

RESEARCH INITIATIVES

- **Research funds in place**
The Molecular Medicine Research Centre will be located in the ICR Discoveries building on Munro Street, joining current tenants Lakehead University, Genesis Genomics and the Lake Superior Centre for Regenerative Medicine. The \$14.7 million over five years is the last piece of funding needed, joining millions from the province, city, other local sources and Philips Medical Solutions for a total of \$44 million.
Cancer, cardiac and neurology research will be the focus, and is to be managed by Thunder Bay Regional and Toronto's Sunnybrook Health Sciences Centre. Early projects at the centre will include developing high-intensity ultrasound equipment that would use heat to destroy cancers deep in the body without the need for incisions, as well as new and more powerful imaging methods to detect tumours.
Molecular medicine and imaging are the most important weapons to detect and treat cancer early, said Cancer Care Ontario CEO Terry Sullivan. Lakehead University will be a research partner, while Philips Medical Systems is the private business partner in the group. (Source: www.chroniclejournal.com)
- **New products marketed**
Genesis Genomics is moving from research and development to the commercialization of its products. The company has developed a number of products, including a test for ultraviolet damage to skin caused by exposure to the sun, and an early test for prostate cancer. As part of its move toward global marketing, the company has hired a new president.
The company is also looking at expanding its operation in Thunder Bay. The company expects that the majority of the people it hires in the near future will be graduates of Lakehead University. (Source: Labour Market Bulletin – 2nd quarter 2007)
- **Helping with cold cases**
Thunder Bay's Molecular World helped Winnipeg police crack a 23 -year - old murder case through the use of mitochondrial DNA (mt-DNA) testing. It is believed that the suspect could have been arrested five years earlier if the RCMP lab had the appropriate technology at that time.
Molecular World is the only privately-run company in Canada that is accredited to perform this type of testing. Most labs offer nuclear DNA testing. Most labs offer

nuclear DNA testing which uses samples such as blood, skin or swabs from inside the mouth. Mt-DNA can be found in bones, teeth or hair without follicles, allowing for testing on older samples. It is believed that the publicity from this case will create awareness about mt-DNA technology in the law enforcement community. Molecular World's technology is likely to be considered for other cold cases in Canada and the U.S. (source: Labour Market Bulletin – 2nd quarter 2007)

- **Funding for Atikokan Research Centre**

A major investment was announced Wednesday for Atikokan's bio-energy research centre. The province is investing \$4 million that will support the development and testing of clean energy research at the site.

The Bio-Energy Research Centre is associated with the Atikokan Generating Station and is looking at alternative forms of energy to use at the coal fired site. Energy options that will be looked at include peat and forest biomass. The environmental impacts of these options and the best way to maximize their effectiveness will also be explored. New mercury monitoring technology will also be tested.

Research is expected to begin this fall at the Atikokan site.

(Source: Tb News Source; Web Posted: 9/5/2007)

LAKEHEAD UNIVERSITY: RESEARCH CENTRES, INSTITUTES AND FACILITIES

Additional information regarding the following Research Centres, Institutes and Facilities can be obtained by calling the Office of Research at Lakehead University at 807-343-8283 (tel.) or 807-346-7749 (fax).

Source: http://calendar.lakeheadu.ca/current/contents/the_university/lakeheadresearch.html

Centre for Education and Research on Aging and Health (CERAH)

CERAH, previously known as the Northern Educational Centre for Aging and Health (NECAH), has a mandate to develop and promote research and education on aging and health - at the university, local and regional level in Northwestern Ontario. Members of CERAH are actively involved in research at the national level. In addition, CERAH fosters research at the graduate level in the departments of education, kinesiology, psychology, social work and sociology. Current interest on research and education include palliative care, psychogeriatric training, caregiver assistance, successful aging, falls prevention, medication use, and driving abilities. CERAH started the first collaborative Master's program in gerontology in Ontario. CERAH also sponsors

conferences, workshops, and training in many areas of gerontology and hosts regular Forums in Gerontology.

Centre for Northern Forest Ecosystem Research (CNFER) Ontario Ministry of Natural Resources

Located on Lakehead University's campus, the Centre for Northern Forest Ecosystem Research (CNFER) is an applied research unit of the OMNR with a focus on the effects of forestry practices on boreal ecosystems. This includes impacts on soils and forest stand ecology, fish and wildlife habitat at multiple scales, and tourism and recreational values. Research Scientists at CNFER are also appointed as adjunct faculty members in Biology and Forestry & the Forest Environment and supervise Lakehead University graduate students. CNFER has developed strong linkages with public interest groups, academic and industrial partners and other governmental organizations in support of collaborative efforts to address new issues and priorities in resource management.

Centre for Northern Studies

Lakehead University is known, nationally and internationally, as one of the main centres for northern studies in Canada. The activities of the Centre for Northern Studies have added a distinct dimension to Lakehead's identity as a university "of the North, in the North." A key priority for the Centre for Northern Studies is serving the needs of the region of Northwestern Ontario. This occurs primarily through the support of international and regional conferences, research projects, publications, and a visiting speaker series. Further, the Centre has been the extension of opportunities for Lakehead faculty and students to undertake research in northern parts of the province, the country and the circumpolar world, and to attend conferences on northern themes. A vital component in the support structure for northern studies at Lakehead is the Northern Studies Resource Centre in the Chancellor Paterson Library, developed to be the prime location of relevant resources and data on Northwestern Ontario, the Provincial Norths and the circumpolar world.

Centre for Parks, Recreation and Tourism Research

The School of Outdoor Recreation, Parks and Tourism established the Centre for Parks, Recreation and Tourism Research. The mission of the research centre is to promote and facilitate the involvement of faculty, staff and students in high quality interdisciplinary research in recreation, parks and tourism. The objectives of the outreach program are:

- to provide timely and critical research in recreation, parks and tourism issues to the region;
- to aid regional planning and development through research; and,
- to create a venue for research presentations and dialogue among recreation, parks and tourism scholars.

The Centre for Parks, Recreation and Tourism Research will work to promote activities associated with the recreation, parks and tourism mission of Lakehead University in the long term.

Centre for Rural and Northern Health Research (CRaNHR)

The Centre for Rural and Northern Health Research (CRaNHR) is a conjoint initiative of Lakehead and Laurentian Universities, funded by the Ontario Ministry of Health and Long Term Care, to study issues related to the delivery of health care in rural and northern parts of the province. Its primary mandate is to provide evidence-based assessments for Ministry programs and policies. The Centre also carries out other research under grants or contracts and, as well, serves as a source of evaluation expertise for community agencies. The Centre has a core research staff which works with members of the university's faculty on projects. Its operations are overseen by a joint university/ministry liaison committee.

Centre of Excellence for Children and Adolescents with Special Needs

In October 2000, the federal government announced that Lakehead would be the lead institution in a national Centre of Excellence for Children & Adolescents with Special Needs. The Centre represents a true partnership with businesses, schools, universities, community groups and governments across Canada. National partners include the Government of Nunavut, the University of Northern British Columbia, Memorial University of Newfoundland and Mount Saint Vincent University. The Centre of Excellence is focusing on the best ways to support children and adolescents in small, rural and remote communities who require care and services beyond those normally required for healthy development. This includes children and adolescents with extraordinary gifts and talents, developmental disabilities, and problems due to social and economic factors.

ICR Discoveries

ICR Discoveries is a partnership between Lakehead University, Thunder Bay Regional Health Sciences Centre and the Northern Ontario School of Medicine initiated in 2002 to:

- Offer a platform for the training, development and support of personnel in cancer research in Northwestern Ontario.
 - Conduct research that relates to all parts of the Continuum of Cancer Care: Prevention, Screening, Supportive Care, Palliative Care, Diagnosis, and Treatment.
 - Support the translation of basic research into clinical programs.
 - Develop interdisciplinary areas of research strength and fostering of translational research by increasing communication between fundamental and clinical investigators.
- ICR Discoveries' mission is to undertake, develop and support cancer research and related programs in Northwestern Ontario that will improve the prevention, screening,

supportive care, palliative care, diagnosis and treatment of cancer. This includes a focus on cancer issues of the people of Northwestern Ontario.

Lakehead Social History Institute

The Lakehead Social History Institute is a partnership of historical researchers at Lakehead University and in the Thunder Bay community. The Institute was constituted by meetings of persons interested in historical research. According to the Lakehead Social History Institute's mission statement, the institute has been created for the following purposes:

- to encourage and promote historical research in order to facilitate research and train researchers;
- to disseminate information about existing historical resources and publications;
- to conduct workshops in historical research in order to facilitate research and train researchers;
- to assist educational institutions and other community organizations in historical research;
- to assist authors and publishers in the publication of historical writing;
- to establish formal links with existing institutions and organizations in order to avoid duplication of effort;
- to encourage ethnocultural associations, churches, and other organizations to promote archival endeavours and to make their records available for research, and
- to seek funding for projects that advance the aims of the institute.

Lakehead University Centre for Health Care Ethics (CHCE)

The Centre for Health Care Ethics (CHCE) is dedicated to promoting ethical health care in Northwestern Ontario. To this end, CHCE provides a forum for dialogue, the interdisciplinary exchange of information and collaborative research between Lakehead University faculty, students, members of the health care professions, researchers, administrators and public. Through its colloquium series, workshops and conferences, CHCE aims at examining, articulating and improving the ethical standards of the community, reflecting on best experiences and ideas. The Centre's activities are supported by its individual members and institutional members such as Thunder Bay Regional Health Sciences Centre, St. Joseph's Care Group, Confederation College and other health care organizations and institutions of learning. The programs of the CHCE provide continuing medical education and professional development opportunities for health care providers in the region. CHCE's initiatives focus on such issues as: end of life decisions, ethics of research with human subjects, aboriginal health ethics, religious and cultural interpretation, allocation of scarce resources and professional codes of ethics. All persons and organizations interested in health care ethics are welcome to participate in the Centre's activities.

Lakehead University Centre for Analytical Services (LUCAS)

The Centre for Analytical Services promotes the research interests of Lakehead University faculty while providing regional access to the university's analytical testing facilities. The following analytic service units are members of LUCAS:

Aquatic Toxicology Research Centre

The Aquatic Toxicology Research Centre (ATRC) is an aquatics facility that supports research into reducing toxic effects of industrial wastes in the environment. The ATRC also offers a full range of toxicity testing services to both industry and government, designed to meet current regulatory requirements. These services currently include acute testing with rainbow trout, fathead minnows and water fleas, as well as TIE and TEW services. ATRC is accredited by the Canadian Association for Environmental Analytical Laboratories (CAEAL).

Forest Soils Laboratory

The Forest Soils Lab offers testing of both chemical and forest soils parameters of interest to the land manager. These services provide valuable information about soils in terms of harvesting and site preparation impacts (e.g. compaction assessment, erosion potentials), and can help in the identification of prime sites and provide sampling assistance. Available services include chemical and physical analysis of soils.

Lakehead University Environmental Laboratory

The Environmental Laboratory (or LUEL) offers multi-parameter testing of aquatic soils, sediments, tissue and waters using production-based tools such as an autoanalyzer, auto-titrator and microwave digester. LUEL also offers field services using satellite tracking and mapping technologies to provide spatial and depth data for project sites. LUEL is CAEAL certified for many of its parameters.

Lakehead University Instrumentation Laboratory

The Lakehead University Instrumentation Laboratory (or LUIL) is a multi-purpose, centralized facility which serves researchers and students from three faculties, providing access to spectrometers, electron and laser microscopes and analyzers needed for modern research and training of Canada's future scientists. The Laboratory manages some of the University's most advanced research equipment, much of which is unique to the region. The LUIL provides extensive, hands-on training programs in the use of SEM/EDS, NMR, CONFOCAL, FTIR, ICP and XRD systems to students before they begin their research projects. The facility is supported and used by regional resource and health care industries as well as government agencies for multi-party projects in the fields of mineral exploration, process control, cancer diagnosis and bio-remediation.

LEVTEK

LEVTEK offers access to the pulping research facilities in the Chemical Engineering Department at Lakehead University. Some of the pulp testing services include: latency removal, fibre classification, digester cooks, bleaching, PFI curves, pitch and resins content of pulp and paper and chips. Chemical Engineering testing services include: BOD, flashpoint, fuel oil specs, BTU/calorie testing, chorlide analysis in concrete, and technical training.

Lakehead University Nutrient Ecology Laboratory

The Lakehead University Nutrient Ecology Laboratory (LUNE), under the management of Dr. Ellie Prepas of the Faculty of Forestry and the Forest Environment consists of a "wet" laboratory for the preparation and analysis of relatively raw water samples, and analytical equipment to detect and measure the low concentrations of nutrients and other solutes typical of undisturbed surface waters in northwestern Ontario. The analytical capacity of the LUNE laboratory includes: a spectrophotometer for phosphorus, chlorophyll and colour analyses; an AutoAnalyzer III for detection of nitrate, ammonium and silicates; a High Performance Liquid Chromatograph (HPLC) for detection of cyanobacterial toxins and; an Inverted Microscope to identify, count and examine phytoplankton, including cyanobacteria. In addition other water quality variables associated with surface water quality (e.g., dissolved oxygen, pH, alkalinity, turbidity, conductivity) can be measured in the LUNE laboratory. The state-of-the-art equipment and highly trained staff are accessible to the Lakehead University community. The laboratory provides hands-on training of undergraduate and graduate students and can meet the future needs of a much wider area of research.

Paleo-DNA Laboratory

The Paleo-DNA Laboratory is one of the top ancient DNA research laboratories in the world. Researchers at the Laboratory are pioneers in the application of molecular genetic techniques to the study of ancient DNA. The Laboratory has attracted international attention for genetically identifying the "Unknown Child" of the Titanic disaster. In addition, the Laboratory has worked with the United Nations to genetically identify war crime victims of East Timor. There are many research projects involving the identification of disease, sex, species and population and migrations studies of animal and human remains. These projects cover the DNA analysis of skeletal remains from Egypt, the Nubian peoples of Kerma, the Chinese of Anyang, the peoples of Central America and molecular studies of mummified remains from all over the world.

The Resource Centre for Occupational Health and Safety

Established in 1978, and now a partner in LUCAS, the Resource Centre for Occupational Health and Safety offers comprehensive industrial hygiene services and associated laboratory analyses to support occupational health and safety programs in

businesses and industries throughout Northwestern Ontario. The Centre's library has more than 9000 books, journals, papers and periodicals relating to workplace health and safety. Students and the general public have access to the library. The Centre is located at 681 Oliver Road. The Centre teaches the University course Engineering 0555 - Chemical and Physical Hazards and supports the course Nursing 4272 - Occupational Health and Safety. Seminars, professional development courses and specialized training are also offered by the Centre.

Lakehead University Wood Testing Laboratory

The LUWSTF offers state-of-the-art testing for the mechanical property of wood and wood products. The lab can also do hot press runs for composite research as well as large ovens for physical property research projects.

Lakehead University Centre for the Application of Resource Information Systems (LU-CARIS)

The Lakehead University Centre for the Application of Resource Information Systems (LU-CARIS - funded in 1983) is a fully integrated digital database provider focused on natural resources applications. The Centre, located in the Faculty of Forestry and the Forest Environment, serves the needs of both LU researchers and external resource managers for accurate, timely and cost-efficient data, analysis/modeling and custom-solutions with up-to-date remote sensing, GIS and GPS technologies. External professional and internal academic training and technology transfer, including Internet integration, in these technologies are integral parts of the Centre. Recent developments include the use of segmentation techniques for improved classification of high-resolution imagery as well as the incorporation of high-end spatial modeling and 3-d visualization tools.

Lakehead University Geographical Information Systems (GIS) Research Laboratory Geographic Information Systems (GIS), Global Positioning Systems (GPS) and remote sensing have become crucial for research in many spatially-oriented disciplines. The challenge is to provide access to the specialized computer hardware and software needed to integrate these methodologies into research conducted in many academic fields. To this end, the Lakehead University GIS Research Laboratory offers centralized facilities to all faculty, staff and senior students to further academic research. This lab also offers a central depository of electronic spatial data relevant to Northern Ontario and other parts of Canada.