Rat survey may help identify human disease genes

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Almost all human genes known to be associated with diseases have counterparts in the rat genome.

A survey of genetic variation in laboratory rats which may help identify human disease genes is published this week in *Nature Genetics.*

A consortium of European laboratories, including Professor Dominique Gauguier at the Wellcome Trust Centre for Human Genetics, University of Oxford, has published a survey of genetic variation in the laboratory rat.

This survey is based on three million single nucleotide polymorphisms (SNPs) and represents a solid foundation for disease gene discovery in rats and for translating research findings to patient care.

Areas in which rat models have already helped to advance medical research include: cardiovascular diseases (hypertension); psychiatric disorders (studies of behavioral intervention and addiction); neural regeneration; diabetes; surgery; transplantation; autoimmune disorders (rheumatoid arthritis); cancer; wound and bone healing; and space motion sickness.

When the complete rat genome was sequenced in 2004, it was confirmed that almost all human genes known to be associated with diseases have counterparts in the rat genome, confirming that the rat is an excellent model for many areas of medical research.

The discovery of over three million SNPs in the rat genome and the characterization of genetic polymorphism for 20,000 of them provide crucial resources for identifying genes underlying complex traits relevant to human disorders.

This research is published in a special issue of *Nature Genetics* along with a community view on rat genetics and other papers reporting findings linking rat genomic studies to human genetics. This demonstrates the importance of rat genetic and genomic research in modern biomedical genetics.

Source: University of Oxford