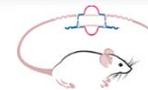


Rodent Portfolio of The Division of Comparative Medicine ORIP/DPCPSI/OD



KOMP2 Program
Knockout Mouse Production and Cryopreservation



**National Gnotobiotic Rodent
Resource Center**



Mutant Rat Resource



Oleg Mirochnitchenko, Ph.D.



Rodent-related Programs at DCM

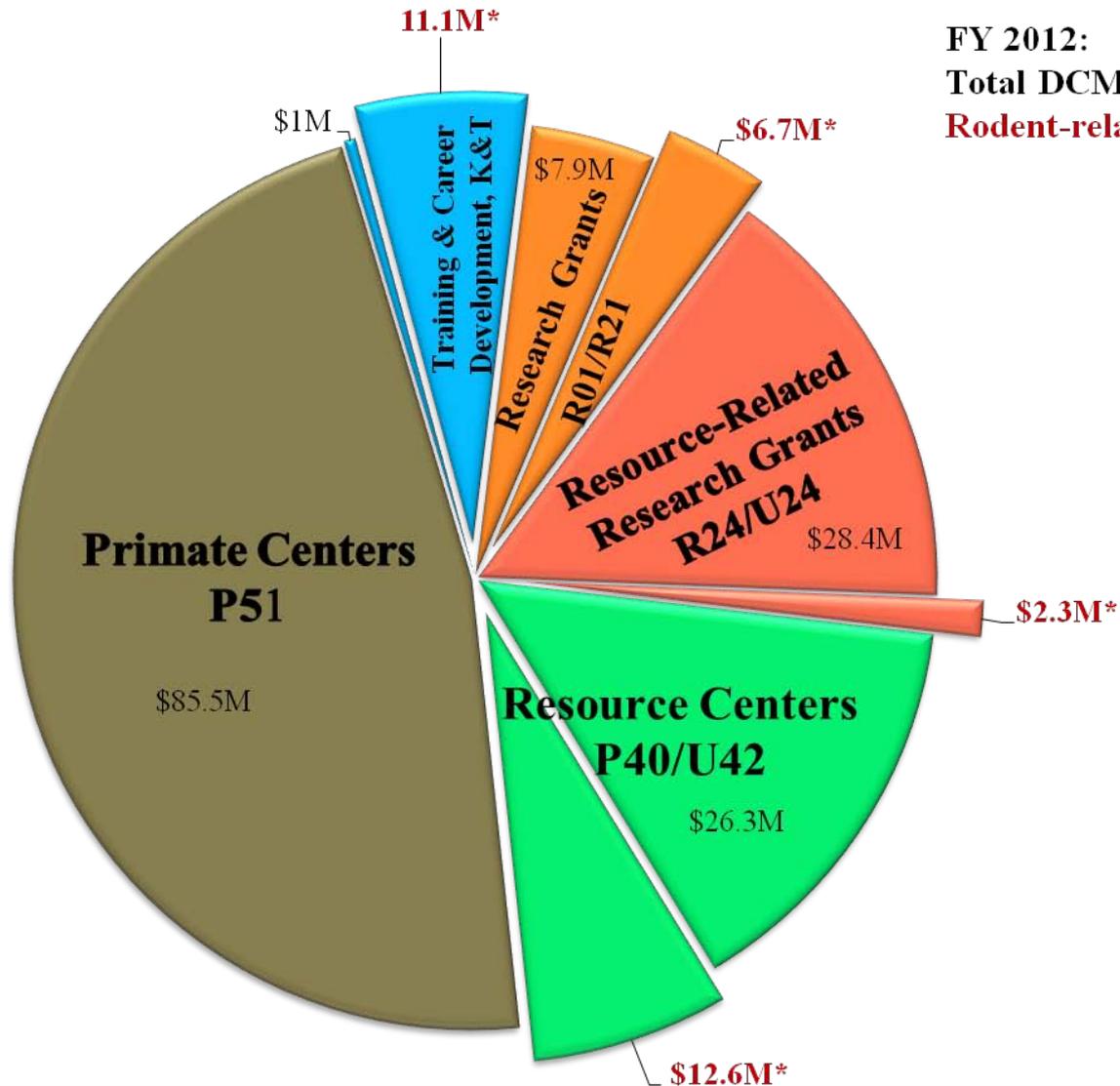
DCM supports the biomedical community through grants that fund **research resources and projects designed to create, characterize and distribute a broad array of high-quality animal and animal-related models.**

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

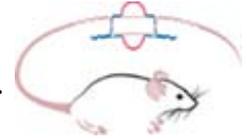


Rodent-related Budget at DCM



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

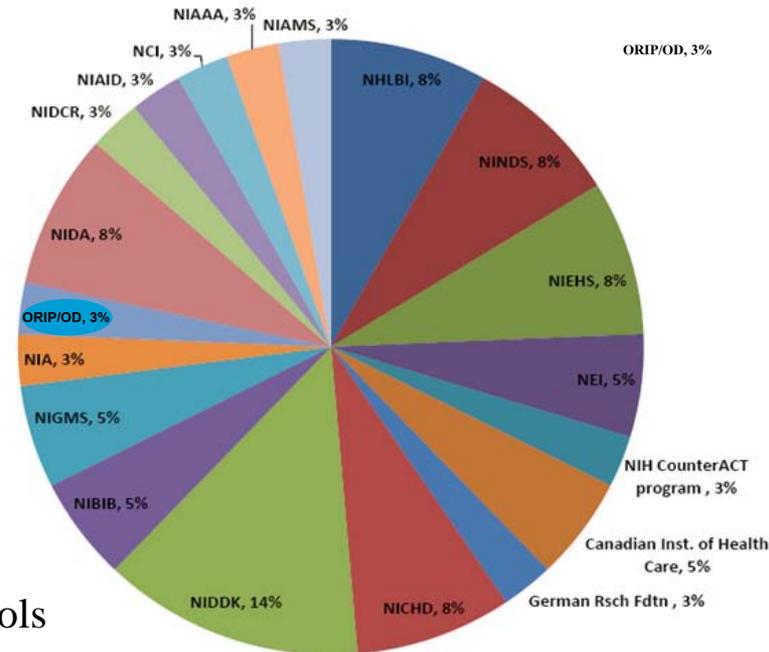


Supports research of PIs funded by 14 NIH ICs

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)
- Developments disease models
- Collaborates with other NIH ICs (NIDA, NIAAA, NHLBI, NHGRI, NEI)

RRRC Requesting Investigator Funding Sources



Rodent Model Research Projects (R01, R21, R24)

Examples of current DCM supported rodent model research grants:

- New approaches for germlasm 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

Envirotype 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

