

## ABSTRACT

Brown algae biomass is a promising and challenging resource for industrial bioconversions, but there is a need to develop efficient cell factories to convert the constituent carbohydrates into high-value added products. In this proposal, four metabolically different environmental bacteria, inherently suitable to harsh process conditions, will be engineered for production of a number of industrially important platform and specialty chemicals, including 1,2-propanediol, cadaverine, propanol and lycopene. The project will implement and integrate systems biology and metabolic engineering, including rounds of model-driven metabolic optimization. Feedstock development and process engineering are important parts, to optimize fermentability of the algal hydrolysates, and ensure integration with downstream processing and product recovery. At the end of the project, use of all major carbohydrate fractions from brown algae through integrated processing will be demonstrated at small pilot scale.



Dr Trygve Brautaset, Project Coordinator  
Norwegian University of Science and Technology  
Norway

## CONSORTIUM

Name	Organisation	Country
Trygve Brautaset	Norwegian University of Science and Technology	Norway
Alexander Wentzel	SINTEF Materials and Chemistry	Norway
Steinn Gudmundsson	University of Iceland	Iceland
Eva Nordberg Karlsson	Lund University	Sweden
Jochen Förster	Technical University of Denmark	Denmark
Gudmundur Oli Hreggvidsson	Matis Ohf	Iceland
Bruno Ferreira	Biotrend SA	Portugal
Simão Soares	SilicoLife Lda	Portugal

### Topic:

- Materials
- Energy as by-product
- Production of other commodities or services

### Marine biomass:

- Macroalgae
- Bacteria

### Keywords:

Microbial metabolic engineering, systems biology, value-added chemicals, integrated bioprocess, fermentations

**Total costs\*:** € 2.485.677

**Funding granted\*:** € 1.981.507

**Duration:** 3 years (2016-2018)

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