

Title of Project: Genome-wide assessments of thermal plasticity and threshold performance in corals across the Great Barrier Reef

Names of supervisors:

Name	Affiliation (AIMS or JCU)
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Brief description of the project

This project will characterise the spatial and temporal drivers of thermal tolerance in key coral species. Environmental correlates of acute thermal tolerance will be determined in coral sampled across the Great Barrier Reef and seasonal and habitat variation will be examined at smaller spatial scales. Tagged corals of high and low tolerance will be interbred to further elucidate the genetic basis and heritability of thermal tolerance. This project will address a critical knowledge gap in our understanding of the natural adaptive ability of coral populations. It will also provide further information to assess the risks and benefits of assisted gene flow as a management intervention. Genome-wide sequencing will be used to develop markers to identify individuals, populations and species with high thermal plasticity, making such populations excellent candidates for brood-stock development. Overall, this project will provide data required to model the future of reef building corals under conventional and novel management actions. It will also provide a genetic framework for identifying brood-stock populations for restoration initiatives based on acute stress tolerance.

This project would suit someone who:

- Has skills in the following: field, experimental, coral breeding
- The scope of this project is adaptable and could be supported as either an MPhil (2 years) or PhD (4 years) depending upon the applicant

Key words: Coral, adaptation, climate change, heat tolerance, genomics