

## Background

6/19/08

### Who We Are

Thunder Bay Regional Health Sciences Centre (TBRHSC) supported the creation of the Thunder Bay Regional Research Institute to advance its academic research mandate, strengthening its role as a leader in healthcare innovation and delivery.

All research done at the Thunder Bay Regional Research Institute will be motivated by patient needs. This **patient-centred research focus** is unique, and will transform patient care in Northwestern Ontario and beyond.

The primary area of focus for the Research Institute is cancer, one of the leading health concerns in Northwestern Ontario. In the future, research programs will expand to include other areas where disease is prevalent, such as cardiac care and neurology.

Research at the Institute will be done in partnership with TBRHSC, Sunnybrook Health Sciences Centre, Cancer Care Ontario, Lakehead University, Confederation College, and industry partner Philips Health Care.

Pre-Clinical Research will be done at the ICR Discoveries Building at 290 Munro Street, and Translational Research will be done at Thunder Bay Regional Health Sciences Centre.

### The Science

The Thunder Bay Regional Research Institute will root its scientific program in Molecular Imaging in Advanced Diagnostics and Therapeutics (formerly the MMRC). Scientists and clinicians will work together with academic and industry partners to develop tools to efficiently bring molecular imaging and advanced diagnostic technologies to the patient in a research setting.

Molecular imaging allows us to follow the movement of single cells in the body, enabling us to better understand disease metastasis, and enabling us to detect and treat cancer and other diseases at the earliest possible stage. With this scientific base, research at the Thunder Bay Regional Research Institute will centre around **three core themes**:

- **Imaging Guided Interventions**, such as High-Intensity Focused Ultrasound (HIFU) can be used to improve imaging guided surgical procedures that result in better outcomes and faster recovery for patients. Dr. Laura Curiel, Dr. Samuel Pichardo and others will collaborate with Sunnybrook Research Institute's Dr. Kullervo Hynynen and industry partner Philips Health Care to pioneer a new generation of commercial systems, the first of which is designed to eliminate uterine fibroids and lead to developments in cancer treatment.
- **Advanced Detection Devices**, including x-rays, PET and MRI imaging, can better detect small tumours in the body and improve surgical planning. Dr. John Rowlands, Dr. Alla Reznik and others will work in the Advanced Detection Devices program to apply this technology first to the early detection of breast cancer – by optimally combining x-ray and PET systems

## Background

6/19/08

matched to the detection of very small cancers. To facilitate this research, a PET-CT system was installed at TBRHSC in June 2008.

- **Biomarker Exploration** allows a biomarker, or drug, to enter the body and seek out cancer cells at the molecular level. Using an MRI or other imaging tool, any cancerous cells that exist will light up, making early detection possible through non-invasive techniques. This also allows scientists to create customized therapies for individual patients.

The three themes are linked by a common focus: translating knowledge, generated in Thunder Bay and internationally, to clinical trials. In clinical trials the impact of new approaches will be tested and breakthrough concepts will be identified and developed worldwide. Clinical development time for imaging technology is shorter compared to the development of drug interventions, meaning patients experience the impact sooner.

### Strategic Plan Goals

The Thunder Bay Regional Research Institute's patient-centred research vision will be achieved through the realization of five goals over the next five years:

1. **Recruitment:** Establish a scientific program that is recognized for excellence internationally.
2. **Tangible Success:** Within 3-5 years, ensure that at least one technology co-developed with Philips Health Care and/or other industry partners enters clinical trials.
3. **Translational Foundation:** Seek complementary programs in health technology assessment and knowledge exchange to build a foundation for translational research.
4. **Economic Growth:** Work actively with local, regional, provincial, federal and industry partners to build health research and commercialization capacity in Northwestern Ontario. The Thunder Bay Regional Research Institute will help grow and accelerate the knowledge-based economy in Northwestern Ontario. The global molecular imaging market, for example, is projected to reach \$11.4 billion by 2012.
5. **Sustainability:** Ensure that the Thunder Bay Regional Research Institute is scientifically and financially sustainable by 2012.