LAURENTIAN UNIVERSITY

STRATEGIC RESEARCH PLAN SUMMARY

Update March 2003

Over the next five years Laurentian University's goal is to create an academic and research environment that is recognized locally, nationally, and internationally in a limited number of concentrated areas of research. The following major objectives form a crucial part of this plan:

1) to build state of the art, world class research programmes;
2) to create, where appropriate inter-and multi-disciplinary co-operation amongst researchers and research units;
3) to promote extra-university partnerships and collaborations locally, nationally and internationally;
4) to contribute to the betterment and enhancement of society by transferring the results of research to society as a whole;
5) to attract and provide increased resources and infrastructure to excellence and innovation.

ASSESSING SUCCESS IN MEETING OBJECTIVES

For each of our focus or thrust areas we will monitor and measure the success in attaining our goals by the number and quality of publications, conference proceedings issuing from these areas, by the partnering and collaborative initiatives established with other post-secondary institutions and the private sector; by the international recognition of Chair holders and their collaborators; and by the contribution the institution can make to the region in which it is located.

MAJOR FOCUS AREAS OR THRUSTS

While not discounting areas of research both pure and applied that have taken place and will continue to take place at our institution, Laurentian, at this stage, has identified four focus areas for particular nurturing and further development:

1) Mineral Resource Science & Engineering;
2) Environment Sciences;
3) Health Sciences;
4) Regional Economic, Political, Social, and Cultural Development, particularly in the region of Northeastern Ontario

MINERAL RESOURCE SCIENCE & ENGINEERING FOCUS

Laurentian University located close to the world's largest mining cluster has, in collaboration with

the public and private sector, developed internationally-recognized expertise in mineral exploration, rock mechanics and ground control, mining technology, mine modelling and simulation, mining materials research, and mineral processing. Our research efforts in these areas have been directed within several research centres: the Centre in Mining and Mining Environment Research (CIMMER), the Geomechanics Research Centre (GRC), the Laurentian University Mine Automation Laboratory (LUMAL), the Mineral Exploration Research Centre (MERC), and the Mining Innovation, Rehabilitation, and Applied Research Corporation (MIRARCO).

We plan to build on existing expertise and intensify our research activities in Mineral Resource Science and Engineering. A Centre for Mining Technology (CMT) focused on emerging technologies with mining applications is under development. Another centre, the Centre for Integrated Monitoring Technology (CIMTec), also being built, will provide state-of-the-art technology for interdisciplinary research and development projects involving data acquisition, transfer, processing, and visualization. CIMTec will also provide an opportunity for Laurentian to further develop expertise in Information Technology with the establishment of a Graduate Programme in Computer Science. Further, the establishment of a joint Ph.D. programme in Ore Deposits and Precambrian Geology with the University of Western Ontario is nearing completion. Finally, we envisage the following: establishing Co-op Graduate programmes in Earth Sciences and Engineering as well as establishing a Ph.D. programme in Mineral Resource Engineering and the creation of an Ontario School of Mines in collaboration with Cambrian College, Northern College, the Haileybury School of Mines and other partners.

ENVIRONMENTAL SCIENCES FOCUS

During the past two decades Laurentian University has developed expertise in several areas of environmental science and engineering, particularly in the areas of aquatic studies, climate change, mine rehabilitation and remediation, environmental remote sensing and monitoring, analytical biogeochemistry of trace elements, toxicology, and mine waste management. Our research efforts in these areas have been focused within several research centres: the Cooperative Freshwater Ecology Unit (CFEU), the Elliot Lake Research Field Station (ELRFS), the Centre for Environmental Monitoring (CEM), and the Centre for Integrated Monitoring Technology (CIMTec).

Our plan for this area includes the establishment of multidisciplinary M.Sc. and Ph.D. programmes in Environmental Sciences. This will consolidate the wide range of environmental expertise in the various academic units in the Faculty of Science and Engineering. We also envisage the establishment of an Environmental Research Institute for research on lake and watershed restoration, environmental effects monitoring in aquatic environments, biological recovery in northern lakes, climate change and its implications for the recovery of acidified lakes, urban limnology, sediment-water interactions, remote monitoring technology, fresh water protection and rehabilitation engineering, and heavy metal absorption processes in water treatment.

HEALTH SCIENCES FOCUS

The foundation of Laurentian's commitment to research in health and human development lies in two research centres: the Centre for Research in Human Development (CRHD) and the Centre for Rural and Northern Health Research (CRaNHR). CRHD conducts research in social services, education, and health, with a special focus on occupational health and safety, and in particular on aspects related to accidents and illness prevention. CRaNHR's mandate is to pursue research on rural health issues, the health workforce and innovative approaches to serve rural and northern communities, with a view to improving access to health services, achieving a better understanding of the rural health care system and supporting health care organizations in northeastern Ontario and other rural areas through research. It examines critical issues such as regional variations in health status, maldistribution of physicians, use of telehealth technology, innovative models in rural health service delivery, training of practitioners in rural settings and the informal support system.

Laurentian scientists have also been engaged in fundamental research in health sciences. Our plan is to continue research in experimental and theoretical studies of the structure and function of complex biomolecules, molecular and cell biology, structural biochemistry, computer-aided molecular modelling, biophysical chemistry, radiation therapy and medical physics. Laurentian University, the Northeastern Regional Cancer Centre and the Sudbury Regional Hospital have established a Chair in Cancer Research. This Chair will lead to the development of a Ph.D. programme in Biomolecular Sciences. Further, we expect the expansion of Laurentian's expertise in Biotechnology through the establishment of multidisciplinary and inter-institutional links.

Laurentian University works closely with the Northeastern Ontario Medical Education Corporation (NOMEC) which offers, in collaboration with established Ontario Medical Schools, clinical teaching programmes for family medicine residents, medical student electives, speciality residents and several allied health programmes. NOMEC has an extensive network of physician perceptors offering important clinical research possibilities reaching throughout the northern part of the province. Laurentian is working with NOMEC on the development of this research potential. We envisage the establishment of an Occupational and Environmental Health and Safety Group, a Rural Health Delivery Research Team and a research group in Epidemiology for investigation of regional incidences of major diseases such as Cardiovascular disease and Cancer. Finally, we foresee the development of a Northern Health Research Network of researchers and health professionals throughout Northeastern Ontario focusing on the health issues of the region.

REGIONAL ECONOMIC, POLITICAL, SOCIAL, AND CULTURAL DEVELOPMENT FOCUS

Sensitive to its regional mandate and its location in Northeastern Ontario. Laurentian University focuses much of its research activity on regional economic, political, social, and cultural phenomena and issues. A largely bilingual part of the province of Ontario, Sudbury and the region is also the home of numerous other ethnic groups, ranging from First Nations peoples to Italian, Finns and other Western and Eastern European peoples. The research of our three research centres, The Institute of Northern Ontario Research and Development, L'institut franco-ontarien, and The Centre for Research in Human Development, reflects institutional interest and expertise in these groups as

they contribute to all aspects of life in Northeastern Ontario. Apart from specific and applied research, this focus also makes space for "pure" research that goes well beyond regional interests in such areas as language, literature, and history.

PLANNING AND APPROVAL PROCESS

The thrusts or focus areas were developed through a wide process of consultation involving faculty, Deans, Director of Graduate Studies and Research, and Vice-Presidents, Academic. The plan was approved by the Academic Planning Committee and is to proceed to Senate later this month for final approval.

DISTRIBUTION OF CHAIRS

Of our seven Chairs allocated and projected, six will be in the areas of Mineral Resource Science and Engineering, Environmental Sciences, and Health Sciences. One will be in the area of Regional Economic, Political, Social, and Cultural Development.

STRATEGIC PLAN UPDATE – MARCH 2003

The University is in the process of developing a new Strategic Research Plan at this time, but the CRC Secretariat has requested that we modify the plan submitted to them to take into account the recommendation of their Third Year Review Report to deal with the issue of gender representation of its Canada Research Chairs.

The University has nominated three successful Chairs up to the present, two males (in Biophysical Computational Chemistry and in Robotics and Mine Automation) and one female (in Biocomplexity of the Environment). Five Chairs remain to be nominated under the University's present allocation, of which four are in currently in the last stages of writing.

For the last Chair to be nominated, the University will make every effort to recruit women, and will monitor the efforts of the Committee charged with the task of recruitment to make certain that their advertising and selection procedures take this into consideration.