

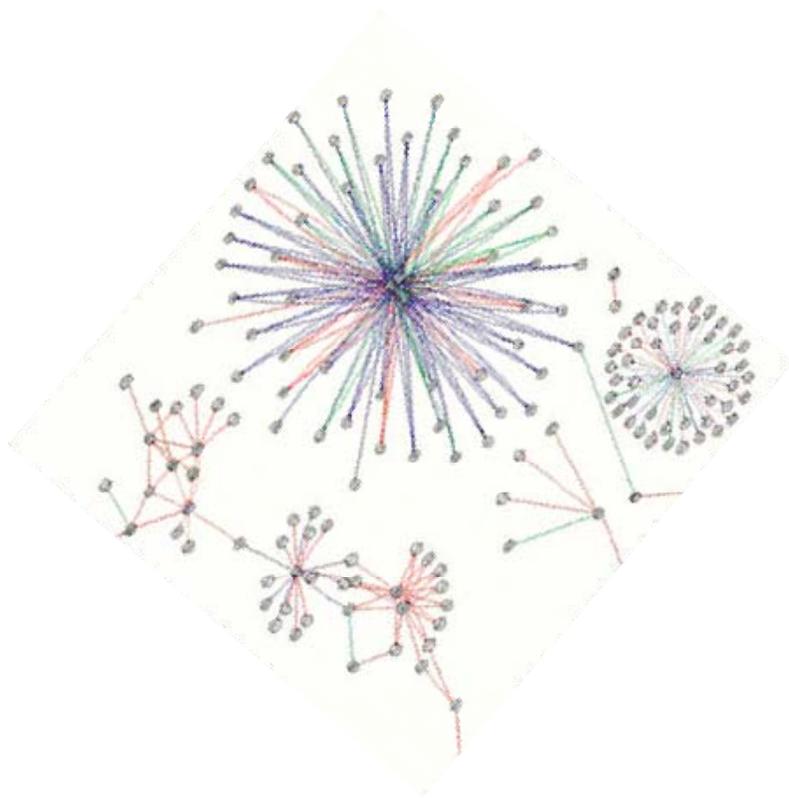
2008 RAMS Review¹

Presented by

Andrea M. Rocha
Mentor: Dr. Nagiza Samatova

**Research Alliance in Math and Science
Computer Science and Mathematics Division**

**December 3, 2008
Oak Ridge, Tennessee**



Andrea M. Rocha

- **Education:**

- **PhD Engineering Science (current), University of South Florida**
- **M.S. Ocean & Earth Sciences (2007), Old Dominion University**
- **B.S. Biology (2000), Texas A&M University – Corpus Christi**

- **Experience:**

- **Graduate Research & Teaching Assistant**
- **Environmental Technician, ENTACT LLC**
- **Undergraduate research assistant**
- **Undergraduate REU programs**

Andrea M. Rocha

- **Career objective:**
 - Career at a national lab or government agency
- **Doctoral research:**
 - Integrated computational – experimental approach to improving bioremediation efforts
 - Computational component: RAMS program
 - Experimental component: USF
 - Experimental design is based on results from RAMS research

2007 RAMS Internship

- **Project: “Towards Revealing the Relationships between Ecophysiological and Metabolic Characteristics of *Shewanella* Strains”**
 - Research was part of the *Shewanella* Federation and reconstructions published on the *Shewanella* knowledgebase
- **Research Objectives:**
 1. Characterize metabolic pathways of sequenced *Shewanella* species
 2. Evaluate relationships between metabolic capabilities and ecophysiological characteristics of these species

Outcomes

- **Skills gained from project & RAMS workshops:**
 - PathoLogic Software[®]
 - Pathway Tools Software[®]
 - HTML web development
- **Potential collaborators:**
 - **DOE: Genome to Life meeting**
 - Sponsored by Dr. Nagiza Samatova
 - Introduced to members of the Shewanella Federation
 - Learned about current work with Shewanella

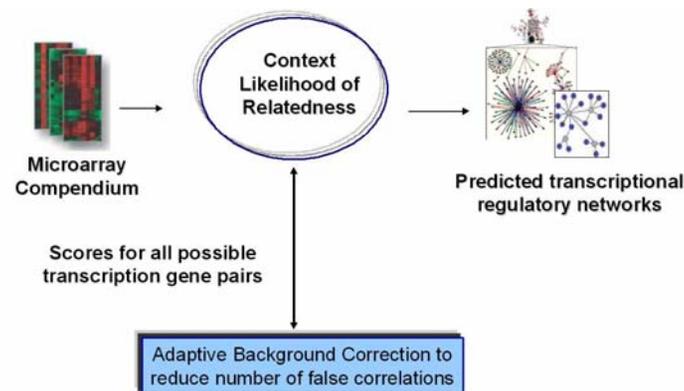
Outcomes

- **Conferences**
 - **Society for the Advancement of Chicanos and Native Americans in Science (SACNAS) National Conference (October 2007), Kansas City Missouri.**
 - **International Microbial Genome Conference (September 2007), College Park, Maryland.**
- **Manuscript in preparation**
 - **Target journal: BMC Bioinformatics**



2008 RAMS Internship

- **Project: “Reconstruction of Transcriptional Networks of *Shewanella oneidensis*”**
- **Research Objectives:**
 - 1. Evaluate two systems-based algorithms, cMonkey and Context Likelihood of Relatedness (CLR), in predicting transcriptional gene response**
 - 2. Identify potential microbial cellular response to environmental perturbations in a model organism**



2008 outcomes

- **Skills gained from project & RAMS workshops:**
 - **Linux server: first time**
 - **Programs:**
 - **R: A programming environment for data analysis and graphics**
 - **Mat Lab**
- **Conferences**
 - **Fall Creek Falls Conference (September 2008)**
 - **Society for the Advancement of Chicanos and Native Americans in Science (SACNAS) National Conference (October 2008), Kansas City Missouri.**

RAMS outcomes

- **Gained valuable research and work skills**
- **Gained knowledge about research conducted in various divisions at ORNL**
- **Recognized for outstanding work**
 - **USF's Successful Latina Student Award**
 - **Article published on my internship on Universities website and student newspaper**
- **Developed a strong portfolio which helped compete for fellowships**
 - **GEM Consortium Fellowship**

