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## Biofuel extracted from algae using sunlight

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Bangalore: Imagine extracting oil from genetically engineered algae and by using a solar panel. That's precisely what scientist T V Ramachandra and researchers Durga Mahapatra and Karthik Balasubramaniam (all from the Indian Institute of Science here) and Prof. Richard Gordon of the University of Manitoba have done.

They propose extraction from genetically engineered diatoms or single-celled algae, as they are commonly known. The solar panels, instead of having photovoltaic cells, will contain the algae and float in a water solution. The panel will be exposed to sunlight following which the algae secrete the oil, which could be used as biofuel.

Algae, which are basically plants, are present as coatings in rivers and lakes and have oil droplets in their cells. These droplets are being squeezed out of the algae using sunlight.

The quantity of oil that can be extracted could be up to 25% of the mass of a diatom cell. Ramachandra has said that "if a novel way could be found to efficiently wrest it from diatoms, a hectare of diatom cultivation could produce up to 200 times the oil produced by soybean cultivation". The algae have many advantages as a source of oil: they multiply rapidly and some species double their biomass in merely 5 hours. Diatoms are also numerous, with the estimated number of species exceeding 1 million. According to Balasubramaniam, there are 2,500 species of diatoms in India alone. He has discovered three new species in India while hunting for those with the most oil content. The challenge for the researchers will be to devise a method that will permit extraction of oil in large quantities and to genetically engineer algae so as to produce them in millions.

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