

***Synechocystis* sp. 6803 cultivation for ethanol and glycogen overproduction**

Gergely Lakatos

Laboratory of Algal Biotechnology, Centre Algatech, Institute of Microbiology CAS, TŘEBOŇ

Bioethanol is a promising candidate to be a successful third generation biofuel produced by or from cyanobacteria. *Synechocystis* sp. 6803 possess the potential to produce glycogen, which can be digested and converted to bioethanol via fermentation or it can be genetically modified to produce directly ethanol from CO₂ and H₂O by light energy.

Both techniques need further efforts to be operable. Extracted ethanol makes the autotrophic cultivation heterotrophic by serving as an organic carbon source in cultivation media. It triggers the appearance of contaminations which thereby consumes the produced ethanol and decrease productivity. For efficient traditional ethanol fermentation high carbohydrate containing biomass is needed. Glycogen accumulation can be supported by stress effects or by genetic modifications.

To increase productivity, different experimental trials were tested on wild type and mutant *Synechocystis* sp. 6803 strains. Series of salt concentrations, nutrient-deprivation methods, and glycogen overproducing mutants were investigated for higher final product yields.