Characteristics of exopolysaccharides in selected species of unicellular algae.

Unicellular algae are a source of many valuable metabolites, e.g. proteins, lipids, and polysaccharides. Polysaccharides produced by microorganisms and secreted into the surrounding environment are referred to as extracellular exopolysaccharides (EPS). Microalgae are known as a source of exopolysaccharides but there are few comprehensive investigations focused on the production of exopolysaccharides by microalgae. The EPS structure varies between species and depends on the microbial growth conditions.

The aim of the research will be to elucidate the impact of growth conditions, including environmental stress factors, on the process of exopolysaccharide synthesis by selected unicellular algae. The investigations will be carried out with spectroscopic and chromatographic methods. The doctoral research will provide knowledge of the structure and function of polymers produced by unicellular algal species.

Scientific supervisor: Dr hab. Agnieszka Nawrocka, assistant supervisor: dr Izabela Krzemińska

C. Delattre, G. Pierre, C. Laroche, P. M. Production, extraction and characterization of microalgal and cyanobacterial exopolysaccharides. Biotechnology Advances. 2016

Tom M.M. Bernaertsa, Lore Gheysenb, Clare Kyomugashoa, Zahra Jamsazzadeh Kermania,Stéphanie Vandionanta, Imogen Foubertb, Marc E. Hendrickxa, Ann M. Van Loeya. Comparison of microalgal biomasses as functional food ingredients: Focus on the composition of cell wall related polysaccharides. Algal Research 32 (2018) 150–161

Candidate profile:

- master's degree in biology, chemistry or biotechnology;

-very good command in English, including specialist terminology;

-knowledge of biochemical and microbiological methods for isolation, purification, and determination of exopolysaccharides on media and their flocculation properties;

-preferable experience in research on algal cultures (e.g. research internships);

- ability to use statistical software to elaborate results;

- teamwork skills, motivation, creativity, independence.