

DR. JEAN-BAPTISTE RAINA

jeanbaptiste.raina@my.jcu.edu.au

PhD 2009 to 2013

School of Marine and Tropical Biology

AIMS@JCU and IPRS

Supervised by:

Prof. Bette Willis (JCU)

Dr. David Bourne (AIMS)

Production and fate of dimethylsulfoniopropionate (DMSP) in reef-building corals and its integral role in coral health

Jean-Baptiste completed his bachelor degree in Marseille, south of France, before moving to Townsville to study marine biology. His PhD built on his Masters degree on coral-associated bacteria.

DMSP is a sulphur molecule produced in large concentration by corals and is known to be an antioxidant, an important signal molecule, and major source of sulphur for bacteria. Marine bacteria are capable of degrading DMSP into a sulphurous gas called dimethylsulfide (DMS) which is involved in cloud formation and local-climate regulation.

Jean-Baptiste's research identified that DMSP-degrading bacteria are highly abundant in corals. His work contributes to improve our understanding of the complex microbial symbioses guaranteeing the health of reef-building corals.

DR. JEAN-BAPTISTE RAINA

Publications

- Bartlett, C.Y. et al., 2009. Comparison of Outcomes of Permanently Closed and Periodically Harvested Coral Reef Reserves. *Conservation Biology*, 23(6), pp.1475–1484. Available at: <http://doi.wiley.com/10.1111/j.1523-1739.2009.01293.x>
- Ceh, J. et al., 2012. Coral-bacterial communities before and after a coral mass spawning event on Ningaloo Reef. *PloS one*, 7(5), p.e36920. Available at: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3353996&tool=pmcentrez&rendertype=abstract>
- Ceh, J. et al., 2013. Nutrient cycling in early coral life stages: Pocillopora damicornis larvae provide their algal symbiont (Symbiodinium) with nitrogen acquired from bacterial associates. *Ecology and Evolution*, 3(8), pp.2393–2400. Available at: <http://doi.wiley.com/10.1002/ece3.642>
- Cinner, J.E. et al., 2009. Gear-based fisheries management as a potential adaptive response to climate change and coral mortality. *Journal of Applied Ecology*, 46(3), pp.724–732. Available at: <http://doi.wiley.com/10.1111/j.1365-2664.2009.01648.x>
- Puill-Stephan, E. et al., 2012. Allorecognition maturation in the broadcast-spawning coral *Acropora millepora*. *Coral Reefs*, 31(4), pp.1019–1028. Available at: <http://link.springer.com/10.1007/s00338-012-0912-1>.
- Raina, J.-B. et al., 2009. Coral-associated bacteria and their role in the biogeochemical cycling of sulfur. *Applied and environmental microbiology*, 75(11), pp.3492–501. Available at: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2687302&tool=pmcentrez&rendertype=abstract>.
- Raina, J.-B. et al., 2010. Do the organic sulfur compounds DMSP and DMS drive coral microbial associations? *Trends in microbiology*, 18(3), pp.101–8. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/20045332> .
- Tapiolas, D.M. et al., 2013. Direct measurement of dimethylsulfoniopropionate (DMSP) in reef-building corals using quantitative nuclear magnetic resonance (qNMR) spectroscopy. *Journal of Experimental Marine Biology and Ecology*, 443, pp.85–89. Available at: <http://linkinghub.elsevier.com/retrieve/pii/S002209811300098>.