Rodent Portfolio of
The Division of Comparative Medicine
ORIP/DPCPSI/OD

National Gnotobiotic Rodent Resource Center

Mutant Rat Resource

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The Division of Comparative Medicine
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MMRRC
Mutant Mouse Regional Resource Centers supported by NIH

Peromyscus Genetic Stock Center

The Jackson Laboratory

MMR
SMSR

RRRC Rat Resource & Research Center

KOMP2 Program
Knockout Mouse Production and Cryopreservation

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Division of Comparative Medicine
DCM supports the biomedical community through grants that fund research resources and projects designed to create, characterize and distribute a broad array of high-quality animal and animal-related models.

Rodents are the primary species used in research, comprising 67% of all animals used in biomedical research and testing. Nearly half of all NIH-funded research uses rodents.

- **Rodent repositories/distribution facilities** (animals, embryonic stem cells, frozen embryos, sperm and other biomaterials for rodent research) U42, P40, N02, R24
- **Resource-related grants** to develop new methodologies for creation of genetically modified animals and germ cells; cryopreservation research U42, P40, R24, R01, R21, SBIR/STTR
- **Investigator-initiated grants** in biomedical research utilizing rodent models of human diseases R24, R01, R21
- **Conferences and scientific meetings** (rodent-related research and training) R13
Rodent-related Budget at DCM

FY 2012:
Total DCM budget: $181.5M
Rodent-related: $32.7M

Primate Centers P51
$85.5M

Resource Centers P40/U42
$26.3M

Resource-Related Research Grants R24/U24
$28.4M

Research Grants R01/R21
$7.9M

Training & Career Development, K&T
$1M

11.1M*
Rodent Resources

- **Mutant Mouse Regional Resource Centers** at The Jackson Laboratory, University of Missouri, University of California, Davis and University of North Carolina

- **MMRRC Informatics, Coordination, and Service Center** at UC Davis

- **Knockout Mouse Project Repository 1 (KOMP1)**

- **KOMP2 Production and Cryopreservation Centers**: DTCC Consortium (UC Davis-Toronto-CHORI-Charles River), The Jackson Laboratory and BaSH Consortium (Baylor College of Medicine with the Wellcome Trust Sanger Institute and the Medical Research Council Harwell, England).

- **Peromyscus Genetic Stock Center, University of South Carolina**

- **National Gnotobiotic Rodent Resource Center, UNC School of Medicine**

- **Preparation and Distribution of Adult Stem Cells at Texas A&M Health Science Center**

- **Special Mouse Strains Resource**

- **Mouse Mutant Resource**

- **Cre Driver Strain Resources**

- **Rat Resource and Research Center, University of Missouri**

- **Resource for Rat Genetic Models of Aerobic Capacity at the University of Michigan**

- **Mutant Rat Resource at UT Southwestern**
Rat Resource and Research Center (RRRC)
E. Bryda, University of Missouri

Supports research of PIs funded by 14 NIH ICs

320 strains/stocks/cell lines

- Statistics for 2012: ~100 strains shipped to 44 different institutions
- Offers rat ES cell lines, continues characterization of additional cell lines from several rat strains
- Establishes/distributes efficient cell maintenance protocols
- Tracks animal and disease model use
- Develops new technologies (ZFNs and TALENs)
- Develops disease models
- Collaborates with other NIH ICs (NIDA, NIAAA, NHLBI, NHGRI, NEI)
Rodent Model Research Projects (R01, R21, R24)

Examples of current DCM supported rodent model research grants:

- New approaches for germplasm cryopreservation (R01, P. Mazur)
- Modulation of epigenetic reprogramming during gestation (R01, M. Ramalho-Santos)
- Approaches for modeling of human mitochondrial diseases in mice (R01, M. Alexeyev)
- Murine norovirus 4, an Emerging Pathogen in Murine Models of Inflammatory Bowel Disease (R01, L. Maggio-Price)
- Derivation, propagation and genetic modification of rat ES cells (R01, Q. Ying)
- Development of rat sperm cell cryopreservation procedures (R21, A. Yuksel)
- Development of the effective sequence capture/sequencing pipeline for characterization of spontaneous mutants (R21, L. Donahue)
- Integration and function of iPS cell-derived progeny in normal tissues (R21, R. Pedersen)
- Rat sperm Stem Cell Libraries for biological research (R24, K. Hamra)
- Develop and distribute comprehensive Cre strain resources (R24, S. Murray)
Future Development of the Rodent Portfolio

- in search of better rodent models

- Enhanced genotypes
- Systematic phenotyping
- Envirotpe modelling
- Regenerative medicine
- Personalized rodent models

- To support continued access to and availability of the highest quality-disease free and genetically defined rodent models for biomedical research

- To foster collaborative relationships between rodent resources and other comparative medicine programs

- To promote and facilitate the development of partnerships with other NIH categorical Institutes and Centers to pool resources and develop trans-NIH initiatives

- To continue creation of the informatics system related to animal models that will allow identification and evaluation the utility of the current model resources

- To develop new programs to improve existing rodent models and create new ones aimed at understanding disease mechanisms and developing effective preclinical evaluation of new treatments

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