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Fresh Organic Cosmetics  
from Greece

# Marie Skłodowska-Curie Actions (MSCA) Research and Innovation Staff Exchange (RISE) H2020-MSCA-RISE-2017

**GRANT AGREEMENT**

**NUMBER — 778263 — AlgaeCeuticals**



*“This project has received funding from the European Union’s Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 778263”.*

# RISE: Research & Innovation Staff Exchange



## Promoting transfer of knowledge between countries and sectors

- Research programme executed by:
  - Exchange of “**staff**” around the consortium (Duration 1 month to 1 year)
  - Networking Activities
- Collaborate with **any sector** and any country **worldwide**
- No Mobility Rule
- Per Researcher/Month:
  - €2000 for travel costs
  - €2500 networking, management, etc.

*“Staff” = research students, postdocs, PIs, technical and managerial staff.*

# RISE Requirements

- Project duration 48 months
- Minimum consortium **3** participants in **3** countries
  1. 2 academic participants plus 1 non-academic (or vice versa)
  2. 2 European participants plus 1 non-European participant

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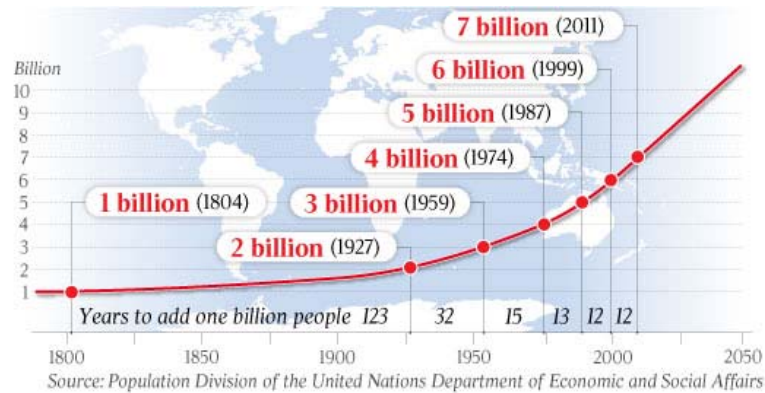
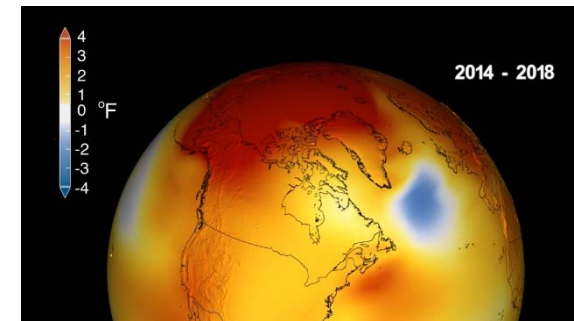
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# The challenges we face

- Human population increase
- Climate change
- Decrease in available soil and water
- Increasing demand



# High increase in human needs



**F**ood

**F**eed

**F**iber

**F**uels

**P**harmaceuticals

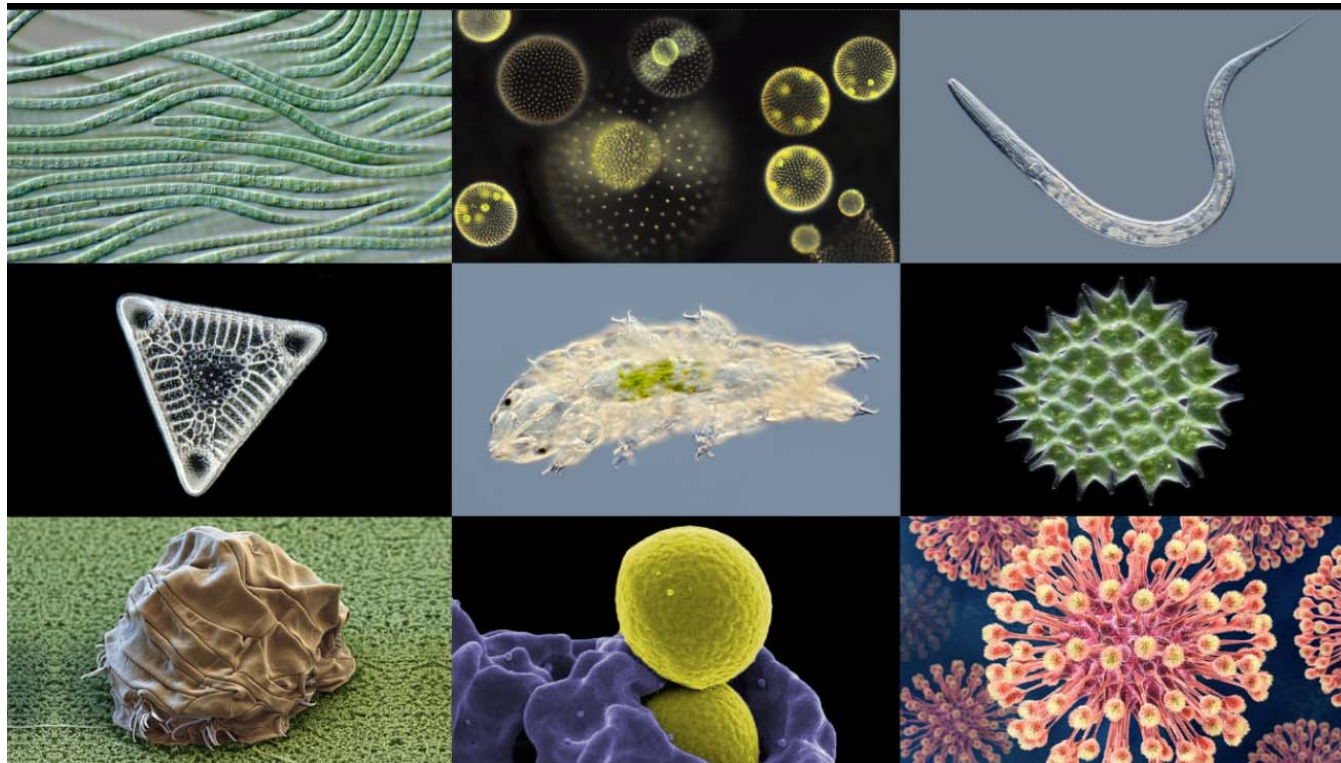
**F**umes

# Why algae

- Algae are largely unexplored organisms
- They live in very different environments
  - Sometimes being very harsh (Ph, temperature (low, high), nutrients)
- They have developed mechanisms involving metabolites to help them survive
- Their protein has high nutritional value
- Often they are ingredients for pharmaceuticals, nutraceuticals or cosmetics



Marine biodiversity combined with biotechnology and –omics technologies can offer novel solutions





# Marine biotechnology securing food supply

- To satisfy the growing demand for high quality and healthy products from fisheries and aquaculture in a sustainable way.
- Intensive aquaculture

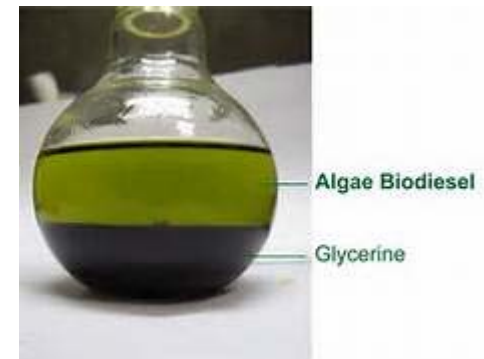
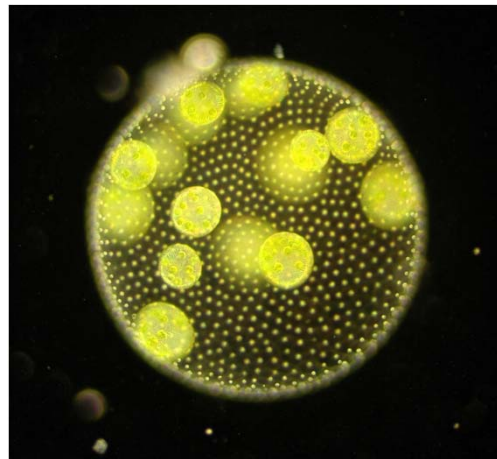


# Algal food products

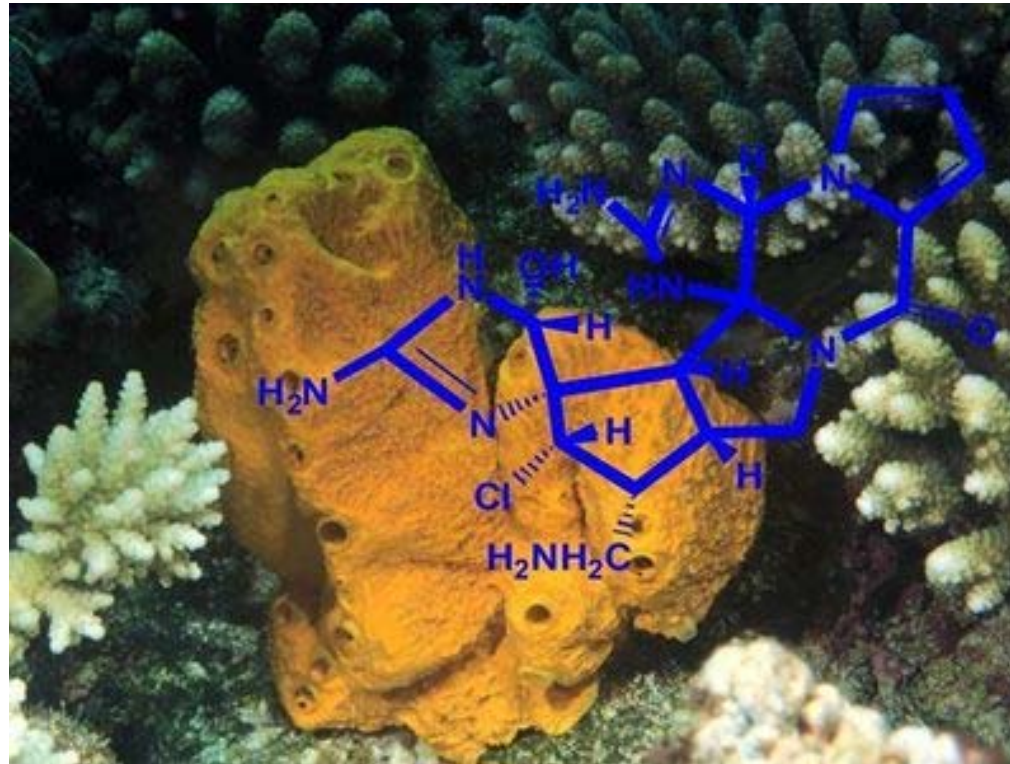
- ▶ Microalgae (green algae and cyanobacteria):  
mostly as food, but also used as pigment sources such as  $\beta$ -carotene.
- ▶ Algae such as Spirulina and Chlorella are of much nutritional value.
- ▶ Spirulina is marketed today as dried flakes that are used in fish food and human consumption



# Marine biotechnology securing alternative sources of renewable energy



# Marine biotechnology securing human health



The sponge *Stylissa massa* produces an unusual compound palauamine, with antimicrobial activity

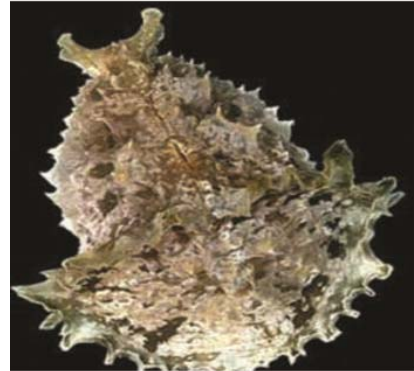
# Marine biotechnology securing human health



*Elysia rufescens*

Kahalalide-F

Antitumor



*Dolabella auricularia*

Dolastatin 10

Antimitotic



*Trididemnum solidum*

Didemnin-B

Herpes simplex virus



*Conus magus*

Ziconotide (prialt)

Chronic pain



# Marine derived food additives

- Antioxidants
  - Polyamines such as Spermine and Spermidine
  - Sulfated polysacchrides from brown algae
  - Astaxanthin: pigmented antioxidant in microalgae
- Taste – adding substances
- Lipids
- Photosynthetic pigments
- Polysaccharides
- Protein



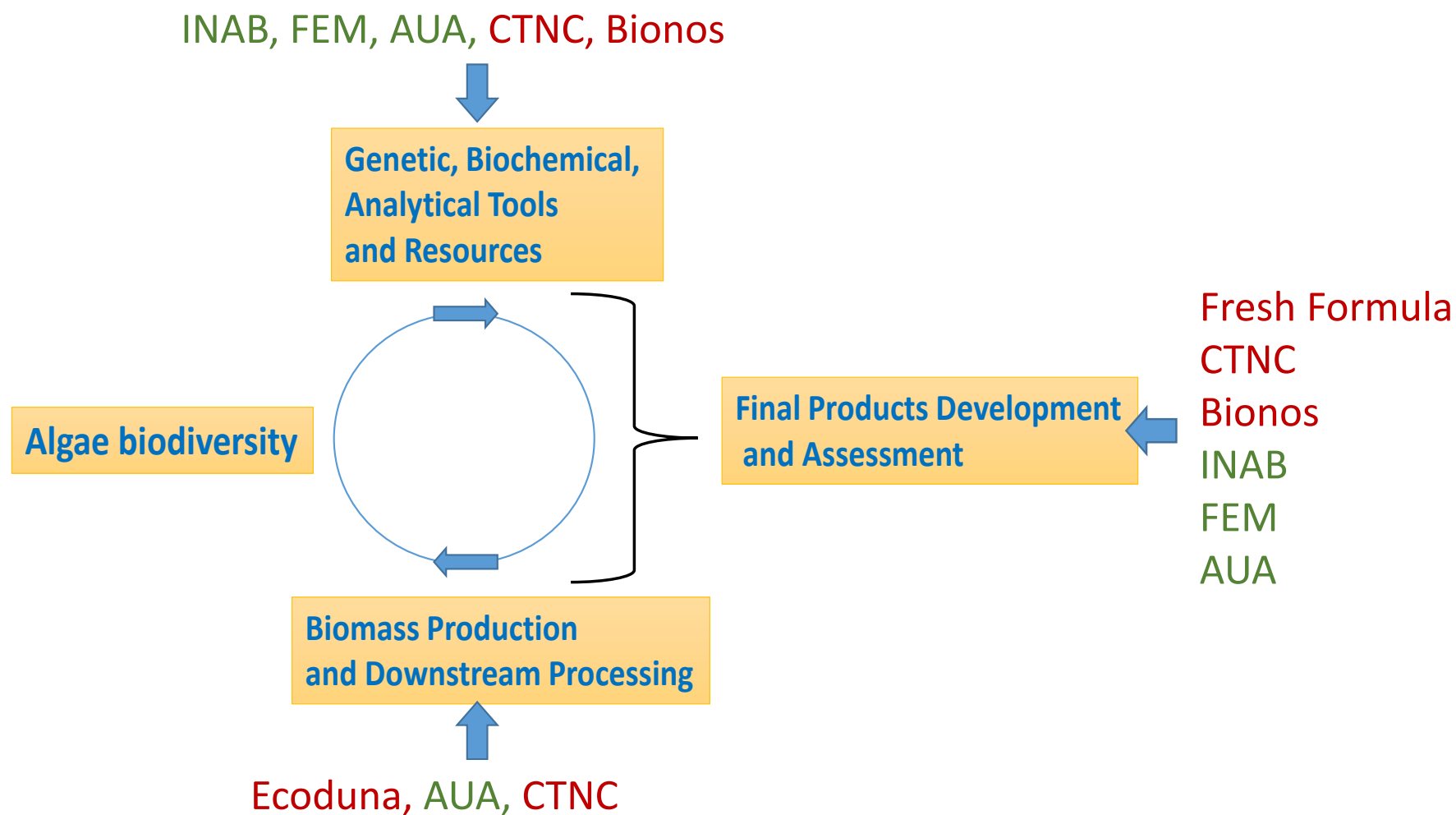


# Marine derived nutraceuticals

- Bioactive peptides
- Fish oils
- Fish proteins
- Seaweeds
- Macroalgae & microalgae
- Amino acids
- Omega-3 oils
- Phytochemicals



# Workplan

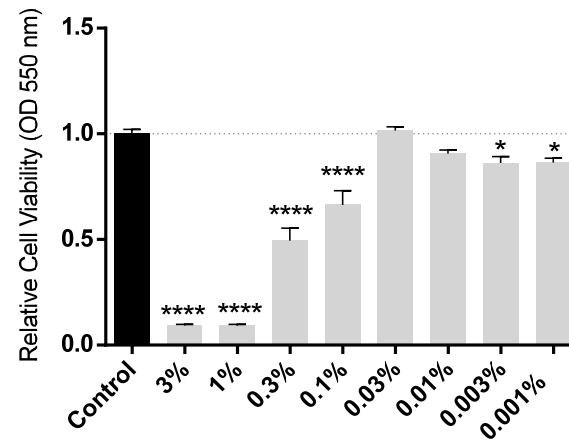


# WP1 Microalgae cultivation, screening and analysis

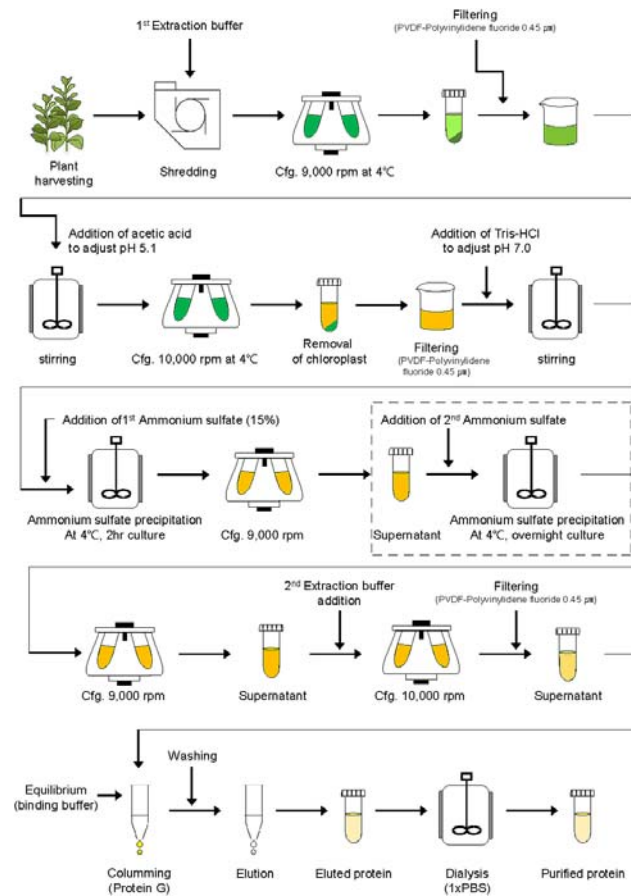




# WP3 Functional analysis and bioactive properties of microalgae derived products



# WP4 Downstream processing and purification strategies





# WP5 Development of cosmeceuticals and nutraceuticals from microalgae



Pulver

extract



- 3 PRODUCTS:
- ✓ **Antioxidant**
  - ✓ **Detox**
  - ✓ **Energetic**



# WP6 Dissemination and outreach activities



# WP7 Training and transfer of knowledge



# Training

- Workshop
- Summer school



# Conclusions

- Exchange of knowledge between academia and private sector through the secondments
- Acquire novel knowledge
- Develop novel products



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