Australian Microbiome

A Continental Microbial Resource
The Australian Microbiome Database

- Methodologically Standardized
- Continental Scale
- Soils, Sediments, Pelagic, Host Associated
- Diversity data is sequence based
- Taxonomic and Functional: 16S, 18S, ITS, meta-gen/ transcript-omes
- > 6000 “microbiomes” all provided by different people
Australian Microbiome Initiative:

Current Network

International:
- European Bioinformatics Initiative
- Global Soil Biodiversity Initiative
- Earth Microbiome Project
- TARA Oceans
- Edith Cowan University
- Murdoch University
- Dept. of Parks and Wildlife
- Kings Park Botanical Gardens
- Science Investment Endowment fund
- Atlas of Living Australia
- National Soils Archive
- Dept. of the Environment
- Grains R&D Corporation
- Bush Blitz
- University of Adelaide
- Terrestrial Ecosystem Research Network
- Australian Genome Research Facility
- Australian National Data Service
- La Trobe University
- Vic. Dept. of Economic Development
- Royal Botanical Gardens Melbourne
- Australian Institute of Marine Science
- James Cook University
- Sugarcane R&D Corporation
- University of Queensland
- Bioplatforms Australia
- Macquarie University
- University of Western Sydney
- Sydney Institute of Marine Science
- University of Technology
- University of NSW
- Ramaciotti Centre for Genomics
- Forestry Tasmania
- Integrated Marine Observing System
- Australian Antarctic Division
- Tasmanian Land Conservancy
- University of Tasmania
BASE: the Biomes of Australian Soil Environments soil microbial biodiversity database

Biogenomics 2017, 23 February

Andrew Bissett, Anna Fitzgerald, Thys Meintjes, Pauline Mele, Frank Reith et al... & Andrew Young

NATIONAL RESEARCH COLLECTIONS AUSTRALIA
www.csiro.au
Marine Microbes

Coastal
- NRS time series
- Open ocean

Pelagic

Water, sediment, symbionts

Standardised to enviro/sample

Marine microbes play a critical role in our oceans’ health—making up the bulk of ocean biomass they directly control the majority of the oceans’ energy production and are ultimately responsible for regulating the marine food-web—however, little is known about the dynamic nature of these organisms.

This Bioplatforms Australia Framework Data Initiative will establish how Australia’s marine microbial communities change over time in various locations and habitats. The consortium of researchers will investigate the microbial communities of seawater, sediment, sponges, seaweeds, corals and seagrasses utilising the extensive sequencing capability of Bioplatforms Australia and support from Australia’s Integrated Marine Observing System (IMOS).

The nationally collaborative project is led by Dr Torsten Thomas from the University of New South Wales and Dr Lev Bodrossy from CSIRO and involves scientists from the Australian Institute of Marine Science, Curtin University, Edith Cowan University, James Cook University, Macquarie University, Sydney Institute of Marine Science, University of Queensland and University of Technology Sydney.

For further information please visit the Bioplatforms Australia Metadata Portal: https://data.bioplatforms.com/organization/about/bpa-marine-microbes
Coastal sampling: sample type

**Seawater**
- Standardised to environ/sample
- Chem individ lab based

**Sediments**

**Kelp**
*(Ecklonia radiata, Sargassum sp.)*

**Seagrasses**
*(Zostera muelleri)*

**Sponges**
*(Chondrilla australiensis, Ianthella basta)*

**Corals**
*(Plesiastrea versipora, Acropora tenuis, Goniastrea aspera)*
OTHER DATA
= 6000 + AMD
“microbiomes”
What AMD looks like in terms of “products”

- 6000 samples – 50% public
  - Various sources and resourcing, various sample ID systems

- 90 + billion sequences and contextual data
  - Plus analysis specific metadata most people don’t care about

- Raw data, analysed data, sample metadata and physical samples produced/archived