

THE KEY

LAURENTIAN UNIVERSITY'S RESEARCH MAGAZINE

Curiosity • Creativity • Connectivity



THE COOPERATIVE FRESHWATER ECOLOGY UNIT

30 years of successful partnership



Laurentian University
Université Laurentienne

SUDBURY | ONTARIO | CANADA



Dr. Pierre Zundel
Interim President and Vice-Chancellor,
Laurentian University

Together, ensemble, maamwi – changing lives through research

Universities are made to change lives for the better. We do that through the education we provide, the engagement we have with communities we serve and, very powerfully, through the results of our research.

“Curiosity Drives our Research” is one of the shared values identified in our 2018-2023 strategic plan *Together, Ensemble, Maamwi*. Reading the five outcomes that relate to research, one sees a dedication to social accountability represented in our commitment to wellness, environmental stewardship, mining-related work and social innovation.

The leads for these five outcomes and their teams are making plans and taking action. There is still time and need for more Laurentian University community members to take part in this work. I encourage you to reach out to them if you would like to participate.

In my time as Provost and even more so in my time as Interim President, where I have been cast in the role of Chief Storyteller for Laurentian, I have come to learn more about the incredible research work taking place here, the people who conduct it and its profound impact on our lives. The amazing work of the Centre for Research in Occupational Safety and Health (CROSH), bringing research projects and results

to remote communities, has made work in our core heavy industries safer. Our colleagues in *Orthophonie* help children develop the speech language skills that are critical to social and educational development. Gregory Schofield’s poetry work has shed much needed light on the Indigenous reality in Canada. Colleagues at the Vale Living with Lakes Centre continue to lead in bioremediation of industrial landscapes and make our environment healthier. Researchers in the schools and departments related to the mining cycle lead the world and create economic opportunities that sustain our region.

In addition to these and other direct contributions, our scientists, scholars and creators are powerhouses promoting studies and careers in research for everyone. Individuals such as Celeste Pedri-Spade, Tammy Eger, and Thomas Merritt and entire units such as the School of the Environment work tirelessly to encourage the next generation of scholars to enter the world of scientific research.

Our strength in research is bolstered by our partnerships in Northern Ontario – e.g., SNOLAB, Health Sciences North, Indigenous communities, Pan-Northern Mining Research Alliance.

I am proud of the way Laurentian researchers change lives and grateful for their ceaseless efforts. On behalf of all the people whose lives you make better – thank you!

GROWTH IN RESEARCH ACTIVITIES

For more than a decade, we have been ranked among the top 50 universities in Canada in terms of research activity. This is a significant achievement for a university of our size.

AREAS OF RESEARCH

While research at the University encompasses many disciplines, our 2019-2023 strategic research plan identifies four areas of strength:

- **Materials, Minerals, Matter and Energy**
 - **Environment**
- **Health, Health Services and Well-Being**
- **Histories, Identities, Cultures and Languages**

THE KEY

Vol. 8 2019

Publisher: Office of the Vice-President, Research
Laurentian University

Interim Vice-President Research: Dr. Rizwan Haq

Co-editors: Natalie Melanson-Martin,
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Design: Lynn Laird, JoAnn Wohlberg

Support: Kristyna Ripley, Ki-Youn Kim

Printing: The Print Hub, Laurentian University

Contributors: This edition is a collective effort of many individuals and offices of the university community and our affiliated partners. They include our researchers, Deans, the Office of Research Services, Health Sciences North Research Institute, the Northern Ontario School of Medicine and SNOLAB. We thank everyone for their time and commitment in supporting this publication.

Photography: In addition to images supplied by featured researchers and faculties, other contributors include HSNRI, NOSM and SNOLAB.

Special photo credit to Dani Kastelein (UNCEDED Exhibit, Venice Biennale, p. 15), Gerry Kingsley (Drs. Hallman and Parrisenti award, p. 8) and Darlene Naponse (screenshot of *Digital Storytelling*, p. 13).

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Published in collaboration with the Marketing Office.

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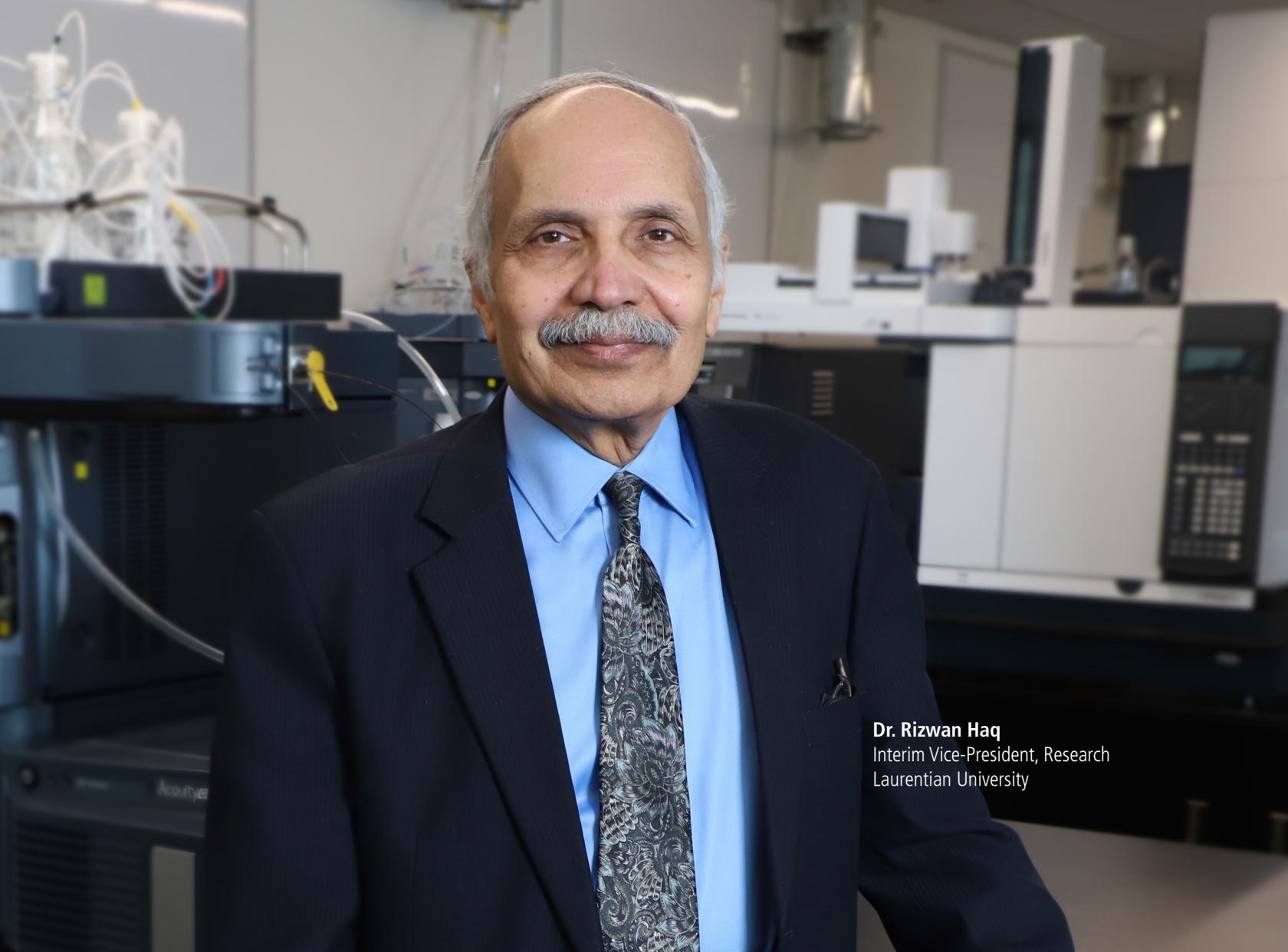
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Update on Cliff Fielding Research, Innovation and
Engineering Building



Dr. Rizwan Haq
Interim Vice-President, Research
Laurentian University

Reflections on 2018

As Laurentian University's Interim Vice-President Research, I am delighted to highlight our research community's achievements for 2018.

For the second year in a row, Laurentian University celebrated its ranking as Canada's #1 undergraduate university in total sponsored research income, according to *Research Infosource*. In a single year, our research income increased by 36.8%, giving us the #1 rank for research income growth amongst undergraduate universities. Our success is a credit to the faculty, highly qualified personnel, research staff and students who are helping put Laurentian on the map as a research-intensive university.

Several of our research centres recently marked important anniversaries. As featured in our cover story, the Cooperative Freshwater Ecology Unit (CFEU) is celebrating 30 years of ecological research this year. Discover how this one-of-a-kind research centre has evolved over the years and how it plans to address issues relating to climate change going forward.

An eventful year in research culminated with the completion of our new 2019-2023 Strategic Research Plan. Developed following a broad-based consultation process, this plan is a reflection of our research community's views and hopes for the future of research at Laurentian, aligning itself with the University's 2018-2023 Strategic Plan. In implementing our plan, we will foster all research at Laurentian by making our internal processes more efficient, strengthening our partnerships old and new, increasing internal and external collaborations and highlighting the research excellence of our researchers and students.

As you will see in this issue of *The Key*, the variety of research done at Laurentian is impressive, and its impact even more so. I congratulate every member of the Laurentian research community who contributed to the research achievements highlighted here and all those whose hard work is helping to expand our knowledge and understanding of the world.

RESEARCH & INNOVATION

2018 in numbers

#1



\$32,068,000

Canadian Undergraduate University in
TOTAL RESEARCH INCOME
(in 2017 and 2018)¹

Canada's



TOP 50

Research Universities

*Ranked 28th – our
highest ranking ever¹*

#2



Canadian undergraduate
university
**IN CORPORATE
RESEARCH INCOME**
(2013-2017)¹



272.4%

**#2 CANADIAN
UNDERGRADUATE
UNIVERSITY**
in not-for-profit research
income growth
(2013-2017)¹



95.6%

Corporate Research
Income Growth
(2013 to 2017)¹



**#2 Canadian Undergraduate
University in Research Intensity
per Graduate Student (2017)¹**

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RESEARCH
CHAIRS

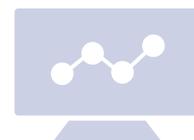


CRC – Industrial – University

**3 new shared research
spaces dedicated to
research + innovation**



- Jim Fielding Innovation and Commercialization Space
- Research Hub
- Perdue Central Analytical Facility



9.3%

**ANNUAL INCREASE
IN TOTAL TRI-COUNCIL
FUNDING (2017-2018)**

36.8%



**INCREASE IN TOTAL RESEARCH
INCOME (2016 to 2017)¹**

THE CO-OP UNIT

*30 years of successful partnership...
many more to come.*



The Cooperative Freshwater Ecology Unit (CFEU) is a unique, multidisciplinary research partnership with far-reaching, global impacts. Now celebrating its thirtieth anniversary, the Co-op has seen great expansion throughout the years, and with further developments already planned, it shows no sign of relenting any time soon.

By Meerna Homayed

The Co-op Unit began as a partnership between Laurentian University, the Ministry of Natural Resources (MNR), and the Ministry of the Environment (MOE), with a sharp focus on restoration ecology involving acid- and metal-damaged waters in Northeastern Ontario. In 1989, the timing was perfect for Dr. John Gunn, then a fisheries scientist with the MNR, and Bill Keller, a freshwater limnologist with the MOE, to join forces with Laurentian in a bid to further their research initiatives.

“The rationale was that we had similar or at least parallel interests – fish, water, benthic invertebrates, that kind of stuff. And it just made sense to tie some of the efforts more closely together,” explains Keller.

The partnership was initially called the Cooperative Fisheries Unit, with Gunn and a research assistant working out of Laurentian’s Biology Department. In 1991, they relocated the Co-op Unit to modest cottages on an MNR airbase on Ramsey Lake Road, where Keller also maintained an office. When his lab in downtown Sudbury was replaced with a new boardroom, he transferred his lab equipment to the new site and retrofitted the cottages to create workspaces. Having a research lab afforded Gunn and Keller the space and opportunity to engage more students in their fields of research.

“I think one of the best things about it was the kind of spirit of the people we managed to attract there. I mean it wasn’t a wonderfully glitzy place to work, by any means. But everybody loved it, and got along, and worked hard. And that was really what made things succeed. People liked what they were doing, and even more importantly, believed in what they were doing,” says Keller.

In 1992, the Co-op Unit was renamed the Cooperative Freshwater Ecology Unit to incorporate its expanding and diversified research interests. Gunn and Keller were gaining international recognition for their studies on acid rain, and collaborators were steadily drawn to their robust datasets on lake acidification. As more students and collaborators from academia and government joined the thicket, the focus of the partnership evolved to embrace a multiple stressor framework.

“That’s kind of how the work at the Co-op Unit evolved over time, in a nutshell. From, you know, looking at a problem, to looking at a problem that has changed a lot in scope, but is now being played out against a background of a whole bunch of other things too, with climate change being a big one everywhere,” says Keller.



Industry partners engaged in the CFEU after a change in provincial government in 1995 led to a drastic lack of funding. All the while, the quaint cottages on Ramsey Lake Road were struggling to keep up with the proliferating Co-op Unit. As research moved beyond Sudbury's industrial damage to incorporate more regional ecological complexities, the needs of the CFEU greatly surpassed its allotted space, and it was time to move out. Gunn, in his new role as a Tier 1 Canada Research Chair in Stressed Aquatic Systems at Laurentian, began the search for new facilities, and potential donors.

"Most of the members took part in the fundraising themselves. We designed the new building ourselves with professional architects, and then built it for growth. We built it for new potentials that we didn't know at the time," says Gunn.

It worked. In 2011, with support from local businesses and provincial and federal agencies, the Vale Living with Lakes Centre officially opened for business. Situated on Ramsey Lake at the mouth of Laurentian's campus, the building is dressed in ceiling-to-floor lake-facing windows and equipped with sustainable water and energy sources. The upper floor mainly consists of a large, open lab where researchers and students from all facets of the Co-op Unit work closely together.

"To be all together in this inspiring space gives a great sense of cohesion and purpose to the work we do," he says.

Moving into the Vale Living with Lakes Centre enabled growth within the CFEU's foundation. What was once a three-pronged co-op between Laurentian and the Ontario Government and industry, then became four by adding a federal collaborator in the Canadian Forestry Services (CFS), further stabilizing the partnership. Dr. Erik Emilson, a former Laurentian University PhD student, leads the CFS program.

"It grew from one research assistant, Ed Snucins, and myself in a tiny corner office in Biology, to the current participating researchers from five different departments, six associate universities, and three government agencies, forming a team of approximately 80 people."

"Moving into the Living with Lakes Centre represented the expansion of the ecosystem of concern onto the land and into the atmosphere,"

says Gunn. "We arrived in the new facility with our established team of experts (Gunn, Keller, and Drs. Tom Johnston, Dave Pearson and Peter Beckett), but the move soon ushered in a new generation of talented research scientists whose expertise covers all manner of stressors to ecological ecosystems. This includes Dr. Nate Basiliko, a Tier II Canada Research Chair in Environmental Microbiology, Dr. Nadia Mykytczuk, an NOHFC Industrial Research Chair in Biomineralization, Bioremediation and Science Communication, Dr. Brie Edwards with the Ontario Ministry of the Environment, Conservation and Parks (MECP), and Dr. Pascale Roy-Léveillé with the School of Northern and Community Studies. The Vale Living with Lakes Centre is also host to the Science Communication Master's program, the first of its kind in North America, directed by Dr. Chantal Barriault.

As the CFEU celebrates this milestone anniversary, it's also gearing up for the next phase of developments. The Co-op Unit is looking to add 3 or 4 new researchers by 2022, extend the Vale Living with Lakes Centre to incorporate a science communication and climate change hub, establish a new Centre for Mine Waste Biotechnology, and support the development of clean-water technologies. It will continue to expand connections with other post-secondary institutions and industry partners, and maintain its long-term monitoring studies.

Where will it be in the next thirty years? Gunn believes the CFEU will develop broader and deeper partnerships, while perhaps creating other research and science engagement institutes and teams, to be based largely in Northern Ontario. "We will still be conducting important research to address the life cycle effects of mining, from environmental assessment to decommissioning to waste management. But I suspect the big focus will be on climate adaptation with a Northern community and ecosystem perspective."

While it's not always possible to predict the future in an area of changing environments, "the Co-op Unit has always been a leader in identifying threats to freshwater systems and their surrounding landscapes," says Dr. Brie Edwards, the CFEU's lead research scientist for the MECP. "[It] will continue to champion research that blends multiple disciplines and breaks down barriers between knowledge production and evidence-based decision-making wherever it is needed most." 

Research Awards



Science North Honorary Life Members

Science North has recognized Drs. Douglas Hallman and Amadeo Parissenti as Honorary Life Members. Dr. Parissenti was recognized for his research and his discovery of an innovative method that will help physicians measure the effectiveness of chemotherapy in shrinking cancer tumours. Dr. Parissenti is a full professor in the Department of Chemistry and Biochemistry at Laurentian University and in the Division of Medical Sciences at the Northern Ontario School of Medicine, and a scientist at Health Sciences North Research Institute. Dr. Hallman, Professor Emeritus of Physics at Laurentian, was honoured for his research on the Sudbury Neutrino Observatory Experiment (predecessor of the SNOLAB) and for his work with Science North in communicating science to the public.



Community Partnership Award

Dr. Scott Fairgrieve received a Community Partnership award from the Rainbow District School Board. Dr. Fairgrieve, a full professor in the Department of Forensic Science at Laurentian University, was recognized for his contribution to the Lockerby Composite School Forensic Science Program for which he has been an active contributor since its creation in 2008. He also helped establish a formal partnership between the school and the University in 2009. The hands-on program is credited for having inspired a number of students to pursue their studies in the field of forensic science.

PSI Foundation Graham Farquharson Knowledge Translation Fellowship

Dr. Nisha Nigil Haroon, Assistant Professor of Endocrinology at the Northern Ontario School of Medicine, was awarded the PSI Foundation Graham Farquharson Knowledge Translation Fellowship for her work on *The Thyroid Nodule Epidemic: Choosing and Treating Wisely*. This fellowship — valued at \$150,000 per year for two years — is intended to protect a new, promising clinician's research time, allowing the Fellow to undertake high impact translational research. With the fellowship, Dr. Nigil Haroon will develop an interdisciplinary initiative to optimize the management of thyroid nodules and a novel diagnostic panel to better predict the malignant potential of indeterminate thyroid nodules.



Ontario Centres of Excellence's Mind to Market Award Shortlist

Dr. Nadia Mykytczuk and her research team were shortlisted for the Ontario Centres of Excellence's Mind to Market award. The collaboration between BacTech Environmental, Dr. Mykytczuk's lab at Laurentian University, and Cambrian College Applied Research was one of three shortlisted projects nominated. They developed pilot scale bioreactors (tanks) to test how different bacteria degrade different gold-bearing materials. The collaboration's ultimate goal is to make bioleaching a reality in Northern Canada, where millions of tonnes of tailings need treatment. The success of this project could have an important environmental impact. Dr. Mykytczuk is the NOHFC Industrial Research Chair in Biomining, Bioremediation and Science Communication and an assistant professor in the School of the Environment.



Early Researcher Award

Dr. Jennifer Walker received an Early Researcher Award for her project entitled “Data as Medicine: Improving population-level health information in First Nations communities in Northern Ontario.” The award is an initiative of the Ministry of Economic Development, Job Creation and Trade to help accelerate the research activities of Ontario’s leading career researchers. Dr. Walker is the Canada Research Chair in Indigenous Health at Laurentian University, and a Core Scientist and Indigenous Health Research Lead at ICES. The overarching goal of the project is to promote First Nations community wellbeing in Northern Ontario through community-driven use of health systems data to inform health services and policy; the research will leverage data from the newly established ICES North. The project is being done in partnership with the emerging Northern Ontario Indigenous health partnership called *Mamow Ahyamowen*, meaning Everyone’s Voices. This partnership of nine Northern Ontario First Nations health organizations representing 73 First Nations communities, is using epidemiological methods to help communities access the health status data they need to inform local planning to improve health.



Honorary Provincial Education Award

Dr. Luis Radford received an Honorary Provincial Education Award from the Ministry of Education for his exceptional and sustained contribution to French-language education research in Ontario. The award was presented to Dr. Radford at the 4th edition of the Forum for Synergy on Research in French-Language Education in Ontario in recognition of his contributions to the concepts, theories, policies, and practices of French-language education. The Ministry also commended him for the quality of his innovative work in mathematics, his important contribution to the improvement of concepts and practices in education, and his engagement with the students and teachers who are the focus of his research. Dr. Radford is a full professor at the *École des sciences de l’éducation*.

METAL EARTH UPDATE

A seven-year \$104 million research initiative



Canada’s largest mineral exploration research project, prepares for a third field season across 13 transects in the Canadian Precambrian Shield totaling approximately 1,000 line km.

A seven-year \$104 million research initiative, Metal Earth, led by the Mineral Exploration Research Centre (MERC) at Laurentian University has attracted researchers from around the world to uncover key characteristics and processes that are responsible for Earth’s differential base and precious metal endowment. The project aims to develop an understanding of these processes and to apply them to other jurisdictions with similar geologic environments, thus providing better area selection tools to reduce exploration risk.

Much of this research is focused on 13 research areas throughout the Superior Craton, which totals over 1,000 line km with the goal to produce large scale cross sections of greenstone belts that covers ancestral fault systems and volcanic complexes that have differential metal endowment. Further sub-projects include studying modern ocean environments, researching the generation and evolution of the sub-continental mantle, creating powerful area selection tools with isotopic mapping, to conducting geophysical data analyses using Seismic and Magnetotelluric (MT) Surveys.

The project continues to expand to include partner academic institutions including the University of Toronto, Université du Québec à Chicoutimi (UQAC), Université Laval, University of Maryland, Carnegie Institution for Science, University of Alberta and the University of Ottawa. The skilled team of researchers consisting of 10 Research Associates, 9 PhD Students and 22 M.Sc. Students at Laurentian University provides training through summer field work to many additional undergraduate students. Students and industry professionals can stay in touch by becoming a member of MERC or by applying for research associate or graduate research opportunities. For more information, visit merc.laurentian.ca.

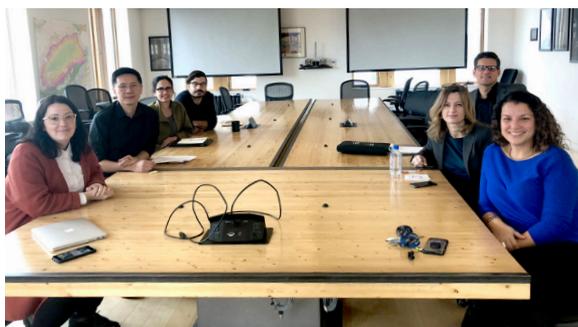
Research Highlights



Celebrating Indigenous Voices at the 2018 Venice Architecture Biennale

Dr. David Fortin, Director of the McEwen School of Architecture (MSA), was a co-curator of Canada's first ever Indigenous-led entry at the 2018 Venice Architecture Biennale. The exhibit, called *UNCEDED: Voices of the Land*, showcased Indigenous architecture by

18 Indigenous architects from Turtle Island (Canada and the USA). The project, which was led by renowned architect Douglas Cardinal and co-curated by Gerald McMaster from OCAD University, was chosen to represent Canada by the Canada Council for the Arts following a nationwide, juried competition. The people and communities served by the participating architects were the subject matter and backdrop of *UNCEDED: Voices of the Land*, which told a story through four thematic metaphors – indigeneity, resilience, sovereignty, and colonization. Two MSA students, Krystal Clark and Bohdana Chiupka-Innes, also participated in the exhibit as cultural hosts, and Eladia Smoke (master lecturer), Jake Chakasim (sessional), and Patrick Stewart (adjunct professor) were also featured in the exhibit.



SSHRC VP Visit and Researcher Showcase

Between November 16 and 19, 2018, Dr. Dominique Bérubé, Vice-President, Research Programs at the Social Sciences and Humanities Research Council (SSHRC), visited Laurentian for a series of meetings and events with the Maamwizing Indigenous Research Institute, the Canada First Research Excellence Fund funded Metal Earth and SNOLAB teams, Science North, our research centres and SSHRC-funded researchers. With a background in engineering and environmental science, she expressed a great affinity with the dynamic and interdisciplinary research environment at Laurentian.

Over the course of her four days at Laurentian, Dr. Bérubé provided researchers with valuable strategic insights regarding Tri-Agency programs and policies related to research-creation, Indigenous research, and major research infrastructure projects, and briefed the research community about upcoming funding opportunities. One of the major highlights of her visit was the SSHRC Showcase. This event featured 5-minute presentations by several researchers during which they described the outcomes and impacts of their SSHRC-funded research projects. Currently, Laurentian has over 20 active SSHRC-funded research projects in disciplines such as architecture, education, social work, history, English, archaeology, Indigenous studies, French studies, philosophy, economics, sports psychology, ethics and sociology. This terrific visit was made possible by a myriad of researchers and staff, all of whom were excited and proud to share their research achievements.

First Issued Patent in Chile – Superbolt

A patent application for a new rock bolt – the Superbolt – designed by a professor in the Bharti School of Engineering and four students, has been issued in Chile. This marks an exciting milestone for Laurentian University as it is the University's first patent in Chile and, most importantly, the first issued patent which names four students as co-inventors. The Superbolt was designed in 2012 by Dr. Ming Cai, University Research Chair in Geomechanics, and Alexander Watt, Ukelabuchi Tabele, Ian Van Eyk and Kevin Pan, fourth-year undergraduate students participating in a Mining Engineering Design Project supervised by Dr. Cai. In the time since the invention was disclosed to Laurentian, the students have graduated and are currently employed in the mining industry, while Dr. Cai has continued to work on the development of the rock bolt with the support of Mansour Mining Technologies Inc (MMTI). The company has partnered with Dr. Cai on a research and development grant from the Natural Sciences and Engineering Research Council of Canada and has supported patenting activities since the initial provisional application. Dr. Cai continues to work with MMTI in advancing the commercialization activities, and a license agreement which will allow the company to sell the Superbolt worldwide will be negotiated with the University in the near future.

Nancy Young receives Health System Research Fund grant

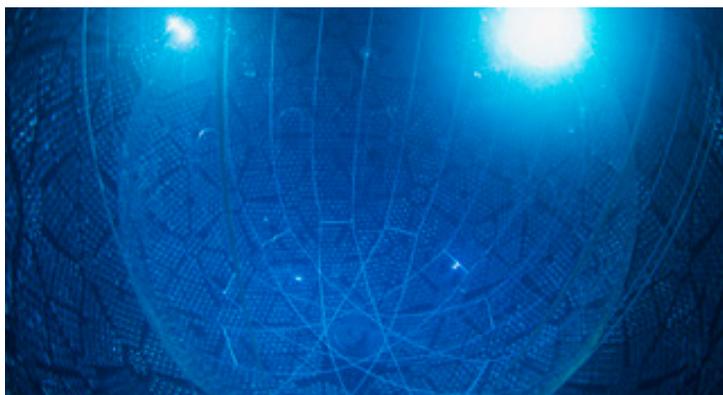
Dr. Nancy Young, University Research Chair in Rural and Northern Children's Health, received a \$2 million Health System Research Fund grant from the Ministry of Health and Long-Term Care in support of the project *Evaluation to Action: Integrating the Voices of Aboriginal Children* (ETA), which is co-led with Mrs. Mary Jo Wabano, Health Services Director for Wiikwemkong Unceded Territory.

Together, they are leading a team of child health researchers and Aboriginal health leaders in profiling the health of children in eight communities and learning how this information affects decision-making. Using the *Aboriginal Children's Health and Well-being Measure* assessment tool, developed in a previous stage of their research, the ETA team is examining how tailored child health report cards and program evaluations can identify what steps need to be taken to improve future health outcomes for children at a local level. The effectiveness of the model is being evaluated in partnership with several Indigenous communities from 2018 through 2020. If effective, the ETA model will later be rolled out for use across the province.

Inaugural Summer School of Ontario's Indigenous Mentorship Network

In June 2018, Laurentian University had the honour of hosting the inaugural summer school of Ontario's Indigenous Mentorship Network (IMN), Ontario's first Indigenous-led health research training network. Funded by the Canadian Institutes of Health Research, it provides high-quality mentorship, training, and opportunities to Indigenous scholars and trainees who work in the field of Indigenous health research. Over 20 graduate students from as far away as Labrador attended the week-long program, with emphasis placed on students studying, or planning to work, in Northern contexts.

The students were joined by practitioners, Indigenous knowledge holders and researchers to strengthen the skills, capabilities, and knowledges needed to do meaningful and respectful research with Indigenous communities. The IMN-ON is an interdisciplinary group of research institutions led by Dr. Chantelle Richmond at Western University. The group includes several Laurentian researchers as members, including Drs. Jennifer Walker, Taima Moeke-Pickering, Sheila Cote-Meek, Joey-Lynn Wabie, and Celeste Pedri-Spade.



New Era of Physics Publications

The SNO+ Collaboration has just published its first physics results of the SNO+ detector. This marks the start of a new era of physics publications as the SNO+ detector comes into operation. The Sudbury Neutrino Observatory (SNO), used for the Nobel Prize-winning measurements made on solar neutrinos, has been substantially modified over the past decade in order to attack new astroparticle physics challenges as SNO+. The first two papers contain results from the “water-fill” phase of commissioning the new detector. The Collaboration is now displacing the ultra-pure water in the 12 m diameter acrylic vessel with 780 tonnes of linear alkyl benzene, a liquid scintillator that will boost the detector's sensitivity and enable a full program of new measurements over the coming years. The newly published results report on a solar neutrino measurement and a nucleon decay search. The solar neutrino measurement complements the SNO measurements extending it to lower neutrino energies with very low backgrounds. It contributes to constraining neutrino properties and demonstrates SNO+'s ability to produce high-quality measurements after the long transition period. Nucleon decay refers to the decay of a neutron or proton. Free neutrons do decay to protons, electrons and neutrinos but proton decay has never been observed, and searches with several large detectors have set stringent lower limits on the lifetime of the proton. The SNO+ search is for the particular hypothetical decay mode of nucleons with the oxygen nuclei in the ultra-pure water. The sensitivity of SNO+ to these particular decay modes is superior to other larger detectors, and by not observing any decay candidates, SNO+ has increased the lifetime limits associated with those modes. The observation of nucleon decay would have huge consequences for particle physics. Among the many researchers taking part in this experiment are Laurentian researchers Dr. Christine Kraus, Canada Research Chair in Particle Astrophysics, and Drs. Clarence Virtue and Doug Hallman, full professor and professor emeritus, respectively, in the Department of Physics.



Maamwizing Conference: Pursuing Indigenous Research “In a Good Way”

Following the success of the inaugural Maamwizing Indigenous Conference in 2016, a second conference, *Maamwizing: Pursuing Indigenous Research “In a Good Way,”* was held at Laurentian University on November 16-18, 2018. The conference focused on the nature and role of Indigenous research and was organized by the Maamwizing Indigenous Research Institute.

Over 200 people from across Canada and overseas attended the busy weekend conference that featured lectures, workshops, discussions, creative sessions, and paper and poster exhibits. Presenters came from multidisciplinary backgrounds in engineering, social sciences, education, Indigenous studies, art, and anthropology/archeology, among others. The program topics ranged from the methodology, ethics and protocols, and current projects in Indigenous research. Also, a banquet, which included performances by musicians, comedians and storytellers, was held at the Atikameksheng Anishnawbek Community Centre and an Indigenous Art Market took place in the Atrium at Laurentian University.



Dr. Robert Ohle Receives Northern Ontario Academic Medicine Association Grant

Dr. Robert Ohle, Clinical Investigator at the Laurentian-affiliated Health Sciences North Research Institute (HSNRI), Emergency Physician

with HSN and Director of Research for the HSN Emergency Department, received a Northern Ontario Academic Medicine Association grant to adapt and improve current guidelines for Acute Aortic Syndrome (AAS), a rare life-threatening and oft-misdiagnosed condition that results from a tear in the inner wall of the aorta.

As there are currently no Canadian guidelines to aid in diagnosis, the goal was to adapt the American Heart Association and European Society of Cardiology diagnostic algorithms for AAS. A National Advisory Committee was created, consisting of 21 members including academic, community and remote/rural emergency medical practitioners and patient representatives. Using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach to assess evidence and make recommendations, the Advisory Committee created the first Canadian best practice diagnostic algorithm for AAS that will standardize and improve diagnosis of AAS in all emergency departments across Canada.

Research Centre Anniversaries

One year ago, the Centre for Rural and Northern Health Research (CRaNHR) celebrated its 25th anniversary. CRaNHR, formerly known as the Northern Health Human Resources Research Unit, was established in 1992 by the Ontario Ministry of Health to conduct research with a focus on health workforce issues in Northern Ontario. Over the years, CRaNHR has obtained additional funding to broaden its research mandate to include work focused on Indigenous health, Francophone health, and virtual care, with research partners across Canada and around the world.

CRaNHR has been led by Dr. Raymond Pong (1992-2010), Dr. Elizabeth Wenghofer (2010-2011), Mr. John Hogenbirk (2011-2012), Dr. Wayne Warry (2012-2017), and Dr. Alain Gauthier (2017-2019). Over the years, the staff and faculty/affiliated investigators have created a space for generating innovative ideas and enhanced partnerships. CRaNHR is currently a proud partner of Canada's Strategy for Patient-Oriented Research (SPOR) as one of 13 Ontario SPOR Support Unit (OSSU) Research Centres, and has been a partner to the Northern Ontario School of Medicine in leading the medical school's Integrated Impact research program for over 14 years.

CRaNHR pursues ongoing research, and welcomes new collaborative opportunities. To know more about CRaNHR's projects and activities, follow @CRaNHR or visit www.cranhr.ca/.

The Centre for Research in Occupational Safety and Health (CROSH) celebrated 10 years of Prevention Through Research in 2018. Founded by researchers in partnership with community stakeholders and in response to industry, community, and labour needs, CROSH's mission is to be a leader in providing occupational health and safety solutions to problems facing northern industries.

At a celebration gala, CROSH unveiled its Top 10 milestones, which included the establishment of the CROSH Research Chair in 2012; the opening of the CROSH home lab in the Ben Avery building; and the Mining and Mental Health Study, a three-year initiative with Vale and United Steelworkers that examines mental health issues in the mining industry.

Other major achievements from the past two years include M-CROSH, a mobile occupational



Sandra Dorman, Leo Gerard and Tammy Eger



Elizabeth Wenghofer, Wayne Warry, John Hogenbirk, Raymond Pong and Alain Gauthier



health and safety lab researchers can use to travel to the communities with which they conduct research, and the Workplace Simulator Laboratory (W-SIM) located in the Cliff Fielding Research, Engineering and Innovation Building where researchers can study health and safety challenges by simulating work environments of Northern Ontario industries such as mining, construction, and forestry. Significantly, CROSH was also recently recognized as a Health and Safety system partner, which includes a 5-year core funding commitment from the Ministry of Labour.

Laurentian's Oldest Journal Celebrates Its 40th Anniversary – The *Revue du Nouvel-Ontario* marked its 40th anniversary in 2018, making it Laurentian University's oldest active journal. The French-language interdisciplinary journal focusing on Franco-Ontarian topics was founded by the *Institut franco-ontarien* in 1978.

To celebrate this important milestone, the RNO is releasing a 43rd issue in winter 2019 entitled "La RNO... déjà 40 ans!" (The RNO... 40 years already!). This issue is co-edited by Dr. Julie Boissonneault, Editor-in-Chief since 2010, and the first Editor-in-Chief, Dr. Donald Dennie. In addition to the usual articles and reviews, this issue provides an update on the Franco-Ontarian field of study. It includes testimonies from former editors-in-chief and a retrospective look at RNO articles and issues published between 1978 and 2000, which are revisited by the original authors or by other researchers. These and previous issues can be found on the *Érudit* portal.



The Laurentian Research Institute for Aging (LRIA) and its founding team (Drs. John Lewko, Sylvie Larocque, Bruce Oddson and Birgit Pianosi) marked its first year of existence in September 2018. This is Laurentian University's newest research centre and is one of Canada's newest research institutes that focuses on aging.

The LRIA aims to help find innovative solutions to the challenges presented by the aging population in sectors such as healthcare, housing, economics and public policy at the local, provincial and national levels. Through interdisciplinary, applied, tri-cultural research, LRIA's vision is to positively impact the activities and experiences that influence the daily lives of older adults, with a particular focus on those who live in northeastern Ontario.

As a first major achievement, the LRIA partnered with the North East Specialized Geriatric Centre to develop a compendium of educational offerings relevant to a competency framework that outlines seventy-two practice-based behavioural statements to guide interprofessional comprehensive geriatric assessment (CGA). This compendium will give healthcare providers access to a diverse collection of educational resources that will help them acquire the requisite knowledge, skills, values, and attitudes that are foundational elements in interprofessional CGA, which is the standard of care for specialized geriatric services for frail older adults.

FACULTY

Arts

Interim Dean: Joël Dickinson, PhD



RESEARCH MAKING AN IMPACT TODAY



Gert Nootchtai
Atikameksheng Anishnawbek

Drs. Sheila Cote-Meek, Taima Moeke-Pickering and Hoi Cheu collaborated with Dr. Janet McElhane from Health Sciences North Research Institute, community Indigenous Scholar Elder Betty McKenna, and filmmaker Darlene Naponse on *Digital Storytelling*, a digital media production project funded by AGE-Well. The project seeks to improve dementia care for Indigenous people, with dementia rates reported to be 34% higher in Indigenous compared to non-Indigenous people due to health inequities.

Driven by Indigenous communities and aligning with Indigenous ways of knowing, the project facilitates knowledge-sharing around common caregiver experiences and patterns through storytelling. *Digital Storytelling* is being integrated into training sessions for caregivers and as tools to promote community-driven models to address the emerging health issues related to dementia diagnoses for Indigenous peoples in Canada.



Alain Doom

The creative writing of the Theatre Program's Associate Professor Alain Doom is consistent with a keen interest in "memorable theatre." In his play *Un neurinome sur une balançoire*, published

by Éditions Prise de parole in 2015, he explored memorial space through a self that is defined by illness and an encounter with a poet. This play was recently adapted into a web series by TV5 Monde under the title *Neurinome*, and is now available to watch at unis.ca/neurinome. In 2018, Prof. Doom's play *Un quai entre deux mondes* was published by Éditions Prise de parole. In this play, he explores how a lack of roots allows the memory to be revisited more easily as a form of baggage that transcends space. In his new play, *Le Club des Éphémères*, he tackles the rejection of mythified stories that nevertheless shape our memory, drawing on the history of the Dionne Quintuplets, whose physical or memorial traces are slowly disappearing. This "research-creation" will be published in 2019.



Cynthia Whissell

Dr. Cynthia Whissell's book entitled *Emotion and Plot in the Premodern English-Language Novel* was published in 2018 by Common Ground Research Networks. The book is the result of several years of research on the topic of emotion in literature and of 20 months of work, from conception to writing, acceptance, editing (by Mary Ann Carswell) and publication.

Inspired by a list of "100 Best" English-language novels published in *The Guardian* newspaper, Dr. Whissell studied the underlying structure of 39 English novels published before 1914 and used quantitative methods to analyze the emotional implications of their words. Targeted at an interdisciplinary humanities audience, the book should also be of interest to those seeking to understand literature from another

perspective. This is Dr. Whissell's third book, having published over 100 articles, mainly in the area of emotion and language. This summer, she will present a paper on the plot structure of *The Iliad* and *The Odyssey* at a conference in Greece. Dr. Whissell is a full professor and chairperson for the Department of Psychology.



Serge Miville

Dr. Serge Miville was highly sought after by the provincial and national media in November 2018, following the political crisis that mobilized a significant portion of civil society in French-speaking Ontario and put the spotlight on the province's Francophone community. The involvement of the Assistant Professor and Franco-Ontarian History Research Chair in the debate has brought Laurentian's research in the humanities and the arts to the forefront. Drawing on his research, particularly on the Sturgeon Falls school crisis (SSHRC Insight-Development 2018-2020) and the Hôpital Montfort crisis (1997-2002), he has written and co-authored numerous letters in the *Globe and Mail*, *Le Devoir*, and *Le Droit*, and has appeared on *The Agenda*, *TVO*, *Médium Large* and *Faut pas croire tout ce qu'on dit* on the national networks of Radio-Canada and the CBC.

This mobilization of knowledge has helped to inform public debate on the future of French-speaking Ontario, as well as on popular education, the democratization of knowledge and the development of public governance policies.

FACULTY

Education

Dean: Luce Marie Brogden, PhD



ENGAGEMENT IN EDUCATION



Ginette Roberge

Building Capacity for French Immersion Science Teachers

Drs. Ginette Roberge and Yovita Gwekwerere received a grant of \$300,000 from the Ontario Ministry of Education and the Council of Ontario Directors of Education (CODE) to conduct research, develop teaching resources, and offer professional development workshops for French Immersion science teachers across the province.

The two researchers bring unique experiences that have strengthened this collaboration. Dr. Roberge, Associate Professor, teaches French, English and science at the *École des sciences de l'éducation*, and also has experience teaching French as a second language in elementary schools. Dr. Gwekwerere, Associate Professor, teaches science education courses to pre-service teachers in the English School of Education and has experience teaching middle school science.

Dr. Roberge's research focuses on second language teaching and learning, as well as bullying prevention and intervention strategies in schools. Dr. Gwekwerere is part of an international research team investigating middle school and high school students' understandings of scientific inquiry – the main focus of her work – across five continents. The researchers' project, entitled "Building Capacity for French Immersion Science Teachers," was developed in response to French Immersion teachers' concerns about the additional challenge of teaching scientific concepts to second language learners whose second language competencies may be varied or limited.



Yovita Gwekwerere

A common challenge in French Immersion science classrooms in Ontario is that existing resources are generally designed for first language teachers and therefore do not take into account the pedagogical implications of second language teaching approaches, namely teaching complex scientific concepts in what is a second language for most learners. In July 2017, representatives from the Ontario Ministry of Education approached Laurentian University to discuss a project that would strive to build capacity for these teachers. In February 2018, Laurentian signed agreements with CODE and Science North. Laurentian researchers were tasked with conducting research and then developing teaching resources informed by research, while Science North was subcontracted by the researchers to develop and conduct science workshops for French Immersion science teachers.

The research project focused on gaining an understanding of teachers' and students' perceptions about French Immersion science teaching and learning. The project is ongoing. So far, the collaboration has provided professional development workshops to 37 grade 7-10 science teachers, as well as research training opportunities for two Laurentian University students working as research assistants. This project demonstrates the recognition of Laurentian University as a bilingual university which offers unique talents that are essential for the promotion of Canada's two official languages.

FACULTY

Graduate Studies

Dean: David Lesbarrères, PhD



2018 ACHIEVEMENTS



Jasmine Veitch at the 3MT provincial competition



2018 Venice Biennale in Italy



Kelly Harding, winner of the Governor General Gold Medal

So many awards and scholarships!

What a great year for our graduate students, with more than 72 publications, 127 presentations, and over 150 scholarships awarded across all disciplines. Here's a glimpse of some of the most prestigious prizes:

- 2 Ontario Trillium Scholarships for international PhD students: Farhad Abassi Amiri (Natural Resources Engineering), and Maryam Parashkouhi (Natural Resources Engineering)
- Grace Scott was awarded the CIHR Doctoral Scholarship, and Thierry Middleton was the recipient of the SSHRC Doctoral Scholarship.
- 8 Canadian Graduate Scholarships: Valérie Gauthier (Sociologie), Anik Dennie (Human Kinetics), Désirée Quenneville (Human Kinetics), Dominika Pakula (Psychology), Kelsey Lapointe (Orthophonie), Adam Kirkwood (Biology), Damiano Bartolotto (Chemical Sciences), Laura Williams (Biology)
- 31 Ontario Graduate Scholarships

Want more?

- Jasmine Veitch (Biology) represented Laurentian University at the Ontario Universities 3MT provincial competition.
- Kelly Harding (Rural and Northern Health) was awarded the Governor General Gold Medal.
- Krystel Clark (Architecture) was selected to act as a cultural host at the Canadian Pavilion at the 2018 Venice Biennale in Italy.

So far away!

- Adam Kirkwood (Biology) presented at the European Conference on Permafrost in Chamonix Mont-Blanc, France and at the Geophysical Union 2018 Fall Meeting in Washington D.C., USA.
- Ibrahim Berrada (Human Studies) presented at the Mid-Atlantic-New England Council for Canadian Studies in Lake Placid, NY, at the Association of Canadian Studies in Waterford, Ireland, and at the British Association for Canadian Studies Conference in London, England.

- Mandy Scott (Human Studies) presented at the Toward a Science of Consciousness Conference in Tucson, Arizona.
- All Architecture students travelled to one of the following for research/study trips: Helsinki, Copenhagen, Moose Factory, Albuquerque, New York City, Northern Quebec.
- Stéphanie Beaulieu, Émilie Bouchard-Moore, Catherine Contant, Alyshia Kiernan, Kelsey Lapointe, and Joannie Morris (Orthophonie) presented at the International Society for Augmentative and Alternative Communication Congress in Gold Coast, Australia.
- Corey Caporicci and Mélodie Serré (Orthophonie) presented at the American Speech-Language and Hearing Association Convention in Boston, MA.
- Carly Stransky (Biology) presented her thesis at a conference in Russia and spent part of her summer in the Arctic placing trackers on endangered species for conservation and finding mammoth remains for research on mammoth era flora and fauna.

Congratulations to all of our graduate students on these outstanding achievements!

FACULTY Health

Interim Dean: Céline Larivière, PhD



ENHANCING HEALTH AND WELLBEING OF COMMUNITIES NEAR AND FAR THROUGH RESEARCH



Sandra Dorman



Dominique Gagnon



Isabelle Côté

The Faculty of Health's research productivity is diverse and covers a variety of disciplines and thematic areas that were front and centre at the 10th Annual Faculty of Health Conference held on December 5th, 2018. This year's conference featured over 15 posters, over 30 oral presentations, a three-minute thesis competition, a grant-writing panel discussion, an Indigenous scholarship showcase organized by the School of Indigenous Relations, and featured Dana Wilson from Public Health Sudbury and District who gave a compelling talk on the topic of health equity.

During the 2017-2018 academic year, researchers from the Faculty of Health have published 23 books and book chapters, 117 peer-reviewed articles and over 300 conference proceedings or research reports. Individual researchers, research centres and laboratories received a combined total of \$19,521,840 in research funding.

Among the books published by our faculty are *Les pratiques en maison d'hébergement pour femmes victimes de violence conjugale : 40 ans d'histoire* by Isabelle Côté, *Facilitating Mindfulness: A Guide for Human Service Professionals* by Diana Coholic, and *La pensée critique expliquée par des didacticiennes et des didacticiens de l'enseignement supérieur* by Georges Kpazai.

Select research grants awarded

- Isabelle Côté from the School of Social Work and colleagues were awarded an SSHRC grant (\$50,855) for *"Développement d'outils méthodologiques et pratiques pour évaluer les pratiques d'intervention axées sur la sécurité et la reprise du pouvoir des femmes victimes de violence conjugale."*
- Elizabeth Carlson from the School of Social Work and colleagues were awarded a SSHRC Connection Grant (\$49,980) for *"Stories of Decolonization Film Project: Identities and Contemporary Colonization."*
- Lea Tufford from the School of Social Work and colleagues (including Elizabeth Wenghofer from the School of Rural and Northern Health) received a SSHRC Insight Grant (\$120,824) for *"Evaluating decision-making and relationship competence when reporting suspected child abuse and neglect."*
- Roxanne Bélanger, Chantal Mayer-Crittenden and Michèle Minor-Corriveau from the School of Speech-Language Pathology received a SSHRC Insight grant (\$99,499) titled *"The early identification of children at risk of developing language disorders using validated parent questionnaires: a partnered approach to childhood well-being."*
- Birgit Pianosi from the Department of Gerontology at Huntington University and John Lewko from the School of Rural and Northern Health received a grant from the North-

East Specialized Geriatric Centre, Seniors' Care Network (\$50,000) for *"Compendium of Educational Offerings Relevant to Interprofessional Comprehensive Geriatric Assessment."*

- Dominique Gagnon from the School of Human Kinetics received an NOHFC Internship Grant (\$31,500; 2018-2019) to help support his research program focused on human thermoregulation and metabolism.

Other Research news

- Manon Robillard and Pascal Lefebvre, both from the School of Speech-Language Pathology, as well as 5 graduate students and 2 undergraduate students attended the International Society for Augmentative and Alternative Communication conference in Gold Coast, Australia in July 2018 where they presented four posters.
- Tammy Eger (Research Chair in Occupational Health and Safety) from the School of Human Kinetics is one of four Canadian women to have been selected to participate in the prestigious 12-month Homeward Bound Leadership development program in science, technology, engineering, mathematics and medicine, which culminates with an expedition to Antarctica.
- The 2017-2018 Faculty of Health Excellence in Research Award was given to Sandra Dorman from the School of Human Kinetics.

FACULTY

Management

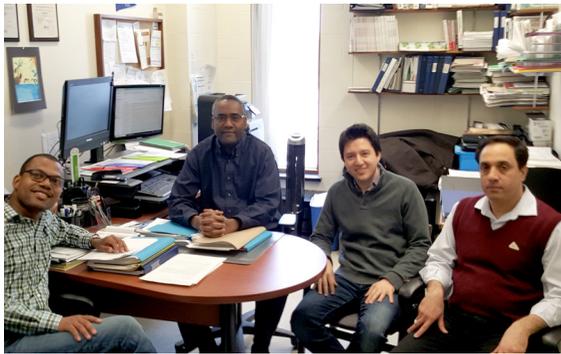
Interim Dean: Bernadette Schell, PhD



BUILDING RESEARCH COMMUNITIES GLOBALLY



Dr. Luckny Zéphyr with his Certificate of the First Prize AMBAR 2018-Research and Development of the Colombian Energy Sector (Research Category) of the Association of Colombian Distributors of Electrical Energy



The RCODS' Executive Team: from left to right, Dr. Luckny Zéphyr, Dr. Mohamed Dia, Dr. Amirmohsen Golmohammadi, Dr. Shashi K. Shahi



Dr. Amirmohsen Golmohammadi and Dr. Mohamed Dia with their Certificate of the Best Paper Award received from the Production and Operations Management Division of ASAC 2018

The Research Centre for Operations and Decision Sciences (RCODS)* was created on September 21, 2018, by a group of Operations Management faculty members, namely, Dr. Mohamed Dia who was appointed Executive Director of the Centre, and Drs. Amirmohsen Golmohammadi, Shashi K. Shahi, Pawoumodom M. Takouda, and Luckny Zéphyr, from the Department of Finance and Operations. Both the Faculty of Management and the Department of Finance and Operations Councils have endorsed the creation of the RCODS.

The RCODS aims to foster multidisciplinary research in the areas of operations management, decision sciences, and related fields (e.g. analytics, data mining, big data, artificial intelligence, machine learning, renewable energy, sustainability), and in other disciplines such as management information systems, accounting, finance, engineering, economics, health administration, management of natural resources (mining, forestry, fisheries, renewable energy), behavioural sciences, and public administration. The Centre, in line with the Laurentian University 2018-2023 Strategic Plan, will encourage research in the areas mentioned above,

increase opportunities for research funding, assist with faculty attraction and retention, provide opportunities for graduate education, and promote and support opportunities for international accreditations (EPAS, AACSB) in the Faculty of Management.

Two thousand eighteen was a successful year for the RCODS members and for the Faculty of Management at Laurentian University, with professors attending conferences, collaborating with researchers around the world, and obtaining prestigious awards. Dr. Dia was a member of the Scientific Committee and a track chair for the 2018 International Conference of the African Federation of Operational Research Societies (AFROS 2018) held in Tunis (Tunisia), July 2-4, 2018, where he also presented two communications. Dr. Takouda presented two communications at the Administrative Sciences Association of Canada (ASAC) 2018 Conference in Toronto, May 27-29, 2018. One of the papers won the Best Paper Award. Titled "Reliability Effort Management in a Decentralized Assembly System," by Golmohammadi, A., A. Tajbakhsh, M. Dia, and P.M. Takouda, the winning paper was chosen among dozens of other high

quality submissions to the Production and Operations Management Division of ASAC 2018. In December 2018, as part of a team featuring a PhD student whom he co-supervises in Colombia, Dr. Luckny Zéphyr won the First Prize AMBAR 2018-Research and Development of the Colombian Energy Sector (Research Category) of the Association of Colombian Distributors of Electrical Energy. The winning paper is titled "MAEP: A Mild- and Long-Term Tool for Hydro-Thermal Power Systems," and the open-source software (MAEP) is currently used by a private company in Columbia. Dr. Golmohammadi presented a communication at the Canadian Operational Research Society (CORS) 2018 Conference in Halifax on June 4-6, 2018. Dr. Shahi was instrumental in developing research collaborations with the Ontario Ministry of Natural Resources and Forestry. In addition, during the year 2018, the RCODS members produced numerous papers in top-tier peer-reviewed journals.

* Senate approval pending

FACULTY

Medicine

Dean: Roger Strasser, MD, Northern Ontario School of Medicine



INNOVATIVE EDUCATION AND RESEARCH FOR A HEALTHIER NORTH

Rooted in the North – The Northern Ontario School of Medicine (NOSM) is rooted in the North. We owe our progress in making Northern Ontario a healthier place to the many people and communities who have embraced our learners, supported NOSM, and advocated for improved health services in the region.

Research at NOSM is reflective of those roots. The work of NOSM researchers plays a key role in fulfilling the School's mandate to be socially accountable to the diverse cultures of Northern Ontario, tackling important questions about the issues that affect people in the North. Research by our faculty and learners covers a breadth of topics in clinical, community and population health, biomedical sciences, environmental health, health education and health services.



Marina Ulanova



Marion Maar



Lorrilee McGregor

Indigenous Health Research – NOSM learners and researchers continue to develop collaborative, participative and meaningful approaches to community-based research, and are working to answer questions that will have a positive impact on Indigenous communities in a respectful way.

Dr. Lorrilee McGregor, Assistant Professor of Indigenous Health, joined NOSM in the spring of 2018. Since 2002, Dr. McGregor has been a member of the Manitoulin Anishinabek Research Review Committee (MARRC), a community research ethics board, and has served as the chair since 2004. She is the School's first full-time Indigenous faculty member. Dr. McGregor organized a research conference on February 1-2, 2019, to highlight research projects that have been reviewed and approved by MARRC over the years.

Dr. Marion Maar, Associate Professor of Medical Anthropology at NOSM, together with First Nations communities of Manitoulin Island and Laurentian University Master of Indigenous relations graduate, Beaudin Bennett, created *Noojamadaa*, an educational photo exhibit exploring healthy relationships in First Nations families and communities. The goals of the project include understanding the context of intimate partner violence, the role of primary care practitioners in addressing violence their patients experience at home, and what kind of training and resources they need to better fulfill that role.

Dr. Marina Ulanova, Professor of Medical Sciences, has been studying *Haemophilus influenzae* infection for the entirety of her 13 years as a faculty member at NOSM. Throughout her tenure, Dr. Ulanova and her team have made numerous significant discoveries about HiA, including its prevalence in Northwestern Ontario and in Indigenous versus non-Indigenous populations in the region, as well as about natural immune defences against this infection.



Roger Strasser

Northern Health Research Conference

NOSM's Northern Health Research Conference (NHRC) has been held annually since 2006. The School's 13th annual Northern Health Research Conference was held in Kenora, directly following the School's Indigenous Community Partnership Gathering hosted by Wauzhushk Onigum First Nation.

As this was the last NHRC Dr. Roger Strasser will attend in his role as Dean and CEO of NOSM, it was announced that the School has created a research award in his name which will provide financial support for a learner to present at each future conference.



Tara Baldisera

Working Better Together

A group of NOSM researchers, led by Dr. Tara Baldisera, Associate Professor of Clinical Sciences, are following both male and female athletes from multiple varsity teams at Laurentian University, studying the effectiveness of interprofessional concussion management teams in diagnosing and treating injuries from both return-to-play and return-to-learn perspectives.

FACULTY

Science, Engineering and Architecture

Dean: Osman Abou-Rabia, PhD



ENGAGED RESEARCH



RL Beattie Primary School students dancing DNA replication



Part of the Huron-Wendat Pottery Project (Michel Plourde, Laval University; Amy St. John, Western University; Greg Braun, University of Toronto; Alicia Hawkins, Laurentian University; Louis Lesage, Huron-Wendat Nation).



Albrecht Schulte-Hostedde with Canada's Chief Science Advisor, Mona Nemer

In May 2018, 160 grade four to six students from RL Beattie Primary School danced a DNA replication of a bacterial chromosome. The event was part of NSERC Science Odyssey, a national week of science outreach. Under the direction of science teacher, Emilia Corsi and Dr. Thomas Merritt, Canada Research Chair in Genomics and Bioinformatics, the students interpreted the replication of a circular bacterial chromosome in a swirling 10-minute dance of colour. Kindergarten teacher Alyssa Julien choreographed the piece, and a student band played an original composition in four notes, one for each base in the DNA code, composed by music teacher Colette Nadeau. The students spun and circled as one looping chromosome became two and created an amazing multidisciplinary piece of art that put the whole concept of genetics in a different light.

The Huron-Wendat Nation and Laurentian researcher Dr. Alicia Hawkins have teamed up to explore a question central to Huron-Wendat understandings of their history. In a SSHRC-funded project conceived of and co-designed with the Nation, the research team is investigating why Huron-Wendat oral traditions indicate a strong connection with the St. Lawrence Valley, while traditionally archaeologists have not recognized this. The team employs the idea of "community of practice," in which artisans who learn from one another share gestures and ideas of how to make something, possibly without even being aware of this. If Huron-Wendat ancestors made

pots in eastern Canada, as well as in what is now southern Ontario, this should be observable in the selection of clays, in the "recipes" for preparing clay, and in the gestures they used to form the pots. Laser ablation inductively coupled plasma mass spectrometry (by Dr. J. Petrus at the Harquail School of Earth Sciences, Laurentian University), ceramic petrography (by Dr. G. Braun at University of Toronto) and micro-computed tomography (by A. St. John at Western University) are three of the methods employed to see beyond decoration and to explore possible "common recipes" of Indigenous potters over five hundred years ago.

In October 2018, Dr. Émilie Pinard, Assistant Professor at the McEwen School of Architecture, and ten students from the program, travelled to Sept-Îles through an SSHRC Partnership Engage Grant to support the Innu Takuaihan Uashat mak Mani-Utenam (ITUM) Band Council in developing a project to build a transmission centre of Innu culture for youth. The team met with government officials and cultural specialists, participated in educational workshops, and visited existing transmission camps of Innu culture with elementary school elders and directors. These activities made it possible to identify and prioritize the qualities required for the future centre and to make an inventory of preferred construction practices. The students then produced concrete proposals, in the form of architectural drawings, as a means of translating, sharing and validating the visions expressed. These were presented to the

partners at meetings in Sudbury in November and Quebec City in December, and the results will be shared in a printed publication and on a website accessible to the communities in the coming months.

In November 2018, the inaugural Canadian Science Meets Parliament event was held at Parliament Hill in Ottawa. Organized by the Canadian Science Policy Centre in partnership with Chief Science Advisor, Dr. Mona Nemer, Science Meets Parliament brought researchers and parliamentarians together to start a dialogue. Laurentian University's Dr. Albrecht Schulte-Hostedde, Canada Research Chair (CRC) in Applied Evolutionary Ecology, was one of 29 Tier II CRCs selected from across the country to participate in this initiative. Researchers from a variety of disciplines were in attendance.

Dr. Schulte-Hostedde participated in a workshop on how to communicate with policymakers and met with Conservative MPs, Jim Egliniski and Colin Carrie, and the head of the Green Party, Elizabeth May. A key lesson Dr. Schulte-Hostedde took away from this experience was on how to communicate ideas to politicians and policymakers: start with the take-home message and explain how you got there, rather than starting with a theoretical foundation and building up evidence to a crescendo. The CRCs who attended the inaugural Science Meets Parliament are now working on a paper documenting their experiences at the event.

The Cliff Fielding Research, Innovation and Engineering Building



On any given day, visitors to Laurentian University can encounter a number of curiosity-driven activities taking place in the Cliff Fielding Research, Innovation and Engineering (CFRIE) Building. Opened in the fall of 2018, the 60,000-square-foot building is home to the award-winning Bharti School of Engineering, the Perdue Central Analytical Facility (PCAF), the Jim Fielding Innovation and Commercialization Space, and the Research Hub.

The ground floor of the building provides new lab spaces for the more than 700 students enrolled in the School's four engineering programs. Visitors can observe the activities taking place in all seven labs from windows on the first floor. Featuring high ceilings and open spaces, the design of the building facilitates both experiential learning and collaboration with other groups housed within the building. For example, a design competition which featured cardboard airplanes being catapulted upwards and forwards was held in the CFRIE's atrium. Additionally, a group of fourth-year students are working with the Centre for Research in Occupational Safety and Health (CROSH) to design a test cab for the Rotopod currently being installed in the PCAF. Outreach activities with local high schools, including Laurentian University's Open House, and the First Year Integration Conference, a two-day leadership development conference for one hundred first-year engineering students from universities throughout Ontario, are examples of other initiatives taking place in the CFRIE.

Since its opening, a growing number of laboratory and analytical infrastructures have reached operational status in the PCAF, as new pieces of equipment have been purchased and installed. Existing equipment is also being relocated into the facility. The PCAF is designed to enhance sharing across disciplines

and reduce underutilization of valuable research infrastructure; user fees also create a mechanism by which maintenance and repair of the resources are streamlined, ensuring that equipment remains operational. A number of meetings and discussions have taken place with the federal and provincial governments and labs at other universities on potential partnerships and collaborations to leverage the centralized resources of the PCAF. Recently, the Norrine Perdue Lecture Series was launched, highlighting successful analytical researchers and exciting developments in their field.

In its inaugural period of operation, the Jim Fielding Innovation and Commercialization Space has been a veritable hive of activity. As a burgeoning academic innovation centre, its initial focus is to create opportunities for students to acquire skills beneficial to any career path and to support the development of a culture of innovation and entrepreneurship on campus. Regular programming includes Crash Courses, Brainstorming Sessions, and Office Hours, while special events have featured guest speakers, a faculty book launch, and an innovation seminar co-hosted with partners in the Greater Sudbury innovation ecosystem. In addition, training sessions on how to use the Space's 3D printers and laser cutter have been offered. Students have used this equipment to create prototypes for

fourth-year Venture and Engineering Capstone projects, personal designs, and visual art creations.

As home to Laurentian's thirteen Senate approved research centres, the Research Hub has become a dynamic space on campus, used by researchers for the dissemination of research outcomes. To date, a number of conferences and meetings have taken place in the main space of the Research Hub, including a Social Sciences and Humanities Research Council Showcase, the Annual General Meeting of the Institut franco-ontarien, and the New Diplomacy of Natural Resources, a forum hosted in conjunction with the United Nations Association in Canada. It has also been used by researchers, research centres and university staff to host advisory board meetings, outreach sessions with policymakers, funding opportunity information sessions and funding support workshops. Finally, the Research Hub serves as an important, informal venue to facilitate collaboration and multidisciplinary interaction due to its shared workspaces, which are available for use by all on campus.

As seen by the volume and diversity of activities, the CFRIE has become, in the short time since its official opening, a true hub for creativity and innovation, supporting the generation of new knowledge and the training of a new generation of highly qualified personnel and leaders.