Improve Algae Biotechnology

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The algae have many abilities as a renewable lipid source of producing biofuel. Nevertheless, there is an inherent economic problem to make the algae use beneficial as the algae's fuel costs much more than fossil fuel. But if the returns algae biofuel increase, the algae will be an important viable rival. Instead of using complex genetic manipulation, the environment, in which the algae cells grow, was changed and some gases were passed on the algae cells so these cells were forced to stimulate their growth. These gases are produced from burning agricultural waste, which causes 42% of air pollution annually in Egypt when it is applied in randomly so it was burnt in a closed system. These gases achieved amazing results in the algae rapid growth by 35% more than the natural case and in lipid content increase in cells. To increase the lipid content, a material was used to obstruct the responsible enzyme for activating fatty acid within the algal cells. There were rare cells with invisible characteristics, which produced large amounts of lipid among huge number of low lipid productivity cells. As soon as, the X material had been added, the low lipid productivity cells died and the activity of survival cells became higher than the natural case. These survival cells were forced to boost their lipid production to stay alive so they produced more lipids. The result of my experiment was to increase the lipid content inside the algae cells five times more compared with the highest degree of world genetic average. This increase caused lasting change in the algae genes and made the algae an important economic rival to produce biodiesel, glycerol and vitamins. Finally, a new developed algae type was produced that is able to return the hope of international generalization of biofuel.

Awards Won:

Fourth Award of $500