



Another project brought to you by **GenomeCanada**

Proteomics and Functional Genomics: An Integrated Approach

Status	Past
Competition	Competition II
Sector	Health
Genome Centre	Ontario Genomics Institute
Project Leaders	Brenda Andrews & Cheryl Arrowsmith

Project Description

Our Genome Canada project was a large-scale “basic science” research endeavour. Our goal was to use functional and chemical genomic approaches to establish a comprehensive description of the biology of the budding yeast *Saccharomyces cerevisiae*. We developed platforms to exploit this simple model organism to both discover drug targets and understand the genetic basis of complex disease.

Mainly, our work was concerned with using a variety of cutting-edge functional genomics approaches to define gene function and to probe the mechanistic basis for drug action and the characterization of novel, unknown and microbial proteins.

In our structural biology efforts, we identified the biochemical function of these proteins and made hypotheses about their cellular role in microbial cells. This new information has greatly extended our fundamental knowledge about microbial biology and created an experimental basis for the development of novel anti-microbial drugs and biotechnological processes by Canadian biotech industry.

Our research team has made many important contributions to Canadian and Canadian-led scientific, commercial and educational enterprises. For example, project co-leaders Aled Edwards and Cheryl Arrowsmith co-founded Affinium Pharmaceuticals, Mike Tyers co-founded MDS-Proteomics and Charles Boone is a co-founder of Mycota Biosciences, which was recently bought by Merck.

Our project has produced reagents and has led to the development of technologies that have already produced patents, and have attracted investment from the industrial sector. For example, our work inspired Singer Instruments to develop a table-top arraying robot which is now being purchased by labs around the world. Our expertise in array-based genetics inspired our collaborator, Sasan Ragabazidah to found a new company, S&P Robotics, which markets a second-generation arraying robot which was prototyped in our laboratory. The team continues to identify significant market opportunities arising from the project.

Fast Facts

Highlighted outcome: genomic datasets and techniques important to human drug development, including large number of purified proteins, and technologies to make protein production and structure determination proceed more quickly and economically

Number of research personnel employed by the project: 50

Number of peer reviewed publications published: 61 journal articles, 25 reviews or contributions to books, and 364 invited presentations

Number of patents in process or obtained: 2 published, 1 filed, and 1 provisional

Commercialization: 1 commercial licence in place and 4 companies formed