

Microbiomes in Transition Seminar Series

Social Life of Microbes: Who is Eating Methane?

Presented by:

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ABSTRACT: The concept of community function in microbially-driven environmental processes is increasingly recognized. However, the details of partner selection and bases for their interdependence are lacking in most cases. Such partnerships appear to be involved in aerobic methane metabolism that is an important part of global carbon and nitrogen cycles. We are using Lake Washington methanotrophic communities as a model, to start to understand why and how bona fide methanotrophs share their hard-earned carbon with other bacteria. Through microcosm manipulation combined with metagenomic analysis we identify specific partnerships in methanotrophy, along with key factors in community assembly, such as oxygen partial pressures. Through manipulation of synthetic communities followed by transcriptomic analysis we identify at least one metabolic node at which community cross-talk takes place, the methanol oxidation step that involves alternative methanol dehydrogenase enzymes. Enzyme choice, in turn, appears to be determined by a number of environmental factors, such as oxygen and methane partial pressures, as well as the sources of nitrogen. Overall, our data shed new light on social lives of microbes involved in methane oxidation in natural habitats and highlight some of the metabolic links among the community partners.

MORE INFO: <http://depts.washington.edu/microobs/pLudmilaChistoserdova.php>

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