross-resistance to podophyllotoxin. AlbR lines were not cross-resistant to Mtz, but MtzR lines had enhanced survival in Alb. Lastly, Alb analogues with longer thioether substituents had decreased potency against our AlbR lines. In silico modelling indicated the Alb-beta-tubulin interaction in Giardia partially overlaps the CBS and corresponds to residues associated with BZ-resistance in helminths and fungi (F167, E198, F200). Sequencing of *Giardia* beta-tubulin identified a single nucleotide polymorphism resulting in a mutation from glutamic acid to lysine at amino acid 198 (E198K). To our knowledge, this is the first beta-tubulin mutation reported for protistan BZ-resistance. This study provides insight into BZ mode of action and resistance in Giardia, and presents a potential avenue for a genetic test for clinically resistance isolates.

News from the ASP Network for Parasitology

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 30th September 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/

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

Parasitravaganza 2021 – were you able to join us for an online Parasite Fest Wednesday 23rd – Friday 25th June 2021? Our 2021 Annual Conference for the Australian Society for Parasitology took place live and online and if you attend the 2021 ASP AGM you'll find out which ASP students won prizes for their awesome talks. Student and Early Career Researchers enjoyed career development events on Monday 21st "Meet the Editors" and Tuesday 22nd June "Resilience in Research". The Conference Organising and Scientific committee were: Sarah Preston, Ali Raza, Alireza Zahedi, Shokoofeh Shamsi, Abdul Jabbar, Michelle Clark, Lisa Jones, Nick Smith, Michelle Power and Sonja Frolich, they did an amazing job. Audience numbers were excellent throughout the days with 30-40 attending the ECR events on Monday and Tuesday and 100-125 attending the scientific talks. Download the proceedings from the conference website. https://www.parasite.org.au/conferences/parasitravaganza/

We hope to see you all at the 2022 ASP Annual Conference which is planned for 4-7 July 2022 at the Shangri-La Hotel in Cairns, Queensland, if the COVID-19 pandemic travel restrictions have eased. We will be monitoring the situation in the lead up to the conference and ASP Council will make the decision about whether it will be face-to-face or online prior to the event.

National Science Week

National Science Week have published a disability inclusion brochure which features some of the ASP Parasites Online events developed and delivered by Rina Fu in 2020. Please download the brochure to get inspired for your next Outreach events! https://www.scienceweek.net.au/wp-content/uploads/2021/04/scienceweek_disability_inclusion_booklet.pdf

We hope you have had a chance to be part of our recent online events and details of any future Facebook live events and Zoom seminars will be emailed to all members and posted on our website and social media pages. The next event in the ASP Climate-Focus seminar series is September 9, 2021 1-2pm AEST, check the ASP website and social media for details of the next ASP Online Seminar and our ASP Outreach team will run some Art-Science events online in 2021, if you are interested in participating please email Lisa secretary@parasite.org.au

With best wishes,

Nick and Lisa

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

State News

Queensland

State Outreach for 2021 ASP Conference

ASP Members enjoyed a face-to-face social gathering as part of the 2021 ASP Online Annual Conference.

Above and left: Brisbane ASP members enjoy a social catch up after the 2021 ASP Online Conference

Right:Carins ASP members enjoy a social catch up after the 2021 ASP Online Conference

State News continued

New South Wales

Macquarie University

Queers in Science representative **Michelle Power** recently won a NSW Government grant to host a Queers in Science event at the Powerhouse in Sydney later in the year. Contact Michelle for details and to get involved in QiS.

University of Sydney Laboratory of Veterinary Parasitology @ McMaster Building

Dr **Nichola Calvani,** previously from the Laboratory of Veterinary Parasitology at The University of Sydney and now a postdoctoral fellow at the National University of Ireland, Galway with Prof John Dalton's group.

My pandemic postdoc

by Dr Nichola Calvani

February 2020 was a great time for me – I had just submitted my PhD thesis, I was finishing up my first full time contract working in science and I was about to go overseas to get married before starting a postdoc in one of the best labs in my field. Two days before the end of my honeymoon in Iceland, however, the Australian government announced they were closing the borders and instituting a mandatory two-week home quarantine. People began buying toilet paper like crazy and hand sanitiser popped up everywhere you went. Luckily my trip was unaffected aside from the odd experience of flying from Reykjavik to London on an almost empty flight and watching people board the 13+ hour flight from Abu Dhabi to Sydney wearing raincoats gaffer-taped to their shoes at one extremity and washing up gloves at the other. I was not as lucky with my postdoc, however, which was put on hold until work and travel options became clearer for both myself and my hosting institution.

The next 10 months were filled with uncertainty about what I should do with my career in science. I had always planned to finish my PhD and remain in academia, and was incredibly fortunate to have been offered a position with John Dalton's Molecular Parasitology Laboratory at the National University of Ireland, Galway straight out of my PhD. I know I was not alone in my struggle, having read article after article about the impacts of the pandemic on early career researchers, the growing gender inequalities as a result of women having to balance working from home with childcare, the lack of funding as government and other agencies were diverting their focus towards the coronavirus, and the way the increased costs of travel disproportionately limited the potential of young researchers from lower socioeconomic areas. I was fortunate to have had several job offers during this period of uncertainty and had some research put aside for a rainy day to write up. In fact, the end of 2020/start of 2021 was quite possibly my most productive writing period yet – I even managed to write a chapter for the second edition of John Dalton's Fasciolosis textbook. Although I was lucky to have these opportunities and distractions, I was languishing. There are limited postdoc opportunities in Australia, with fewer available every day as all the major Australian universities struggle financially as a result of losing the bulk of their international student cohort.

With limited academic options at home the way forward was obvious – if I wanted

Left: Nichola Calvani from the Molecular Parasitology Lab (MPL) in the Dalton Laboratory , Galway, Ireland

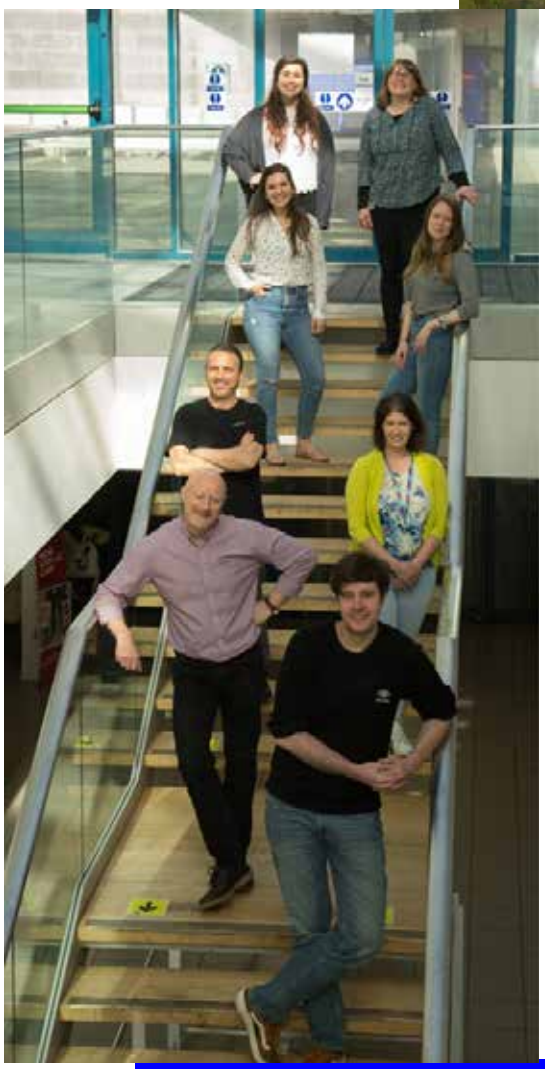
A uniquely pandemic experience: Flying home from my honeymoon in March 2020 on an empty plane.

State News continued

to progress in my chosen career I would have to stick with my original plan of moving to Ireland and hope that the world would collectively find a way forward through the pandemic some time in 2021. Naturally my family were worried about when they would be able to see me again and at the thought of me leaving Australia's relatively COVID safe bubble. I placated them by telling them how Ireland was one of the least affected countries in Europe. My plans of spending time with my friends and family before leaving were unfortunately dampened by the Christmas outbreak and ensuing lockdowns in Sydney and

Right: Making the most of the Irish sunshine: Still no indoor pints, but we pack a picnic at every sunny opportunity!

Below: My new lab family at NUIG



border restrictions in other states, along with the death of my husband's grandmother the day before my departure. Nevertheless, I boarded yet another empty plane in the first week of January... only to arrive in Ireland the week they recorded the highest rate of infections globally. That was one article I wasn't planning on forwarding along to my mum!

It's now been five months since I arrived and, as I'm sure any new postdoc will know, it has been a steep learning curve. I have panicked on several occasions that I have made the wrong choice and constantly struggle with my now-familiar imposter syndrome. My new colleagues will tell you that I frequently exclaim "I hate proteins!" as my latest E. coli transformation leads to low expression or as my enzyme assay results are the opposite of what I had expected... if they work at all. I know that these feelings are a part of the shared experience of many new postdocs, but they feel so much more isolating as I sit half a world away from my friends and family, watching them enjoying life from lockdown here in Ireland. The slow vaccine rollout and never-ending border closures in Australia are heartbreaking to read about and have all but dashed my hopes of coming home for Christmas and my 30th birthday. I have no idea when I will next see my husband, but my new boss has let me shift my working hours back a bit to allow me to catch up with him and other members of my family in the morning when the nine-hour time difference suits best. The zoom age of connectivity as a result of the pandemic has even allowed me to stay connected to Australia in other ways, such as presenting at this year's ASP conference and giving lectures to the USYD DVM students – even if it means waking up at 3:30 in the morning!

While starting my academic career during a pandemic has certainly been a struggle that I am still figuring out to deal with, I have learned so much in the short time I have spent here and I know that the move was absolutely vital for my career. And although all the normal perks of working in Europe are out of reach for the time being, I have discovered that there are other, unexpected benefits to doing an overseas postdoc during a pandemic. For one, I have seen a side of my new city unlike any many will have seen before, with people out enjoying (the very limited) sunshine and making use of public spaces to have picnics and enjoy their time together during lockdown. I have developed close

State News continued

bonds with my new colleagues, many of whom are similarly disconnected from their friends and families and are unable to travel home. In some ways we have become a lab family. Despite the distance I seem to have become closer to many of my friends and family back home as we spend more time talking and catching up over zoom and whatsapp. Finally, I have developed a resilience that I was previously unaware of, and now know that if a pandemic can't stop me from moving forward in my chosen career, not much else can. With my long-term goals back on track my current focus includes getting fully vaccinated and, maybe one day even having a beer inside an Irish pub.

South Australia

State Outreach events

ASP members recently enjoyed a face-to-face social event for members where they shared the latest updates about their parasitology research over pizza and drinks. Photos will be published in the next newsletter.

University of Adelaide

Mohammad Farouq Sharifpour, PhD Candidate McAllister lab at The University of Adelaide has published the first paper of his PhD, available online: https://authors.elsevier.com/a/1d8wtbvbdRJEd. Farouq says that this paper encompasses the first goal of his PhD project which is improving an existing tetracycline-dependent transcription regulatory system in *Toxoplasma* known as TATi. The project was partially granted with a SAVS seed grant (2019), a Hans-Jürgen & Marianne Ohff research grant and an ASP Network Researcher Exchange, Training and Travel Award.

Farouq thanked everyone involved for their mental and intellectual support.

Victoria

University of Melbourne

Congratulations to **Tulio Campos** from Gasser Lab who recently completed his thesis and the whole team enjoyed celebrating!

Marshall Lightowlers has retired (voluntarily!) from the paid workforce at the end of 2020 but reports that he has been working full time ever since. Marshall says "We have just started a new 2-year project, so I will be busy working for some time to come. I have been appointed Laureate Professor Emeritus in the university, allowing me to continue my research. The new project is being undertaken in Madagascar and, ultimately, seeks to reduce human cysticercosis, and in turn, human epilepsy. It is funded by the Livestock Vaccines Innovation Fund, supported by the Bill and Melinda Gates Foundation, Global Affairs Canada, and Canada's International Development Research Centre. The project aim is to establish an effective and practical approach by which human cysticercosis can be reduced in endemic countries, leading indirectly to a reduction in the incidence of human epilepsy. The $1.9 million project is led by Meritxell Donadeu and Marshall Lightowlers. It will evaluate a low-cost option for *T. solium* control by firstly eliminating porcine cysticercosis in the project area by vaccinating and medicating pigs, followed by mass drug administration to the human population to eliminate tapeworm carriers."

ASP State Outreach

Coralie Boulet and Clare Anstead have been busy organising State Outreach events in Melbourne for Victorian members and their colleagues who are interested in joining the ASP as part of the 2021 ASP

Above: Tulio Campos from Gasser Lab celebrating his PhD submission.

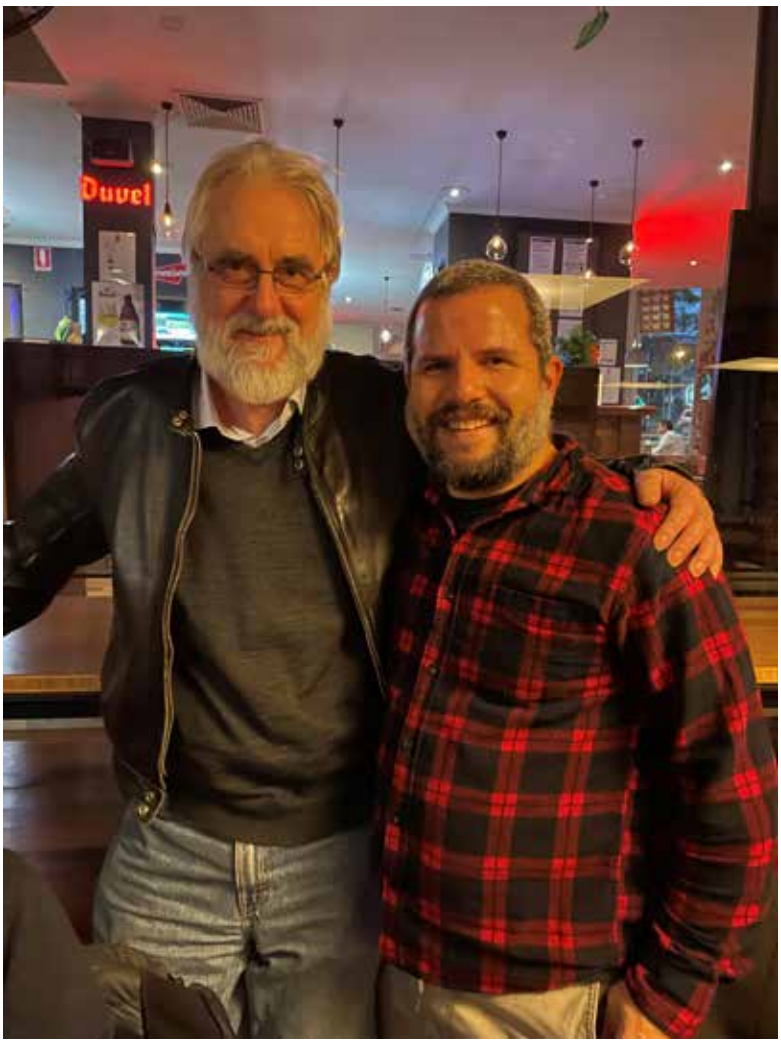
State News continued

Online Conference and as a State Outreach event.

We were honoured to hear from **Cam Raw** (University of Melbourne) at the 2021 ASP Online Conference. Cam gave delivered the Acknowledgement of Country on the Wednesday 23 and Friday 35 June at the start of the conference.

Right: ASP members enjoying a social gathering after COVID-19 restrictions had lifted

Below: PhD student Tulio Campos with Robin Gasser



Below: ACT ASP members enjoying face-to-face social events after the 2021 ASP Online Conference

State News continued

Top: Cam Raw (University of Melbourne) delivered the Acknowledgement of Country at the 2021 ASP Online Confernce

Above and Left: ASP members in Melbourne enjoying a face-to-face social gathering after the 2021 ASP Online Confernce

State News continued

Left: Haylee Weaver with baby Freya early in 2021.

Above: ACT ASP face-to-face social event for the 2021 ASP Online Conference

ACT

Australian National University

Congratulations to **Haylee Weaver** and partner who gave birth to a beautiful baby called Freya early in 2021.We look forward to meeting Freya at an upcoming ASP Conference!

Congratulations to Dr. **Giel van Dooren** who was awarded the 2021 Bancroft-Mackerras Medal for Excellence from the Australian Society for Parasitology.

ASP members in the ACT enjoyed their face-to-face social event as part of the 2021 ASP Annual Online Conference.

State News continued

On this page: ACT ASP members enjoying a face-to-face social gathering after the 2021 ASP Online Conference

State News continued

Above: Tasmanian ASP members enjoyed their face-to-face social gathering as part of the 2021 ASP Online Conference

Below: Telleasha Greay and partner with their 2.5 week old baby, Maddox Steer-Ninyette

University of Tasmania

ASP Members in Tasmania have enjoyed attending ASP Outreach events recently. In May this year members of ASP living in Tasmania held a joint mini-conference and fieldtrip to the beautiful Maria Island with Tasmanian members of the Wildlife Disease Association Australasia. The fieldtrip was organised by Scott Carver (ASP State Representative and Chair of WDAA) with both organisations contributing funds to pay for participants ferry ticket, lunch and refreshments.

ASP members in Launceston enjoyed their face-to-face social event as part of the 2021 ASP Annual Online Conference.

WA

Murdoch University

Congratulations to **Telleasha Greay** and partner who gave birth to a beautiful baby called Maddox Steer-Ninyette and Congratulations to Telleasha for graduating from her PhD! Born 23rd Feb this year, Telleasha took Maddox to her PhD graduation 2.5 weeks later, carried him up on stage with her and he sat with Telleasha the whole time. "That's when he used to be quiet, he certainly knows how to cry now." says Telleasha!

ASP members in Perth enjoyed their face-to-face social event as part of the 2021 ASP Annual Online Conference.

State News continued

On this page: ASP members in Perth enjoying a face-to-face social gathering after the 2021 ASP Online Conference

Events and Jobs in Parasitology

Jobs in Parasitology

Check out the latest jobs in parasitology
https://www.parasite.org.au/jobs/

Australian National University

Group Leader

Job no: 540890

Work type: Continuing

Location: Canberra / ACT

Categories: Academic

MULTIPLE ACADEMIC POSITIONS IN BIOLOGICAL SCIENCES

Research School of Biology

ANU College of Science

Classification: Academic Level B (Lecturer), or C (Senior Lecturer) or D (Associate Professor)

Salary package: $99,809 - $152,124 per annum plus 17% Superannuation

Term: Continuing

The Opportunity

To sustain and grow the Research School of Biology's program of research and teaching, we are seeking to appoint up to three new continuing faculty members at Academic Levels B, C or D (equivalent to Assistant or Associate Professor).

To address goals for gender equity, two positions are identified positions for applicants who identify as women.

Position one – photosynthetic biology,

Position two – host-microbe biology or membrane biology.

The third position is open to all applicants and will be appointed in any area consistent with RSB research and teaching priorities.

Applicants for all three positions should have received their PhDs within the last 15 years, allowing for career interruptions.

The successful candidates will be able to demonstrate that

- They are, or have the potential to become, world-class researchers in their respective fields, with strong, independent research programs funded by external grants.
- Their research and teaching reflects the latest theoretical, quantitative and experimental advances in their field, with a clear commitment to teaching excellence.
- They are collaborative and collegial, and accessible to colleagues, research students and undergraduates.
- They have a demonstrated high-level understanding of the principles of inclusion, diversity, equity and access, and a commitment to the application of these principles in a University context.

To apply for this role please upload the following documents:

A statement addressing each of the selection criteria and which includes:

A one-page statement of your research vision for the next 5-10 years

A one-page statement of your teaching philosophy

A half-page statement on where you see potential for collaborations within RSB.

A list of your top 5 publications, each one with a short description of its contribution and impact.

A current curriculum vitae (CV) which includes the names and contact details of at least three referees (including a current or previous supervisor). If your CV does not include referees, you can complete these online when prompted in the application form.

You are encouraged to ensure your application clearly articulates any personal circumstances, which should be taken into consideration when assessing of your achievements.

Download the Position Description & Selection Criteria online

https://jobs.anu.edu.au/cw/en/job/540890/group-leader

Advertised: 25 Jun 2021 09:00:00 AM AUS Eastern Standard Time

Applications close: 08 Aug 2021 11:55:00 PM AUS Eastern Standard Time

Events and Jobs in Parasitology

Jobs in Parasitology

Check out the latest jobs in parasitology
https://www.parasite.org.au/jobs/

University of Technology Sydney

Scholarship Opportunity

UTS is Australia's Top Young University and ranked within the Top 200 universities worldwide. Its vibrant campus is

located in the centre of Sydney, with easy access to all amenities and transport. A postgraduate research degree

equips you with specialist knowledge in your chosen field in preparation for entrepreneurial career pathways, senior

roles in industry, or for a future career in research. It's an opportunity to expand your intellectual interests, build

your skills and hone your expertise. And it's not just for a certain type of person—in fact, a research degree has

something to offer anyone who's passionate, intellectually curious and up for a challenge.

As well as building in-depth disciplinary expertise, a UTS research degree will equip you with skills and knowledge

that are highly valued in industry, government and academia.

Project description:

This project will identify and characterise the biological function of small RNAs known as microRNAs expressed by

the liver fluke parasite *F. hepatica*. The findings will create a new mechanistic framework for the regulation of host

immune responses by parasite-secreted miRNAs and reveal the molecular biological pathways that are unique to

parasitism and parasitic disease.

Specifically, the candidate's role in the project will be to characterise the miRNA profile of the parasite throughout its

life cycle. This information will then facilitate an examination of the interaction of parasite miRNAs with host cells in

vivo and in vitro, and inform the exploration of the functional mechanisms employed by

the parasite to manipulate

host immune responses.

Demonstrated laboratory experience in tissue culture, aseptic techniques and molecular techniques, including

working knowledge of RNA extraction, PCR/qPCR, RNA sequencing would be desirable. Applicants with some

knowledge in bioinformatic approaches for the analysis of gene expression would be ranked highly.

The project will be supervised by Associate Professor Sheila Donnelly and Associate Professor Nham Tran.

About the Scholarship:

The scholarship is for $28,597 per year (RTP Stipend rate, indexed annually) for salary costs of the PhD candidate and

the successful applicant.

Applicants must be either permanent Australian residents or New Zealand citizens. To be eligible for this application,

you must hold the following or equivalent degree in biomedical science, biotechnology, life science, science:

• Honours degree with First Class, or Second Class Division 1, or

• MSc Research or MSc Coursework with a research thesis.

How To Apply

Applicants must meet the eligibility and has the desire to pursue research in the proposed area.

Students should meet the UTS admission requirements to the UTS PhD program. Applicants should send their CV, list

of publications, and a personal statement (750 words maximum) outlining your suitability for undertaking a PhD,

what you hope to achieve from your research, and your research experience to date (with reference to the desirable

expertise described above) to Associate Professor Sheila Donnelly (Sheila.Donnelly@uts.edu.au) by the closing date.

Shortlisted candidates will be advised with further details.

Associate Professor Sheila Donnelly

University of Technology Sydney

Sydney AUSTRALIA

Closing Date: 30th Sept 2021

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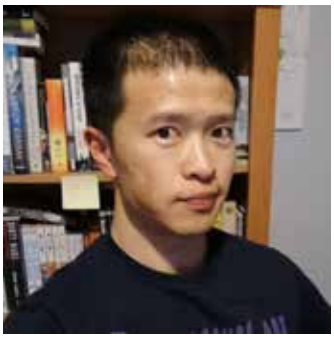

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