Future Perspectives of Blue Biotechnology in the Baltic Sea Region

Imke Schneemann Norgenta, Kiel & Hamburg
Jutta Wiese KiWiZ at GEOMAR, Kiel
Gdańsk, Poland | 6 September 2013
Programme

- SUBMARINER Blue Biotech: introductory statements
  Jutta Wiese – Centre for Marine Natural Product Research at GEOMAR
  Imke Schneemann – Norgenta North German Life Science Agency

- Blue Biotechnology of the Baltic Cyanobacteria – Cooperation, Research and Education at the University of Gdańsk
  Hanna Mazur-Marcez - Institute of Oceanography, University of Gdańsk

- Sustainable use of cultured seaweed
  Jenny Veide Vilg - Chalmers University of Technology

- Skin Care and protection against MRSA colonization by the application of cyanobacteria microparticles
  Gerold Lukowski - Institute of Marine Biotechnology e.V

- The Fraunhofer Research Institution for Marine Biotechnology (EMB)
  Ronny Marquardt - Fraunhofer Research Institution for Marine Biotechnology

- The KiWiZ - Centre for Marine Natural Product Research
  Antje Labes - Centre for Marine Natural Product Research at GEOMAR
Blue Biotechnology - Facts

- Oceans cover over 70% of the Earth's surface
- Ocean constitutes over 90% of the habitable space on the planet
- 50-80% of all life on earth is found under the ocean surface
- 3.3 billion years of evolution
- All 36 known animal phyla can be found in the ocean (12 can be found on land)
- 0.01% of marine micro-organisms are discovered

Tremendous Bio-Diversity

The global market for marine biotechnology products was around 2.8 billion € in 2010 and will be around 3.2 billion € in 2015.
First Achievements

- **Yondelis®**
  - Anti-Cancer drug
  - PharmaMar
  - Tunicate
  - R&D stage
  - Pharmaceuticals

- **Collagen wound gel CRM**
  - Jellyfish
  - R&D stage
  - Medical devices

- **New antibiotics for treatment**
  - R&D stage
  - Animal health

- **NIVEA® Q10 plus**
  - Face cream
  - Beiersdorf
  - Macroalgae
  - Cosmetics
  - Health care
  - Wellness

- **Magnum Ice cream**
  - Unilever
  - Fish
  - Nutraceuticals
  - Food

- **Feed for aquaculture**
  - Concentrate
  - Feeding stuff
  - Blue Biotech GmbH
  - Microalgae
  - R&D stage

- **New microbial strains for degradation of pollutants**
  - R&D stage
  - Bioremediation

- **Bio-kerosene**
  - Airbus
  - Microalgae
  - R&D stage
  - Biofuels

- **New techniques and methods sufficient for exploitation of marine organisms**
  - R&D stage
  - Marine technologies

- **Anti-fouling system**
  - LimnoMar
  - R&D stage

**High Potential**
Compendium

Comprehensive assessment of the potential for innovative and sustainable uses of Baltic marine resources
Compendium - SWOT

Strengths

• Baltic Sea organisms show great potential for exploration
• Experts & laboratories in place
• Technologies for bioprospecting of Baltic organisms exist in some regions => good basis for technology transfer
• Existing networks (e.g. Life Science Nord, ScanBalt) provide basis for promotion and cooperation
• Schleswig-Holstein / Denmark strategies can serve as “models”

Weaknesses

• Low awareness about “Blue” potential => market not developed
• Skills shortage esp. in cross-cutting disciplines
• Lack of venture capital & investment for R&D / start-ups
• Low technology transfer, networking & collaboration
• Limited knowledge on scale of environmental impacts
## Compendium - SWOT

### Opportunities
- Growing market needs / markets for in pharmaceutical, cosmetics, food industry & environmental solutions
- Specific BSR NEEDS exist
- Growing interest in marine biotechnology as source for greener & smarter economies
- Good underlying resources, i.e. universities, scientists, facilities => synergies / complementarity
- BSR regional cooperation
- Growing public (EU) support
- Positive perception of Baltic Sea Region brand products

### Threats
- Lack of “real case” samples for blue biotechnology solutions
- Short term project related funding cycles not suitable for long term processes
- Lack of policies in some BSR countries to support biotechnology
- Lack of financial support due to economic & financial crisis
- Difficulties to create win-win solutions for public-private partnerships
• OBJECTIVE: Efficient and effective use of Blue Biotechnology research capacities across the BSR
• NETWORK COORDINATOR:
  Ministry of Economic Affairs, Employment, Transport and Technology Schleswig-Holstein (DE), Finnish Environment Institute – SYKE (FI) and BioCon Valley Mecklenburg-Vorpommern e.V. (DE)
• ACTORS: Biotechnology clusters, relevant research institutions, companies
SUBMARINER Network

- Develop pan-Baltic research agenda and create respective pan-Baltic research groups
  - Use of biomarine material for medical and health applications

- Identify and test Baltic Sea organisms for various applications
  - Evaluate possibilities of macroorganisms in production of high value compounds

- Establish a BSR centre for bioprospecting of Baltic Sea microorganisms
  - Creating a (virtual) centre comprising all actors from public research institutions and companies working at the research and the sustainable use of marine microorganisms
Funding opportunities

- Horizon 2020
- ERA-SME
- BSR Programme
- BONUS
- EuroTransBio
- ERA-IB2
- ERA-NET marine Biotech
- CORNET
- EuroStars
- IMI
- ...

...
Thank you!!!

www.submariner-project.eu
jwiese@geomar.de
imke.schneemann@norgenta.de