

Research Summary for Valerie Eckrich

First-Year Beckman Scholar (2013-2014), University of Nebraska-Lincoln. Having graduated in December 2014, Valerie will begin graduate school at the University of Nebraska Medical Center in the Department of Pathology and Microbiology in fall 2015.

Exceeding natural traits: evolution of hot acid resistance in a biomining organism.

Metallosphaera sedula is an important acidic thermophile that is useful in bio-mining applications and has the potential to be used in other industries like the ethanol and paper industries. The first aspect of the project is to understand how *M. sedula* adapts to life at extremely low pH and manipulating *M. sedula*'s acidic properties to maximize its industrial potential. The second aspect of the project is to understand how stress induced genes, the Virulence Associated Protein (VAP) genes, affect organismic survival when introduced to undesirable environments, like elemental uranium presence or further pH lowering.