Development of an efficient hydrocarbon producing algae by genetic modification of the genome

Project Leader:

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Objective:

Ethanol is a first-generation biofuel generated from starch or cellulose by fermentation, while hydrocarbons accumulated in algal cells are second-generation biofuels. We intend to develop a system in which useful hydrocarbons are produced efficiently by algae, thus creating an alternative energy resource to oil. For this, we will breed high-quality algae using molecular genetics. *Botryococcus braunii* is a colony producing green alga that has the characteristics necessary for this purpose.

Project Outline:

(1) Analysis of expression levels of MEP genes by second generation DNA sequencer to detect the limiting step in the squalene synthesis.

(2) Cloning of the cDNA, and generating expression construct for the over expression of the gene in *Botryococcus braunii* and *Chlamydomonas reinhardtii.*.

(3) Repression of the byproduct pathways by the artificial micro RNA method to increase the squalene synthesis.

References:

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