PROJECT TITLE: Genome integrity in archaea from geothermal environments

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Project Description

Micro-organisms (predominantly archaea) that have been recovered from acidic hot springs require unusually high temperature and low pH in order to grow. The Grogan lab investigates how these "extremophiles" maintain the integrity of their genomes under such harsh conditions. A 2019 WISE participant in this research would learn basic microbiological and DNA methods and use them to address questions about the genetic processes that occur inside Sulfolobus cells. For example, what enzymes help these cells cope with DNA damage? What are the genetic consequences of removing these enzymes? Does genetic fidelity vary among members of the same species? The research uses genetic manipulation and genetic analysis of Sulfolobus cells to uncover new information about molecular strategies that preserve archaeal genomes under extreme environmental conditions.