

## MOUSE GENETICS RESEARCH FACILITY

For over 50 years, the Mouse Genetics Research Facility (MGRF) at Oak Ridge National Laboratory (ORNL) has attracted a highly qualified staff of mouse geneticists and molecular biologists who use its standard and mutant strains of laboratory mice for basic research in analyzing gene function and identifying mouse models of human genetic disease. In May 2004 the MGRF opened a new, 36,000-ft<sup>2</sup> vivarium on the main ORNL campus at ORNL. This new vivarium, the William L. and Liane B. Russell Laboratory for Comparative and Functional Genomics, is being operated by Bionetics, Inc., as a specific-pathogen-free barrier facility with a capacity for 60,000 mice. Mouse strains, rederived from the transfer of two-cell stage embryos, are housed in ventilated racks with automated watering systems; basic husbandry is provided by certified technical staff.

### RESEARCH CAPABILITIES

Expertise in mouse genetics is provided by highly trained research staff and technicians, many with decades of experience in all phases of experimental design, mutagenesis, transgenesis, phenotyping, cryopreservation of embryos and germ cells, and data management. The mouse program is also part of an integrated and multidisciplinary functional-genomics team working towards discovering genes and the functions of genes in the mouse genome. The investigators also pursue specific areas of interest using mouse models (<http://bio.lsd.ornl.gov/mgd/>). MGRF team members have a wide range of computational and analytical expertise that can be brought to bear on questions of nucleic acid and protein structure and function, biochemical pathway analysis, gene mapping and cloning using genetic and molecular techniques, and the tailoring of mouse mutations to specific needs.

### RESEARCH OPPORTUNITIES

The resources of the MGRF are available to users both off site and on site. Off-site users may obtain live mice, embryos, sperm, or nucleic acids from mouse strains of their choice via ORNL's Mutant Mouse Database (<http://bio.lsd.ornl.gov/mouse/>) for a cost-recovery fee. Off-site users may also request collaborations or fee-for-service arrangements to have ORNL staff perform genetics experiments, including customized breeding, specific genetic alterations using a variety of molecular or whole-organism techniques, exposure-response testing, or the application of specific technologies such



*Aerial view of the new William L. and Liane B. Russell Laboratory for Comparative and Functional Genomics (upper right), ORNL's new facility for research in mouse genetics.*

as DNA microarray analysis or microCT scanning. Long-term collaborations for the utilization of the facility capacity and for the adaptation of the space to meet specific needs can be arranged.

Users who want to come to ORNL to perform their own experiments with assistance from ORNL staff should feel free to discuss their ideas with MGRF staff using the contact information below. General information about access to ORNL User Facilities is available through ORNL's Technology Transfer and Economic Development web site ([www.ornl.gov/adm/tted/UserFacilities.htm](http://www.ornl.gov/adm/tted/UserFacilities.htm)).



*Changing cages under a hood.*

*Inside the new MGRF.*



*Mouse cages in ventilated racks.*



*A "job description" can often be assigned to a gene by determining what changes occur in a live mouse when the gene is mutated. These mice carry different mutations in a single gene involved in coat color and in susceptibility to obesity, diabetes, and tumors.*