



# GreenCoLab

Joining the pieces  
in algal biotechnology.

[www.greencolab.com](http://www.greencolab.com)  
[geral@greencolab.com](mailto:geral@greencolab.com)





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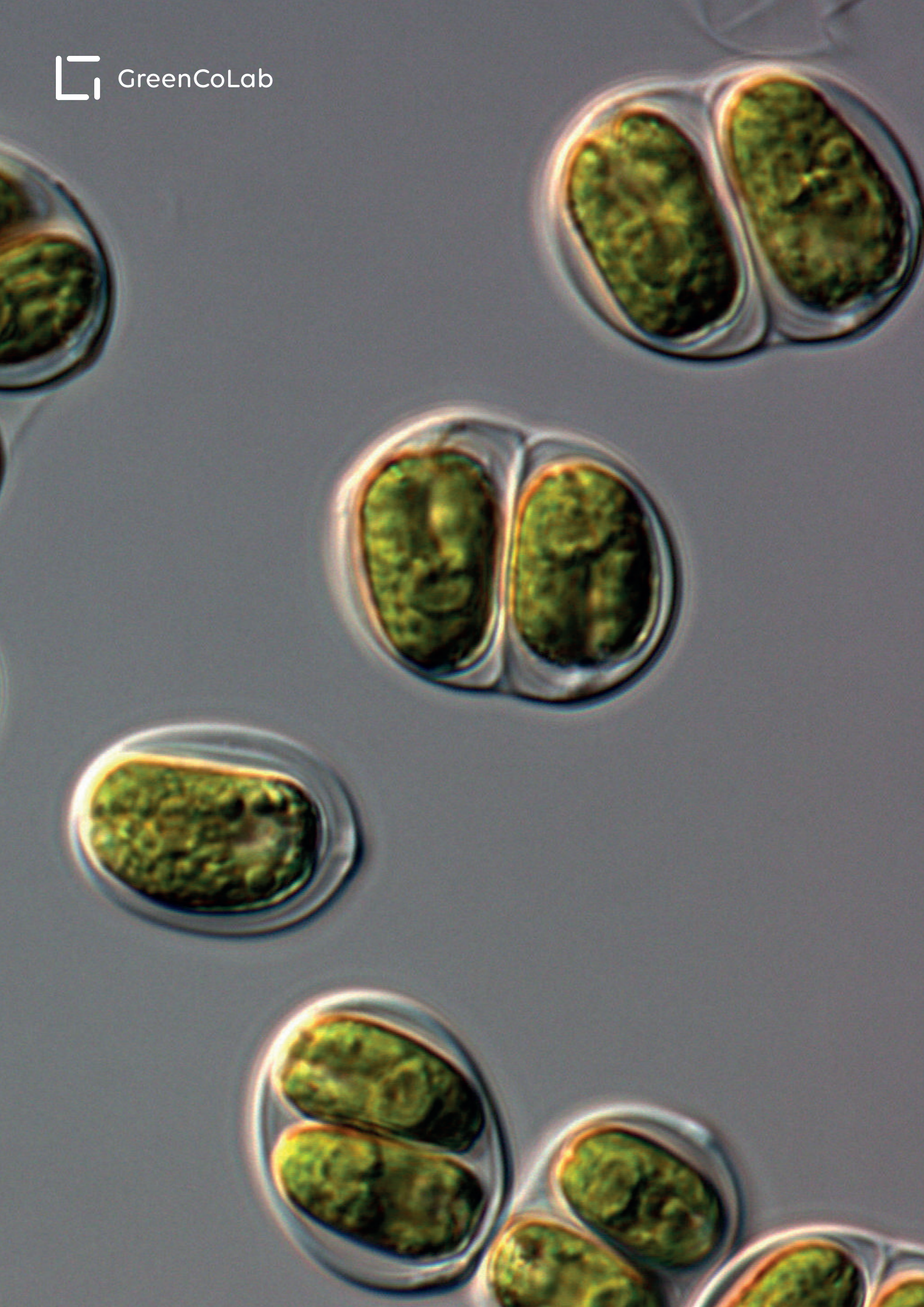
# Content

## Our Value Proposition

1. ANALYTICAL
2. MOLECULAR BIOLOGY
3. BIOREFINERY
4. FOOD
5. ANIMAL NUTRITION
6. CONTRACTED RESEARCH  
& CONSULTANCY



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Services Platform

# OUR VALUE PROPOSITION

GreenCoLab is a Collaborative Laboratory specialist in the algae biotechnology field, bridging the transfer of knowledge between academia, industry, stakeholders, and consumers

## WE COVER THE ENTIRE VALUE CHAIN

1.

In algae biotechnology, we pride ourselves on our comprehensive approach to cover the entire algal value chain, on differentiating scales, within the Blue Economy realm. From algae growth, strain improvement, production optimization, resolving culture crashes, to harvesting, and downstream processing, we leave no aspect untouched.

## EMPOWERING KNOWLEDGE ADVANCEMENT

2.

GreenCoLab is equipped with a highly skilled international team of dedicated researchers who possess extensive expertise in the field of algae and are supported with state-of-the-art technology. With a deep understanding of the intricacies of algae cultivation, production processes, and algal valorization, our team is at the forefront of innovative solutions and advancements.

## DRIVING ALGAE SERVICES INNOVATION

3.

We possess a strong capacity for developing innovative solutions for the algae-based industry, constantly seeking ways to explore, improve and implement new technologies and techniques aiming at the needs of the evolving industry and academia, and the requirements of the market. Our relentless drive for innovation fuels our commitment to pushing the boundaries of what is possible in the field of algae biotechnology.

## IN THE HEART OF THE ALGAE ECOSYSTEM

4.

GreenCoLab thrives with an expansive sustainable network of symbiotic partners and associates. This network encompasses renowned universities, forward-thinking companies, and diverse organizations, positioning our combined services at the forefront of innovation and progress.





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# 1 ANALYTICAL

...services to analyse the (bio-) chemical properties of algal biomasses

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## 1.1 PROXIMATE COMPOSITION

- 1.1.1 AP PC02 Moisture
- 1.1.2 AP PC03 Ash
- 1.1.3 AP PC04 Crude fat (total lipids)
- 1.1.4 AP PC05 Crude proteins
- 1.1.5 AP PC06 Total nitrogen, carbon and hydrogen

## 1.2 BIOCHEMICAL COMPOSITION

- 1.2.1 AP BC01 Soluble carbohydrates
- 1.2.2 AP BC02 Starch
- 1.2.3 AP BC03 Soluble protein
- 1.2.4 AP BC05 Total polyphenols
- 1.2.5 AP BC04 Total chlorophylls
- 1.2.6 AP BC06 Condensed tannins
- 1.2.7 AP BC10 Phycoerythrin, Phycocyanin and Allophycocyanin

## 1.3 BIOCHEMICAL PROFILING

- 1.3.1 AP BP02 Total amino acid profile
- 1.3.2 AP BP03 Free amino acid profile
- 1.3.3 AP BP15 Tryptophan
- 1.3.4 AP BP04 Carbohydrates profile
- 1.3.5 AP BP08 Glycosidic linkage
- 1.3.6 AP BP09 Sulphated polysaccharides determination
- 1.3.7 AP BP01 Fatty acid profile
- 1.3.8 AP BP10 Lipidomic profile
- 1.3.9 AP BP11 Phospholipids quantification
- 1.3.10 AP BP12 Glycolipids quantification
- 1.3.11 AP BP05 Mineral composition
- 1.3.12 AP BP06 Carotenoids profile
- 1.3.13 AP BP06F Fucoxanthin
- 1.3.14 AP BP07 Phenolics profile
- 1.3.15 AP BP16 Phycobiliproteins profile
- 1.3.16 AP BP14 Vitamin B12

## 1.4 BIOACTIVITIES ANALYSIS

- 1.4.1 AP BA01 Global antioxidante (ABTS)
- 1.4.2 AP BA02 Global antioxidant (DPPH)
- 1.4.3 AP BA03 Global antioxidant (ORAC)
- 1.4.4 AP BA04 Iron reducing power
- 1.4.5 AP BA05 Nitric oxide radicals scavenging activity
- 1.4.6 AP BA06 Superoxide radicals scavenging activity
- 1.4.7 AP BA07 Hydroxyl radical scavenging activity
- 1.4.8 AP BA08 Metal chelating activity of copper
- 1.4.9 AP BA09 Metal chelating activity of iron
- 1.4.10 AP BA10 Metal chelating activity of calcium

## 1.5 NUTRIENT WATER ANALYSIS

- 1.5.1 AP WA01 N-NO<sub>3</sub>+NO<sub>2</sub>
- 1.5.2 AP WA02 N-NH<sub>2</sub>
- 1.5.3 AP WA04 N-NH<sub>4</sub>
- 1.5.4 AP WA06 Total Nitrogen
- 1.5.5 AP WA03 P-PO<sub>4</sub>
- 1.5.6 AP WA05 Silicates



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## 2 MOLECULAR BIOLOGY

...services to analyze the genome and transcriptome of algae and animals.

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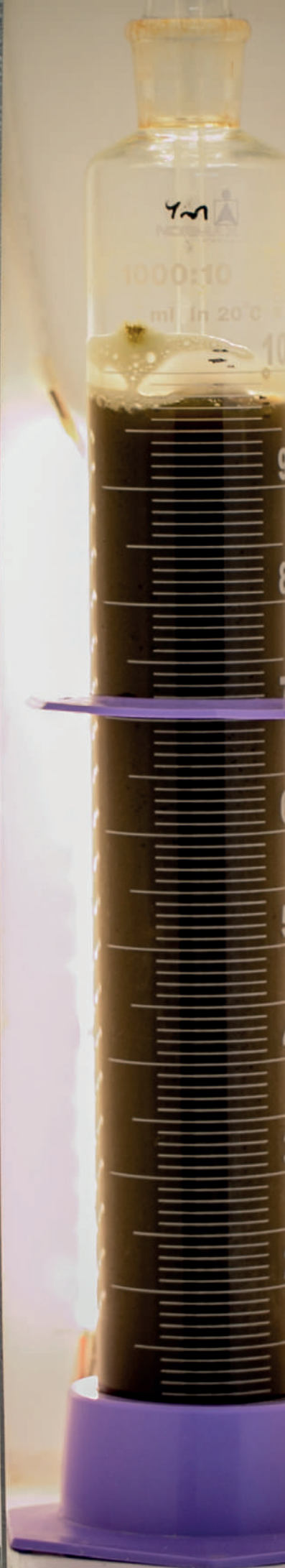
### 2.1 GENOMICS

- 2.1.1 MP MB02 Bacteria identification
- 2.1.2 MP MB09 Bacteria presence/absence
- 2.1.3 MP MB17 Algae identification [1 primer pair]
- 2.1.4 MP MB15 Algae identification [2 primer pairs]
- 2.1.5 MP MB16 Algae identification [3 primer pairs]
- 2.1.6 MP MB06 Algae identification (complex organisms)
- 2.1.7 MP MB13 Algae - Check DNA quality
- 2.1.8 MP AG01 Animal derived DNA
- 2.1.9 MP AG02 Animal derived Bacteria presence/absence
- 2.1.10 MP AG03 Animal Bacteriome (Illumina®)
- 2.1.11 MP AG04 Animal Bacteriome (Nanopore)

### 2.2 TRANSCRIPTOMICS

- 2.2.1 MP AT01 RNA extraction and quality
- 2.2.2 MP AT02 Gene expression (panel of 5)
- 2.2.3 MP AT03 Gene expression (panel of 10)
- 2.2.4 MP AT04 RNAseq (Illumina®)
- 2.2.5 MP AT05 RNAseq (Nanopore)





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## 3 BIOREFINERY

...services to fractionate algal biomass into different streams and processing of extracts for biomass valorisation

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- 3.1 BP 01 Water- and ethanol-based extraction
- 3.2 BP 03 High Pressure Homogenization
- 3.3 BP 05 Micro/Ultrafiltration
- 3.4 BP 02 Extract Concentration\Evaporation
- 3.5 BP 04 Spray Drying
- 3.6 BP 06 Freeze-drying
- 3.7 CS 02 Biorefinery \*

\* Contracted Research





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## 4 FOOD

... services to analyze the biomass functional properties to understand their physical and chemical changes as well as their protein characteristics

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- 4.1 FP 01 Solubility
- 4.2 FP 02 Water absorption
- 4.3 FP 03 Oil absorption
- 4.4 FP 04 Foaming capacity and stability
- 4.5 FP 05 Emulsifying capacity and stability
- 4.6 FP 09 Protein digestibility-corrected amino acid score (PDCAAS)
- 4.7 FP 10 Digestible indispensable amino acid score (DIAAS)
- 4.8 FP 11 Sensory analysis
- 4.9 CS 06 Algal-based, food prototyping or development \*

\* Contracted Research





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## 5 ANIMAL NUTRITION

....services to evaluate ingredients' functional properties based on nutrigenomics.

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5.1 CS 09 Tailor made algae/animal transcriptomics \*

5.2 CS 10 Ex-vivo platform for functional screening \*

In Partnership with **sparos**

5.3 CS 11 Advanced Bioinformatics \*

\* Contracted Research



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## 6 CONTRACTED RESEARCH & CONSULTANCY

...services to conduct tailored research on algae cultivation,  
their application and process optimisation

- 6.1 CS 01 Sustainability assessment (LCA, TEA)
- 6.2 CS 03 Strain improvement
- 6.3 CS 04 Bioactive secondary metabolites discovery
- 6.4 CS 05 Identification of algae and microorganisms
- 6.5 CS 07 Algal-based biostimulant and biofertilizer
- 6.6 CS 08 Algal production optimisation
- 6.7 CS 12 Algae Strains Isolation



# Blue Growth

Portugal holds outstanding conditions for algae ventures.

Algarve is a privileged region due to the solar and temperature that maximize algae growth

Algae is among the most promising and emerging sustainable industries

GreenCoLab aims to catalyze the transfer of knowledge, pushing the boundaries of the algae industry

For more information contact us:  
[services@greencolab.com](mailto:services@greencolab.com)

PORTUGAL



GreenCoLab



Universidade do Algarve  
Campus de Gambelas  
8005-139 Faro, Portugal

ACADEMIA



ALGAE VALORIZATION



FINANCING



ALGAE PRODUCERS

