

**Title of Project:** Characterising and monitoring oceanic microbial communities in a changing climate.

**Names of supervisors:**

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

The IMOS Microbial Genomics Database initiative aims to generate a microbial genomics database to be used as a resource for community and functional analyses of GBR microbial communities, with a specific focus on seawater and sediments. This project will produce 10,000 microbial genomes which will be curated into a genomic database resource for the broader community. In addition, microbial observatories will be established at key reef sites within the IMOS network, allowing investigation of how environmental factors influence microbial processes.

The development of these resources will allow us to definitively answer three key questions about microbial community dynamics in reef systems:

- 1) Which taxa and functions form the microbial baseline(s) of healthy coral reefs?
- 2) How does the microbial community respond to environmental changes?
- 3) How are environmental disturbances predicted by compositional and functional changes in microbial composition / function

The PhD student will play a key role in answering questions 1 and 2 within the scope of their project, as they will be integral in the site sampling, generation of metagenomic assemblies that will ultimately inform the microbial genomics database, as well as exploring how microbial gene expression shifts within communities in response to environmental changes, using metagenomic and metatranscriptomic sequencing methods.