Andrea M. Rocha
Graduate Student
University of South Florida
Major: Engineering Science

Faculty Advisor: Dr. P. Stroot and
Dr. A. Pyrtle (Co-advisor)

Program: Research Alliance in Math &
Science

Email: rochaam@ornl.gov
Home: amrocha@mail.usf.edu

Research Area: Genomics and Computational Biology

Redox biotransformation of metal contaminants is a promising strategy that has not been widely used in bioremediation efforts. Studies investigating redox biotransformation of metals have shown that several groups of bacteria are capable of reducing metal contaminants, particularly when environmental and physiological demands are met. *Shewanella*, a bacterium capable of utilizing a wide variety of compounds to meet its energy and growth requirements, is a potentially important model microorganism for bioremediation studies. In this study, the metabolic pathways of multiple strains of *Shewanella* will be reconstructed in order to characterize the metabolic capabilities of *Shewanella*. Metabolic pathway modeling software, Pathway Tools, will be used to reconstruct and model the metabolic pathways of the various strains of *Shewanella*. The results of this study will not only be used for generation of metabolic pathways, but also used for generating specific hypothesis regarding growth rates of *Shewanella* in natural sediments.

Research Mentors:
Dr. Nagiza Samatova and Dr. Tatiana Karpinets
Computational Biology Institute
Computer Science and Mathematics Division
Oak Ridge National Laboratory

(865) 241-4351
samatovan@ornl.gov and karpinetstv@ornl.gov