NordForsk, Nordic Centre of Excellence: Nordic Bioeconomy Programme

Towards Versatility of Aquatic Production Platforms: Unlocking the Value of Nordic Bioresources

The new Nordic Centre of Excellence "Towards versatility of aquatic production platforms: unlocking the value of Nordic bioresources" (NordAqua), led by Academy Professor Eva-Mari Aro, focuses on blue bioeconomy, i.e. on bioeconomy that is directly linked to water. The NordAqua project combines internationally highly ranked basic research into applied research and aims at developing commercial applications from micro- and macroalgae.

Beside the traditional green bioeconomy, which focuses on forests and agriculture, the blue bioeconomy is also getting more and more highlighted at both the national and global levels. Blue bioeconomy focuses on versatile and sustainable utilization of aquatic resources. Nordic countries, which are particularly rich in aquatic resources, have special expertise and interest to develop blue bioeconomy. The NordAqua project focuses on algae which have been acclimated to Nordic conditions, for example to low growth temperatures. The project will address the optimization of algae growth for biomass, as well as for the production of high-value products (pharmaceuticals, cosmetics, chemicals for industry etc). In the long-term, the NordAqua project aims at development of cyanobacterial-based "living factories" for the production of specific chemicals and fuels.

The Molecular Plant Biology Unit of the University of Turku is responsible for the NordAqua project leadership. Also entrepreneurship researchers from the Turku School of Economics are involved in the project. Other Finnish partners are the University of Helsinki, VTT (Technical Research Centre of Finland Ltd) and Natural Resources Institute Finland (LUKE). Swedish partners of NordAqua include the Umeå University and the Uppsala University. The

Norwegian partners of NordAqua come from the University of Bergen, Norwegian Institute of Bioeconomy Research (NIBIO), Norwegian Institute for Water Research (NIVA) and the SINTEF Fisheries and Aquaculture. Furthermore, NordAqua has several industrial and societal partners within the field of bioeconomy.

The NordAqua partners from each participating country have established vast local algae culture collections. These, together with related datasets, will be merged into one comprehensive open database, which will be available also for commercial use. The NordAqua project will perform pilot scale experiments on algae growth in wastewater and in glass houses. The project will also focus on identification, and extraction of algal bioactive compounds and on enhancement of their concentration by various environmental treatments as well as by utilization of synthetic biology tools.

NordAqua project will encourage researchers from academia and industry R&Ds for innovative and broad-minded thinking concerning algae and their commercial utilization. The planned NordAqua courses and other education thus emphasize entrepreneurship. Networking of researchers within the field of blue bioeconomy will be fostered, and one specific aim is to encourage particularly early-career stage PIs for common projects and funding applications. As to the societal aims, NordAqua project will provoke discussion with all stakeholders and improve general awareness about blue bioeconomy, providing education for example to biology teachers.

Further information:

- NordAqua project leader, Academy Professor Eva-Mari Aro (evaaro@utu.fi)