**Management**: The research team will include Prof. Mikael Elias, Prof. Randall Hicks. Prof. Elias will be the project manager. The team assembled has unique, and complementary, skills necessary to achieve the goals of the project. The specific expertise of each team member is described below.

**Prof. Mikael Elias, PI,** is an Assistant Professor in the Department of Biochemistry, Molecular Biology and Biophysics at the University of Minnesota. Elias has over 10 years of research experience on enzyme interfering with bacteria, producing 4 patents and >30 articles on this topic alone, including in prestigious journals (*JACS*, *Nature, PNAS*) and extensive know-how in protein engineering where he pioneered methods, such as the use of ancestral methods. He will invest most of his time on the project, and perform experiments and data analysis. Additionally, he reviews data and meets with laboratory personnel on a daily basis to promote the projects. He also prepares the dissemination of results, such as the proposed conference and publications. As the PI of the project, Dr. Elias will oversee the entire project, design the experiment plans, and draft the project reports.

**Prof. Randall Hicks, co-PI** is a Professor of Biology at the University of Minnesota Duluth (UMD). Dr. Hicks is an environmental microbiologist who studies the diversity and productivity of aquatic microbial communities, and the survival and virulence of pathogenic microbes in these communities. Much of his current research focuses on biocorrosion. This work has taken him to the bottom of different great lakes using a manned submersible, to Russia, Africa and various oceans, but his current research is focused on the North American Great Lakes. He has published over 40 scientific journal articles and book chapters. Dr. Hicks brings several decades of organizational experience and expertise ranging from heading a large academic department (UMD Biology; 1998-2006), organizing an international scientific conference (IAGLR 2011), to directing a university center (UMD Center for Freshwater Research and Policy; 2007-2011).

**Organization**: the University of Minnesota has several missions: improve lives through research, education, and outreach. The University possess extensive facilities that ensure high research performance. In particular, for this project:

• Biotechnology Resource Center: (<http://www.bti.umn.edu/brc/index.html>) A wide variety of bench-scale to pilot scale fermenters is available, up to 500L, and will be used in this project to produce cost-effective biomaterials.

Elias Lab: 1,800 sq. ft. of renovated research space is dedicated to Dr. Elias. This space is located on the 1st floor of the GortnerLab Building, on the St Paul campus. Elias’s office space is adjacent to the laboratory. The lab contains all of the necessary equipment for molecular biology, biochemistry, protein production and purification, enzyme kinetics, and crystallography. Numerous facilities are available, such as microplate readers, spectrophotometers, scintillation counters, fplc, liquid nitrogen storage, -80 freezers, incubators/shakers, autoclave, as well as 4 and -20 rooms.

Hicks Lab: Dr. Hicks’s research laboratory is located in the research wing of the Swenson Science Building (SSB 171) on the University of Minnesota Duluth campus. In addition to research laboratories, this wing has special rooms for culturing, epifluorescence microscopy, tissue culture, equipment rooms, cold rooms, and variable temperature rooms. There is a support room on each floor that has an autoclave, dishwasher, and pyrogen-free Milli-Q water system. Dr. Hicks's laboratory (~1,200 ft2) is equipped for research in the areas of microbial ecology, organic geochemistry, and molecular biology and includes computers and special software for genetic and phylogenetic analyses. The Department of Biology is well equipped for microbiological, limnological, and molecular biology research. In addition, his laboratory and this project have access to DNA sequencing facilities at the University of Minnesota Biomedical Genomics Center and the Minnesota Supercomputing Institute for analysis of DNA sequence data generated by this project.

The collective research, organizational, and administrative experiences of the project team members and the resources available to this project from the University of Minnesota should ensure the successful completion of the proposed project goals.