

## EU FP7 BAMMBO: SUSTAINABLE PRODUCTION OF BIOLOGICALLY ACTIVE MOLECULES OF MARINE BASED ORIGIN

Céline Allewaert, Annick Verween and Wim Vyverman

Protistology and Aquatic Ecology, Sterre Complex, S8, Krijgslaan 281, 9000 Ghent, Belgium  
E-mail: [celine.allewaert@ugent.be](mailto:celine.allewaert@ugent.be)

The current growing demand for marine resources, in particular High Value Added molecules (HVAB's) could pose a serious threat to marine ecosystems and marine biodiversity. Instead of exploiting the natural marine resources, environmental friendly and economically sustainable ways for culturing organisms with economically interesting composition should be developed.

BAMMBO addresses all key issues associated with the culture of marine organisms and will overcome these bottlenecks by designing economically sustainable and scalable culturing methodologies for industrial scale production of HVAB's. BAMMBO will screen and identify a broad range of marine organisms (e.g. bacteria, fungi, sponges, microalgae, macroalgae and yeasts) from diverse global locations for potential as sustainable producers of HVAB's. BAMMBO will apply various analytical methods for the extraction, purification and enrichment of targeted bioactive compounds. Moreover, a detailed life cycle analysis of the production pathways developed in the project will be undertaken to fully evaluate the sustainability of production of biologically active products from marine organisms.

The EU funded FP7 project BAMMBO started in 2011. BAMMBO has brought together a multidisciplinary consortium of specialist research and SME partners. The knowledge and technologies developed during the project is transferred to relevant stakeholders in industry and the research community, as well as to policy-makers. Innovative technologies developed in the project will be demonstrated with the involvement of industry partners, and the results will be of interest not only to companies directly involved in the marine sector, but to other large scale industry players such as pharmaceutical companies with interest in added-value bioactive compounds.

The laboratory of Protistology and Aquatic Ecology (PAE), Ghent University has focused on HVAB's derived from microalgae. Three microalgal species: *Phaeodactylum tricornutum*, *Cylindrotheca closterium* and *Haematococcus pluvialis* were selected by the consortium as model species. All three are producers of bioactive molecules: EPA, fucoxanthin and astaxanthin, respectively. The production of HVAB's is often elicited by the alteration of environmental and nutritional parameters, so called abiotic stressors. PAE has focused on the optimization of growth, harvest and screening of *P. tricornutum*, *C. closterium* and *H. pluvialis*. The elicitation of secondary metabolites was investigated *in vitro* at the flask scale by measuring metabolite production in response to various stresses.