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North American Conditional Mouse Mutagenesis Project: High Throughput Mammalian Functional Analysis for the Discovery of Novel Determinants of Human Disease

Status	Current
Competition	III
Sector	Health
Genome Centres	Genome Prairie & Genome Alberta
Project Leaders	Geoff Hicks & Janet Rossant

Project Description

Knock-out mice are model organisms in which specific genes have been inactivated. These model organisms make it possible to understand the role of genetic changes in the development of human diseases. The International Knock-out Mouse Project is a worldwide effort to generate knock-out mutations in every gene in the mouse genome – and is widely considered to be the next most important step following the Human Genome Project.

Dr. Geoff Hicks, a cancer biologist at the Manitoba Institute of Cell Biology, a joint institute between CancerCare Manitoba and the University of Manitoba, and Dr. Janet Rossant, a developmental biologist at the Hospital for Sick Children, are project leaders of North American Conditional Mouse Mutagenesis Project: High Throughput Mammalian Functional Analysis for the Discovery of Novel Determinants of Human Disease.

As a major contributor to the International Knock-out Mouse Project resource, this project aims to identify and characterize the functions of mouse genes. The team led by Drs. Hicks and Rossant will establish cell lines in which all mouse genes of interest are knocked out and will make them available to the scientific and biotech communities. In addition, the team will establish cell-based and computer-based applications linked to target genes associated with disease, and will establish a distribution centre making so that Canadian biomedical research projects, whether public or private, can more easily benefit from this knowledge base.

The genetically altered cell lines developed by this project will allow researchers to address the exact role of genetic changes in the development of specific human diseases. This in turn is expected to accelerate the rate at which new medical discoveries are translated into possible therapeutic interventions, and then moved into health care delivery.