**Biogeochemical Constraints on Methanogenesis in a Subsurface, Recalcitrant Carbon Environment**

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**Abstract:** Different coal beds within or between basins contain different amounts of biogenic CH4, and little is known about the relationship between microbial community dynamics, turnover of recalcitrant carbon, aqueous geochemistry and CH4 concentrations. For example, competition between microbial sulfate reduction and methanogenesis drives cycling of fossil carbon and generation of CH4 in sedimentary basins; however, little is understood about the fundamental relationships between subsurface biogeochemical constraints and the impact on methanogenesis. Results will be presented on laboratory and field work that relate bacterial and archaeal population dynamics to sulfate and organic matter degradation.



**Biography:** Matthew Fields is a professor in the Department of Microbiology & Immunology at Montana State University (MSU) and also serves as Director for the Center for Biofilm Engineering. He is also an Adjunct Research Fellow at the National Center for Genome Resources in Santa Fe, NM. His laboratory uses molecular ecology, microbial physiology, and genomics to study microbial populations and communities associated with different environments important to groundwater, bioremediation, bioenergy, and health. Ultimately, a driving question is to understand the relationships between structure and function at different scales of biology. An improved understanding of structure/function relationships will allow predictive modeling and design for a variety of natural and engineered systems.

**When: Tuesday, October 23, 2018 at 4:00 pm**

**Where: EP252**