

THE KEY

LAURENTIAN UNIVERSITY'S RESEARCH MAGAZINE

WINTER 2007

COPING WITH CLIMATE CHANGE

Northern researchers help Canadian cities adapt

LAURENTIAN RESEARCHERS RESPOND TO REAL WORLD PROBLEMS

Cutting-edge research on tobacco consumption, sport participation and cancer prevention has local impact



Laurentian University
Université Laurentienne

THE FIRST WORD



I am delighted to share with you our first issue of The Key, Laurentian's premiere publication solely devoted to communicating the university's research activities to the public.

Our faculty is currently involved in over 250 funded projects in various disciplines. Through their initiatives, Laurentian researchers are solving problems that we - real people - face in everyday life. From enhancing safety in the work place or understanding climate change to battling cancer and food shortage in developing countries, their work can improve quality of life on a global scale.

This magazine will feature various projects undertaken by Laurentian faculty and their collaborators as well as their results and impacts in the community.

The name, The Key, reflects the significance of our researchers as their hard work and undying passion for knowledge is the key to discovery- a key that will open the door to the future.

Cordially,

Dr. Liette Vasseur
Associate Vice-President, Research
Laurentian University



Growth in research activities

Research activity at Laurentian has surpassed the \$20 million mark, and for the fourth year in a row we have been ranked among the top 35 universities in Canada in terms of research activity. These are significant achievements for a university of our size.

Areas of research

While research at the university encompasses many disciplines, Laurentian has identified five areas of strategic focus:

- Mineral Resource Science and Engineering
- Environmental Sciences
- Regional Economic, Political, Social and Cultural Development
- Health Issues
- Underground Science

THE KEY

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TWO NEW CANADA RESEARCH CHAIRS AT LAURENTIAN

By Crystal Bresson

The Canada Research Chairs Program has once again enabled Laurentian University to attract outstanding young scientists.

In July of 2005, earth sciences professor, Dr. Balz Kamber, a leading researcher in precambrian geology joined Earth Sciences at Laurentian University. The following September, Dr. Nancy Young, an expert in children's health outcomes, joined Human Kinetics. Both were awarded Canada Research Chairs for their contributions and accomplishments. These new CRCs reflect both the scope and the relevance of the research conducted at Laurentian.

Dr. Kamber, who received his degrees in Switzerland, joined Laurentian University after postdoctoral research at Cambridge University, Oxford University and the University of Queensland (Australia), where he held a position as senior research fellow. Kamber obtained an esteemed Tier 1 Canada Research Chair valued at \$200,000 per annum, for an initial period of seven years. This funding has established his chair in Precambrian Geology.

As chair, Dr. Kamber will study the slow change in physical, chemical and biological parameters that governed earth's geology over the 3.5 billion years prior to the Cambrian explosion of life forms. His efforts will help the scientific community understand how the formation of continents depleted the earth's mantle in heat-producing elements and how the build-up of free oxygen in the atmosphere has changed the chemistry of seawater. His research will be carried out in a contemporary trace element laboratory in the Willet Green Miller Centre funded by the Canada Foundation for Innovation.

Dr. Nancy Young developed her reputation as a leading scientist in children's health at The Hospital for Sick Children and the University of Toronto. She is the recipient of a Tier 2 Canada Research Chair in Rural and Northern Children's Health valued at \$100,000 per year, for a period of five years.

Dr. Young works in a rural health research framework and is a core faculty member in the new Interdisciplinary PhD in rural and northern health at Laurentian. She is also affiliated with the university's Centre for Rural and Northern Health Research (CRaNHR). Her research focuses on children in rural and northern regions who face unique health challenges due to isolation, distance and limited healthcare resources.

This interdisciplinary research program is currently supported by two Canadian Institute of Health Research (CIHR) grants and is structured around three thematic areas: health status measurement, health care utilization, and evaluation of health delivery innovations.

Through her research activities, Dr. Young explores the inter-relationships between the health care system, interventions and children's health outcomes. She seeks to cultivate improved health among this vulnerable sector of society. Dr. Young plans to ensure that children's voices are heard when their health is assessed.

Laurentian now has six Canada Research Chairs in various disciplines. ❧

RESEARCH



Dr. Balz Kamber



Dr. Nancy Young

THE BEST FIRST STEP: EXPLORING CHEMOPREVENTIVES

By Crystal Bresson

Cancer heads the list of public health concerns. Incidence is high; treatment techniques are often dangerous, sometimes ineffective and costly. Though no cure has been found, these factors have spurred substantial interest in means of cancer prevention.

Within the last decade, there has been a multitude of studies accomplished concerning the rediscovery of natural medicine and investigating the preventive compounds found in plants. As this pursuit continues, so does the growth rate of the disease. Fortunately, promising researchers such as Dr. Sabine Montaut, of Laurentian University, are pursuing this area of research and exploring how plants can potentially act as cancer chemopreventives.

The cancer chemopreventive activity of cruciferous vegetables such as broccoli and canola is believed to be related to sulfur-containing products (glucosinolates and isothiocyanates), flavonoids and phenolic compounds.

"Most of the studies involving biological activity have been restricted to cruciferous vegetables of the Brassica species. Very little information pertaining to "non-Brassica" glucosinolate-containing plants has been collected. Therefore it is of considerable importance to screen these plants with the view of determining their pharmacological value in terms of cancer prevention and antioxidant activity," says Montaut.

Montaut and her research group will investigate the phytochemical composition of wild cruciferous plants not yet screened for



Dr. Sabine Montaut

chemoprotection and antioxidant properties. Montaut says that they are particularly interested in "the identification of natural products of biological activity in the chemoprevention of cancer, which is a very exciting field of research." She also highlights that her group is "working in close relationship with European experts (France and Italy) to identify new medicinal natural products."

"WE EXPECT THAT
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(...) PROGRAM."

Epidemiological studies indicate that in 30-60 per cent of the various forms of the disease, the most controllable determinants of cancer risk is diet. The aim of Montaut's study is to screen potentially chemopreventive, non-cultivated cruciferous plants of the Canadian landscape as human dietary components.

This research is anticipated to provide clear understanding of the relative contributions of various components of these plants to cancer risk reduction, and provide fresh avenues for developing preventative drugs. Results may demonstrate new uses for these plants as dietary supplements to interested pharmaceutical and food companies.

"We expect that some interesting compounds will emerge from this challenging research program. This will have a strong impact in human health not only in Canada but in the entire world," she says.

Her research is being carried out with financial support generously provided by Natural Sciences and Engineering Research Council of Canada (NSERC), Canada Foundation for Innovation (CFI), Ministry of Research and Development (MRI) and Laurentian University. ❏

WORLD'S SMALLEST PARTICLES LEAD TO BIG AWARD

By Shirley Moore

Three Laurentian physics professors are among a team of researchers that have been honoured with a new national research award for their work on the groundbreaking Sudbury Neutrino Observatory (SNO) experiment.

Dr. Jacques Farine, Dr. Doug Hallman and Dr. Clarence Virtue are among 22 researchers who have won the inaugural John C. Polanyi award from the Natural Sciences and Engineering Council of Canada (NSERC), a federal funding body for science research. The award is named after Dr. Polanyi, a Canadian researcher who won the 1986 Nobel Prize in Chemistry, and includes a research grant of \$250,000.

This initial seven-year underground SNO experiment – which is considered to have contributed greatly to the world of physics – has become nationally and internationally renowned and wrapped up in November 2006. Among its greatest findings is that neutrinos have actual mass, something that has affected scientists' basic understanding of how the universe formed.

The team of researchers, lead by Queen's University's Dr. Art McDonald, has been involved in the design, construction and operations of SNO, which is two kilometres below surface in the hot and humid tunnels of CVRD-Inco's Creighton mine in Sudbury.

The unique underground location is specific to the needs of the experiment. Scientists are trying to gather information on the elusive neutrino, a tiny subatomic particle that comes from the sun. Scientists need to take measurements without a lot of background interference that can be caused on surface.

Right below the floor is a 12-metre wide acrylic sphere filled with 1,000 tonnes of ultra-pure heavy water that is on loan from Atomic Energy of Canada Limited. More than 9,000 light sensors around an outer, second sphere detect tiny flashes of light that are emitted when neutrinos, which have been travelling through the solar system and the Earth, are stopped or scattered in the heavy water. Computers collect the information so scientists can analyze it.



Dr. Doug Hallman, left,
Dr. Clarence Virtue and
Dr. Jacques Farine

The original SNO experiment has helped physics make great strides. What has been groundbreaking, according to Dr. Jacques Farine, is that "neutrinos are produced as we expect, the Sun is working as we expect, the models are perfectly understood, and they just change on their way to the Earth. And this is new."

"THIS CANNOT HAPPEN WITHOUT NEW PHYSICS."

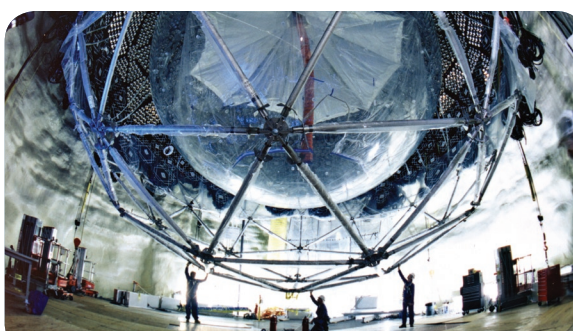
It turns out that neutrinos change types as they travel, which means they have to have an actual mass. "That changes even the calculations of how stars explode," says Farine.

He calls this "far-reaching" because scientists will have to take a second look at the big bang theory – a widely accepted theory that explains the formation of the universe – redo some calculations and come up with a theoretical framework that "explains everything properly again.

"So we know without stars exploding we wouldn't be here and that changes the dynamics of the entire process. Beyond that, it changes our understanding of particle physics," says Farine, who wants to know why neutrinos are so different than other particles.

There are now plans to convert the original experiment to look for new neutrinos from the Sun and Earth, says Dr. Doug Hallman. A new lab called SNOLAB is under construction right now, just a short walk from the original underground SNO facility.

Many astronomy and physics books have now been rewritten and mention this experiment. "We really changed something important in the understanding of nature," says Farine. ◀



RESEARCH

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SO WE KNOW
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PARTICLE PHYSICS.

Smoke signals

DEVELOPMENT

4

A STRATEGY FOR CHANGE

By Crystal Bresson

In 1997, at a traditional ceremony, Sheila Hardy received the Anishnawbek name Sema-Kwe which translates to Tobacco Woman. Coincidentally, nearly ten years later, she is playing a key role in a national study that aims to reduce commercial tobacco consumption amongst the First Nations population.

“TODAY, SOME OF OUR PEOPLES MISTAKENLY DEFEND HABITUAL AND ADDICTIVE TOBACCO MISUSE ON THE GROUNDS OF TRADITION, WITHOUT TRULY HAVING ANY AWARENESS OF ITS TRADITIONAL PURPOSES.”



The widespread misuse of commercial tobacco products among Aboriginal peoples has developed into a critical health concern that warrants serious attention.

Traditionally, First Nations peoples have used tobacco for medicinal, cultural and

ceremonial purposes. While tobacco is sanctified, the recreational use of tobacco, with its high content of nicotine and toxic chemicals, is addictive and harmful. First Nations Elders maintain that this type of use contradicts the spiritual, medicinal and traditional uses of tobacco.

“Today, some of our peoples mistakenly defend ‘habitual and addictive’ tobacco misuse on the grounds of tradition, without truly having any awareness of its traditional purposes,” said Sheila Hardy, Laurentian University’s director of academic (native affairs).

Current reports estimate that over half the Aboriginal population in Ontario smoke, compared to 20 per cent of the general population. The First Nations and Inuit Branch of Health Canada reports that 60 per cent of on-reserve First Nations people between the ages of 18 and 34 smoke and the majority of these people started smoking during early adolescence. While tobacco consumption in mainstream society has decreased drastically, there has been little decline in usage among Aboriginal communities.

Realizing this, Hardy, along with Sonia Isaac-Man, representing the Assembly of First Nations and a collaborative research team from across Canada, are exploring how First Nations’ traditional use of tobacco can be used as a prevention and intervention strategy to address tobacco misuse amongst the First Nations population.

Reducing tobacco use among Aboriginal communities, and having an impact on youth, requires a multifaceted approach. Strong community partnerships, a focus on relationship building between Aboriginal youth and Elders, and an emphasis on renewing and strengthening the understanding of traditional tobacco practices are central to Hardy’s research. This holistic approach, which includes community members, will ensure that everyone involved, is working toward a common goal; reducing the rate of tobacco misuse and preventing tobacco-related illnesses and diseases.

Active partners include four First Nations communities from across Canada: Katzie First Nation (British Columbia), Sandy Bay First Nation (Manitoba), Sagamok Anishnawbek First Nation (Northern Ontario) and Elsipogtog-Big Cove First Nation (New Brunswick).

“It is critical that effective strategies for change are rooted in the community. We can’t develop prevention programming or interventions to address this issue unless we work directly with Aboriginal communities. This research will assist us in building on the cultural strengths that exist in First Nations communities by bringing together Elders and youth,” says Hardy.

This team is tackling these issues using an approach that will not only increase knowledge of traditional tobacco usages in prevention and intervention but teach youth and community members how to carry out relevant community based research.

“As First Nations peoples, one of our strengths has been our ability to retain our traditional teachings and culture despite enormous pressures to assimilate. It is my belief that drawing on these traditional teachings is a key to addressing our health concerns. In this research we hope to identify ways that we might be able to do this more effectively in developing prevention and intervention strategies to address the misuse of tobacco,” says Hardy.

“Experience has taught us that a return to true traditional values, in a contemporary context, promotes cultural wellness. We certainly hope this project will contribute to our First Nations youth’s moral and physical well-being.”



Photo courtesy of Robert Schinke

Robert Schinke, far left, Duke Peltier, Patricia Pickard and Stephen Ritchie.

DEVELOPMENT

5

WHEN SPORT IS MORE THAN JUST THE FINAL SCORE

By Crystal Bresson

LAURENTIAN RESEARCHERS FOCUS ON HOW FIRST NATIONS CULTURE CAN SUPPORT ABORIGINAL ATHLETES TO PLAY – AND STAY – IN SPORT

Knowing the power of sport first hand, Dr. Robert Schinke, associate professor of sports psychology at Laurentian University, is focusing on the role that culture can play in elite sport participation.

Schinke's work in the area of cultural sports psychology is helping coaches and athletes understand and adapt to challenges experienced by minority cultures within mainstream sport. His interest in working with multicultural sport stems from his extensive experience as a world cup equestrian athlete, international coach and sport psychology consultant. Now he is focusing on sport participation in First Nations communities.

In 2005, Schinke and his colleagues partnered with community-appointed researchers from the Wikwemikong Unceded First Nation and completed a Social Sciences and Humanities Research Council Research Development Initiative which shed light on the experiences of elite aboriginal athletes from across Canada. Together, they explored the personal, coaching and social support needs of aspiring athletes. This co-researched material was presented at the 2006 North American Indigenous Games and has been published in *The Sport Psychologist*, the *International Journal of Sport Psychology*, and the *International Journal of Sport and Exercise Psychology*.

The results of the project included recommendations from over 20 elite Canadian aboriginal athletes intended for community coaches, community social support and for aspiring athletes.

From the research, Schinke explains that coaches should be culturally sensitive and integrative of tradition within their pedagogical approach to sport. Since parents also play a central role as social support to aspiring youth athletes, he suggests that they monitor their children's

connections with peers, time management and ongoing adherence to sport programs. There is also advice for community members focusing on the importance of daily encouragement, onsite support at sporting events, and fundraising for youth and their programs.

"For the athletes, there were recommendations regarding how to train and prepare for performance integrating aboriginal cultural practices, including smudging, other sacred medicines, elders, sweat lodge use and medicine men," says Schinke.

Schinke and his team believed it was important to broaden the scale of their research. Based on the results of their work, they initiated another project.

"THE INTENDED PURPOSE WITH THE NEW PROJECT IS TO INCREASE AND RETAIN THE NUMBER OF YOUTH IN ONE ABORIGINAL COMMUNITY INVOLVED IN SPORT AND RECREATION PROGRAMMING."

In March of 2006, they were awarded a three-year SSHRC grant totaling \$132,311 to support a new project entitled Cultural Strategies to Inspire Aboriginal Sport, which uses the data collected and focuses on implementing ideas that stemmed from their initial inquiry.

Working with Wikwemikong First Nation, Schinke, along with community and academic partners (graduate students included) are focusing on the development of effective motivational strategies aimed at increased long-term retention among adolescent sport participants. "The intended purpose with the new project is to increase and retain the number of youth in one aboriginal community involved in sport and recreation programming. The longer-term objective will be to develop programming strategies that will actually be administered for youth by youth," says Schinke. They also

hope to improve understanding among sport scientists interested in supporting aboriginal youth in sport and physical activity.

This project will contribute to an ongoing research initiative intended to build positive ties among First Nations peoples and non-aboriginal residents of the region.

When summing up the goals of these projects Schinke says "the overlying objective in all of my research is that it translates back to its respective community." ❖



Dr. Robert Schinke



CLIMATE CHANGE

IMPACTS AND ADAPTATIONS PROGRAM

THE COLD TRUTH ABOUT A HOT TOPIC

By Shannon Dennie

AWARENESS OF CLIMATE CHANGE AND ITS IMPACTS HAS NEVER BEEN GREATER. TUNE INTO THE EVENING NEWS, A MORNING RADIO SHOW OR JUST FLIP THROUGH A DAILY NEWSPAPER AND CHANCES ARE YOU'LL BE PRESENTED WITH COLD HARD FACTS ABOUT GLOBAL WARMING.

The heat is on and communities worldwide have felt it with violent storms in coastal regions of America, in a greater number of droughts and forest fires in Europe and Australia and in the disappearance of ice in Arctic and Antarctic regions.

"Climate change is happening," says Dr. Liette Vasseur, associate vice-president, research and a professor of biology at Laurentian University. "The problem is that the climate has been perceived as stable for many centuries and now, suddenly, we observe drastic changes to which we have to adapt. By these changes, we think in terms of temperatures and precipitations and frequent occurrences of extreme events."

Vasseur has been studying climate change since 1992, while completing her postdoctoral studies in biology at McGill University. Today, she is the principal investigator of the City of Greater Sudbury's case study which is supported by the Climate Change Impacts and Adaptations Program (CCIAP) of Natural Resources Canada (NRCan).

According to the Intergovernmental Panel on Climate Change, global warming is one of the most serious challenges facing the

world today. The earth's surface has undergone unprecedented warming over the last century, particularly over the last two decades. The concept that humans could alter something as huge and complex as the Earth's climate was once the subject of scientific debate, but today the evidence is alarming.

The City of Greater Sudbury's case study, which boasts upwards of 40 collaborators from Laurentian University, the City, the Sudbury & District Health Unit, Science North, the Ministry of Environment, Environment Canada, Earthcare and many more, was initiated to study the potential impacts and vulnerabilities of climate change in the city, as well as to look at different methods of adaptation to these potential changes. Adaptation, in this case, refers to activities that minimize the possible negative impacts of climate change. It is not a new concept: humans, like all organisms, have

"GLOBAL WARMING IS ONE OF THE MOST SERIOUS CHALLENGES FACING THE WORLD TODAY."

always adapted to change in order to avoid extinction.

"This program would not exist without the collaboration of all these partners," says Vasseur. "It's really the mind of many people."

At present, six Canadian communities are working under the project to improve knowledge and adaptation to climate change



Unpredictable weather patterns wreaked havoc in Mattawa in July 2006. A microburst, with tornado-like winds snapped ancient pine trees and damaged homes in the small northern Ontario town.

impacts. They encompass both urban and rural communities from Vancouver to St. John's.

"The extent of our research was to look at past data for Sudbury in terms of what has been done and what temperature changes have happened already," says Lisa Léger, coordinator of the Sudbury case study.

"Then, we look at all the information that Environment Canada and other people have compiled and see if it can help confirm the trends being predicted. From there we can determine Sudbury's vulnerabilities."

According to Léger, a major vulnerability for Sudbury would be linked to a temperature rise of two to three degrees by 2050 which in turn could lead to more heat waves in summer and drier conditions due to water evaporation. While some may think such a modest rise is insignificant, Léger says the change in temperature could become a cause of concern for the elderly. As well, illnesses such as the West Nile Virus and Lyme disease could become more prominent with rising temperatures and longer summers thus increasing the population's chances of infection, she adds.

While Léger points out the potential changes to the summer season, Vasseur explains that winter season will not be immune to global warming. With warmer winters, activities such as snowmobiling, skating and cross-country skiing could be drastically reduced which would impact tourism as well as northern culture. On the other hand, says Vasseur, climbing temperatures in winter could reduce the number of injuries or deaths due to cold and stormy weather.

Evidently, climate changes will have significant effects on communities and the economy. In one way or another, Canadians will have to adapt to them and how they do so will have considerable effects on their quality of life over the long-term.

According to Vasseur, there are several ways to adapt to these changes. On an individual basis, she cites the way houses are built and the way we renovate them. Most people don't own alternative sources of energy, such as a woodstove or solar panels, that could help them in case of a power failure caused by extreme weather, she says. Currently, building codes do not fully integrate adaptive measures for heat waves or for changes in climate.

At the municipal level, she points to the City of Greater Sudbury's dependence on larger centres such as Ottawa and Toronto for goods and services (like gas, medications and certain food supplies). Sudbury, like most rural communities in northern Ontario, does not keep personal reserves of these commodities, and in the case of an extreme event, that could cause potential limiting situations for some vulnerable people, says Vasseur.

"How are we going to adapt," says Léger. "We have to work more on that. We only skim the surface. In our report, we have to come up with feasible suggestions."

Vasseur concludes that better planning at all levels will be crucial to maintain sustainable development.

The work ahead has only just begun. ❏

What will climate change mean for northern Ontario forests?



Exploring Canada's social landscape just got

easier

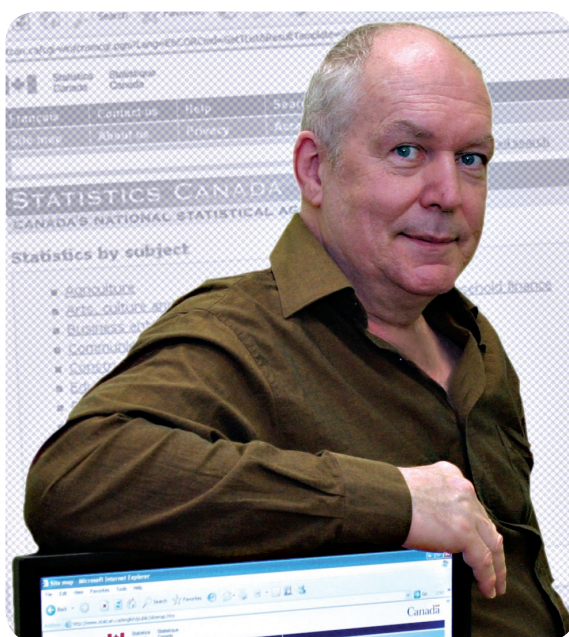
By Crystal Bresson

Much of Laurentian University's research activity is focused on responding to societal needs and with the availability of Statistics Canada's data sets, increased and improved research can deliver more insight on issues regarding children, youth, the economy, health and healthcare, and Aboriginal peoples – all of which have a significant impact on daily Canadian life.

This task has been made a little easier for researchers around the north thanks to the Research Data Centres Program, a joint initiative by Statistics Canada, the Social Sciences and Humanities Research Council (SSHRC), Canada Foundation for Innovation (CFI) and university consortia.

September 18th, 2006 marked the opening of Laurentian University's Branch Research Data Centre (RDC). Located in the J.N. Desmarais Library, this center will provide researchers with countless sources of micro-data from Statistics Canada population and household surveys.

“THE LAURENTIAN BRANCH IS AN IMPORTANT AND SYMBOLIC STEP FOR NORTHERN ONTARIO IN TERMS OF MAKING POSSIBLE POLICY RESEARCH DONE IN THE NORTH, BY THE NORTH FOR THE NORTH.”



Derek Wilkinson

The new Laurentian University Branch RDC is affiliated with the South Western Ontario Research Data Center and the University of Waterloo. Operating one day per week, it will provide service to researchers on campus who wish to analyze Statistics Canada data. Four workstations will be available and equipped with SAS, SPSS and STATA software.

Just a short time ago, researchers could only access Statistics Canada's longitudinal studies in Ottawa, under strict guidelines in place to protect privacy. "Northern Ontario researchers no longer need to travel to Ottawa to access these data sets," says Derek Wilkinson, director of the Laurentian Branch RDC. Now, individuals working on approved projects can make use of this valuable information right from their home-town university while still adhering to Statistics Canada's strict confidentiality policy.

Having easy access to detailed microdata has numerous benefits, particularly in the area of policy-relevant research where new research findings may help inform and shape public policies. "The Laurentian branch is an important and symbolic step for northern Ontario in terms of making possible policy research done in the north, by the north for the north," says Wilkinson.

"Many Stats Can non-public data sets, when analyzed, offer in-depth understanding of our northern communities. I hope to see a significant number of researchers take advantage of this new close-to-home facility."

Along with generating a wide perspective on Canada's social landscape, the RDC network also trains specialists including demographers, sociologists, public health experts and economists to analyze the data sets so they may combine their capabilities and collaborate on interdisciplinary projects.

The RDC Program is a partnership that includes over 40 Canadian universities, major granting councils, provincial governments and Statistics Canada. There are currently 13 full centers and six branch centers with more than 500 active projects. Within the last six years, these RDCs have housed over 1,000 researchers from across the country. Thirty per cent of these researchers are graduate level students. ❏



An architectural rendering of the Living with Lakes Centre by J.L. Richards and Associates and world-renowned architects Busby, Perkins + Will.

CREATIVITY

9

NEW LAKESIDE CENTRE OFFERS FRESHWATER FOR THE FUTURE

By Crystal Bresson

LAURENTIAN UNIVERSITY'S PROGRESSIVE COOPERATIVE FRESHWATER ECOLOGY UNIT (CFEU) IS ABOUT TO EVOLVE, BLENDING CUTTING-EDGE RESEARCH, ENVIRONMENTAL SUSTAINABILITY AND TRAINING AND EMPLOYMENT FOR THE PEOPLE OF NORTHERN ONTARIO.

Dr. John Gunn leads the CFEU, a distinct and successful partnership of academic and government scientists who collaborate with industry and municipal partners on projects related to the protection and restoration of water bodies. This team, which includes Bill Keller, a senior environmental scientist with the Ontario Ministry of the Environment, and Tom Johnson, a research scientist with the Ministry of Natural Resources, focuses on understanding the functioning of industrially damaged aquatic systems. The unit also assesses and monitors the process of recovery and rehabilitation of industrially damaged water, and develops and tests rehabilitation techniques to speed up the recovery process.

tangible and substantial emblem of Laurentian University's motto "Learning. It's in our Nature." The centre also aims to meet the university's commitment to the environment and compliment its strategic research focus as it will be an environmentally sustainable structure. A certification process called the Leadership in Energy and Environmental Design (LEED) green building rating system, will guide and measure meeting sustainability targets. The centre's design and northern Ontario location make it an ideal demonstration candidate, especially related to renewable energy and environmental design, engineering, construction and materials development technology.



Dr. John Gunn

The CFEU is a leader in research concerning the impacts of human activities on the lakes, streams and wetlands in Northern environments and soon enough, they will be calling a multi-million dollar, energy efficient research facility, home sweet home.

Some of the sustainable design features include: a green roof, ground-source heat pumps, permeable paving, solar water heating, energy efficient appliances, greywater treatment, as well as the use of alternate fuels and non toxic materials. Vegetative buffers on the water's edge will be incorporated. The LWLC will offer the best of environmentally sound shoreline development. Busby Perkins and Will, one of the premier Canadian firms in sustainable design, as well as local firm, J.L. Richards, are the architects for this incredible project.

The much anticipated Living With Lakes Centre (LWLC) will include an Aquatic Restoration Ecology Laboratory, Invertebrate Lab, and Fisheries Laboratory along with other spaces which will accommodate future growth. "The centre will provide a home for the growing ecology unit to allow it to continue to develop as a centre of excellence in freshwater restoration," says Gunn, Laurentian's Canada Research Chair in stressed aquatic systems. "The new LWLC will house scientists and students and provide the necessary laboratory infrastructure needed for fundamental and applied environmental science," he adds.

Because of the sustainability features and simple design, the building will be able to operate with a \$5,000 energy bill per annum and that over a 25-year period, the model suggests about \$1 million in energy savings, Gunn says.

Key features of the new facility and future programs will include state-of-the-art aquatic laboratories, research equipment and teaching facilities to enhance the environmental science programs at Laurentian University, including the new PhD in boreal ecology.

Having such a unique centre in northern Ontario is tremendously advantageous. Elizabeth Bamberger, the CFEU's Business Manager says, "not only will it attract highly skilled personnel and valuable researchers; it will also attract an increase in funding and will become a recruiting tool for undergraduate and graduate students. Because the LWLC will create employment and training opportunities, the Living With Lakes Centre has great potential to reduce the out-migration of youth from this region, thus creating and retaining an educated, skilled workforce. It is a symbol of the quality of life Sudbury has to offer." ❏

"The quality of water we enjoy here is a measure of our success as a community. This centre is going to be one of the major environmental centres of its kind anywhere in the world," says Gunn.

The building, which will be located on the shores of Ramsey Lake, across from the main entrance to the campus, will be a

report from the

AVPR

{ associate vice-president, research }

These are exciting times at Laurentian University. There is a sense of renewal and a greater commitment to research. Our growing faculty and increase in research activities are being felt in the community. Laurentian is maintaining its commitment while encouraging greater fundamental and applied research, alone or in collaboration. With the creation of the Research, Development & Creativity Office in September, 2004, Laurentian University has grown with its research activities and can now support researchers more efficiently. As this office evolves with the brilliant work of Laurentian researchers, facilitating research and promoting these activities to the community has become an achievable goal.

Through the hard work of our faculty, Laurentian has contributed to the development of new discoveries. Inspired by the Strategic Research Plan, outstanding work is being conducted at the university in many areas of Natural Sciences and Engineering, Social Sciences and Humanities, Professional Schools and Life Sciences. The result of these initiatives has been a direct increase of research funding from about \$9 million

in 2003 to over \$20 million in 2006 (not including the \$10 million donation from the Province of Ontario for the Centre for Excellence in Mining Innovation).

With the hiring of faculty at the new Northern Ontario School of Medicine, a new era of health research is also being initiated. The addition of six PhD programs at LU (Biomolecular, Precambrian Geology, Natural Resource Engineering, Boreal Ecology, Rural and Northern Health and Human Studies) will also help promote the training of highly qualified personnel.

The various grants awarded to researchers and students at Laurentian University have had and will continue to play a major role in the socio-economic activity of the region and in fact, all of Canada. The university would like to acknowledge all the agencies

and contributors (governmental agencies, foundations and industry) for their support of research, training, and infrastructure as they will have a lasting impact on the region and its economy. It is all for the benefit of our region and its economic growth. ❏

PROPORTION OF RESEARCH FUNDING

