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THE PEOPLE



Photo: UiT

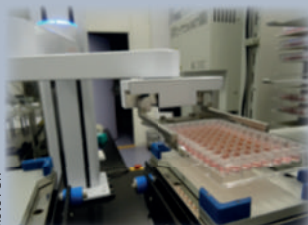


Photo: UiT



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THE PROJECTS

MabCent-SFI Centre for research-based innovation

The overall scope of MabCent was to find and develop high-value bioactive products through screening of Arctic organisms for future commercial exploitation.

In this project:

- Marbio performed more than 20 various bioassays and approximately 300 000 screening events. This was to support the bioassay-guided isolation of marine natural products.
- Marbio isolated 150 bioactive compounds from crude extracts of marine invertebrates.



Photo: Adnan Icaagic

KinSea - Kinase inhibitors from the sea

The Kinsea project aims at advancing the hits from the anticancer screening program of marine invertebrates through the biodiscovery pipeline. This will be achieved through optimization of biological activity through chemical synthesis and the key outcome is to nominate lead compounds.

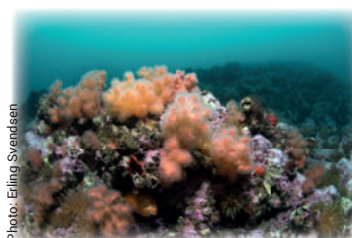


Photo: Erling Svendsen



THE HARDWARE

- Flash chromatography systems (prefractionation of extracts)
- Autopurification HPLC systems (isolation of natural products)
- High-resolution MS-MS with ion mobility (identification of natural products)
- Biomek minicore system (liquid handler Biomek NX, CO2 incubator, plate washer, barcode reader, plate reader, shakers, integrated with SCARA robotic arm)
- Biomek3000 liquid handler
- Biomek NXp liquid handler
- Envision Alphascreen multimode detector
- Flow cytometer
- Automated colony picking system for microorganisms

THE EXPERTISE AND CAPABILITIES

- Experience in screening complex mixtures (i.e. natural product extracts and fractions) for biological activity in biochemical and cell based assays.
- Dereplicating (identifying) known compounds in complex mixtures using chromatography and high-resolution mass spectrometry.
- Isolation of bioactive natural products from crude extracts using a combination of classic techniques such as liquid-liquid extractions and Flash chromatography, as well as state of the art mass guided fractionation based on HPLC.
- Structural elucidation of complex natural products using several types of high resolution MS as well as infrared and NMR spectroscopy.
- Data management of datasets for natural product drug discovery, including geographical sample information, taxonomical data, sample tracking through complex extraction and fractionation schemes, analytical chemistry data and extensive bioactivity profiles of extracts, fractions and pure compounds.

THE OUTPUT

1. Securamine Derivatives from the Arctic Bryozoan *Securiflustra securifrons*. *Journal of natural products* 2017; Volum 80 (12). ISSN 0163-3864. s 3276 - 3283. s doi: 10.1021/acs.jnatprod.7b00703.
2. A Novel Brominated Alkaloid Securidine A, Isolated from the Marine Bryozoan *Securiflustra securifrons*. *Molecules* 2017; Volum 22 (7). ISSN 1420-3049. s doi: 10.3390/molecules22071236.
3. Metabolomic Profiling Reveals the N-Acyl-Taurine Geodiataurine in Extracts from the Marine Sponge *Geodia macandrewii* (Bowerbank). *J Nat Prod.* 2016 May 27;79(5):1285-91 doi: 10.1021/acs.jnatprod.5b00966.
4. Antioxidant and anti-inflammatory activities of baretin Mar. *Drugs* 2013, 11, 2655-2666 doi: 10.3390/md11072655.
5. A combined atomic force microscopy and computational approach for structural elucidation of breittfussin A and B, highly modified halogenated dipeptides from the Arctic hydrozoan *Thuiaria breittfussi* Angew. Chem. Int. Ed. 2012, 51, 1 - 6 doi: 10.1002/anie.201203960

- NOR-OPENSREEN: Marbio is one the 4 nodes in the Norwegian network NOR-OPENSREEN, that offers advanced scientific equipment/facilities within chemical biology. The expert areas in NOR-OPENSREEN are marine bioprospecting, microbiology screening and metabolomics as well as cell-based HTS flow cytometry.

- Marbio has a unique opportunity to train both master-, PhD students as well as technical personnel in bioassay screening and identification of natural products.

- International collaborators: Lead Discovery Centre, Germany, Medina, Spain, University of Aberdeen, UK, University College of Cork, Ireland, Technical university of Denmark (DTU), Sea4us, Portugal

THE FUTURE

The strategy of Marbio is to continuously set-up additional bioassays to identify novel chemistry in our unique marine extract library.

