

New microbial ecology results from genome centered metagenomics studies of iron carbonate and sulfidic hot springs

*Shawn E McGlynn¹, Lewis Ward², Takeshi Kakegawa³, Yuichiro Ueno¹, Mayuko Nakagawa¹

1. Earth-Life Science Institute, Tokyo Institute of Technology, 2. Harvard University, 3. Tohoku University

The ability to recover microbial genomes from metagenomic datasets has revolutionized how we understand microbial inhabitants in the environment, and is a powerful way to develop detailed hypotheses of community function and evolution. In this talk, I will discuss recent genomes we have recovered from two iron rich, carbonate hot springs in Japan, and contrast these to observations in low iron, sulfidic springs. Surprisingly, despite the different chemistry, some overall trends in phylogeny and physiology are observed, however water chemistry differences such as salinity and the availability of ferrous iron does alter the observed microbial inhabitants and physiologies.

These overall results will be discussed within the context of the possible ability to recognize microbial inhabitation on Earth through time.

Keywords: metagenomics, microbial ecology, geochemistry, geobiology

