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Inventors

Willem Vermaas

Contact

Jovan Heusser
jovan.heusser@skysonginnovations.com

Modified Cyanobacteria

Two challenges facing the world today include the ongoing pollution of the environment with carbon dioxide which contributes to global warming and the increasing consumption of the world's natural energy resources of fossil fuels. A problematic cycle exists where the increase in fossil fuel consumption correlates with an increase in carbon dioxide air pollution.

An elegant solution to these challenges would be to cultivate microorganisms such as cyanobacteria that take and utilize carbon dioxide for their growth while producing useful products and alternative sources of energy.

Researchers at Arizona State University have developed methods to modify and grow cyanobacteria to achieve the controllable production of a desired metabolic product.

The engineered bacteria also demonstrate increased uptake and fixation of carbon dioxide as compared to unmodified bacteria. The metabolic products overexpressed by the bacteria can be processed into biofuels, bioplastics, animal feed additives, pigments or anti-oxidants, or organic fertilizers.

Potential Applications

- Biofuels
- Carbon remediation
- Bioplastics
- Renewable feedstocks for fine chemical production

Benefits and Advantages

- Versatile - the bacteria can be modified to express many products of interest
- Controllable - production is regulated at the genetic level
- Renewable - cyanobacteria growth is well studied and robust

For more information about the inventor(s) and their research, please see [Dr. Vermaas' departmental webpage](#)[Dr. Vermaas' research webpage](#)

