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## Integrative Genomics for Women's Health

<b>Status</b>	Past
<b>Competition</b>	II
<b>Sector</b>	Health
<b>Genome Centre</b>	Genome Quebec
<b>Project Leader</b>	Mario Filion

### Project Description

An important aspect of the Human Genome Project lies in its promise for better understanding and treatment of human diseases. The more we know about the genes that underlie disease, the more skillfully we can devise new treatments. We aim to use the methods of genomic science to find new ways to diagnose and treat three major threats to women's health: osteoporosis, breast cancer and ovarian cancer. We work closely with a new company, *Alethia BioTherapeutics*, which was created especially to speed the practical use of our research.

The goal of our osteoporosis research is to find genes that are active in bone-making cells taken from humans and mice. Using a method called subtractive-cloning we found over 700 genes that are potentially important in the diagnosis and treatment of osteoporosis. In our breast-cancer research we identified genes that are particularly active in breast tissues; these are possible targets for new therapy and diagnosis. We used so-called laser tweezers to isolate extremely small amounts of genetic material from breast cells for further research. Using material from 110 patients we discovered a group of 49 genes that might act as a "molecular signature" for breast cancer diagnosis. For our ovarian-cancer studies we studied genetic material from over 100 breast tumours using laser-tweezers and other genomic methods; we found 49 genes that, taken as a group, might be a molecular signature for ovarian cancer diagnosis. We put these results into a publicly available computer database.

### Fast Facts

<b><i>Highlighted outcome:</i></b>	The identification of new genetic markers leading to the diagnosis and treatment of three major threats to women's health: osteoporosis, breast cancer and ovarian cancer.
<b><i>Number of research personnel employed by the project:</i></b>	28
<b><i>Number of patents in process or obtained:</i></b>	Two provisional patents, one published patent, one commercial license and one biotechnology company started
<b><i>Co-funders:</i></b>	Alethia BioTherapeutics