



Australian Government



AUSTRALIAN INSTITUTE
OF MARINE SCIENCE

TOWNSVILLE

DARWIN

PERTH

Biodiscovery Partnering with AIMS **- oceans of opportunity, over 4 billion years in the making**

The Australian Institute of Marine Science (AIMS) is an Australian government science agency. Its mission is to generate and transfer the knowledge to support the sustainable use and management of Australia's marine environment, through innovative, world-class scientific and technological research. For over 15 years, AIMS' activities have included a biodiscovery research effort, and explored Australia's mega-marine biodiversity for attributes with commercial application. AIMS' biodiscovery pursuits target discovery of new natural products, genes, enzymes and other proteins.

AIMS boasts extensive bio-discovery facilities and capabilities, including

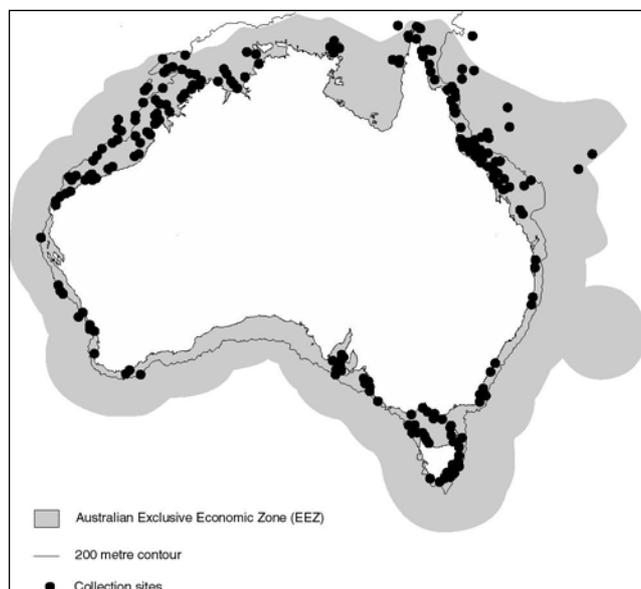
- A substantial biodiversity collection of macro- and micro- organisms from Australia's EEZ, with associated agreements and approvals for CBD compliance, and curated for biodiscovery effort.
- Two custom built research vessels, plus a fleet of smaller vessels and a marine operations division, to support ongoing collection and recollection effort.
- A world-class Biomolecular Analysis Facility (BAF) with instrumentation including FTMS; LC-MS with and without BNMI interface for advanced hyphenation LC-MS-NMR; BEST system with flow probe for LC-NMR; 300MHz NMR; and a three channel 600MHz NMR with cryoprobe.
- 96 well plate readers for virtually all forms of bioassay detection including radiometric, spectrophotometric, chemiluminescent, fluorometric, and time resolved fluorescence, some of which can also be used in 384 well plate format.
- A dedicated cell culture laboratory alongside a PCR 'farm' including a real time PCR.
- A comprehensive bioinformatics database that integrates information from all aspects of biodiscovery activities including sample acquisition, extract production and curation, and analytical results.
- A multi-disciplinary team of scientists including
 - natural products chemists, expert in rapid dereplication of known compounds and structure elucidation of novel compounds
 - molecular and cell biologists with expertise in bioassay design and implementation, and cell culture
 - biochemists with expertise in genome and metagenome expression, recently credited with one of the world's first expressions of a bioactive natural product through cloned expression of a metabolic pathway.
 - Microbiologists, with expertise in cutting edge techniques for assessment of entire community biodiversity as well as selective isolation and culture.
 - Marine biologists with expertise in invertebrate taxonomy, biogeography, chemical ecology, environmentally rigorous recollections, and invertebrate aquaculture for production of bioactive compounds.
 - Information technologists for database management and bioinformatics

AIMS seeks to continue its practice of establishing strategic collaborative links to outside partners, from industry, academia, and other government agencies and research organisations. Such partnerships are sought to compliment AIMS' own capability and enhance its biodiscovery effort to maximise the social, economic and environmental value of the biodiversity represented in its collection.



Access to the AIMS collection for partnerships in biodiscovery

The cornerstone of AIMS' biodiscovery effort is its marine biodiscovery collection. This collection, which is constantly expanding through ongoing sample acquisition effort, has been sourced from over 1500 sites across Australia's EEZ (see fig 1).



Australia is a party to the Convention on Biological Diversity (CBD) and its *Bonn Guidelines on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising out of their Utilization*, and AIMS is committed to ensuring that the acquisition and use of its collection is compliant with this international law. To this end, AIMS ensures that appropriate agreements and approvals from relevant government agencies and competent authorities are in place for all samples offered from the AIMS collection for use in collaborations. AIMS also ensures that collaboration agreements include terms that give effect to the obligations contained in these agreements and approvals.

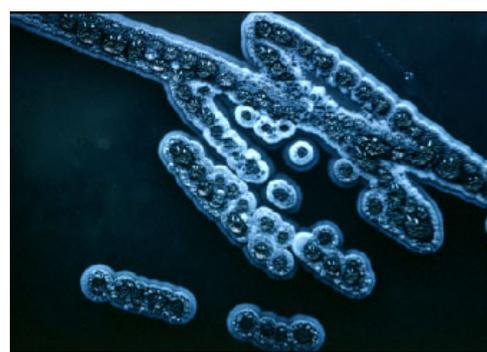
Figure 1: Map of collection sites and Australia's EEZ



This combination of legal certainty with a biodiverse Australian marine collection curated for biodiscovery, is unique to AIMS. It has been achieved despite the absence of a comprehensive regulatory framework in a landscape of still-emerging guidelines and new legislation. This is because AIMS, as a Statutory Authority of the Australian Government, has positioned itself at the forefront of national and international access and benefit sharing policy discussion, and proactively engaged with Australian Government agencies at senior levels to develop landmark agreements where current legislation has not provided an adequate process.

Currently, the following samples are available for prospective collaborations:

- Extracts from over 7600 samples of marine macroorganisms including sponges, ascidians, soft corals bryozoans and algae. Additional frozen material exists for most samples, for larger scale extraction to support early-phase lead development without the need for a recollection.
- Over 9000 cryopreserved marine-derived microorganisms, including over 1000 marine actinomycetes and over 1700 marine fungi. These are available for customised fermentation and extract production.



This pool of available samples is constantly expanding.

For further information contact:

Dr Chris Battershill, Research Group Leader, Marine Biotechnology, c.battershill@aims.gov.au

Ms Libby Evans-Illidge, Bioresources Manager, e.evansillidge@aims.gov.au

