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# Parasitravaganza 2020: Insights into a Virtual Parasitology Conference

**Recognizing the significant impacts of the coronavirus disease 2019 (COVID-19) pandemic for early-career researchers (ECRs), the Australian Society for Parasitology Inc. organized an online conference 'Parasitravaganza 2020' on 30–31 July this year for ECRs to connect, present their research, and participate in career-focused workshops. In this *TrendsTalk* we invite the organizing committee to discuss some of the highlights of the meeting and some of the challenges and opportunities presented by online conferences.**

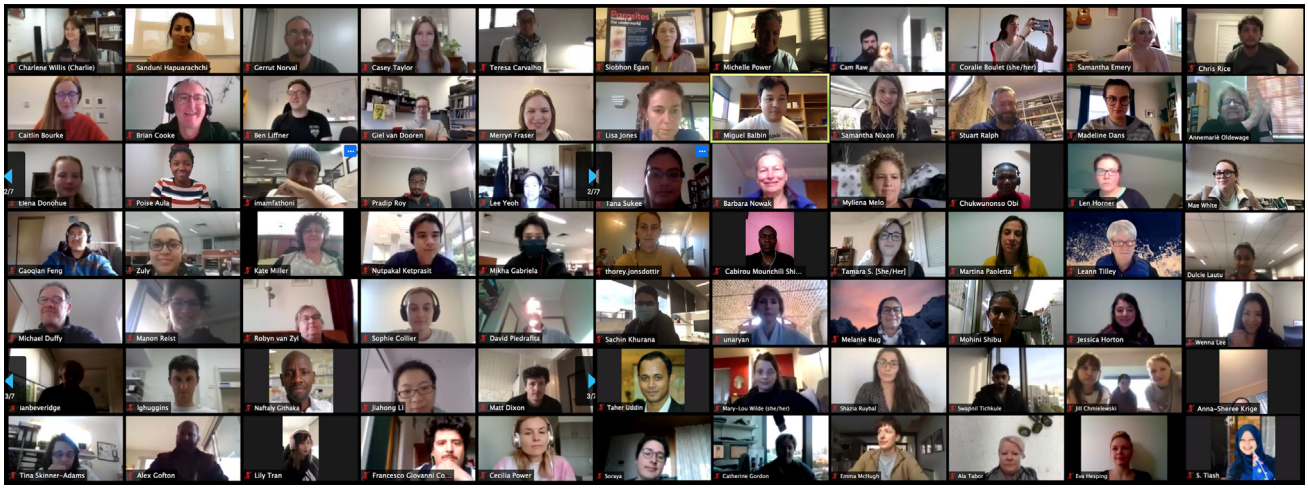



Figure 1. Parasitravaganza 2020 Participants Listening to Scientific Presentations. The online conference reached a wide audience, with 175 delegates representing more than 38 countries from six continents participating in the event.

## The COVID-19 Pandemic and Impacts for Early-Career Researchers

The impact of the 2020 COVID-19 pandemic on academia and research will have long-lasting consequences, especially for ECRs (postgraduate students and postdoctoral researchers) [1]. Networking with peers and members of the scientific community is crucial for ECR career development and has been hindered by travel restrictions, work-from-home directives, and the cancellation and postponement of many conferences due to the pandemic.

Recognizing the significant impact on ECRs, the Australian Society for Parasitology Inc. (ASP) responded by organizing an online conference 'Parasitravaganza 2020', continuing to support ECRs given postponement of the ASP's annual 2020 conference to 2021. The ASP highly values ECR members as evidenced through its many initiatives, including the 'Concepts in Parasitology' course, prizes, travel awards, and annual conference travel grants. Therefore, 'Parasitravaganza 2020' aimed to provide a platform for ECRs to remain connected, present their research, and participate in topical workshops.

## Parasitravaganza: A Virtual Conference for ECRs

The organization of the Parasitravaganza conference was driven by a committee consisting of five PhD students who embraced the opportunity to organize, structure, and lead the event. Two senior academics, and the ASP secretary and executive officer, provided mentoring, advice, and delivery. The conference attracted 450 registrations representing over 38 countries from six continents. Of the 81 submitted abstracts, 24 were international submissions. While the team initially envisioned this to be an event for Australia-based scientists, the online forum facilitated a wider and more inclusive opportunity for ECRs from around the world (Figure 1).

Parasitravaganza opened with career-focused workshops on the first day, covering the impact of COVID-19 on the research workforce, how to publish your paper, and science communication. The workshops ended with a panel discussion on 'life beyond academia' providing advice on pursuing jobs and collaborative projects outside of the traditional university sector. On the second day, the inaugural online conference began

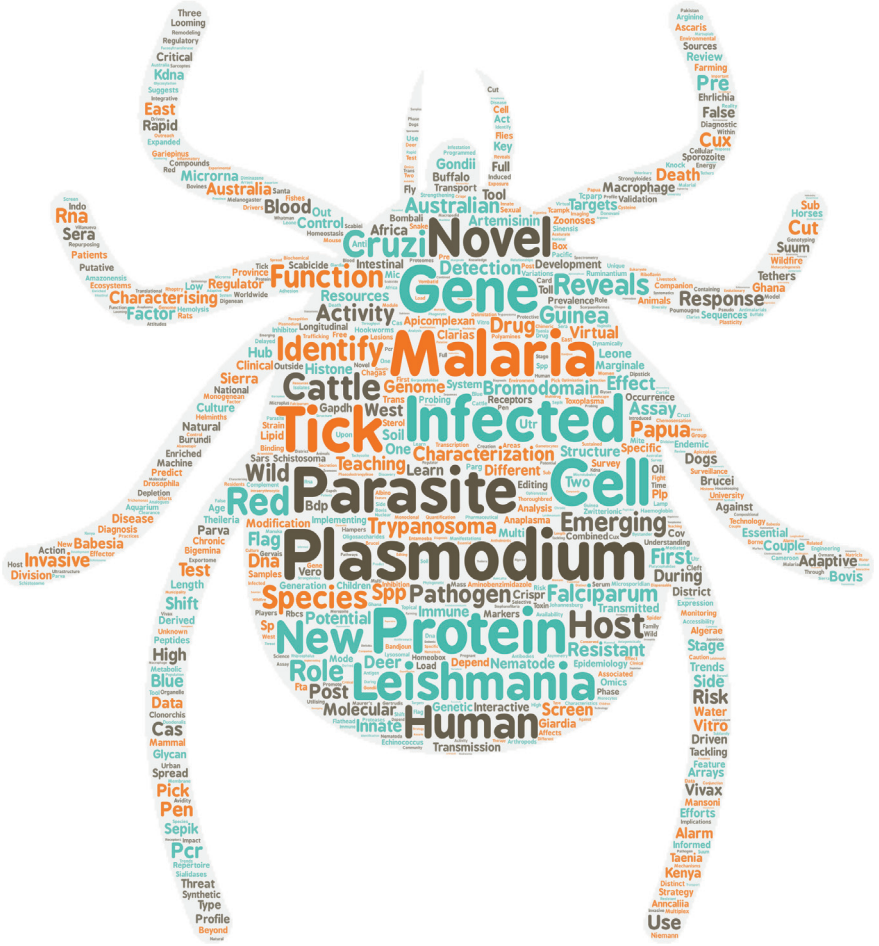
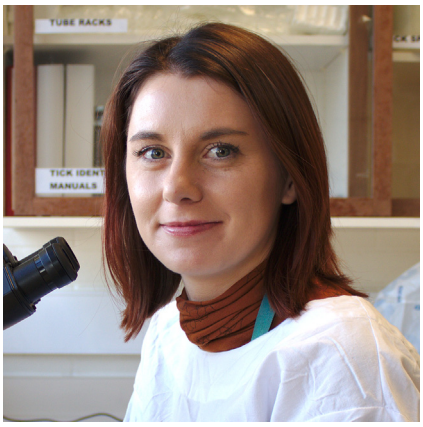



Figure 2. Parasitravaganza 2020 Word Cloud Generated from Keywords Selected from 81 Submitted Abstracts in the Shape of a Tick (Ixodidae). The word 'cloud' reflects the diversity of parasitology research that brought the delegates together.

Coralie Boulet
La Trobe University, Melbourne, Australia

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Murdoch University, Murdoch, Australia

Lisa Jones
James Cook University, Townsville,Australia

with an Acknowledgment of Country, a formal ceremony to acknowledge and recognize the Traditional Owners and Custodians of the land – the Aboriginal and Torres Strait Islander people – on which an event is held. The Acknowledgment of Country was led by ASP president Barbara Nowak (The University of Tasmania), and an animated video of the Indigenous painting *Gula Guri mayin* ('Heal the body') was shared with the delegates. This artwork[i] by Bernard Lee Singleton, and animated by Russell Milledge (James Cook University) and Tai Inoue, explores themes of parasites and health in Aboriginal and Torres Strait Islander communities. This was followed by scientific presentations by ECRs in both oral and ePoster formats, representing diverse topics in parasitology (Figure 2).

## Career Development Workshops

### Finishing Your PhD in a Pandemic. What Is Next?

Inger Mewburn (The Australian National University), author of *The Thesis Whisperer* blog[ii], discussed her analyses of the impact of the COVID-19 pandemic on the research workforce. Inger reported that the number of PhD graduates far exceeds the number of academic positions, with many new graduates feeling 'anxious', 'scared', and 'uncertain' when confronted with the lack of job opportunities. Despite this, Inger provided encouraging numbers, with 98% of PhD graduates in Australia finding a job. For the ~50% of Australian PhD graduates leaving academia, the industry and government sectors are the predominant employers. In Australia, many job offers exist for researchers, but ~80% of them do not use 'PhD' in their keywords; other search terms are therefore required to find these 'hidden jobs'[iii]. Although these are difficult times, Inger stated that this is an opportunity to nurture our communication and technical skills, not to underestimate 'the strength of weak ties' and the power of networking platforms such as LinkedIn.

### Publishing Your Research

Una Ryan (Murdoch University) and Brian Cooke (James Cook University), editors for the journals *Parasitology Research* and the *International Journal for Parasitology*, respectively, provided advice on getting your research published. Una and Brian emphasized the importance of 'first impressions' and making sure journal instructions have been followed. Editors receive hundreds of submissions and need to make very fast decisions. Many manuscripts are rejected because they are not within the scope of the journal, or because the data are too preliminary for publication. The importance of the letter to the editor when submitting was also emphasized; this letter is an opportunity to talk directly to the editor, highlight the research significance, summarize key results, and 'sell' the paper. The letter to the editor should not just be a repeat of everything that you have included in the abstract, but emphasize why you did the research, how your work expands and goes beyond previous work, and if the work contradicts earlier published research. The review process was also highlighted as an important opportunity to improve your work. Whether your submission is accepted or not, integrating the reviewers' comments and making appropriate adjustments will considerably improve your paper.

### Outreach and Science Communication

Alice Motion (The University of Sydney) spoke about our duty as scientists to communicate results to the public, and to reflect on the impact of our research. According to Alice, effective science communication relies on storytelling, and the three I's: (i) increase interest and engagement, (ii) improve understanding, and (iii) impact

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people's beliefs. When communicating your research, Alice explained that it is not about you, but about your audience: be aware of what they know, what their interests are, and find the 'wow' factor of your research to grab their attention. To further increase audience engagement, Alice suggested connecting through emotions, by incorporating personal stories, cliff-hangers, humor, and to leave out scientific jargon. The number one piece of advice for effective science communication Alice says 'is to simply start doing science communication. It's something that, like research, can only get better with experimenting and practice'. This can be in the form of a science festival, podcast, science journals, radio station interviews, social media – any place where you can communicate with an audience.

### Career Panel Discussion – Life beyond Academia

The career panel consisted of Krystal Evans (GSK Australia), Andrew Wilks (SYNthesis Med Chem), and Rebecca Traub (The University of Melbourne and The Tropical Council for Companion Animal Parasites). Together with the participants, they discussed life beyond and alongside academia and provided tips and advice on employment. They emphasized that employers want to employ a person, not a publication list, and encouraged job seekers to research the role, the company, and importantly, the values of the company. Many skills developed during postgraduate studies are transferable, including teamwork, meeting deadlines, data analysis, and critical thinking. In fact, some employers prefer to hire PhD graduates for this reason. It is crucial, however, to provide evidence behind each skill that you list on your CV. Krystal, Andrew, and Rebecca reminded us that networking is invaluable to our careers. Panellists encouraged participants to engage in work experience, industry-based learning placements, volunteering, and science communication to get a foot in the door of the careers they want to pursue. Lastly, it was stressed that resilience is an essential trait for all researchers. As ECRs, little goes as planned. Try to establish back-up plans (several of them) early on; this will help you to get back on your feet when things go wrong.

## Parasitravaganza Keynotes

### Gender Equity in Research

Elena Gómez-Díaz (The Institute of Parasitology and Biomedicine López-Neyra, Spain) is a coordinator of 'Women in Malaria' (WiM)[iv] and of the Equality and Diversity Commission at her institute. Elena presented a talk on disrupting both unconscious and gender biases in science. She based the talk on her own experiences in the field and her work with the WiM community. Elena's thought-provoking presentation provided simple steps that individual researchers can follow to build more diverse and inclusive laboratories, which have also been articulated in a recent *Trends in Parasitology* commentary [2].

### Dogs, Worms, and Long Days in the Stone Country

Dogs fulfil many special roles in Australian Aboriginal and Torres Strait Islander cultures: acting as companions or hunting partners, playing integral roles within the intricate kinship system, or even creating resources as critical as fresh water within dreaming stories. Free-roaming dogs throughout the world can also act as reservoirs of zoonotic parasites such as soil-transmitted helminths. Cameron Raw (The University of Melbourne) is a Palawa man, veterinarian, and PhD candidate, and is providing new insights into the intersection of dogs, parasites, and zoonoses in Australian Aboriginal and Torres Strait Islander communities (Figure 3). Taking part in regular trips to over


Figure 3. Cameron Raw with a Litter of Puppies Treated during a Dog Health Program in West Arnhem Land (Australia).

ten remote communities in Arnhem Land, teams of veterinarians and veterinary students provide important services such as desexing, parasite treatment, general veterinary care, and community education. Cameron's research and community-based One Health approaches are vital to not only better understand the role of dogs as a potential reservoir of zoonotic parasites but also to connect with Aboriginal and Torres Strait Islander communities and provide practical and meaningful advice to improve health outcomes[v].

## Science Presentation Highlights

### Drug Discovery: Using Spider Venoms against Human and Veterinary Parasites

Venoms are complex cocktails of molecules that evolved over hundreds of millions of years in >220 000 species. Venoms therefore represent a large library of natural molecules that can be explored for drug discovery [3]. Samantha Nixon (The University of Queensland), the winner of the Parasitravaganza Best Long Talk Award, investigates spider venoms as a novel source of antiparasitic compounds. Samantha has tested over 200 venoms on a variety of parasites, including hookworms, schistosomes, nematodes, blow flies, and malaria parasites. In particular, compounds from tarantula species displayed potent antiparasitic activity against *Haemonchus contortus* (Barber's

Trends in Parasitology

Figure 4. Samantha Nixon Holding a Queensland Whistling Tarantula (*Phlogius crassipes*), Used as a Source of Venom to Screen for Antiparasitic Compounds.

pole worm), a blood-feeding gastrointestinal nematode of sheep which represents a major threat to the sheep industry (Figure 4).

### Identification of *Plasmodium falciparum* Merozoite Proteins Essential for Rhoptry Secretion

Benjamin Liffner (The University of Adelaide) was awarded the prize for Best Speed Talk for his research combining super-resolution imaging, electron microscopy, and protease protection assays to describe a *Plasmodium* rhoptry membrane protein required for invasion of red blood cells, PfCERLI1. In recently published work, Benjamin showed that the inducible knockdown of PfCERLI1 led to impaired secretion of invasion organelles [4].

### A Transporter Critical for *Toxoplasma gondii* Invasion

Transporters are integral membrane proteins that facilitate the translocation of molecules across biological membranes. Apicomplexan parasites *Plasmodium falciparum* and *T. gondii* rely on transporters for nutrient uptake, waste removal, and in the generation and maintenance of electrochemical ion gradients. Sanduni Hapuarachchi (The Australian National University) won the People's Choice award for her talk on uncovering key transporter proteins termed important transporters in apicomplexans (ITA) proteins. Currently, Sanduni has identified six ITA proteins important for apicomplexan proliferation and demonstrated that the loss of one of these, ITA-13, renders *T. gondii* parasites unable to invade host cells, illustrating the far-reaching importance of transporters.

### Identifying the Key Players of the *Plasmodium falciparum* Exportome

*P. falciparum* exports hundreds of proteins from its encasing vacuole into the host's red blood cell during its blood stage for survival. Thorey Jonsdottir (Burnet Institute) won the Best Poster Award for her work on determining the essentiality of these proteins through bioinformatic analysis. Thorey included export prediction databases and data from various knockout screens, and predicted which proteins are likely to be essential for parasite survival, with the potential for these proteins to act as drug targets for therapies.

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Mae A.F. White
Flinders University, Adelaide, Australia

Currently Thorey has identified 44 previously uncharacterized exported proteins and is working on a subset of these proteins to determine if they are essential for *P. falciparum* survival and what roles they play in malaria biology.

TcAMPK: A Cellular Energy Homeostasis Hub Regulator with Unique Characteristics in *Trypanosoma cruzi*

A highlight of the conference was the contribution of international participants. Time-zone differences were no barrier for Tamara Sternlieb (Instituto de Investigaciones en Ingeniería Genética y Biología Molecular) who delivered both an oral and a poster presentation from Buenos Aires. Tamara presented data regarding the AMP-activated protein kinase (AMPK) in *T. cruzi* and its role in adaptation of the parasite to varying metabolic environments. Tamara reported that phosphorylation and activity of AMPK varied in response to carbon availability in growth media, with increased activity observed in starvation levels. Tamara also showed that expression of AMPK subunits impacted the growth rate of the *T. cruzi* epimastigote, pointing to a potential post-translational source of regulation for metabolic remodeling.

## Our Perspective on Virtual Conferences

Although face-to-face events provide invaluable experience, there are now increasing online scientific events (conferences, workshops, and outreach) occurring across many disciplines. Among the advantages of online conferences, accessibility was considered crucial (Table 1). Not only was registration to Parasitravaganza free, attending online removed the need for travel and accommodation costs. Less academic travel also contributes to reducing greenhouse gas emissions, a much needed action to mitigate the ongoing climate crisis [5]. While the COVID-19 pandemic has changed our vision of conferences, the importance of face-to-face networking, and those unanticipated conversations that lead to ideas and new collaborations, cannot be

Table 1. Considerations When Organizing Online Conferences

| Aspect | Organizational considerations | What worked and what did not work |
|---|---|---|
| Participation | Registration was free to ensure that participation was not restricted due to cost. | Organization (registrations, technical, online platform, and awards) were financially supported by the ASP. While organization costs were not as high as face-to-face conferences, there is still a need for financial support when organizing online conferences.<br>Attendance rates over the 2-day event were ~34–39% of those that registered. The lack of a fee may make it harder to predict how many people will join (attendance) although this is not as important compared with in-person attendance (e.g., no catering involved).<br>Importantly, low- or no-fee conferences support participation of registrants from low resource settings without individuals having to justify their inability to pay for registration. |
| Online delivery – format | Zoom 'meeting' function was chosen over a webinar format to encourage interaction between participants and foster engagement. | This decision was considered important to allow maximized interaction of delegates, who turned on their cameras to ask their questions directly.<br>The chat feature in Zoom was also used and provided a good source of communication for questions and general interactions. |

*(continued on next page)*

Table 1. (continued)

| Aspect | Organizational considerations | What worked and what did not work |
|---|---|---|
| | Cautious of 'Zoom fatigue' a schedule comprising 2 half days was chosen to ensure accessibility by as many time zones as possible. | Scheduling shorter sessions rather than whole-day conferences may have assisted with increasing international contributions and participation.<br>Allowed for flexibility with participants able to choose which sessions they would attend. We found this was well received by delegates. |
| | ePosters displayed on the Society's website for participants to view at leisure. | The ePoster concept was well received, with 36 poster submissions displayed on the ASP website.<br>The lack of an easy platform for participants to view individual posters together with the presenter reduced the opportunity for discussion and feedback with ePoster authors. |
| Online delivery – technical | A Slack workspace for attendees was structured around separate channels for different purposes: workshop discussions, the career panel, the oral presentations, and the posters. | The Slack 'bio' channel provided a platform for presenters to introduce themselves, their research topic, and to provide contact details.<br>While this platform was well received, more engagement with the delegates would be beneficial. It was not clear if the lack of engagement was due to unfamiliarity with the platform or interest. |
| | Only presenters of talks greater than 10 min (invited speakers and long talk contributions) were invited to share their screen.<br>Short-talk presentations were collated prior to the event and their display controlled by the session chair. | Managing displays of presentations for short talks provided smooth transition between presenters and avoided technical delays.<br>Presenters were also provided with the opportunity to submit a video recording to prevent technical issues from disrupting sessions.<br>Time management is complicated by the slight delays associated with the use of zoom technology and the lack of a chair's physical presence to prompt presenters to complete. Need to compensate by providing extra time for questions in future events. |
| Networking and social interactions | To encourage networking between participants, the Zoom session ran continually through session breaks. | Networking could be further improved by organizing breakout rooms in between sessions of more intimate size and/or including a facilitator in each room to enhance informal interactions |
| | A social event (online trivia) was held after the workshops and was well received with ~30 participants. | This trivia event facilitated further social and networking opportunities among participants who did not know each other by providing an informal social setting. |

underestimated. Therefore, innovative mechanisms to include such opportunities when organizing online conferences should be considered.

## Resources

[i] www.parasite.org.au/outreach/gula-guri-mayin/
[ii] https://thesiswhisperer.com

[iii] https://openresearch-repository.anu.edu.au/handle/1885/209176
[iv] https://womeninmalaria.weebly.com/
[v] https://mag.alumni.unimelb.edu.au/dogs-dust-and-long-days-in-the-stone-country/

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