

DEVELOPMENT OF A DNA MICROCHIP AS A STANDARD ANALYTICAL TOOL FOR THE IDENTIFICATION OF PHYTOPLANKTON

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The aim of the EU project "FISH&CHIPS" is to develop a DNA chip as a cost effective, reliable and efficient tool for the identification of marine phytoplankton. The DNA chip contains a hierarchical set of oligonucleotide probes specific for different phytoplankton classes, genera and species occurring in the North Sea. It will facilitate monitoring of phytoplankton with little morphological features. A further result of the DNA chip development is an assessment of genetic diversity of studied species.

In the first part of the work a set of molecular probes has to be developed that is specific for the target species at different taxonomic levels. The set of probes on the DNA chip will contain probes for 25 different algae species from the North Sea. Molecular probes are already available for a subset of the target species. The specificity of the probes is under testing with laboratory cultures of the target species and their closest relatives in the phylogenetic tree.

In the second part of the project, the DNA chip is going to be validated. Weekly samples of phytoplankton are taken on a monthly basis from the North Sea. They are filtered, frozen in liquid nitrogen and DNA will be extracted and examined with the DNA chip. The results will be compared to the conventional counting. This will be a long time analysis of the biodiversity of phytoplankton in the North Sea.