



GENIALG

Enzymatic Deconstruction of *Ulva spp.* Seaweed biomass

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This project has received funding from the European Union's Horizon 2020 Framework Programme under grant agreement No 727892. This output reflects the views of the author, and the Research Executive Agency (REA) cannot be held responsible for any use which might be made of the information contained therein.

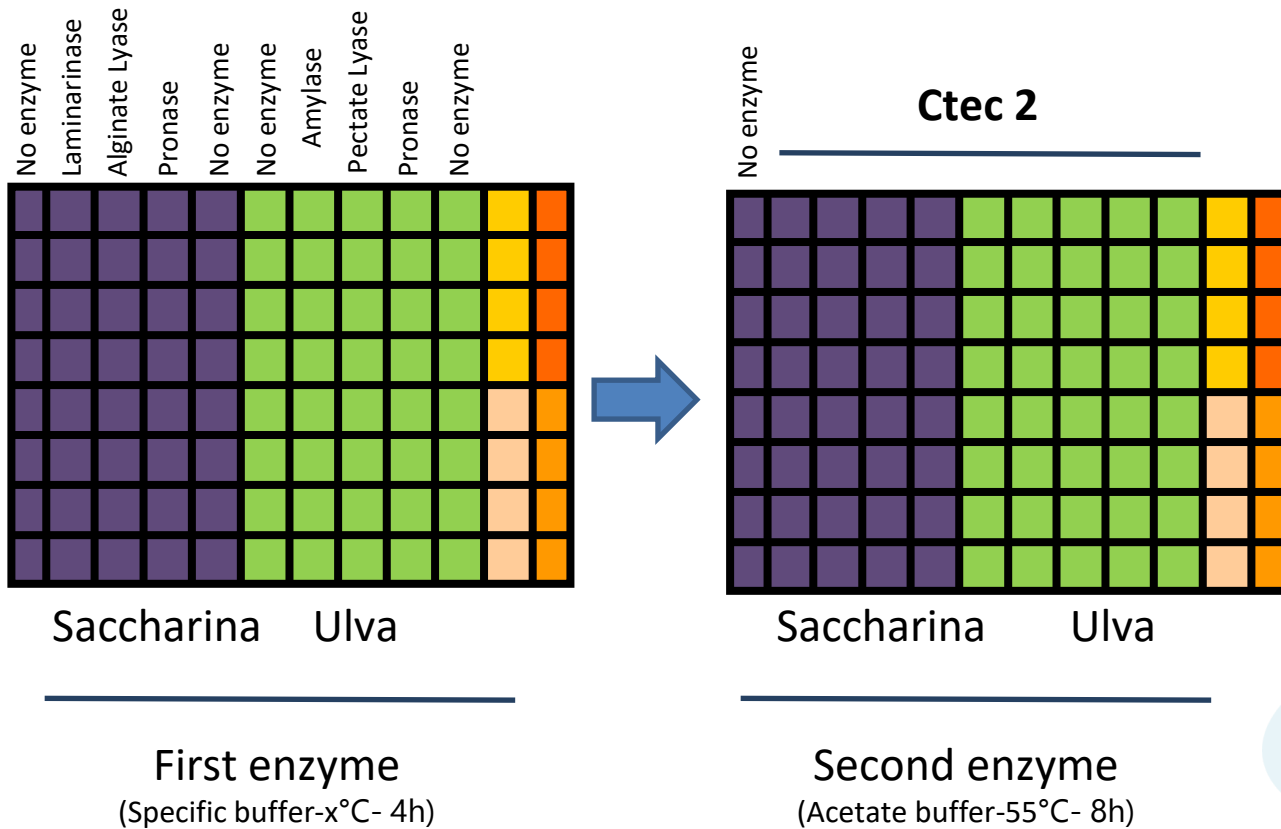
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Introduction

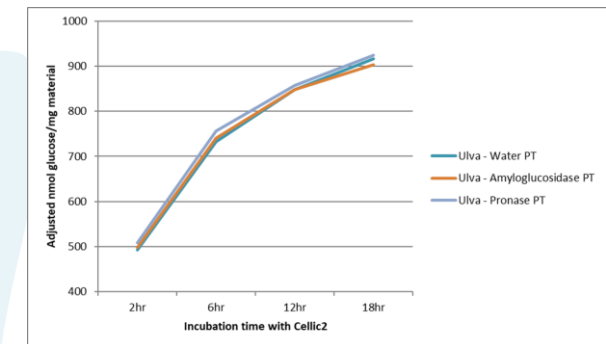
- **Preliminary Work using Robotic Platform**
- **Sequential Enzyme Hydrolysis**
- **Acrylic Acid work at Biome**



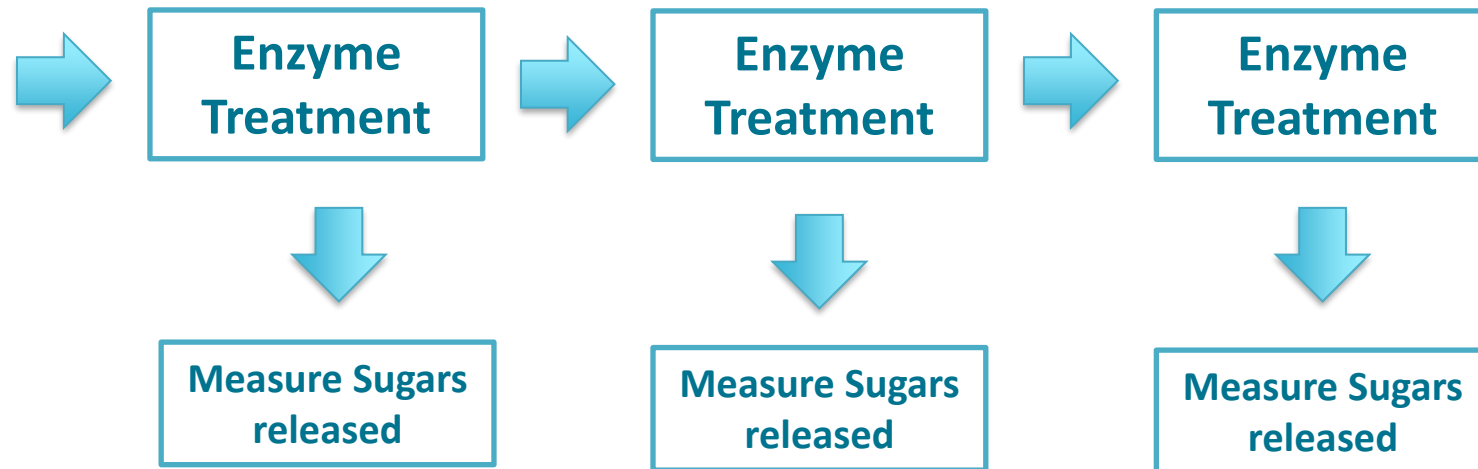
Automated Enzyme Digestions



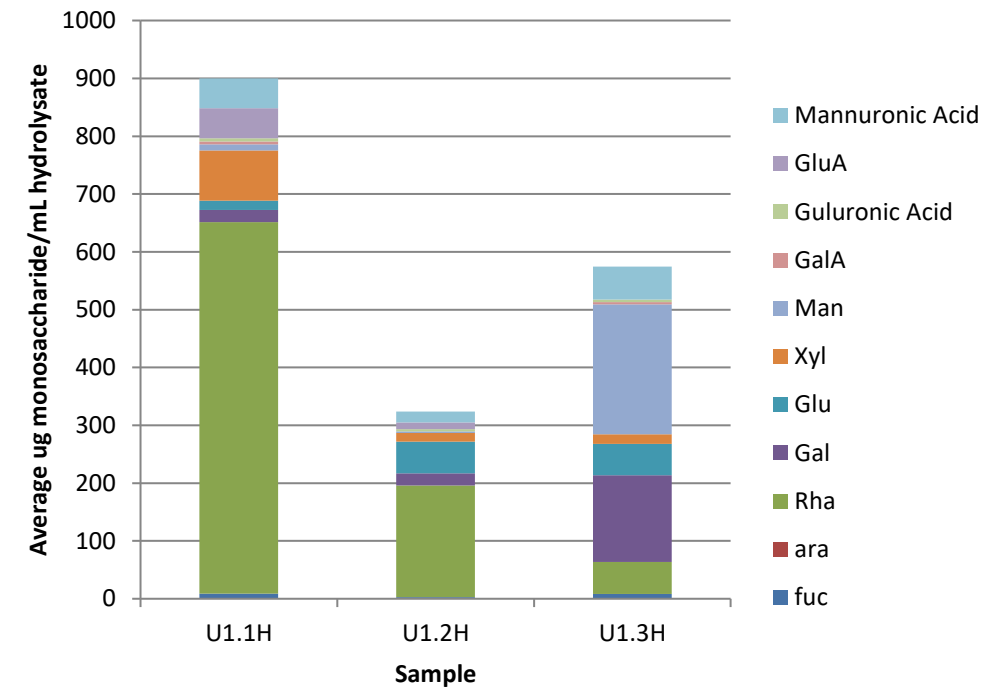
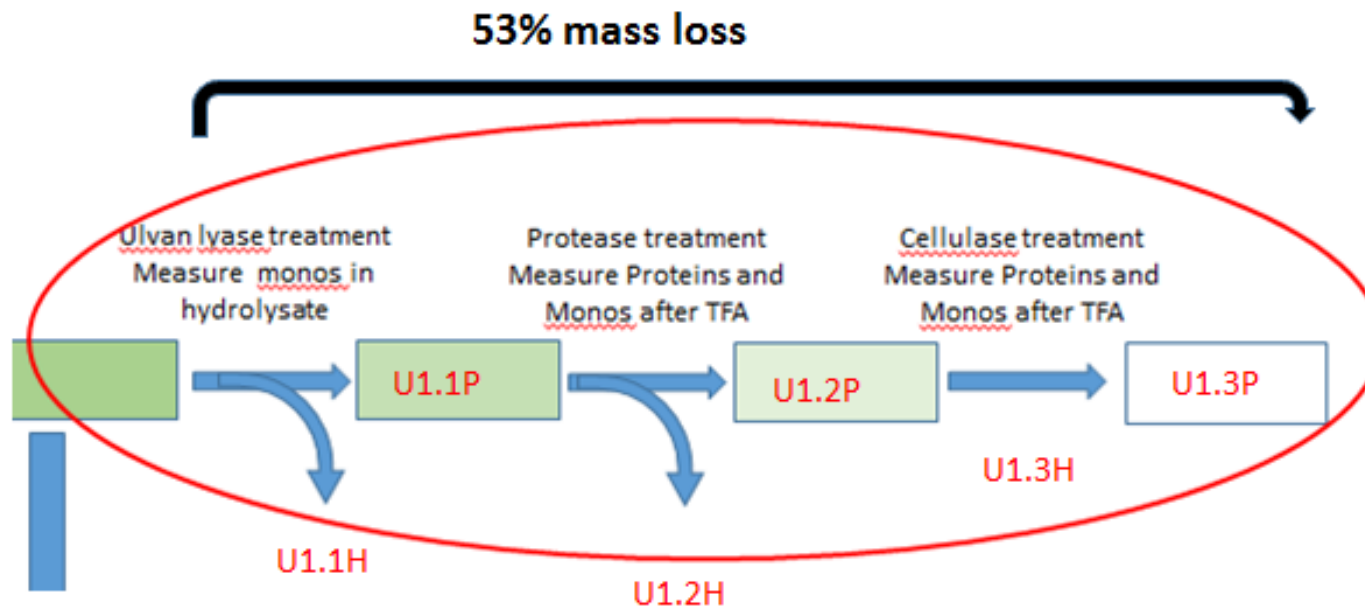
Reducing sugars determination



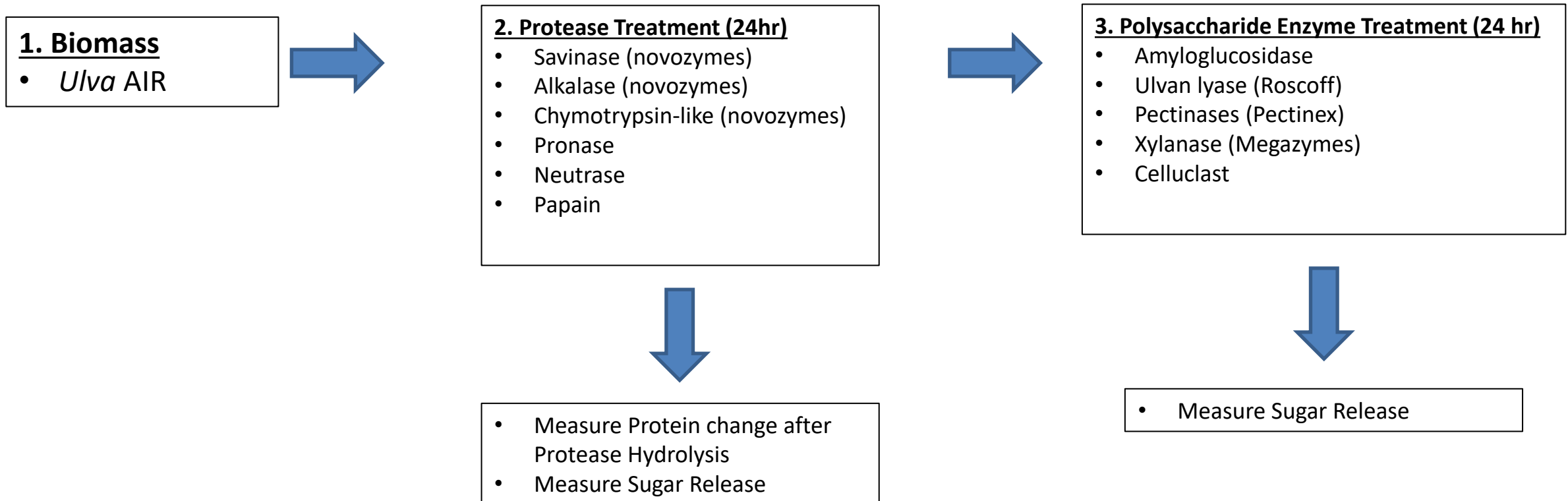
Sequential Digestions of *Ulva*



Sequential Enzyme Digestions



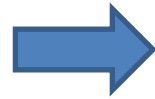
Sequential Digestions using Proteases and Polysaccharidases



Sequential Digestions using Proteases and Polysaccharidases

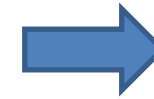
1. Biomass

- *Ulva* AIR



2. Protease Treatment (24hr)

- Savinase (nozymes)
- Alkalase (nozymes)
- Chymotrypsin-like (nozymes)
- Pronase
- Neutrase
- Papain



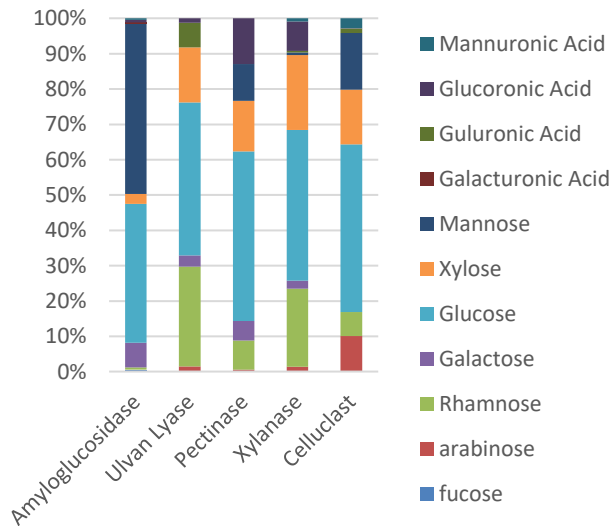
3. Polysaccharide Enzyme Treatment (24 hr)

- Amyloglucosidase
- Ulvan lyase (Roscoff)
- Pectinases (Pectinex)
- Xylanase (Megazymes)
- Celluclast



- Measure Sugar Release

Ulva - Pronase Treated



- Measure Protein change after Protease Hydrolysis
- Measure Sugar Release

Scale-Up *Ulva* Processing at the BDC

Enzyme 1	Enzyme 2
Neutrase	Ulvan Lyase
Ulvan Lyase	Neutrase
Papain	Ulvan Lyase
Neutrase	Amyloglucosidase
Neutrase	CTec Cellic3

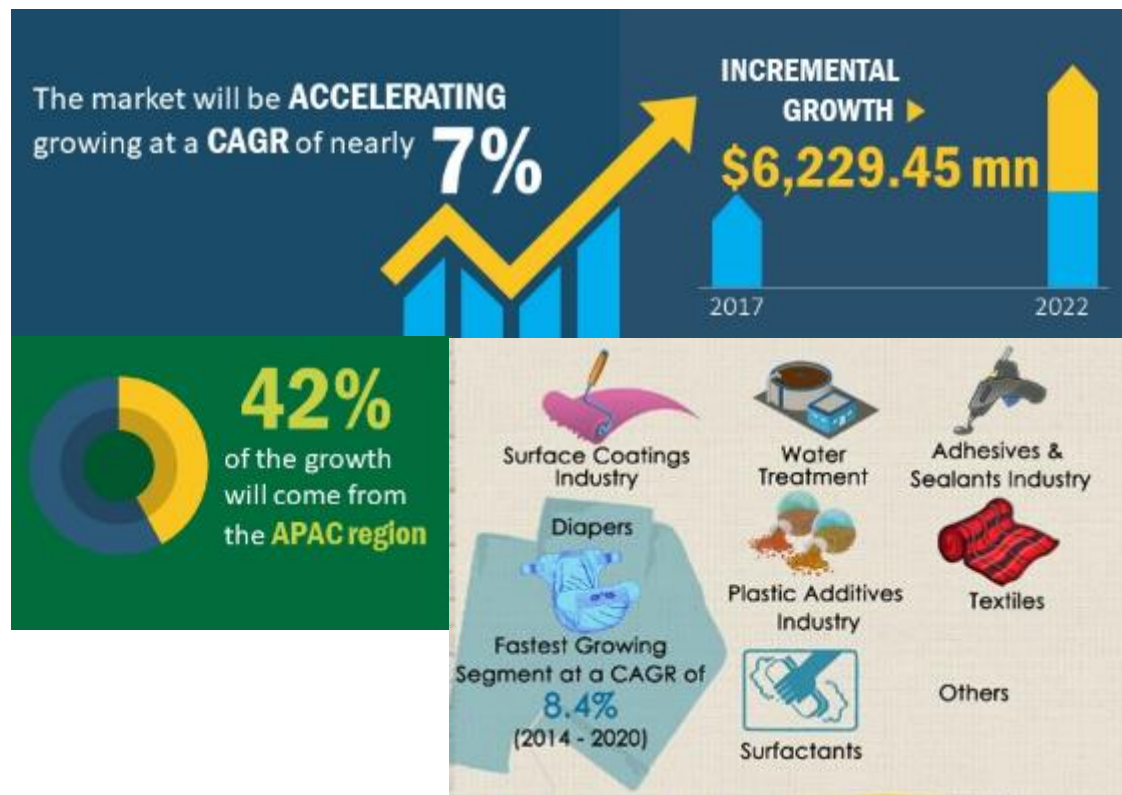


ULVA AS A POTENTIAL SOURCE OF BIO-BASED ACRYLIC ACID

Giovanna Pesante, Thierry Tonon, Krisztina Kovacs-Schreiner & Paul Mines



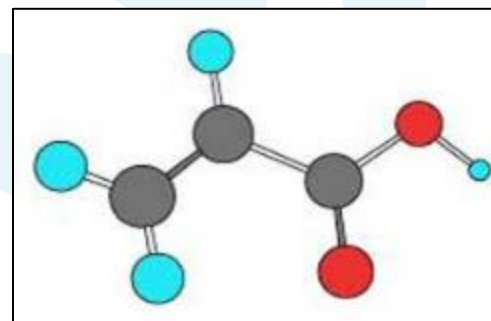
Acrylic acid market in 2020:
around 19 billion USD



Bio-based acrylic acid Project work plan



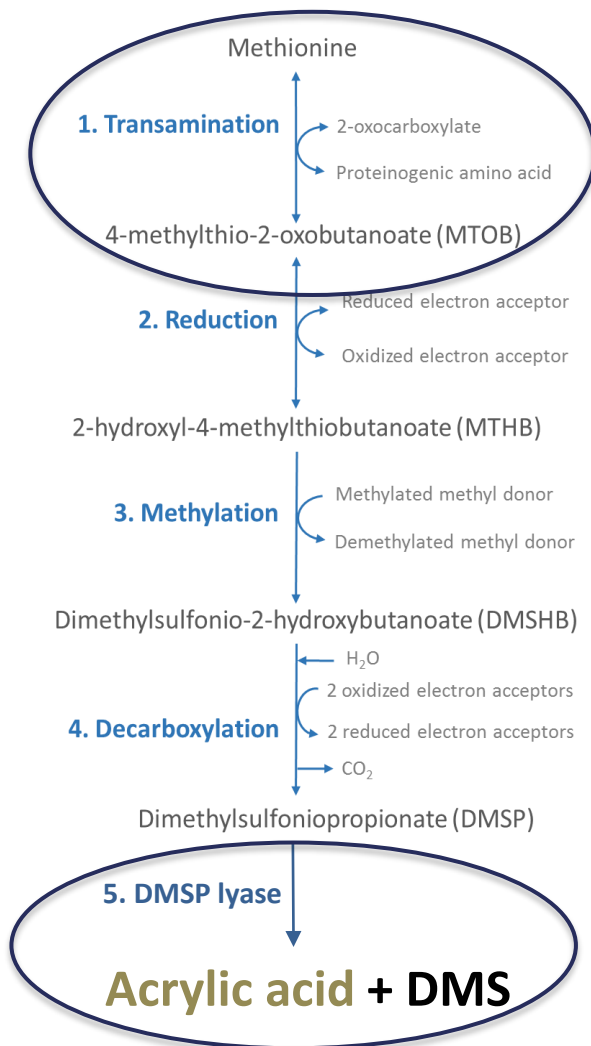
1. Biochemical characterisation of DMSP biosynthetic genes in *Ulva*



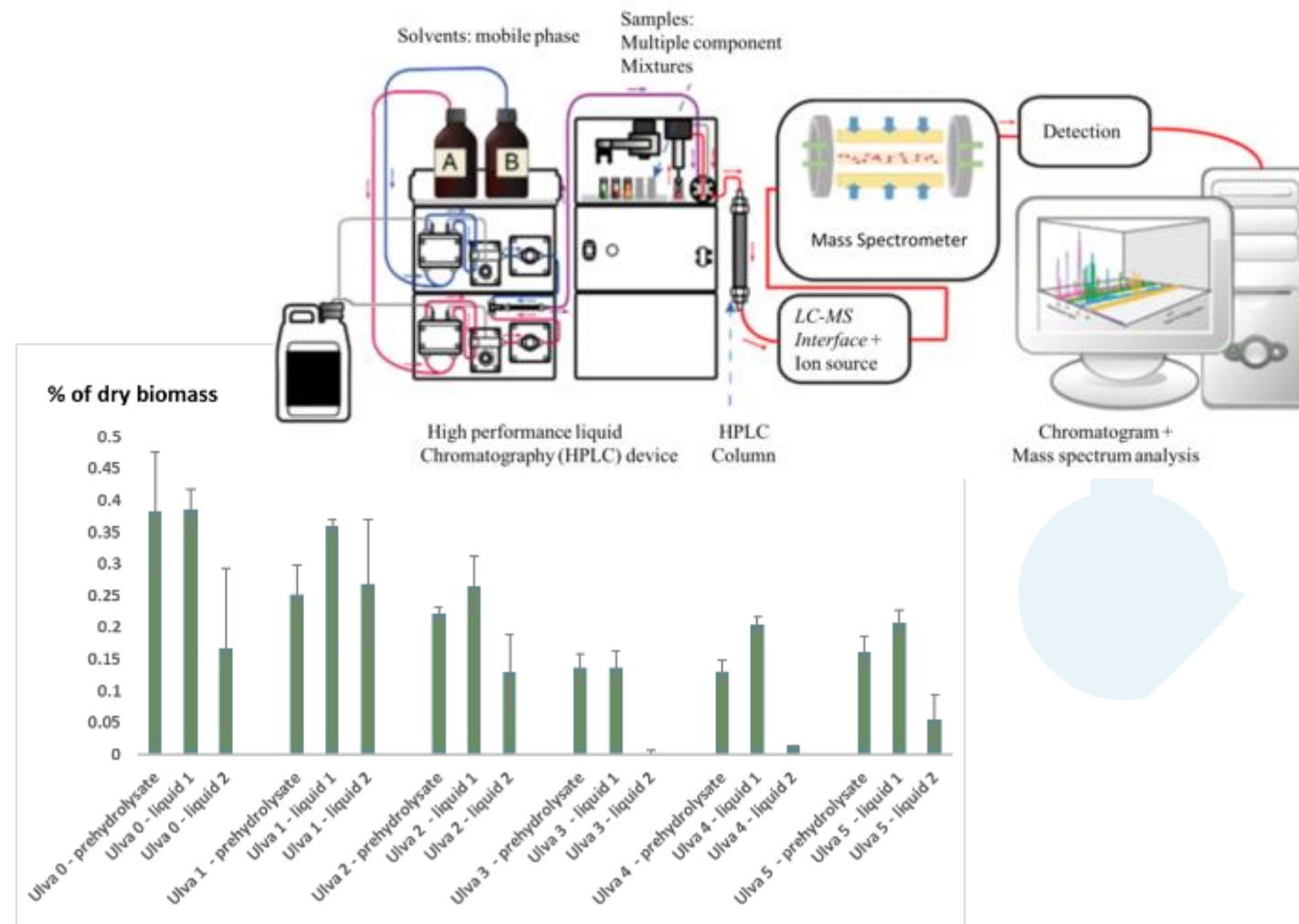
2. Quantification of acrylic acid and its pathway intermediates in *Ulva*



1. Biochemical characterisation of DMSP biosynthetic genes in *Ulva*



2. Quantification of acrylic acid and its pathway intermediates in *Ulva*



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Acknowledgments

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Diane Jouanneau & partners at Roscoff

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