

## Methanotrophic Bacteria: Challenging Fossils for Sustainable Growth

Marina G. Kalyuzhnaya<sup>†</sup>  
San Diego State University  
(1234@1234.com<sup>†</sup>)

Microbial methane utilization has been investigated for numerous industrial applications, ranging from the production of biofuels and chemicals to environmental remediation and metal leaching. Here we will present a novel methanotrophic bacteria, *Methylomicrobium alcaliphilum* 20ZR, which is becoming a prominent platform for production of chemicals, amino acids, organic acids and biofuels from wasted sources of natural gas and biogas. The microbe offers unprecedented growth parameters with methane or methanol as its sole source of carbon and energy. Here we present the development of novel tools for further engineering of the methanotrophic bacterium, including the development of a systems biology framework, a set of genetic tools, and synthetic biology approaches for enhancing methane conversions.