

2024 RESEARCH ANNUAL REPORT

MAKING WAVES



NOSM
UNIVERSITY

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Making Waves

As we reflect on another year of growth, innovation, and collaboration, it's clear that the momentum we've built together is not just moving us forward—it's creating ripples that extend far beyond our immediate reach. At NOSM University, we are committed to making waves in the world of research, and this year, we have witnessed the power of collective movement in action.

From groundbreaking studies to new partnerships, the research community in Northern Ontario has demonstrated that progress isn't just about individual achievements—it's about the connections and collaborations that challenge the status quo. When we work together, the impact is multiplied, creating waves that inspire change and spark new possibilities.

This annual report highlights the transformative work taking place at NOSM University, from advancing knowledge in critical fields to fostering a culture of curiosity, inclusivity, and innovation. Every project, every collaboration, and every new discovery contributes to a greater movement—one that aims not only to answer the questions of today but to inspire the solutions of tomorrow.

As you read through the *2024 Research Annual Report*, I hope you'll feel the same sense of excitement and pride that I do as we look ahead to the waves we will continue to make together. We are a dynamic, forward-moving force committed to making an impact that ripples across Northern Ontario, changing lives and shaping the future.

Dr. David Marsh
Vice President, Research & Graduate Studies
NOSM University



Researcher Showcase



Meet Dr. Sujeenthar Tharmalingam: molecular biology researcher at NOSM University

When Dr. Sujeenthar Tharmalingam, Assistant Professor, is asked about his work, he says he's been told that perhaps he does a little too much.

He **runs a molecular biology lab at NOSM University** where he supervises about 20 people from graduate students to post-doctoral fellows, and research assistants.

His wide range of projects includes research in molecular biology, cancer biology, radiation biology, clinical research and diagnostics, and applied microbiology.

"I like to do cutting edge research," he says. "What drives me really is to be able to do research that can change our human health. That is the priority for me."

Some of this research to improve human health in the North includes developing point-of-care diagnostics tools for oral candidiasis (thrush) infections, using probiotics in the management of type II diabetes, and studying biomarkers for therapy-resistant breast-cancer.

Dr. Tharmalingam is quick to point out that he does not work alone, but rather with a team of other researchers across Northern Ontario. He credits his collaborators across different fields and the supportive research community for his ability to achieve so much. For his radiation biology research, he works with NOSM University faculty including Drs. Chris Thome, Assistant Professor; Douglas Boreham, Professor; T.C Tai, Professor; and Simon Lees, Associate Professor.

In 2023, they received an Alliance grant from the Natural Sciences and Engineering Research Council of Canada (NSERC), valued at \$1.5 million over five years to study the effects of **radon on human health**.

Earlier in 2024, Dr. Tharmalingam—working with Dr. Vasu Appanna at Laurentian University—received another NSERC Alliance grant of \$600,000 for an applied microbiology project. This study is looking at more efficient and environmentally friendly methods of **mining gallium**, which is an important element in the production of semiconductors.

Dr. Tharmalingam describes these two grants as one of the biggest achievements in his career to date. These grants give his team the flexibility to continue working on cutting edge research for the next few years.

In addition to his microbiology and radiation biology work, he also does clinical biology research with Health Sciences North (HSN) Sudbury Drs. Debra Saunders, Associate Professor, and Ravi Singh, Assistant Professor, to improve treatment outcomes for patients with oral candidiasis—a fungal infection that can cause severe pain and lead to death in extreme cases.

In Northern Ontario, about 10-20% of palliative patients are resistant to the standard treatment, an antifungal medication called fluconazole. There is currently no way for doctors to determine which patients would be resistant.

Dr. Tharmalingam and his team of collaborators are working to understand the genetic factors underlying the resistance and to develop point-of-care diagnostic tools that will let doctors know in about 30 minutes if the patient will be resistant to an anti-fungal without waiting weeks.

“The ultimate goal is to improve patient outcomes. We’re trying to increase the therapy effectiveness for oral candidiasis patients and improve their quality of life,” he says.

They are currently planning to start clinical trials in 2025.

Passionate about collaborating with other researchers to achieve goals and move health research forward, Dr. Tharmalingam hopes to bring in new students and researchers to continue improving health care for people across the North.

“What we try to do is lend our expertise to different projects in Northern Ontario,” he says.

Sudbury Researchers Awarded NSERC Grants Totaling \$1.1M to Advance Mining-Related Projects

Huntsville, Parry Sound, and Bracebridge Local Education Groups

It is a truth universally acknowledged that good research needs a lot of time and resources. For clinicians working full time in small communities, doing everything required for research is almost impossible.

This is where Dr. Lisa Allen comes in. Dr. Allen, who holds a BSc and PhD in Biomolecular Science, is the research coordinator for the **Huntsville, Bracebridge and Parry Sound Local Education Groups (LEG)**—a position she has held for about 10 years.

She works with a variety of clinicians including family doctors, surgeons, internists, anesthesiologists, psychiatrists and more. Dr. Allen does the complex but important work, which enables the clinicians to focus more time on their research.

“All the clinicians I work with have a full-time commitment,” she said. “I’m able to facilitate collecting documentation, project management, and help with collecting data so they can focus on the research.”

The three LEGs work on multiple research projects. Projects in Parry Sound include a lifestyle medicine intervention program that is branching out to other communities across the country, a project on culturally sensitive end of life care, and a frostbite project that was presented at the Canadian Burn Association and will be presented to the American Burn Association in 2025.

In Huntsville, clinicians are looking at an exercise program for cancer survivors that has been running for about five years, a direct oral penicillin allergy study, a clinic that provides continuing care to people without a permanent family physician, and a women’s health clinic.

Projects in Bracebridge include studies looking at Labour Dystocia, how Personal Health Information Protection Act (PHIPA) regulations are changing with electronic medical records, and ways to improve in-hospital care for patients with delirium along with rural communities’ services.

Dr. Allen says more physicians have expressed interest in conducting research over the past five years, including family doctors, surgeons, internists, anesthesiologists, psychiatrists, and more. The program has grown from one to more than 40 researchers, all NOSM University faculty members currently working on different projects. Because of the support Dr. Allen provides, clinicians are less daunted about the prospect of taking on research in addition to their full-time clinical work.

“I think the biggest success now is that people are seeing that they can be involved in this without negatively impacting their work life balance,” she said.

Clinicians' Perspective

Drs. Hector Roldan, Timothy Lapp and Roy Kirkpatrick are physicians in Huntsville who have worked with the LEGs and Dr. Allen on multiple research projects.

Dr. Kirkpatrick, a general surgeon in Huntsville for more than 30 years and the Chair of Surgery at NOSM University, says that without the LEGs and Dr. Allen's work, completing research would not be possible.

"It has made it accessible for ordinary doctors to do this kind of work," he said. With the support of Dr. Allen and other LEG staff and administration, an expanding number of doctors can participate in research.

"The research capacity at Huntsville was virtually nil. Not that there wasn't any interest, but it was not feasible to have a full-time job in a rural community and do meaningful research," explained Dr. Lapp, a Physical Medicine and Rehabilitation Specialist.

"With the advent of the LEG, we've secured more than \$1.5 million in grants to date. People who didn't see themselves as researchers—or did not imagine a research career for themselves in Huntsville—now have that option," Dr. Lapp added.

The success of the LEGs has also provided opportunities for university students to gain research experience, as they are able to participate in data collection through a summer-work program. Many of the students have gone on to medical school or continue careers in medicine.

With the advent of the LEGs, more NOSM University clinical faculty participating in research also provides a good example for medical learners, said Dr. Kirkpatrick. It demonstrates that being a clinician researcher is possible.

"It is valuable for our learners to see us taking an interest in research, to see that it is possible, and to see that the engagement in research is important to develop skills and critical thinking," Dr. Kirkpatrick said.

All doctors agree that doing research while working as a full-time physician provides immense value to their profession.

Dr. Roldan, a General Surgeon, is the Research Coordinator for General Surgery at NOSM University. He has worked on four funded research projects in Huntsville since 2015 and says research provides an opportunity to learn new things about his area of practice and provides a change to the routine of living in a smaller community.

"Research is very important for clinicians because you get in-depth knowledge of the subject of study. The learning opportunity is amazing," Dr. Roldan said.

"It gives you a variety of things to do in your practice, particularly for rural physicians. I like the little bit of challenge it brings to my practice," he added.

In addition, Dr. Lapp says clinicians participating in research benefits smaller communities because it gives them an opportunity to validate research that has been done elsewhere.

"A lot of the evidence has come from large urban settings that don't resemble the kind of care that we provide here," Dr. Lapp said. "If we, in a smaller community, can measure our effectiveness against what large urban settings and larger academic settings are telling us we should be doing, there's value in that."

The success of the Huntsville, Parry Sound and Bracebridge LEGs has created a culture of research in the three communities which the clinician researchers hope to build on for years to come.

In the coming year, Dr. Allen says that the LEGs are looking forward to working more with the communities, improving patient care and efficiency, and getting people more aware of the research that is happening.

"The future is bright," said Dr. Kirkpatrick.

NOSM University researchers help Canada prepare for future health emergencies

Drs. Barb Zelek and Brianne Wood at the NOSM University Research Toward Health Hub (NORTH)—part of the **Dr. Gilles Arcand Centre for Health Equity**—are **supporting a new national initiative**, the **PREPARED** project. It is led by Dr. Andrew Pinto at Upstream Lab, Unity Health Toronto, with support from researchers and research and industry partners in six provinces. The project has received \$18.9 million from the Canada Biomedical Research Fund to protect Canada against future pandemics.

Pandemics such as SARS, COVID-19, H1N1, and the mpox outbreak have shown that Canada needs to improve its preparedness for future health emergencies.

The PREPARED project will use efficient methods to collect, monitor, and analyze data from patients in primary care and emergency departments presenting with acute respiratory symptoms. By partnering to routinely collect voluntary samples from patients with respiratory symptoms alongside automated electronic medical record analysis, PREPARED can warn agencies of illness patterns with pandemic potential.

Patients will also see the difference that this project makes. PREPARED will link patients to active clinical trials, which can accelerate the development of treatments, vaccines, and diagnostic tests.

The variety of stakeholders involved means that the initiative can improve health system efficiency and accelerate the development of new diagnostics and treatments. This national project includes 29 partner institutions, 11 industry partners specializing in the development of vaccines, treatments, and diagnostic tests, and 16 primary care practice-based research networks collectively serving more than 2.5 million patients.

"It's important that Northern Ontario is represented in this major national project, and I'm so pleased that NORTHH is a research partner," said Dr. Barb Zelek, Physician Lead, NORTHH. "This project will give health-care solutions back to communities—a goal that's very dear to NOSM University's heart and is at the core of our social accountability mandate."

The Dr. Gilles Arcand Centre for Health Equity is home to a growing number of research networks, including NORTHH, which are focused on building capacity and providing tools for change. The Centre is the first of its kind in Canada. It is a model for multidisciplinary, community-led, and community-prioritised health and public health multidisciplinary research.

The Centre is advancing social accountability research globally and locally by working and collaborating with diverse stakeholders in the broad areas of health professional education, health system transformation, health human resources, social and population health, and social determinants of health.

2024 Vogel Award Winner

Dr. James Crispo, Assistant Professor, was the recipient of the 2024 **Vogel Award** for his research on pediatric spinal cord injury (SCI).

The 2024 Vogel award was presented to Dr. Crispo during the Annual Scientific Meeting in San Juan, Puerto Rico for his paper titled "Nationwide Emergency Department Visits for Pediatric Traumatic Spinal Cord Injury in the United States, 2016–2020."

The Vogel Award is given annually for the best paper by a clinician or researcher involved in Pediatric SCI Rehabilitation in the preceding calendar year. The award honors Lawrence C. Vogel, MD, a recognized world expert on SCI in children.

In Memoriam

Dr. Sanjoy Gupta

On November 4, 2024, NOSM University learned of the passing of Dr. Sanjoy Gupta, Ophthalmologist in Thunder Bay. Dr. Gupta became a NOSM University faculty member in 2011 as an Assistant Professor and was promoted to Associate Professor in 2017.

Dr. Gupta was a true academic who was heavily involved in research regarding age-related macular degeneration and glaucoma. Dr. Gupta was heavily involved in clinical teaching. Described by colleagues as friendly and easy going, Dr. Gupta was an amazing cook and musician, a gifted ophthalmologist, treasured colleague, and a dedicated mentor to many NOSM University learners. His learners spoke highly of him, and Dr. Gupta was formally recognized on numerous occasions for his excellence in teaching.

Learners described Dr. Gupta as: "Excellent! A person who goes above and beyond the requirements of the module and was very passionate about teaching."

Dr. Gupta leaves behind his wife, a highly respected NOSM University alumna, and two sons, one who is in the MD program and one who is also a NOSM University alumnus.



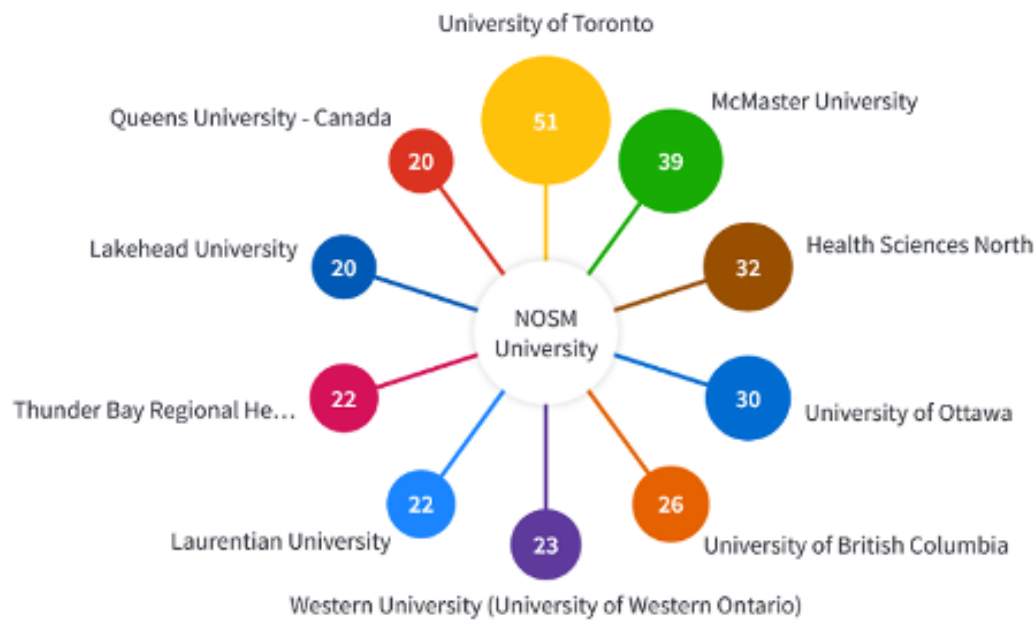
Research Priorities

| Themes | Research Priorities |
|-----------------------------------|--|
| Clinical and Translational Health | <ul style="list-style-type: none">• Cardiovascular• Cancer• Surgery• Primary Care |
| Biomedical and Basic Sciences | <ul style="list-style-type: none">• Environmental Health• Physiology, Biological Systems and Functions• Disease Process, Diagnostics and Therapeutics |
| Population and Public Health | <ul style="list-style-type: none">• Chronic Disease• Rural Medicine• Health Services• Social Determinants of Health |
| Humanities and Social Sciences | <ul style="list-style-type: none">• Indigenous Peoples' Health• Francophone Health• Health Professions Education |

Collaborations by Organization

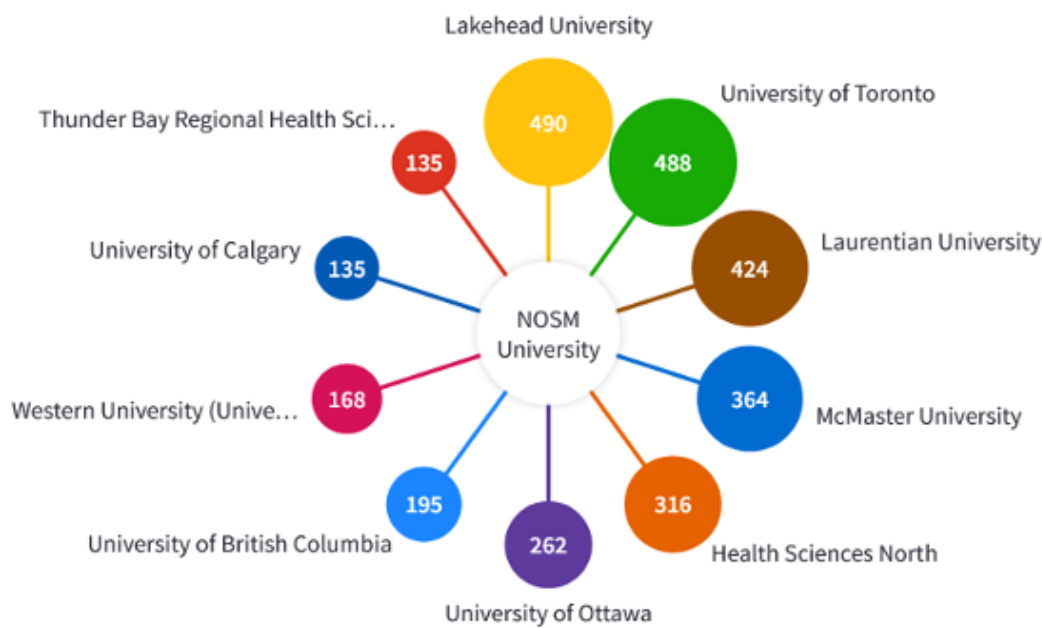
NOSM University researchers collaborated with the following organizations:

In 2024:



*Data retrieved from InCites® (© 2025 Clarivate)

From 2005 to 2024:

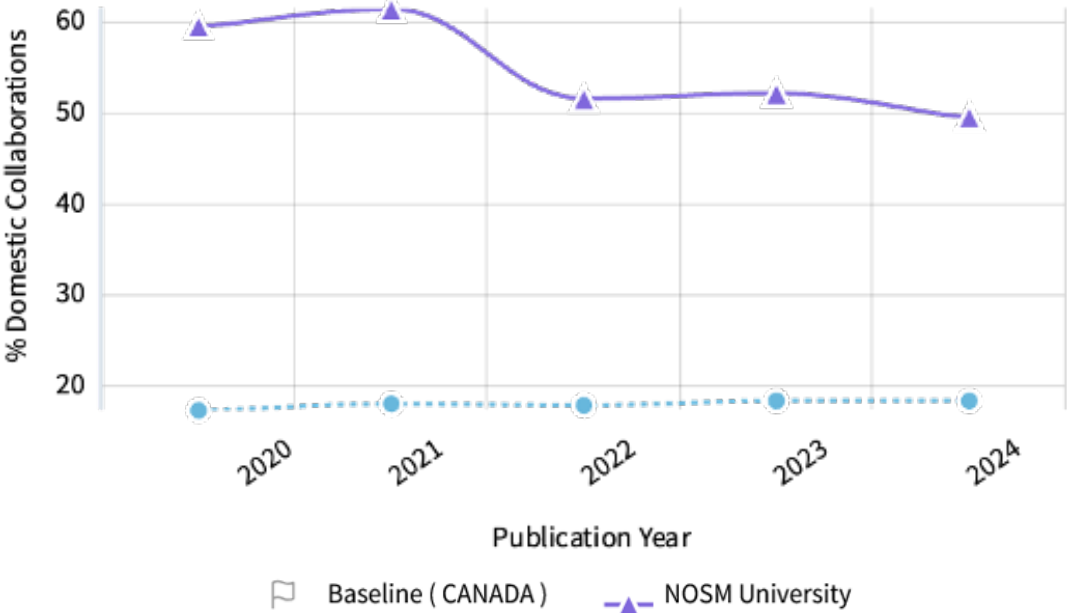


*Data retrieved from InCites® (© 2025 Clarivate)

Domestic Collaborations per Year

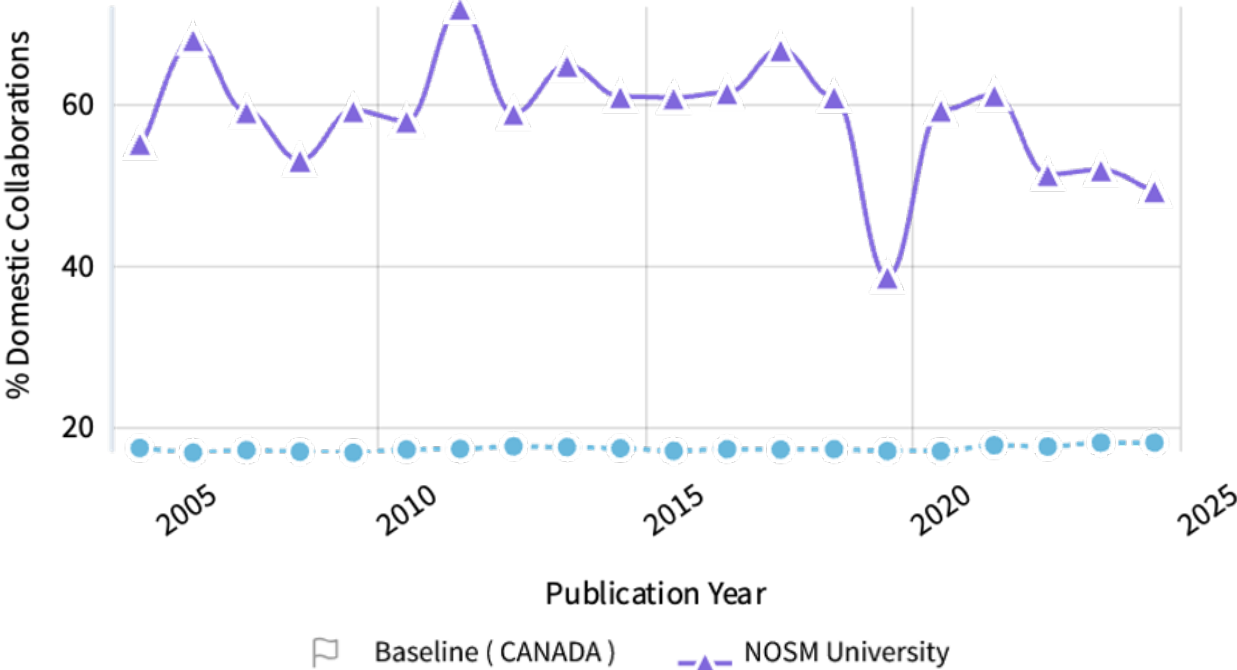
NOSM University researchers are more likely to engage in collaborations with researchers at other Canadian institutions, when compared to the baseline for Canada.

2020 – 2024



*Data retrieved from InCites® (© 2025 Clarivate)

2005 – 2024



*Data retrieved from InCites® (© 2025 Clarivate)



The Dr. Gilles Arcand Centre for Health Equity

Dr. Gilles Arcand Centre for Health Equity Officially Opens at NOSM University

Made possible by transformational \$10 million gift from the Temerty Foundation

NOSM University officially cut the ribbon on the **Dr. Gilles Arcand Centre for Health Equity** (formerly the Centre for Social Accountability). The **grand opening of this Centre** signaled another major step forward in the improvement of health and wellness for all in Northern Ontario.

Through policy leadership and advocacy, research and innovation, and education that better aligns medical training with community needs, this multidisciplinary, one-of-a-kind Centre in Canada will ultimately help people who both need and deserve better access to health care services across the region and beyond.

Just like NOSM University's distributed education model, research will be conducted by and between partners and networks across Northern Ontario.

"The Dr. Gilles Arcand Centre for Health Equity is an incredible strategy to harness the insights, experience and collective will of people in Northern Ontario who care deeply about communities that face barriers to health care," says Dr. Sarita Verma, President, Vice-Chancellor, Dean and CEO. "I am so proud of the work that has already been done, and deeply grateful to the Temerty Foundation for their visionary support that allows us to pursue this critical work. Their investment is a powerful vote of confidence."

In September 2023, a \$10 million gift was made by the Temerty Foundation to NOSM University to advance and grow social accountability and health equity initiatives as well as support medical students. In recognition of this transformational gift, the former Centre for Social Accountability is renamed the Dr. Gilles Arcand Centre for Health Equity in honour of Mrs. Louise Temerty's late brother. He was an inspiring and compassionate physician who, among other things, practised rural medicine in Northern Quebec, and was dedicated to serving marginalized communities before his death in 1975.

James and Louise Temerty are selfless philanthropic leaders and long-time supporters of a wide range of causes that improve lives in Canada and worldwide. Between them, Jim and Louise hold five Honorary Doctorates, and are co-chairs of the Temerty Foundation, making significant philanthropic contributions to health care, education, and the arts.



Extension of Dr. Erin Cameron, Director, Dr. Gilles Arcand Centre for Health Equity

NOSM University was pleased to announce the term **extension of Dr. Erin Cameron** as Director, **Dr. Gilles Arcand Centre for Health Equity**. Dr. Cameron's extension was effective July 1, 2024.

The inaugural Director since the Centre was formed in 2021 (then called the Centre for Social Accountability), Dr. Cameron is also an Associate Professor at NOSM University and an adjunct member in the Faculty of Education at Lakehead University.

The Centre is the first of its kind in Canada. It is a model for multidisciplinary, community-led, and **community-prioritized health and public health research**. The Centre is advancing social accountability research globally and locally by working and collaborating with diverse stakeholders in the broad areas of health professional education, health system transformation, health human resources, social and population health. The Centre is home to ten research networks that are focused on building capacity and providing tools for change. Read more about the **Arcand Centre's accomplishments**.

Through its work, the Centre strives to address health inequities by prioritizing the needs and voices of diverse communities. The University expresses its gratitude to Dr. Cameron for her ongoing contributions to the Centre's success.

Highlights from 2024

The Dr. Gilles Arcand Centre for Health Equity is a multidisciplinary centre of NOSM University dedicated to the improvement of health and wellness in Northern Ontario. The Centre's embedded-network model grounded in the areas of policy leadership and advocacy, research and innovation, education, and community impact is making it a leader in the development of strategies that help all people in Northern Ontario live better, healthier lives. At its core, the Centre's work is helping to strengthen the work of NOSM University and its many partners in advancing equity, access, and population health outcomes.

NOSM University becomes newest member of the OSSU

This past year the Arcand Centre at NOSM University became the newest member of the **Ontario SPOR SUPPORT Unit (OSSU)** family, which is providing funding for building an equity-focused, partnered clinical research program. With this added support, the program will strengthen clinical leadership, research infrastructures, and knowledge translation expertise to advance evidence-based health care practices in Northern Ontario. This collaboration will enhance research networks and help address priority health needs, ultimately improving equity-linked population health outcomes across Northern Ontario. OSSU is a provincial network that helps strengthen health research and data infrastructures to drive improvements in health care across Ontario.



Arcand Centre partners with Associated Medical Services (AMS)

This past year the Arcand Centre partnered with **AMS Healthcare** to support the ongoing advocacy of AI-North, a network dedicated to developing emerging leaders in artificial intelligence (AI) and digital innovation across Northern Ontario. AI-North, based at the Dr. Gilles Arcand Centre for Health Equity, is a growing collaborative network of researchers, healthcare providers, and community leaders focused on advancing AI innovation and research. AMS healthcare is providing three years of funding to AI-North to support its efforts to build collaborative learning and leadership development pathways, convene thought leaders, and foster cross-sectoral collaborations.

Centre Networks continue to help identify research priorities and advance key initiatives. To learn more about the Arcand Centre networks, visit arcandcentre.ca.

Featured networks:

- **NORTHH** – Improving primary care practice through data access and quality
- **MERLIN** – Advancing evidence-based education and workforce decision making
- **AI-North** – Driving AI innovation through trust and capacity building efforts
- **CityStudio Thunder Bay** – Connecting future leaders and real-world problems
- **CREATE** – Convening research networks for health system transformation
- **NOLHS** – Supporting research lifecycles for health system transformation
- **Nourish Health Education Coalition** – Empowering bold leadership for Indigenous food sovereignty
- **SAFE for Health Institutions** – Accelerating the adoption of equity-infrastructures
- **ISAASC** – Supporting social accountability in medical school accreditation standards
- **One Health Alliance** – A forum for interprofessional collaboration to address complex planetary health challenges





Research Chairs



Hannah Chair in the History of Indigenous Health and Indigenous Traditional Medicine

Dr. Darrel Manitowabi is an Associate Professor in the final year of his five-year term as the inaugural NOSM University and Associated Medical Services Incorporated Jason A. Hannah Chair in the History of Indigenous Health and Indigenous Traditional Medicine. Dr. Manitowabi is Three Fires (Odawa, Ojibwa, Potawatomi) Anishinaabe from the Wiikwemkoong Unceded Territory and currently lives in Whitefish River First Nation.

He is an Indigenous scholar with research interests in Anishinaabe ethnohistory and oral history, Indigenous gambling, Indigenous social determinants of health, Indigenous healing, Indigenous-state relations and Indigenous self-determination. Dr. Manitowabi's research and publications examine how colonialism's historical and ongoing legacy impacts the health and well-being of First Nations communities. His research in the history of Indigenous health intersects Anishinaabe wisdom (nbwaakawin), holistic well-being (mino-bimaadiziwin) and ill health (maanaaji-bimaadiziwin) through Indigenous narratives and experience.

Since 2022, Dr. Manitowabi has continued collaborating with healers, helpers, Elders and health-care administrators in gatherings to advance capacity building. With colleagues at McMaster University, Mississauga First Nation, Six Nations and Noojmowin Teg, a gathering took place at the Six Nations on June 7-9, 2024, to discuss systems-level change in supporting Indigenous traditional healers in Ontario. This initiative included contributions from the AMS, Inc., McMaster University and Ontario Health (\$80,000).

Dr. Manitowabi is also part of the **Indigenous Medicine Stories** podcast, which features the lived experiences of Elders, healers, helpers, and practitioners. It is ranked within the top 10% in Canada in education. It has 40,000 downloads to date across the world. He also participated in a podcast collaboration with Dr. Megan Davies (York University) on the experience of residents, family members, and workers in an Indigenous nursing home. The podcast "COVID in the House of Old: Stories from the Wikwemikong Nursing Home" is a four-part series.

He is also co-lead in a CIHR grant with Dr. Marion Maar on community responses to support opioid recovery (\$461 651). Recent research in this project resulted in NOSM University learners researching historical accounts of Indigenous conceptions of healthy living on Manitoulin Island. Dr. Manitowabi is also co-applicant with researchers at Laurentian University's Maamwizing Research Institute in collaboration with Indigenous community stakeholders (Akinoomooshin Inc. and White Buffalo Healing Lodge, SSHRC, \$430,832) to connect academic and community relationships.

A committee member with the Chiefs of Ontario in Indigenous Data Sovereignty and Ontario Health in province-wide cultural safety consultations, he is also currently serving as a helper (mentor) for Indigenous health leaders as part of a pilot initiative with McMaster University. Since 2022, Dr. Manitowabi has been a team collaborator in hosting the annual Manitoulin Island Treaties Gathering, a hybrid community academic and ceremonial gathering held in May of each year with a forthcoming event in May 2025.

Recent Publications

Manitowabi, Darrel. 2025. *Colonialism and Indigenous Peoples. In Handbook on the Social Determinants of Health* edited by Toba Bryant and Dennis Raphael. Edward Elgar Publishing.

Hudson, Geoffrey and **Darrel Manitowabi.** 2024. *Accidental History and Manitoulin Island, c. 1830-1960. Accidental History of Canada* edited by Megan Davies & Geoffrey Hudson, McGill-Queen's University Press.

Creative Works

Manitowabi, Darrel. 2022-Present. *Indigenous Medicine Stories Podcast.* Michael McDonnell (producer), associated with Associated Medical Services, Inc. (Anne Avery).

Davies, Megan and **Manitowabi, Darrel.** 2023-2024. *COVID in the House of OLD: Stories from the Wikwemikong Nursing Home Podcast,* Kohen Hammond (producer).

Indigenous Medicine Stories with Darrel Manitowabi



Heart and Stroke Foundation/ NOSM University Chair in Indigenous and Rural Health Research

Dr. Rob Ohle, Associate Professor, is dedicated to developing solutions tailored to the unique challenges of cardiovascular disease in Northern Ontario, improving diagnosis in a health-care system constrained by geographic distribution, limited access to imaging, and scarce subspecialist consultation. This year, Dr. Ohle's research team made meaningful progress in both research and advocacy to address these challenges.

Indigenous Health Research: Building Capacity, Strengthening Community Partnerships, and Supporting Future Leaders

Dr. Ohle's team facilitated the hiring of a research coordinator for Indigenous health, a position supported by the Health Sciences North Foundation, as part of the goal to create pathways for developing local talent in Indigenous health research and health care. A key priority is to strengthen the connection between NOSM University and Health Sciences North, ensuring that Indigenous students are supported in both research and education. To further foster research opportunities for Indigenous students, they initiated a summer research studentship in Indigenous health. This program provides mentorship, hands-on research experience, and a stronger connection to hospital-based research, helping to build a sustainable pipeline of Indigenous health researchers and practitioners who will drive community-led research and meaningful change in health-care delivery.

Sudbury Vertigo Risk Score: Improving Diagnosis and Access

Through a prospective observational study involving over 2,000 patients, the team developed the Sudbury Vertigo Risk Score, designed to help emergency physicians identify patients at high risk of stroke as the cause of their vertigo. The score allows providers to rule out low-risk patients without further investigation while guiding decisions on who requires imaging or specialist consultation. By reducing unnecessary imaging and consultations, this tool helps optimize health-care resources, which is particularly crucial in Northern Ontario, where patients often travel long distances for specialized care.

Acute Aortic Syndrome: A Decision Aid for Faster, More Reliable Diagnosis

The team also developed a clinical decision aid for acute aortic syndrome (AAS)—a life-threatening vascular emergency where timely diagnosis is critical. Given the geographic challenges and reliance on imaging for diagnosis, this tool aids frontline clinicians in identifying high-risk patients and ensuring they receive appropriate care without unnecessary delays.

Advocacy: A Northern Voice in National Policy

Beyond research, advocacy has been a key focus this year. Dr. Ohle's team actively participated in Heart & Stroke initiatives, ensuring that the Northern perspective was represented in national discussions. They advocated for expanded access to B-type Natriuretic Peptide (BNP) testing for heart failure, enabling patients to be screened in their home communities instead of traveling long distances for an echocardiogram.

Additionally, they took part in the Heart & Stroke Cardiac Arrest Roundtable, contributing to the development of a National Action Plan for Cardiac Arrest. Their role was to ensure that Northern health-care challenges—including long transfer times, limited access to advanced cardiac care, and resource constraints—were considered in national recommendations. Bringing a Northern voice to these discussions is essential to ensuring that solutions are relevant and effective for Northern communities.

Impact & Future Directions

These efforts have been supported by \$175,000 in new research funding and have led to seven publications, reinforcing the commitment to high-impact research and advocacy that translates into real-world improvements in patient care and community health.

As Dr. Ohle and team move forward, their focus remains on developing practical, evidence-based solutions that improve early diagnosis, optimize health-care resource use, and enhance patient outcomes in Northern Ontario. They continue to develop the foundational infrastructure that allows for the practical application of Indigenous research principles in health-care research at Health Sciences North and supports Indigenous researchers and students to drive community-led health-care solutions.





Graduate Studies



Meet Dr. Alexander Moise: Assistant Dean of Graduate Studies

Dr. Alexander Moise, Associate Professor, can talk about vitamin A for hours. He has been researching the vitamin and its role in the prevention of diseases since 2002.

Vitamin A is an important nutrient needed for vision, immunity, reproduction, and cell differentiation. Each year, about half a million children worldwide go blind because of vitamin A deficiency and 200,000 to 300,000 die due to common infections. In all, it is estimated that this deficiency affects more than 200 million children worldwide.

Researching the role and regulation of vitamin A signaling allows Dr. Moise to work on a variety of health issues as it affects almost every part of the human body. "It touches ophthalmology, cancer, embryology, dermatology, and more," he says.

While in Canada, there isn't a widespread deficiency of vitamin A, some people are exposed to an excess of the vitamin, which can cause toxicity and birth defects. Dr. Moise's research focuses on safe ways to supplement without leading to toxicity.

"So, vitamin A is good, but too much of it can be a bad thing," he says.

In July, he was the chair of the **International Retinoids Conference** in Saint Paul, MN, USA, where researchers from around the world came together to present their research on vitamin A and the related retinoid compounds.

Dr. Moise's current research focuses on the regulation of vitamin A metabolism having identified genes that play critical roles in this process.

Working with other researchers, they found mutations linked to excess vitamin A signaling that causes craniofacial defects in babies. One common defect called **craniosynostosis** affects approximately 1 in 2,000 babies and it occurs when one of the sutures on a baby's skull prematurely closes before the brain is fully grown. Craniosynostosis is treated with surgery, but Dr. Moise's work suggests that its treatment could also incorporate non-surgical therapies in the future.

"This is the first time that we had evidence that links this enzyme to this disease," says Dr. Moise. "Not all cases of craniosynostosis are caused by mutations in this one gene, but alterations in vitamin A signaling are quite commonly seen in craniofacial defects, and this is a known signaling pathway that we can control through pharmacology."

This latest study has been submitted for publication.

In addition to his research, Dr. Moise is the new Assistant Dean, Graduate Studies at NOSM University. He is passionate about helping learners understand the process of research and its importance.

"Research is a humbling but also rewarding process. Students come through my lab having preconceptions about how science is done, then learn the process of research, and are dismayed of just how often our hypotheses are wrong," he says. "Yet this iterative process ultimately leads to discoveries and outcomes far beyond what was initially imagined."

Dr. Moise's trainees have gone on to research careers in academia or industry or pursued medical training in the US and in Canada including NOSM University's MD program. Many trainees have also been recognized through awards. Parisa Varshosaz, who will soon defend her Ph.D., won the Laurentian University **3-minute thesis competition** in March.

As Assistant Dean, Dr. Moise says he will work to ensure that students are getting a quality education with a robust curriculum and have a positive experience throughout the program.

He is excited to work with NOSM University's administrators, faculty and staff to increase the breadth and capacity of the university's graduate studies programs.

"The goal of our program is to provide students with solid and thorough training in clinical and biomedical research methods," Dr. Moise says. "One of the strengths of our program is that it takes into account the unique challenges and environment of Northern Ontario to have a meaningful impact on our region."

Convocation for First Master of Medical Studies Graduates

The spring convocation of the inaugural Master of Medical Studies (MMS) class recognized the program's first graduates: Dr. Jenna Darani, supervised by Dr. Brian Ross and Dr. Sabrina Slade, supervised by Dr. Rob Ohle and Dr. Dave Savage. These clinician-researchers completed a demanding academic journey, marking a significant milestone for both the graduates and the MMS program.



Photo (L to R): Dr. Brian Ross, Dr. Jenna Darani and Dr. Erin Cameron

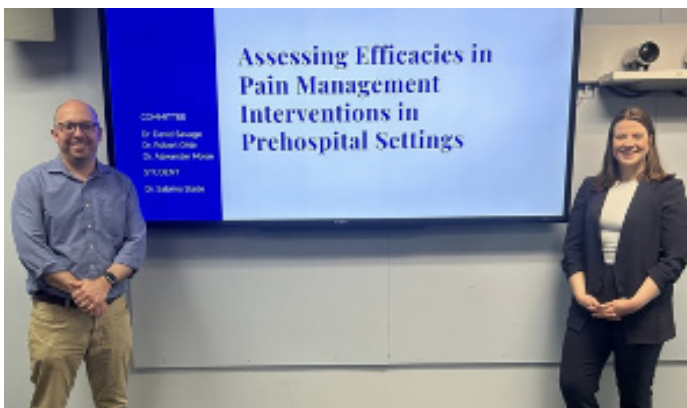
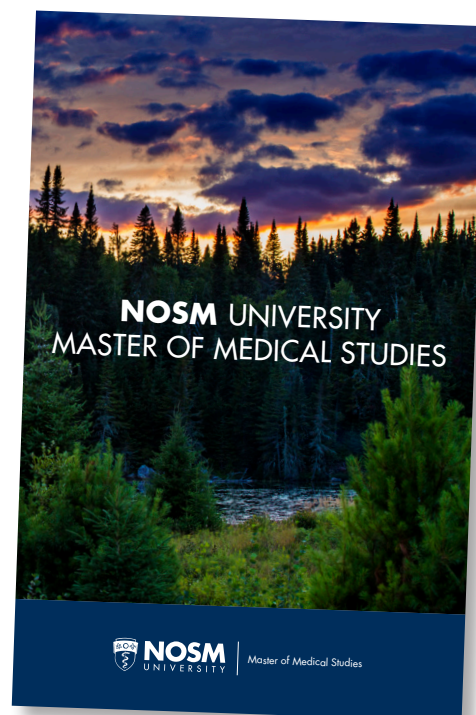
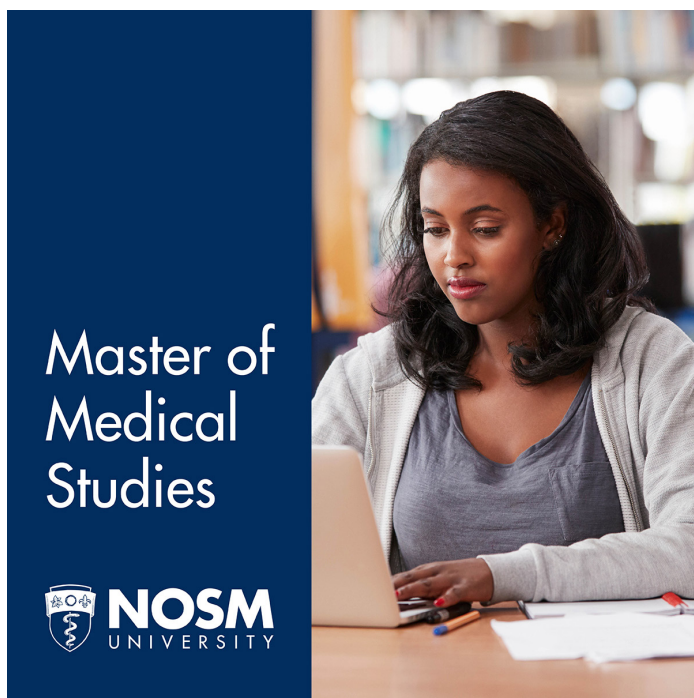


Photo (L to R): Dr. Dave Savage and Dr. Sabrina Slade



New MMS Course-based Stream

Building on the success of the thesis-based stream, the MMS program introduced its first cohort of students in the course-based stream in September. The new stream is designed to equip health-care professionals with essential research skills in a flexible format. This stream emphasizes foundational research competencies without requiring a major thesis. Instead, students engage in an independent study, conducting a comprehensive literature review on a chosen topic, allowing them to critically assess existing research and apply their findings to clinical and academic contexts.

The thesis and course-based streams of the MMS use an asynchronous online model to deliver the course material. Students can complete this program remotely with a flexible schedule. Both streams are also open to applicants with a Bachelor's degree in a Health Sciences discipline or an MD degree.

New Graduate Courses at NOSM University

- Clinical Integration of Research
- Bridging research and clinical practice, AI and big data in health care.
- Research Dissemination
- Master communication, policy impact, and ethical research dissemination.
- Data Management and Visualization
- Ensure data integrity, apply advanced analytics, and explore AI applications.
- Independent Study / Advanced Topics
- Deep dive into specialized research, thesis development, and critical analysis.
- Elevate your research and transform clinical practice!



Awards



Internal Awards

Research Awards Committee

The Research Awards Committee is composed of NOSM University faculty members who, along with the Chair, Dr. T.C. Tai, Assistant Dean, Research, and Professor, Medical Sciences Division, develop and adjudicate internal awards and prizes and make awardee recommendations to the Vice President, Research and Graduate Studies.

The Research Awards Committee was established in 2019, with faculty members appointed for a three-year term adjudicating numerous internal awards, including those awarded in 2024.

The current membership includes:

- Dr. Mohammed Shurrab – Assistant Professor, Clinical Sciences Division
- Dr. Scott Sellick – Associate Professor, Human Sciences Division
- Dr. Neelam Khaper – Professor, Medical Sciences Division
- Dr. T.C. Tai – Professor, Medical Sciences Division and Chair

In 2024, the Committee reviewed a total of 62 award applications.

2024 Internal Faculty Research Awards

| Award | # Applications Funded | Amount Funded |
|--------------------------------|-----------------------|---------------|
| Rene Guilbeault Research Award | 1 | \$8,000 |
| Research Development Fund | 7 | \$57,000 |
| Educational Research Fund | 1 | \$4,000 |
| Total Faculty Awards: | 9 | \$69,000 |

NOSM U Research Development Fund

As part of the Collective Agreement between the Board of Directors of NOSM University and Unit 1 of Local 677 of the Ontario Public Service Employees Union annual funding for the **Research Development Grant** is provided through an open competition restricted to Bargaining Unit OPSEU 677 Members. The Research Development Grant funding opportunity is provided to enhance scholarly productivity.

The 2024 Award recipients were:

- Dr. Erin Cameron for her project titled *Exploring AI Tools for Researchers in Northern Ontario*.
- Dr. Geoffrey Hudson for his project *Disabled Persons, Health, and Social Policy in Canada and New Zealand, a comparative study, c. 1975-1995*.
- Dr. Brian Ross for his project titled *A pilot investigation of the role psychological trauma in the etiology and treatment of Hallucinogen Persisting Perceptual Disorder*.
- Dr. Gregory Ross for his project, *A wing strut adaptor for mounting an external infrared sensor to NOSM U's Cessna 172 research aircraft*.
- Dr. T.C. Tai for his project titled *Role of Complement Factors in the Regulation of Adrenal Function*.
- Dr. Sujeenthara Tharmalingam and Dr. Natalie Lefort for their project *Investigating the role of isoprostanes in breast cancer radiotherapy*.
- Dr. Marina Ulanova for her project titled *Inflammatory responses to non-encapsulated (non-typeable) Haemophilus influenzae clinical isolates from invasive and non-invasive infections*.

Education Research Fund

Funded by NOSM University, the **Education Research Fund** is a seed funding opportunity for building capacity and accelerating partnerships that address priority health professional education needs that are responsive to Northern Ontario. The spirit of this award has a priority to support new and emerging medical educators (clinical and non-clinical).

The 2024 recipient was Dr. Emily Groot for her project titled *Teaching and entrusting evidence-informed decision-making to public health and preventive medicine residents*.

Rene Guilbeault Research Award

The **René Guilbeault Research Award** was established by a gift to NOSM University in May 2016, for the specific purpose of creating an endowed research award in Mr. Guilbeault’s name. The use of these funds is unrestricted except that they must be directed in the area of medical research and must be awarded to a NOSM University full-time faculty member.

The 2024 award recipient was Dr. Sujeenthara Tharmalingam for his project *Pilot Study to Validate ctDNA as a Biomarker for Colorectal Cancer Detection*.

2024 Internal Learner Research Awards

| Award | # Applications Funded | Amount Funded |
|---|-----------------------|---------------|
| NOSM University Summer Medical Student Research Award | 16 | \$88,000 |
| Mach Gaensslen Summer Medical Student Research Award | 5 | \$28,600 |
| AMS Health Care Summer Medical Student Research Award | 1 | \$4,400 |
| Roger Strasser NHRC Travel Award | 1 | \$1,000 |
| UME Student Award in Medical Education Research | 1 | \$6,600 |
| Total Student Awards: | 24 | \$128,600 |

NOSM University Summer Medical Student Research Awards

Aalto, Hannah – *Real world effectiveness and tolerability of low-dose naltrexone to treat chronic pain: a retrospective cohort study of one pain physician's practice*
(Supervisor: Dr. Virginia McEwen)

Campbell, Madyson – *The use of administrative health data to identify opportunities for improving outcomes from treatment of Opioid Use Disorder*
(Supervisor: Dr. David Marsh)

Corneil, Heidi – *Determining Factors Implicated in Rural Obstetrical Service Closures in Northern Ontario and their Solutions Towards a Northern Ontario Rural Maternity Care Action Framework*
(Supervisor: Dr. Eliseo Orrantia)

Curwin, Angelina – *Development of Locum Recruitment and Retention Best Practice Recommendations – Towards Health Human Resource Sustainability in Rural Northern Ontario*
(Supervisor: Dr. Lily DeMiglio)

Fong, Kyesha – *The Rural Nursing Workforce Crisis: Developing A Retention Framework*
(Supervisor: Dr. Lily DeMiglio)

Gagné, Zacharie – *Outcome of Inter-facility Transfer for Endovascular Thrombectomy in Northern Ontario*
(Supervisor: Dr. Aviraj Deshmukh)

Gibbs, Alicia – *Correlates of immunotherapy related toxicity in older adults*
(Supervisor: Dr. Chris Verschoor)

Hofmann, Joseph – *Investigating the biological role of natural background radiation exposure*
(Supervisor: Dr. Christopher Thome)

Hunt, Emily – *Incidence of acute care adverse events in hip fracture patients – comparing a Northwestern Ontario cohort*
(Supervisor: Dr. Travis Marion)

Jones, Allison – *Addressing Northern Ontario's Developing Rural Maternity Care Desert. Determining a Novel Model of Care and Scope of Practice for Integrating Midwives into Small Rural Interprofessional Obstetrical Teams*
(Supervisor: Dr. Eliseo Orrantia)

Labranche, Émilie – *Exploring paramedic practice: Comparing the challenges between urban-rural communities*
(Supervisor: Dr. David Savage)

Lavigne, Félix – *The Efficacy of Low-Dose Naltrexone for Pain Management*
(Supervisors: Drs. TC Tai, Christine Lalonde, Benjamin Lalonde)

Liu, Shirley – *Optimizing preoperative anemia in hysterectomy and myomectomy patients*
(Supervisor: Dr. Karen Splinter)

Mackereth, Eden – *Introducing Mindful Self-Compassion Online Series: Examining shifts in knowledge, attitudes and behaviours of clinicians and learners towards self-compassion*
(Supervisor: Dr. Bryan MacLeod)

Perlin, McKenna – *Age-related changes in myeloid cells and their association with vaccine responses*
(Supervisor: Dr. Chris Verschoor)

Redmond, Matthew – *Emergency Department Procedures for Pediatric Traumatic Spinal Cord Injury in the United States: A Nationwide Analysis*
(Supervisor: Dr. James Crispo)

Mach Gaensslen Summer Medical Student Research Awards

Charbonneau, Meredith – *Assessing Implementation and Effectiveness of Community of Practice Ketamine-Assisted Therapy (CoP- KaT) to Address Healthcare Worker Burnout in Rural Northern Ontario*
(Supervisor: Dr. Ryan Patchett-Marble)

Couture, Luc – *Blood immune profile as a tool for neoadjuvant chemoimmunotherapy treatment success in breast cancer patients*
(Supervisor: Dr. Hoang-Thanh Le)

Fenlon, Cassandra – *Biomarkers in Colorectal Cancer in Clinical Practice – Availability, use and influence of molecular biomarkers on therapeutic decisions and on cancer outcomes in colorectal carcinoma patients*
(Supervisor: Dr. Ioannis Voutsadakis)

Shortreed, Hannah – *Wholesale cardiac Imaging Surveillance with Echocardiography and Radionuclide Assays during breast cancer chemotherapy (WISER study)*
(Supervisor: Dr. Olexiy Aseyev)

Yeo, Melissa – *Colorectal cancer in patients over 80 years old: Characteristics and treatment*
(Supervisor: Dr. Ioannis Voutsadakis)

AMS Healthcare Summer Medical Student Research Award

Poulin, Claire – *Cultivating Cultural Competence: Integrating Indigenous Perspectives on Traditional Tobacco Use in Medical Education at NOSM University*
(Supervisor: Dr. Darrel Maniowabi)

UME Student Award in Medical Education Research

Hamill, Lauren – *Screening for Intimate Partner Violence During Pregnancy: Measuring Attitudes and Perceptions of Physicians in Northern Ontario*
(Supervisor: Dr. Gayle Adams-Carpino)

Roger Strasser NHRC Travel Award

Stevenson, Paige – *Abstract Title: Primary Health Care Utilization in All Nations Health Partners Ontario Health Team: Assessing Preventative Services, COVID-19 Impacts and Recommendations for Improving Access*
(Supervisor: Drs. Brianne Wood and Barbara Zelek)

External Awards

2024 Externally Sponsored Research Funding

| # of new in 2024 | Total amount |
|------------------|--------------|
| 61 | \$3,892,717 |

2024 Active Externally Sponsored Research Funding

| # of all Active research funding in 2024 | Total amount of all active research funding | 2024 Disbursement Amount of active research funding |
|--|---|---|
| 189 | \$25,590,056 | \$4,428,931 |

Total New Sponsored Research Awards by Location

| Location | # Awards |
|----------------------|----------|
| Bracebridge | 1 |
| Huntsville | 7 |
| Kenora | 1 |
| Marathon | 3 |
| North Bay | 2 |
| Northern Ontario | 7 |
| Northwestern Ontario | 1 |
| Parry Sound | 1 |
| Sudbury | 24 |
| Thunder Bay | 13 |
| To be determined | 1 |

New Sponsored Research Funding Awarded by Agency

| Agency | \$ Amount | # of Awards |
|------------------------------|---------------------|-------------|
| AMS | 30,000.00 | 1 |
| Canadian Cancer Society | 110,000.00 | 2 |
| CIHR | 100,000.00 | 1 |
| Healthcare Excellence Canada | 90,000.00 | 2 |
| NSERC | 630,000.00 | 6 |
| NCF | 85,000.00 | 2 |
| NOAMA | 2,492,717.00 | 42 |
| NOHFC | 70,000.00 | 2 |
| Obesity Canada | 40,000.00 | 1 |
| Ontario SPOR Support Unit | 195,000.00 | 1 |
| Ornge | 50,000.00 | 1 |
| Total | 3,892,717.00 | 61 |



The Health Sciences Library conducts an annual faculty publications search for peer-reviewed articles. The citations provided are a snapshot of what is available at the time the searches are conducted. Best efforts are made to identify and validate NOSM University-authored publications. The **2024 NOSM University Faculty Publications Bibliography** represents the unique citations. Unique citations are articles listed only once in the bibliography, even if there were multiple NOSM University faculty who authored a particular article. NOSM University faculty members are denoted in bold within each citation.

[View the Library Guide.](#)

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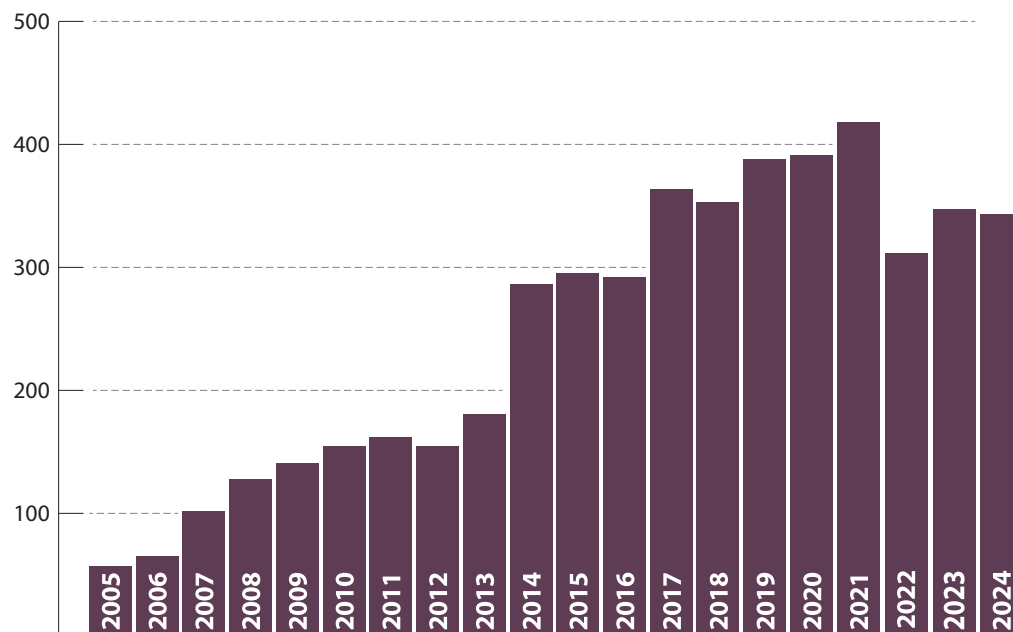
Total
number
of unique
publications
in 2024

4859

Total
number of
unique
publications
2005-2024

Faculty Publications

Total Number of Unique¹ Publications Organized by Year, 2005-2024



¹ "Unique" in this bar graph means that a publication was counted only once, even if there were multiple NOSM University faculty members listed as authors in the publication.

What are NOSM University authors writing about?

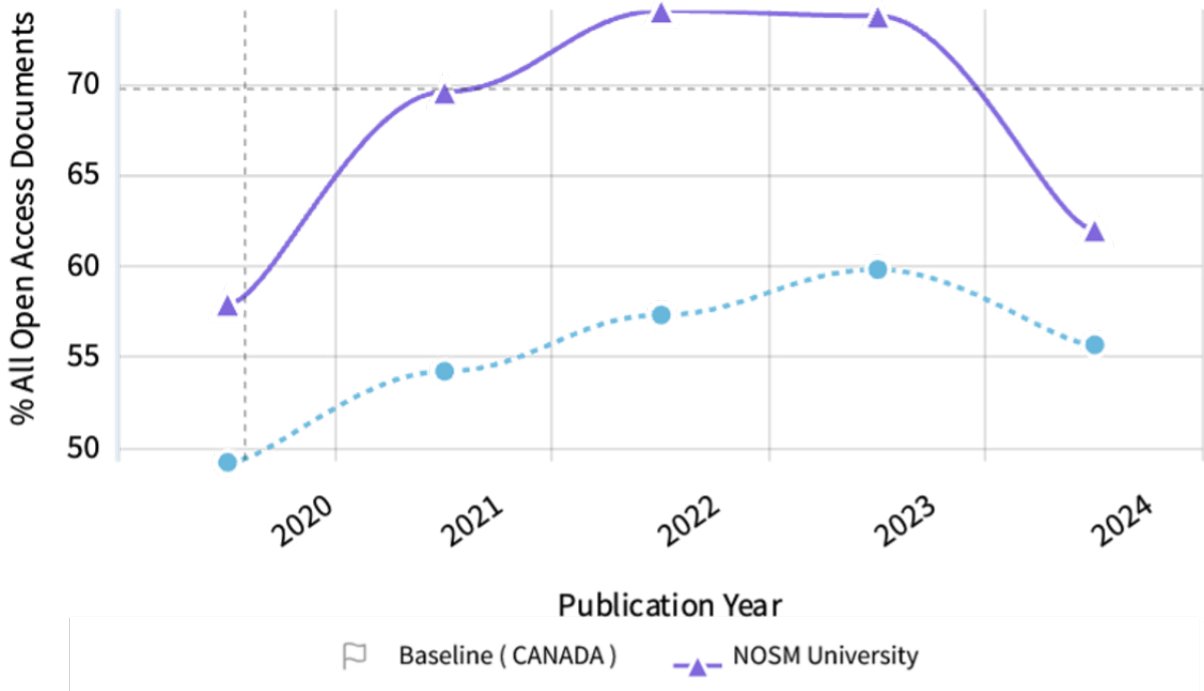
A word cloud from commonly occurring words in the titles of NOSM University affiliated journal articles, 2020-2024:



% Open Access Research

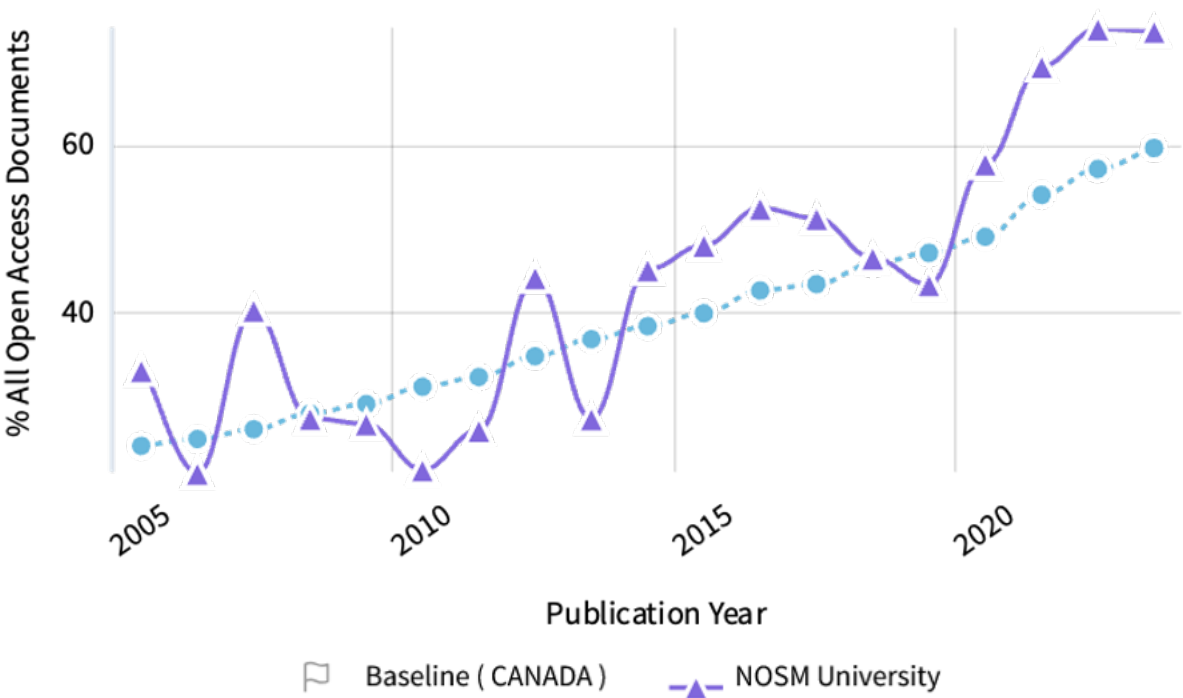
Research by NOSM University authors is usually more likely to be open access when compared to the Canadian **baseline**.

2020 – 2024



*Data retrieved from InCites® (© 2025 Clarivate)

2005 – 2024



*Data retrieved from InCites® (© 2025 Clarivate)



Research Services Office

New Research Intellectual Property Policy

In November, the NOSM University Board of Governors approved the **Research Intellectual Property Policy**. This policy covers Research-related Intellectual Property that is created using NOSM University Resources and applies to faculty, staff and learners who are engaged in research-related activities at the University.

Research Administration Support

In 2024, the Research Services Office received 2,470 distinct email threads to research@nosm.ca and labresearch@nosm.ca.

We're helping our researchers manage their funding. We've reviewed:

- 38 REB applications
- 63 agreements

We're helping our researchers get funding:

- 9 internal faculty awards (\$69,000)
- 24 internal student awards (\$128,600)
- 142 sponsored funding proposals submitted (\$17,672,272)
- 61 external sponsored funding received (\$3,892,717)
- 189 active awards with \$4,428,931 dispersed in 2024

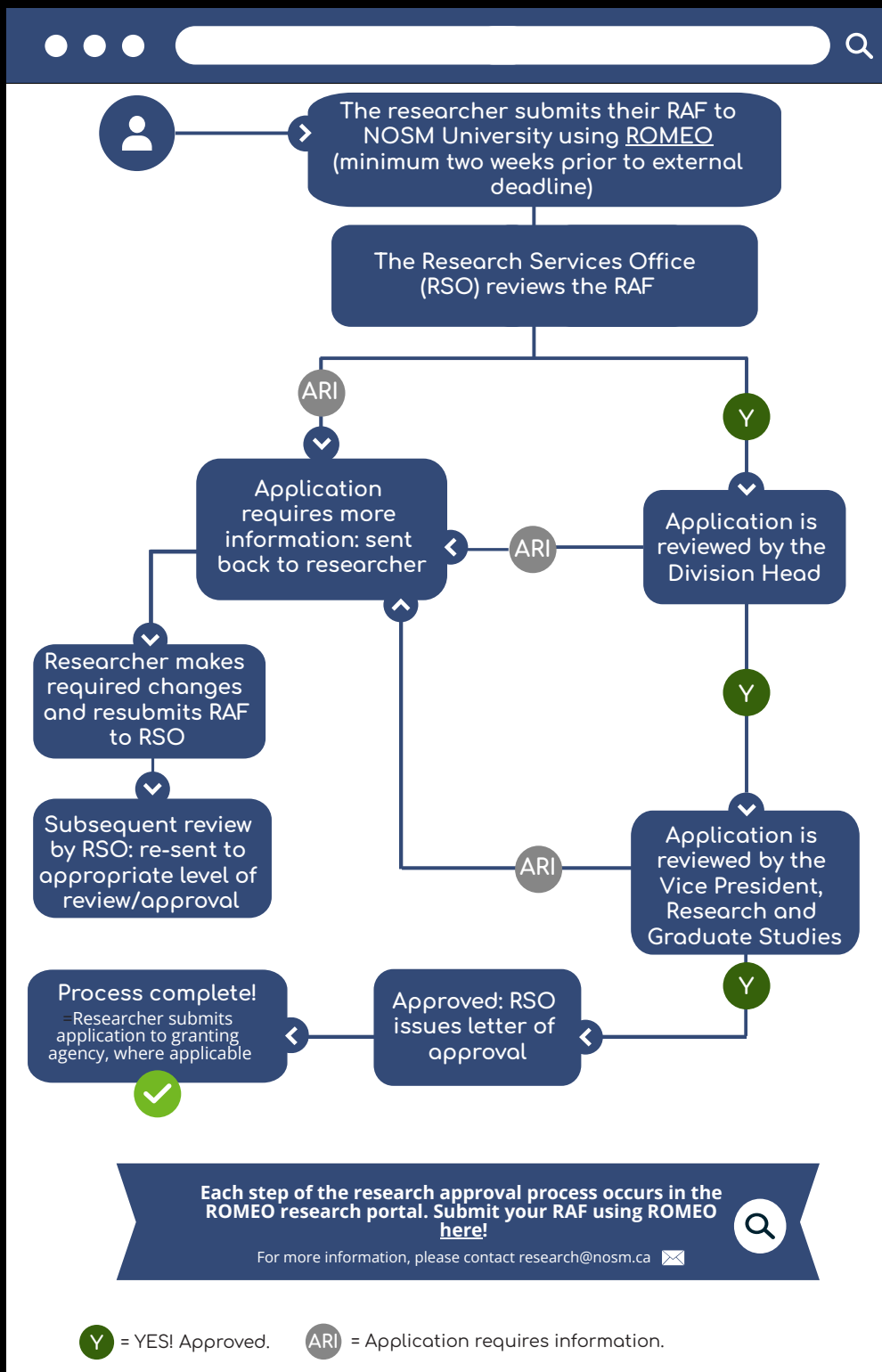
We're supporting our research labs:

- training and troubleshooting (195 hrs)
- maintenance and repairs (298 hrs)
- health and safety and process improvement (111 hrs)
- 14 faculty and students were onboarded

We're communicating:

- 20 newsletter issues
- 314 subscribers
- 42.8 % open rate

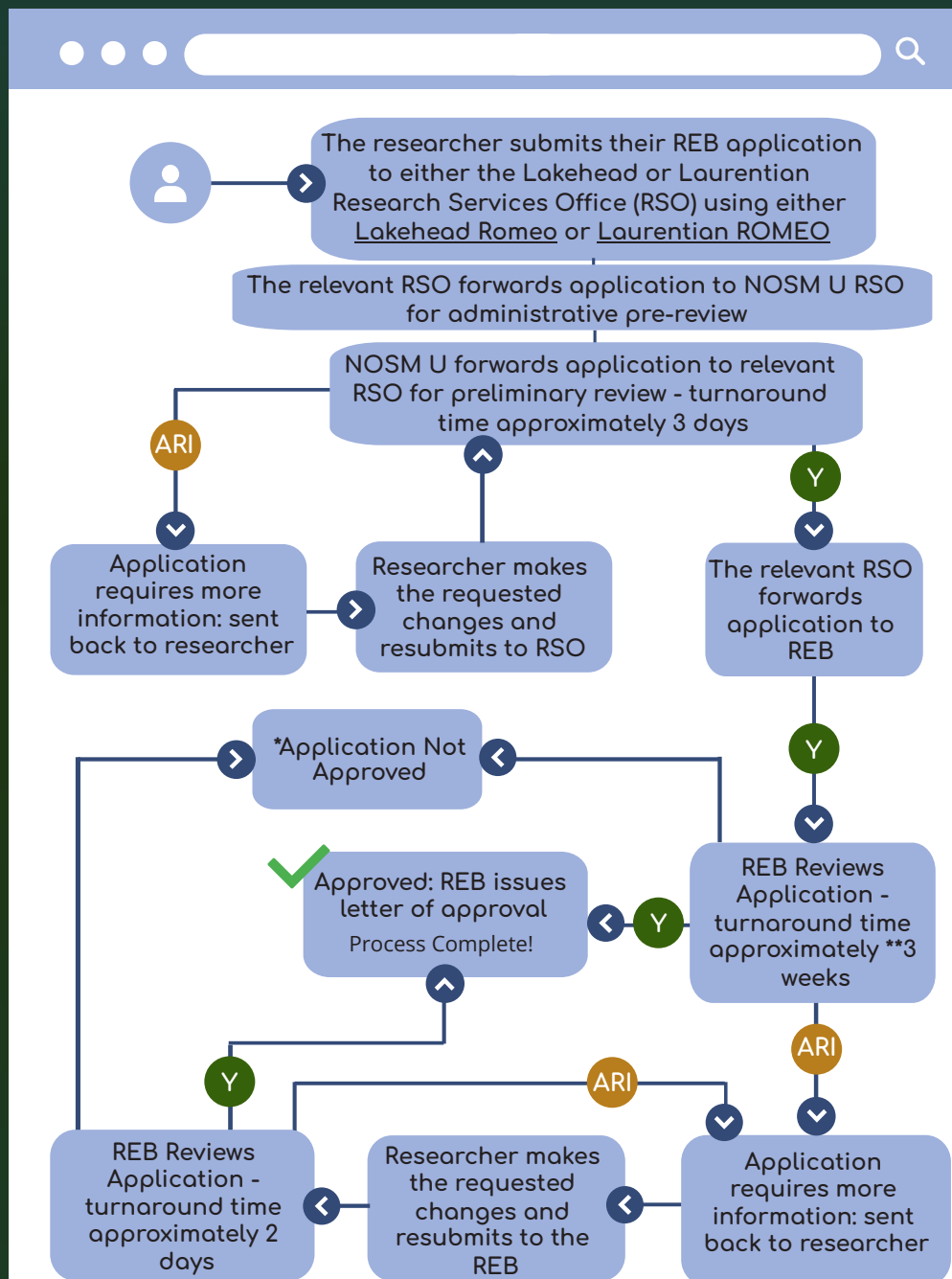
NOSM University ROMEO Research Approval Form (For Research Projects): Approval Sequencing and Information



Research Ethics Board (REB): Approval Sequencing and Information

Did you know?

Lakehead University and Laurentian University are the REBs of record for NOSM U researchers.



* The REB has the option to reject research it deems unethical.

**Please note: This timeline is for online delegated review only. There is a longer timeline for projects that are greater than minimal risk, requiring a face-to-face full board review, which takes place once per month.

Y = YES! Approved. ARI = Application Requires Information

For more information, please contact research@nosm.ca



Northern Health Research Conference



The **2024 NHRC** was held in Sudbury from Monday, June 10, to Tuesday, June 11, 2024. The hybrid format provided opportunities for collaboration and community networking, and highlighted projects underway from students, residents, and community-based researchers.

The conference included 28 oral presentations and 43 poster presentations across the following NOSM University research themes and priorities:

| Research themes and priorities | Poster Presentations | Oral Presentations |
|-----------------------------------|----------------------|--------------------|
| Humanities and Social Sciences | 7 | 5 |
| Population and Public Health | 15 | 9 |
| Biomedical and Basic Sciences | 12 | 7 |
| Clinical and Translational Health | 9 | 7 |

The conference had a total of 145 registrants. Participants enjoyed a keynote panel titled *Advancing Health Equity Research: A Learning Collaborative Network Approach at NOSM University*. Keynote panelists included Drs. Alex Anawati, Erin Cameron, Joseph LeBlanc, Brianne Wood, and Barb Zelek. New in 2024 was a Lunch & Learn workshop by Josh Cerasuolo, Staff Scientist, ICES North, titled *Unlocking the possibilities of administrative data for research*. A reception and resident research workshop was hosted by the Dr. Gilles Arcand Centre for Health Equity.

Paige Stevenson was the recipient of the 2024 Dr. Roger Strasser NHRC Student Travel Award. The conference continued to include student awards for top oral and poster presentations:

- **Top Oral Presentation - Undergraduate Student**

Paige Stevenson

Primary Health Care Utilization in All Nations Health Partners Ontario Health Team: Assessing Preventative Services, COVID-19 Impacts and Recommendations for Improving Access

- **Top Oral Presentation – Graduate/Postgraduate Student**

Lucas Mrozewski

High Dose C5a Induces PC12 Cell Dysfunction - A Potential Mechanism of Adrenal Gland Damage in Sepsis

- **Top Poster Presentation - Undergraduate Student**

Caleb Lawlor, Brandon Grandinetti and Matthew Jones

A retrospective chart analysis of frostbite care in Northeastern Ontario to guide emergency department quality improvement

- **Top Poster Presentation – Graduate/Postgraduate Student**

Karolina Czajka

The characterization of antifungal resistance in pathogenic Candida to improve development of resistance biomarkers and species identification

The 2024 NHRC Scientific Planning Committee thanks all participants for their continued interest in this conference geared towards exploring research activities within Northern Ontario arising from community-based activities.

