MarineBiotech

MARINE BIOTECH NEWSLETTER

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EDITORIAL

How to make industry profit on marine biotechnology

The ambition of the Marine Biotechnology ERA-NET (ERA-MBT) is to establish a lasting network of stakeholders within marine biotechnology. Such a network will not be successful if the research and innovation provided cannot be turned into profitable results that can add benefit to the society. So it is important to build a viable environment where there are strong connections between research, innovation and a productive industry.

In an article last year, the CEO of BioBridge, Meredith Lloyd-Evans, asked the question: Who's investing in marine biotech? A range of good examples were given on specific business cases where profits have already been made, and the great untapped potential was highlighted. However, the main question raised by Lloyd-Evans remains unanswered.

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ERA-MBT Consortium at the kick-of meeting in Lillehammer, Norway on 29-30 January 2014.

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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In a recently conducted open stakeholder consultation, carried out as one of the ERA-MBT activities, it became clear that most companies characterizing themselves as marine biotechnology companies were small enterprises. The bigger industries may have some products on their product portfolio that can be said to be categorised as being made by using marine biotechnology, but they do not consider themselves as marine biotechnology companies. This raises another question: Is there anything such as a marine biotech industry sector?

In another survey conducted by DG MARE earlier this year a Blue Biotechnology sector was identified as part of a larger biotechnological industry sector, and it was concluded that the Blue Biotechnology sector needed higher visibility.

In the Blue Growth strategy launched by the EU as part of the Horizon 2020 programme, Blue biotechnology is one out of five different focus areas. In this strategy several opportunities for new business development are described, and the following is envisioned for the future development:

> *'In the very short term, the sector is expected to emerge as a niche market focused on high-value products for the health, cosmetic and industrial biomaterials sectors. By 2020, it could grow as a medium-sized market, expanding towards the production of metabolites and primary compounds (lipids, sugars, polymers, proteins) as input for the food, feed and chemical industries. In a third stage, around 15 years from now and subject to technological breakthroughs, the blue biotechnology sector could become a provider of mass-market products, together with a range of high added-value specialised products'.*

This is a good indication of how the marine biotechnology sector may develop to be profitable in the future. It is further expected that technological breakthroughs that will occur in what we can call the 'toolbox' for biotechnology can strengthen the development. It is however necessary that there is a return on the investment in research and innovation. The more good examples we can get and the more we make them visible, the better the opportunities are for creating a viable marine biotechnology sector.

Dr Torger Børresen
Danish Agency for Science, Technology and Innovation (DASTI), Denmark

MEET ERA-MBT'S INTERNATIONAL ADVISORY GROUP (IAG)

The IAG will serve as ERA-MBT's "think-tank" group and as a reference point for all strategic initiatives undertaken by the ERA-MBT consortium. Providing strategic guidance and advice, the IAG will be involved in ERA-MBT over the life-time of the project. The diverse background and experience of the IAG members will be of great importance when providing input to activities such as developing the strategic roadmap, defining research priorities and reviewing ERA-MBT performance, in addition to broader issues associated with the implementation of ERA-MBT.

If you want to learn more about our 11 IAG members, please read about them on the ERA-MBT website.

LOOKING FOR RESEARCH FUNDING?

- What? 1st ERA-MBT transnational call: "The development of biorefinery processes for marine bioresources"
- When? Preproposal submission deadline December 10, 2014
- Why? To stimulate joint European research and development activities in marine biotechnology
- Who? Researchers from the academic and the industrial sector

More information including the call text and guidelines for applicants is available on the ERA-MBT website.

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MEET US IN LISBON AND INFLUENCE THE FUTURE OF ERA-MBT

- What? 1st ERA-MBT Stakeholder meeting:

  WAVES OF INNOVATION - Integrating National Efforts to Build the Future of Marine Biotechnology

- When? 28th - 29th October 2014

- Why? To influence the future of ERA-MBT as it seeks to expand and reinforce the network of researchers, industry, policy makers and funding agencies to support the development of European marine biotechnology.

- Who? Scientists, companies, policy makers/advisors and other key individuals involved in or interested in furthering European Marine Biotechnology research and development.

Detailed information on the event is available at the ERA-MBT website.

THE VOICE OF A STAKEHOLDER

Dr Per Møller
Kalundborg Municipality, Denmark

An important role of the ERA-MBT is to have dialogue with its stakeholders. Dr. Torger Børresen of DASTI talked to Mr. Per Møller, who works for the development department at the municipality of Kalundborg (a small town in West-Zealand, Denmark), and is at the same time the founder of an SME aiming at creating new business in the local community.

Q: Why is marine biotechnology interesting for you and your local area?

A: The municipality has a general interest in promoting 'green technology' linked to test- and demonstration activities to generate value from reuse or upcycling of residual streams coming from industry, agriculture and aquaculture. We have facilitated this approach and activities related to what we call the Kalundborg Symbiosis where one company's waste becomes a resource of the other. We thus have a range of projects turning waste streams into valuable products. The municipality has a large production facility of the enzyme producer Novozymes and the insulin producer Novo Nordisk within its borders, and some of the projects are performed in collaboration with these companies. For a number of years and with good results we have made experiments on growing microalgae on process water from these companies and when combined with the reuse of excess heat from wastewater and CO2 from fermentation off-gas, this makes a very interesting business case.

Q: What are the products you get out of the microalgae cultivation?

A: We have put a lot of focus on establishing an economically sound dewatering and harvesting technology concept, which we have developed in collaboration with industry and university partners. Now we are at a stage where we use some of the obtained algae for fish feed experiments in collaboration with a global fish feed company. Furthermore, we have projects where we are experimenting with new ways of opening the algal cells making it possible to gently extract more valuable components for a full range of applications. Residuals from this refining approach are considered for use within the biofuel production, and a successful test on biogas potential has been performed, however growing microalgae for biofuels is currently not our primary target.

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Q. Are you participating in European collaboration?

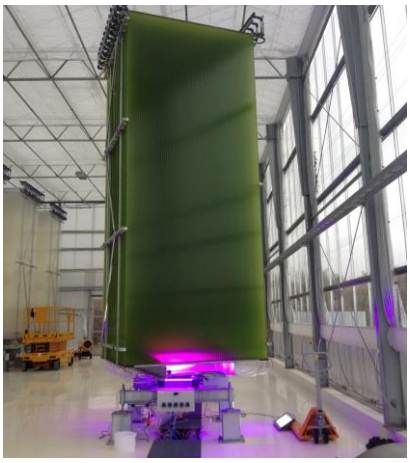
A: Absolutely. Many of our projects are performed together with partners in other European countries. They are partly academic institutions and partly industries. In some cases we participate in project consortia where large industry players are also taking part.

Q: What is your opinion on the newly established ERA NET on marine biotechnology?

A: Honestly, I have not much knowledge about the technicalities on how an ERA-NET works, but I am very positive about having more European collaboration on marine biotechnology, and I will be very interested in participating in new projects within the area. When participating as a municipality it is however usually a big challenge to join in if the requirements for our co-funding/in-kinds are too high. We mainly have to rely on and join programs where we can use our infrastructure and test- and demonstration facilities as a valid in-kind contribution.

Q: ERA-MBT is seeking complementarities between national activities and aims at pooling resources for joint funding of transnational projects with the objective of better coordination of research and innovation within marine biotechnology. Is there such a need?

A: The presently available project funds seem to be quite scattered, and not all of them fit our targets. If a more strategic and coordinated approach focusing on marine biotechnology can be established, life would be easier. My personal interests are within multistream biorefining linked to areas like marine biotechnology and this is what I will pursue in the future.



Photocredit: Per Møller, Kalundborg Kommune

TOPIC PAGE: MACROALGAE FOR THE FUTURE

Macroalgae are an important potential source of ingredients for food, feed, biochemicals and biofuels production. While seaweed has already been on the menus of Asians countries for quite a while and some species have been extensively farmed, this resource is under-exploited in Europe where seaweed consumption is still rather poor.

Seaweed is well known for its high content of hydrocolloids (alginate, carrageenan, and agar) which present specific chemical and physical properties and have already been commercialized, being used by the food industry as a thickener or emulsifier in chocolate milk, yoghurt and beer. Other components produced in the algae biomass have also been defined as higher value molecules and deserve greater attention in future research.

Due to the above mentioned attributes, an increasing demand of seaweed biomass on an international scale can be noticed, resulting also in the rising recent interests of European researchers to develop cultivation methods and investigate the potential of native seaweeds.

Within this research field we would like to highlight a national and a European research project aimed at fostering the biotechnology applications within the seaweed field. As part of these research endeavors, we would like to highlight two projects, one national and one European, which both aim at fostering biotechnology applications within the seaweed field. They are interesting for ERA-MBT, especially when considering the whole value chain, as techniques for sourcing the right raw material are important for core marine biotechnology elements, i.e. the processing and refining of biomass, into a spectrum of products that can be marketed profitably.

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Photocredit: Ifremer

"IDEALG, 2011-2020" is a large integrated long-term research project supported and funded by the French government with more than a hundred participants from 12 research institutes, 5 private companies and a seaweed technical center. The main aim of IDEALG is to tackle main issues related to seaweed production such as aquaculture techniques, biomass valorization, environmental impacts and socio-economic developments. The project will help improve algal bioresources and seaweed domestication as well as boost seaweed biotechnologies by making the best of genomics and post-genomic research. Indeed, metagenomic approaches applied on seaweed biomass and closely associated micro-organisms will bring progress to seaweed crops and developing blue and white technologies. The final goal is to bring forward basic knowledge and specific tools which are necessary to develop the marine biotechnology sector in France, hoping on a long term to fuel the applied sector and position France as a leader in the domain.

TASTE:

a look at the application side

The main objective of the European funded FP7 project TASTE project was to develop flavour ingredients from edible seaweeds (*Ascophyllum nodosum*, *Saccharina latissima*, and *Fucus vesiculosus*) with the potential to replace sodium in food products. This can be done through two options, namely flavour enhancing properties or mineral content. One of the work packages of the project focused on the process development of building blocks (i.e. single substances and compounds or natural mixtures thereof) with the main focus on enzyme hydrolysis to unlock minerals, flavour-active and flavour enhancing compounds. The salt-reducing potential of building blocks was evaluated sensorially. In addition, physical methods like milling and high pressure homogenisation as complementing tools prior to or after the enzyme hydrolysis were studied. In the project the Icelandic Biotech company Prokazyme tested the application of a range of enzymes on seaweed raw materials. The company will continue to develop enzymes for applications in the marine biotech industry.

TASTE was co-ordinated by Matis and finished in September 2014.

More information on the can be found on the TASTE website and from the TASTE coordinator Rósa Jónsdóttir.

The AT~SEA project (2012-2015) is an EU funded research project with seven European companies (including six SMEs) and four research institutes that aims to develop advanced seaweed cultivation technologies using innovative textiles that allow large scale and high yield cultivation of seaweed in Europe. This 2D approach, which is operational at pilot sites in Norway, Scotland and Ireland, generates yields that are three to five times higher than rope based cultivation. The AT~SEA consortium has applied for a patent on the advanced cultivation substrates and is studying the founding of a commercial company. The latter would develop and exploit an 8 ha demonstration site in 2015. In its final year the project team wants to demonstrate large scale seaweed cultivation on 200 m2 cultivation substrates in order to demonstrate the technical and economic feasibility of open sea cultivation of seaweeds in Europe. In the near future seaweeds will be an important biomass source for all kinds of biotechnological products (food/feed additives and nutraceuticals, biochemicals (including pharmaceuticals and cosmetics), etc.).

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ERA-MBT
IN A GLANCE

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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

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.

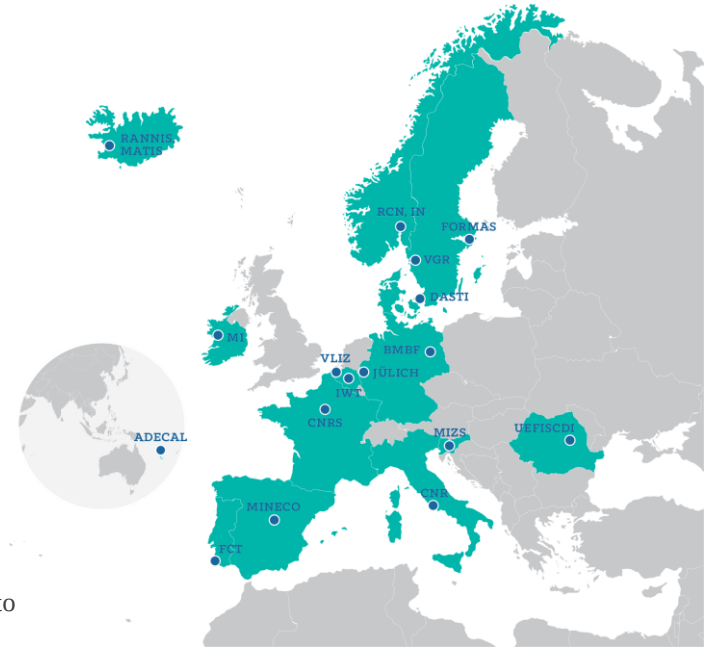
A LinkedIn communication forum to support exchanges between stakeholders and to highlight opportunities for interlinkage and collaboration.

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.



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