

## GLOBAL LEADERSHIP IN THE FIGHT AGAINST BREAST CANCER

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Ontario recognizes the tremendous potential for innovation in the health sector. The life sciences sector – including biotechnology, advanced health technologies and pharmaceutical research – is one of the three areas of focus for investment in the \$3-billion [Ontario Innovation Agenda](#).

Ontario is a global leader in the health sciences and supports an increased focus on research and commercialization. The province:

- Is the largest hub of life sciences activity in Canada and the fourth largest biomedical research centre in North America.
- Has 25 research and academic hospitals that employ 10,000 scientists and clinical investigators and conduct \$850 million in research annually.
- Is home to one of the world's leading biopharmaceutical industries. The sector employs more than 20,000 Ontarians in high-value jobs, including researchers and scientists.
- Has been chosen, through the Ontario Institute for Cancer Research, as the administrative centre of the [International Cancer Genome Consortium](#). The consortium's goal is to unlock the genome of the 50 most common cancer tumours. The project will generate 25,000 times more data than the human genome project, and Ontario's role will include being the data coordination centre for the consortium.
- Is turning its commitment to research and innovation into a magnet for world-class talent, such as Dr. Tom Hudson, president and scientific director of the Ontario Institute for Cancer Research, who came to Toronto from Montreal, and other leading institute researchers, such as Dr. Lincoln Stein (from Cold Spring Harbor Laboratory in New York) and Dr. John McPherson who took the opportunity to return to Ontario after two decades of working in the United States.

### ONTARIO'S ROLE IN THE FIGHT AGAINST CANCER

In 2005, Ontario launched the [Ontario Institute for Cancer Research](#), the first collaborative research institute in Canada to bring together leading researchers from across the province in a coordinated effort to fight cancer.

By bringing together public and private sector partners, the institute enables researchers from across the province to work together on a strategy to fight cancer — from the need for better prevention and early detection to more targeted diagnosis and more effective treatments. As a major hub for cancer research, the institute also partners with other leading provincial, national and international cancer research institutions to advance research opportunities.

The collaborative approach characteristic of the institute – and Ontario – has now led to a partnership that will make the province the first place in the world to evaluate and further develop new molecular imaging technologies for the early detection of breast cancer.

## **EARLY DETECTION – MOLECULAR BREAST IMAGING**

Early detection makes an enormous difference to breast cancer survival rates. According to the Mayo Clinic, the five-year survival rate for early-stage, localized cancer is 98 per cent. Through the OICR's Imaging Pipeline group and One Millimetre Cancer Challenge, Ontario is investing in research into a variety of techniques for catching cancer early.

One promising technique is molecular breast imaging, an experimental approach to cancer detection that has the potential to identify very small tumours and also to reduce the number of false positive results. It is geared toward high-risk women with dense breasts, who are not well served by mammography.

## **CLINICAL TRIALS COMING TO ONTARIO**

Molecular imaging needs two things: a radiopharmaceutical that highlights cancer cells and an imaging device. GE Healthcare is developing prototype breast imaging technologies and in an international competition, chose Hamilton to become the first site in the world to receive its new technologies.

GE picked Hamilton based on the strength of its internationally recognized breast cancer research and clinical trials ([Ontario Clinical Oncology Group](#)), nuclear medicine program and the work being done by the [Centre for Probe Development and Commercialization \(CPDC\)](#), a new organization focused on the development and commercialization of molecular imaging probes and related technologies. The CPDC will be developing new probes for use with this type of breast cancer imaging strategy.

GE technologies are expected to be located at Hamilton's Henderson General Hospital with the research and development work carried out by McMaster University and Hamilton Health Sciences. Through careful evaluation in clinical trials, researchers will determine the full potential of the molecular breast imaging strategy.

All clinical studies will be submitted to Health Canada and the hospital's research ethics board for review. Technologies will be delivered and studies will start only after approvals from both Health Canada and the hospital's Ethics Board have been received.

## **BENEFITS FOR ONTARIO AND CANADA**

The primary reason for research focused on molecular imaging is its potential to impact the long-term health outcomes and improve quality of life for women threatened by breast cancer. But it offers practical short-term benefits as well.

The technologies, once deployed in a clinical trial, will increase the number of jobs for nuclear medicine technologists in the short term. Worldwide, these specialists are in high demand, and the technologies will attract these and other health care professionals to Ontario.

In addition, the use of radiopharmaceuticals in molecular breast imaging will strengthen Canada's position as a global leader in the production of these specialized substances. The choice of Hamilton by GE Healthcare highlights the expertise of researchers and clinicians in Ontario. One additional benefit of growing the molecular imaging program in Ontario is that it will attract new investment in probe and drug development and clinical trials in the province.

### **ONTARIO SUPPORT FOR THIS PROJECT**

Ontario is contributing \$450,000 towards the project, through the Ontario Institute for Cancer Research. Also through the institute, Ontario is investing \$4 million in the Centre for Probe Development and Commercialization.

To date, Ontario has committed \$357 million to create and support the Ontario Institute for Cancer Research.

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