

# Portfolio of Project Factsheets (Biomedical)

A Horizon 2020 funded project  
Full project title: ERA-NET Cofund on Blue Bioeconomy - Unlocking the potential of aquatic bioresources (BlueBio)

Website: [www.bluebioeconomy.eu](http://www.bluebioeconomy.eu)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 817992

Project start date: 1 December 2018

Duration: 66 months



# Overview

These factsheets outline the outputs and commercialisation needs for the 36 BlueBio funded projects as of November 2023. This includes 17 projects from the cofunded call (↓), 9 projects from the 1st additional call (↓), and 7 from the 2nd additional call (↓).

Each factsheet contains the following information:

- Project Name
- Brief description/tagline
- Relevant Blue Invest sectoral opportunity icon (see next page for description)
- Website (if applicable)
- Country flags of industry partners in the consortium
- Outputs (including Technology Readiness Level (TRL), brief description, Intellectual Property Rights (if provided))
- Commercialisation Needs or Next Steps

More information on the projects available on [www.bluebioeconomy.eu](http://www.bluebioeconomy.eu)

# Blue Invest Sector Opportunities

## Aquaculture



Aquafeed



Equipment



Broodstock



Rearing/  
Harvesting



Disease battling  
& fish welfare

## Blue Biotechnology



Biofuels



Nutraceuticals



Cosmetics



Pharmaceuticals



Food & Feed



Waste Reduction



General

## Blue Biotechnology



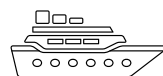
Fishery Services



Fishing Gear



Fishing



Ship Equipment



# AquaHeal 3D

3D printed Biomarine  
Wound Healing  
Accelerant

<https://bluebioeconomy.eu/3d-printed-biomarine-wound-healing-accelerant-2/>  
[regenics.no](http://regenics.no)

## Portfolio of Outputs and Commercialisation Needs



Project consortium  
includes 3 enterprises:



TRL 6

### Collex<sup>®</sup>

- 3D printed wound healing medical device
- Bioactive substances from unfertilised salmon roe
- Topical wound healing dressing (class III medical device)
- For burns, diabetic and chronic wounds
- Bioactive ingredient is HTX (EPO patent granted Dec 2018)
- ReGenics AS holds IP

## Commercialisation Needs



Funding for clinical trial



Commercial exploitation  
of marine collagen and  
chitin from marine  
sources

<https://bluecc.eu/>

# Portfolio of Outputs and Commercialisation Needs



Project consortium consists of  
research organisations

## Outputs

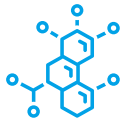
Optimised collagen  
extraction methods



TRL 5/6

Homogenisation and  
ultrasound application used  
to reduce pre-treatment time  
and solution for starfish.  
Ultrasound increased  
collagen yield in jellyfish.

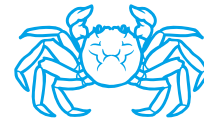
Enzyme production  
from microorganism



TRL 4/5

By changing the chitin source  
material, it is possible to obtain  
different enzymes (chitinases)  
through the degradation pathways  
used by the microorganism Chi5.

Chitosan extract as  
flocculant



TRL 5/6

Chitosan extracted from  
Chinese mitten crab used to  
harvest (flocculate) microalgal  
cells from cultivation medium.

## Commercialisation Needs

Scale up  
collagen  
extraction

Scale up  
production of  
enzymatic  
hydrolysis of  
lumpfish

Yogurt provider  
to collaborate  
with

New regulation  
within Novel  
Food framework



Advanced Materials using  
Biogenic Calcium Carbonate  
from Seashell Wastes

<https://site.unibo.it/casewa/en>

# Portfolio of Outputs and Commercialisation Needs



Project consortium  
includes 1 company:



## Outputs

Biogenic CaCO<sub>3</sub> micro-  
& nano-particles



TRL 4/5

The grounded particles still  
preserve the compositional and  
texture features of the pristine  
seashells



Calcium phosphate  
biomaterials



TRL 3

Apatite micro-nano particles with  
osteogenic and luminescent properties  
obtained by innovative one-pot low  
temperature hydrothermal method.



Strengthened & conductive  
Levirex® compounds



TRL 4/5

Antistatic Levirex® sole shoes  
developed using conductive  
biogenic CaCO<sub>3</sub> particles.

Universität  
Konstanz



## Commercialisation Needs

Upscaling

Regulatory  
aspects for  
food by-  
products

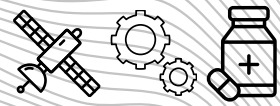
Collection and  
storage chain  
of waste  
seashells

Industry  
Network  
(companies &  
services)

# MedSpon

Characterization of new antibiotic principles against WHO priority pathogens of sustainably produced marine sponges for nutraceutical applications

# Portfolio of Outputs and Commercialisation Needs



Project consortium includes 2 SMEs:



## Outputs

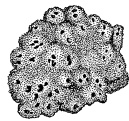
Sponge collagen-based product



TRL 7

Contract manufacturing solutions and co-development opportunities for larger scale production.

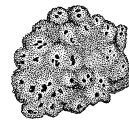
Sponge RAS production technology



TRL 4

Sustainable land-based production in closed systems for enhanced growth.

Sponge mariculture production technology



TRL 5

Sustainable production on novel artificial reefs and evaluation of in situ parameters for RAS production.

R&D sponge-based antimicrobial applications



TRL 4

Academic and industry partnerships with expertise in antimicrobial agents, genetics, and probiotic nutraceuticals.

## Commercialisation Needs

Scale up aquaculture systems (incl. RAS)

Scale up extraction methods

Increase impact and market readiness

Engage with academia and commercial partners

Establish joint product developments





Marine Innovation using Novel Enzymes for waste Reduction and Valorisation of Algal biomass

<https://minerva-bluebio.weebly.com>



# Portfolio of Outputs and Commercialisation Needs



Project consortium includes 2 SMEs:



## Outputs

### Antifouling substances



TRL 2

Biologically inspired antifouling substances that may offer novel alternatives to currently used materials and coatings in aquaculture.

### Food Ingredients



TRL 2-4

New food fibres and flavour ingredients that address key market drivers and growing demand for sustainable, healthy food.

### Facial serum



TRL 3

Facial serum product with *Ascophyllum nodosum* extract.

### Biomedical Applications



TRL 3-4

Marine derived actives and polymers that may offer new solutions for drug development and tissue engineering.

### Skincare Product



TRL 7-8

Facial skincare product with *Ascophyllum nodosum* extract.

## Commercialisation Needs

Continued bioactivity screening & characterisation

Food applications trials & sensory analysis

Cost analysis, Life Cycle Assessment & Social-LCA

Targeted market needs analysis

Scale up of extraction processes and production

Scope any regulatory constraints





# Portfolio of Outputs and Commercialisation Needs

Seaweeds for Novel Applications and Products

<https://tinyurl.com/ye28268y>



Project consortium includes  
1 Small and 1 Large Enterprise:



## Outputs

Biorefinery methodologies



Isolation of high-quality polysaccharides such as alginates, cellulose, fucoidans, carrageenans, laminarins.

Upgraded & modified polysaccharides



Seaweed based foams and seaweed microsheets.

Seaweed cellulose based biomaterials



Novel biopolymer modifying enzymes. Enzymatically and chemically tailored polysaccharides.

Alginate based biomaterials



Novel hydrogels for cell cultivation.

Cellulose alginate composite biofibres.

## Commercialisation Needs

Establish of sustainable and economically feasible supply chains for raw materials

Scalable processes for biorefining of seaweed

New infrastructures for sustainable processing of biomass

Engagement with industry on further projects to realise innovations

Regulatory framework for seaweed derived products for use in food, feed, and pharma.

# SuReMetS

from Sustainable Resources to novel marine nutraceuticals for the management of Metabolic Syndrome

## Portfolio of Outputs and Commercialisation Needs

<https://shorturl.at/nxFS0>



Project consortium includes 3 SMEs:



### Outputs

Novel hydrolytic enzymes



TRL 3

Novel hydrolytic enzymes isolated from marine bacteria to improve processing and bioactivity of raw materials.

Fish hydrolysates



TRL 6

Production of fish hydrolysates for testing as nutraceuticals to manage Metabolic Syndrome.

Algae hydrolysates



TRL 5

Production of algal hydrolysates for testing as nutraceuticals to manage Metabolic Syndrome.

### Commercialisation Needs

Regulatory aspects for nutraceuticals

Market Access

Industry Network (companies & services)

Scale-up

# MICROALGAE IN IT

Microalgae based,  
safety-tested and  
optimised fish feed value  
chain by using  
interdisciplinary R&D and  
IT solutions

## Portfolio of Outputs and Commercialisation Needs

<https://www.poweralgae.eu/microalgae-in-it>



Project consortium  
includes 1 SME:



### Circular model for microalgae cultivation

Carbon dioxide  
from flue gas to  
enhance  
microalgae  
growth



TRL 5/6

Agri-food residues to  
provide cheaper  
nutrients for  
microalgae



TRL 5/6

Information and  
communications  
technology (ICT), sensors,  
and algorithms for  
efficient bioprocess  
management



TRL 5/6

Chemical testing for  
product safety



TRL 5/6

### Commercialisation Needs

Validation of  
aquafeed  
producers' needs

Validation of fish  
farmers' needs

Microalgae  
components  
users in the food  
sector

Microalgae  
components  
users in the  
cosmetics sector

Retail channels  
for food &  
nutraceuticals  
(physical &  
online)

# ImPrESsiVE



Improved processing to enhance seafood sidestream valorisation and exploration

## Portfolio of Outputs and Commercialisation Needs

<https://bluebioeconomy.eu/improved-processing-to-enhance-seafood-sidestream-valorization-and-exploration/>



Project consortium includes 2 Medium Enterprises:



### Outputs

Optimised extraction solutions



TRL 6

Technological solutions for improved extraction of bioactive proteins, fish oil and chitosan.

Bioactive Protein Ingredient



TRL 6

Extracted from underutilised fishery and crustacean sidestreams.

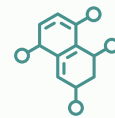
Fish Oil



TRL 7

Extracted from underutilised fishery sidestreams.

Chitosan



TRL 6

Extracted from crustacean sidestreams.

### Commercialisation Needs

Upscaling

Market Analysis

Stakeholder Engagement