Phase II: Identification of Isolates of Algae with Biofuel Properties

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There are thousands of strains of algae in our environment, but which ones have the best properties for making biofuels? Last year, research was conducted to isolate if a local strain of algae had properties able for yielding oil and producing the biofuel. Using a series of qualitative growth experiments, it was proven that the specific strain of algae had these properties. This year, the same strain of algae was tested qualitatively for oil production and the exact species of algae was identified. Fluorescent microscopy and molecular biology techniques such as PCR and DNA sequencing was used to identify these properties in relationship to what other research has been done. After the PCR (Polymerase Chain Reaction), the PCR product was sent for sequencing at Clemson University. Once the DNA sequencing results came back, an NCBI BLAST was conducted. The results of the BLAST pointed towards the green algae named Sphaeropleales sp. However, the expected value was 10-125 meaning that the chance of this match happening at random was less than 10-125. The algae, Sphaeropleales sp. is local to southern Colorado, has a potential for producing biofuel, and correct information for growing the algae in larger quantities. The non-renewable sources (petroleum) of fuel for transportation are being used up; renewable sources will become more valuable. One renewable resource for transportation fuels that can easily be put into current modes of transportation is algae. This research may identify a strain of Algae that might provide one future source of these fuels.

Awards Won: