

Amy Rosenzweig

Title: *“Transport and biosynthesis of a novel copper-chelating natural product”*

Abstract:

Methanobactins (Mbns) are ribosomally-produced, post-translationally modified natural products that bind copper with high affinity. Some methanotrophs, bacteria that use methane as their sole carbon source, secrete Mbns as a means to acquire copper for their primary metabolic enzyme, particulate methane monooxygenase (pMMO). Genome mining has led to the identification and classification of operons encoding the Mbn precursor peptide as well as potential biosynthesis, transport, and regulatory proteins. These operons are found in a range of bacteria, including non-methanotrophs, consistent with a broader role in and perhaps beyond copper homeostasis. The known and predicted Mbn structures are diverse, but all Mbns characterized thus far bind copper with two nitrogen-containing heterocycles and two neighboring thioamide groups. Recent progress toward elucidating the roles of specific operon proteins in Mbn transport and biosynthesis will be presented.