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## Functional Genomics and Proteomics of Model Organisms

<b>Status</b>	Past
<b>Competition</b>	I
<b>Sector</b>	Health
<b>Genome Centre</b>	Ontario Genomics Institute
<b>Project Leader</b>	Janet Rossant, Brenda Andrews, Jack Greenblatt and Andrew Spence

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### Project Description

Our project aimed to provide a comprehensive view of protein and genetic interactions in biomedically important model systems – bacteria, yeast, worm, and mouse.

- For the **bacterial, yeast and worm components**, we used a variety of cutting-edge functional genomics approaches to define gene function in model eukaryotic organisms and characterize novel protein complexes in bacteria and yeast. We anticipate that our genetic network and other yeast functional genomics projects will lead to both a better understanding of the basis of genetic disease and also the discovery of new compounds that might be useful in the treatment of proliferative disorders such as cancer.
- The **Functional Annotation of the Mouse Genome** project has moved Canada's mouse genomics to the forefront of this rapidly growing and increasingly important field. Our team has generated mouse models for human conditions such as kidney disease and osteoporosis, developed new tools to help characterize Canada's mutant mice, and established new mouse cell lines that are in high demand by academic and industrial investigators worldwide.
- The **Mammalian Protein-Protein Interactions** project team developed high-throughput approaches to quantitatively assess protein-protein interactions in mammalian cell systems. Because most regulated cellular processes are carried out by complex protein-protein interaction networks, the underlying cause of many human diseases can often be traced to mutations that interfere with the assembly or function of these networks.

With the successful completion of this program, these approaches now promise to provide major insights into human pathologies and highlight effective targets for therapeutic development.

## **Fast Facts**

**Highlighted outcome:** major insights into the molecular causes of a wide range of human diseases and new targets for drug and biomarker development

**Number of research personnel employed by the project:** 191

**Number of peer reviewed publications published:** 98 referred papers (including Nature and Science), 17 invited reviews, 3 book chapters or contributions to a collective work, and over 385 invited presentations

**Patents:** 1 provisional patent, 1 patent filed, 2 published patents, 1 commercial license in place, and 4 companies formed (MDS-Proteomics, Affinium Pharmaceuticals, Virtek Proteomics, and Mycota BioSciences)