EMBRC
EUROPEAN MARINE BIOLOGICAL RESOURCE CENTRE

Europe's Infrastructure for Marine Biological Research and Innovation

INTAROS – RI Meeting 16/02/2021

Nicolas Pade – Executive Director EMBRC-ERIC

Outline

1. What is EMBRC?
2. Our Services, Competencies, & Users
3. Observation initiative

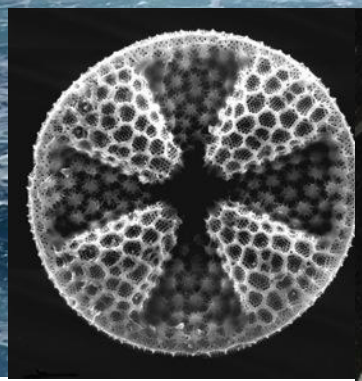
EMBRC
EUROPEAN
MARINE
BIOLOGICAL
RESOURCE
CENTRE

The sea as a source of new ideas

Of the 34 fundamental animal lineages,
32 are found in the sea
13 are exclusively marine

80% remains unexplored

This high biodiversity represents an outstanding resource for novel products and technologies BUT must be understood, studied, and exploited in a sustainable manner




EMBRC-ERIC

EMBRC
EUROPEAN
MARINE
BIOLOGICAL
RESOURCE
CENTRE

Composition:
9 countries, 45 sites for research & experiments

Access to Ecosystems and biodiversity:
Artic to tropical, coastal to deep-sea

Access to research facilities & platforms:
Enabling research close to source of marine resource – experimental facilities (aquaria, mesocosms), technical and analytical platforms

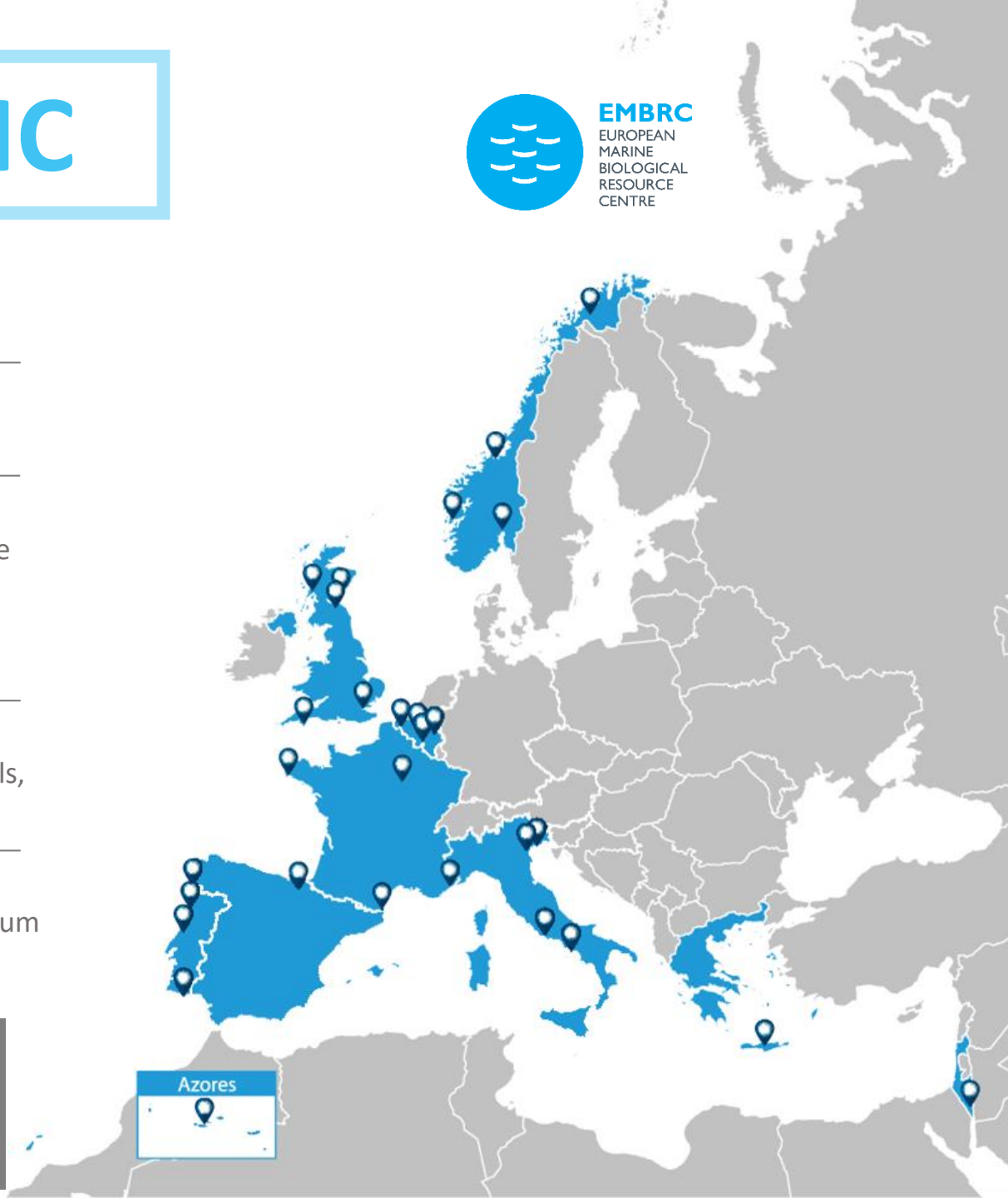
---

Development of tools & techniques
Cryopreservation, husbandry, genomic tools, experimental systems, 'omics observation

---

Status:
European Research Infrastructure Consortium (ERIC)
Operational - 2018

RI member countries: Belgium (BE), Greece (GR), Spain (ES), France (FR), Israel (IL), Italy (IT), Norway (NO), Portugal (PT), United Kingdom (UK)



Vision & Mission

VISION: Develop a better understanding of the connections between marine systems, humans and the environment to develop 'blue solutions' to society's grand challenges such as climate change, food shortages, and new treatments and drugs

MISSION: Promote the sustainable use of marine resources; deepen the fundamentals of knowledge on marine organisms and ecosystems; promote the use of marine experimental models in mainstream science, and raise the profile of marine biological sciences

EMBRC
EUROPEAN MARINE BIOLOGICAL RESOURCE CENTRE

EMBRC Service

EMBRC
EUROPEAN
MARINE
BIOLOGICAL
RESOURCE
CENTRE

Biological resources

The provision of marine biological resources for research purposes is a fundamental service of EMBRC-ERIC:

- Sampling upon request
- Culture collections
- Preserved samples collections
- Biobank material

EMBRC
EUROPEAN
MARINE
BIOLOGICAL
RESOURCE
CENTRE

Ecosystem access

EMBRC-ERIC provides access to a range of marine ecosystems, including kelp forests, coral reefs, intertidal rocky shores, lagoons, mudflats, deep-sea environments as well as planktonic and pelagic communities. Access to ecosystems is provided through the following platforms:

- Coastal research vessels
- Scuba diving facilities
- Submersibles (ROVs,AUVs)
- Sampling facilities and equipment

EMBRC
EUROPEAN MARINE BIOLOGICAL RESOURCE CENTRE

Experimental facilities

EMBRC-ERIC provides access to modular experimental facilities, and can accommodate a wide breadth of experimental designs, for research, education, and training activities.

The facilities include:

- Aquaria and mesocosms
- Wet laboratories
- Dry laboratories
- Climate rooms
- Field experiments (*in situ* experminatal platforms)

EMBRC
EUROPEAN MARINE BIOLOGICAL RESOURCE CENTRE

Technology platforms

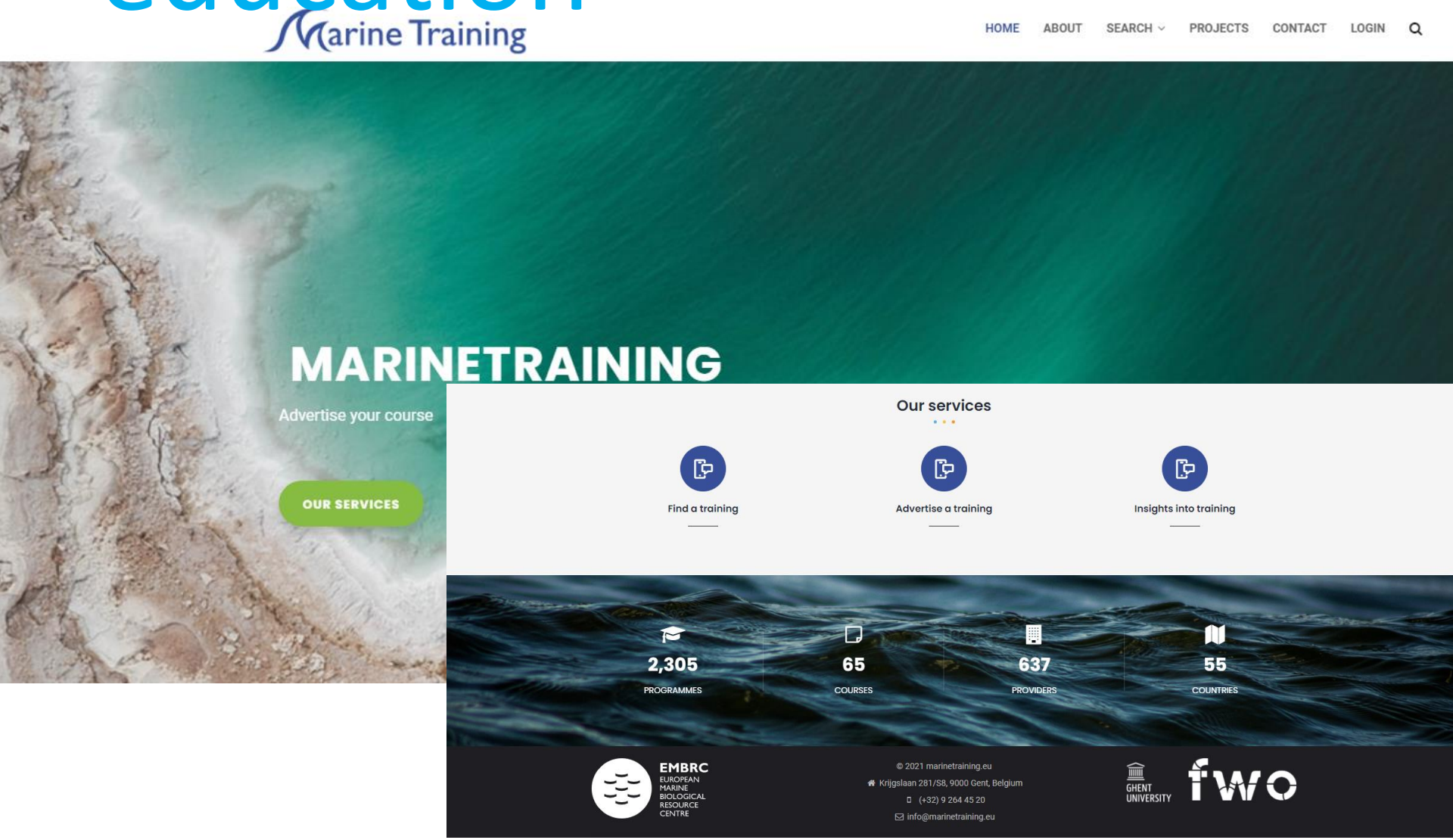
EMBRC-ERIC provides access to the latest technologies in support of on-site research projects.

EMBRC-ERIC Technology platforms include:

- Biological analysis
- Imaging
- Molecular biology and omics
- Structural and chemical analysis
- Remote sensing and telemetry

EMBRC
EUROPEAN
MARINE
BIOLOGICAL
RESOURCE
CENTRE

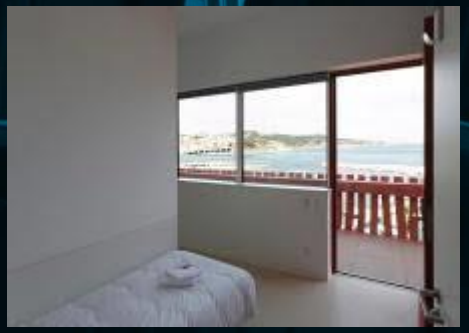
Training and education



Supporting facilities

EMBRC-ERIC offers a large range of supporting facilities, to facilitate long visits and projects, offering lodging and catering close to the laboratries.

- Conference and meeting facilities
- In-house lodging
- In-house catering
- Others



EMBRC
EUROPEAN
MARINE
BIOLOGICAL
RESOURCE
CENTRE

A multi-disciplinary RI

- EMBRC is a “Life Science RI” – Supporting fundamental biology, physiology, evo-devo, gene expression, bioprospecting:
  - Culturing of marine models & maintenance of organisms
  - Supplying micro-organisms for experimental purposes
  - Development of post genomic tools
- EMBRC is an “Environmental RI” – Environmental science, conservation, climate change impact, biodiversity, ecology:
  - In situ & ex situ experiments
  - Scientific diving teams
  - Maintenance and study of collected samples




EMBRC
EUROPEAN
MARINE
BIOLOGICAL
RESOURCE
CENTRE

EMO BON – *European Marine Omics Biodiversity Observation Network*

- European Marine Omics Biodiversity Observation Network
- Establish first coordinated, long-term Marine Omics Observatory in Europe
- European contribution to international networks, such as GLOMICON, contributing to:
  - Quality controlled, baseline genomic biodiversity data
  - Essential Ocean Variables (EOVs) monitoring
  - Microbiome research
  - Ensure continuity element between project-based monitoring at sites
- Build European Omics Observation community and contribute to global community

EMBRC
EUROPEAN MARINE BIOLOGICAL RESOURCE CENTRE

EMO BON - Approach

- Operational Committee Comprising 1 member per country
- Three, minimum-standard protocols:
  - Water column (obligatory to participate)
  - Soft sediment (in development)
  - Hard substrates (ARMS – Smithsonian protocol)
- Centralised DNA extraction & sequencing:
  - metagenomes
  - Metabarcodes: 16S, 18S, CO1, ITS1
- Use existing data and metadata standard – compatibility with global efforts
- Data to be released as open data, with data publications planned every 4 months

EMBRC
EUROPEAN MARINE BIOLOGICAL RESOURCE CENTRE

EMO BON – Collaborations

- Looking to engage other RIs for:
  - Complementarity, e.g. LifeWatch – data workflows
  - Connectivity, e.g. ELIXIR – database linking, data mining
  - Context and complementarity working with other marine RIs, EMSO, Euro-ARGO, JERICO-RI, ICOS Marine
  - Expansion/collaboration, e.g. SIOS
- Exploring collaboration outside of Europe to build and connect GO networks:
  - SAEON – South African coastal observatory
  - Japan – Multiple marine stations
  - USA – multiple networks and observatories, e.g. NEON
  - Latin America & Caribbean

LifeWatch ERIC elixir emso ERIC EUROPEAN RESEARCH INFRASTRUCTURE CONSORTIUM Euro Argo NRF SAEON EMBRC EUROPEAN MARINE BIOLOGICAL RESOURCE CENTRE

Thank you!

EMBRC
EUROPEAN
MARINE
BIOLOGICAL
RESOURCE
CENTRE

EMBRC-ERIC Headquarters
4 Place Jussieu, 75005 Paris (FR)
e: info@embrc.eu
t:+33.1.44.27.63.37

www.embrc.eu

ESFRI