



October 2021

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AIMS@JCU Awards: Round 2 for 2021

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

Science Communication Awards

Chinenye Ani, Ramona Brunner, Emma Marangon, Mikaela Nordborg, Tiny Remmers Barry & Marko Terzin.

Pilot Research Awards

Alex Gulizia, Magena Marzonie, Josephine Nielsen, Tiny Remmers Barry & Taylor Whitman.

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

Progress Reports

Please remember to send AIMS@JCU a copy of either your progress report for the GRS or an email from the GRS showing that you are exempt from completing one.

AIMS@JCU Commuter Vehicles

We'd like to thank those of you who are kind enough to drive the AIMS@JCU student members to AIMS and back each day. We are very grateful that you ensure the groups travel safely, even though it adds extra responsibility and effort to your day. Please make sure that you provide accurate odometer readings when refuelling and ensure you stick to the speed limits (note that the JCU Bebegu Yumba Campus, Douglas limit has been reduced to 40kms/hr). Thanks again.

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

We are reducing our carbon footprint by reducing the number of printed copies available. Please let us know if you need a hard copy of this newsletter

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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Writing Retreat: The second AIMS@JCU writing retreat held on Magnetic Island was a huge success, with students enjoying a productive, Pomodoro style, writing experience. There was a good mix of work, classes and fun, which was made all the more enjoyable by the fabulous group of attending students.



Thank you to Valerie Cornet, Josephine Nielsen, Magena Marzonie, Stella Fulton, Blanche D'Anastasi, Bethan Lang, Emma Marangon, Kevin Bairos-Novak, Paul O'Brien, Annika Lamb and Geoffrey Yau for all of your hard work and kindness. Thanks also to Gemma Wickens for her help with logistics, as well as to Liz Tynan, Sharn Rocco and Dani Ceccarelli for fabulous talks and workshops. Hopefully we can make this an annual event, COVID-19 allowing!

Graduation: Congratulations to our most recent graduates, Sam Sherman, Bettina Glasl, Cecilia Pascelli Santana Santos, Stacy Bierwagen, Grace Al Moajil-Cole, Cheng-Han Tsai, Jonathan Barton & Audrey Schlaff. In March, our Assistant Research Director, Cherie Motti was able to join those who were able to attend their ceremony in person.



Michelle Heupel

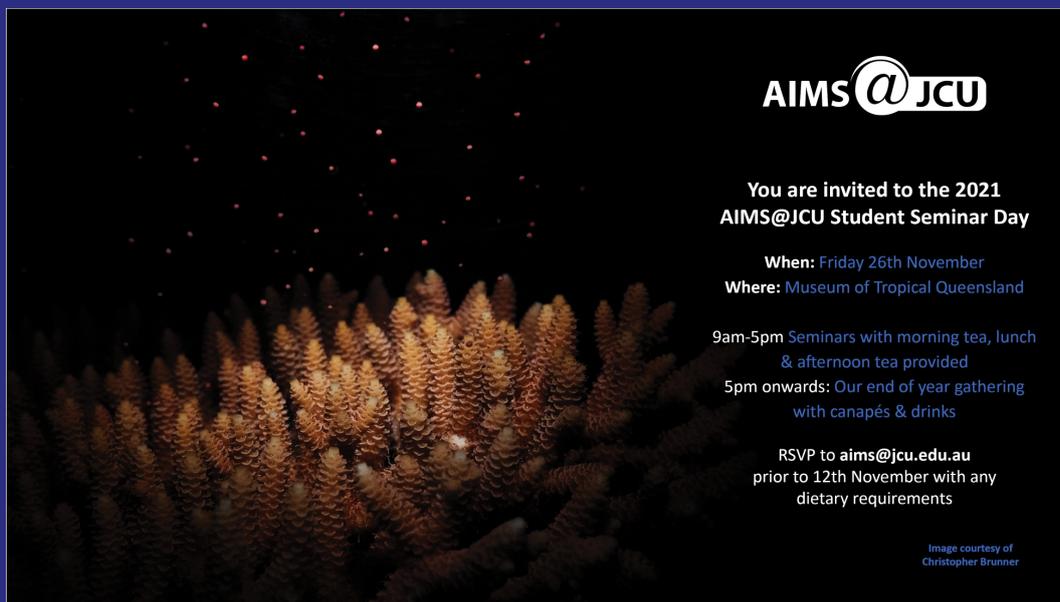
Left image: Jonathan Barton, Cherie Motti.

Right image from left to right: Kelley Meehan, Helene Marsh, Audrey Schlaff, Stacy Bierwagen, Cherie Motti and Samuel Matthews, Geoffrey Yau.

AIMS@JCU News

Continued

2021 AIMS@JCU Student Seminar Day: It's that time of year again where we showcase our amazing student talent and offer great prizes for seminars, speed talks, posters and photographs/illustrations. Remember that if you are an AIMS@JCU scholarship holder, you need to present all three presentation types before you submit your thesis. If you are an AIMS@JCU alumni, let us know if you'd like to chair a session, or even be considered to be our keynote speaker. Make sure you encourage your supervisors to come to support you, and RSVP if you are attending as there are limits on numbers due to COVID rules.



After the official seminar day is over, we will be celebrating the end of another successful year, so please join us for some drinks and nibbles.

The AIMS@JCU Strategic Alliance: AIMS and JCU have been working towards a new AIMS@JCU strategic alliance agreement. Both organisations want to build on the success of the historical model of Higher Degree Research training, and expand the investment to broaden and deepen the relationship. The new agreement strives to better align our combined infrastructure, capacity and capability to identify and tackle new and emerging science priorities and challenges of importance to AIMS, JCU, Australia and the tropical world. The draft new arrangement includes joint science appointments and a broadening of disciplines and sub-disciplines incorporated into our portfolio, so stay tuned for more updates on this soon. Thank you to Libby and all involved in this long and complicated process, AIMS@JCU will emerge even stronger moving into the future.

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Michelle Heupel

Pilot Research Award report

Josephine Nielsen

In April 2021, I was fortunate enough to be awarded an AIMS@JCU Pilot Research award to investigate the Symbiodiniaceae community the coral *Pocillopora verrucosa* from across the Great Barrier Reef.

Coral mortality from severe thermal anomalies poses a significant threat to coral reefs globally. Less than 2°C warming is now unlikely by the end of the century. As corals already live near their upper thermal limits, the ability to acclimate and adapt to ocean warming is paramount for their continued survival. Coral thermal tolerance is substantially influenced by the coral-algal symbiotic relationship and make-up of the symbiont community. Some species/strains of Symbiodiniaceae are known to be able to confer an additional 1°C of thermal tolerance, a capacity that could be important in determining the impact of marine heatwaves on coral survival.

Rapid adaptation of the coral symbionts may provide an avenue of holobiont (coral and all symbiotic partners) resilience to climate change due to their much shorter generation times. Some novel management interventions have suggested the use of targeted symbiont inoculations, particularly around aquarium breeding and rearing of corals, to provide newly settled coral individuals with a symbiont community with higher thermal tolerance. For such interventions to be successful, we need to understand the natural distribution and biogeography of these symbionts on the reef.

This project aims to: identify the Symbiodiniaceae community make-up in one coral species sampled across the latitudinal extent (~ 1,700km) of the GBR. These data will be combined with physiological measures of heat tolerance following exposure to acute thermal stress assays and will be used to explain observed patterns of tolerance.

Between January 2019 and April 2021, I conducted multiple acute heat stress assays (see for example Voolstra et al 2020) to determine thermal susceptibility of corals, utilising the SeaSim In A Box (SSIAB) mobile experimental tank system onboard AIMS' research vessels the RV Solander and RV Cape Fergusson. In total, 317 colonies were sampled across all sectors and field trips. Preliminary analysis of in-field collected photosynthetic efficiency data have shown distinct differences in thermal tolerance between populations. This will be investigated further by identifying the Symbiodiniaceae community of each colony.

Michelle Heupel

Pilot Research Award report

continued

I used the money provided by the AIMS@JCU Pilot Research Award to purchase laboratory reagents required for the DNA extraction and PCR amplification of the ITS-II gene region from Symbiodiniaceae cells and am currently in the process of extracting and amplifying DNA from all samples.

Thanks to the AIMS@JCU Pilot Research Award, I have been able to develop my laboratory skills in preparing samples for sequencing and the funds will allow me to gain familiarity with bioinformatics analyses and add a significant data component to my PhD project.



A and B: Acute heat stress assays in the field onboard RV Solander. Photos courtesy of K. Frith.

C and D: DNA extractions in the PC2 lab.

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Michelle Heupel

Science Communication Award Report

Christopher Brunner

I would like to thank the AIMS@JCU team very much for giving me the opportunity to present my research at the world's biggest coral conference, the International Coral Reef Symposium (ICRS) 2021, by providing me with a Science Communication Award back in 2019.

Originally, this award was to support my attendance ICRS 2020 in Germany. Unfortunately, the COVID-19 pandemic demanded that this conference to be rescheduled to 2021 (19/07 – 23/07) and changed to an on-line format. This change allowed me to upgrade my poster presentation to a pre-recorded talk, which I presented on 20th July 2021 in Theme 2 - Session 2C-1 followed by a live question and answer session. The audience was very interested in my talk, which resulted in fruitful discussions with multiple peers. Furthermore, this presentation is now also available on the ICRS on-line archive so that it can be accessed and watched again by interested ICRS members.



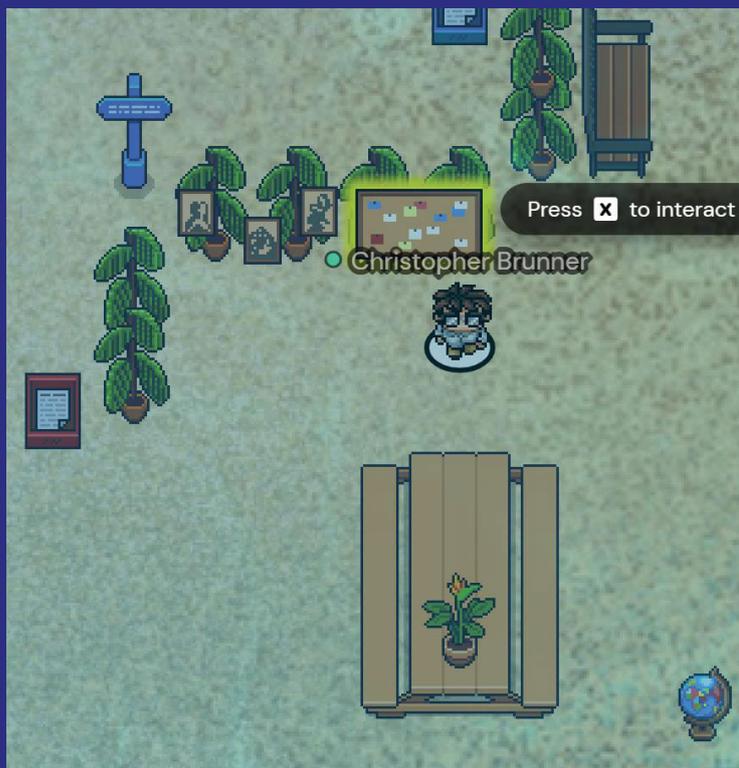
Title page of the presentation

The ICRS team did a wonderful job in implementing a variety of technologies to make this online conference as interactive as possible. A virtual underwater garden was 'accessible' through a platform called Gather. There, every attendee could create an avatar and then freely walk around to interact with blackboards, art galleries and videos, as well as start instantaneous online video chats with multiple persons when 'standing' next to them. A great and fun way to get to know the ICRS community.

Michelle Heupel

Science Communication Award Report

continued



'In-game' view of the underwater garden, allowing to interact with blackboards, art galleries, as well as 'sit down' and chat with other ICRS attendees.

Through this interactive gateway I was able to speak with senior scientists for quite some time between the conference presentations. Furthermore, I attended all four one-hour-long mentoring events organised by the ICRS team. At these events it was possible to speak with a range of senior scientists in small chat rooms to ask burning questions and expand my scientific network. The most common question asked was how to best approach scientist you would like to work with in the future, regardless of your level of study, Master, PhD or Postdoc. The common answer was to send a short introductory email outlining why you would think a collaboration might be beneficial, accompanied by a brief CV. Furthermore, most researchers valued skills such as being a team player, enthusiasm, and additional skills such as knowledge in specific methodologies or diving / boating certificates, more so than an outstanding publication record, since such people are often a better fit to an existing team.

Once again, I would like to thank AIMS@JCU very much for allowing me to participate in this amazing conference. It has certainly exposed me to new methodologies and research projects and has broadened my network. I am sure this will prove beneficial in the future when applying for a postdoctoral position.

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Michelle Heupel

Research Director Report

We are now nearing the closure of another year and who would have thought we would still be living with COVID-19? The transition back to the AIMS and JCU sites has been challenging for everyone and AIMS@JCU would like to thank you all (staff and students) for adhering to the safety measures and ensuring we all stay safe.

The end of the year gives us time to reflect on our collective achievements and AIMS@JCU has been able to continue deliver some key programs. In June the re-vamped writing retreat was held on Magnetic Island supported by the ever amazing Lauren and with a guest appearance by Prof. Liz Tynan. It was the yoga sessions that proved a real hit with everyone! The Pomodoro sessions, an extension of the writing retreat, have continued virtually, and in the new year will transition to hybrid virtual:in-person format. It's also great to see these sessions have helped a number of you who are in the midst of finalising theses – a stressful but exciting time for all involved.

A special shout out to Josephine Nielsen who took out 2nd place in the JCU 3 Minute Thesis Competition (3MT) in August 2021! Jo dreamed of being a whale biologist –so in 2013 she moved halfway around the world from Northern Europe, the land of beautiful mild summers and dark, snowy winters, to study at JCU here in sunny, hot Townsville. While on her first field trip she discovered she gets seasick! But, she also met her honours supervisor and quickly made the transition to corals and has no regrets! She now considers herself a 'warm-weather thermal specialist', a trait that she is also investigating in corals. It is on this topic that she presented her 3MT – if you missed it check out this link <https://vimeo.com/594940020>.

Congratulations also to those of you awarded Pilot Research and Science Communication awards. The AIMS@JCU Seminar Day is back, and we look forward to hearing how you've put these funds to use! The date is Friday 26th November 2021, the venue is the Museum of Tropical Queensland, and there are plenty of opportunities for you to present a seminar, 3MT, or poster, as well as photographs and artworks depicting your science. We are looking forward to receiving your abstracts and entries, there are student prizes in all categories and our end of year celebrations afterwards.

Remember, we are here for you, so please don't hesitate to reach out via email, phone, or come see us. Cherie can always be found in the AIMS café at 9:30am having a coffee and is always keen for a chat!

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Cherie Motti, AIMS@JCU Assistant Research Director
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Michelle Heupel