

Post-Doctoral Fellowships

An Integrated Bioscreening Approach for the Identification and Cloning of High Value-added Biocatalysts of Biotechnological Importance from Marine Algae

Duration: 2002–2006 (42 Months)
Grant-Aid Approved: €210,503
Fellow/Host Institute: Dr. Alice Grassick/Dr. Patrick Murray, NUI Galway

The marine ecosystem offers enormous diversity and magnitude in terms of biotechnological potential, which, if fully realised, could generate and sustain a vibrant, high value-added marine biotechnology industry. Seaweeds represent a vast and 'generally regarded as a safe' (GRAS), under-utilised resource of high-value bio-pharmaceuticals, agro-chemicals, nutraceuticals, veterinary and healthcare products. The identification of high value-added seaweed extracts could revitalise the declining traditional seaweed industry and stimulate the seaweed culture sector.

By bioscreening a range of red, green and brown algae for production of carbohydrate-active enzymes, this work has generated a portfolio of enzymes with detailed information on their temporal expression and biochemical information of direct relevance to their biotechnological application. It is also cloning genes for selective key enzymes. Ultimately, it will provide a detailed database of information for further bioscreening studies and for the successful exploitation of the enzymes in the biotechnological, biopharmaceutical and biomedical industries, and propose a strategy for future bioscreening programmes. Finally, it has provided preliminary protocols for industry and information on optimum harvesting times.

Identification of Key Non-Technical Challenges and Recommendations for an Appropriate Governance Framework for Marine Biodiscovery Activities

Duration: 2004–2006 (24 Months)
Grant-Aid Approved: €119,986
Fellow/Host Institute: Dr. Ronan Long, NUI, Galway

Marine biodiscovery and biotechnology are frontier sciences, which present exciting new opportunities for Ireland. Biodiscovery involves the collection of small amounts of biological resources such as those found in plants, animals, fungi and micro-organisms and subsequent screening to identify bioactive compounds that may be used for commercial purposes (e.g. pharmaceuticals and insecticides). Despite the considerable interest in the biological resources in Irish waters, no specific legislation has been enacted to regulate biodiscovery activities. The focus of this post-Doctoral award is to identify and recommend an appropriate framework to govern marine biodiscovery activities, taking into account international agreements on, for example, access to marine resources/organisms, intellectual property rights related to genetic material and ethical and environmental concerns. It will identify the core legal and policy elements that need to be adopted for establishing such a framework and will contribute to legislative and policy development at national and international level.