

# **Global Forum on Biotechnology: Marine Biotechnology – Enabling Solutions for Ocean Productivity and Sustainability**

**May 30-31, 2012  
Wosk Centre for Dialogue  
Vancouver, Canada**

## **Purpose and Objectives**

Recent advances in science and technology have increased our understanding of the marine environment and the bioresources it contains. For a long time, our understanding of marine bioresources was hindered by the difficulty of ocean exploration and by the fact that the vast majority of marine life cannot be easily cultured in the laboratory. New 'omics tools and related technologies have changed that, enabling analysis of marine biodiversity at the molecular level. DNA sequencing has been used to access and study unculturable samples and has revealed surprising information about the extent of the diversity and the symbiotic nature of marine organisms.

The extreme environments of the marine environment have fostered the evolution of organisms with unique structures, metabolic pathways, reproductive systems and sensory and defence mechanisms. This biodiversity is likely to be an important source of new materials, feedstock, bioactive compounds, and biological and biochemical systems and processes, yet it remains largely untapped within a dynamic and shared ocean ecosystem.

Interest in marine biotechnology is expanding rapidly, based both on our growing knowledge of marine biodiversity, and the development of tools to access and study marine organisms and ecosystems. It is now clear that marine biotechnology has the potential to address the grand challenges of food and energy security and population health, and to contribute to green growth and sustainable industries. At the same time, marine bioresources also provide a number of important ecosystem services for the planet and its inhabitants which must be maintained.

Governments and private sector organisations around the world have begun to recognise the potential of marine biotechnology and are actively working to harness its potential. However there are several features of the marine environment which may necessitate new policy work to ensure the translation of new scientific and technological advances into economic prosperity in an environmentally sustainable manner. This GFB aims, therefore, to:

- Provide a forum to discuss the potential of marine biotechnology to provide solutions to the grand challenges of food and fuel security, population health, sustainability industries and environmental sustainability.
- Discuss the impact and potential of new science and technology within the field of marine biotechnology.
- Identify areas which may present a barrier to development of marine biotechnology.
- Consider the role of government in creating an enabling environment for marine biotechnology.

- Consider the regulations and the treaties that can affect the large-scale application of marine biotechnology
- Determine areas in which the OECD can provide further policy insight and expertise.
- Provide guidance for further work on marine biotechnology at the OECD.

### **Participants**

The GFB will include international speakers and participants from the policymaking, business and research communities from the 34 OECD countries and non-member and developing countries. It will increase awareness among policymakers about potential of the marine environment which may be realised through marine biotechnology, and those areas where policy may be able to influence positive the translation of marine biotechnology to economic benefit and environmental sustainability. Participants will have an opportunity to contribute to discussions and identification of areas which would benefit from further work.

### **OECD Outputs**

Based on discussions held at the GFB, the OECD will produce a summary of the meeting in 2012. The report will identify issues which could benefit from policy work. The report will be discussed and agreed by OECD countries through the OECD Working Party on Biotechnology.

DRAFT

**GLOBAL FORUM ON BIOTECHNOLOGY: MARINE BIOTECHNOLOGY – ENABLING SOLUTIONS FOR OCEAN PRODUCTIVITY AND SUSTAINABILITY**

<b>Day One: Day, Date, Place</b>	
<b>8:00 - 9.30 Registration - Coffee</b>	
<b>09:30 - 10:00</b>	<p><b>Welcome and Introduction</b></p> <p><b>OECD</b>, OECD,</p> <p><b>TBD</b>, [Host Country representative]</p> <p><b>TBD</b>, [Dignitary, Other representative]</p>
<b>10:00 - 12:30</b>	<p><b>Session 1: Productivity and Sustainability of the Ocean</b></p> <p><b>Chair: OECD</b>, France</p> <p><b>KEYNOTE SPEAKER</b> , <b>TBD</b>, Country</p> <p><b>Speakers:</b></p> <p><b>TBD</b> , Country [Importance of biodiversity: 'Ecosystem services']</p> <p><b>TBD</b> , Country [Climate change, Polar seas—looking to the future]</p>
<i><b>Coffee available during session</b></i>	
	<p><b>TBD</b> , Country [Sustainable use: biomass harvesting, appropriation of genetic resources]</p> <p><b>Panel Discussion:</b> Challenges to ocean productivity and sustainability</p> <p>This Keynote session will consider the potential <b>contributions of oceans to economic prosperity on a global level</b> and to the <b>maintenance or improvement (sustainability)</b> of the planet's ecosystem. It will highlight the global potential of the oceans as enabled through biotechnology as developed in the last decade, and consider sustainability of marine ecosystems now, the last century and 100 years from now. It will also identify some of the challenges to realising this potential (i.e. sustainability and barriers to translation of science and technology for global benefit).</p>
<b>12:30 - 14:00</b>	<b>Lunch</b>

<b>12:30 - 14:00</b>	<b>Lunch</b>
<b>14:00 - 15:45</b>	<p><b>Session 2 : Development of infrastructures to realise the potential of marine biotechnology</b></p> <p><b>Chair:</b> TBD , Country</p> <p><b>Speakers:</b></p> <p>TBD , Country [Ocean Mapping, Sample collection]</p> <p>TBD , Country [Model organisms for translation of science and technology]</p> <p>TBD , Country [Bioinformatics—tools to unlock genomic information]</p> <p><b>Panel Discussion:</b> Developing infrastructure to enable marine biotechnology</p> <p>This session will consider the knowledge-based, scientific and technological <b>infrastructure</b> required to reap the benefits of marine biotechnology. The Human Genome Project was used to focus considerable investment and infrastructure development. In other fields, large national or international projects have been used to focus financial and political attention to develop significant infrastructure which has proven critical for enabling progress in particular fields. In this session we ask the question: What 'human genome' type of project would drive <b>development of necessary infrastructure</b> and <b>investment</b> in the field? What would this infrastructure look like?</p>
<b>15:45 - 16:15 - Coffee</b>	
<b>16:15 - 18:00</b>	<p><b>Session 3: Knowledge Mobilization: Sharing knowledge for Global Benefit</b></p> <p><b>Chair:</b> TBD , Country</p> <p><b>Speakers:</b></p> <p>TBD , Country [Sharing of data: the need, the tools, the gaps]</p> <p>TBD , Country [Harmonising collection and use of data: Argos floats, microbial populations for genetic analysis]</p> <p>TBD , Country [Capacity building: sharing data to enable all countries to derive benefit from marine biotechnology]</p> <p><b>Panel Discussion:</b> Knowledge mobilization for global benefit</p> <p>In this session we look at how scientific and technical <b>knowledge may be mobilized</b> to advance the field of marine biotechnology. In the face of the recent economic crisis, maximising return on investment, and the impact of investments is more important than ever. How can investments in marine biotechnology be <b>harmonised</b> to reduce duplication of resources and maximize knowledge production? What <b>standards</b> might be required to share data nationally and internationally? What <b>collaborative models</b> and types of initiatives might facilitate knowledge sharing? What will '<b>open innovation</b>' look like in this field? Finally, how can developed countries <b>share scientific advances</b> and technologies with less developed countries?</p>
<b>18:00</b>	<b>Drinks Reception</b>

<b>Day Two: Day, Date</b>	
<b>08:30 – 09.30 Registration - Coffee</b>	
<b>09:30 - 11:00</b>	<p><b>Session 4: Marine Biotechnology and the Bioeconomy / Deriving Value from Marine Biotechnology</b></p> <p><b>Chair:</b> TBD, Country</p> <p><b>Speakers :</b>  <b>TBD,</b> Country [‘Case study’ developed country e.g. Biofuels ]</p> <p><b>TBD,</b> Country [‘Case study’: regional economic development—developing country?]</p> <p><b>TBD,</b> Country [Quantifying impact of marine biotechnology: challenges, need for measures, importance for policy development]</p> <p><b>Panel Discussion:</b> Developing infrastructure to enable marine biotechnology</p> <p>This session will consider the role of marine biotechnology in deriving benefit from oceans? How can marine biotechnology <b>contribute to the bioeconomy</b>? How do we <b>quantify this impact</b>? What are the (regional &amp; national) <b>economic opportunities afforded by associated science and technology</b>?</p>
<b>11:00 - 11:30</b>	<b>Coffee</b>
<b>11:30 - 13:00</b>	<p><b>Session 5: Realising the Promise of Marine Biotechnology—‘Benefit for the People’</b></p> <p><b>Chair:</b> OECD,  <b>Speakers:</b>  <b>TBD,</b> Country (Bioactives in the field of Health)</p> <p><b>TBD,</b> Country (Industrial Biotechnology— Food production? Biofuels?)<b>TBD,</b> Country (Case Study from Developing Country)</p> <p><b>Panel Discussion:</b> Contribution of marine biotechnology to the bioeconomy</p> <p>This session will consider ways that marine biotechnology is contributing to <b>economic development on a global level</b>. We will look here at the economic and social benefits which may be realised from marine biotechnology. We will focus on the potential for marine biotechnology to provide solutions to the <b>grand challenges</b> of population health, food and fuel security in both developed and developing countries.</p> <p>We will be looking in particular at benefits made possible by advances in genomics and related sciences and technologies. We will look at the use of these technologies in <b>bioprospecting</b>—looking at the opportunities and challenges it may bring.</p>
<b>13:00 - 14:15</b>	<b>Lunch</b>

<p><b>14:15 - 15:45</b></p>	<p><b>Session 6: The intersection between Science, Industry and Society—Enabling the Global Promise of Marine Biotechnology</b></p> <p><b>Chair:</b> TBD , Country</p> <p><b>Speakers:</b>  <b>TBD</b> , Country [Access and benefit sharing from ocean bioresources/ELSI issues]</p> <p><b>TBD</b> , Country [Intellectual property and open innovation: creating the conditions to enable development of the field.]</p> <p><b>TBD</b> , Country [Public-Private Partnerships to enable marine biotechnology]</p> <p><b>Panel Discussion:</b> Towards new partnerships to realise the potential of marine biotechnology</p> <p>In this session we look at opportunities and challenges posed by industry and society to advancement of marine biotechnology. How can closer <b>interaction with industry</b> help translate advances in science and technology? What is the right balance between industry 'pull' and scientific 'push' to enable innovations in marine biotechnology? How can <b>public engagement help or hinder the field</b>? How can <b>social science enable development</b> of the field of marine biotechnology and contribute to benefit for people and planet?</p>
<p><b>15:45-16:15</b></p>	<p><b>Coffee</b></p>
<p><b>16:15 - 17:30</b></p>	<p><b>Session 7: Closing Debate “How to Deliver the Promise: Where to Next?”</b></p> <p><b>Chair:</b> OECD, France [Overview of meeting themes]</p> <p><b>Panel Discussion:</b>  <b>Chairs from previous sessions (#1-6):</b></p> <p>This final session will be an interactive 'town hall' discussion which will allow delegates to ask questions of the panel members. It will be an opportunity to look at all the previous conference sessions and debate the important question: 'what happens next?' allowing delegates to contemplate the future of marine biotechnology in terms of economic productivity and ocean sustainability.</p>