

**October 2020**

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## **AIMS@JCU Awards: Round 1 for 2020**

Congratulations to all of the students who were successful in their applications for the following awards:

**Science Communication Awards** (\$1,500 each)

**Stacy Bierwagen & Rodrigo Gurdek** towards journal publications

**Pilot Research Awards** (\$1,000 each)

**Julia Saper, Stella Fulton & Geoffrey Yau**

Look out for summaries of their travel and research in future newsletters.

Applications submitted earlier this year that were unable to be assessed due to the COVID-19 situation will be looked at again when restrictions on travel etc., are relaxed.

AIMS@JCU will honour awards granted in 2019 which were unable to be undertaken because of travel restrictions/cancellations/postponed events, where possible.

## **AIMS@JCU Awards: Round 2 for 2020**

The second round of applications for 2020 are currently being finalised for both Science Communication awards and Pilot Research awards.

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Photographs in this publication were submitted by AIMS@JCU members unless otherwise stated

### **About the AIMS@JCU Newsletter:**

This newsletter is produced quarterly and distributed by email to AIMS@JCU members, AIMS and JCU staff.

If you'd like to be added to our mailing list, or have a query regarding this newsletter, please contact:

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## 2020 AIMS@JCU PhD scholarship recipient

Ahmad Rafiuddin 'Raf' Rashid

Specialising in environmental biology, Raf received a Bachelor's degree (with honours) in Life Sciences from the National University of Singapore in 2016. He then spent a year working as a research assistant at the Tropical Marine Science Institute in Singapore, where he supported researchers working on a coral reef restoration project. Over the next two years, he pursued a Master's degree in Marine Biology at Universität Bremen, Germany. It was also during this time when Raf joined the Microsensors group at the Max Planck Institute for Marine Microbiology as a student, and helped in the development of a new proximal sensing method of surveying coral reefs by capturing underwater hyperspectral imagery and applying machine learning techniques to generate maps of high spatial and taxonomic resolution.

Raf will commence his PhD candidature under the supervision of Dr. Karen Joyce (JCU), Dr. Katharina Fabricius (AIMS), Dr. Jonathan Kok (AIMS), and Dr. Stefan Maier (JCU). His PhD research will investigate the use of close-range millimetre-resolution hyperspectral imaging in monitoring the health of coral recruits and fragments destined for reef restoration. Hyperspectral methods have long been used in remote sensing and coral reef mapping, and the ability to distinguish spectrally dissimilar targets is also applicable to close-range proximal sensing of corals at the organismal level as well. Spectrally-rich hyperspectral imagery data will be analysed using artificial intelligence methods to quantitatively measure zooxanthellae, fungal or microbial photopigments and detect other biophysical parameters that can be correlated to recruit health and vitality. This work will then be the foundation for a non-invasive and scalable health monitoring system, capable of early detection of coral recruit bleaching, disease, and mortality.

Michael Jarrold



# Science Communication Award report

Mickaela Nordborg 2019



In July 2019 the Society of Environmental Toxicology and Chemistry Australasia Chapter (SETAC AU) held their biennial conference at the Darwin Convention Centre. The convention centre is beautifully located at the waterfront in central Darwin, Northern Territory. With the support of an AIMS@JCU student travel award I could attend the conference and present results from several chapters of my PhD thesis. I gave a 15min seminar talk on the relative sensitivity of life stages across the life cycle of the model coral *Acropora millepora* to heavy fuel oil exposure as well as a poster presentation on the impacts of elevated temperature on oil toxicity towards coral larvae under different light conditions. Both presentations were well received with interest shown by both industry representatives and academics. I also received the prestigious SETAC AU Best Student Oral Presentation in Ecotoxicology award for my seminar presentation, one of only two awards presented for student seminars each conference.



As is traditional for SETAC AU, the conference also offered outstanding student and ECR networking opportunities with several events organised specifically to that end, including the conference Buddy/Mentoring system, the Buddy breakfast and Student/ECR night. I received feedback on my work from researchers from several prominent institutions which has helped me further develop my project and resulting publications. I would highly recommend other students from AIMS@JCU to attend a SETAC AU conference during their candidature and take advantage of these unique opportunities to interact with other students as well as high profile researchers, such as the conference keynote speaker Professor Emma Johnston, in a highly supportive and welcoming environment.



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Christopher  
Brunner

# Science Communication Award report

Bettina Glasl 2018

In August 2018, I attended the International Symposia on Microbial Ecology (ISME) in Leipzig (Germany). The ISME conference is the world's largest non-profit meeting in the field and one of the most influential microbial ecology conferences, attracting the attention of high profile researchers in the field. I am very grateful that I was given the opportunity to present the most recent results of my PhD at this prestigious conference as this provided me the ideal platform to disseminate my research findings, network with my peers and to practice my presentation skills.

Thanks to the AIMS@JCU Science Communication Award I was able to cover travel related costs and attend the ISME conference in 2018. The title of my oral presentation was "Coral reef microbiomes: Establishing baselines for microbial based monitoring". My talk focused on the establishment of microbial baselines and the identification of microbial indicators of coral reef health. The data presented at the conference are now published in the high impact journal *Microbiome* (<https://bit.ly/2zy2Kk5>).



Emma Marangon

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Page 5 photographs courtesy of Mikaela Nordborg and SETAC AU 2019 conference organisers.

## Pilot Research Award report

Josephine Nielsen 2019

I was fortunate to be awarded an AIMS@JCU Pilot Research Award in April 2019 which supported acute thermal stress experiments in the SeaSim for my PhD project. Here, I examined the effects of acute heat stress (6h exposure) on coral physiology and survival. I have previously conducted multiple acute heat stress assays in the field using mobile tank systems and will continue to do so throughout my PhD project. Therefore, it was important to establish if such assays are capable of teasing out differential thermal tolerance of coral colonies and at what temperatures such differences start manifesting themselves.

Although my field project includes multiple species, here I chose to focus purely on *Acropora tenuis*. 30 colonies were collected from Davies Reef, fragmented and distributed across 5 treatments: 27°C, 30°C, 32°C 34°C and 35.5°C. Corals were sampled 1h after the end of the heating period where photosynthesis was measured by quantifying Rapid Light Curves and samples were then snap-frozen in liquid nitrogen and stored at -80°C until further processing. Corals were also sampled at 24h post heat stress and again 10 days and five weeks after to monitor recovery and potential long-term effects of acute heat stress. Corals were buoyant weighed prior to heat stress and a subset weighed again 10 days and 5 weeks after the six hour heat stress had occurred.



Preliminary results indicate that both the 30°C and 32°C treatment resulted in enhanced weight gain of the corals detectable 10 days after the acute heating event. More importantly, conducting these assays under controlled laboratory conditions highlighted that it is possible to elicit physiological responses to warming over short temporal scales.

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## AIMS@JCU Pomodoro Sessions

Dr. Cherie Motti

In September 2019 AIMS@JCU held their inaugural writing retreat in the idyllic setting of Magnetic Island. It was held over two days and incorporated two techniques: mindfulness and pomodoro.

Recently, the importance of practicing mindfulness has become evident with programs being introduced at AIMS and JCU. However, not many of us practice the Pomodoro technique. So, what exactly is the Pomodoro technique? Pomodoro is the Italian word for tomato, but what does that have to do with writing? In the early '90s then university student Francesco Cirillo was using the humble pomodoro kitchen timer to set blocks of time to complete tasks in order to meet his looming deadlines. In essence, he was using the Pomodoro kitchen timer as a method of time management, whereby the length of time for concentrated effort was limited by the introduction of a forced restorative break.

Typically, a Pomodoro session includes a 25-minute-long period of concentration, followed by a 5-minute break, repeated over a period of 2 hours. So why 25/5 mins? There is now scientific evidence that prolonged cognitive load can lead to mental fatigue and lower productivity, yet many of us feel guilty about taking too many breaks at work. On the other hand, many people say they work best under tight deadlines, because they are forced to complete the task in a defined, and sometimes very short, period. The 25/5 min interval combines both aspects. Although the 25/5-time interval may not suit everyone or every task, the key is to find what works for you and be consistent.

Feedback from those that attended the AIMS@JCU writing treat was that there was benefit in doing the Pomodoro technique as a group. Therefore, in January 2020 AIMS@JCU started running weekly Pomodoro sessions at AIMS on Thursdays between 8:30-10:30 am. Although most students attended the sessions in person, there were a few that persevered with the (numerous) technical difficulties associated with virtual connection. And thankfully they did, as the sessions have been able to continue uninterrupted since the start of the COVID-19 pandemic. As a group we now check-in with each other and chat at 8:15 am every Thursday via Zoom before starting the 2 hr Pomodoro session. If you are interested in joining the AIMS@JCU Pomodoro sessions please contact the AIMS@JCU office ([aims@jcu.edu.au](mailto:aims@jcu.edu.au)), Cherie Motti (AIMS staff; [c.motti@aims.gov.au](mailto:c.motti@aims.gov.au)) or Michaela Miller (AIMS@JCU candidate; [m.miller@aims.gov.au](mailto:m.miller@aims.gov.au)). All students and staff associated with AIMS and JCU are welcome.

Christopher  
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## Research Director Report

The year 2020 has certainly thrown us some unique challenges!

The year began with mixed emotions as we said farewell to our much loved admin officer Melissa McLean after a marvellous 6 years with us at AIMS@JCU, and we wished her well for a new career in early childhood education. Mel's contribution to AIMS@JCU was immense - through her outstanding professional competency, great flexibility and stamina to always go above and beyond whenever necessary, empathy for the highs and lows experienced by our wonderful students and their (mostly) patient supervisors, and her positive, logical and bubbly presence that brightened our office every day. Good luck Mel! (and as a member of our alumni, we look forward to seeing you at future seminar days and other AIMS@JCU social events).

Unfortunately, we have been unable to recruit a new admin officer yet because Mel's departure coincided with the onset of COVID-19 and related restrictions on new recruitments. So – thank you so much to Lauren Gregory, our trusty office manager - who absorbed the increased workload and keep us afloat with seamless continuity. This was made more possible because some of our events have not been able to proceed during the lockdown – however Lauren's workload has increased and adapted and she has been amazing throughout.

At the risk of stating the obvious, COVID-19 has dominated this year for all of us. Thankyou to all students for having contingency conversations with your supervisors and adjusting to working from home. Throughout the lockdown, we did our best to ensure those of you who really had to access AIMS facilities were able to do so to the extent possible. Sorry for all the extra paperwork – but I hope you agree that it was worth it! Now that restrictions are easing, we are doing our best to ensure that those who need to access the AIMS site are able to get there safely. For those that commute in the AIMS@JCU vehicles – I appeal to you to please follow the protocols for booking in via the website. It really does help us help you – but informing us about demand for transport to AIMS.

I acknowledge how hard this period has been for you all, and I especially acknowledge the impact on general wellbeing, mental health, anxiety about the future and increased financial stress. I think this has especially been hard for our international students. On behalf of all at AIMS@JCU, I extend sincere condolences to those who have lost family and friends back home during the

**Christopher  
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## Research Director Report

continued

pandemic period. The restrictions on ability to travel and move about freely have prevented some of you from being with loved ones during these difficult times, and you are in our thoughts.

Many of you will be thinking about the candidature and scholarship extensions you might need to complete your projects. I urge you to continue to document the specific COVID impacts on your projects, so that we can help you when the time comes to justify and obtain the extension that you need. I would also like to remind you that AIMS CEO, Dr Paul Hardisty, has repeatedly and publicly stated AIMS' commitment to support you to completion. While we are not yet sure what this will look like (how many, cost, etc), the commitment is there and we will stand by you.

Thank you to everyone who participated in the student wellbeing survey that we established early in the lockdown. It really has helped us understand the impact and develop responses. We are going to repeat that survey soon – I urge you all to again participate so we can continue to advocate for your needs.

Libby Evans-Illidge, AIMS@JCU Research Director

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