



university of
 groningen



Aquatic Biotechnology & Bioproduct Engineering

Information for IEM master students

m.j.e.c.van.der.maarel@rug.nl



Prof. dr. Marc van der Maarel
m.j.e.c.van.der.maarel@rug.nl

Branched glucose polymers

Functional carbohydrates for sports and clinical nutrition

(Nano)Glycogen, modified starches, glucanotransferases

Bioreactors, enzyme production and characterisation, extremophilic microalgae, starch, rheology, carbohydrate structural analysis



Dr. Edita Jurak
e.jurak@rug.nl

Marine polysaccharides

Seaweed polysaccharides

polysaccharide utilisation loci, complex microbial enzyme systems

Biomass fractionation and extraction, genomics, carbohydrate analytics



Dr. Hans Leemhuis
(AVEBE)
hans.leemhuis@avebe.com

Functional starches

Modified food starches

Enzymatic starch modification

Starch enzymes, rheology

- 1 Technical staff, 1 Post-doc researcher, 6 PhD students,
- 5 Master, 5 Bachelor, 4 MLO- technician and 2 polytech (HLO) students per year

Main research areas:

1. Functional carbohydrates for food and nutrition
2. Marine polysaccharides
3. Enzyme structure-function relationships
4. Food-grade starch modification
5. Complex polysaccharide degrading enzyme systems

What can you achieve?

New food ingredients;

New renewable materials and products;

Scientific Papers & Patents;

High level analytical and academic thinking



Research projects

1. NanoGlycogen for high energy sport drinks;
2. OSA-NanoGlycogen as food-grade emulsifier;
3. Amphiphilic NanoGlycogen as coating stabilizer;
4. Optimising NanoGlycogen production from biodiesel/dairy byproducts;
5. High cell density fed-batch cultivation for NanoGlycogen production;
6. Down-stream processing of NanoGlycogen;
7. Glycogen branching enzyme-modified starches as slow carbs;
8. Amylomaltase-modified starches as thermoreversible gelling agents;
9. In-vitro and in-vivo glycogen structures and functional properties;
10. Building amylose from scratch with microbial enzymes;
11. Extraction and characterisation of seaweed polysaccharides;
12. Turning seaweed polysaccharides into platform sugars;