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The National Bio-Resource Project for the Rat in Japan

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This rat project is a part of the National Bio-Resource Project for more than 20 species including animals, plants, microbes, tissues and DNAs. It was founded by the Ministry of Education, Culture, Sports, Science and Technology (Monkasho), in Japan. The work started from July 1, 2002 and will continue for a period of 5 years. Institute of Laboratory Animals, Graduate School of Medicine, Kyoto University, is the central facility. The purpose of this project is to facilitate the availability of genetically and phenotypically standardized rat strains for experimental research. Closest attention will be given to Japanese derived strains but also rat strains from outside Japan will be taken into this repository. The resource is available to biomedical scientists worldwide.
Objectives of the rat project are:

1. Collection and supply of rat strains.
   More than 200 rat strains are supposed to be integrated within the first five years of this project. Those strains will be reference strains, derived from spontaneous mutations and/or developed by classical breeding techniques, such as congenic and recombinant inbred strains. In dependence of the progress for artificially designed rat strains (mutagenesis, rat ES cells, etc.), the number of strains introduced into this repository will be markedly increased.
2. Sperm and embryo cryopreservation and their supply
   Embryos of rat strains collected will be cryopreserved in a network of affiliated institutions. Supply for interested researchers will be given at the minimum real costs.
3. Genomic profiling
   In the first step, about 300 microsatellite markers will be examined. The markers will mainly be derived from the profiling data of the 48 strains at Rat Genome Database (RGD http://rgd.mcw.edu). In the future, single nucleotide polymorphisms (SNPs) will be added to the database.
4. Characterization of the phenotypes
   All strains will be checked for a standard of physiological, biochemical and behavioural parameters. More specific data according to the strain's phenotype will also be integrated.
5. Database
   A publicly available database (Internet) of all collected strains and achieved data will be developed.

The embryo/spermatozoa bank and the associated database will become a unique and important tool in the field of functional genomics for the rat research community. Until now, there is no comparable rat resource worldwide. This project also preserves genetic material for future research as well as it propagates and supports rat research activities at all. The exploration of the human genome, mainly in terms of functional genomics, is strongly supported by animal experimentations and this Rat Bio-Resource Project is one link to this.