Technology licensing opportunity

Rapid growth algae

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- An enabling technology to enhance algal growth and reduce algal production costs.
- A growth-enhancing gene that accelerates algal growth.
- A fast-growing algal strain with increased growth rate and biomass.
- International (PCT) application filed.
An innovation to significantly accelerate the growth of algae

The global market for algal biomass is blooming, attracting investment and interest from organisations wishing to utilise algae to produce high quality and sustainable biofuels, food supplements, animal-feed, high value co-products such as nutraceuticals, pharmaceuticals, bioplastics, biochemicals, fertilizers and cosmetics.

Opportunity

Scientists at the University of East Anglia have discovered a novel gene that significantly accelerates the growth of commercially used microalgae. Marine diatoms exhibit a “bloom and bust” life cycle whereby they can rapidly replicate when conditions are favourable. This novel gene is responsible for the mechanism that enables translation of favourable environmental conditions into fast growth, with a phenotype that allows for accelerated growth, which outcompetes commercial wild type strains.

A key strategy is to grow commercial production algal strains as fast as possible to obtain high biomass inexpensively and in a short amount of time. Key factors that affect algal growth and metabolism are sunlight, CO₂, water, nutrients (e.g. phosphorus, nitrogen and micronutrients such as iron) and temperature.

This novel growth-enhancing gene offers the opportunity to grow algae faster without additional nutrients or increased light, providing solutions to companies wishing to develop commercial algal strains with increased yields and reduced algal growth costs.

Licenses and commercial collaboration opportunities available for:

- Growth-enhancing gene: We have identified a novel gene for incorporation into your algal strain selection or improvement program.
- Fast-growing algal strain: Transgenic cell line of the marine diatom *Thalassiosira pseudonana* (CCMP1335) with over expressed growth-enhancing gene, resulting in accelerated growth.

Status

An international (PCT) patent application has been filed which covers the fast-growing algal strain and the use of the growth-enhancing gene for increasing the growth rate and yield. We are seeking commercial collaborators and licensees to develop this opportunity further.

Figure 1. Growth curve of fast-growing algal strain (FGAS) compared to Wild Type.

Markets

Fuels: Algal systems offer a real alternative to petroleum based transportation fuels in the ethanol, gasoline, biodiesel and aviation fuel markets, an increasing number of ventures are receiving investment to create algae based biocrude oils for petrol refineries.

Food: Projected growth in the nutraceutical market will mean that derivatives of algae in the food market will become increasingly valuable, for example for the production of vitamins, essential unsaturated fatty acids (e.g. eicosapentaenoic acid, docosahexaenoic acid and other omega-3 fatty acids), amino acids and food supplements.

Feed: As global demand for animal protein continues to grow, so too will the market for animal nutrition, due to the high carbohydrate and high protein content of many algae strains, algae offer a sustainable alternative to animal feed.