

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



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University of Gdańsk (UG)



Faculty of Biology UG

UG

11 Faculties

30 000 students

1 664 academic staff

Motto: In mari via tua



Institute of Oceanography UG

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




Participant	Country
University of Helsinki (Coordinator) Heikki Vuorela, Jari Yli-Kauhaluoma, Päivi Tammela, Paula Kiuru, Tiina Jones	Finland
University of Ljubljana Danijel Kikelj	Slovenia
University of La Laguna Manuel Norte Martín	Spain
University of Gdansk Grzegorz Węgrzyn, Hanna Mazur-Marzec	Poland
Katholieke Universiteit Leuven Jan Tytgat, Jeroen Lammertyn	Belgium
Åbo Akademi University Jussi Meriluoto	Finland
American University of Beirut Marwan El-Sabban	Lebanon
University of Antofagasta Iván Brito	Chile
University of Strasbourg Christian D. Müller	France
Ege University Meltem Conk Dalay	Turkey
University of Naples Federico II Maria Valeria D'Auria	Italy
Catholic University of the North Victor Kestemich	Chile
Technical Research Centre of Finland (VTI) Heiko Rischer	Finland
National Institute of Oceanography Lisette D'Souza	India
Imego AB Kristina Fogel	Sweden
Xention David Madge	UK
BioVico Artur Wilandt	Poland
Edrotec S.A. Valter Lombardi	Spain
BiotechMarine Nicole Mékidèche, Saliou N'Gom	France

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Photos by Christian D. Müller, Anna Torunska and Kerstin Häggqvist. Designer Adutor Oy, Kari Levelä



EXPLORES MARINE BIODIVERSITY
FOR A HEALTHIER FUTURE



2010 - 2014



UG contribution to MAREX



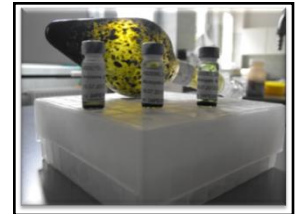
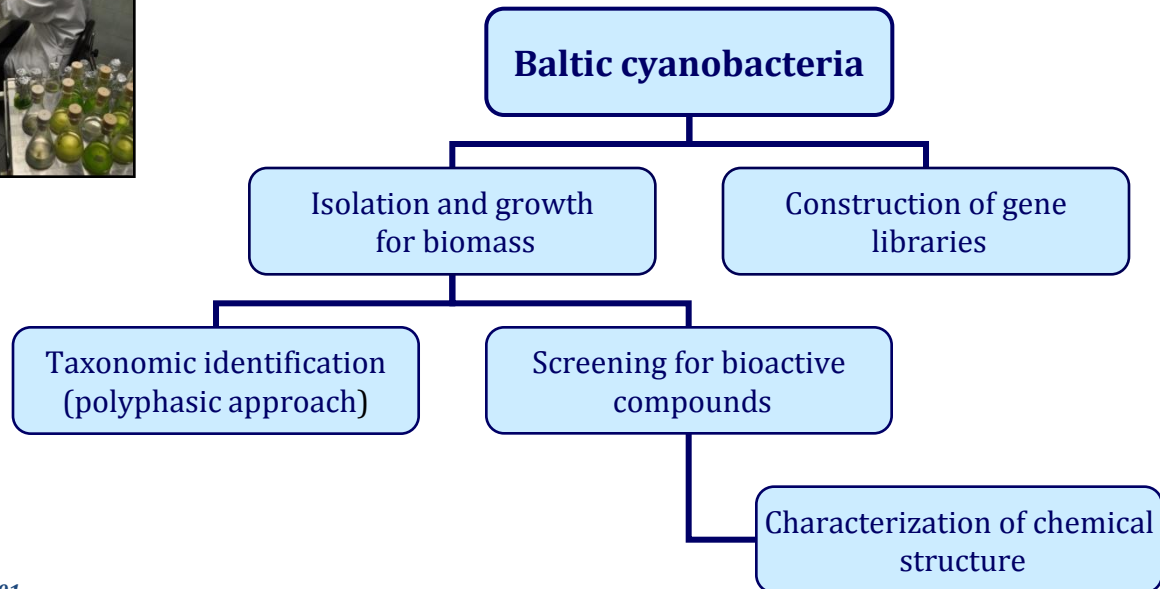
Institute of Oceanography

Lab. Biochemical Ecology of Microorganisms



Faculty of Biology

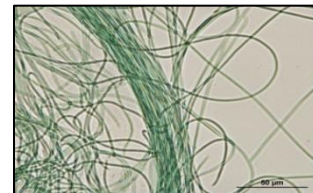
Department of Molecular Biology

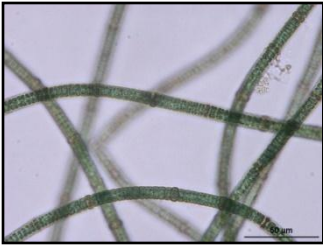


*Nodularia spumigena*CCNP1401



Phormidium sp. W130405

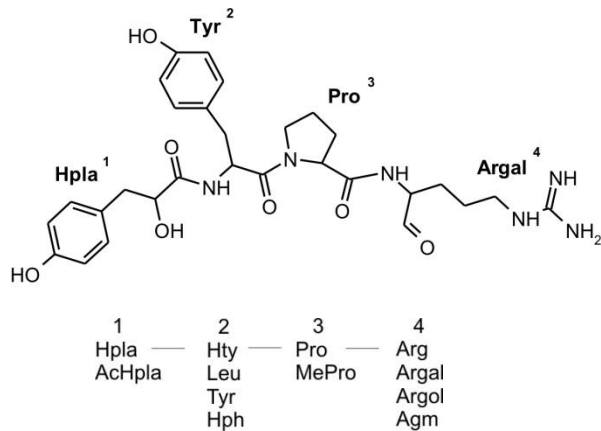




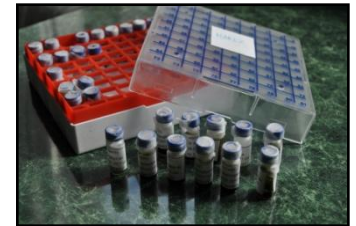
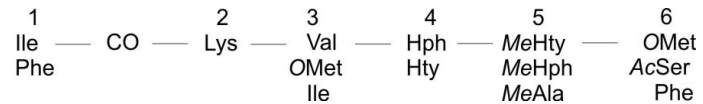
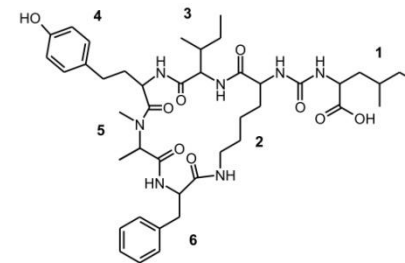
Non-ribosomal cyanobacterial peptides

strong inhibitors of key metabolic enzymes

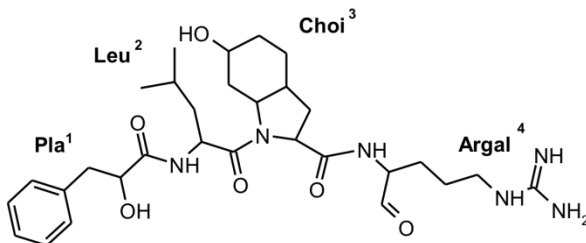
Spumigins



Anabaenopeptins



Aeruginosins



Novel peptide structures

Cyanobacterial oligopeptides - National Science Center Grant 2013-2016



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- Cyanobacterial culture collection
- Biochemical assays and cytotoxicity tests
- Structure v. activity of non-ribosomal peptides



Faculty of Biology UG
Department of Molecular Biology

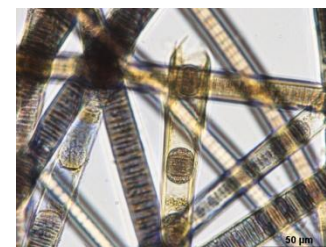


- Searching for genes involved in the production of active peptides
- Antimicrobial activity



Faculty of Chemistry UG
Department of Medicinal Chemistry

- Isolation and synthesis of peptides
- NMR



Åbo Akademi University, Turku, Finland
Department of Bioscience/Biochemistry



- Isolation and purification of peptides



UNIVERSITY OF HELSINKI

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