



Summary for Public Release for FY 2018 DE-FOA-0001908: “Efficient Carbon Utilization in Algal Systems“, Topic Area 2 “Direct Air Capture Systems”

Project Title: Air Carbon for Algae Production - AirCAP

Lead Organization: MicroBio Engineering Inc.

Project Team and Key Participants:

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Abstract:

This project will develop a transformative technology for the utilization of CO₂ from air for production of microalgal biomass to be converted into fuels and bioproducts. This technology eliminates the need to co-locate algal cultivation plants with concentrated sources of CO₂, such as power plant flue gases, thereby increasing the CO₂ resource potential for production of algal fuels by well over ten-fold, while reducing the overall costs of production. Direct mass-transfer of air-CO₂ into algal ponds is limited by diffusion of CO₂ at the air-water interface and the subsequent slow hydration of dissolved CO₂ into carbonic acid. *The key innovation of this project is to demonstrate that this limitation can be overcome by a synergistic combination of biochemical, biological, physical and chemical processes* that would make algal cultivation similar to other crop plants in utilizing only air CO₂. If de-coupled from near-by sources of enriched CO₂, such as power plants, large-scale microalgae biomass production has the potential to generate 10% of current U.S. gasoline and diesel supply, while creating well paid rural jobs.