Blue biotechnology of the Baltic cyanobacteria
Cooperation, research and education
At the University of Gdansk

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UG
11 Faculties
30 000 students
1 664 academic staff

Motto: *In mari via tua*

Oceanography
Protection of Marine Environment
Maritime Transport and Marine Economy
Maritime Law
Laws and System of Pomeranian Towns
Maritime Criminology
MAREX: Exploring Marine Resources for Bioactive Compounds
From discovery to sustainable production and industrial applications

EU FP7 – KBBE-2009-3-245137
UG contribution to MAREX

Institute of Oceanography
Lab. Biochemical Ecology of Microorganisms

Faculty of Biology
Department of Molecular Biology

Baltic cyanobacteria

Isolation and growth for biomass

Construction of gene libraries

Taxonomic identification (polyphasic approach)

Screening for bioactive compounds

Characterization of chemical structure

Nodularia spumigena CCNP1401

Phormidium sp. W130405
Non-ribosomal cyanobacterial peptides
strong inhibitors of key metabolic enzymes

- Spumigins
- Anabaenopeptins
- Aeruginosins
- Novel peptide structures
Cyanobacterial oligopeptides - National Science Center Grant 2013-2016

Institute of Oceanography UG
Lab. Biochemical Ecology of Microorganisms
- Cyanobacterial culture collection
- Biochemical assays and cytotoxicity tests
- Structure v. activity of non-ribosomal peptides

Faculty of Biology UG
Department of Molecular Biology
- Searching for genes involved in the production of active peptides
- Antimicrobial activity

Faculty of Chemistry UG
Department of Medicinal Chemistry
- Isolation and synthesis of peptides
- NMR

Åbo Academi University, Turku, Finland
Department of Bioscience/Biochemistry
- Isolation and purification of peptides

University of Helsinki
Biocenter Viikki, Finland
Department of Food and Environmental Sciences
- Factors regulating gene expression
Interdisciplinary course on blue biotechnology

Main objectives:

- To develop blue biotechnology at university, and underline its interdisciplinary aspect
- To spread knowledge about the metabolic diversity of marine organisms and potential application of marine natural products
- To raise the awareness of the potential profits related to the innovative use of marine natural resources
- To strengthen cooperation with biotechnological enterprises
Summary: blue biotechnology at UG

- National and international co-operation with research institutions has been established

- First hits have been identified for further work

- Efforts to raise the awareness of the potential profits related to the innovative use of marine natural resources have been undertaken