

The background of the entire slide is a photograph of a coral reef. The coral is primarily pink and purple, with some yellowish-green patches. A white measuring tape is laid across the reef, showing measurements in centimeters. The text is overlaid on a semi-transparent white box in the upper half of the image.

Origins and Function of the Animal Metaorganism

A transdisciplinary workshop investigating the evolutionary success of cnidarian metaorganisms and the conditions that sometimes cause their collapse

An Australian Academy of Science Boden Research Conference, supported by DFG Research Centre “Origin and function of animal metaorganisms”, the Great Barrier Reef Foundation, the Ian Potter Foundation and the ARC Centre of Excellence for Coral Reef Studies

11th to 14th March 2018

Peppers Blue on Blue Resort, Magnetic Island, Australia



@CoralCOE #COE_symbiosis

Conference Objectives

Why here and why now? Ideas about how the coral association has succeeded over evolutionary time, and what mechanisms underlie coral tolerance to environmental change, have not changed substantially since the 1970's. Advancing the field requires bringing in expertise from "left field" as novel perspectives can greatly increase the odds of conceptual breakthroughs being made. These new insights will be relevant to understanding coral reefs on a global scale and also to understanding organism-microbe interactions more broadly. A specific aim is that the scheduled discussion sessions lead to concrete outcomes in the form of perspective manuscripts.

The meeting will bring together a critical mass of leading researchers across fields as diverse as palaeontology, physiology, microbiology and bioinformatics who are united by an interest in microbe – animal interactions. Our proposed group transcends disciplinary boundaries in an attempt to cross-fertilise thinking about the evolutionary success of the animal metaorganism and the conditions that sometimes cause collapse of these associations. New approaches, insights and thinking in this area are critical because important ecosystems that rely on animal-microbe interactions, such as coral reefs, are experiencing increasing levels of stress that threaten their long-term persistence. We intend that this meeting will provide a broader understanding of the evolutionary forces that have led to the diversity of present day coral metaorganisms. We seek new understanding as to why some coral metaorganisms are more tolerant of environmental change than others, and how flexibility with respect to the associated microbiota might enhance resilience at the metaorganism level.



Great Barrier Reef Foundation



ARC CENTRE OF EXCELLENCE
Coral Reef Studies

Conference Program

Sunday 11 th March	
9:00 – 17:00	Delegates arrive in Townsville, transfers to Pepper's Blue on Blue Resort, Magnetic Island.
18:30 – 20:30	Welcome drinks and dinner

Monday 12 th March		
7:00 – 8:20	Breakfast	
8:20 – 8:30	Welcome – David Miller and Mia Hoogenboom Official Opening – Jenny Lappin	
8:30 – 9:30	Metaorganisms as the new frontier	Thomas Bosch
9:30 – 10:10	QS and QQ in the holobiont <i>Hydra</i>	Sebastian Fraune
10:10 – 10:30	The <i>Amphiprion</i> genome	Tim Ravasi
10:30 – 10:45	Morning tea	
10:45 – 11:05	Host and microbial processes underlying White Syndrome lesions on corals	David Bourne
11:05 – 11:20	Rethinking the coral microbiome: simplicity in a diverse microbial biosphere	Alejandra Hernandez-Agreda
11:20 – 11:50	Chasing beneficial microorganisms for corals: characterization of green sulfur bacteria in coral skeletons	Sen-Lin Tang
11:50 – 12:10	Viruses: the neglected part of metaorganisms	Tim Lachnit & Thomas Bosch
12:10 – 12:30	Microbial Interactions in sponges: Symbiosis insights derived from basal Metazoa	Nicole Webster
12:30 – 13:45	Lunch	
13:45 – 14:10	Expression patterns of immune receptors in two marine sponge species	Lucia Pita-Galan
14:10 – 14:25	Status of coral genomics: 2018 and beyond	David Miller
14:25 – 14:50	Decoding coral genomes beyond sequencing	Emily (Hua) Ying
14:50 – 15:05	Catching a glimpse of the coral proteome with mass spectrometry	Ira Cooke
15:05 – 15:45	Afternoon tea	
15:45 – 16:30	Emergence of scleractinian corals: Snapshots from the geological past	Jarek Stolarski
16:30 – 16:55	<i>Symbiodinium</i> genomes reveal adaptive evolution of functions related to symbiosis	CX Chan/Mark Ragan

16:55 – 17:20	Mechanisms for initiating coral- <i>Symbiodinium</i> symbiosis	Shunichi Takahashi
17:20 – 17:45	Establishment of coral-algal symbiosis from the symbiont perspective: Dual RNA-Seq approach	Amin Mohamed
18:00 – 20:00	Dinner	

Tuesday 13th March		
07:30 – 08:30	Breakfast	
8:30 – 9:15	Assembling the (holo)biont in deep time	Nick Butterfield
09:15 – 09:35	Evolutionary (meta)genomics of calcareous sponges	Maja Adamska
09:35 – 09:55	Genomics approaches for investigating probable crosstalk between coral and algae	Chuya Shinzato
09:55 – 10:15	Understanding coral bleaching in the light of holobiont nutrient cycling	Christian Voolstra
10:15 - 10:35	Heatwaves, thermal tolerance and the coral microbiome	Tracy Ainsworth
10:35 – 11:15	Morning tea	
11:15 – 11:50	Partner switching and its impact on metabolite flux in the cnidarian-dinoflagellate symbiosis	Simon Davy
11:50 – 12:10	The evolutionarily conserved apoptotic machinery in corals	Kazuhiro Sakamaki
12:10 – 12:30	Mechanisms of coral heat tolerance – lessons from the naturally extreme Kimberley region in NW Australia	Verena Schoepf
12:30 – 13:30	Lunch	
13:30 – 14:10	Stability, structure, and sustainability of symbioses: perspectives from plant-fungal associations	Elizabeth Arnold
14:10 – 14:30	Stress transcriptomics: understanding the genetic basis of summer mortality in a different invertebrate - abalone	Jan Strugnell
14:30 – 14:50	Impact of hybridization on host-microbiome community composition: Results from an experimental evolution study	Cornelia Jaspers
14:50 – 15:30	Afternoon tea	

15:30 – 15:50	Genome sequencing of the <i>Porites lutea</i> holobiont illuminates the roles of coral-associated microbial symbionts	Steven Robbins
15:50 – 16:10	The long and short of microbial genomics	Torsten Seemann
16:10 – 16:30	Microbial metagenomics: recent advances and ongoing challenges	Aaron Darling
16:30 – 17:30	<p>Discussion groups:</p> <ul style="list-style-type: none"> • Molecular techniques determine what research questions can be answered in metaorganism research (Facilitator: Cooke) • Impacts of mutualism on capacity for acclimation/adaptation and rates of evolution (Facilitators: Bosch, Miller) • Photosynthetic symbioses – why have <i>Symbiodinium</i> spp been so successful in doing this? (Facilitators: Hoogenboom, Davy) 	
19:00 – 20:30	Dinner	

Wednesday 14 th March		
07:30 – 09:00	Breakfast	
09:00 – 10:30	<p>Discussion groups:</p> <ul style="list-style-type: none"> • Molecular techniques determine what research questions can be answered in metaorganism research (Facilitator: Cooke) • Impacts of mutualism on capacity for acclimation/adaptation and rates of evolution (Facilitators: Bosch, Miller) • Photosynthetic symbioses – why have <i>Symbiodinium</i> spp been so successful in doing this? (Facilitators: Hoogenboom, Davy) 	
10:30 – 11:00	Morning tea	
11:00 – 12:00	Discussion groups (continued)	
12:00 – 12:10	Synthesis: Impacts of mutualism on capacity for acclimation/adaptation and rates of evolution	Thomas Bosch, David Miller
12:10 – 12:20	Synthesis: Why have <i>Symbiodinium</i> spp been so successful in forming mutualisms?	Simon Davy, Mia Hoogenboom
12:20 – 12:30	Synthesis: Molecular techniques determine what research questions can be answered in metaorganism research	Ira Cooke
12:30 – 12:45	Closing remarks	David Miller / Thomas Bosch / Elizabeth Arnold / Nick Butterfield
12:45 – 14:00	Lunch	