

Bioprospecting of Microalgae in Colorado for N-based Fertilizer Production

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Alabama State University (ASU), Washington University in St Louis and National Renewable Energy Laboratory (NREL) have joined forces to develop nitrogen-fixing cyanobacteria as a source of fertilizer. Recently NREL used bioprospecting to discover natural strains of microalgae with desired traits (Schaedig et al 2024). The hypothesis of this work is that there is a diversity of cyanobacteria on the NREL campus and that by using nitrogen-deficient media we will be able to isolate nitrogen-fixing cyanobacteria. In this work, we isolated nitrogen-fixing cyanobacteria from water and soil samples collected on NREL campus. The growth of nitrogen-fixing cyanobacteria as well as the isolation and purification process of the algae were explored (Figure 1). DNA sequencing was used to identify the isolated strains. Lastly the future plan for this project, including the measurements of the N-fixing and chemical analysis of overflow metabolism in the strains at Alabama State University, will be discussed. This work was supported by the U.S. Department of Energy, Office of Science Energy Earthshot Initiative, as part of the Science Foundations for Energy Earthshot (DOE SFEE) Projects under grant number DE-SC0024702.

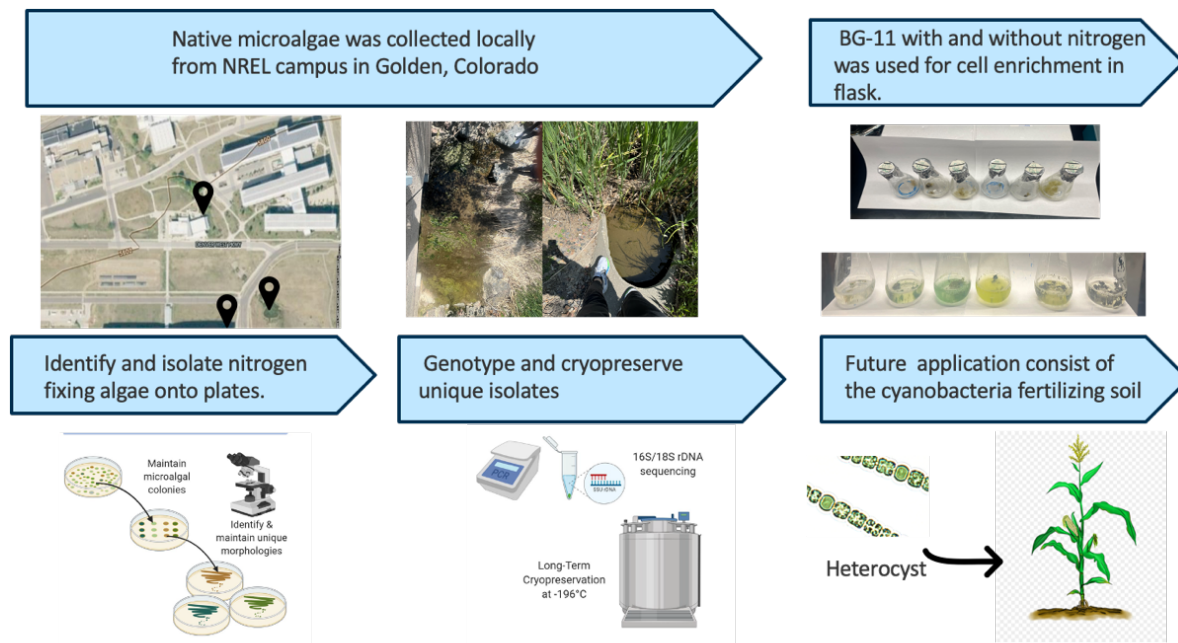


Figure 1. Scheme for isolating the N-fixing microalgae and cyanobacteria in Golden, Colorado.

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