Addressing collective marine biotech and bioprospecting challenges: development, coordination and alignment of national, regional and pan-European research strategies and programmes

Intersessional Workshop on the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction

Marine genetic resources

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The European Marine Board is a partnership of major national marine research and funding organisations which was established in 1995 to facilitate cooperation and coordination in marine science in Europe. 34 Member Organizations from 20 European countries
Presentation outline

- What is Marine Biotechnology?
- Recent strategic events/initiatives in Europe
- Addressing fragmentation and improving collaboration
- Addressing marine biodiscovery policy and legal bottlenecks

What is Marine Biotechnology?

... the use of the marine environment and its bioresources as the target or source of biotechnology applications (OECD)

Marine Biotech value chain
Strategic events/initiatives in Europe

Re-emerging challenges identified:
- Lack of a coherent/coordinated pan-European approach
- Policy and legal barriers in the biodiscovery pipeline

2010 MBPP15 – Selected recommendations

• Improve coordination of European Marine Biotechnology RTD to reduce fragmentation and avoid overlaps/duplication
• Profile marine biotechnology science policy landscape in Europe in international context
  – Create a central European portal www.marinebiotech.eu
• Address legal issues (IPR/ABS)

SEE ALL RECOMMENDED ACTIONS – download the position paper at www.marineboard.eu
CH1 - Addressing fragmentation and improving collaboration

At the level of research groups
- Networks of Excellence in Marine Biodiversity (Marbef) and Marine Genomics (MGE) → “Euromarine”

At the level of infrastructures
- EUROFLEETS (research vessels)
- ASSEMBLE/EMBRC (marine stations and marine model organisms)
- EU-OPENSCREEN (high-throughput screening platforms)

At the science policy and research program level
- Joint Programming Initiative on Healthy and Productive Seas and Oceans (JPI Oceans)
- Creating a network of funding agencies – CSA MarineBiotech

Establishing a network of programme developers and managers from national funding agencies (ERA-NET)

ERA-NET Preparatory Action (CSA MarineBiotech)

Main achievements:
- Increasing the understanding of the marine biotech science policy landscape - Mapping MarineBiotech RTDI
- Established MarineBiotech Portal
- Mobilisation of funding agencies to form network in marine biotechnology

Duration: October 2011 – March 2013 (18 month)
Mapping Observations

• Disparity between approaches, focus and mechanisms by which various European countries (and regions) support marine biotechnology research activities
  – Few dedicated strategies, research plans and/or programmes
  – Support for MBT mostly under wider biotechnology or marine science plans and programmes or both

• International interest and activities are increasing
  – E.g. work done by OECD, CIESM, ...

• **Marine biodiscovery** (in particular for health) = one area of common interest among several European countries

Examples of national strategic documents with an identifiable focus on marine biotech

• **Ireland 2007**: [http://www.marine.ie/home/SeaChange.htm](http://www.marine.ie/home/SeaChange.htm)
    Marine Biotechnology, Marine Technology, Marine Functional Food and Renewable Ocean Energy

• **Norway 2009**
  – “A strategy for **Marine Bioprospecting** – a source of new and viable wealth creation”
    Encourage use of marine resources, biobanks, international collaboration, innovation – develop value chain

• **Denmark 2010**
  – “**The Ocean** – a underutilised resource”
    Better use of marine biomass, healthy diet, bioprospecting for new biological principles and compounds, biofilms

See [www.marinebiotech.eu](http://www.marinebiotech.eu) for regular updates, strategic documents and analysis reports
Recent FP7 RTD projects looking at policy and legal issues

- **PharmaSea**: Search of active compounds from deep-sea and extreme environments as novel drug leads, antibiotics or ingredients for nutrition or cosmetic applications

- Exploiting marine invertebrates biodiversity gene resources, sponges and related microorganisms: **BlueGenics**

- Exploiting biodiversity of marine extreme environments for health products, cosmetics, food and industrial biotechnology: **SeaBioTech**

- Exploiting marine microbes gene resources using genomics, bioinformatics for biotechnology: **MicroB3**

- Cultivation challenges: **MaCuMBA – Marine Microorganisms: Cultivation Methods for Improving their Biotechnological Applications**
PharmaSea Partners

UniAbdn, DeepTek, Aquapharm, KULeuven, eCost, RSC, BioBridge

Access to both poles, the world’s deepest trenches and thermal vents

PharmaSea - Increasing value and flow in the marine biodiscovery pipeline

• Create a robust “model” marine biodiscovery pipeline to make marine bioresources more attractive to industry

• Identify and overcome chronic bottlenecks in the marine biodiscovery pipeline, including legal/policy/IP aspects affecting access/utilization of marine bioresources.
WP6 – Ethics, Policy and Legal Aspects of Access to, and Use of, Marine Genetic Resources

- **Create a platform** to bring together MGR practitioners + legal experts + policy advisors/makers + relevant stakeholders to identify and analyze policy/legal bottlenecks in marine biodiscovery pipeline. (APPLE)

- To **analyze and describe current legal and policy landscape** which governs ABS of MGR in a European context.

- **Identify best practice and model agreements** using selected case studies and PharmaSea’s ABS arrangements

- Organise two **workshops**. (ABS in EU, **options for ABS in ABNJ**)

Conclusions

Notable progress

- European coordination efforts ongoing
  → CSA, marine biotech portal, Euromarine, ...

- Key research priorities are being addressed
  - Cultivation challenges, e.g. microorganisms (MaCumba)
  - Legal and policy barriers (MicroB3, Pharmasea, Bluegenics, ...)

- Infrastructures are being developed, coordinated and/or improved
  - Research fleets (EUROFLEETS)
  - Access to marine model organisms and marine stations (ASSEMBLE, EMBRC)

- International governance processes, recognition and driving forces (e.g. UNDOALOS, OECD initiative)
Many challenges remain

- EU: Aligning the various interests, strategies and programmes at different levels (local, regional, national, pan-European)
  - Keeping everyone onboard!
- Securing development of MBt in a sustainable way, protecting the marine environment and MGR
  - Particular attention to deep sea resources
  - Develop new tools and regulations where appropriate
  - Data and knowledge about marine biodiversity and ecosystem functioning is still very limited, in particular in ABNJ
- MGR/ABNJ - Scientific community needs a clear and enabling framework/regime with freedom of sampling for scientific research/monitoring purposes

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