CSA MarineBiotech Partners

Belgium - Flanders Marine Institute (VLIZ)
- Marine Board - ESF

Denmark - Technical University of Denmark (DTU)

France - Centre National de la Recherche Scientifique Roscoff (CNRS)
- French Institute for Exploration of the Sea (Ifremer)

Germany - North Germany Life Science Agency (Norgenta)

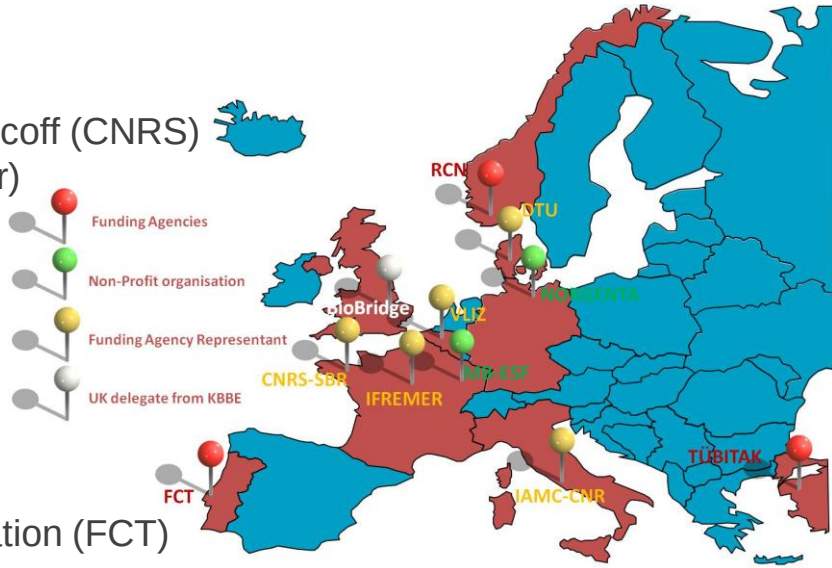
Italy - National Research Council (CNR)

Norway - Research Council Norway (RCN)

Portugal - Ministry of Science, Technology and Higher education (FCT)

Turkey - The Scientific and Technological Research Council of Turkey (TÜTIBTAK)

UK - Biobridge Ltd.



MarineBiotech

ERA-NET Preparatory Action in Marine Biotechnology (CSA-MBt)

Marine Biotechnology in the European Research Area:
Challenges and Opportunities for Europe
Brussels, 11-12 March 2013

Steinar Bergseth - Research Council of Norway
Jan-Bart Calewaert - European Marine Board

CSA (Coordinating) in Marine Biotechnology. MarineBiotech is funded under the European Commission's Seventh Framework Programme.
Contract number 289311. October 2011 - March 2013.

Presentation outline

I. What is Marine Biotechnology?

II. Why an ERA-NET Preparatory Action in Marine Biotechnology?

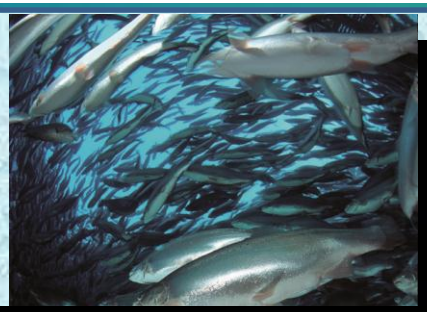
III. Main objectives and structure of the CSA MarineBiotech

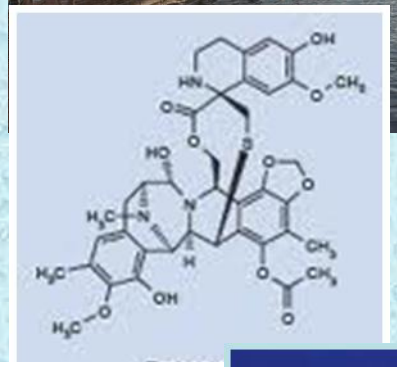
IV. Main achievements of the CSA MarineBiotech
   a) Strategic Forum and Stakeholder Group Workshops
   b) Mapping MarineBiotech RTDI
   c) The MarineBiotech Portal
   d) Scoping the ERA-NET

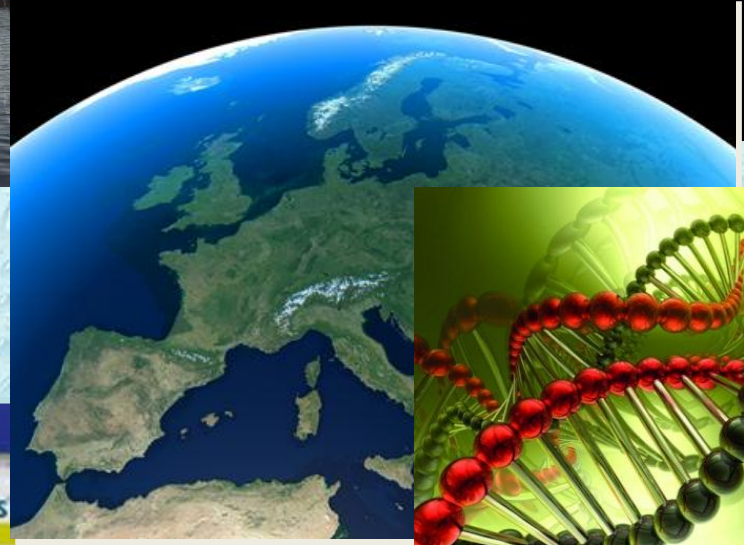
V. Towards an ERA-NET MarineBiotech?

I. What is Marine Biotechnology?

MarineBiotech





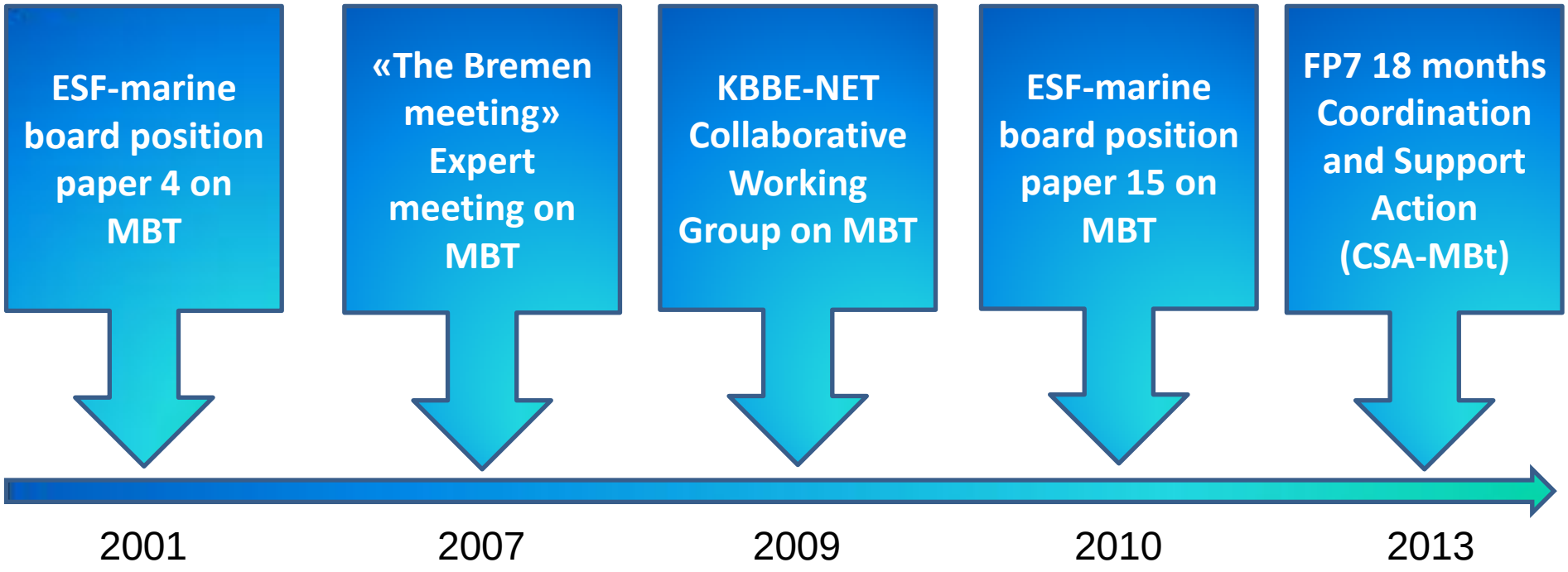


I. What is Marine Biotechnology?

… the use of marine bioresources as the target or source of biotecnology applications (OECD)

II. Why CSA MarineBiotech?

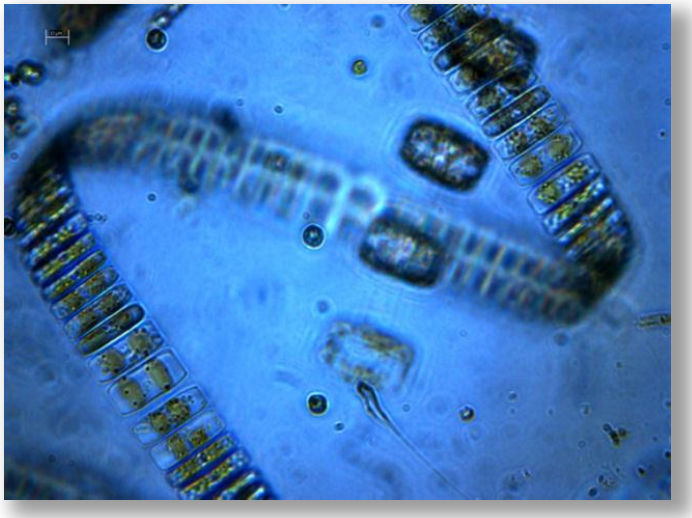
Main events leading to a coordinated action:



***ERA-NET MarineBiotech* from January 2014 + 4 years….?**

II. Why CSA MarineBiotech?

- **Europe's marine ecosystems and organisms are:**
  - Underexplored, Understudied and Underexploited.
- **Europe's sea basins have an immense biodiversity supporting:**
  - Food production, ecosystem services and the possibility to develop new innovations for societal benefits (energy, platform chemicals, neutraceuticals, pharmaceuticals, …).
- **Biotechnology needs to go marine!**



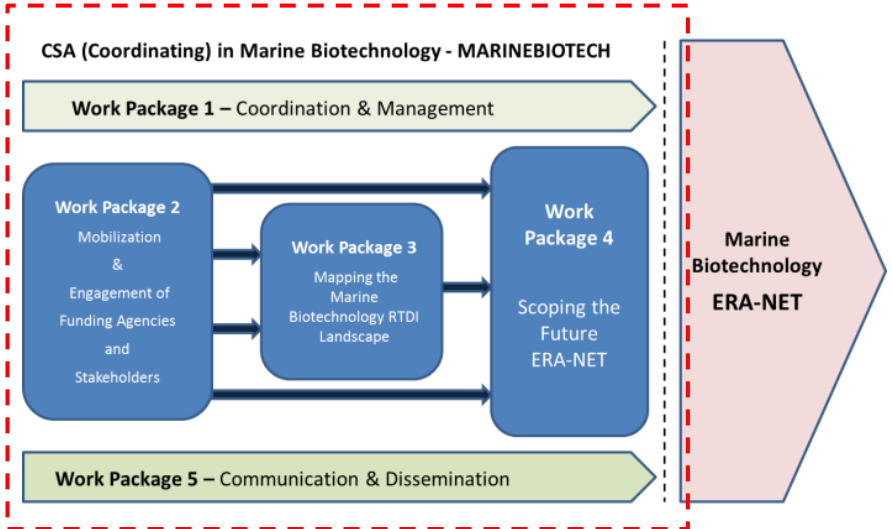
Navicula vanhoeffenii
MabCent, Tromsø

- **By sustainable development of marine biotechnology:**
  - The marine ecosystems can be better understood.
  - The bioeconomy will be developed and the economical potential realised.
  - The societal requirements can be integrated as ELSA / RRI / ABS issues.
  - The Grand Challenges of our time will be addressed. (environment, food supply, health, energy).

III. Main objectives and structure of the CSA MarineBiotech

- **Prepare the foundation for an ERA-NET in marine biotechnology**
  - Mobilise and engage funding agencies and stakeholders (WP2, FCT). (Establish a Strategic Forum and a Stakeholder Group)
  - Increase the number of funding agencies involved in the partnership committed to develop an ERA-NET in marine biotechnology (WP2/4, FCT/RCN).
  - Map the landscape in Europe and internationally (WP3, ESF-MB).
  - Scope the possibilities (WP4, RCN).
- **Communicate the potential and how an ERA-NET adds value to the ERA** (WP5, VLIZ).

October 2010 → March 2013



IV. Main Achievements of the CSA

A. Strategic Forum and Stakeholder Group Workshops

B. Mapping MarineBiotech RTDI

C. The MarineBiotech Portal

D. Scoping the ERA-NET

Gramatophora sp
MabCent, Tromsø

IV. A. Strategic Forum and Stakeholder Group – The CSA Workshops – *WPL:FCT*

- Established and expanded two communities active in marine biotechnology:
  Funding agencies (Strategic Forum) and stakeholders (Stakeholder Group).
  - Basis for ERA-NET MBT Consortium (SF).
  - Providing recommendations for a proposal (project scope and content) for an ERA-NET in marine biotechnology (SG).

MarBank, Univ. Tromsø

How?

- Through 2 Workshops and informal interactions.

IV. A. Workshop 1: Strategic Forum and Stakeholder Group

26th – 27th April 2012, Olhão, Portugal – TL: Partner FCT (P)

- 52 participants established & held the first meetings of the Strategic Forum and the Stakeholder Group.
- Successful enlargement of the group of interested funding agencies.
- Presentations and discussions on the marine biotechnology landscape in the EU.
- Exchanges on research priorities and gaps, resource problems and sector-needs, provided important information for the establishment of an ERA-NET in marine biotechnology.

IV. A. Workshop 2:
Strategic Forum and Stakeholder Group

8th – 9th October 2012, Hamburg, Germany – TL: Partner Norgenta (GE)

- 57 industry, academic, policy and funding agency representatives met to discuss the role and future of marine biotechnology in Europe.
- Formation of an ERA-NET Working Group to prepare the ERA-NET project proposal.
- The Research Council of Norway, represented by Dr Steinar Bergseth was elected co-ordinator for the prospective ERA-NET and leader for the proposal activity.

IV. A. Main Stakeholder Recommendations

1. Consolidate the CSA Stakeholder Group (SG) into an ERA-MBT Stakeholder Platform and ensure active participation of stakeholders in the ERA-MBT activities.
2. Take an industry-academic collaborative approach, ensuring appropriate industry involvement in the ERA-MBT activities and funding opportunities.
3. Continue efforts to map and better understand the European marine biotechnology landscape.
4. Ensure that a central component of the ERA-MBT (and its budget) is dedicated to communication, outreach and providing access to relevant information to mobilize a broad European marine biotech research community.
5. Organise a series of thematic research workshops and support training activities.

IV. B. Mapping MarineBiotech RTDI – *WPL: EMB*

Mapping components:

- Overview of **European** MBT Strategies, Programmes and Initiatives
  TL: Marine Board-ESF

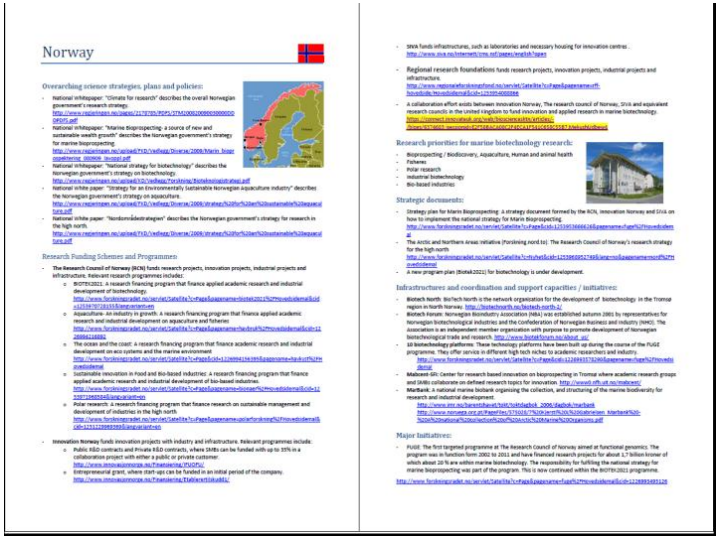
- Overview of **Global** MBT Developments: High-level analysis of key trends and developments in global marine biotechnology RTDI
  TL: BioBridge

IV. B. Mapping MarineBiotech RTDI (2)

Strategies, Programmes and Initiatives in Europe - TL:EMB

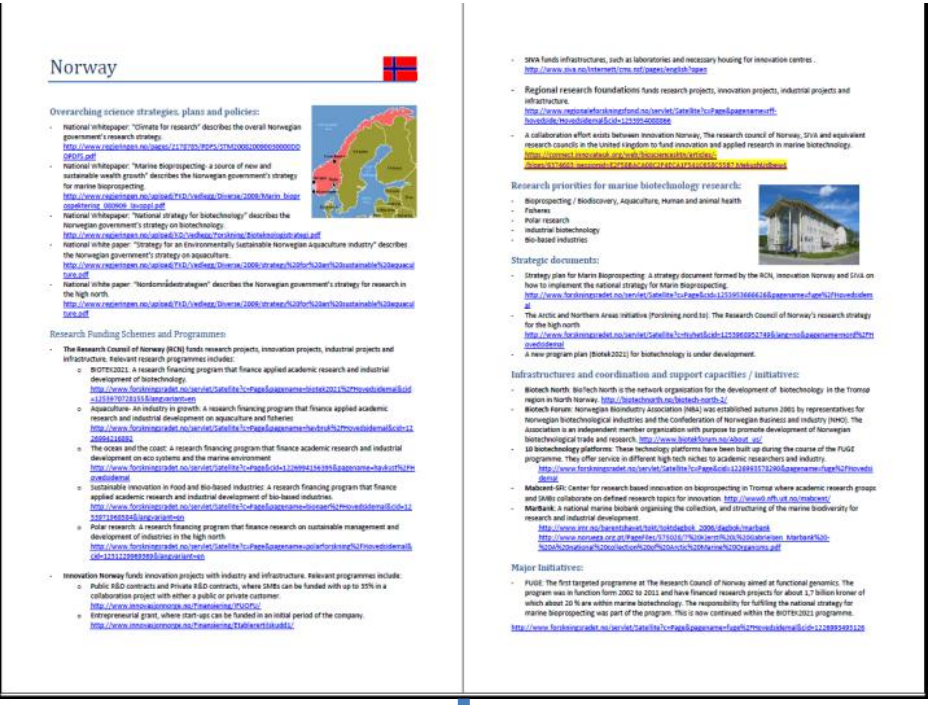
General approach:

- Three levels
  - countries
  - pan-European
  - regional (European sea-basins)



- Focus on relevant Policies, Strategies and Programmes and coordination initiatives
- Stepwise approach starting from high level to more details as information becomes available
- Developed and updated during and beyond the lifetime of the project

From report to Portal



Norway

Overarching science strategies, plans and policies:

- National whitepaper: "Climate for research" describes the overall Norwegian government's research strategy.
- National whitepaper: "Marine Bioprospecting - a source of new and sustainable wealth growth" describes the Norwegian government's strategy for marine bioprospecting.
- National Whitepaper: "National strategy for biotechnology" describes the Norwegian government's strategy on biotechnology.
- National white paper: "Strategy for an Environmentally Sustainable Norwegian Aquaculture industry" describes the Norwegian government's strategy on aquaculture.
- National White paper: "Nordområdestrategien" describes the Norwegian government's strategy for research in the high north.

Research Funding Schemes and Programmes

- **The Research Council of Norway (RCN)** funds research projects, innovation projects, industrial projects and infrastructure. Relevant research programmes includes:
  - BIOTEK2021: A research financing program that finance applied academic research and industrial development of biotechnology.
  - Aquaculture- An industry in growth: A research financing program that finance applied academic research and industrial development on aquaculture and fisheries
  - The ocean and the coast: A research financing program that finance academic research and industrial development on eco systems and the marine environment
  - Sustainable innovation in Food and Bio-based industries: A research financing program that finance applied academic research and industrial development of bio-based industries.
  - Polar research: A research financing program that finance research on sustainable management and development of industries in the high north
- **Innovation Norway** funds innovation projects with industry and infrastructure. Relevant programmes include:
  - Public R&D contracts and Private R&D contracts, where SMEs can be funded with up to 35% in a collaboration project with either a public or private customer.
  - Entrepreneurial grant, where start-ups can be funded in an initial period of the company.

- SIVA funds infrastructures, such as laboratories and necessary housing for innovation centres.
- **Regional research foundations** funds research projects, innovation projects, industrial projects and infrastructure.
- A collaboration effort exists between Innovation Norway, The research council of Norway, SIVA and equivalent research councils in the United Kingdom to fund innovation and applied research in marine biotechnology.

Research priorities for marine biotechnology research:

- Bioprospecting / Biodiscovery, Aquaculture, Human and animal health
- Fisheries
- Polar research
- Industrial biotechnology
- Bio-based industries

Strategic documents:

- Strategy plan for Marin Bioprospecting: A strategy document formed by the RCN, innovation Norway and SIVA on how to implement the national strategy for Marin Bioprospecting.
- The Arctic and Northern Areas Initiative (Forskning nord.to): The Research Council of Norway's research strategy for the high north
- A new program plan (Biotek2021) for biotechnology is under development.

Infrastructures and coordination and support capacities / initiatives:

- **Biotech North**: BioTech North is the network organization for the development of biotechnology in the Tromsø region in North Norway.
- **Biotech Forum**: Norwegian Bioindustry Association (NBA) was established autumn 2001 by representatives for Norwegian biotechnological industries and the Confederation of Norwegian business and industry (NHO). The Association is an independent member organization with purpose to promote development of Norwegian biotechnological trade and research.
- **10 biotechnology platforms**: These technology platforms have been built up during the course of the FUGE programme. They offer service in different high tech niches to academic researchers and industry.
- **Mabcent-SR**: Center for research based innovation on bioprospecting in Tromsø where academic research groups and SMBI collaborate on defined research topics for innovation.
- **MarBank**: A national marine biobank organising the collection, and structuring of the marine biodiversity for research and industrial development.

Major Initiatives:

- FUGE: The first targeted programme at The Research Council of Norway aimed at functional genomics. The program was in function form 2002 to 2011 and have financed research projects for about 1.7 billion kroner of which about 20 % are within marine biotechnology. The responsibility for fulfilling the national strategy for marine bioprospecting was part of the program. This is now continued within the BIOTEK2021 programme.

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Home | About us | Our events | News | Library | MarineBiotech Registers | Infopages | Calendar | Contact | Login

Log in / create account

navigation

- Main Page
- Content
- Community portal
- Recent changes
- Random page
- Help
- Glossary
- Featured content
- Newest articles

search

Go | Search

toolbox

- What links here
- Related changes
- Upload file
- Special pages
- Printable version
- Permanent link

article | discussion | view source | history

Croatia

Contents [hide]

1 Overarching science strategies, plans and policies
2 Research Funding Schemes and Programmes
3 Research priorities
4 Strategic documents
5 Infrastructures and coordination and support capacities / initiatives
6 References
7 Disclaimer

Overarching science strategies, plans and policies

- Ministry of Science, Education and Sports: **"Strategic plan 2012-2014"** describes the overall Croatian strategic short-term measures in education, science and sports.[1]
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- **"Marine strategy"**, currently under development, but being obligatory act in future (details defined by governmental "Act on establishing a framework for protecting the environment of the Republic of Croatia"[3]).

Research Funding Schemes and Programmes

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- **Croatian Foundation for Science** funds research and innovation projects, all research topics.[5]
- The **Business Innovation Centre of Croatia (BICRO)**, central institution in the national innovation system for supporting innovation and technology advancement.[6]
- **IPA program (Instruments for Pre-accession Assistance)** has different funding lines: for Adriatic cross-board cooperation[7], operative competitiveness [8], IPARD. [9]
- Other EU Cohesive Funds, will be available from 2014 (if Croatia enters the EU).
- As part of the stabilisation process and Croatia's accession to the European Union, the Government is promoting a shift to a knowledge-based economy. Croatia has established a national **Science and Technology Action plan** for 2006-20104. Biotechnology (agri-food / healthcare / industrial) has been recognised as one of the priorities which will contribute to the development of Croatian society. Currently, 55 biotechnology projects are funded by the Government.[10]

Research priorities

IV. B. Mapping Observations (1)

- Disparity between approaches, focus and mechanisms by which various European countries (and regions) support marine biotechnology research activities

- High level of fragmentation of activities and infrastructures

- Growing interest and activities at most levels
  - **National** strategies/programmes are being considered
  - **Regional** interest is growing
  - Support at regional level **in federal countries**
  - Strategic activities and responses at **pan-European level**

IV. B. Mapping Observations (2) - Priorities

- Priorities largely confirm the areas of common interest which were already defined during the EC KBBE-NET Collaborative Working Group on Marine Biotechnology. These are:
  - *Marine bioprospecting/biodiscovery (in particular for Health)*
  - *Development of robust, biotechnology-based state of the art R&D tools and infrastructures tailored for marine biotechnology*
  - *Molecular aquaculture*
  - *Biomass production for bioenergy and fine chemicals*

- + Additional area: marine environmental applications and bio-sensors (e.g. in the framework of MSFD)

IV. B. Mapping MarineBiotech RTDI

Global Strategies, Programmes and Initiatives – TL: BioBridge ltd

Some strategic activities aimed at MBt outside Europe

- Australia: individual states recognise MBt as a strategic strength (eg Queensland, Tasmania, Sth Australia)
- Brazil: BIOMAR programme & networks (Redes) in microalgae, seaweeds and biodiesel
- Canada: Genome Canada includes aquatic genomes (salmon, trout) in its work-programme
- China: National Hi-Tech R&D Program '863' includes MBt
- Costa Rica: INBio institute's activity in marine bioresources
- India: Individual State policies eg Gujarat; Establishment of new Institute of Marine & microbial Biotechnology
- Indonesia: Marine Biopharmaceuticals Forum
- Korea: Blue-Bio 2016 & Biotechnology Fostering Policy
- Mozambique: Biotechnology programme including MBt
- Vietnam: Vietnam Academy of Science and Technology new initiative on MBt

IV. B. Mapping MarineBiotech RTDI (2)

Global Strategies, Programmes and Initiatives – TL: BioBridge ltd

International activities indicate increased interest in MBT

- CIESM: Strategic analysis of marine biotechnology potentials of Mediterranean states
- OECD: Establishment of a Global Forum and working group on marine biotechnology
- Bilateral initiatives increasing at national level (eg Norway-UK; Portugal-Norway) and regional (eg Barents BC-CRBM Canada)
- USA: Strong public and private investments in algal biofuels – ethanol, biodiesel and biogas

IV. C. The MarineBiotech Portal - *WPL: VLIZ*

- **Project-specific information is integrated** with a **long-term information management system** for Marine Biotechnology, containing a contact database and a content/knowledge management system
- Can respond effectively to **dynamic nature** of documents and contact information
- **Everyone can support** with keeping system up-to-date, with sufficient quality control

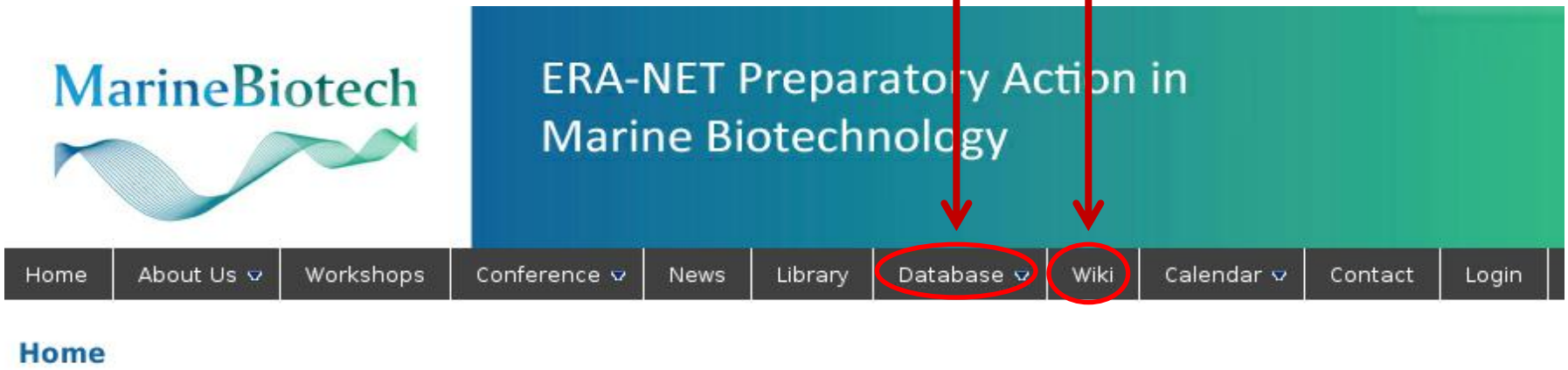
WPLeader: Flanders Marine Institute (VLIZ)

IV. C. The MarineBiotech Portal (2)

Key componenets of the long-term information system

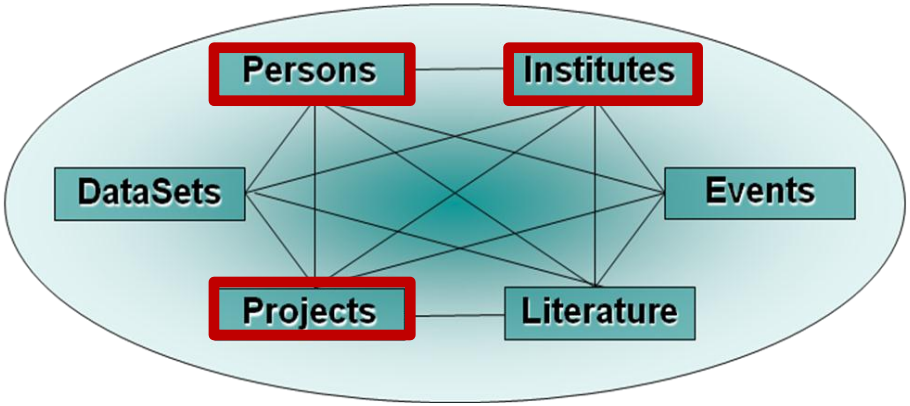
- MarineBiotech Database
  (Information database, hosted at VLIZ, based on **IMIS**)
- MarineBiotech Infopages (WIKI)
  (Online software, freely accessible, created within coastal and marine **WIKI**)

=> Available at www.marinebiotech.eu



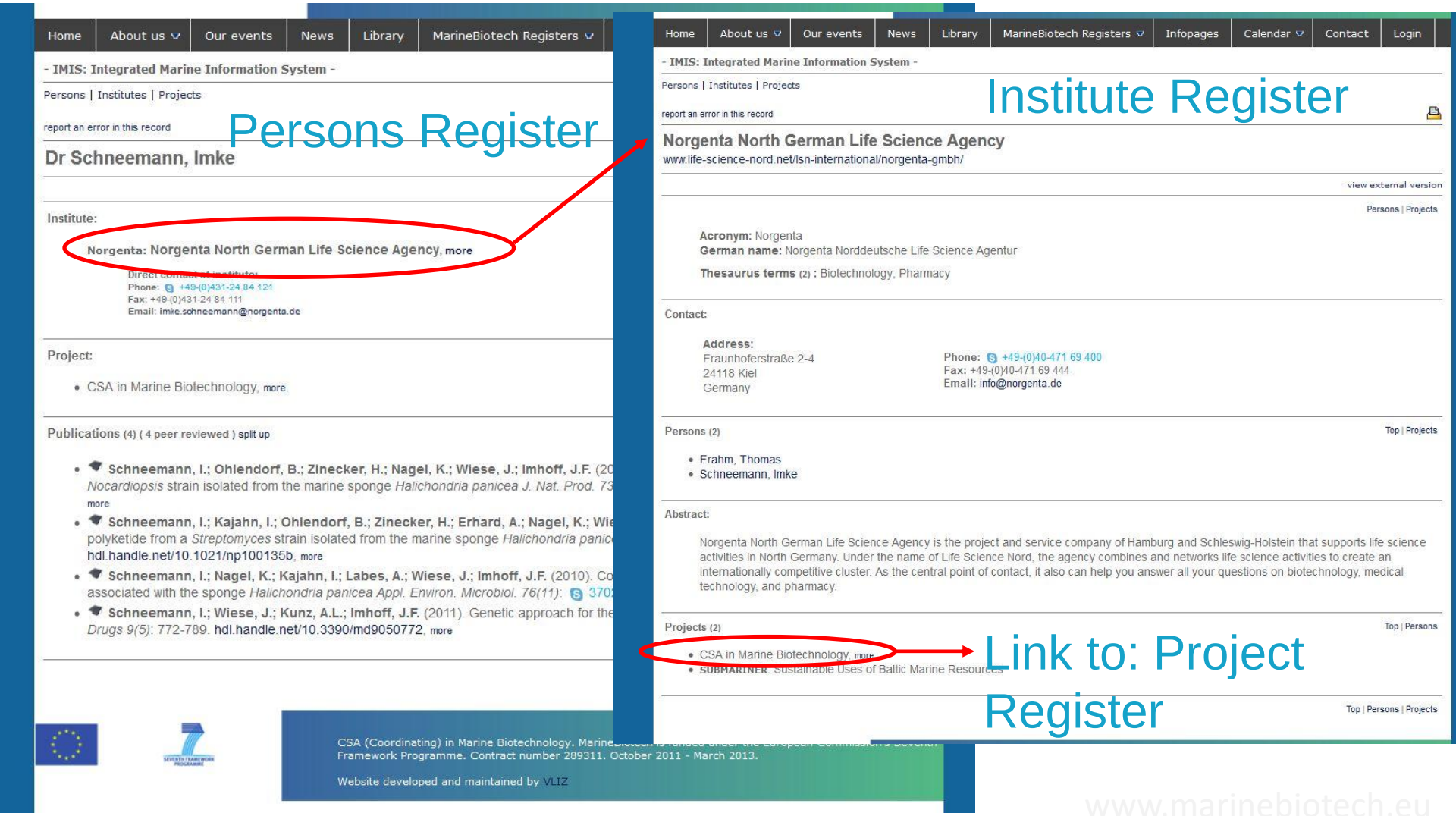
IV. C. The MarineBiotech Portal (3)
MarineBiotech DataBase (IMIS)

- Adaptation of existing **Integrated Marine Information System (IMIS),** hosted at the VLIZ data centre
- Modular Information system



- Architecture developed to the specific needs of the project: emphasis on Persons – Institutes/organisations/companies – Projects
- Scientific community + Networks + Funding agencies + Commercial companies + Education

MarineBiotech DataBase (IMIS)



IV. C. The MarineBiotech Portal (4)
MarineBiotech Infopages (WIKI)

- A dynamic community information portal on Marine Biotech with MBT introductory and strategic information
  - » Project Information will not be lost in time
  - » Content can be updated and elaborated continuously also beyond the life time of the project
- Content supplied by different stakeholders
- Editorial team for quality control

MarineBiotech Infopages (WIKI)

Content edit

What is Marine Biotechnology?

Key Marine Biotechnology application areas [hide]

- Marine Biotechnology securing Food supply
- Marine Biotechnology securing alternative sources of renewable Energy
- Marine Biotechnology securing Human Health
- Marine Biotechnology securing Industrial Products and Processes
- Marine Biotechnology securing Environmental Health

Examples of Marine Biotechnology successes [hide]

- Application of Ziconotide as a painkiller

Marine Biotechnology key tools and technologies [hide]

- 'Omics' driven technologies
- Metabolic engineering and systems biology
- Model species for marine biotechnology
- High throughput tools for proteins, enzymes and biopolymers

Strategies, Policies and Programmes [show]

Glossary

Links to more general information

MarineBiotech Infopages (WIKI)

www.marinebiotech.eu/wiki/Strategies,_Policies_and_Programmes

vorites Tools Help

Home | About Us | Workshops | Conference | News | Library

Navigation

Page Discussion

Strategies, Policies and Programmes

- Pan-European
- European sea basins
  - Atlantic, Celtic Sea, Bay of Biscay and the Iberian Coast
  - Baltic Sea
  - Mediterranean and Black Sea
  - North Sea
- European countries
  - Austria
  - Belgium
  - Bulgaria
  - Croatia
  - Denmark
  - Estonia
  - Finland
  - France
  - Germany
  - Greece
  - Iceland
  - Ireland
  - Italy
  - Latvia
  - Lithuania
  - Malta
  - The Netherlands
  - Norway
  - Poland
  - Portugal
  - Romania
  - Slovenia
  - Spain
  - Switzerland
  - Sweden
  - Turkey
  - United Kingdom
  - Ukraine
- International and regional summaries
- Africa
- Asia
- Australia Pacific
- America
- International summaries

Toolbox

What links here
Related changes
Special pages
Printable version
Permanent link

Main Page
Content
Community portal
Recent changes
Random page
Help
Glossary
Featured content
Newest articles

Help

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navigation
- Main Page
- Content
- Community portal
- Recent changes
- Random page
- Help
- Glossary
- Featured content
- Newest articles

search
Go Search

toolbox
- What links here
- Related changes
- Upload file
- Special pages
- Printable version
- Permanent link

article | discussion | view source | history

Croatia

Contents [hide]
1 Overarching science strategies, plans and policies
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Research priorities

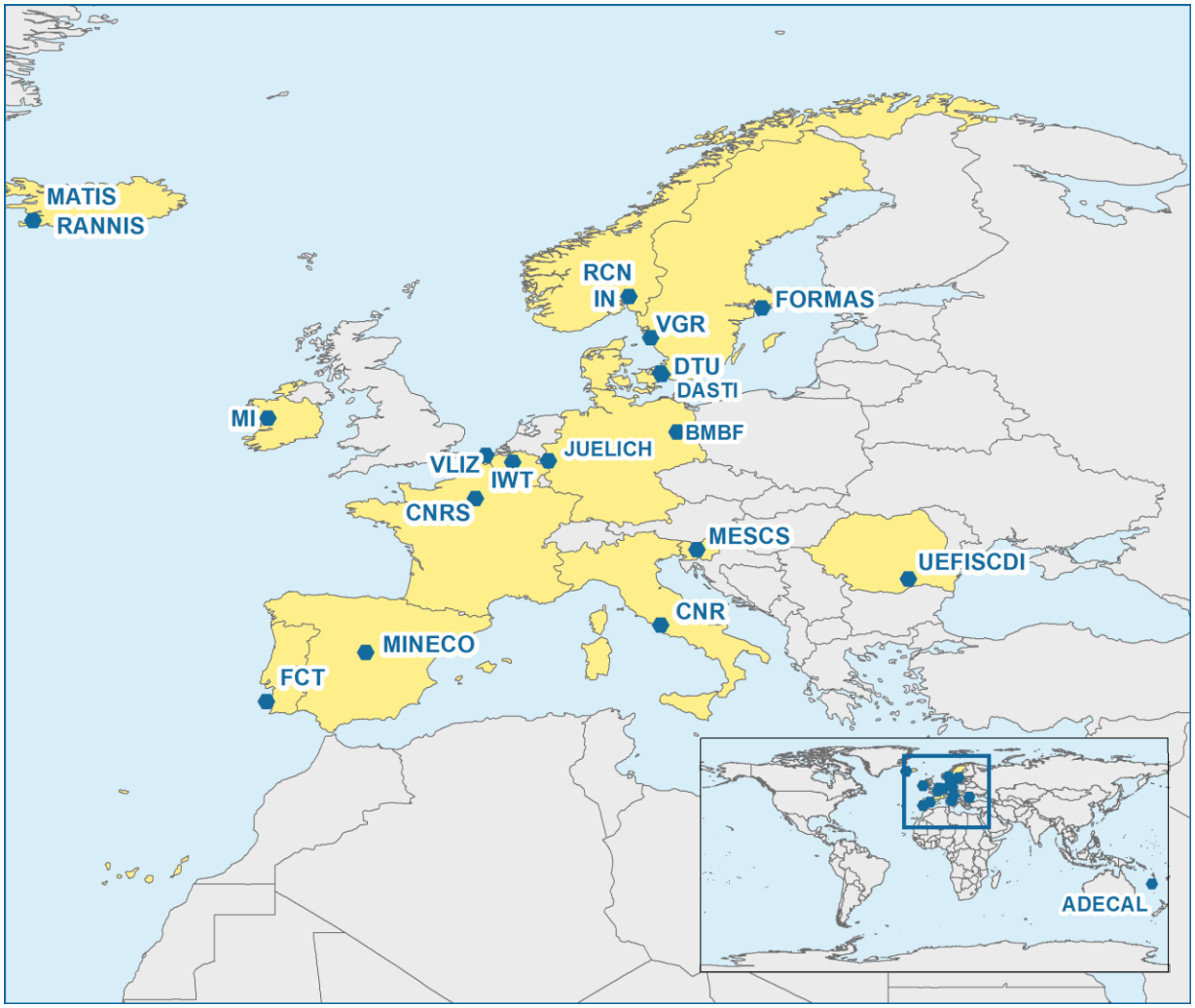
IV. D. Scoping the ERA-NET

→The CSA provided information & recommendations to guide the newly formed ERA-NET Consortium in preparing a ERA-NET Project Proposal by sketching the contours of the possible structure of collaboration and envisaged activities

- Based on preparatory project work, notably
  - The two CSA Workshops
  - The MarineBiotech Mapping efforts

V. Towards an ERA-NET MarineBiotech?

- ***28.02.2013***
  20 partners in
  14 countries
  applied to the
  ERA-NET call from
  FP7.
- Coordinated by:
  RCN – Norway
- If succesfull:
  Start January 2014
  with an early,
  general call to be
  announced
  mid 2014.



Thank you!

MarineBiotech

BioBridge®
turning innovation into action

Consiglio Nazionale delle Ricerche

DTU

Flanders Marine Institute

FCT
Fundação para a Ciência e a Tecnologia
MINISTÉRIO DA EDUCAÇÃO E CIÊNCIA

Ifremer

MARINE BOARD

norgenta
Norddeutsche Life Science Agentur

The Research Council of Norway

CNRS UPMC
Station Biologique Roscoff

TÜBİTAK

SEVENTH FRAMEWORK PROGRAMME