A Laboratory Information Management System
For Protein Complex Research

The Department of Energy's Genomics: GTL Program number one goal is to identify and characterize the complete set of protein complexes within a cell to provide a mechanistic basis for the understanding of biochemical functions. The Department of Energy hopes to discover ways the microbe can be used in areas such as energy production and environmental restoration. The Oak Ridge National Laboratory (ORNL) is one lab among many that has a major role in helping the Department of Energy to reach its goal. ORNL project within this program is the Genomics: GTL Center for Molecular and Cellular Systems (CMCS). Its focus is on the development of new capabilities for complex isolation, molecular level identification of the complexes, characterization of the complexes in living cells using imaging techniques, and critical bioinformatics and computing capabilities. Their goal is to develop high throughput methods to characterize protein complexes from microbial cells. The CMCS has developed a comprehensive laboratory information management system (LIMS) for sample tracking, process management, and data control. The LIMS system enforces project standards, while integrating project data and providing data security The LIMS system supports the ORNL Center for Molecular and Cellular Systems. In this project the LIMS was used to develop a clone stock inventory system. The clone stock system will be used to assist the researchers in project planning and will lead to improved operational efficiency, and quality assurance. It will also aid in maintaining a detailed record of each sample used throughout the project. A requirement of the system was that it was to be accessible from within the LIMS application as well as the web. To create the clone stock system a data modeling system was used to link all tables required in an Oracle database. Once the tables were identified the queries were created and linked into a report generator which allows reports to be created from the LIMS application. The same query modules were implemented in Perl scripts to create dynamic web pages that enable internet access to the clone stock system.

Students Name:	**Tanika Rand**
School Student Attends:	Fisk University
Name(s) of mentor(s):	**Denise Schmoyer**
Division:	Computing & Computational Sciences
Program:	Research Alliance in Mathematics and Science (RAMS)