



Gergely Torda

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AIMS@JCU goes to ICRS

Cairns, 9-13th July 2012

The 12th International Coral Reef Symposium was held from the 9th to 13th July 2012, in Cairns. This five day event drew more than 2,000 scientists from 80 countries, providing an amazing opportunity for learning and networking. Having such a major international science conference so close to Townsville was such an enormous opportunity that AIMS@JCU decided to make a big splash at this event.

We were able to financially supported 28 AIMS@JCU student members who attended, as well as arranging transport and accomodation. AIMS@JCU had a presence at the AIMS stall; we also organised a pizza and drinks night at the Bellavista at the Marina, which was extremely successful. AIMS@JCU members assisted with hosting this event by inviting approximately 400 peers, colleagues and potential future post-doc employers and collaborators. Feedback has been very positive and thank you to the students who have put together some personal accounts of their ICRS experience for this newsletter.



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About the AIMS@JCU Newsletter:

This newsletter is produced quarterly and distributed by e mail to all 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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For more images from the 2012 Student Seminar Day and our ICRS Pizza Night, please visit the Client Galleries on www.visualecho.com.au

ICRS Student Review

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Gergely Torda I presented a synthesis of two of my PhD thesis chapters on genetic connectivity and ecological dispersal in the brooding coral *Pocillopora damicornis* in Theme 14: Larval ecology, recruitment and connectivity. This species is one of the classic “labrats” of coral ecology, with a very complex life history, however a recently study showed that it is likely not a single species, but a species complex, with as many as five genetic lineages on the Great Barrier Reef (GBR). This new discovery by UTAS-AIMS PhD student Sebastian Schmidt-Roach and colleagues triggered a set of comparative studies to understand differences between the reproductive strategies, ecology, dispersal characteristics, and hence connectivity of these putative cryptic species. My PhD looks into the population genetic patterns of adult colonies of the two most common genetic lineages on the GBR, as well as aims at genetically assigning their freshly settled recruits back to potential source populations. My results show that while a high proportion of recruits originate from the first 200 meter vicinity of their site of settlement, there is a substantial proportion of long-distance migrants. Therefore these corals are potentially among the more resilient species on the GBR, since they have a good capacity to colonise distant depleted habitats, and once a few individuals have settled successfully, they have a high potential to re-seed the site from local recruitment.

Following my presentation I had interesting discussions with a number of senior researchers and fellow PhD students, and have talked about potential collaboration with oceanographic modellers from Australia and Belgium, as well as a similar population genetic study in done by Swedish researchers in Vietnam.

Apart from sitting in the larval connectivity sessions, which are my main field of research currently, I also visited sessions on macroecology, fish ecology and behavior, and phase shifts in ecosystems. The talks I liked most were usually simple, but very good ideas, implemented and presented very professionally. For instance, Elizabeth Madin presented a novel idea on how to use the publicly available satellite images from Google Earth to estimate

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fishing intensity even in remote, inaccessible locales. The idea is that the sand halo around reef patches, that can be observed on these satellite photos, correlates to the boldness of herbivorous fish, which in turn correlates to the density of predatory fish, which are targeted by most fisheries.

I also greatly enjoyed the talks by Nick Graham about how phase shifts may be reversed on coral reefs by appropriate ecological shocks, that tip over some key ecological processes that facilitate high coral cover, and by Russ Schmitt, about why reefs in Moorea are more resilient to phase shifts than reefs in most other parts of the world. The exposed reefs of Moorea have been impacted by several severe disturbances in a sequence, including crown-of-thorns outbreak and a cyclone, and have suffered high loss in live hardcoral cover, from above 40 % to less than 2 %. And yet they have not tipped over to macroalgae dominated states, because the high connectivity between depleted exposed, and protected sheltered habitats has facilitated a fast herbivore response that kept algae in check. This study also showcased why it is important to protect a diverse array of habitat types and the connectivity between them in one single location.

And naturally, I was fascinated by the quality, quantity and diversity of larval dispersal studies, from chemical cues to larval settlement, through dispersal modelling, to genetic assessments of connectivity. This conference was certainly very motivating and inspiring!

Ian McLeod Thanks AIMS@JCU for supporting my attendance at this year's ICRS conference in Cairns by covering some of my accommodation and transport costs. I really enjoyed the conference and saw some relevant presentations that provided useful insights into how to frame my PhD write up more broadly. Discussions after my presentation set up an ongoing research collaboration. I would particularly like to thank Lauren and Libby for doing such a great job of organising the 'networking' pizza night at the Bellavista restaurant. It was a fun night and discussions there resulted in a



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strong lead for a job once my PhD is handed in (an actual science job, not just at the restaurant, haha).

Adriana Humanes I had a great experience at ICRS this time. This is the second time I have enjoyed the Symposium and I think it is the best opportunity to catch up with colleagues from all over the world. Besides it was enormously beneficial for my future research, as I am just starting my PhD at AIMS@JCU. It was a good opportunity to exchange ideas, have access to so much information and be together with other researchers was invaluable for me. During the pizza night sponsored by AIMS@JCU I was able to talk in a more relaxed ambient environment with researchers with whom I will probably start a project for estimating settlement rates of of hard corals in the Caribbean.

Emmanuelle Botté This year was my second attendance to the ICRS and it was interesting to see how different my experience was compared with my first ICRS. I've finished my PhD now, whereas I was just at the start of it when I attended the 2008 ICRS in Fort Lauderdale. I was much more relaxed this time and it was very clear to me which sessions I could benefit from right away in my daily working life so I tried to stick to those. I must admit this conference is always so intense that I think we should have a "Wednesday afternoon off", because after 3 days of sitting, listening and being in this enclosed environment, you just crave fresh air! The pizza night was a great opportunity for me to have a good chat with a post-doctoral fellow who I kept in touch with since then as he's got the skills to help me solve a few technical problems I encounter in my work at the moment. And from a social point of view, it was great to see some familiar faces that I only ever see every four years, at the ICRS. I really enjoyed that conference, I learnt a lot, got a nice big picture feeling at the end and met interesting and fun people along the way.

Heidi Luter I attended the ICRS for the first time, with travel support from AIMS@JCU. As I have taken up a post-doc position in Darwin, it was great to see so many of my friends and

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ICRS Student Review

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colleagues all in one place. I gave an oral presentation on the results of my PhD and got positive feedback, which can be applied in my current project. I missed a few of the talks I would have liked to see due to clashes, but that is to be expected at a conference with so many concurrent sessions. On the other hand, I sat in on some talks I wouldn't normally attend, which in some cases turned out to be the best presentations I saw.

Jeroen van de Water I started my PhD research in tropical marine biology at James Cook University in 2010. Because this was the first time I would attend an International Coral Reef Symposium, I had been warned by several people that it would be overwhelming. And it certainly was... with over 2000 attendees and 12 parallel presentation sessions for 5 days. It was hard to go to all the presentations I wanted to go to. However, I spent most of my time at sessions related to my field of research: coral microbiology, genomics and immunology, but also broadened my horizon by attending presentations on totally different topics. ICRS 2012 was a great place for networking: catching up with old friends and meeting new people. It helped me to get in contact with researchers from around the world, get very useful advice for several of my own experiments and create new ideas. My attendance was made possible by financial contributions from the Australian Coral Reef Society and AIMS@JCU, for which I am very grateful.

Kim Lema I am an AIMS@JCU student working on coral associated bacteria. This year, my colleagues and I, had the great opportunity to attend the ICRS 2012 conference in Cairns thanks to the support of AIMS@JCU! AIMS@JCU provided us with accommodation, transport but also with a great venue: a pizza and beer night in the 3rd night of the conference.

I enjoyed the conference although it was hard to attend so many talks due to clashes. I gave an oral presentation, and it was challenging but at the same time exiting to present in front of such a big audiences and important people from the coral world. I believe it was a great opportunity for me but also for my colleagues to be able to attend and present in such a conference, because it allowed us to present ourselves to the big world of coral people and get training in giving oral presentations. I also would like to thank particularly, the pizza night venue that was organized, because it allowed me to have a more relaxed conversation with people I was interested in meeting!

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AIMS@JCU Honours Student Profile

Shaun Bochow

I grew up in Darwin, where I spent most of my time outdoors fishing. When the time came to decide what I wanted to do, I chose to study aquaculture, as I like fish! I spent my first semester at Flinders University, Adelaide, studying a Bachelor of Aquaculture before moving to James Cook University where I completed a Bachelor of Science (Aquaculture). During this program, I became interested in aquaculture disease and alternative treatments that did not involve the application of antibiotics. I studied aquatic pathology with Leigh Owens who became my Honour's Supervisor.



Crustacean aquaculture is a global business handicapped by disease outbreaks, particularly from vibrios. Research at JCU has demonstrated that some of the virulent vibrios carry lysogenic bacteriophage that increase the virulence of isolates. Bacteriophage also have the potential to be used as a probiotic. Their lytic lifecycle can lower the pathogenic load of bacteria in aquaculture systems. However, control over these two lifecycles is problematic. Generally, bacteriophage that are lytic to a particular host are isolated and then applied to the culture environment, though these potentially still have the opportunity to become lysogenic in other hosts. To overcome this, my project will be looking at the adenine methyltransferase (*DAM*) gene encoded by the bacteriophage *Vibrio harveyi* Myovirus Like (VHML), that infects *V. campbellii* strain 642. This gene is a powerful epigenetic switch in bacteria, and is possibly playing some role in lifecycle regulation of VHML. My project will, in collaboration with Lone Hoj (AIMS), aim to develop a transformation protocol to introduce a suicide plasmid into the host that will knockout the *DAM* gene. I will then observe the effect this has on the lifecycle of VHML and collect any other relevant data.

By understanding how bacteriophage regulate their lifecycles, scientists can manipulate them to produce continuously lytic phage without the risk of a phage turning lysogenic and increasing the virulence of the host.

My future goals are to undertake a PhD looking at the host-pathogen interactions of crustaceans. Crustaceans lack an antibody-based immune response, yet are able to survive viral infection that once killed them. I am interested in finding out how crustaceans are able to do this.

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Research Director Report

What a fabulous three months, with AIMS@JCU's flag flying high in the field of science communication.



With a packed schedule of 20 oral presentations and 7 posters, this year's seminar day, held on 26th June, was a great success. Congratulations to all presenters – especially those that won awards. The best oral presentation prizes (\$2,000 each to be spent on science communication) went to JB Raina (1st) and James

White (2nd); and best poster prizes (\$1,000 each to be spent on science communication) went to Mario Espinoza (1st) and Melissa Rocker (2nd). Many thanks to Helene Marsh and Peter Doherty for performing the daunting task of judging the talks and posters. We also ran a photography competition, which was not taken up particularly well by the student body, with only three students entering photos, and only two of those students taking out prizes (James Tan CH two categories at \$200 each, and Gergley Torda three categories at \$200 each). Many thanks to Marc Gregory from Visual Echo Photography for judging the photos in all categories except people's choice. A condition of entering photos was our rights to use them – so you can look forward to some stunning new images in upcoming newsletters etc.



Seminar day was excellent preparation for the students that also presented at the ICRS conference. It was great to see so many student members at the conference – and so many presentations (21 in total). Thanks to all of you for making our pizza night such a great success. While the 400 participants was a bigger number than expected in a restaurant that at first seemed better at serving drinks than pizzas, everyone was fed eventually and it was great to see the place buzzing with all that networking.



Many thanks to Line Bay for organising the excellent AIMS heat (sponsored by AIMS@JCU) for JCU's 'my research in 3 minutes' competition on 19th September. Thanks also to Liz Tynan and Tim

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Research Director Report

Simmonds for their well attended workshops on speed talking and powerpoint slide design, and to everyone who volunteered to give a talk in all three categories. Hearty congratulations to the following speed talk champions: Gergely Torda – Post Graduate Research Student; Dr Karen Weynberg - Early Career Researcher (Karen also won 'people's choice'); and Dr David Bourne - Established Researcher.

Please keep Thursday 27th September free, to cheer on these AIMS champions when they compete in the JCU finals from 4-7pm, in the Medical Lecture Theatre at JCU. If you are planning on coming, don't forget to RSVP to clare.gregory@jcu.edu.au for catering purposes.



Thank you to Martino Malerba and Gergely Torda for your assistance with the AIMS@JCU display at the JCU Open Day, we really appreciate your time and willingness to help. Don't forget that our call for 2013 AIMS@JCU scholarship applications is open – for new PhD projects that include a significant component of advanced quantitative analysis. Details are on our website.



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