

Beaufort Award in Marine Biodiscovery

Terms of Reference

OVERALL OBJECTIVE

To develop research capacity in the priority area of marine biodiscovery through the funding of a research team that will contribute to the development of a distributed national centre of excellence in Ireland in Marine Biodiscovery.

STRATEGIC CONTEXT

The Beaufort Award in marine biodiscovery addresses the vision and challenge in the Government's *Strategy for Science Technology and Innovation 2006-2013* (SSTI). In addition, this award directly addresses a number of key objectives of *Sea Change: A Marine Knowledge, Research & Innovation Strategy for Ireland 2007-2013* (www.marine.ie). Specifically, it addresses objectives within the Marine Biodiscovery/Biotechnology Research Programme, as follows:

- *Create a strong interdisciplinary capability in the utilisation of marine biodiversity, using novel high-throughput techniques, for the development of drugs, therapies, bio and nano-bio materials;*
- *Develop core research capabilities and teams in taxonomy, natural products chemistry, chemogenomics and bioinformatics and*
- *Develop capabilities for the isolation and identification of novel chemical compounds or proteins for use by the medical device industry (e.g adhesives, biofilms and sensors).*

The Marine Institute, in partnership with a range of national and international centres of expertise, has been establishing the scope and content of a national Marine Biodiscovery programme. Initiatives are planned and underway to strengthen the MI's capabilities in respect to sample collection and processing, and the Marine Institute will play a central role in facilitating and co-ordinating the ongoing evolution and development of a national programme in this field.

DELIVERABLES/KEY OUTPUTS

The areas in which proposals should demonstrate capability to generate deliverables and outputs include some or all of the following:

- Mapping and genetic characterisation of Ireland's marine biodiversity;
- Creation of a strong, networked research capability in taxonomy, screening and characterisation of algae, sponges and other marine invertebrate fauna;
- Metagenomic cloning and screening of unculturable marine microbes;
- Establishment of capability in the isolation and identification of novel chemical compounds, proteins and enzymes, and microorganisms;
- Development of new synthetic production methodologies;
- Contribution to unique databases linking marine, biological and chemical information;
- Development of national and international scientific collaborations;
- Possible identification and demonstration of candidate marine materials as components in functional foods, pharmaceuticals and nanotechnology, (including nano-bio applications).

ACCESS TO MARINE INSTITUTE DATA / FACILITIES

The Marine Institute has facilities and data which may be applicable to this research programme. This national infrastructure will be made available to anyone who wishes to compete for this award. Candidates should contact Aengus Parsons (aengus.parsons@marine.ie) to discuss further details on access.

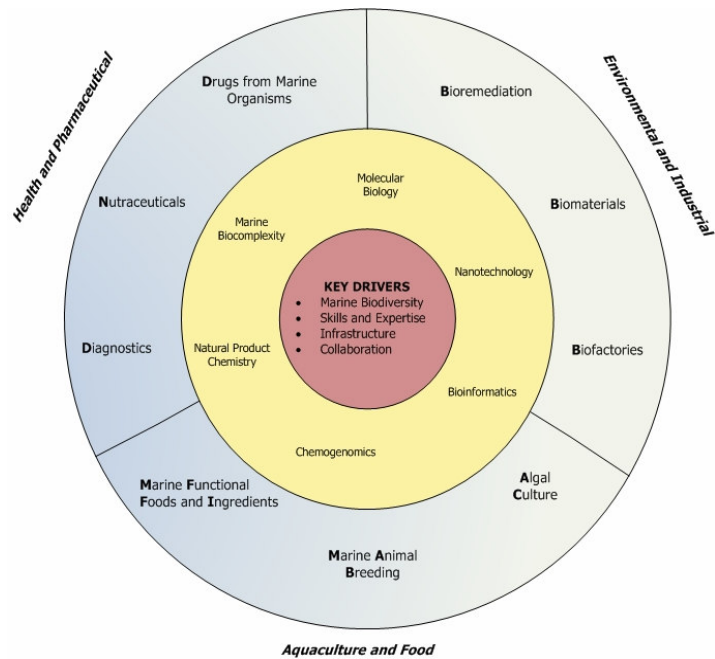
KEY ADDITIONAL INFORMATION

Marine Biodiscovery is fundamentally directed towards using nature's own technology for the production of goods and services. The seas are a major source of organisms with unique metabolic mechanisms, and novel biological materials. There is an international resurgence of interest in natural products as a source of novel bioactive substances for the development of novel drugs, therapies, functional food ingredients and biomaterials.

Ireland has developed much of the marine research, biotechnology, food and medical research infrastructure and capability that is necessary to establish an integrated chain of marine biodiscovery activities. In addition to creating a significant "value-added" aspect to a wide range of research investments, specific opportunities and synergies that will arise from exploring Ireland's marine resources from an entirely different perspective include:

1. Novel business opportunities for Ireland in the areas of:
 - drugs, industrial enzymes and biomaterials and processes as discoveries are made and optimized;
 - provision of chemical and protein drugs for disease targets identified as part of the State's research programmes in biotechnology; and
 - Biomaterials for the Medical Device and Diagnostics Sectors.
2. Functional foods/nutraceuticals, including prebiotic and probiotic products based on fish oils, algae or other marine sources.

The aim of this Award is to develop the core capability, as illustrated in the figure below, in order to enable Ireland to realise the opportunities outlined.



The implementation of an effective national effort in Marine Biodiscovery will entail the participation of a wide range of disciplines across a range of institutions. The Beaufort Award will not be able to address the entire chain of competencies and activities involved in Biodiscovery; but it is intended to build core capacity and knowledge that will contribute to the development of a wide-ranging programme.