

Poster

Cold Spring Harbor Meeting, May 2001

TMGC:Mutrack, A Collaborative Database for Phenotype Screening in the Tennessee Mouse Genome Consortium**Erich Baker^{1,3}, Barbara Jackson¹, Gwo-Liang Chen¹, Denise Schmoyer¹, Jay Snoddy^{1,2,3}, and the Tennessee Mouse Genome Consortium.**¹Oak Ridge National Laboratory ²Univ. of Tennessee Center of Excellence in Genomics and Bioinformatics ³UT-ORNL Graduate School of Genome Science and Technology<http://www.tnmouse.org>

The Tennessee Mouse Genome Consortium (TMGC) is a collaborative research effort of several researchers and research institutions. It has recently been funded to examine the neurological phenotypes of ethyl-nitrosourea (ENU)-induced mutations in the laboratory mouse. TMGC:MuTrack, an On-Line Transactional Database (OLTP), was developed to maintain an integrative data infrastructure among the geographically disparate experimentalists within the TMGC. The requirements for MuTrack v1.0 include that the system must: (1) allow individual researchers the ability to upload information into a central database; (2) track mice and sample flow; (3) analyze information for statistical anomalies for the purposes of uncovering possible mutations; (4) statistically analyze for quality control, assurance, and improvement; (5) allow users (including external users) to view, search, and retrieve queried information on-line; and (6) eventually send data to appropriate mouse strain databases and community databases that support On-Line Analytical Processing (OLAP) and data mining. The production version of MuTrack can be accessed through web pages and is designed to accept and curate data on the location, health status, and experimental progress of thousands of mice, tissue samples and other specimens through senescence and long term storage. User interfaces for the MuTrack database are accessible through web browsers and are created primarily with PHP that creates the front-end to an ORACLE8i database. The system allows for public reference of stored data and password-protected access for researchers who can upload structured data through pre-planned forms or as text files in the comma-separated value (CSV) format. MuTrack monitors experimental results by automating statistical analysis on presented data and communicates statistical anomalies to collaborators. The bioinformatics approach taken by MuTrack and other OLAP and OLTP systems we are developing ensures that we will have the necessary web-based information systems in place to succeed in building up networks of collaborating scientists to attack large-scale problems in biological research.

The TMGC includes Vanderbilt Medical Center, Meharry Medical Center, Univ. of Tennessee, East Tennessee State Univ., Univ. of Memphis, ORNL, and St. Judes Children's Research Hospital.

Research sponsored by the National Institutes of Health and, in part, by the US Department of Energy under contract DE-AC05-00OR22725 with UT-Battelle, LLC