

What's in it for a marine region?

A voice from the Baltic!

Prof. Dr. Deniz Tasdemir

Research Unit Marine Natural Product Chemistry &

GEOMAR Centre for Marine Biotechnology (GEOMAR-Biotech)

GEOMAR Helmholtz Centre for Ocean Research Kiel, Kiel, GERMANY

HELMHOLTZ
RESEARCH FOR GRAND CHALLENGES

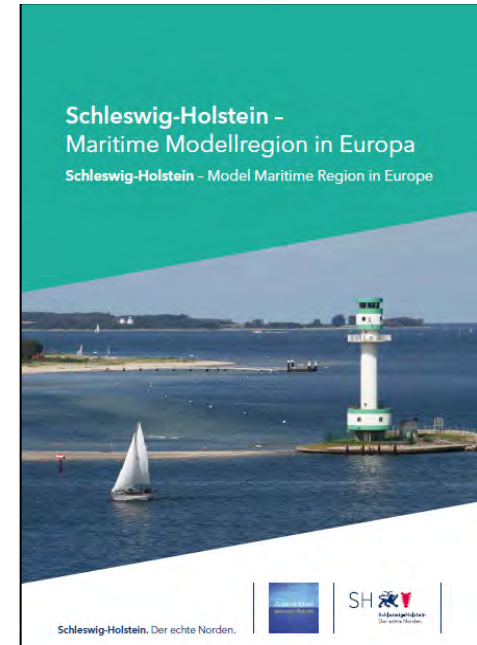
 **GEOMAR-Biotech**
GEOMAR Centre for Marine Biotechnology

GEOMAR 

Region: Schleswig-Holstein (SH) Germany



- KIEL (Capital of SH)**
- GEOMAR Helmholtz Centre f. Ocean Research
 - Kiel University
 - Excellence Clusters e.g. Future Ocean
 - Kiel Marine Science
 - Competence Centre for Aquaculture
 - Maritime Centres of Applied Universities in
 - Kiel & Flensburg
 - Lübeck, Flensburg..



Kiel Centre for Marine Natural Products (KiWiZ, 2005 - 2015)

to -> **GEOMAR Centre for Marine Biotechnology (GEOMAR-Biotech) 2015 -**



Fermentation

1 L
10 L
300 L

2 Ferment.
Rooms
Shakers
Incubators
OSMAC,
Co-culture

Bioassays >50

96-well plate

Pharmacological
30 antimicrobial
10 cancer &
normal cell lines
Enzyme assays

Ecol.Environment
-Algal pathogens
-Fish pathogens

Automated Extraction Systems

ASE - solvent

SFE - CO₂

Spray dryer

Metabolomics Chemical Imaging

GC-MS
LC-MS (ion trap)
LC-HR-MS
UPLC-QToF-
MS/MS
DESI-Imaging MS

Fractionation & Purification

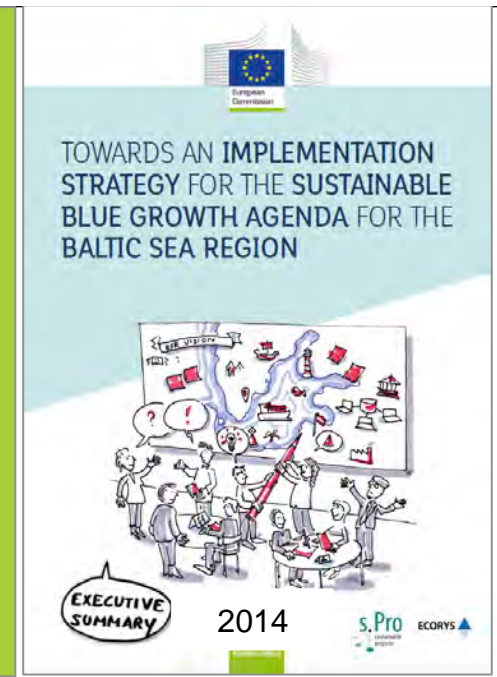
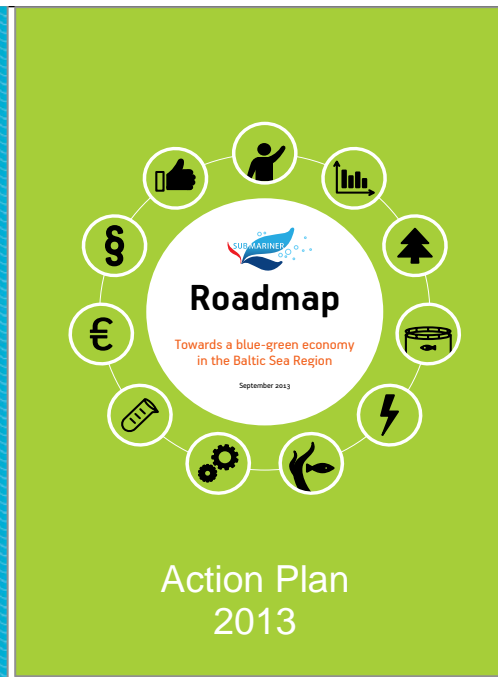
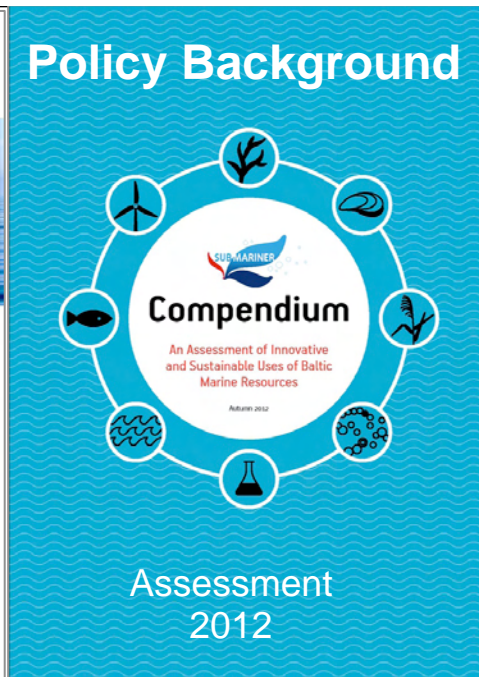
Anal. HPLC
Semi-prep.
HPLC
MS, PDA,
ELSD detect
Prep. HPLC

Structure Elucidation

UV
FT-IR
HR-MS
[α]_D
Melting point
NMR (U. Kiel)

GEOMAR Helmholtz Centre for Ocean Research Kiel





SUBMARINER Project (SUBMARINER Network EEIG)

SUBMARINER (Sustainable Uses of Baltic Marine Resources) Interreg BSR project (2010-2013)

KiWiZ and several other German institutions partner, SH involved

Masterplan MBT SH: 2012, Compendium (2012), Roadmap (2013)

Flagship project in area Innovation of EUSBSR

SUBMARINER Network: SH Ministry of Economic Affairs, Employment, Transport & Technology: Founding member & President of the Executive Board of (Dr. S. Lüsse); **Secretariat: Berlin (Angela Schulz-Zehden)**





Interreg BSR Programme:

- Developing the Baltic Sea Region (BSR)
- Creating change for a better region

Funding cooperation for more innovative, better accessible & sustainable BSR

Stimulating cooperation between **local, regional, national level** public authorities research & training institutions, sectoral agencies & associations NGOs, enterprises **by addressing common issues that cannot be tackled by single countries**

The Programme will **contribute to Europe 2020**, the EU's 10-yr growth strategy to transfer **the EU into a smart, sustainable & inclusive economy**

The Programme helps to **implement the EU Strategy for the BSR**; finances **seed money & flagship projects** and provides support to strategy governance and annual fora

Baltic Blue Biotechnology ALLIANCE

Advancing marine biobased product development

Lead partner: GEOMAR

Duration: 3 years (March 2016)

Budget: € 3.7 M

Management: SUBMARINER Network EEIG



BalticBlueBioALLIANCE Consortium: Research organizations, biotech hubs, business parks, SUBMARINER Network, companies..

Expertise: Aquaculture, chemistry, microbiology, waste water treatments, life cycle analysis, aquatic ecology, IPR, tech transfer, marketing, business planning..



Partner		Function	Partner		Function
GEOMAR	DE	Lead, WP2	CRM	DE	Case 1 st generation
SUBMARINER Network EEIG	DE	P, WP4	Biovento Sp. z.o.o	PL	Case 1 st generation
BioCon Valley GmbH	DE	P	JSC 'Geoterma'	LT	Case 1 st generation
KTH Royal Institute of Technology	SE	P	JSC 'Baltic Probiotics'	LV	Case 1 st generation
University of Gothenburg	SE	P	Kalundborg Utility A/S	DK	Case 1 st generation
Finnish Environment Institute (SYKE)	FI	P			
University of Gdansk	PL	P	6 cases: <u>funded</u>	---	Case 2 nd generation
Pomeranian Special Economic Zone Lt	PL	P	5 cases for <u>mentorship</u>	---	Case 2 nd generation
Coastal Research & Planning Institute	LT	P	4 cases for <u>mentorship</u>		Case 3 rd generation
Danish Techn. Institute (DTI)	DK	P, WP3	2 cases for <u>mentorship</u>		Case 4 th generation
Klaipeda Sci & Techn Park (KSTP)	LT	P			
Latvian Biotech. Assoc. (LBA)	LV	P	Agro Business Park	DK	Associated Partner
Tartu Biotechnology Park SA	EE	P	ESMB	FR	Associated Partner
Svanvid Sp. z.o.o	PL	P	CIIMAR	PT	Associated Partner
SAMS	UK	P	University of Greifswald	DE	Associated Partner

Background: Submariner Compendium, Roadmap; Sustainable BG agenda for BSR EC 2014

The challenge: No integrated blue biotech value chains in the BSR!



Resources and expertise are **present but too fragmented** to make full use of innovation & market uptake potential

No single actor can cover the **full range of services** across the whole value chain

Need for reaching the **critical mass** through **systematic cooperation** to pool national resources and expertise

The sector needs **concrete success stories** in product development to showcase the economic potential

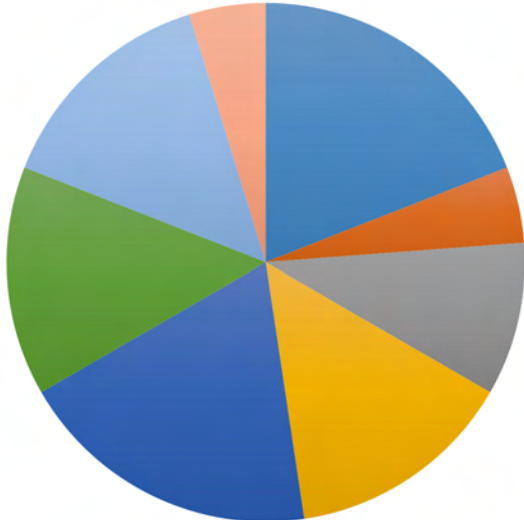
Accelerating the development of marine bio-based products through translational collaboration of Public & private partners

#BalticBlueBioALLIANCE: Cases

Since March 2016, the Alliance has selected **22** cases to work with:



- Food
- Feed
- Industrial chemicals
- Pharma
- Cosmeceuticals
- Specialty materials
- Tech providers
- Energy
- Ecosystem services



- Germany
- Netherlands ←
- Lithuania
- Denmark
- Finland
- Estonia
- Poland
- Sweden

Proactive search for new actors (cases) is on-going!



Case progress

Until Apr 2017 ✓ **Log book**
Apr-Nov 2017 ✓ **Work plan**

Kickstart ALLIANCE work with existing cases
Feasibility of transnational value chain development
Optimal pathway definition for selected users
Operational planning of optimal pathways
11
Implementation of service offer for case studies
Analysis of case studies
Documentation of case studies

		GoAs	2.1	2.2	2.3	2.4	2.5	2.6	2.7		
1 st generation	Case 1: CRM (PP17)								✓	✓	
	Case 2: Biovento (PP18)									✓	
	Case 3: Geoterma (PP20)								✓		
	Case 4: Baltic Probiotics (PP21)									✓	
	Case 5: Kalundborg Utility (PP22)										
2 nd generation	Case 6: UAB Biome (PP24)										
	Case 7: Furcella (PP25)									✓	✓
	Case 8: BIOFISK (PP26)									✓	
	Case 9: Koster Alg (PP27)									✓	
	Case 10: SFTec Oy (PP28)									✓	✓
	Case 11: UKSH (PP29)									✓	
	Case 12: Hoekmine									✓	✓
	Case 13: JAMK									✓	✓
	Case 14: IMAB										
	Case 15: Power Algae									✓	✓
3 rd generation	Case 16: Enzymicals										
	Case 17: Movable Biogas Factory										
	Case 18: Organic Seaweed								✓		
	Case 19: Inst. of Oceanography, UG										
	Case 20: EHP-Tekniikka Ltd.								✓	✓	

Healthy fish, happy customers



Latvian company working on probiotics-based products applications in fish aquaculture

Promote fish health & reduce the need for antibiotics in aquaculture

NEED: Experimental testing & scientific data, market research, product development

ALLIANCE Support:

Full-scale experiments in RAS & in carp ponds (CORPI, Lithuania)

Market study (PSEZ, Poland)

Evaluation methods (Animal physiological status) (Uni. Gdańsk, Poland)

Natural cosmetics from red algae



Estonian start-up developing **algae-based natural cosmetic products**

NEED: Knowledge for packaging, raw materials suppliers, marketing support and strategy

ALLIANCE Support:

Advice on **branding and logo design, marketing contacts** (TBP, Estonia)

Ingredient suppliers & access to networks (CRM)

Advice on **packaging solutions** (TBP; CRM; KTH)

First case reached the Estonian market & on its way to European market

ModHeat Dryer

Finnish SME which created an **innovative technology to dry biomass**

Automated, energy-efficient & remote controlled system

NEED: access to biomass for piloting, partners & networks

ALLIANCE Support:

- **Market study** (SYKE, Finland; UGOT, Sweden; SubNet, Germany)
- **Communication & Marketing** (SYKE; TBP, Estonia)
- **Pilot test** (UGOT → KosterAlg, Sweden)
- **Find R&D partners** (ALLIANCE PPs from various BSR countries)



Juha Roininen
SFTec Oy | Finland

BalticBlueBioALLIANCE Dissemination

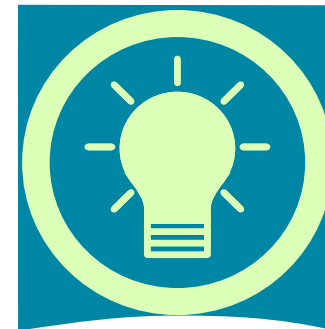
2nd SUBMARINER Conference “**Better off Blue – Creating Synergies for a Biobased Society**”, 27-28 Sept. 2017, Berlin



ALLIANCE Service Offer Brochure

Proactive search for new actors (cases)

Working through calls, pitching events, joint marketing
Biannual ALLIANCE New Case calls: Follow us on
Twitter #BalticBlueBioAlliance



BalticBlueBioALLIANCE Conference: “Blue Biotechnology in Baltic Sea Region – from Science to Business” 22-24 August 2018, Greifswald (Germany)

Expected outcomes



- BSR-wide public-private partnership to facilitate blue biotech
- Develop/advance innovative marine bio-based **products and services**
- Develop optimal transnational pathways
- Reach the critical mass
- Increase global competitiveness of BSR-support Baltic bioeconomy
- A **self-sustaining network** of actors providing service offers after the project

The ALLIANCE directly supports ERANET-MBT's goal in *“the development of marine biotech research & innovation, enabling its growth within a self-sustained enterprise driven network”*

- By supporting development of transnational product chains that pool national capabilities
- Facilitating efficient use and access to facilities, (bio-)resources and expertise

How the Regions in Europe can Participate and Contribute To Development of European Blue Bioeconomy?

Today, EU's emphasize is very much on paving the way for for regions to realize their full potential:

- Interreg BSR, Interreg Atlantic & others. Other regions, Mediterranean?
- Encourage and promote partnerships in regions
- Regional projects driven by the ACADEMIA in each region
- Regional projects driven by the INDUSTRY in each region
- *Future ERA-NET MBT (co-fund?)*
- Blue Bioeconomy Forum
- Blue bioeconomy clusters and networks

Local / National



Regional



Europe-wide

