

Project Report

# A Collaborative European Approach to Accelerating Translational Marine Science

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**Abstract:** Marine environments account for over 90% of the biosphere and hold tremendous potential for biotechnological applications and drug discovery. To fully exploit this potential and develop interesting discoveries into useful molecular tools and successful products, a multidisciplinary approach is indispensable. Here, we introduce the European Marine Biological Research Infrastructure Cluster (EMBRIC), a novel collaborative initiative that aims to facilitate translational marine science and remove existing bottlenecks that are currently impeding blue innovation. In the context of this initiative, pilot projects have been designed to test the functionality of the cluster focusing on two specific sectors of marine biotechnology: (i) the discovery and exploitation of marine natural products and (ii) the marker-assisted selection of desirable traits in aquaculture. EMBRIC brings together the expertise of six European Research Infrastructures on accessing the potential of marine organisms, specifically on the 99% of bacteria yet to be grown in culture, the microalgae, finfish, and shellfish. It improves the throughput and efficiency of workflows for discovery of novel marine products and facilitates projects that require an interdisciplinary approach. The objective is to develop coherent chains of high quality services for access to biological, analytical, and data resources by deploying common underpinning technologies and practices. The connection of academic science with industry is being strengthened by engaging companies, as well as geographically separated public and private-sector communities in the domain of marine biotechnology, and by federating technology transfer services amongst the players involved.

**Keywords:** marine biotechnology; microorganisms; microalgae; finfish; research infrastructure; discovery pipeline; bioactive compounds

## 1. Introduction

In addition to providing food for mankind and livestock, the oceans represent a vast reservoir of genetic diversity that can potentially be harnessed to drive scientific innovation and develop new products. The establishment of numerous marine stations since the 19th century has greatly facilitated access to marine organisms; however, most stations are relatively remote from major centres of life sciences research, which provide the interdisciplinary skill sets and large scale infrastructure required for modern biological research. This problem has become even more acute following the advent of ‘omics’ technologies. European Research Infrastructures represent an attractive means of bridging this gap by providing leading expertise and state-of-the-art life sciences facilities to marine biologists, and by making marine model organisms accessible to a wide range of researchers.