

Project # 50958

Bacterial:Fungal Interactions in Soil: Developing a mechanistic understanding of nutrient exchange between soil microbes and the resulting consequences for C/N cycling

Patrick S.G. Chain (PI)¹, Pilar Junier (Co-PI)²

¹Los Alamos National Laboratory, ²University of Neuchatel

Abstract:

Little is known about the interactions between bacteria and fungi and how they function in the cycling of carbon (C) and nitrogen (N) in soils. Here we seek to characterize at the molecular level the mechanisms through which bacteria and fungi cooperate synergistically or antagonistically to alter C and N cycling and how they might affect access to organic C/N for plants. We will employ metabolomic & proteomic resources provided by EMSL to determine the chemical mechanisms as well as the nature of secondary metabolites involved in cell-cell interactions and nutrient transfer shared between bacterial:fungal partners. Furthermore, we will link these phenotypic responses to the genome, utilizing transcriptome profiling afforded by JGI, to collect and understand a complete regulatory network involved in C/N cycling at the microbial level.