MarineBiotech

NEPTUNA

Novel Extraction Processes for mulTiple high-value compoUNds from selected Algal source materials

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ERA-MBT 1st Transnational Joint Call: Biorefinery processes

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THE CONSORTIUM

PRINCIPAL INVESTIGATOR	INSTITUTION	COUNTRY
Dagmar Stengel	**NUI Galway**	**IE**
Alan Dobson	University College Cork	IE
Peter Bossier	Ghent University	BE
Sarah Hoskins	Unilever UK	UK
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Project period: February 2016 – January 2018

BACKGROUND

- Increasing demand for novel compounds from natural sources
  - Search for high value chemicals from algae with new applications

- To effectively exploit the rich chemical diversity of algae
  - need to develop new technologies to optimize the extraction yields
  - without damaging the chemical integrity of valuable compounds.

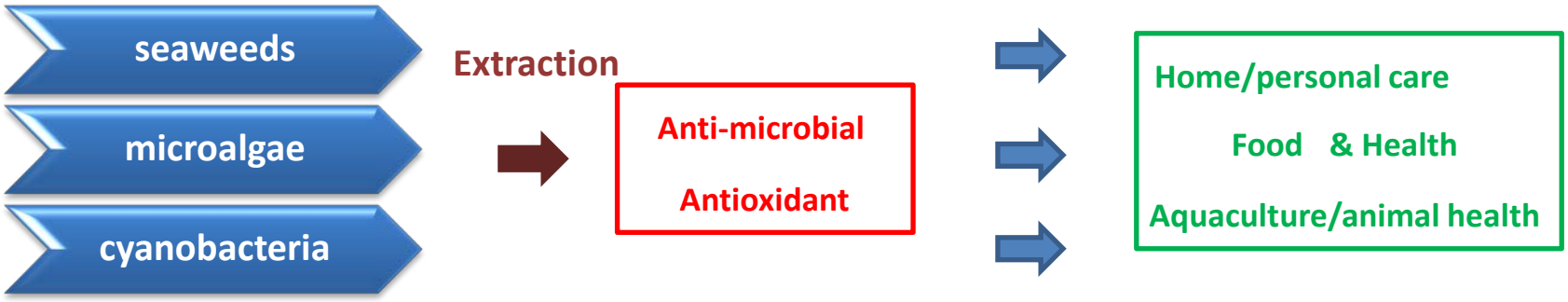
- Biorefinery concept

- **Responding to Call Topic 'Biorefinery processes'**

Food, Feed, Cosmeticeuticals (e.g. skincare), Health (e.g. food supplements), Pharmaceuticals, Environment and monitoring (e.g. biosensors, anti-fouling technology, bioremediation....)

PROJECT OBJECTIVES

- develop **new extraction methodologies** for multiple compounds
  - biorefinery concept
- with antioxidant and anti-microbial activities from **marine algal biomass**
  - optimised/preconditioned
  - seaweeds, microalgae, cyanobacteria
- applications in food, health, home/personal care, and (aquaculture) animal health
  - focusing on selected bioactivities



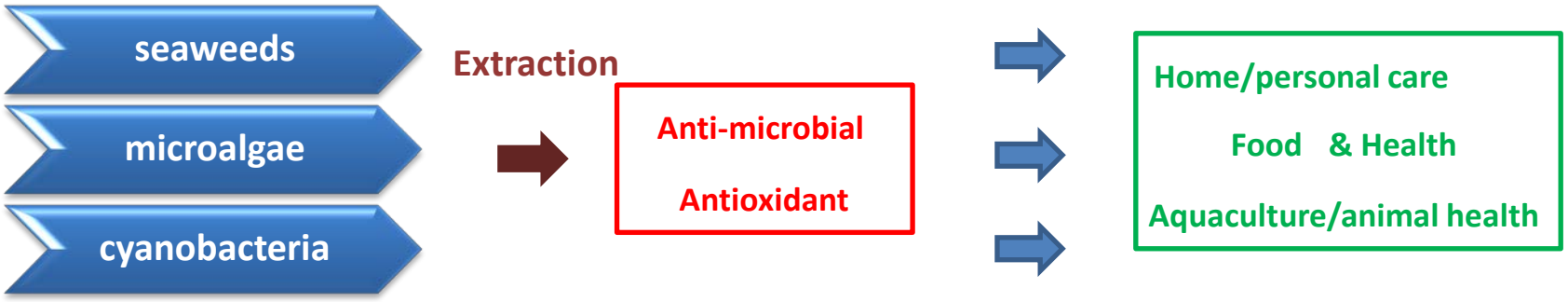
Why this project?

- Addressing potential to use selected/optimised biomass
  - Utilising unexploited algal diversity and potential to select/improve
- Developing new protocols, optimising techniques and approaches
- New applications

Why this partnership?

Expertise needed

- Algal Biology and Chemistry (NUI Galway and USF)
- Novel Extraction processes (*Traditional vs Novel*) (NUI Galway, UCC)
- Testing for different applications (end-users): UiT, UGent, Unilever



POTENTIAL IMPACTS AND PERSPECTIVES

- Successful demonstration of concepts
  - Biorefinery concept – applied!
  - Novel extraction methods – new source of enzymes
  - Applications across a range of sectors
- Several publications in pipeline
- Potential IP

- Sustainable Exploitation of Biomass/Algal Resources
  - nutraceuticals and bioactives with applications in animal feed and human foods.
  - new protein preparations, enhancing global food security through provision of alternative sources of high quality protein - reducing the reliance on terrestrial animal proteins.
  - natural molecules with functional properties (nutraceuticals, marine peptides/hydrolysates) for application in the diet of farm animals and humans

FUTURE DIRECTIONS AND NEEDS/GAPS IN THIS AREA

- Short-term research project
- Small consortium very effective
- Consider multi-stage research:
  - add new/industry partners as and when required
- National funding vs European

- Algae as a valuable member of the new marine value chain: capacity to become high-potential contributors of novel materials relevant to European consumer health and food security

THANK YOU

Dr Freddy Guiheneuf

Consortium members

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