U.S. DEPARTMENT OF ENERGY AlgaePrize NextGen Algal Innovators

Team Name:

The Cyantific Method

Team Schools/Organizations:

Colorado State University, Fort Collins, CO

Abstract:

Cyano-SUGAR: Optimizing Algae for Low Water Growth. A major challenge for growing algae at scale is getting rid of all the water they grow in. We plan to design a cyanobacterium alga ("Cyano") to grow better with less water using two approaches. We describe these approaches in our acronym SUGAR: Simultaneous Utilization of Glycans And far-Red Light. Glycans are long sugar chains which can coat each cell and protect them from drying out. Our cells will make more of these to grow better in low water conditions. Far-red light is the light just beyond red in the color spectrum and most plants and algae do not absorb this as well as visible color, so it passes through them. We expect cells to not move around as much in low water as they would while swirling around in huge containers of water. This means some cells will be below others much of the time and could use the leftover far-red light. Together, our product with these two design changes will advance the economic and commercial use of algae while saving water.