MarineBiotech

# MARINE BIOTECH NEWSLETTER

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# EDITORIAL

## International cooperation for future challenges

International cooperation in science and technology is an important brick to face the societal challenges in Europe and across its borders. Most of these challenges are not only European. They are related to global conditions, markets and resources. The European Commission shaped already in 2012 an EU International Strategy to tackle the global societal challenges and to strengthen the Union's excellence and attractiveness in research and innovation, and its economic and industrial competitiveness. It underlines the necessity of international cooperation, also to realize the vision of a European Bioeconomy.

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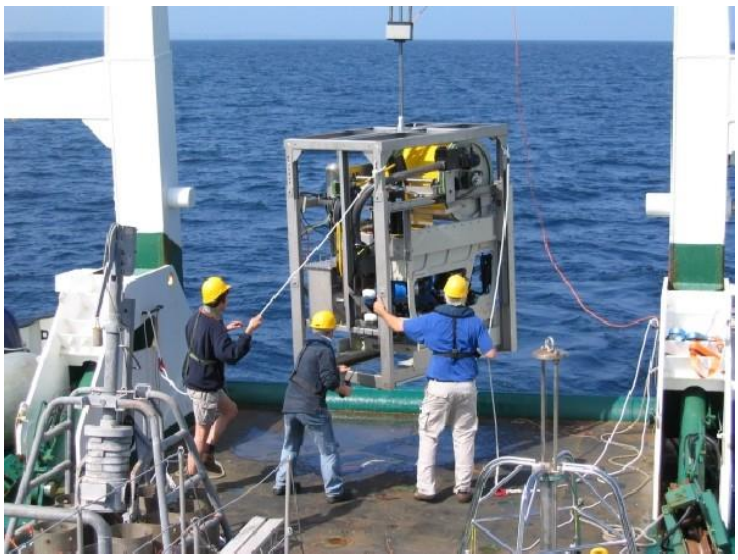

*Photocredit*: UGent-RCMG (Henriet)

The *Marine Biotechnology ERA-NET* (ERA-MBT) is a consortium of 19 national funding agencies seeking complementarities between national activities by pooling resources to undertake joint funding of transnational projects in the area of Marine Biotechnology.

During the lifetime of the project the following activities will be carried out, supporting the European Bioeconomy:

- Launching three thematic calls to generate joint European research and development activities.
- Arranging a number of stakeholder events to promote dialogue between science, industry and policy and to identify requirements for successful developments within the area.
- Performing outreach activities to seek complementarities and avoid overlap with other activities sharing common interest with ERA-MBT.
- Establishing a Strategic Roadmap with the support of the International Advisory Group, an expert panel reflecting views and expertise from the scientific, policy and business sectors.
- Developing a perspective on the future of marine biotechnology research and development and its likely impacts.
- Providing information about marine biotechnology in an online and open access portal with a wiki function.

Marine Biotechnology ERA-NET (ERA-MBT) is funded under the European Commission's Seventh Framework Programme. | Grant Agreement Number 604814
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Our oceans as a whole are a global resource, connecting Europe with the rest of the world. To sustain us with good and healthy seafood and other bio-based products, their bioeconomic and sustainable utilization can only be realized by coordinated international efforts. International companies develop products from, or with help of, marine organisms, and many of these are addressing global markets. The science communities investigating the marine organisms are also international. The biodiversity in the oceans needs to be protected by the same legislations as on land, which is a far from a trivial effort considering their plasticity and to a large part international nature. Hence, international stakeholders along the value chain need to cooperate to develop marine biotechnology derived products and services.

Regarding the significance of international collaborations, the Marine Biotechnology ERA-NET (ERA-MBT) has been an international consortium from the beginning. The New Caledonian funding agency Agence de développement de la Nouvelle-Calédonie (ADECAL) and the Canadian funding agencies GENOME British Columbia and the Fonds de recherche du Québec (FRQNT) were funding partners in the ERA-MBT calls for proposals. ADECAL is also as an ERA-MBT project partner in a marine region not easily reached from our European base. International knowledge and experience have been involved in the *International Advisory Group (IAG)* at the earliest possible point, and international stakeholders have been invited and participated in our ERA-MBT events. They have given important input to our project and to the development of the Marine Biotechnology Strategic Research and Innovation Roadmap published in October 2016.

The roadmap clearly indicates international networks as an important long-term activity, especially for the development of enabling technologies and the joint building and usage of infrastructures. Future short- and long term activities within marine biotechnology should be based on more and dedicated international collaborations. Therefore, our 6th newsletter is focusing on this topic that can support the establishment of a sustainable Blue Bioeconomy in Europe, which can contribute to Blue Growth.

Dr Jens Schiffers
Research Centre Jülisch (JÜLICH)
Germany

# THIRD JOINT CALL SUBMISSION RESULTS

The 3rd ERA-MBT Call, which was launched in December 2016, has resulted in the submission of 17 applications requesting a total funding of € 18 million and involving a total of 78 research teams, including 7 companies. The call entitled "Metagenomic approaches for valorization from the marine environment" received a lot of attention, mainly from higher education institutions and non-university public research organisations which accounted for respectively 59% and 32% of the total applicants. Commercial companies accounted for 9% of the total applicants.

The call targets research in marine microbes and their metagenomes, identifying new enzymes, metabolites, and metabolic pathways with biotechnological potential.

The call is an initiative of 11 funding organisations from 8 countries and the number of submissions from the countries involved reflects the committed budget of these countries. Partnering between at least 3 different countries resulted in teams from Germany, Norway and Spain being most prominently included. Belgium, Portugal, Romania and Slovenia are also well represented, and eight research teams applied to funding from Canada (FRQNT and Genome BC), who joined the call from outside the ERA-MBT consortium.

By the end of July, the ERA-MBT consortium will announce the names of the granted projects. These projects are expected to start late 2017.

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# INTERNATIONAL MARINE BIOTECNOLOGY INITIATIVES

One of the objectives of ERA-MBT's work programme is to link ERA-MBT with international activities and to reduce fragmentation of research efforts in the area of marine biotechnology. Therefore, one of the work packages aims to identify and preferably realise potential collaborations with institutions/initiatives in non-European countries.

A desk study was conducted to obtain a deeper insight into international research areas and themes, best practices for research management and capturing industry participation. This has resulted in a list of seven countries (USA, Brazil, Canada, China, Republic of Korea, Australia) for which marine biotechnology is increasing in importance as a priority to develop their marine bioresources.

In a next step, efforts are being intensified to obtain more detailed information by contacting specific funders and stakeholders in these countries. This should identify a more concrete potential for joint actions with the international partners. A fact finding mission to Canada was carried out in 2016, which resulted in the involvement of Canadian funding agencies in the third ERA-MBT call. Another visit to South-America (Argentina and Brazil) allowed a better knowledge of their marine landscape and research priorities.

More information about the global priority list of relevant international activities can be read in the full report on the ERA-MBT outreach page.

The report will be updated in the autumn of 2017 with a summary of realised international collaborations and a selection of potential partners for future collaborations. These updates will be based on the developments in the different countries and their willingness and ability to cooperate.

# THE VOICE OF A STAKEHOLDER

Dr Rachael Ritchie, Director of Business Development at Genome British Columbia, Canada

An important role of the ERA-MBT is to have dialogue with its stakeholders. Dr. Steinar Bergseth of the Research Council Norway (RCN) talked to Dr Rachael Ritchie, who has a solid marine biotech background from work within aquaculture and fisheries in Canada, via a policy analyst position with OECD in Paris, and now as the Director of Business Development at Genome British Columbia in Canada. She works to develop strategic partnerships to facilitate advancement of genomics within and from the lab to deliver tangible economic and social benefits. She is chairing the International Advisory Group for ERA-MBT.

*Q: How different is the marine biotech landscape in Canada and Europe?*

A: Canada and Europe share similarities in size and position in the northern hemisphere, bound by several large bodies of water. There are, however, some notable differences in our approach to marine resources and our respective landscapes for marine biotechnology. Canada was one of the first countries in the world to have a comprehensive oceans management legislation, the Oceans Act (1997) and under this framework an Ocean Strategy and an Ocean Action Plan was developed that serve as the overarching umbrella for coordinating and implementing ocean activities. This plan provides a framework to sustainably develop and manage our oceans. Within this framework marine biotechnology is included primarily as a means to manage the marine environment through ecosystem science, rather than to valorize marine resources per se.

While there is no single European strategy or policy specifically targeting marine biotechnology, marine biotechnology features in a number of EU-level strategies and is seen as a key contributor of social and economic growth. The ESF publication (2010) and the EU Blue Growth Strategy (2012) are two notable examples. More recently, the *Marine Biotechnology Strategic Research and Innovation Roadmap* (2016) provides a very strong framework for future marine biotechnology research and innovation in Europe and globally. Overall, I feel that marine biotechnology has a higher-profile in Europe than it does in Canada and it is more readily accepted as a source of sustainable economic growth.

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*Rachael Ritchie in the* FAASG meeting Photocredit: Steinar Bergseth

### *Q: How is this difference reflected in concrete research activities?*

A: I think both Canada and Europe are quite similar with a rich and diverse research ecosystem for marine biotechnology. A range of academic institutions exist in different provinces (Canada) or countries (Europe) and in federal or national research laboratories. Canada and Europe have each established a number of specialized institutes and infrastructures to support various aspects of marine biotechnology; from exploration to biobanking. For instance, British Columbia is home to Oceans Network Canada, which operates cabled ocean observatories in the northeast Pacific Ocean and adjacent waterways, the Arctic and Atlantic. It collects data on physical, chemical, biological, and geological aspects of the ocean over long time periods. In both places marine biotechnology research and associated infrastructure are supported by a range of research funding for basic and increasingly, applied research. Generally, I see great potential for collaboration between Europe and Canada in marine biotechnology given the richness and complementarity of their research ecosystems. This is one of the reasons I was so pleased to support Canadian participation in the ERA-MBT and to see last year's launch of the *Marine Biotechnology Strategic Research and Innovation Roadmap*.

### *Q: In which fields do you see cooperation between Canada and Europe most rewarding?*

A: Canada and Europe have a longstanding record of collaboration. In recent years we have collaborated on a number of joint projects supported by the European Commission, national or regional funding agencies, and (in Canada) federal agencies and organizations like the National Research Council and Genome Canada, and regional organizations such as Genome BC. Successful recent collaborations have focused on aquaculture species of mutual interest including salmon, cod and flatfish. These are perhaps the 'low hanging fruit' and areas of natural collaboration.

Going forward I think there is great potential for collaboration in areas of biomass production and processing—given both our proximity to access and culture of biomass and perhaps the need to establish platform processing technology that is both efficient and economical. Of course collaboration on 'global challenges', those challenges that exceed the capacity of any one player—things around mitigating the impact of climate change, food supply, preserving biodiversity, ocean exploration and bio prospecting.

### *Q: What could be the added values of cooperation?*

A: For me, cooperation has always been about working together to do more, go faster or go further than one could do in isolation. For instance, collaboration between nations on issues of strategic importance provides a means to understand operating context and interests of individuals and nations. This allows us to harmonize our thinking on important global issues and arrive more quickly at an approach that is most likely to work. In many cases, and especially when dealing with a shared resource like the ocean, international collaboration is necessary if any progress is to be made in addressing the challenge.

On a science and technical front, opportunities for collaboration may be driven by the need to access capacity or infrastructure like vessels for exploration of the high seas or arctic waters, specialized remotely operated vehicles to allow for collection of samples, or ocean observatories.

Collaboration has also been shown to be invaluable in tackling science and technical issues of great complexity, scope or scale. In the field of marine biotechnology, international collaboration has been used to elucidate the sequence of the Atlantic salmon—a task complicated by the existence of a vestigial genome duplication.

### *Q: Have you been involved in international projects that have been influential to bring marine biotech research a big step forward?*

A: Yes. Our organization, Genome BC, was one of the founding partners of the International Cooperation to Sequence the Atlantic Salmon Genome, a 6-year collaboration with funders in Chile and Norway. This work resulted in the 2016 publication of a reference genome of the Atlantic salmon, a species of great economic and social importance to many countries. The reference sequence is being used by researchers around the world and is supporting the generation of high quality reference genomes for a number of related

salmonids including the rainbow trout and coho salmon.

At present, I am working with collaborators in Norway and researchers from more than ten countries to support the functional annotation of the Atlantic salmon genome. The Functional Annotation of All Salmonid Genomes is seeking to coordinate the salmonid community to standardize and share data for comprehensive mapping of the functional elements of salmonid genomes in order to provide solutions for salmonid conservation, sustainable fisheries and aquaculture through an improved understanding of salmonid biology.

## RACHAEL RITCHIE

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*Rachael Ritchie chairing at the ERA-MBT Stakeholder meeting, Brussels*
*Photocredit: VLIZ*

# ERA-MBT NEWS

## 'FROM KNOWLEDGE TO VALUE' WORKSHOP BY ERA-MBT

Related to WP3 on industry, a "by invitation only" workshop will be organized June 1st in Brussels. This is done in close collaboration with the EU-funded COLUMBUS project to draw on their experience on tech transfer matters.

Close to 20 stakeholders along the value chains from academic knowledge output to products and services in markets, will share their experiences and discuss challenges related to information flow and communication.

The aim is to gain tangible guidelines which will be aggregated for efficient and targeted communication between stakeholders. The ultimate aim is to support efficient value creation from academic knowledge.

## ERA-MBT FINAL CONFERENCE TO BE HELD IN NOVEMBER

The ERA-MBT project ends November 30th 2017. Therefore, the planning of a final conference to be held during the first half of November has been initiated.

A two-days conference is foreseen where the funded projects from our three calls will be invited to present their results and status, ERA-MBT achievements will be presented and commented on from core stakeholders, and the future for marine biotech in Europe will be looked upon.

More info will be posted on our website and in newsletters as the details materialize.

The conference will be free of charge and will be open for registration during September.

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# ERA-MBT IN INTERNATIONAL EVENTS

## WORKSHOP ON A MULTI-BIOSENSORS PLATFORM FOR MONITORING MARINE POLLUTANTS

A multidisciplinary and multisector meeting was held by the BRAAVOO project consortium in Messina 19 and 20 May 2016. The intention of the meeting was to inform the experts in the field on the technology developed within the project and to get feedback from a diverse users community. Moreover, the workshop aimed to identify any gaps in the existing technology or its application. Invited stakeholder and end-users were selected on the basis of their commitment to the marine environment monitoring, public bodies responsible for protecting and use of marine environment, research centres and academies, private sectors. Prof. Jan Roloef van der Meer (project coordinator) described the developed technologies, after which a plenary fruitful discussion followed. The 43 participants were asked to complete a questionnaire about their interest on the proposed technologies, their vision on field application, their interest on buying single modules biosensors or whole platform and to identify the gaps for their specific needs.

Stakeholders expressed a great interest for the project. Sensitivity, miniaturization and remote monitoring are seen as an advantage compared with other solutions. One of the needs that was identified was the selectivity of single pollutants. Validation with official protocols for the analyses of the same pollutants would of course be necessary. The preferred type of environment is, e.g. the offshore application for the whole platform in case of an oil-spill. Others are the marine coastal environment, harbour dredging, monitoring following spills or supposed spills and waste-water plants.

An important issue that was pointed out concerns many of the new technologies: public bodies are required to follow approved protocols. Even European regulations are conditioned by these rules which are often obsolete, time-consuming and expensive.

Read the full workshop report by downloading the flyer.

*Participants at the BRAAVOO Stakeholder Forum, 20 May 2016*
*Photocredit: BRAAVOO Project*

# ERA-MBT
# AT A GLANCE

## Project Coordinator

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## ERA-MBT Partners

The ERA-MBT partners welcome you to ERA-MBT and invite you to become involved in the shaping of a common ERA in Marine Biotechnology. Contact the individual project partners using the partner information page at the project website.

## Stay connected

Subscribe to the newsletter mailing list
Follow us on Twitter @ERA_MBT

## Contribute to

The MarineBiotech wiki-pages which aggregate information on marine biotechnology to inform funding agencies, stakeholders and the interested public about developments, achievements and knowledge in this area.

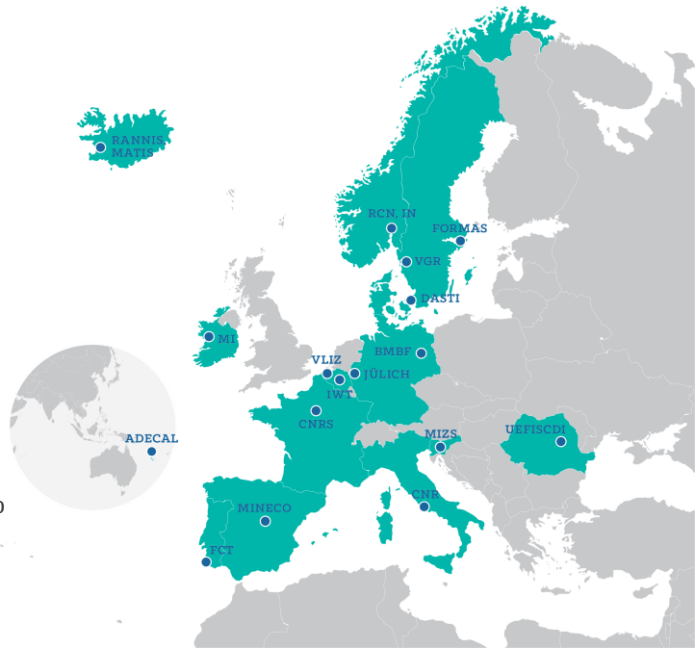
A LinkedIn communication forum to support exchanges between stakeholders and to highlight opportunities for interlinkage and collaboration.

## Comments? Suggestions?

Please contact us at info@marinebiotech.eu.

## Upcoming events

We are collecting information on all events related to the field of marine biotechnology.
To stay up to date, please visit our upcoming events page. If you cannot find the event you are organising or attending and would like to have it featured in our events calendar, please contact us.




## Newsletter acknowledgements

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