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## Projects in Functional Genomics Using Model Organisms

<b>Status</b>	Past
<b>Competition</b>	Competition I
<b>Sector</b>	Health
<b>Genome Centre</b>	Genome Quebec
<b>Project Leaders</b>	Howard Bussey and Stephen Michnick

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### Project Description

With the completion of the yeast genome sequence in 1996, and the use of this information to construct a set of mutants singly disrupted in every yeast gene, the stage was set for a large-scale genetic analysis of this model organism.

Understanding the topology of genetic networks and their functional order may enable human geneticists to develop new approaches for identifying disease genes associated with complex traits.

Our group collaborated with the groups of C. Boone and B. Andrews at the University of Toronto to extend existing work on genetic interactions by building a yeast genetic network. We used 'double mutants' to examine the network of genetic interactions in yeast.

The traditional problem with such work was that double mutants are relatively infrequent and there was no way to explore them systematically. With the complete set of yeast mutants available, the possibility to automate yeast genetics and map all interactions existed and we set out to do this.

As a Canadian consortium we have put together the largest yeast genetic network so far assembled and this work has placed us on the international stage in this new and exciting area of genomics.

This work was well received by the genomics community internationally and was published in the high-profile journal *Science*, where it was accompanied by a "Perspective" by Lee Hartwell, a Nobel Laureate and a pioneer in the area of genetic interactions. Our paper has had a major impact in functional genomics and to date has been cited by 213 other published research papers.

## **Fast Facts**

### ***Highlighted outcome:***

Canadian consortium was developed to gather the largest yeast genetic network so far assembled, work that has placed the group on the international stage in a new and exciting area of genomics

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

10

### ***Number of peer reviewed publications published:***

6 peer reviewed papers, including one in *Science*, which was accompanied by a “Perspective” by Lee Hartwell, a Nobel Laureate and a pioneer in the area of genetic interactions, and has been cited by 213 other published research papers