

The project aims to study the biodiversity of diatoms in the southern region of the Baltic Sea, along the Polish coast. Diatoms are a type of unicellular algae that are important for their role in the carbon cycle, as a food source, and as indicators of water quality. They also have many potential applications in industries such as medicine and cosmetics, biomaterials, drug delivery, biofuels, wastewater treatment, archaeology, and forensics.

Molecular metabarcoding will be used to identify and track specific diatom species in various microhabitats, and to monitor seasonal changes in the diatom flora. This technique involves extracting and analysing DNA from the water samples to identify the different diatom species, that are present in the environment. The information obtained from this research will be used to build a comprehensive database called DiatBalt that can be used for routine biomonitoring and taxonomic studies in the Baltic Sea, as well as in adjacent bodies of water in the future.

The project will develop a reference database for biomonitoring the biodiversity of diatoms in the southern Baltic Sea, along the Polish coast, which can be used in future studies. This database will be build based on diatoms isolated from the sampling of 12 stations located in the Polish Baltic Sea coastal zone during four seasons (2x spring, 2x autumn). Taxonomical analysis, microphotographic documentation will also be carried out.

The benefits of this study will include a comprehensive assessment of the diatom assemblages in the southern Baltic Sea (Polish coast) using molecular metabarcoding, a robust and complex online library of molecular barcodes, micrographs, and microscopic slide digitalized scans with potential application in biomonitoring of the biodiversity of diatoms in the Baltic Sea. This research will provide valuable information about the distribution and diversity of diatoms in the region, as well as their potential applications in various industries.