**Chatfield’s Problem Statement.**

*Algae: Chalamydomonas reinhardtii – hydrogen production.*

Fuel is a vital part of any space mission, and the ability to produce fuel during the course of a mission would be a great breakthrough for future exploration. Being able to generate fuel in space would be an important step toward a more self-sustaining space station, could allow for course corrections while on orbit, or change the design of long-term space missions. We are investigating the use of algae to produce biofuels aboard the International Space Station. The algal strain Chlamydomonas reinhardtii has been shown to produce hydrogen through photosynthesis on earth and we hope to demonstrate that the same process will work in microgravity. If successful, the process would provide a renewable source of fuel on flight that could be used in fuel cells for power, or in engines for spacecraft maneuvers.

*Algae: Chlorella vulgaris – lipid production.*

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