

THE KEY

LAURENTIAN UNIVERSITY'S RESEARCH MAGAZINE

Curiosity • Creativity • Connectivity

2016 in Review

EXPLORATION & DISCOVERY —

From Northern Ontario to
across the globe



Laurentian University
Université Laurentienne

SUDBURY | ONTARIO | CANADA



Dominic Giroux
President and Vice-Chancellor, Laurentian University

The Year to Remember

Unprecedented Chapter in Laurentian's History –
An entire chapter in Laurentian's history book could be dedicated to 2016 – "the year to remember."

We accomplished so much in 2016! Let's begin with the \$10 million investment from David Harquail and his family to advance mineral exploration research. In the family's honour, the Department of Earth Sciences is now known as the Harquail School of Earth Sciences.

On the same day, the federal government announced an investment of \$49 million in a \$104 million mineral exploration research program called *Metal Earth*. This funding is the largest single investment in Laurentian's history! Thanks to \$55 million in matching investments from 22 partners, our exciting seven-year Metal Earth initiative will make Laurentian an undisputed global leader in this field. I encourage you to read more about Metal Earth in this issue to appreciate the decades of research excellence and work from everyone that helped make Metal Earth a reality.

More good news was announced when the federal government approved a record amount of successful proposals made to the Natural Sciences and Engineering Research Council (NSERC) and an 11% increase in funding from the Social Sciences and Humanities Research Council (SSHRC).

On the heels of this announcement, Laurentian learned that it will receive \$21.1 million from the federal government

and \$6.3 million from the Province towards research and innovation infrastructure at Laurentian University. As part of a broad capital program totalling \$60.7 million to be completed in 2018, construction on the new 60,000 sq. ft. Clifford Fielding Research, Innovation and Engineering Building has begun. Key laboratories and collaborative research spaces for colleagues and students for the University's seven Faculties will provide a home to develop, build, test, and commercialize exciting ideas under one roof, not just for our researchers but for collaborations with industry and other start-ups. The Clifford Fielding Building will be our very own physical think-tank and it is a testament to the growing research capacity and innovation on campus. This new facility will also provide state-of-the-art laboratories and enriched learning for our award-winning engineering programs.

Laurentian University is leading Indigenous research with the newly-established Maamwizing Indigenous Research Institute. We welcomed Dr. Jennifer Walker as our first Indigenous Canada Research Chair. We also welcomed two other new research chairs: Dr. Serge Miville in Franco-Ontarian History and Dr. Nadia Mykytczuk in Biomineralogy, Bioremediation and Science Communication.

This is indeed an unprecedented chapter in Laurentian's history – some even say that Laurentian is in a new league.

president@laurentian.ca facebook.com/dgiroux1 @Dominic_Giroux

GROWTH IN RESEARCH ACTIVITIES

For more than a decade, we have been ranked among the top 40 universities in Canada in terms of research activity. This is a significant achievement for a primarily undergraduate university.

AREAS OF RESEARCH

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

- **Environment and Conservation**
 - Health and Wellness
- **Social and Cultural Research and Creativity**
- **Engineering, Mineral and Materials Sciences**
 - Subatomic Physics

THE KEY

Vol. 6 2017

Publisher: Office of Research Services,
Laurentian University

Vice-President Research: Dr. Rui Wang

Co-editors: Réjean Grenier, Gisele Roberts

Design: Lynn Laird, JoAnn Wohlberg

Contributors: This edition is a collective effort of many individuals and offices of the university community, including our esteemed researchers, Deans, the Office of Research Services, the Office of Francophone Affairs, and the Northern Ontario School of Medicine. 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 Bureau des affaires francophones, NOSM and Charles Ramcharan (cover)

Translation: Jean-Yves Asselin, Réjean Grenier

Office of Research Services
Laurentian University
935 Ramsey Lake Road
Sudbury, Ontario P3E 2C6
705-675-1151, ext. 3944
research@laurentian.ca

Published in collaboration with the Marketing Office.

CONTENTS

4

RUI WANG, VICE-PRESIDENT, RESEARCH
Reflections on 2016

5

OUR YEAR IN NUMBERS

6

HISTORIC FUNDING ANNOUNCEMENT:
Metal Earth

8

RESEARCH AWARDS

10

RESEARCH HIGHLIGHTS

12

RESEARCH LEADERS

13

Faculty of Arts, p. 13
Faculty of Education, p. 14
Faculty of Graduate Studies, p. 15
Faculty of Health, p. 16
Faculty of Management, p. 17
Faculty of Medicine, p. 18
Faculty of Science, Engineering and Architecture, p. 19

20

TOP RESEARCH TWEETS



Dr. Rui Wang, MD, PhD, FAHA
Vice-President of Research, Laurentian University

A Reflection on 2016

2016 has been a banner year for research and innovation at Laurentian University. Last year, our researchers exceeded the milestones that were set for our institution.

In 2012, Laurentian University defined its research objectives in its Strategic Research Plan – a plan that focused on research values that reflect the University’s mandate and mission. As we embark on the final year of this plan, there has never been a more opportune time to highlight the many accomplishments achieved throughout the past five years and, in particular, 2016.

When I joined Laurentian two years ago, one of my objectives was to increase the opportunities to celebrate research and innovation within the university community and externally. This past year has been a great year for celebration. The successes of our students, researchers and research centres have been recognized locally, nationally and internationally. It has truly been a year of outstanding achievements and one that is unparalleled in our history.

The numbers tell a story. *Our Year in Numbers* is a reflection of Laurentian’s achievements. Our faculty and students have received numerous prestigious research awards; we have established new research partnerships and strengthened existing ones; we have renovated and built new research infrastructures; and we have created a veritable brain trust by attracting and retaining some of the brightest minds in research and innovation. According to the 2016 ranking of Canada’s Top 50 Research Universities published by ReSearch Infosource, Laurentian was #1 in Canada for sponsored research income growth in the undergraduate category. Our publication output demonstrated a 107% increase over the previous 15-year annual average.

Laurentian’s success story could not be told without the hard work of our dedicated researchers, students and staff and the tremendous support from government, industry, community partners, alumni, and all of the friends of Laurentian University. Together, we celebrate the year to remember, 2016, at the same address of excellence: Laurentian University, 935 Ramsey Lake Road, Sudbury, Ontario, Canada.

Our year in **NUMBERS**

#1 

Undergraduate university in Canada for **GROWTH IN SPONSORED RESEARCH INCOME***

*2016 ReSearch Infosource

8,689

Undergraduate Students



894

Graduate Students

9 Guest lectures from **INTERNATIONAL RESEARCH LEADERS**




\$37M

TOTAL SPONSORED RESEARCH INCOME*

*Estimate based on 2015 results and newly secured funding

\$31M

Funding for the new **Research, Innovation & Engineering Building***

*\$21M from the Strategic Infrastructure Fund, \$6M from the Ontario Government and \$4M from individual donations

4 New institutional research **PARTNERSHIP AGREEMENTS**



18 
RESEARCH CENTRES

17,000+ Square feet of new **RESEARCH SPACE***

*Including the completed and ongoing construction and renovation of research and innovation space

\$104M

over the next 7 years for **Metal Earth research program***

*\$49M from CFREF and \$55M in matching funds



9 International Research Awards

18 **CANADA RESEARCH CHAIRS**
Industry and University



METAL EARTH

Laurentian University's Metal Earth research program is as big as its larger-than-life name would imply. With more than \$49 million in funding from the Canada First Research Excellence Fund (CFREF) and an additional \$55 million from federal, provincial and industry partners, the ambitious project aims to answer a question that has puzzled geologists, and could prove extremely valuable to mining companies:

What makes certain regions more metal-endowed than others?

Celebrating Laurentian University's largest funding award in history: Metal Earth Director Dr. Harold Gibson, Director of the Harquail School of Earth Sciences, Dr. Douglas Tinkham, donors David Harquail and Birgitta Sigfridsson, MPs Marc Serré and Paul Lefebvre, Chair of Laurentian's Board of Governors Jennifer Witty, President and Vice-Chancellor Dominic Giroux and Vice-President of Research Dr. Rui Wang.



By Jonathan Migneault

Through Metal Earth, a team of international researchers and more than 100 graduate students – affiliated with a half dozen research institutes – will study two Canadian greenstone belts to determine why one has a greater concentration of metals than the other. Greenstone belts are zones made up of aged volcanic rock that has a green hue due to years of mineralization. The Abitibi greenstone belt, which covers large swaths of northeastern Ontario and western Quebec, contains some of the richest ore deposits in the world. In contrast, northwestern Ontario's Wabigoon greenstone belt does not have the same high concentration of metals like copper, nickel, zinc and gold. Both greenstone belts were formed more than 2.5 billion years ago during the Precambrian era, which spanned 90 per cent of the Earth's evolution, and was the period when much of the planet's precious and base metals formed. To study and compare both greenstone belts, researchers will use a wide variety of techniques from multiple geological disciplines. It's the unique combination of geology sub-disciplines that most excites Dr. Bruno Lafrance about the project. "The possibilities are enormous," said Dr. Lafrance, Metal Earth's Associate Director. "That's never been done on that scale." To provide detailed images of the rocks and mineral deposits below the surface of both greenstone belts, Metal Earth's researchers will borrow a page from the oil and gas sector.

They will use a technique called seismic reflection to create a sort of giant ultrasound of the geology at various sites. To create detailed images, seismic reflection uses four specialized multi-ton trucks equipped with devices called seismic vibrators that apply pressure on the ground below and create low-frequency vibrations into the earth. The pressure waves travel through the Earth's crust toward the mantle, and like an ultrasound, they bounce off of any objects (like ore different from the surrounding rock) in their way. Advanced software transforms the data into detailed images of what is found below the researchers' feet. Metal Earth researchers will also use different geochemistry techniques and measure the effect ore deposits have on the Earth's gravitational field to analyze the greenstone belts.

Mining companies that have invested into the project – including Vale, Noront Resources and TMAC Resources – hope to eventually commercialize some of the findings to improve their ability to discover new ore bodies. "Global metal reserves are being depleted due to increased demand and decreased global discovery rates over the past 10 years," said Dr. Harold Gibson, Director of the Mineral Exploration Research Centre (MERC) at Laurentian's Harquail School of Earth Sciences and lead of Metal Earth.

Dr. Lafrance indicated that since 2005 the number of dollars mining companies have spent on exploration has increased much more than

the number of new ore discoveries they have made. They've made a lot of the easier discoveries – of ore bodies closer to the surface or in more accessible regions – and it's getting increasingly difficult to find more remote ore bodies. Currently, 90 per cent of Canada's mineral wealth comes from mines located south of the 60° N latitude, where it is easier and less expensive to discover deposits. "We need better models; we need better understanding to find new discoveries," said Dr. Lafrance.

In terms of research spending, Metal Earth is Laurentian's most ambitious program to date. It took years of hard work and dedication for a small team to secure \$49,269,000 in funding over seven years from the Canada First Research Excellence Fund.

Dr. Lafrance pointed out that Laurentian President and Vice-Chancellor Dominic Giroux first suggested the university's geology department prepare a proposal for the federal fund in late 2013. The federal government created the CFREF to help Canadian postsecondary institutions become world leaders in research areas that create long-term economic advantages for Canada. The inaugural competition led to five awards totaling \$350 million in 2015. For the second round of funding the government handed out \$900 million to 13 universities out of 51 applicants. Laurentian was one of the successful applicants during the second round. Each institution could only submit one application.

According to Dr. Lafrance, he and the rest of the team found out their application was successful on Aug. 5, 2016. But the government's official announcement of the successful applicants did not happen until Sept. 6. "I think everybody knew within the university because we received emails from many different people," Dr. Lafrance said. The bulk of the funding will support the science and the people who will make it all possible.

Thirty-five post-doctoral fellows will be attached to the project, and in July a new Canada Research Chair, who will play a critical role in Metal Earth, will join Laurentian. A new professor in exploration and geophysics is due to start around the same time, and in January 2018, a specialist in Precambrian geology is expected to join the Metal Earth team.

The project funding will also allow Laurentian to hire an Earth system modelling professor who will help analyze Metal Earth's scientific data. While Laurentian was already recognized for its geological research, Dr. Lafrance said Metal Earth propels the university to the next level.

"We're playing in the major leagues now with the project," he stated.

Research Awards



2016 Research Excellence Award



The Laurentian University Research Excellence Award recipient for 2016 was Dr. Annie Roy-Charland.

Dr. Roy-Charland is an Associate Professor in the Department of Psychology and an investigator at the Laurentian University Cognitive Health Research Laboratory. Each year, the award is given out by the Vice-President, Research, in recognition of the outstanding research accomplishments of a faculty member. Dr. Roy-Charland's research focuses on the development of reading and literacy, emotional competencies and facial expression recognition as well as children's health in Indigenous communities. Her nomination was supported by her students and peers, a testament to the impact her commitment to research excellence in cognitive health has had at Laurentian University.



Blue Racer Award

At the 2016 annual meeting of the Canadian Herpetological Society, Dr. Jacqueline Litzgus was presented with the Blue Racer Award.

This award is given to an individual in recognition of their outstanding contributions to the conservation of amphibians and reptiles in Canada. Dr. Litzgus is a Full Professor in the Department of Biology and a world-renowned authority on the conservation biology of species-at-risk turtles. Dr. Litzgus' research involves evaluating conservation techniques and informing sustainability strategies that can impact greatly on species facing extinction. She has been instrumental in training a new generation of theoretically grounded, methodologically competent, communication-savvy educators, managers, and researchers. She has quickly established Laurentian as an entirely new and respected centre of Canadian herpetology.

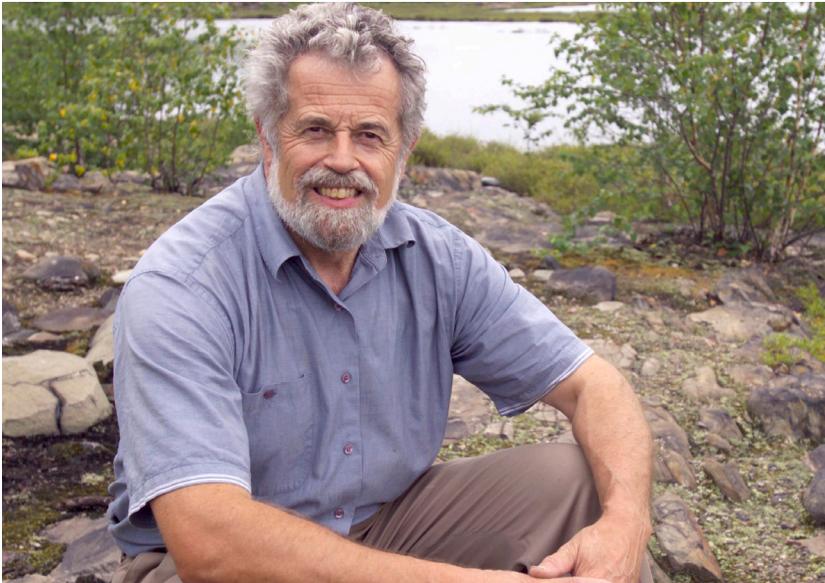
Dr. Edward M. Watkins Award



Dr. Peter Beckett is the 2016 recipient of the Dr. Edward M. Watkins Award, an honour given out by the Canadian Land Reclamation Association (CLRA).

Named after one of the founding members of the CLRA, the award is presented in recognition of the recipient's contributions to land reclamation in Canada, particularly through service to foster advances in regulation, reclamation or the development of personnel or students. Dr. Beckett is a restoration ecologist whose research has examined remediation strategies to address soil contamination in mining and smelter-impacted watersheds. Throughout his 40-year career, Dr. Beckett has distinguished himself as a dedicated volunteer and advisory member of numerous organizations dedicated to land reclamation and remediation.





Order of Ontario

In December 2016, Dr. David Pearson was appointed to the Order of Ontario.

After many years teaching geology, David is now a Professor in the Science Communication Program at Laurentian University and a member of the School of the Environment at the Vale Living with Lakes Centre. Over his long and illustrious career as an environmental researcher and advocate, “Dr. Dave”, as he is informally known, has earned a reputation as a staunch advocate for the environment with a long-standing history of advocacy and public service. He chaired the Ontario office of the Canadian Climate Impacts and Adaptation Research Network from 2002 to 2007; he co-chaired the Ontario Expert Panel on Climate Change Adaptation; and he chaired the Far North Science Advisory Panel for the Ontario Government. He is currently Science Advisor to the Ontario Centre for Climate Impacts and Adaptation Resources at Laurentian and is working with Far North Ontario First Nation communities on climate change adaptation plans.



The Order of Ontario is awarded to individuals whose exceptional achievement in their field has left a lasting legacy in the province, Canada and beyond.

2016 Canada Prize in Social Sciences

The Canadian History of Education Association has awarded its 2016 Founders’ Prize to Dr. Joel Belliveau for his monograph “Le «moment 68» et la réinvention de l’Acadie”.

The book was also short-listed for the Canada Prize in Social Sciences, awarded annually by the Federation for the Humanities and Social Sciences. Dr. Belliveau is Associate Professor of History and his primary area of research focuses on the social and national movements within Canada’s national minorities, particularly Francophone Ontario and Acadian New Brunswick.

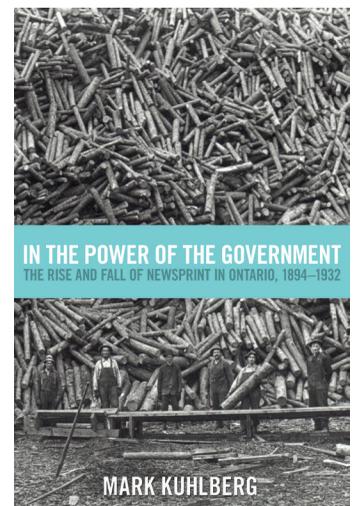


His prize-winning monograph reflects on a social movement created by francophone students in Moncton, New Brunswick during the nineteen-sixties and the resulting effects on the Acadians’ political culture as well as on the province’s political scene.

Political History Group Book Prize

Dr. Mark Kuhlberg, Full Professor in the Department of History was the 2016 recipient of the Political History Group Book Prize awarded by the Canadian Historical Association.

His prize-winning book, “In the Power of the Government: The Rise and Fall of Newsprint in Ontario, 1894-1932”, examines the relationship between the Ontario provincial government and the pulp and paper industrialists who sought to develop the province’s pulpwood and water power resources during the late nineteenth/early twentieth centuries. Dr. Kuhlberg’s research interests span many subsets of history, including the realms of business, environmental, political, education and Aboriginal history, and his recent award reflects his expertise in the history of Ontario’s forests. Dr. Kuhlberg’s book was selected from over 30 nominated titles for the prize.





Research Highlights



CREATE Grant – A team led by Dr. Albrecht Schulte-Hostedde has been awarded a \$1.65M grant under the CREATE program of the Natural Sciences and Engineering Research Council of Canada (NSERC). The team's project, called ReNewZoo, will provide training in conservation-related research by leveraging the resources of five major research-intensive zoos/aquariums in Canada, as well as the Canadian (CAZA) and American (AZA) zoo/aquarium organizations. The six-year project is expected to strengthen and support the zoos and aquariums of the future, as research and conservation become critical strategic goals. Dr. Schulte-Hostedde is Canada's Research Chair in Applied Evolutionary Ecology, Professor of Biology, and Founding Director of the Centre for Evolutionary Ecology and Ethical Conservation at Laurentian University. The project team will include Dr. David Lesbarrères, Dr. Jacqueline Litzgus and Dr. Gillian Crozier, as well as collaborators Dr. Brett Buchanan and Dr. Chantal Barriault.

CFREF (SNOLAB) – The Laurentian University particle astrophysics group, composed of Dr. Ubi Wichoski, Dr. Jacques Farine, Dr. Clarence Virtue and Dr. Christine Kraus (Canadian Research Chair Tier II in Particle Astrophysics), and Professor Emeritus Dr. Doug Hallman are part of a project recently funded by the Canada First Research Excellent Fund (CFREF). Led by Queen's University, the \$63.7M CFREF award will help establish the Canadian Particle Astrophysics Research Centre (CPARC). The project involves scientists from the University of Alberta, University of British Columbia, Carleton University, McGill University, University of Montreal, and the University of Toronto. The new centre will also partner with the Canadian Institute for Advanced Research, the Institute of Particle Physics, the Perimeter Institute, SNOLAB and TRIUMF. Forty-one new positions for researchers, engineers, designers and technicians will be created to support the centre's objective of developing new particle astrophysics detectors. CPARC will also provide annual training opportunities for 40 graduate students and 18 postdoctoral fellows. It is anticipated that the centre will position Canada as a global leader in the field of astrophysics.

Sharing the Sudbury Story with the World –

In May of 2016, Laurentian University hosted the Sudbury Protocol Conference, an event inspired by the desire to answer questions on how Sudbury transformed itself from a barren, industrially damaged landscape to the beautiful and healthy natural environment of present day. With the financial support of the Social Sciences Humanities Research Council, the Northern Ontario and Heritage Fund Corporation, the City of Greater Sudbury, and Science North, the three-day event assembled more than 160 researchers, government and industry representatives and community groups to discuss the history of Sudbury's re-greening efforts. The participants also worked on strategies to better communicate the knowledge gained from this experience to other industrially devastated communities around the world. Plans are now underway to formulate a protocol allowing to most effectively disseminate the lessons learned.



Launch of New Indigenous Research Initiatives – At a special event held in the fall of 2016, Laurentian University launched a number of new initiatives to support Indigenous research. Members of the university and local community were present at the celebration to announce Dr. Jennifer Walker's appointment as Laurentian's first Canada Research Chair in Indigenous Health; the creation of the Senate-approved Maamwizing Indigenous Research Institute; and the launch of the Advancing Indigenous Research Fund that will provide \$100,000 in annual support to Indigenous research collaborations at Laurentian University. It is anticipated that these three initiatives will facilitate the creation of new partnerships that advance Indigenous research and knowledge while facilitating the dissemination of results regionally, nationally and internationally. Further to this announcement, Laurentian hosted the *Maamwizing Indigenous Conference*, a three-day multidisciplinary conference aimed at advancing learning on issues facing Indigenous faculty members at Canadian universities including equity, curriculum and pedagogy. Conference participants included leading and emerging scholars from across the country, faculty members, graduate students, senior administrators, staff, educators, and community members.



Milestone announcement for Indigenous research at Laurentian University: President and Vice-Chancellor Dominic Giroux, Associate Vice-President, Indigenous Programs Dr. Sheila Cote-Meek, Councillor at Atikameksheng Anishnawbek Steven Nootchtai, Canada Research Chair in Indigenous Health Dr. Jennifer Walker, MP Marc Serré, Métis Elder Juliette S. Denis, MPP Glenn Thibeault and Vice-President of Research Dr. Rui Wang.



Banting Discovery Award –

Dr. Jeff Gagnon of the Department of Biology has been awarded the *Banting Foundation Discovery Award*. His research, "Investigating the role of H₂S in the regulation of ghrelin secretion", may provide important information on how ghrelin, an appetite-controlling hormone produced in the endocrine cells in the stomach, is regulated by hydrogen sulfide. This work may lead to new strategies in weight management. The

Banting Foundation bestows the annual award on a small number of scientists who demonstrate excellence and creativity in health and biomedical sciences. According to Dr. Gagnon, this type of funding is critical for young researchers as it offers the necessary funds to operate their university labs and provides the experience necessary to successfully advance their academic career. The grant will enable him to hire and train graduate students, conduct the proposed research, and publish the findings. Dr. Gagnon also believes that these activities will improve the likelihood of securing larger, long-term research grants in the future.



Architectural rendering by Yallowega Bélanger Salah Architecture

Future Clifford Fielding Research, Innovation and Engineering Centre

Laurentian University continues to grow! – A successful application to the Government of Canada's Strategic Infrastructure Fund has enabled Laurentian to leverage provincial and private funds to proceed with the construction of a 60,000 square foot facility that will enhance the university's research and innovation infrastructure. The Clifford Fielding Research, Innovation and Engineering Centre will consist of distinct areas designed to support different types of research by faculty and students. The Norinne E. Perdue Collaborative Research and Development Space will house an analytic lab that will enable researchers across the University's seven faculties to share equipment and expertise; the Jim Fielding Innovation and Commercialization Space will be designed to support entrepreneurial students, faculty and emerging start-ups by bridging the commercialization gap between laboratory and market. A research hub will also be created to promote cross-disciplinary research activities. The remaining space will consist of designated engineering laboratories divided into functional areas such as capstone, material analysis and soil mechanics labs. The proposal and plan for the new facility were developed through an extensive and thorough consultation with internal and external stakeholders including community partners, funders and innovation resource networks.



RESEARCH Leaders

SERGE MIVILLE



In 2016, Dr. Serge Miville, assistant professor, was appointed to a new Research Chair in the History of French Ontario. His PhD thesis was entitled "Écrire un pays: récits et identités au Canada sous la plume des historiens (1945-1982)". Dr. Miville's current research focuses on two wide-ranging themes: "The French-Canadian Reference in French Ontario" and "The Role of Franco-Ontarians in Ontario Politics". The first theme aims at finding out how and why Ontario francophones went from identifying as French-Canadian to Franco-Ontarians. His second initiative tries to evaluate if and how Franco-Ontarians have influenced the government bureaucracy and the politics of their province. Those two research categories have already yielded conferences and papers that Dr. Miville expects to publish.

NADIA MYKYTCZUK



Dr. Nadia Mykytczuk (Environmental Microbiologist, SOTE) has been awarded a 5-year NOHFC Industrial Research Chair in Biomineralization, Bioremediation, and Science Communication. Dr. Mykytczuk earned her post-doctoral degree from Laurentian and is now based out of the Vale Living with Lakes Centre. Her research program aims to use genomic technologies to develop and enhance biomineralization for metal recovery as well as improve strategies of bioremediation of industrially damaged terrestrial and aquatic environments. She has also led the development of a documentary style signature course that features the science of ongoing efforts in Sudbury's remediation program and the valuable lessons it can bring to industrial cities, globally. The course, titled "Environmental Remediation: Global Lessons from the Sudbury Story" was launched in January 2017.

JENNIFER WALKER

Dr. Jennifer Walker has been appointed Tier II Canada Research Chair for Indigenous Health. Her research expertise will complement existing projects within the Centre for Rural and Northern Health Research (CRaNHR) and the Interdisciplinary PhD program in Rural and Northern Health. Dr. Walker has also been appointed Laurentian's Canadian Institute of Health Research (CIHR) Leader and she looks forward to helping build and support research capacity and intensity within the health sciences. Through her CIHR-funded research grant entitled "Unlocking Health Information for Older First Nations Populations", she is working with First Nations partners to generate the first Ontario regional profile of age-related wellness and frailty. Dr. Walker will focus on Indigenous community-engaged research using large health services databases held by the Institute for Clinical Evaluative Sciences (ICES), where she leads the Indigenous health portfolio.





Alain Doom



Gregory Scofield



Dr. Celeste Pedri-Spade (Photo: Rebecca Bose)



Dr. Thierry Bissonnette

Dr. Robert Lemay

FACULTY

Arts

Dean: Elizabeth Dawes, PhD



CONNECTING WITH THE COMMUNITY

Actor, Playwright and Professor

ALAIN DOOM, Assistant Professor of Theatre, was awarded the 2016 prize for emerging authors by the Writers' Association of French Ontario for his play, *Un neurinome sur une balançoire* (Sudbury: Prise de parole, 2015).

« Full of resilience, this introspective story brings us through the various stages of the illness: loss of innocence, fear, solitude, suffering, but also hope. Inspired by the real life experience of Alain Doom, whose life was saved but who was not completely healed, it highlights the urgency of living, the importance of personal encounters and the work of the artist. »
– The jury of the Prix Émergence AAOF



Poetry as Testimony

GREGORY SCOFIELD, Cree Metis Poet and Assistant Professor of English, was awarded the 2016 Latner Writers' Trust Poetry Prize of \$25,000. His most recent collection is *Witness, I am* (Gibsons, B.C.: Nightwood Editions, 2016).

"For seven collections of poetry, Gregory Scofield has impressed us with his memorable lyrics and keen eye for the finer details. His forms embrace the musical, the documentary, and the experimental in a vision of risk and generosity. From raw, urban truths to the solace of Cree cadence, from the heart beat of the drum to

the wax poetics of a young Louis Riel, Scofield's range of subject, work, and style dazzles.
– Jurors Jeffery Donaldson, Karen Solie, Katherena Vermette

The Art of Anthropology

DR. CELESTE PEDRI-SPADE, Anishinabekwe artist and Assistant Professor of Anthropology, and Leanna Marshall showed their exhibit entitled *The Teaching is in the Making: Re(store)ied Memories of Anishinabeg*, at the Art Gallery of Sudbury from October 26, 2016 until January 22, 2017.

"It recognizes that Anishinabeg photographs and regalia not only convey messages but that they embody stories and ideas that arise in the process of making them. In both the making and experience of these art pieces, we enter a space of imagination and healing where we can visit with our ancestors, listen to their stories, and carry out our responsibilities to contribute our own story...through art, leaving our own trace for future generations."
– Celeste Pedri-Spade and Leanna Marshall (2015).



Leanna Marshall
(Photo: Laura Paxton)

It's Not Rocket Science!

If each library book stack has seven shelves, each shelf is three feet long and an average

of one linear foot of shelf space is required for every 10 books, how many stacks will the J.-N. Desmarais Library need to house the entire collection of books written or edited by members of the Faculty of Arts by December 2020 if the current publication rate of 27 books per year is maintained, given that Arts faculty had already launched 1,053 books by December 2016?

To view the complete bibliography of Arts books, edited collections and creative works, go to: www.laurentian.ca/faculty/arts/books-edited-collections-and-creative-works.

Arts Goes Underground

DR. THIERRY BISSONNETTE (French Studies) and **DR. ROBERT LEMAY** (Music/Composer), have undertaken the first phase of a multidisciplinary arts project entitled, "Two thousand meters underground". The project involves a partnership with the world-renowned neutrino research laboratory, SNOLAB. Funded by a grant from the Ontario Arts Council, the project consists of literary writings, a contemporary music composition and recordings that will take place underground. After their initial descent into the laboratory to analyze the sound recording possibilities, the pair began composing. Once the work is finished, they will return to the underground laboratory to record their composition, accompanied by two saxophonists and their instruments. The final musical piece will be issued digitally through iTunes.



FACULTY

Education

Dean: Lacey Marie Brogden, PhD



CONTRIBUTING TO EDUCATION THROUGH ACTION

Contributions to the scientific community

Dr. Yovita Gwekwerere, Associate Professor with the School of Education, with a cross-appointment to the School of the Environment, attended, by invitation, the 2016 *National Roundtable for Environmental Education and Education for Sustainable Development in Canadian Pre-Service Teacher Education*. Held at Trent University in June 2016, this event was attended by over 75 delegates from across Canada.



Laurentian's Dr. Yovita Gwekwerere at National Round Table for Environmental Education 2016

Faculty members in the School of Education published in journals with broad reach in 2016. Their contributions ranged from Dr. Patrice Milewski's article, "Students' Experiences of Schooling During the Great Depression: The Challenges of Oral History" in *History of Education Researcher*, to Dr. Pamela Toulouse's co-authored contribution (with T. Naseba Marsh, S. Cote-Meek, N. L. Young & L. M. Najavits) "Indigenous Healing and Seeking Safety: A Blended Implementation Project for Intergenerational Trauma and Substance Use Disorders," published in the *International Indigenous Policy Journal*.

The École des sciences de l'éducation has continued to champion scientific thought on the Laurentian campus by hosting the *Pensée et Culture* seminar series. In 2016, the series featured, among others, Dr. Bruce Glibert from Bishop's University, Dr. Edith Petitfour from the Université Paris Diderot and Dr. Suzanne Chartrand from Université Laval. The series will continue in 2017.

Dr. Louis Radford, professor at the École des sciences de l'éducation, was elected Vice-president of the International Commission on Mathematical Instruction, thanks to his numerous contributions to mathematics research.

Contributions to the education community

Many faculty members from the Faculty of Education, accompanied by Registrar Dr. Serge Demers, and the faculty's recently appointed Dean, Dr. Lacey Marie Brogden, participated in *Forum Synergie 2016*, a symposium on Francophone education in Ontario. Among the many contributions from our professors, Louise Bourgeois presented a paper titled, *Le rôle de la collaboration pour soutenir la prise de décision au sein des évaluations en écriture*, while Dr. Khaled Taktek presented, *L'analyse transactionnelle au cœur du développement personnel et de la réussite scolaire : mythe dépassé ou rêve à réaliser au sein des écoles de langue française de l'Ontario*.



Master in Indigenous Relations students and faculty outside the UN.



PhD student Kelly Coons presenting her award winning research.



Master in Indigenous Relations student Ian Desjardins and Dr. Daniel Côté at the UN in New York with delegates from Cambodia.

FACULTY

Graduate Studies

Dean: David Lesbarrères, PhD



2016 ACHIEVEMENTS

So many Awards and Scholarships!

What a great year for our graduate students, with more than 50 scholarships awarded across all disciplines. Here is a glimpse at some of the most prestigious prizes:

- 1 Post-Graduate Scholarship to Katie Goggins (PhD, Natural Resources Engineering)
- 2 Queen Elizabeth II Scholarships to John Kosiw (M.Sc., Biology) and Kirk Unger (M.Sc., Chemical Sciences)
- 2 Ontario Trillium Scholarships for international PhD students to Ping Li and Bright Oppong Afum (Natural Resources Engineering).
- 9 Canadian Graduate Scholarships to Paul Draper (M.Sc., Computational Sciences), Jasmin Lemieux (M.A.Sc., Engineering), Chad Williamson (M.Sc., Biology), Stéphanie Beaulieu (M.Sc.S., Orthophonie), Estelle Dupuis (MA, History), Jacob Dupuis-Latour (MHK, Human Kinetics), Ryan Ferguson (MA, Psychology), Annalie Pelot (MA, Psychology) and Chad Prévost (M.Sc. Interdisciplinary Health)
- 27 Ontario Graduate Scholarships

Want more?

Kelly Coons (PhD, Rural and Northern Health) was awarded the Women's Health Scholars Award and the Dr. Sterling Clarren FASD (Fetal Alcohol Spectrum Disorder) Research Award. Sarah Hunt (M.Sc., Chemical Sciences) was the recipient of the Chemistry Institute of Canada's Wally Pasika Leadership Award. Emily Tetzlaff (MHK, Human Kinetics) represented Laurentian at the Ontario Universities 3MT competition and placed 1st in the Ergonomics Competition with the Association of Canadian Ergonomists. Christine Gonsalves (PhD, Human Studies) received the Grant Hall Lambda Foundation Award. Alexis Fong (PhD, Biomolecular Sciences) was named among the Top 10 Most Innovative Researchers by the Canadian Association for Clinical Microbiology and Infectious Diseases Annual Conference. And Justin Chamberland (MA, Psychology) received the Governor General Gold Medal.

So far away!

Our graduate students traveled far beyond the Sudbury campus in 2016.

Alexandra Fleury (M.Sc.S., Orthophonie) spent 5 weeks in Iqaluit (NU) providing otherwise unavailable speech therapy to several francophone children from the community.

Six students from the Master's in Indigenous Relations program traveled to New York at the invitation of the United Nations to participate in the Permanent Forum on the Human Rights for Indigenous People. The trip was supported by the Goodman School of Mines.

Joe-Felix Bienentreu (PhD, Boreal Ecology) escaped the flames in Fort McMurray, Alberta as he searched for the presence of a deadly virus affecting frogs and toads.

Lorrilee McGregor (PhD, Rural and Northern Health) highlighted her research, "Determinants of Physical Activity and Nutrition among Anishinaabe Children in Six First Nation Communities", at the Native American and Indigenous Studies Association annual conference in Hawaii.

Congratulations to all our graduate students on these outstanding achievements!



Students at the undergraduate and graduate levels actively engaged in the many research projects led by the Faculty of Health.

FACULTY Health

Dean: Roger Couture, PhD



RECAPPING THE 8th ANNUAL HEALTH AND EDUCATION CONFERENCE 2016

One of the important ways by which faculty members and students from the Faculty of Health share their research and innovation projects is the Faculty's annual Health and Education Conference. The 8th iteration of this prestigious event was held on December 6-7, 2016 and featured 75 papers, 31 posters, 44 oral presentations and 200 participants.

The conference began with a workshop *Establishing a Research Mentorship Program* during which Laurentian's six health related research centres had the opportunity to present their core research direction and the opportunities for interested faculty members and students and members of the community to collaborate. Participants heard from the Centre for Rural and Northern Health Research, the Centre for Research in Occupational Safety and Health, Evaluating Children's Health Outcomes Research Centre, Maamwizing Research Institute, the Centre for Research in Social Justice and Policy and from the Centre for Research in Human Development.

The presentations were followed by a keynote address from Dr. David Hood, Canada Research Chair in Cell Physiology and Professor in the School of Kinesiology and Health Science at York University. Dr. Hood highlighted some of the successful strategies he has used to engage in research mentorship. He then joined the participants in group discussions aimed at examining how the Faculty of Health could establish such a research mentorship program for graduate students and faculty.

The results of this workshop will be summarized in a report to be shared with faculty and graduate students. The Dean of the Faculty of Health and members of its Research Working Group will work at launching a research mentorship program in 2017.

A second workshop included a round-table dealing with inter-professional and interdisciplinary partnerships in the health and education fields. The discussions allowed for a variety of perspectives with presentations from

Tonya MacDonald, Midwifery, Ousmane Bâ, Service social, Susan Manitouwabi, Indigenous Social Work and Ginette Roberge, École des sciences de l'Éducation.

The second day of the conference was devoted to presentations by students and professors from both faculties.

One of the highlights of the conference was certainly the unveiling, at the closing of the event, of the 2015-2016 Research Awards. The Top 10 Researchers are Dr. Diana Coholic, Dr. Sandra Dorman, Dr. Alison Godwin, Dr. Céline Larivière, Dr. Michel Larivière, Dr. Nancy Lightfoot, Dr. Chantal Mayer-Crittenden, Dr. Kerry MacGonnon, Dr. Stephen Ritchie, and Dr. Elizabeth Wenghofer.

Dr. Michel Larivière was also recognized with the Excellence in Research Award while Dr. Roxanne Bélanger received the Excellence in Governance Award and Mélanie-Rose Frappier won the National Student Leadership Award.

The conference is a great venue where researchers, educators, students and members of the community come together to network and learn about health, well-being and education.



Research that supports the professional development and entrepreneurial activities of our students.

FACULTY

Management

Dean: Stephen J. Havlovic, PhD



GLOBAL ENGAGEMENT THROUGH RESEARCH: FROM BELFAST TO BRAZIL

During 2016, the Faculty of Management held a number of events at Laurentian such as Research Day, a finance colloquium, and several informal seminars where faculty and students presented their current research projects.

Members of the faculty were also actively involved in the dissemination of their research findings, presenting at conferences such as the Administrative Sciences Association of Canada held in Edmonton, the International Symposium for Olympic Research in Victoria, Brazil, the Sport Business Symposium hosted by Lillehammer, Norway and the Conference of the International Academy of Business and Economics in Las Vegas. These and other activities helped the Faculty raise its research profile nationally and internationally.

In October 2016, Dr. Ann Pegoraro, Director of the Institute for Sport Marketing, was a Visiting Professor at the Ulster University School of Business in Belfast Northern Ireland as part of a research partnership with Dr. Damian Gallagher. Drs. Pegoraro and Gallagher worked with the Northern Ireland Football League (NIFL) to assess the use of social media by the league and its football clubs as well as fans expectations. The results of this research were presented to NIFL and to the clubs in a workshop format. The goal of the partnership is to help the league and the clubs enhance their skills in digital media as part of their business transformation plans.

The potential for further partnerships for the Faculty of Management, the Institute for Sport Marketing and Ulster University's School of Business are ongoing.

At the 2016 International Academy of Business and Economics Conference held in Las Vegas this past October, Dr. Charles Bélanger, Professor of Marketing and Management, and MBA student



Dr. Ann Pegoraro at the National Football Stadium at Windsor Park.

Christine Harvey were awarded the Best Research Publication in Journal Award. Their research paper, '*A Study of Dependence and Confidence: Sudbury's Mining Supply and Services Sector*', published in the International Journal of Business Strategy, examines the relationship between Sudbury large mining supply and services sector and its worldwide clientele in the current environment. It also reviews the historical and future trends along with the risk factors associated with the mining industry, specifically within the Sudbury Basin.

Other research in progress by the Faculty of Management includes topics such as social responsibility and aboriginal affairs; social enterprise; accounting cases; accounting disciplinary notices and punishment; merger of legacy accounting designations and satisfaction; female entrepreneurs; international finance; customer service; electronic medical records; assessment of teaching efficacy in Mexico; institutional commitment and personal growth; e-service; personality, self-efficacy, and emotional intelligence; motivational self-talk; social media and market determinants; social media and hospital foundations; and sport fan social networking and its consequences.



Dr. Doug Boreham



Dr. Kristen Jacklin



Dr. Joe Eibl



Dr. David Marsh, MD

FACULTY Medicine

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



INNOVATIVE HEALTH RESEARCH THAT MATTERS

Putting Clean Energy into Health Research

Should patients be worried about being exposed to radiation during diagnostic tests? Dr. Doug Boreham, the Northern Ontario School of Medicine's (NOSM) Division Head of Medical Sciences and the Bruce Power Chair in Radiation and Health has spent years assessing how low doses of radiation like these affect us.

"Contrary to popular belief, we have found that low-dose radiation, like that used in diagnostic medicine, has a net positive effect on an organism's health, leading to less cancer and longer life expectancy," says Dr. Boreham. "Low doses of radiation stimulate repair systems and make organisms healthier, generating a similar effect on the body as exercise."

In November 2016, Bruce Power announced that it would continue providing funding for the NOSM and Bruce Power Research Chair in Radiation and Health, with a contribution of \$5 million over five years. This funding will support health research in Northern Ontario. In addition, Bruce Power donated a clean energy electric car for conducting research at NOSM, and a car charging station that will be open in the spring of 2017 and made available for use free to the public.

Understanding Indigenous Diabetes Care

In Canada, rates of type 2 diabetes are three to five percent higher in Indigenous populations when compared to non-Indigenous populations. Indigenous Canadians typically also have poorer health outcomes during treatment of diabetes.

Dr. Kristen Jacklin, NOSM Associate Professor of Medical Anthropology, and five of her colleagues are investigating Indigenous peoples' experiences with diabetes care. The study states that Indigenous peoples in Canada with type 2 diabetes experience culturally unsafe health care – a factor that may cause poorer health outcomes.

"This study found that many Indigenous patients avoided or disengaged from their diabetes care because of negative experiences such as derogatory or judgmental comments by health-care providers, or visual triggers in health-care settings," says Dr. Jacklin. "However, an equally important outcome of the research was learning directly from Indigenous patients with diabetes about what could be done to rebuild or improve health-care relationships."

Better Care for Patients with Opioid Dependency

Opioid pain killers are prescribed more often in Northern Ontario than in other parts of the province. Unfortunately, this has led to higher rates of opioid-related deaths in the North.

NOSM's Deputy Dean and addictions medicine expert Dr. David Marsh, and Postdoctoral Research Fellow Dr. Joe Eibl have been researching opioid treatment in Northern Ontario and its effectiveness to help patients. Accessing electronic medical records for more than 17,000 patients, the project assesses effectiveness of care in Northern Ontario versus southern Ontario.

"The data shows that mortality rates were higher in southern rural areas than they are in northern urban and rural areas, which was quite surprising to us," says Dr. Eibl. "It was encouraging to be able to see that when treatment is provided in the North, it's effective."

"As a physician, it's important to undertake research to understand what would make treatment more effective," says Dr. Marsh.

"Research allows me to help a lot more people than I can help individually as a clinician."

- DR. MARSH



Some of our students with Dr. Gunn and Dr. Tanentzap (centre of photo) after completing one of the in-lake experimental installations in Sudbury.



Dr. Kai Wood Mah, Associate Professor at the McEwen School of Architecture



Dr. Dean Millar's project under construction at Dynamic Earth

FACULTY

Science, Engineering and Architecture

Dean: Osman Abou-Rabia, PhD



IMPACTFUL RESEARCH ON OUR NATURAL AND BUILT ENVIRONMENTS

Researchers from Laurentian and Cambridge University have teamed up to study land and water linkages. The unique study aims to find out how changing landscapes affect the greenhouse gases produced in lakes.

Dr. Andrew Tanentzap, once a Banting Research Fellow at Laurentian's Vale Living With Lakes Centre (VLWLC), and now a professor and head of the Global Change research group in Plant Sciences at Cambridge University in the UK, is leading the projects in partnership with Drs. Gunn, Basiliko and Mykytczuk at VLWLC.

Many top students from both institutions are involved in this exciting project, with opportunities to travel back and forth between these universities. The project will be featured this fall in a special series on the Boreal Forest to be aired on CBC's *Nature of Things*.

Dr. Kai Wood Mah, Associate Professor at the McEwen School of Architecture, and Dr. Patrick Lynn Rivers, Associate Professor at the School of the Art Institute of Chicago, were recently awarded an Insight Development Grant from the Social Sciences and Humanities Research Council.

Titled "Democratic Early Childhood Development," the project will be used to design and construct two prototypes of early childhood development centres (i.e., crèche) in South African townships. Beyond the physical structures, the prototypes will become boundary objects used to understand the relationship between the politics of design and construction within the country's socioeconomic context. Mah and Rivers will partner with the National Development Agency, which is the national government agency charged with poverty alleviation, and the Early Learning Research Unit, which is the oldest capacity-building NGO in South Africa's early childhood sector. Municipal governments in Cape Town and Saldanha Bay will also be key interlocutors in this international development project.

Dr. Dean Millar, MIRARCO Research Chair in Energy and Mining and Professor at the Bharti School of Engineering, is developing an innovative method to compress air to cool ultra deep mines.

The technology uses water to compress air, thereby simultaneously cooling the air and creating an energy efficient cooling system that can significantly reduce operating costs for mines. The research has progressed to the demonstration stage and is currently under construction on the grounds of Dynamic Earth, in Sudbury. The \$4 million funding for the project is being provided by the Northern Ontario Heritage Fund, Ontario's Independent Electricity System Operator, the Ultra Deep Mining Network, (a federal government supported Business-Led Network of Centres of Excellence managed by the CEMI), and by MIRARCO. It is also funded by Electrale Innovation Ltd., Dr. Millar's spinoff company, that expects to commercialize the technology worldwide.

TOP RESEARCH TWEETS @LaurentianU



CBC Sudbury@CBCSudbury
 "\$27-Million in government funding for research, innovation & engineering building @LaurentianU in #Sudbury" @LaurentianU in #Sudbury, #cbcsby



Universities Canada@univcan
 What an amazing conference. Thanks again @LaurentianU for organizing #Maamwizing2016 and to uni presidents for coming together. #cdnpse



Research Matters
 @OntarioResearch

@SheilaCoteMeek@ResearchLUL studies how Indigenous students are still affected by racism: bit.ly/1VMftC2



Hon. Kirsty Duncan@MindesSciences
 49,3M\$ pour étudier la formation de dépôts de métaux précieux @LaurentianU: ce que ça signifie pour les Canadiens?



Marc Serré@MarcSerreMP
 We're living in truly exciting times... we're very proud to announce \$49,269,000 to @LaurentianU #CFREF #cdnpoli



Dominic Giroux@Dominic_Giroux
 Rencontre fructueuse avec @KirstyDuncanMP. Merci de solliciter l'avis @ULaurentienne @univcan sur l'examen du soutien aux sciences #cdnpoli



Brett Buchanan @BrettBuch
 A privilege to help showcase #science #research to @KirstyDuncanMP, w/ @MarcSerreMP @LefebvrePaul @Dominic_Giroux

Marc Serré @MarcSerreMP
 Touring the Vale Living With Lakes Centre. We have so much talent in #innovation #Science in Greater #Sudbury!

Follow us on Twitter and Instagram