MarineBiotech

Marine Biotechnology
ERA-NET

Stazione Zoologica Anton Dohrn Napoli

Marine Infrastructures in Europe
new opportunities for research and technology development in marine biotechnology

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EMBRC
EUROPEAN MARINE BIOLOGICAL RESOURCE CENTRE

Vision for the future

By 2020 European Union will develop and apply advanced <u>tools, platforms and infrastructures to support Marine Biotechnology</u> in order to address key societal challenges in the next decade in the areas of food and energy, development of novel drugs and the sustainable use and management of the seas and oceans.

ENABLING TECHNOLOGIES AND INFRASTRUCTURES

European marine biotechnology activity has made significant progress over the past decade in building a research community and infrastructure to support research and innovation. Despite this progress, there remains an acute need to continue to build research and innovation capacity — in both the research and enterprise sectors and to enhance the science and technology research infrastructure.

A major goal of ERA-MBT is to position marine biotechnology within a self-sustained enterprise driven network that is supported by national and European funding agencies. Reaching this goal delivers the vision for European Marine Biotechnology set by the ESF-Marine Board in its 2010 position paper.

How to achieve this through current projects such as EMBRC

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EUROPEAN
MARINE
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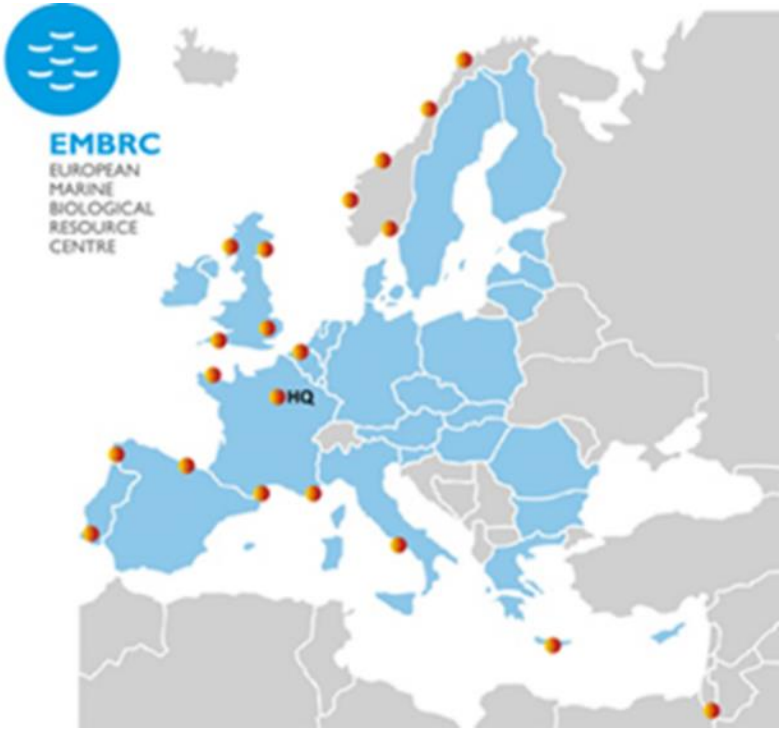
CENTRE



What is EMBRC?

•EMBRC is distributed Marine Research Infrastructure of state-of-the-art research and training facilities (part of the ESFRI roadmap for Biological and Medical Research) that brings together 24 leading European marine stations in 9 different countries across Europe.

•EMBRC is a driver in the development of blue biotechnologies, supporting both fundamental and applied research activities for sustainable solutions in the food, health and environmental sectors.

GOALS AND OBJECTIVES

EMBRC Objectives are to:

- Offer access to a portfolio of state-of-the-art research platforms, biological resources, analytical services, expert advice and data to users from academia, the private sector as well as policy stakeholders;

- Improve the quality of access by developing common standard quality practices and unique integrated workflows of specialized services;

- Strengthen the connection of science with users from industry through the establishment of Expert Centres for blue biotechnology innovation;

- Educate the next generation of research scientists through exposure to and training on excellent infrastructures and services, as well as advanced technology; train researchers, also from the private sector, to utilize advanced technologies; to enhance the managerial competence and technical skills of the RI personnel;

status

- EMBRC was integrated into the ESFRI roadmap in 2008;
- A MoU to establish the EMBRC-ERIC entered into force in 2013 (FR, HR, IT, PT, ES, UK, BE, IS and NO);
- France was selected to host EMBRC-ERIC, with HQ in Paris;
- EMBRC submitted its final ERIC application in May 2017;
- EMBRC-ERIC is expected to enter the Operational Phase in late 2017, with nine country Members.

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Scientific themes

-Developmental Biology & Evolution

-Biogeochemistry & Global Change

-Marine Products & Resources

-Biodiversity & Ecosystem Functioning

-Biomedical Sciences

Ecosystems and biodiversity readily accessible to shore-based marine stations

- Fjords
- Estuaries
- Mud flats
- Sea grass beds
- Kelp forests
- Volcanic seeps
- Coral reefs
- Megatidal seas
- Deep sea environments

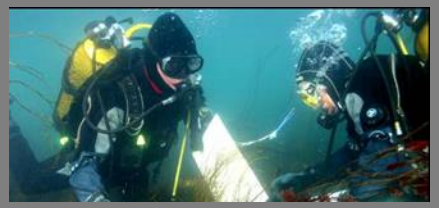







Access to platforms

Coastal research vessels, remote operated vehicles, tethered buoys, scientific diving, and animal borne sensors



Experimental facilities

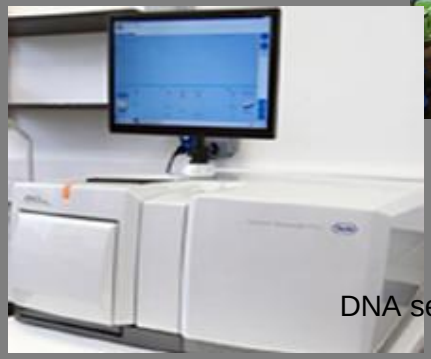
Seawater supply, cold and warm water aquaria, environmental control (pH, CO_2, temperature, light, salinity), plankton and invertebrate feed culture, mesocosms

Biological resources

Model species, genotypes, mutant strains including transgenics, genomic resources (e.g. BAC libraries), type culture collections, antibodies

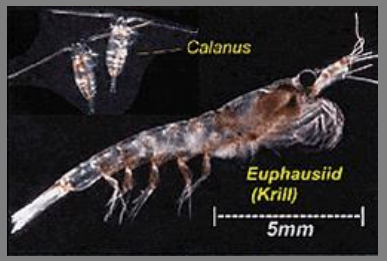
Major equipment

Next Generation Sequencers, X-ray diffraction, nuclear magnetic resonance spectroscopy, mass spectrometry, laser confocal scanning microscopes, electron microscopes, analytical chemistry



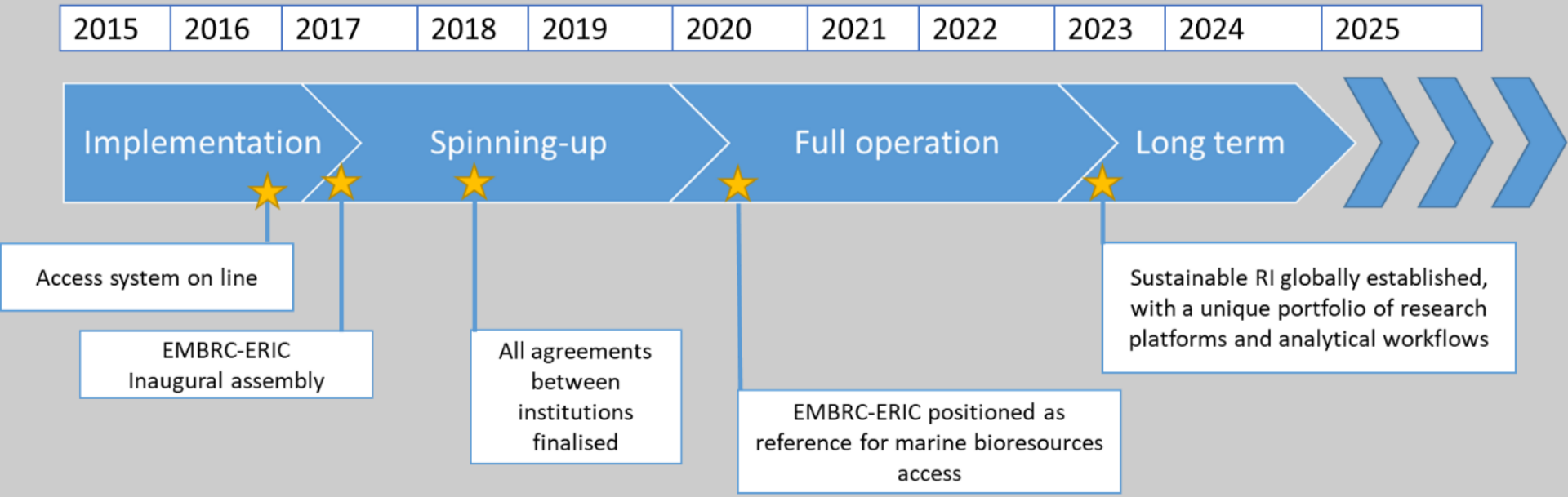
DNA sequencer

Data sets and time series



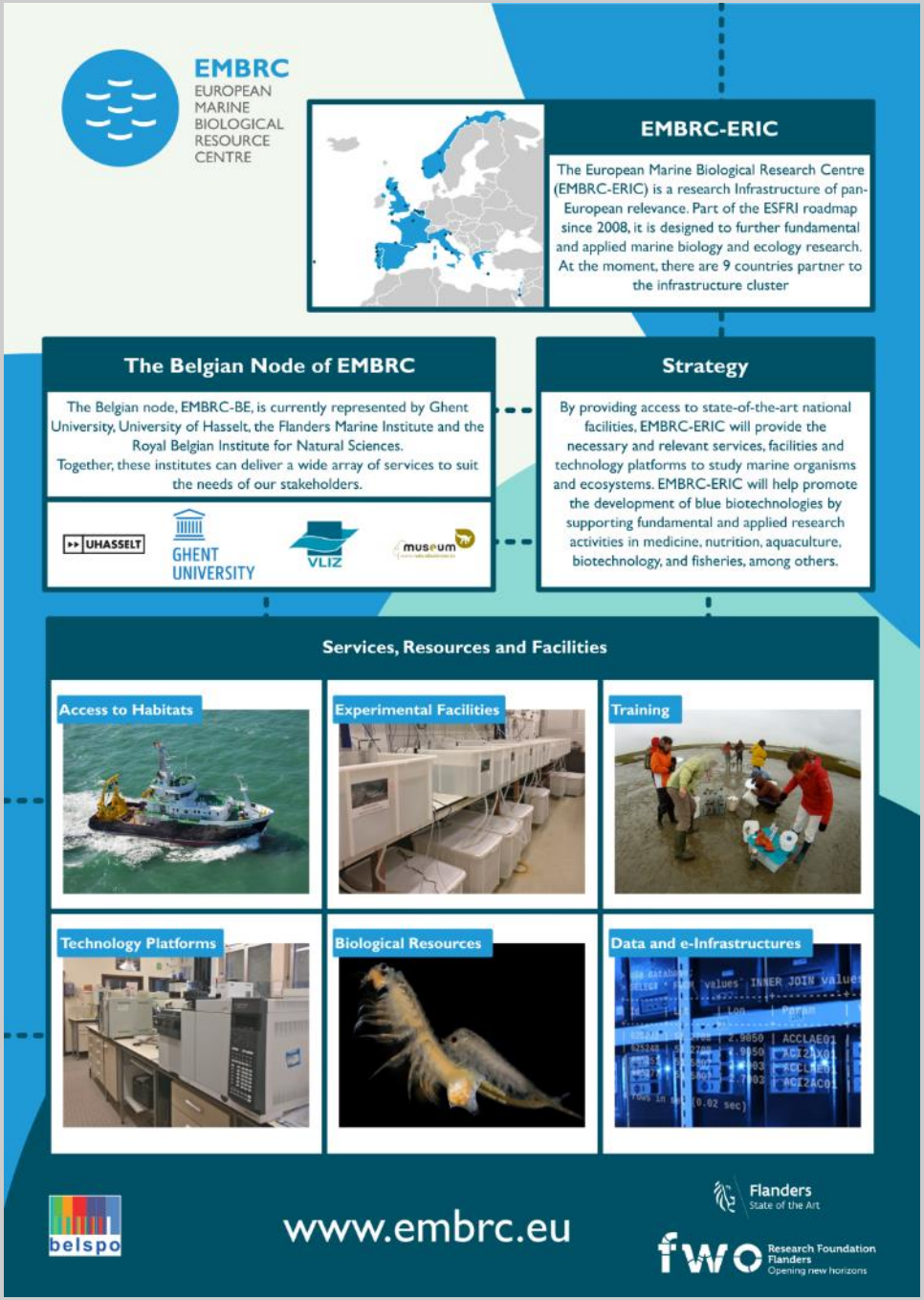
Hosting and teaching facilities

EMBRC Timeline



Many services are already active, and accessible through the EMBRC Access Portal

http://www.embrc.eu/



EMBRC Nodes:

- Belgium (BE)
- Greece (GR)
- Spain (ES)
- France (FR)
- Israel (IL)
- Italy (IT)
- Norway (NO)
- Portugal (PT)
- United Kingdom (UK)

HARMONIZATION of PROCEDURES for INTEROPERABILITY & MULTI-DISCIPLINARITY

EMBRC-ERIC is involved in a number of EU projects, which consolidate and integrate the RI community, linking RIs and standardised procedures for data-gathering, -handling, -calibration and -storage, continuous workflows across RI platforms, and common open platforms for data sharing.

embric.eu

corbel-project.eu

envriplus.eu

EMBRC EUROPEAN MARINE BIOLOGICAL RESOURCE CENTRE

The EMBRIC cluster 9 countries and 27 institutional partners

RISIS
Research infrastructure for research and innovation policy studies

EMBRC
EUROPEAN MARINE BIOLOGICAL RESOURCE CENTRE

elixir
For biological data

AQUA EXCEL 2020

eu:openscreen
For chemical biology and screening

MIRRI
MICROBIAL RESOURCE RESEARCH INFRASTRUCTURE

Six pan-European **Research Infrastructures** contributing to the development of a knowledge-based ***blue bioeconomy***

EMBRIC objectives

1

ENABLE ACCESS TO RESOURCES

Enable access to biological, analytical and data resources by developing coherent chains of high quality services.

2

FEDERATE A COMMUNITY

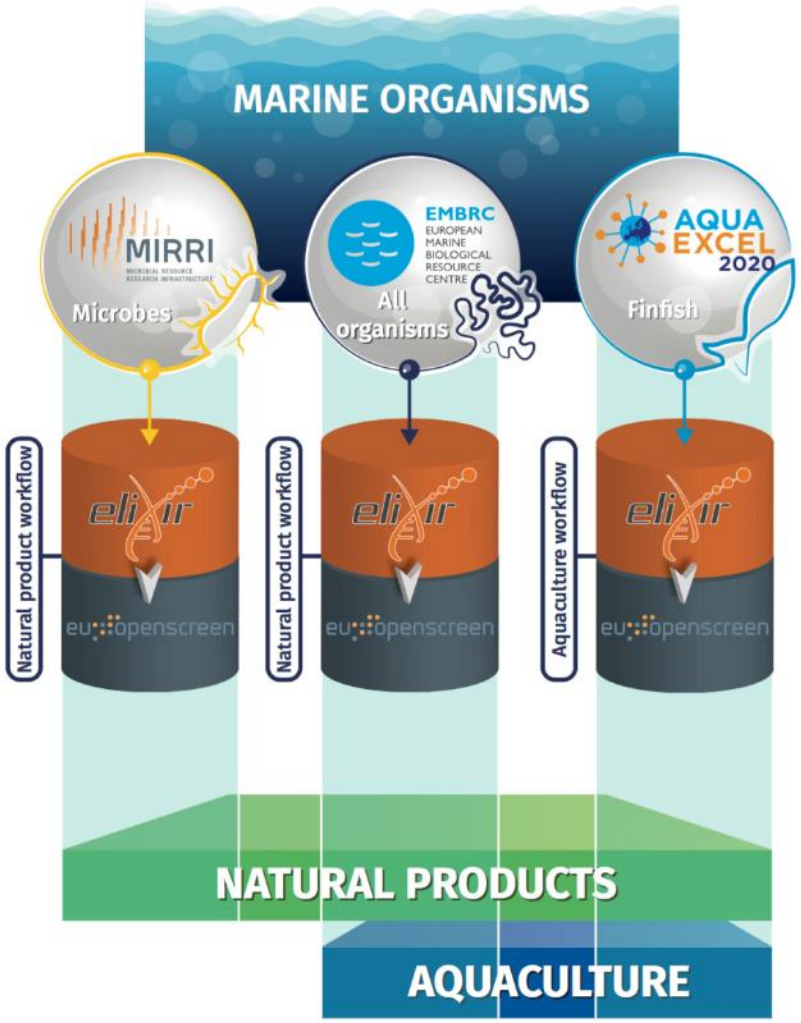
Federate a community of technology transfer services that will strengthen the connection of science with industry.

3

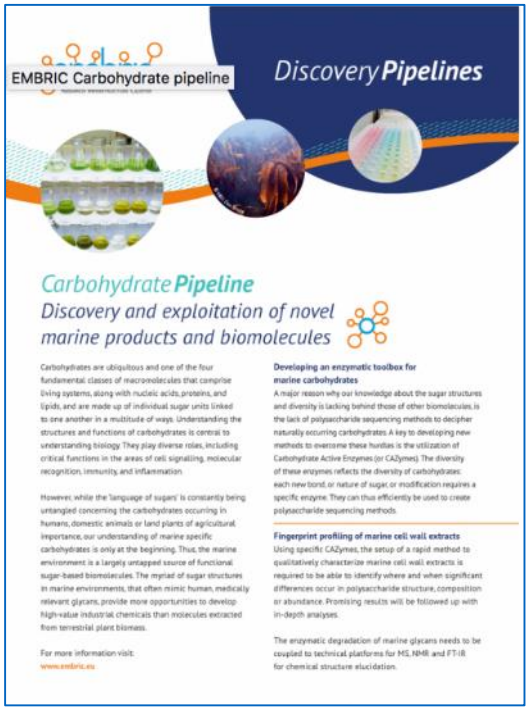
INTEGRATE PUBLIC AND PRIVATE-SECTOR COMMUNITIES

Integrate public and private-sector communities in the domain of marine biotechnology by involving regional RDI policy-makers.

EMBRIC pipelines

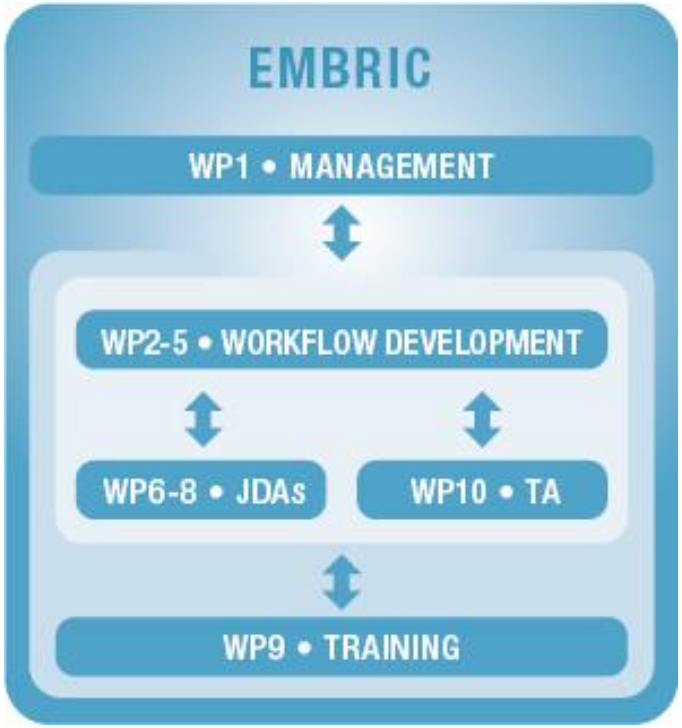


EMBRIC pipeline examples



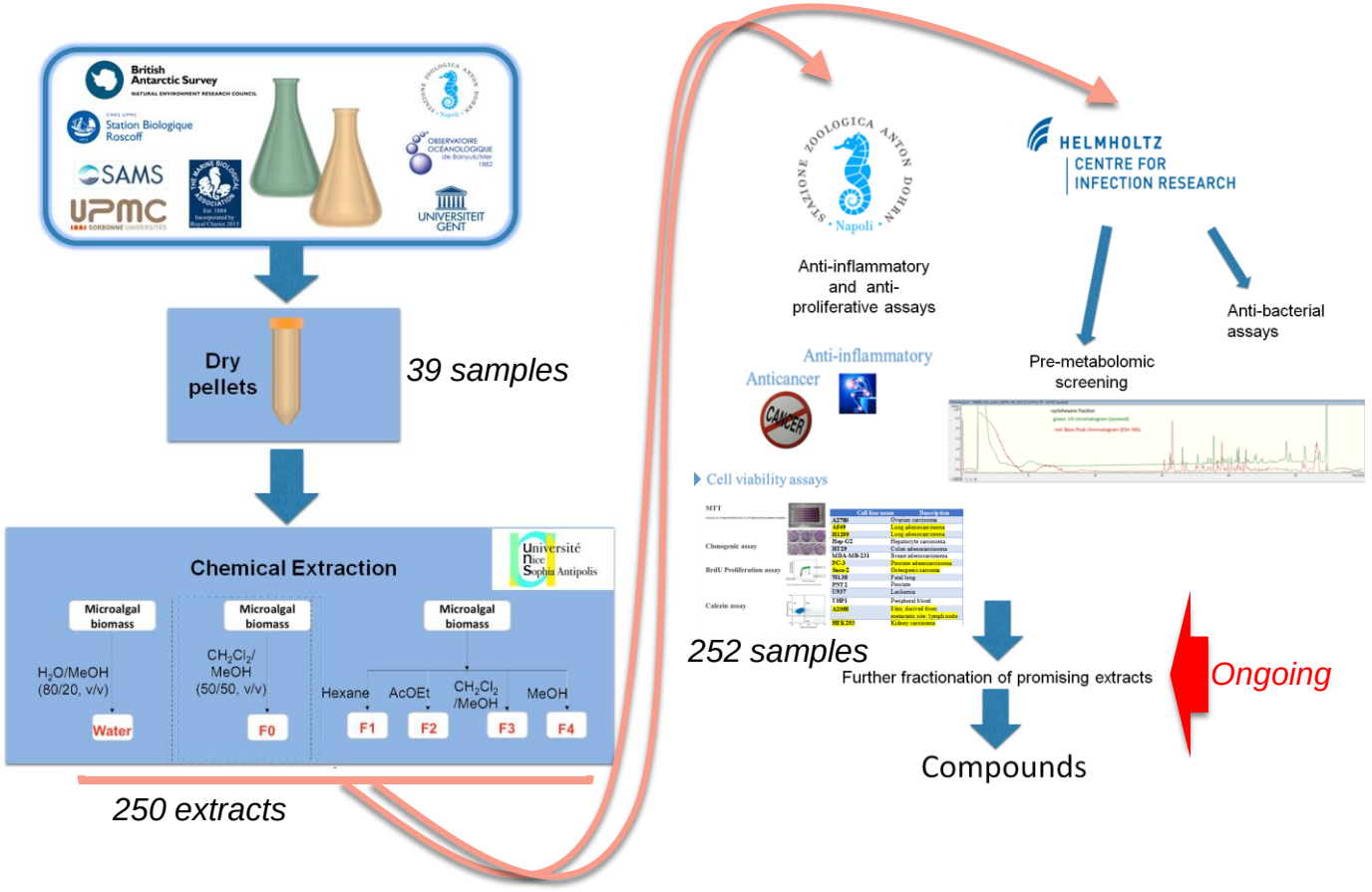
Find more information at
www.embric.eu

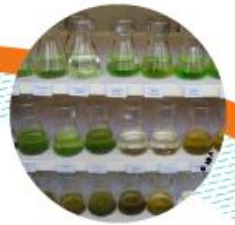
EMBRIC Work Packages: task distribution and interaction



WP1: Management and Communication
WP2: Improvement of access to marine organisms from Biological Resource Centers
WP3: Concepts for the discovery and exploitation of marine products and biomolecules
WP4: Data services and reporting standards
WP5: Mobilizing Research Infrastructures to foster blue biotechnology ecosystems in maritime regions
WP6: Microbial pipeline from environment to active compounds
WP7: Microalgae for blue biotechnological applications
Development of biological
WP8: resources for the selective breeding of shellfish and finfish
WP9: Training and exchange of best practice
WP10: Transnational Access to EMBRIC

WP7: Natural products from microalgal strains





embric
European Marine Biological Research Infrastructure Cluster

EMBRIC Integrated Training Programme

3rd call open now!

Call for training opportunities in marine biotechnology & aquaculture innovation

Deadline: 7 December 2017

EMBRIC, the European Marine Biological Research Infrastructure Cluster launched an integrated training programme to harmonize methods and standardize procedures in the EMBRIC domain. In this framework, a trimestrial call has been set up. It provides partners an extra incentive and financial support to organise, host and participate in knowledge exchange, best practice and technology transfer.

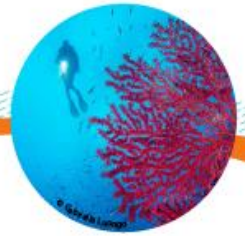
UGent will assist and facilitate training setup

EMBRIC funding call eligibility criteria:

- Up to 3500€
- Proposals can involve organisations outside EMBRIC
- One EMBRIC partner should co-organise
- Only actual costs linked to the training, its venue, its training material and the finalization of its outcome
- Innovative training approaches are welcome
- Collaboration with industry & policy is encouraged

Amongst others, training activities can tackle:

- Standardised procedures for discovery, development and exploitation of resources
- Novel technical enhancements for generating marine derived products
- Methods and developments in computational resources
- Innovation dynamics, technology transfer (TT) and value creation in blue biotech
- Transnational access (TNA) and access benefit sharing (ABS)
- Human capacity building (HCB) and transferable skills
- Intellectual property (IP), governance and policy

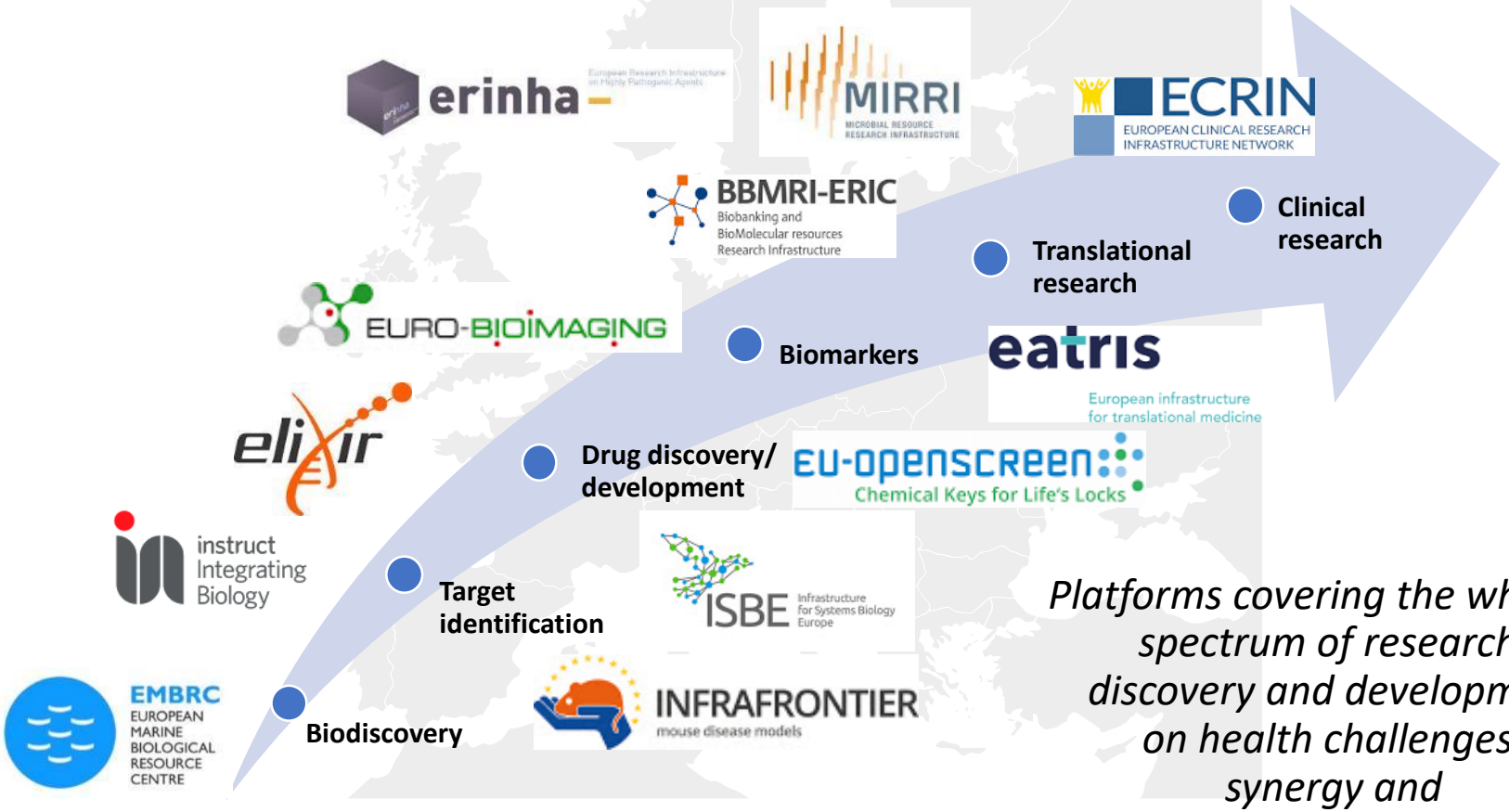


This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 654008

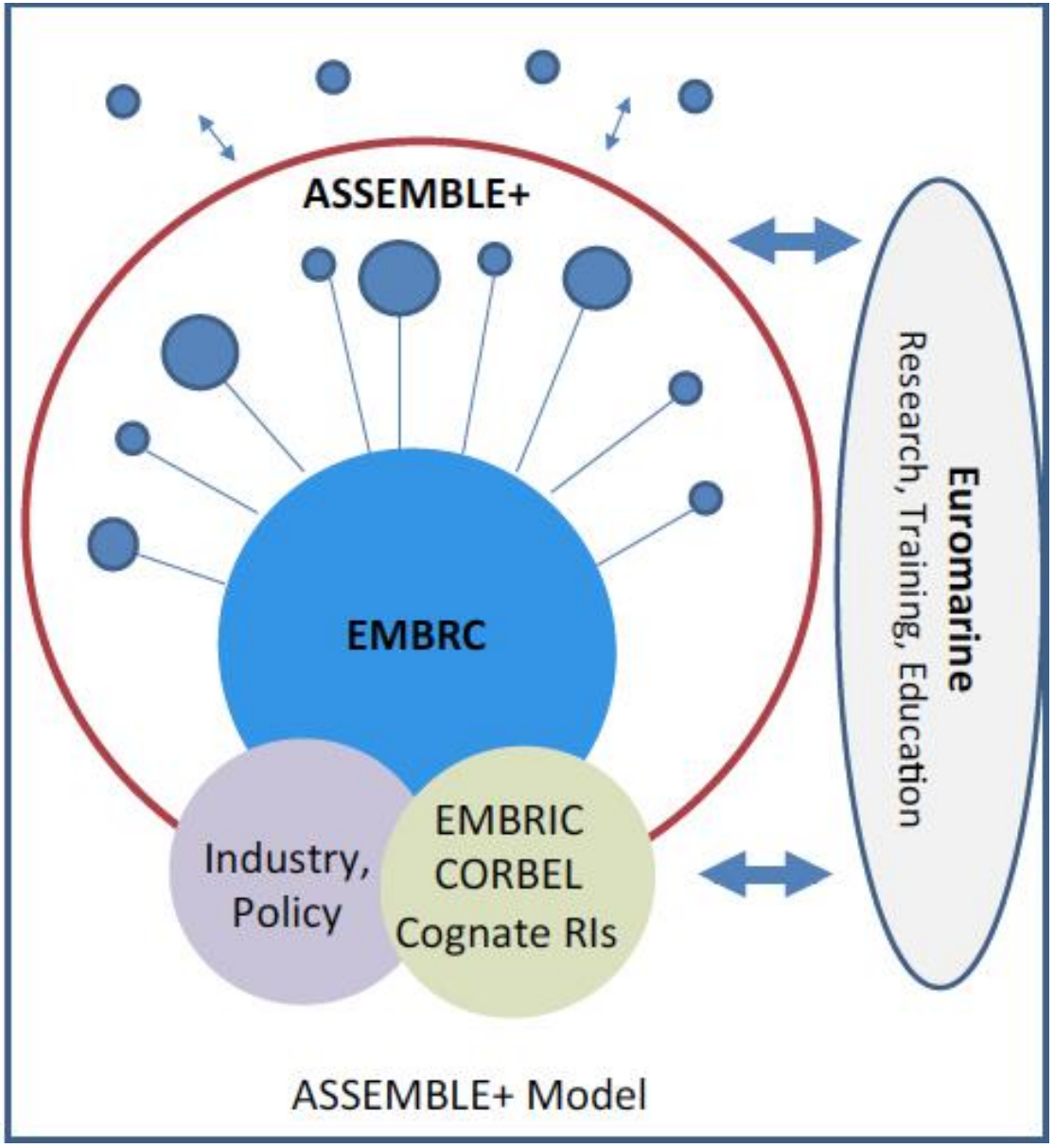
For guidelines and proposal submission visit:
www.embric.eu/trainingcall

CORBEL are shared services between the ESFRI Biological and Medical Research Infrastructures that transform the European research community from discovery of basic biological mechanisms to applied medical translation – through the provision of a unified interface, aligned services and coordinated user access to a range of advanced technology platforms.

Coordinated RIs Building Enduring Life-Science Services



Platforms covering the whole spectrum of research, discovery and development on health challenges: synergy and complementarity



ASSEMBLE Plus will provide scientists from academia, industry and policy with a quality-assured programme of Transnational Access (TA) and Virtual Access (VA) to marine biological stations offering a wide variety of marine ecosystems, unique marine biological resources, state-of-the-art experimental and analytical facilities with integrated workflows, historical observation data, and advanced training opportunities.

The project started on the 1st of October 2017.

Structures & Infrastructures

Why are Research Infrastructures so important?
Innovation in science and technology is vital to solving Europe's economic and societal challenges. These solutions require access to complex and costly RIs.

Efficient RIs enable the greatest **discoveries** in science and technology, **attract researchers** from around the **world** and build bridges between research communities. They allow the **training** of researchers and facilitate innovation and knowledge-sharing.

By **pooling efforts** and developing RIs, European countries can achieve **excellence** in highly demanding scientific fields and simultaneously build the European Research Area (ERA) and Innovation Union.

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Thank you for your attention