

Rat Models for Complex Disease: Using Phenotypes to Identify Disease Models.



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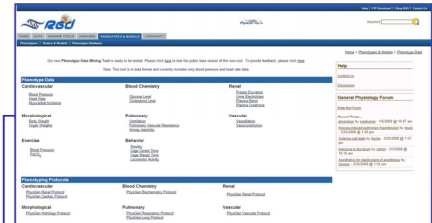
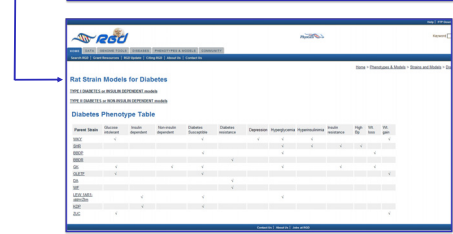
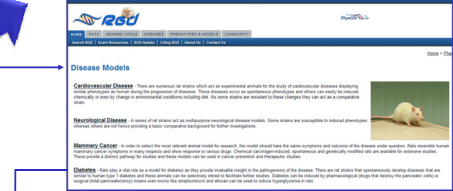
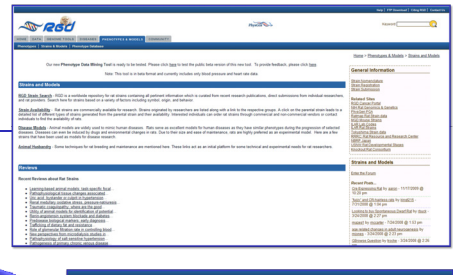
ABSTRACT

In recognition of rat as a premier model for the study of complex disease, the Rat Genome Database (RGD, <http://rgd.mcw.edu>) is developing multiple components which provide better access to phenotype data, facilitate comparison across strains and provide investigators with the information needed to select the model which most closely mimics human disease traits. The three primary methods used by RGD to define rat models for human disease are 1) to gather large phenotype datasets and map these traits to ontologies, 2) to create strain "medical records" and 3) to link phenotype to genotype using ontologies. The Phenotypes and Models portal was created to provide an entryway for physiologists to the genomic and phenotype information available at RGD. This portal provides access to a broad range of phenotype data as well as strain information, including a new strain "medical record", and the new phenotype data mining tool. The new strain medical record is designed to provide general, genomic and baseline physiological data for each strain. To provide a point of reference, the baseline physiological data ("vital signs") for each strain is compared against the mean values for a group of commonly used strains. The medical record also includes a high level view of additional available data, including specific phenotypes which define the strain as a disease model. These new features provide tools to assist investigators in identifying rat models with phenotypes that closely match those found in human disease. The features and resources within the Phenotypes and Models portal extend the effort to link phenotype and genotype data to assist users in choosing appropriate model strains for studying disease.

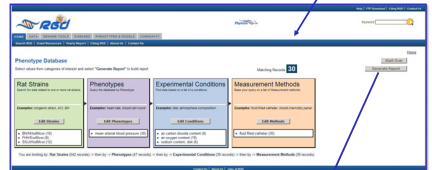
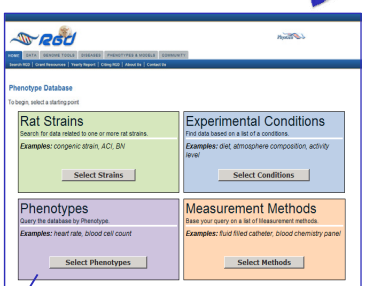
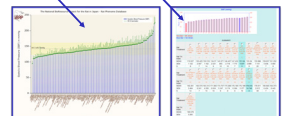
<http://rgd.mcw.edu>



Strains & Models
This branch of the Phenotypes & Models portal provides access to detailed information about strains, identifies disease models, and offers techniques for colony maintenance and strain development.

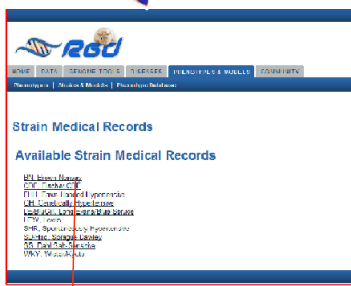


Phenotypes
Summarized data for traits and detailed methods are available through this branch of the Phenotypes & Models portal.



PhenoMiner
This new tool uses multiple ontologies to integrate physiological data and provides a method to query the available data by rat strain, phenotype, experimental conditions and measurement methods.

Phenotype	Strain	Sex	Value	Units	Condition 1	Condition 2
mean arterial blood pressure (MABP)	BN	male	102.0	mmHg	at 10 weeks of age	at 10 weeks of age
mean arterial blood pressure (MABP)	BN	female	102.0	mmHg	at 10 weeks of age	at 10 weeks of age
mean arterial blood pressure (MABP)	BN	male	102.0	mmHg	at 10 weeks of age	at 10 weeks of age
mean arterial blood pressure (MABP)	BN	female	102.0	mmHg	at 10 weeks of age	at 10 weeks of age
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mean arterial blood pressure (MABP)	BN	male	102.0	mmHg	at 10 weeks of age	at 10 weeks of age
mean arterial blood pressure (MABP)	BN	female	102.0	mmHg	at 10 weeks of age	at 10 weeks of age



Strain Medical Records
The new strain medical records provides a systematic overview of models commonly used to study disease, including general characteristics (physical features, growth), phenotype data, and available SNP, QTL and microarray data for each strain.

