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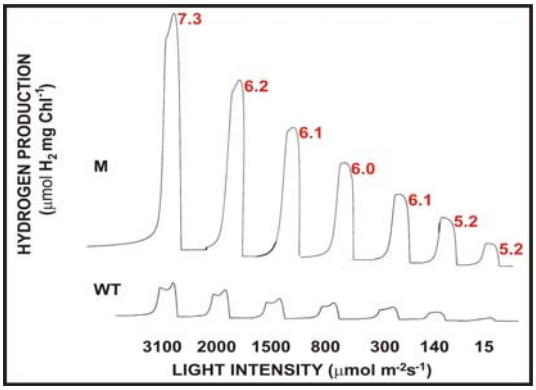
Clean Energy through Biotechnology

Market Overview

Due to significant economic and environmental pressures, there is currently a concerted international pursuit of a clean, sustainable and economically viable energy source such as hydrogen (H_2). Currently the production of H_2 is almost entirely dependent upon the use of non-renewable resources which are ultimately unsustainable and the hydrogen produced is more expensive per unit energy than the source from which it is derived.



Experiments demonstrate that the newly developed strain of algae (Stm6) (without further development) consistently exhibits 5 – 7 fold higher rates of H_2 production than normal ("wild type") over a range of light intensities.

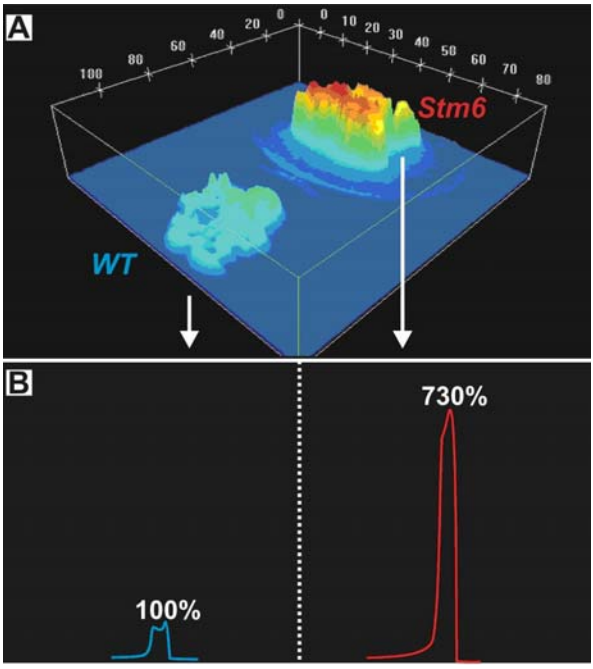
Development Status

It has been known for some time that some species of green algae are capable of using solar energy to split water into hydrogen and oxygen. Australian scientists, working in collaboration with researchers in Germany, have now developed a genetically engineered green algal system that produces several times more hydrogen than the naturally occurring algae.

The Solar Bio-H_2 Project is a research and development program which aims to build upon this discovery. The aim of the Solar Bio-H_2 Project is to develop a clean, sustainable and economical system for generating Hydrogen (H_2) fuel on a large scale. To this end, research is underway on the further improvement of algal H_2 yields as well as the design and development of bioreactors for the large scale production of H_2. An initial analysis has been performed for the Project with regard to the technical milestones (biological and engineering), R&D requirements, industrial scale-up, projected H_2 yields and revenue generation. This study indicates significant promise for the long-term economic viability of Solar Bio-H_2.

Intellectual Property

A provisional patent application covering the genetically modified algae and its use in hydrogen production was filed in 2003 and entered NPE in 2006. Further IP is currently under development.



Screening improved H_2 production properties: *(A) RT fluorescence screen of random knock out mutant by video imaging in low actinic light (20µE). Identification of Stm6 as a high fluorescence mutant. (B) Hydrogen evolution of WT and Stm6 measured by gas mass spectrometry. H_2 evolution (relative rates) of dark adapted cell cultures (30min) during 1minute periods of continuous illumination with 300µmol white light.*

Business Opportunity

We are currently seeking partners to join us in the development of this novel technology.

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the commercialisation company for the Institute for Molecular Bioscience

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