A Multi-level “-Omics” Approach to the Study of the Growth Regulation of Methanotrophs
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AIMS AND OBJECTIVES

- Methane is a common industrial waste and potent greenhouse gas that can serve as a feedstock for methanotrophic bacteria. These bacteria can use methane to produce value-added products such as biofuels.
- A thorough understanding of the physiology and regulation of methanotrophic bacteria is imperative, including a more narrow focus on industrially relevant strains to analyze regulatory effects of further media refinement (i.e., nutrients available, copper concentration, acidic conditions, etc.).
- The multi-level “-omics” approach will demonstrate how different growth conditions affect the structure, function, and metabolism of the different species, leading to a more efficient optimization process for the production of the biofuels (alcohols, isoprenoids), biofuel precursors (isoprene), and other value-added products.

BACKGROUND

- Methane is a common industrial waste and potent greenhouse gas that can serve as a feedstock for methanotrophic bacteria. These bacteria can use methane to produce value-added products such as biofuels.
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RESULTS

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FUTURE DIRECTIONS

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FES PROJECT OVERVIEW

T01-P03 Bioconversion of Single-Carbon Effluents into Biofuels and Biofuel Precursors

The aim of this project is to develop a platform technology for the bioconversion of C1 compounds resulting from forestry activities (fermentation, thermal processing, anaerobic digestion) into biofuels (alcohols, lipids) and biofuel precursors (e.g. isoprenoids). This platform will be integrated in the greater context of biomass conversion by, for example, using by-product streams from other bioconversion activities (e.g. anaerobic digestion and pyrolysis) as feedstock.

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