

ABACUS: Algae for a biomass applied to the production of added-value compounds

Michael Ross (Michael.ross@sams.ac.uk)¹, Michele Stanley (Michele.stanley@sams.ac.uk)¹

¹*Scottish Association for Marine Science (SAMS), Scottish Marine Institute, Oban, Argyll, PA37 1QA, UK*

Algae represent an excellent biotechnological platform for the production of bulk commodities and high-value compounds. However, algal production in Europe is limited to a few industries, mainly for the feed, nutrition and cosmetic sectors. Creating an economically viable and sustainable method of producing large volumes of algae with a consistent quality, then converting them into commercial products that are accepted by markets remains an industrial challenge.

Beginning in May 2017, the ABACUS project is a 3-year collaborative initiative funded by BBI-JU and the EU under the H2020 programme [1]. ABACUS is a consortium composed of 2 large industries, 3 algal SMEs, and 4 RTOS. The ABACUS project aims at a business-oriented and technology-driven development of a new algal biorefinery to overcome the challenges facing the industrialisation of algal biotechnology. To achieve this, tasks performed across the consortium have a strong economic and technical emphasis. This project specifically focusses upon the terpenes family, which includes carotenoids, to meet global demands for natural flavourings and colourants, cosmetics and fragrance markets.

The ABACUS concept is to take an interdisciplinary approach in an effort to develop an algal biorefinery, with objectives spanning the following areas:

- To survey the market potential of algal-derived products;
- To select, screen, and improve micro-algal and cyanobacterial strains for target products;
- The technological development of photobioreactors to optimize algal cultivation and synthesis of high-value compounds;
- Optimise down-stream processing to reduce operational expenses and increase recovery of compounds of interest
- Secure environmental and societal acceptability.

This presentation shall provide a broad overview of the ABACUS project; giving a snapshot of the work performed across the consortium, before focussing upon the results achieved from the species-selection and screening programmes undertaken at SAMS.

[1] Grant agreement n°745668 from the BBI-JU under EU H2020 R&I program