MarBioTech

Advanced Marine Biotechnology toolbox for accessing the uncultivated marine microbial biodiversity and its novel biomolecules

MarineBiotech

PROJECT FACTSHEET

CALL 3 | AUGUST 2017

ABSTRACT

Organisms in the marine environment represent a largely unexploited source of highly valuable biomolecules. Due to the development of sequencing technologies in the last few decades, we are now able to access a vast amount of sequence information of metagenomes of cultivable and non-cultivable marine organisms. Unfortunately, our abilities to link such sequence information with function lags completely behind. The conventional system to annotate protein functions, e.g., annotation based on BLAST homology search, is very poor and often provides false predictions, in particular for classes of proteins for which biochemical characterization data has not been accumulated. Consequently, it is virtually impossible to identify novel proteins and enzymes based on sequence based screenings, only. Therefore, the goals of MarBioTech are to develop innovative tools and technologies to advance function-based searches in combination with sequence-based searches and to deliver valuable biomolecules of marine origin. Together with the innovative technology advancement, a wide range of existing marine resources including microbiomes of marine algae, jelly fish, and marine fish farms, among others, will be exploited by combining innovative function-, sequence-based and in vitro screenings for the identification of novel active high-value marine biomolecules. The target molecules will include enzymes involved in marine plastic degradation (PET esterases), fluorescent proteins for molecular medicine, novel highly active RNA polymerases as well as DNA nucleases for metagenome mining and molecular biology and quorum quenching (QQ) proteins to prevent biofilm formation.

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Topic:

- Biomolecules

Marine biomass:

- Microorganisms

Source of marine biomass:

- Microbiome of:
  - Algae
  - Medusozoa
  - Fish farms

Keywords:

Metagenomics, marine biodiversity, technology advancement, novel proteins and enzyme products

Total costs*: € 1.633.000

Funding granted*: € 1.515.000

Duration: 3 years (2018-2020)

** Exact amount may change after completion of national contracts*

CONSORTIUM

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