

**2022 RESEARCH
ANNUAL REPORT**

REFLECTIONS



NOSM
UNIVERSITY

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Reflections



In NOSM's first year as a university, we are proud of the collaboration across disciplines that fostered partnerships across Northern Ontario, nationally, and internationally. Notably, we celebrated the launch of the Centre for Social Accountability—a truly interdisciplinary research centre, and the only centre of its kind. With the help of partners, we built our research capacity within clinical settings and grew our ability to offer graduate-level training. Our research is enhanced by partnerships, such as the new research agreements signed with Lakehead University and Laurentian University. Our efforts support the priorities of our strategic plan and will work to innovate health professions education, advance social accountability, and transform health human resources planning.

Dr. David C Marsh

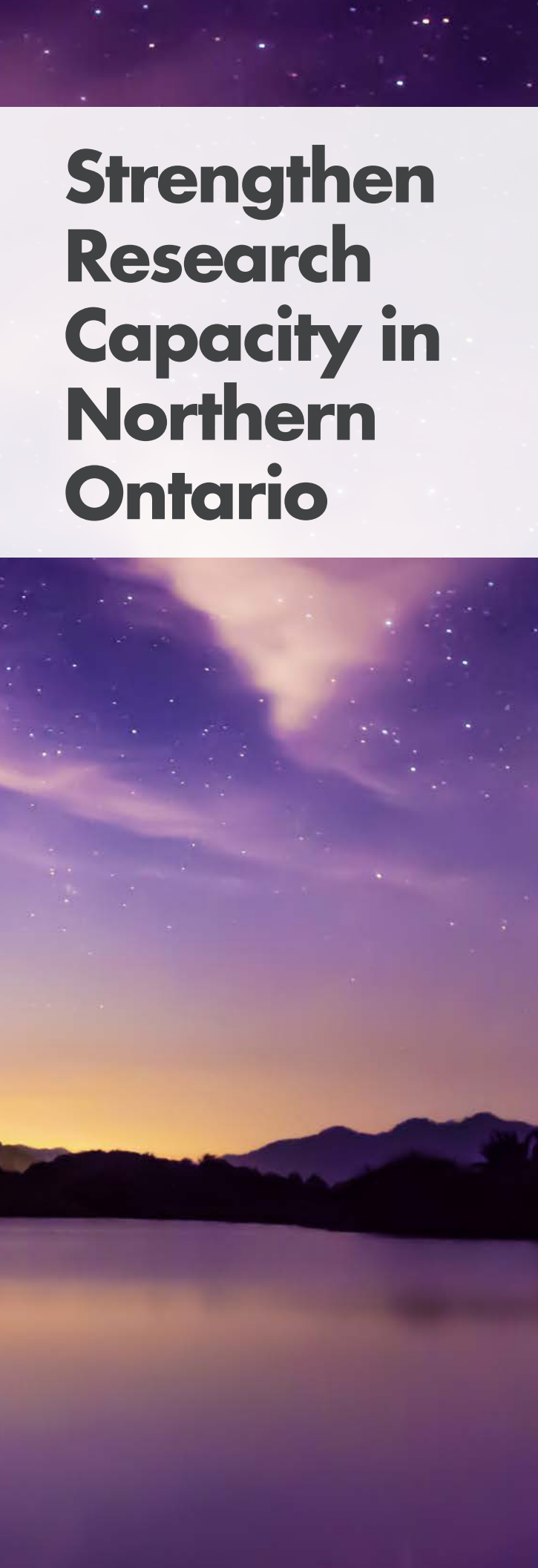
Vice Dean, Research, Innovation and International Relations
NOSM University



The innovative research of NOSM University faculty shone at national and international conferences in 2022. Locally, the University hosted several events to foster collaboration and research networks for researchers from Northern Ontario that included Divisional Research Seminar Series, the Northern Health Research Conference, and Health Research Town Halls in collaboration with Laurentian University, Lakehead University, Health Sciences North, and Thunder Bay Regional Health Sciences Centre. These research events provide an opportunity for NOSM University researchers to work together and develop collaborative research that is important for Northern Ontario.

Dr. TC Tai

Assistant Dean, Research
NOSM University



Strengthen Research Capacity in Northern Ontario

GOAL

To **strengthen research capacity** in Northern Ontario by aligning with health-research partners to improve performance and measurable outcomes in health services, quality health care, health and biomedical research and knowledge translation.

ASPIRATION

NOSM University is the connective tissue between research entities, Northern Ontario Health Teams (OHTs), research institutes and hospitals.

OUTCOMES

- ✓ Establish research partnerships, networks and clusters including those with a cultural focus
- ✓ Strong capacity in research and analytical processes
- ✓ Develop interdisciplinary centers
- ✓ New research opportunities for learners and faculty

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Research Priorities

Themes	Research Priorities
Clinical and Translational Health	• Cardiovascular • Cancer • Surgery • Primary Care
Biomedical and Basic Sciences	• Environmental Health • Physiology, Biological Systems and Functions • Disease Process, Diagnostics and Therapeutics
Population and Public Health	• Chronic Disease • Rural Medicine • Health Services • Social Determinants of Health
Humanities and Social Sciences	• Indigenous Peoples' Health • Francophone Health • Health Professions Education



Studying the effects of space on the human body

Dr. David MacLean, NOSM University Professor, received \$150,000 over two years from the Canadian Space Agency (CSA) to study the effects of space flight on the human body and gain insights into counteracting associated health risks.

The project, titled “Investigating the role of a multi-targeted dietary supplement on attenuating radiation and microgravity-induced tissue damage,” will study how the combined effects of radiation and microgravity interact and damage healthy tissue using a research model that simulates space flight. Dr. MacLean will deduce whether a dietary supplement can counteract the damaging effects of space travel and protect the body’s tissues. “The study will provide a clearer understanding of how the body is affected by space travel and begin exploring meaningful countermeasures,” says Dr. MacLean.

This study will provide the framework for future studies on human tissue and function in a multi-stressor environment. The models, tissues, and physiological systems being studied align directly with primary areas of concern set out by the CSA.

These include musculoskeletal, metabolic, radiation, and microgravity which are all heavily investigated in this study.

“Findings from this project could translate to numerous earth-based applications and contribute to improving health care for Canadians,” says Dr. MacLean. Potential earth-based applications include cancer patients undergoing radiation treatment or situations where individuals must undergo long durations of immobilization, such as prescribed bed rest.

✓ **Research Priority: Physiology,
Biological Systems and Functions**

Showcase of 2022 Funded Researchers





Collaborating with NASA on space research

Drs. Chris Thome, Assistant Professor, and Doug Boreham, Professor and Division Head Medical Sciences, and graduate student Mike Lapointe received a two-year \$149,500 **grant from the Canadian Space Agency** in collaboration with Dr. Marianne Sowa, Chief of the Space Biosciences Division at the NASA Ames Research Center in California.

Life in space and on the moon and Mars has many challenges, including the genetic damage caused by cosmic radiation. Cosmic radiation comes from the nuclear reactions that power stars and the sun. The universe is filled with galactic cosmic radiation but on Earth, our atmosphere shields and protects life from the harmful effects. The shielding effects of the atmosphere can be seen at night as light—the Northern Lights—when cosmic radiation interacts with the atmosphere.

“To understand the biological effects of the cosmic radiation in deep space, our collaborators at NASA Ames Research Center are conducting an experiment in which live BioSentinel desiccated yeast—Baker’s Yeast or *Saccharomyces cerevisiae*—samples are travelling 40,000,000 km into deep space in a small spaceship called 6U Cubesat,” says Dr. Boreham. “The 6U Cubesat will be a payload onboard the rocket Artemis I mission.”

Researchers at NOSM University and NASA are utilizing the same BioSentinel yeast in Sudbury’s SNOLAB, two kilometres underground in a Life Sciences Laboratory. Shielded from cosmic radiation in an ultra-low radiation environment, this experiment will compare and assess the impact of the absence or presence of high levels of natural cosmic radiation on living cells’ genetic material.

“The research is aimed at understanding how living cells can respond and adapt to the harsh radiation environment in outer space,” says Dr. Thome. “These experiments will build our knowledge on the potential risks inherent to future crewed missions to the moon and Mars and help develop new methods for extra-terrestrial protection of living organisms.”

✓ **Research Priority: Physiology,
Biological Systems and Functions**

NSERC Discovery Grants support Northern research

Researchers with NOSM University and Health Sciences North Research Institute (HSNRI) **received Discovery Grants** from the Natural Sciences and Engineering Research Council of Canada (NSERC) to fund their research projects. Dr. Sujeenthatharmalingam, Assistant Professor, received \$152,500 over five years to study “Elucidating the role of long noncoding RNA (lncRNA) in the DNA damage response.” Dr. Chris Verschoor, Assistant Professor, whose primary appointment is with HSNRI and holds a stipendiary appointment with NOSM University’s Medical Sciences Division, also received \$152,500 over five years for his project “Exploring how age impacts the TNF-mediated activation of monocytes.” A portion of the funding included Discovery Launch Supplements, awarded to early career researchers in the first year of the Discovery Grant.

✓ **Research Priority: Physiology,
Biological Systems and Functions**



Exploring access to smoking cessation interventions for priority populations

NOSM University Associate Professor, Dr. Patricia Smith, is exploring options to **expand access to evidence-based smoking cessation interventions**. Dr. Smith's project received \$302,413 in funding from the Public Health Agency of Canada's Healthy Canadians and Communities Fund (HCCF). First Response Mental Health will be partnering on the grant with matched in-kind funding and a customized version of their PeerConnect proactive peer support management app.

Smoking remains the single most preventable cause of premature death and disease in Canada, causing more than 40 diseases and other serious health outcomes, and is the leading cause of lung cancer. "There are subgroups of the population that have disproportionately high rates of smoking, which puts them at increased risk for serious health conditions," says Smith.

Age is a major factor: a high proportion of people under 45, especially males, smoke. Smoking is also higher among those with less than a high school education, people in the lowest income groups, members of LGBTQI2S+ communities, Indigenous peoples, people with mental health conditions and/or substance use disorders, and people in rural and remote settings.

Research shows that smoking cessation programs offering at least eight sessions and focusing on behaviour change strategies are more effective at helping people quit compared to trying to quit on one's own, brief interventions, or smoking cessation medications. However, "few people use behavioural programs, often because there is no access to programs or the services do not meet people's needs," says Dr. Smith. "This project will explore what people's needs are and what services exist to match those needs."

✓ Research Priority: Chronic Disease



Developing a standard for implementing, evaluating, and improving youth-friendly mental health services

Dr. Chiachen Cheng, Associate Professor, was the keynote speaker at NOSM University's annual Northern Health Research Conference (NHRC). Her keynote titled "An unusual suspect: the journey from clinician to physician-researcher" detailed her experience entering the research ecosystem as an active clinician. Dr. Cheng's primary research interests are early intervention for youth mental health, evidence-based practice as it interfaces with youth mental health policy, and models of care for vulnerable populations in rural or remote settings.

Dr. Cheng continues to balance her physician workload with an active research program, including work on her \$97,085 Canadian Institutes of Health Research (CIHR) funded project titled "Canadian Network for Youth-Friendly Mental Health Services: Developing a standard for implementing, evaluating, and improving youth-friendly mental health services." MAYNet (Mental Health and Addictions Youth Network) uses participatory-action methodology to understand lived experience with mental health and addiction services. This project sought to understand how integrated youth mental health and addictions centres across Canada can be youth-friendly for clients with diverse service needs.

✓ Research Priority: Health Services



Compassion and Artificial Intelligence studied by NOSM University researchers

Associated Medical Services (AMS) Healthcare announced the 2022 awardees in their Compassion and Artificial Intelligence Grants funding program. Drs. Erin Cameron, Associate Professor, and Bryan MacLeod, Associate Professor, are NOSM University researchers and two of the six successful recipients. They are in the third cadre of recipients, and their multidisciplinary teams were selected by an external expert review panel and join the 16 other projects funded in 2020 and 2021. Their collective work will help transform health care by ensuring that technologies are enabling of health care's compassionate purpose.

This innovative granting program supports research, knowledge translation and spread and scale activities. It has been designed to promote collaboration across disciplines and professions, and to engage the health-care community in the exploration and evaluation of topics related to compassion and technology.

Dr. Cameron received \$20,000 for her project titled "Exploring the need for a uniquely different approach in Northern Ontario: a study of socially accountable artificial intelligence" and Dr. MacLeod received \$19,730 to support his study on "Using technology to improve compassion in medicine."

✓ **Research Priority: Health Professions Education**

Community-driven research in Sioux Lookout

The Sioux Lookout Local Education Group (LEG) works closely with the Sioux Lookout Meno Ya Win Health Centre (SLMHC) and Sioux Lookout First Nations Health Authority (SLFNHA) on clinically impactful and community-driven research. Over the past 20 years, local researchers have produced more than 150 articles published in a dozen peer-reviewed medical journals. This has led to national coverage on CBC National News (Acute Rheumatic Fever, 2015) and two Canadian Research Awards (CFP Research Award 2015, 2017). Sioux Lookout is internationally known for its excellent work on Indigenous health and their research findings are frequently referenced.

The Sioux Lookout LEG research team completed a quality improvement program across Northwestern Ontario on screening and treatment of diabetes in pregnancy in remote communities. This work was funded through a Northern Ontario Academic Medicine Association (NOAMA) Alternate Funding Plan (AFP) award of \$50,000. The work led to a medical directive for prenatal care used by nurses in remote communities, enhanced screening and education on appropriate screening and treatment of diabetes in pregnancy.

To further improve prenatal care the current focus of the team is on screening and treatment of anemia in pregnancy. Along with community-based workers, SLFNHA and SLMHC, efforts are underway to describe the prevalence of anemia in pregnancy to guide ways of enhancing screening and treatment throughout the region. This work is funded through a NOAMA AFP Innovation Fund award of \$49,930. Dr. Ruben Hummelen, Associate Professor, Family Medicine, has been leading both projects as a clinician-researcher.

Further information on the research activities of the Sioux Lookout LEG is available on the [SLMHC website](#).

✓ **Research Priority: Rural Medicine, Indigenous Peoples' Health**

Cancer research in the North

The research team, led by Drs. Amadeo Parissenti, Professor, and Associate Professors, Tom Kovala and Carita Lanner, were awarded two separate grants from MITACS. The first is \$60,000 over two years for their project “Early Biomarkers for Prediction of Chemotherapy-induced RNA Disruption in Tumour Cells.” They have observed that a variety of chemotherapy agents can induce the degradation of ribonucleic acid (RNA) in tumour cells, a phenomenon called RNA disruption. Clinical studies have demonstrated a link between high tumour RNA disruption during chemotherapy and both complete tumour destruction and improved disease-free survival in breast cancer patients. RNA Diagnostics Inc. is seeking to bring the RNA disruption assay (RDA) into clinical use as a chemo-response assessment tool.

The ability of varied chemotherapy drugs to induce RNA disruption may be due to their common ability to induce the production of reactive oxygen species (ROS) in tumour cells. The funded study examines the relationship between the ability of chemotherapy agents to induce ROS production and their ability to induce RNA disruption. In addition, the study assesses whether ROS production by chemotherapy drugs precedes RNA disruption and whether ROS inhibitors reduce drug-induced RNA disruption. ROS production in tumours by chemotherapy agents may prove to be an earlier indicator of chemotherapy response in cancer patients. Assessing chemotherapy response very early in treatment may enable clinicians to quickly identify strongly responding patients or patients at high risk of treatment failure, who could then be considered for treatment de-escalation or modification.

The second grant for \$120,000 over four years is to study the “Role of Ribosomal Protein Ubiquitination in Chemotherapy and Stress-Induced RNA disruption in Tumour Cells.” While the RDA is a promising new tool to monitor chemotherapy effectiveness in cancer patients, the mechanisms involved in RNA disruption remain unclear. The study hypothesizes that chemotherapy drugs promote the linking of a protein called ubiquitin to proteins within ribosomes of cells, promoting their destruction. Ribosomes are RNA-containing protein factories that are critical for tumour cell survival. Thus, their degradation promotes both RNA degradation and tumour death. Knowledge of the mechanisms involved in RNA disruption may enable researchers to identify new drugs to augment chemotherapy-induced tumour RNA disruption and tumour destruction, possibly improving patient outcome and survival after chemotherapy.

✓ Research Priority: Cancer



In the News

Drs. Nancy Lightfoot, Professor, and David Marsh, Professor and Vice Dean, Research, Innovation and International Relations

➔ Researcher's experience with rheumatoid arthritis inspires new study

✓ **Research Priority: Primary Care**

Drs. Eliseo Orrantia, Professor, and Peter Hutten-Czapski, Professor

➔ Medical school study find maternity care services disappearing in Northern Ontario

➔ New study is shedding light on an ongoing problem affecting northeastern Ontario... maternity care deserts

➔ Rural Northern Ontario becoming 'maternity care desert': study

✓ **Research Priority: Rural Medicine**

Drs. Barb Zelek, Associate Professor and Division Head Clinical Sciences, and Brianne Wood TBRHRI and NOSM University Associate Scientist

➔ NOSM University doctors part of COVID medicine research team

✓ **Research Priority: Disease Process, Diagnostics and Therapeutics**

Drs. Marion Maar, Associate Professor, and Maurianne Reade, Associate Professor

➔ Indigenous vaccine confidence being studied in northeastern Ontario

✓ **Research Priority: Indigenous Peoples' Health**

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

Dr. Darrel Manitowabi, Associate Professor, is mid-way through his five-year term as the inaugural NOSM University and Associated Medical Services (AMS) **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 resides in the Whitefish River First Nation.



An Indigenous anthropologist with research interests in Anishnaabe 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 the historical legacy of colonialism impacts the health and wellbeing of First Nations communities. His research in the history of Indigenous health situates the place of Anishinaabe language (Anishinaabemowin) and knowledge (kendaasawin) in conceptions of holistic wellbeing (mino-bimaadiziwin) and ill health (maanaaji-bimaadizwin).

In 2022, Dr. Manitowabi led—and collaborated on—several research projects. As the principle investigator, along with co-applicants Esstin McLeod (Mississauga First Nation), Danielle Wilson (Noojmowin Teg Health Centre), Germaine Elliot (Mamaway Wiidokdaadwin Primary Care Team), Hannah Roberts (NOSM University), and Debbie Francis (Noojmowin Teg Health Centre), they secured funding from the NOSM University Research Development Grant (\$7,125), Noojmowin Teg Health Centre (\$10,000), Mamaway Wiidokdaadwin (\$9,000), Esstin McLeod (\$2000) for their project "A conceptual framework for training and mentorship of Indigenous Traditional Healers."

Work on this framework included a series of gatherings to discuss the current state of traditional healing. The first gathering, at the Manitoulin Island Conference Centre in Little Current, Ontario was on May 28-29, and included Wisdom Keepers of Healing, representing Elders, healers, helpers (those who assist traditional healers), Indigenous and non-Indigenous physicians and clinical administrators from northeastern, south-central, and southern Ontario. The outcome was a commitment to systems-level change through writing a decree, declaration, and policy paper on the Indigenous right to traditional healing.

A second gathering took place at the Casino Rama Hotel Conference Centre, Rama, Ontario, on October 24-25, funded primarily by Mamaway Wiidokdaadwin, Indigenous Primary Health Care Council (IPHCC) and Noojmowin Teg Health



Research Profiles



Centre (NTHC), to continue dialogue with past and additional participants. The second gathering resulted in a clearer vision for the commitments. Dr. Manitowabi led planning meetings and the writing group, and this project involved NOSM University MD student Hannah Roberts, assisting with this initiative over the past two years. The IPHCC also hosted a gathering in Toronto on December 6-7, attracting province-wide Indigenous health specialists to discuss traditional healing, where Dr. Manitowabi was a featured keynote speaker.

Led by principal investigator Dr. Fiona Nicoll and supported by \$159,975 in funding for the Alberta Gambling Research Institute, Dr. Manitowabi is a co-principal investigator on their project “Giwii-nisidopanmin odaminowin: gambling with videogames in the lives of Indigenous youth in Northwestern Ontario.” He highlights this undertaking is community-led, mostly by Indigenous youth from Thunder Bay. In August and September of 2022, the Thunder Bay youth hosted South Australian Indigenous youth in Northern Ontario with team-building activities and land-based experiences. Dr. Manitowabi hosted the youth in Whitefish River First Nation, Birch Island, and they visited sacred historical sites in Whitefish River with storytelling by a community Elder.

In September and October of 2022, the South Australian youth then hosted the Thunder Bay youth, coinciding with the World Indigenous Peoples’ Conference on Education in Adelaide, September 26-30. With Dr. Manitowabi’s mentorship and leadership, the Thunder Bay youth participated in a panel at this conference, presenting about land-based and cultural alternatives to video gaming and addressing colonial trauma.

Dr. Manitowabi is also collaborating with AMS to pilot ten podcasts featuring traditional healers and Elders. This is tentatively called Mushkiki Dabaajiwina, or “medicine stories” and to date, three recordings are complete with a projected spring 2023 completion. The objective is to capture traditional healer stories for public education and dissemination.

The **Maamwizing Indigenous Research Institute** (MIRI) at Laurentian University received \$430,832 in funding from the Social Sciences and Humanities Research Council’s (SSHRC) **Race, Gender and Diversity Initiative**. This grant was awarded to Dr. Joey-Lynn Wabie of Laurentian University, along with co-applicant Dr. Manitowabi. The funds will support a three-year project, titled “Maamwizing: a hub for Indigenous community-driven research.” This community-driven research will also be led by two local Anishinaabe community partners: Akinomooshin Inc. and **White Buffalo Road Healing Lodge Inc.**

Dr. Manitowabi was invited to several speaking engagements, including the opening co-keynote at the “Back to the centre: back to the future of gambling research,” hosted by the Alberta Gambling Research Institute at the Banff Centre June 23-25, the Turtle Island Indigenous Science Research Conference at the University of Manitoba June 14, and at York University, Georgian College, an Indigenous Health Conference.

As the Hannah Chair in the History of Indigenous Health and Indigenous Traditional Medicine, Dr. Manitowabi works to promote the discussion of the inherent, constitutional, Treaty and international rights of all Indigenous Peoples and communities and the protection of traditional knowledge and medicines from appropriation. As the Chair, his focus is in the history of Indigenous Health and he contributes to NOSM University’s role in leading scholarly activity in the history of Indigenous Health.

Dr. Manitowabi’s 2022 Publications:

Hudson, Geoffrey & Darrel Manitowabi. (In press). Accidental History and Manitoulin Island, c. 1830-1960. In *Accidental History of Canada*, ed. Megan Davies & Geoffrey Hudson. Montreal: McGill-Queen’s University Press.

Maar, Marion, Tim Ominika & Darrel Manitowabi. 2022. **Community-led Recovery from the Opioid Crisis through Culturally-based Programs and Community-based Data Governance**. *The International Indigenous Policy Journal*.

Manitowabi, Darrel. 2022. Weweni Ezhichegewin: Wise Practices in Urban Indigenous Education in Northern Ontario. *AlterNative: International Journal of Indigenous Peoples* 18(1): 114-121. doi:10.1177/11771801221088863

Lightfoot, Nancy, Darrel Manitowabi, Victoria Arrandale, Nathaniel Barnett, Carmen Nootchtai, Mary Lyn Odjig, Jeff Moulton, Julie Fongemy, Michel Lariviere, Zusanna Kerekes, Linn Holness, Leigh MacEwan, Tammy Eger & Wayne Warry. 2022. **Workers’ Compensation Experience in Some Indigenous Northern Ontario Communities**. *Work: A Journal of Prevention, Assessment & Rehabilitation*.

Wabie, Joey-Lynn, Jennifer Walker, H. Neil Monague, Mary Elliot, Paulette Stevens, Elizabeth Carlson, Darrel Manitowabi & Robin Rowe. (In press). *Niigaaniwin: Vision and Spirit of our Journey*. *Turtle Island Journal of Indigenous Health*.

Celebrating the Centre for Social Accountability

The Centre for Social Accountability (CFSA), has grown exponentially since its inception in early 2022, and has recently seen significant success in both grant funding and expanding its team to 18 staff members. As a multidisciplinary centre within NOSM University, the CFSA is dedicated to the improvement of health and wellness in Northern Ontario. In this way the Centre's social accountability research defines and strengthens the work of NOSM University and its partners, making it more effective in the achievement of this critical mission.

Launch Event: Planting Seeds of Change

The Centre for Social Accountability (CFSA), led by the Centre's Director, Dr. Erin Cameron, held its inaugural celebration on Friday, June 24, 2022 with an event jointly hosted online and in-person in both Thunder Bay and Sudbury. In addition to sharing success stories and highlighting important partnerships and collaborations, the event included comments from Dr. Sarita Verma, NOSM University President; Dr. David Marsh, Vice Dean, Research, Innovation and International Relations; Dr. Alex Anawati, CFSA Clinical Lead; Dr. Joseph LeBlanc, Associate Dean, Equity and Inclusion; and, Dr. Natalie Aubin, Vice President Social Accountability at Health Sciences North (HSN).

Describing the Centre's first year as an amazing journey and praising "this inaugural event of the first multidisciplinary, but really interdisciplinary, research centre," Dr. Verma provided a brief look into the history of the Centre and exclaimed that "this is the only centre of its kind!" Dr. Marsh then shared his enthusiasm for the Centre's connection with research and its key focus on the obligations that health-care providers have to the communities they serve. He called those involved in the Centre to continue demonstrating the impact of socially accountable medicine and emphasized that social justice is at the heart of the empowering work of the Centre. The CFSA continued with this important work in 2022 through research and innovation, advocacy, and community impact.

Research and Innovation

Over the past year, the CFSA welcomed twelve research affiliates from a variety of institutions and communities, many of whom are involved with projects related to the centre. They include David Savage (NOSM University and Thunder Bay Regional Health Sciences Centre), Jen Bertoni (Queen's University), Taylor Loughheed (North Bay Regional Health Centre), David Marsh (NOSM University), Kristen Morin (NOSM

University, Health Sciences North Research Institute, and ICES North), Lee Rysdale (NOSM University), Karla Gharthey (Cambrian College and University of Toronto), Holly Sarvas (Health Sciences North), Andrea Raynak (Thunder Bay Regional Health Sciences Centre), Hom Shrestha (Laurentian University), Kyle Vader (NOSM University Medical Student), and Jane Zhao (University of Toronto). Profiles of their respective research are available on the CFSA [website](#). The CFSA has also hosted 10 Research Connection Meetings with prospective collaborators and partners, many of which have led to ongoing projects hosted by CFSA programs MERLIN and NORTH. The Centre continues to welcome new affiliates and prospective collaborators.

The CFSA has seen excellent funding success. To date, over 15 grants and over \$2 million in funds have been awarded from a variety of sources including SSHRC, CIHR, NOAMA and AMS. Knowledge translation of the funded research programs has also led to 15 peer reviewed publications in journals such as *Medical Teacher*, *Canadian Medical Education Journal* and *Journal of Rural Health*.

Supporting new research programs is a key driver for the CFSA. Two examples of this are the **AI North project** and the **NOURISH project**.

In partnership with AMS, Lakehead University and the Temerty Centre for AI Research and Education (T-CAIREM), the CFSA introduced AI-NORTH, a project that focuses on understanding artificial intelligence in the context of Northern Ontario. Through appreciative inquiry, deliberative dialogue and two-eyed seeing, they seek to: understand socially accountable AI, identify strengths and gaps in AI research in Northern Ontario and help to build capacity for AI research in Northern Ontario. AI-NORTH aims to provide space to come together on common ground and explore what Artificial Intelligence means for the people of Northern Ontario.

NOURISH started with a simple idea—how can the hospital tray be a platform to dream big and transform our food and health systems? Food is a powerful way to build health for both people and the planet, in addition to providing comfort and healing to patients, creating more resilient communities, and addressing climate change. Starting from a community of practice, they have grown to a network of leaders, organizations, and communities, shifting the focus upstream to work preventatively through food in health care. Through their work with cohorts of leaders and through action learning series, they work to equip innovative individuals and teams, empowering bold leadership in climate action and health equity.

Policy Leadership and Advocacy

CFSA staff are highly engaged in advocating and leading change. In particular, the CFSA has worked with Health Sciences North (HSN) and Thunder Bay Regional Health Sciences Centre (TBRHSC) in Northern Ontario and created two innovative joint positions to advance social accountability.

Dr. Alex Anawati, Associate Professor, was named as the Clinical Lead Social Accountability Advocacy Leadership and Policy in 2022, which is a joint position between the CFSA and Health Sciences North. He is also a member of the The Association of Faculties of Medicine of Canada (AFMC) Global Health Group, the Association for Medical Education in Europe (AMEE)'s ASPIRE to Excellence in Social Accountability Panel, the College of Family Physicians of Canada Social Accountability Working Group, and the HSN Mental Health and Addictions Research Progress Group.

Dr. Brianne Wood is the inaugural joint Social Accountability and Learning Health Systems Associate Scientist in a partnership between CFSA and the Thunder Bay Regional Health Sciences Centre, and the Thunder Bay Regional Health Research Institute. She is also a member of the Ontario Strategy for Patient-Oriented Research Support Unit's (OSSU) Learning Health System working group, the POPLAR network, and the Ontario Coalition for Population Health Management.

Dr. Erin Cameron, the Director of the CFSA, is also actively involved in advocacy at a national level and serves as the Social Accountability Network Co-Chair for the AFMC, sits on the AFMC Standing Committee on Social Accountability, and co-chairs both the International Social Accountability and Accreditation Steering Committee and the Data and Information Steering Committee (DISC).

Together, the CFSA staff and faculty are advocates and leaders for social accountability and health equity.

Community Impact

A key highlight for the CFSA, is their participation in the **\$1 million grant from CIHR, led by Co-PI Erin Cameron**, that aims to improve local health outcomes for residents of Thunder Bay through partnership between academic researchers, universities, and municipalities. NOSM University, Lakehead University, Confederation College, and the City of Thunder Bay are collaborating to address locally identified health and safety priorities using a CityStudio model of community-campus

engagement. Recognized globally, the CityStudio framework encourages post-secondary students to be agents of change for social accountability in their communities.

Thunder Bay will receive \$370K over four years to implement the project, which includes the hiring of a research coordinator. The funding will also evaluate the reciprocal relationship between cities and academic institutions and their ability to improve population health outcomes.

"We are thrilled that CIHR recognises this as an opportunity to connect communities with the academic research of universities. It aligns with NOSM University's social accountability mandate to address the priority health concerns of communities and advocate for community engagement that is grounded in co-creation," says Dr. Cameron.



Big data and evaluating its impact

Dr. David Savage, Assistant Professor and NOSM University alumnus situates his research program within three key overarching themes:

1. applying systems modelling approaches
2. an interest in data analytics including "big data" and the application of artificial intelligence and machine learning
3. evaluating the impact to northern and rural communities.

His research program focuses on health human resource planning and emergency department operations. He has been a Site-Principal Investigator for a large multicenter observational study to validate the Canadian Transient

Ischaemic Attack Risk Score. This decision tool stratifies patients' seven day risk for stroke, with or without carotid endarterectomy/carotid artery stenting, after presenting to the emergency department with a transient ischemic attack.

As a Co-Investigator, he is about to begin evaluating the implementation of the Canadian Syncope Risk Score which predicts 30-day serious adverse events in patients presenting with syncope. This latter study is a \$1,250,000 CIHR funded project titled "Multi-Centre Cluster-Randomized Implementation of Canadian Syncope Pathway for Emergency Department Syncope Management" led by Principal Investigator Dr. Venkatesh Thiruganasambandamoorthy at the Ottawa Hospital Research Institute.

In addition to his faculty appointment with NOSM University, Dr. Savage is an Emergency Physician at the Thunder Bay Regional Health Sciences Centre (TBRHSC), a NOSM University graduate (MD 2014, Family Medicine 2016 and Emergency Medicine 2017), an Affiliate Scientist with Health Sciences North Research Institute (HSNRI) and the Interim Site Director for **ICES North**.

Dr. Savage's other 2022 research funding awards included:

- \$5,000 from the Canadian Association of Emergency Physicians EM Advancement Fund for "Cancer care for patients diagnosed with cancer through the emergency department" (Dr. Savage, co-investigator, and Dr. Keerat Grewal of Schwartz/Reisman Emergency Medicine Institute, principal investigator)
- \$50,000 from NOAMA CIOF for "Derivation of a clinical prediction rule to rule out a central cause of vertigo in patients presenting with acute vertigo to the emergency department" (Dr. Savage, co-investigator, and Dr. Robert Ohle, principal investigator)
- \$50,000 from NOAMA CIOF for "Pancreatic ductal adenocarcinoma wait times from imaging to surgery: an Ontario population-based study to establish a time cutoff for improved survival" (Dr. Savage, co-investigator, and Dr. Amer Alaref, principal investigator)
- \$10,000 from a Thunder Bay Regional Health Research Institute Seed Grant for "Using machine learning to reduce emergency department length of stay for patients requiring computed tomography (CT) scan"

As the Research Director for the TBRHSC Emergency Department, Dr. Savage collaborates with emergency physicians, computer scientists and health geographers. He co-supervises graduate students in computer sciences and the NOSM

University Master of Medical Studies (MMS) program, as well as currently participating on a Ph.D. thesis committee at St. Mary's University. Prior to his medical training, Dr. Savage completed a Ph.D. at the University of Toronto studying systems modelling and operations research.

In addition to his active research program, Dr. Savage is also supporting fellow researchers as the **Interim Site Director for ICES North**. Appointed in February 2022, he leads ICES North, in collaboration with three Northern partners: NOSM University, Health Sciences North Research Institute and Laurentian University. "I'm excited to be working with ICES North and their partners to further the organization's mandate of supporting high quality research to northern scientists and trainees. My hope is that we can grow ICES North by providing new and existing researchers not already working with us an opportunity to lead impactful population level studies to improve health care in the North," says Dr. Savage.

ICES North launched in 2018 as a site for ICES (Institute for Clinical Evaluative Sciences) to centralize Northern Ontario's unique health research questions and demographic composition that are rooted in rural and remote health. The ICES mandate is to lead cutting-edge studies that evaluate health care delivery and outcomes. ICES researchers access a wide range of health-related data, including population-based health surveys, anonymous patient records, and clinical and administrative databases. ICES is recognized as a leader in maintaining the privacy and security of health information. Their mission is translating data into trusted evidence that makes policy and health care better and people healthier.

ICES North supports studies that evaluate health care delivery and population outcomes in Northern Ontario. Research scientists can securely access Ontario's demographic and health-related data, population-based health surveys, anonymous patient records, and clinical and administrative databases. Scientists published six peer-reviewed articles in 2022. Visit **ICES North** for more information and contact details.

Dr. Savage's 2022 Publications:

Rao G, Mago V, Lingras P, Savage DW. AEDNav: indoor navigation for locating automated external defibrillator. BMC Medical Informatics and Decision Making. 2022 Dec;22(2):1-7.

Phatak A, Savage DW, Ohle R, Smith J, Mago V. Medical Text Simplification Using Reinforcement Learning (TESLEA): Deep Learning-Based Text Simplification Approach. JMIR Medical Informatics. 2022 Nov 18;10(11):e38095.

Shahbandegan A, Mago V, Alaref A, van der Pol CB, Savage DW (2022) Developing a machine learning model to predict patient need for computed tomography imaging in the emergency department. PLoS ONE 17(12): e0278229. <https://doi.org/10.1371/journal.pone.0278229>.



Events

Northern Health Research Conference

The 17th annual Northern Health Research Conference (NHRC) was held on Friday, June 24, 2022. The conference was the first hybrid model, held in Sudbury, Ontario, with an online portion for those who could not attend in person. A total of 142 researchers attended the conference, with 20 oral presentations and 35 poster presentations. As noted, Dr. Chi Cheng was the keynote speaker and this is the first year where a pre-conference workshop was offered. This year's NHRC included the first award competition for the top three best student oral and poster presentations. Student presentations were ranked by Faculty reviewers based on several criteria. Each winner received a gift card. Congratulations to the following students:

Best Student Oral Presentations

- **Lobna Abdel-Dayem** - "Investigating the role of Retinol Saturase in ferroptosis" (Supervisor: Dr. Alex Moise, Associate Professor)
- **Manon Valiquette** - "The Immune Modulating Effects of Low Dose Ionizing Radiation and Its Applicability in Cancer Therapy" (Supervisors: Dr. Chris Thome, Assistant Professor and Dr. Sujeenthara Tharmalingam, Associate Professor)
- **Dr. Kara Nadeau** - "Perceptions on Prehabilitation in Northern Ontario General Surgery Patients" (Supervisor: Dr. Grace Ma, Assistant Professor)

Best Student Poster Presentations

- **Mathieu Rheault-Henry** - "Transcatheter Aortic Valve Implantation Versus Sutureless Aortic Valve Replacement: Overview of the Recent Advancements in Cardiac Surgery" (Supervisor: Dr. Rony Atoui, Associate Professor)
- **Courtney Ferris** - "Neutrophils: necessary networking cells in host defense against *Haemophilus influenzae*" (Supervisor: Dr. Marina Ulanova, Professor)
- **Imran Bagha** - "CPRAT: A Novel Method for Enhancing CPR" (Supervisor: Dr. Samuel Peters, Assistant Professor)

The conference website has additional details including links to the conference recordings (only those in the main room were recorded) and to the 35 poster presentations. Also available is the 1.5-hour pre-conference workshop titled “Research at NOSM University: The basics and beyond.” Ghislaine Attema, Research Coordinator in the Research and Graduate Studies Office, introduced participants to the basic concepts and functions of research administration and the research environment at NOSM University. Ghislaine went through several areas and topics including research funding, NOSM University research processes, opportunities to engage learners in research, and resources available to faculty. In this interactive workshop, participants worked together, and learned from each other in a supportive, and engaging environment. All faculty, learners and staff were encouraged to attend, from novice to expert.

Health Research Town Halls

The Health Research Town Halls are a collaboration between NOSM University, Health Sciences North, Health Sciences North Research Institute, Thunder Bay Regional Health Sciences Centre, Thunder Bay Regional Health Research Institute, Laurentian University and Lakehead University.

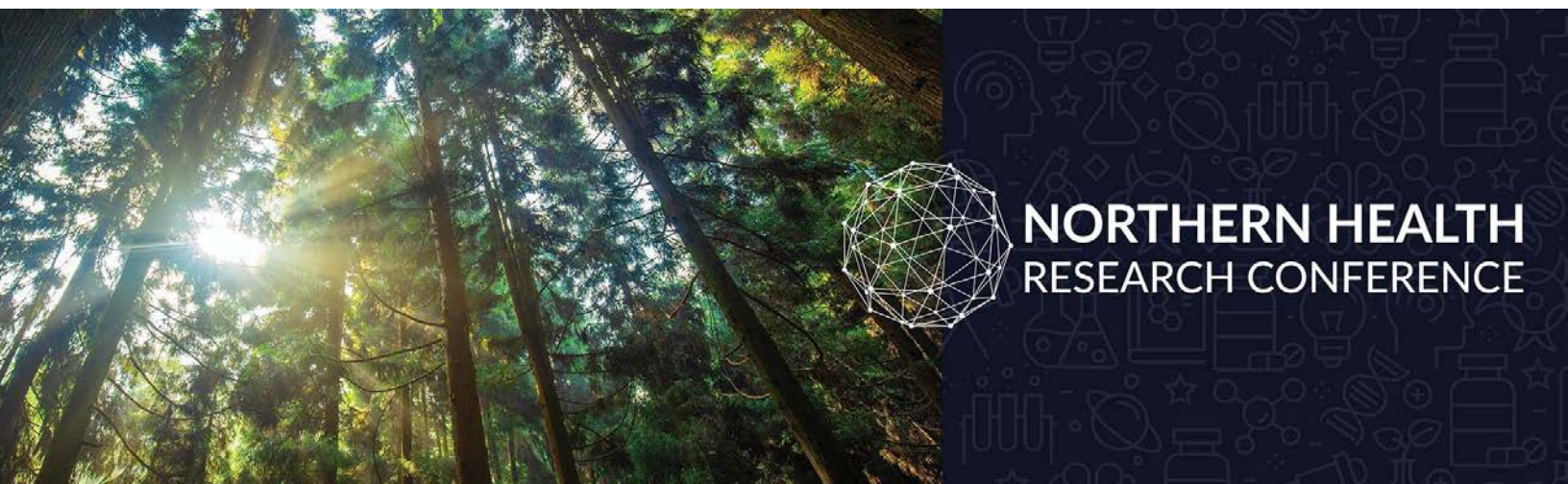
Three sessions were held in 2022:

- February 8 - **Mental Health and Addictions**
- May 10 - **Social Accountability in Healthcare**
- October 11 - **Ethics in Research**



The 18th annual Northern Health Research Conference will be held in Thunder Bay from Thursday, June 1 to Friday, June 2, 2023.

Visit nosm.ca/nhrc





Awards

64 NEW
externally funded
awards totalling

\$3,565,080

121 active
awards totalling
\$17,037,580
with dispersal of

\$5,414,295
in 2022

Externally Funded Awards

Principal investigators listed only.

Lobna Abdel-Dayem (Supervisor: Dr. Alexander Moise, Associate Professor)

Funded Amount: NSERC Undergraduate Student

Research Award - \$6,000

Project Title: Modulation of Ferroptosis by Retinol Saturase

Dr. Sandra Adamson, Assistant Professor

Funded Amount: NOAMA AFP - \$42,804

Project Title: Gestational Correlation of Caesarian Sections with Labour Dystocia

Dr. Peter Ajueze, Assistant Professor

Funded Amount: NOAMA AFP - \$34,053

Project Title: Investigating the effects of "poppers" on aggressive behaviour in child and adolescent inpatients of Health Sciences North

Dr. Amer Alaref, Associate Professor

Funded Amount: NOAMA CIOF - \$50,000

Project Title: Pancreatic ductal adenocarcinoma wait time from imaging to surgery: an Ontario population-based study to establish a time cutoff for improved survival

Dr. Madhu Azad, Assistant Professor

Funded Amount: NOAMA CIOF - \$50,000

Project Title: Incorporating Chronic Care Model to Improve Diabetes Care in Family Health Organization

Dr. Shikha Bansal, Assistant Professor

Funded Amount: NOAMA CIOF - \$18,599

Project Title: Simulation Based Ophthalmology Education for Medical Students In Northwestern Ontario

Dr. Douglas Boreham, Professor and Division Head
Medical Sciences
Funded Amount: Canadian Space Agency - \$149,500/2yrs
Project Title: Investigating the radiation response during anhydrobiosis in yeast (*Saccharomyces cerevisiae*) and applications for future space biosciences research

Dr. Erin Cameron, Assistant Professor
Funded Amount: AMS - \$20,000
Project Title: Exploring the need for a uniquely different approach in northern and rural Canada; a study of socially accountable artificial intelligence

Funded Amount: Ontario Health Team - \$95,000 (Sub-award)
Project Title: Ontario Health Team Impact Fellowship Program

Funded Amount: CIHR Project Grant - \$75,000 (Sub-award)
Project title: The population health impact of community-campus engagement: CityStudio

Dr. Lucas Castellani, Assistant Professor
Funded Amount: NOAMA CIOF - \$49,319
Project Title: Coronavirus in the Urban Built Environment (CUBE)

Dr. Caitlin Champion, Assistant Professor
Funded Amount: SKIN Investigation Network of Canada - \$25,000 (Sub-award)
Project Title: Canadian Frostbite Collaborative Network Development

Dr. Atillio Costa-Vitali, Associate Professor
Funded Amount: NOAMA AFP - \$50,000
Project Title: Utility of echocardiographic strain imaging in cardiac amyloidosis

Luc Couture (Supervisor: Dr. Douglas Boreham, Professor and Division Head Medical Sciences)
Funded Amount: NSERC Undergraduate Student Research Award - \$6,000
Project Title: Researching the Effects of the Presence and Absence of Ionizing Radiation

Dr. Lynn Giroux, Assistant Professor
Funded Amount: Abbvie Corporation - \$11,928
Project Title: The effectiveness of risankizumab following guselkumab failure in moderate-to-severe psoriasis patients: A retrospective study

Dr. Hazem Elmansy, Associate Professor
Funded Amount: NOAMA AFP - \$49,560
Project Title: Thulium fiber laser (TFL) versus Holmium MOSES Laser Enucleation of the prostate for treatment of benign prostatic hyperplasia (BPH): A randomized prospective comparative study

Funded Amount: NOAMA CIOF - \$50,000
Project Title: Thulium fiber laser (TFL) versus Holmium MOSES Laser for Treatment of Kidney Stones: A randomized prospective comparative study

Dr. Mohammed Ibrahim, Assistant Professor
Funded Amount: NOAMA CIOF - \$50,000
Project Title: Improving the chemotherapy treatment of breast cancer patient in Northern Ontario by monitoring the immune biomarker signature profile

Dr. Naana Jumah, Assistant Professor
Funded Amount: NOAMA AFP \$49,999
Project Title: Early Prenatal Screening for Preterm Preeclampsia: An Implementation Study for Northern Ontario

Dr. Mary Catherine Kerr, Assistant Professor
Funded Amount: NOAMA CIOF \$49,800
Project Title: Integration of Social Justice Framework in Simulation Education and the Impact on Emergency Department Healthcare Staff and Learner Perceptions in Northeastern Ontario

Dr. Tom Kovala, Associate Professor
Funded Amount: MITACS Accelerate - \$60,000/2yrs
Project title: Early Biomarkers for Prediction of Chemotherapy-induced RNA Disruption in Tumour Cells

Funded Amount: MITACS Accelerate - \$120,000/4yrs
Project title: Role of Ribosomal Protein Ubiquitination in Chemotherapy and Stress-induced RNA disruption in Tumour Cells

Dr. Andreas Kumar, Associate Professor
Funded Amount: NOAMA CIOF - \$50,000
Project Title: NOMIS-1 Pilot: Study of Infarct Expansion in Patients with STElevation Myocardial Infarction

Dr. Tara Leary, Assistant Professor

Funded Amount: NOAMA AFP - \$50,000

Project Title: The potential for inpatient addiction medicine unit to improve connections with community addiction supports and reduce acute health service use

Dr. Simon Lees, Professor

Funded Amount: Northern Ontario Heritage Fund Corporation - \$35,000

Project Title: Research Intern - Ultra Low Dose Radiation

Dr. Grace Ma, Assistant Professor

Funded Amount: NOAMA CIOF - \$46,127

Project Title: Prehabilitation of older adult patients using the foot peddler prototype to reduce frailty preoperatively

Dr. David MacLean, Professor

Funded Amount: Canadian Space Agency - \$150,000/2yrs

Project Title: Investigating the role of a multi-targeted dietary supplement on attenuating radiation and microgravity induced tissue damage

Dr. Bryan MacLeod, Associate Professor

Funded Amount: AMS - \$19,730

Project Title: Using Technology to Improve Compassion in Medicine

Dr. David Marsh, Vice Dean, Research, Innovation and International Relations and Professor

Funded Amount: NOAMA AFP - \$31,767

Project Title: Patient, Family Physician, Pharmacist, and Rheumatologist Experience, Interaction, Satisfaction, and Suggestions for Rheumatoid Arthritis Treatment in Northern Ontario

Funded Amount: NOAMA CIOF - \$50,000

Project Title: Blending Seeking Safety and Trauma-Sensitive Yoga to Treat Trauma and Substance Use Disorder in a Residential Treatment Centre

Dr. Patrick Martel, Associate Professor

Funded Amount: NOAMA CIOF - \$50,000

Project Title: Randomized control trial of high-fidelity simulator in PoCUS Training

Dr. Sarah McIsaac, Assistant Professor

Funded Amount: NOAMA CIOF - \$50,000

The Northern City of Heroes cardiopulmonary resuscitation training kiosk: Development and validation of a free public access hands only cardiopulmonary resuscitation training kiosk

Dr. Kristen Morin (Supervisor: Dr. David Marsh, Vice Dean, Research, Innovation and International Relations and Professor)

Funded Amount: Council of Ontario Universities (COU) - \$50,000

2022-23 Ontario Women's Health Scholars Postdoctoral Award

Dr. Delene Nelson, Associate Professor

Funded Amount: NOAMA CIOF - \$47,240

Project Title: Does an exercise vital signs intervention improve patient health outcomes? A Northwestern Ontario Perspective

Dr. Sarah Newbery, Associate Dean, Physician Workforce Strategy and Associate Professor

Funded Amount: NOAMA AFP - \$31,452

Project Title: Experiences of new physician graduates as they transition to rural practice in Ontario

Dr. Robert Ohle, Assistant Professor

Funded Amount: NOAMA CIOF - \$50,000

Project Title: Derivation of a clinical prediction rule to rule out a central cause of vertigo in patients presenting with acute vertigo to the emergency department.

Dr. Eliseo Orrantia, Associate Professor

Funded Amount: NOAMA AFP - \$50,000

Project Title: Development of Locum Recruitment and Retention Best Practice Recommendations –Towards Health Human Resource Sustainability in Rural Northern Ontario

Dr. Richard Painter, Assistant Professor

Funded Amount: NOAMA AFP - \$56,600

Project Title: Transforming the delivery of child and adolescent mental health care in Northern Ontario: A comprehensive, multidisciplinary shared care mode

Simon Paquette (Supervisor: Dr. Sujeenthara Tharmalingam, Assistant Professor)

Funded Amount: NSERC Undergraduate Student Research Award - \$6,000

Project Title: Genetically engineering *Limosilactobacillus reuteri* strains

Dr. Ryan Patchett-Marble, Assistant Professor
Funded Amount: NOAMA AFP - \$50,000
Project Title: The creation of a novel online Problem-based Learning (PBL) program to support the specialized clinical skills of rural generalism

Funded Amount: NOAMA CIOF - \$50,000
Project Title: Improving the process and quality of care of psilocybin-assisted therapy for Canadians with life-threatening diagnoses based on patient, caregiver, and therapist perspectives.

Dr. Lacey Pitre, Assistant Professor
Funded Amount: NOAMA AFP - \$49,900
Project Title: Implementation of Canadian Remote Access Framework for Clinical Trials (CRAFT) pilot study at HSN: a mixed methods quality improvement guideline for Northern Ontario sites

Dr. Valerie Primeau, Assistant Professor
Funded Amount: NOAMA CIOF - \$50,000
Project Title: Substance use stigma among first responders and emergency department staff in a Northern Ontario community: Raising awareness and understanding barriers

Dr. Christine Pun, Associate Professor
Funded Amount: NOAMA CIOF - \$49,728
Project Title: Point of Care Ultrasound Use by Registered Nurses in Palliative Care

Dr. Jillie Retson, Assistant Professor
Funded Amount: NOAMA AFP - \$50,000
Project Title: Routine cancer screening across a COVID-timeline: an integrated primary health care investigation with Kenora All Nations Health Partners

Dr. Michael Scott, Assistant Professor
Funded Amount: NOAMA CIOF - \$50,000
Project Title: The Development of a Northwestern Ontario ECMO Transport Program-Improving Patient Safety and Outcomes for the most Critically Ill

Dr. Walid Shahrouh, Associate Professor
Funded Amount: NOAMA AFP - \$50,000
Project Title: Randomized Controlled Trial to Evaluate Safety and Efficacy of Extended Treatment Duration for Idiopathic OAB Undergoing OnabotulinumtoxinA Intraductal Injection

Dr. Kuppuswami Shivakumar, Associate Professor
Funded Amount: NOAMA AFP - \$49,999
Project Title: Assessing accelerated protocols for rapid delivery of dTMS to patients with treatment-resistant depression

Dr. Hadi Shojaei, Assistant Professor
Funded Amount: NOAMA AFP - \$49,979
Project Title: MyPainMyRecord - Engage

Dr. Ravi Singh, Assistant Professor
Funded Amount: NOAMA AFP - \$50,000
Project Title: Development and implementation of a rapid point-of-care diagnostic assay for the detection of antifungal resistance in oral candidiasis management

Funded Amount: NOAMA CIOF - \$50,000
Project Title: Pathological consequences of radiotherapy on the oral epithelial barrier in head and neck cancer patients and implications for improved treatment

Dr. Ravinder-Jeet Singh, Assistant Professor
Funded Amount: NOAMA CIOF - \$49,710
Project Title: Factors influencing access to endovascular therapy among patients with large vessel occlusion stroke in the Northern Ontario and outcome following treatment

Dr. Ravinder Singh, Assistant Professor
Funded Amount: NOAMA AFP - \$49,365
Project Title: Risk factors, causes, access to care, treatment, and outcome of TIA and minor stroke in Northern Ontario

Dr. Raga Sirror, Assistant Professor
Funded Amount: NOAMA AFP - \$49,568
Project Title: De-labelling Penicillin Allergy in Paediatric Patients Using Oral Challenge: A Prospective Study

Dr. Patricia Smith, Associate Professor
Funded Amount: Public Health Agency of Canada - \$302,413/2yrs
Project Title: Innovative behavioural intervention delivery for priority populations

Dr. Sujeenthar Tharmalingam, Assistant Professor
Funded Amount: Northern Cancer Foundation - \$40,000
Project Title: Rewiring DNA methylation signatures for the treatment of therapy resistant breast cancer

Funded Amount: NSERC Discovery - \$152,500/5yrs
Project Title: Elucidating the role of long noncoding RNA (lncRNA) in the DNA damage response

Funded Amount: NSERC Alliance and Biomine Ltd. - \$90,000/2yrs
Project Title: Biomass waste to value

Dr. Sean Thomas, Clinical Lecturer
Funded Amount: NOAMA CIOF - \$50,000
Project Title: Reprogramming the gut microbiome to manage medication-refractory Type II Diabetes

Dr. Christopher Thome, Assistant Professor
Funded Amount: Northern Cancer Foundation - \$40,000
Project Title: Genetically modified microbial species as a mitigation strategy for gastrointestinal side effects following radiotherapy

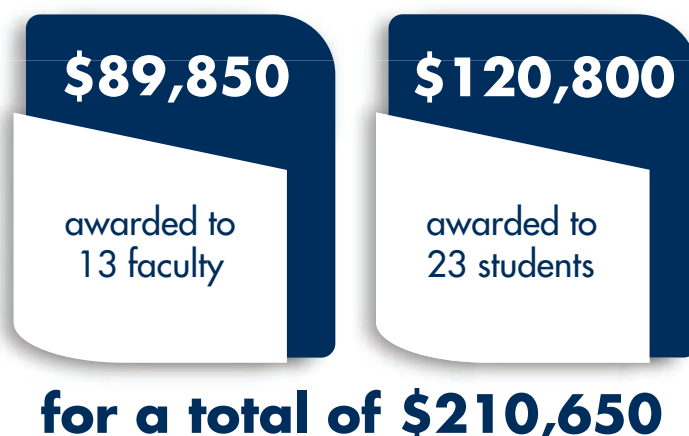
Taryn Thompson (Supervisor: Dr. David MacLean, Professor)
Funded Amount: NSERC Undergraduate Student Research Award - \$6,000
Project Title: Skeletal muscle energetics and protein turnover following electrical stimulation in muscle wasting

Dr. Kim Tilbe, Professor
Funded Amount: NOAMA AFP - \$50,000
Project Title: Genomic Microbiome Characterization and Comparison Among Inflammatory Bowel Disease (IBD) Patients in Northern Ontario – Pilot Project.

Dr. Brianne Wood, Associate Scientist
Funded Amount: CIHR Catalyst Grant - \$100,000
Project Title: Mobilizing and evaluating a multi-level learning health system: examining the influence and impacts of northern, rural, and remote context

Dr. Barbara Zelek, Associate Professor
Funded Amount: NOAMA AFP - \$49,440
Project Title: Changes in Adolescent and Youth Mental Health Presentations as a Result of COVID-19: A Study of Primary Care Practices in Northern Ontario

Internally Funded 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, develop and adjudicate internal awards and prizes and make awardee recommendations to the Vice Dean, Research, Innovation and International Relations.

The Research Awards Committee was established in 2019, with the following faculty adjudicating numerous internal awards, including those awarded in 2022:

- Dr. Mohammed Shurrab – Assistant Professor, Clinical Sciences Division
- Dr. Ed Rawana – Professor, Human Sciences Division
- Dr. Roxanne Deslauriers – Associate Professor, Medical Sciences Division

We appreciate the thoughtful adjudication by these members as their terms come to an end, and congratulate the following faculty who have recently been appointed (or re-appointed) for a three-year term:

- Dr. Mohammed Shurrab – Assistant Professor, Clinical Sciences Division
- Dr. Scott Sellick – Associate Professor, Human Sciences Division
- Dr. Neelam Khaper – Professor, Medical Sciences Division

New in 2022

NOAMA Grant Match Funding

The Northern Ontario Academic Medicine Association (NOAMA) Board, with the support of the Physician Clinical Teachers' Association (PCTA), designated a portion of the Alternate Funding Plan to a NOAMA Grant Match Fund.

This funding intends to increase the ability of NOSM University PCTA researchers to grow programs of research and attract research dollars from outside of Northern Ontario. NOAMA will provide match funding to qualifying PCTA researchers and research teams who are applying to other research competitions that require applicants to source match funding as a condition of the application.

The NOAMA Grant Match Funding (GMF) is an ongoing competition and the GMF Sub-Committee manages the GMF process and recommends approval of GMF projects to the NOAMA Board. NOAMA invites all AFP participating physicians to submit an application for grant match funding [here](#).

Student Open Access Publication Fund

In an effort to support student research, Dr. Verma, NOSM University President, Vice-Chancellor, Dean and CEO is providing \$5,000 per calendar year to support Open Access Publication costs for NOSM University medical students. The funding commitment is currently for three years starting in 2022.

Faculty Awards

Education Research Fund:

Lee Rysdale, RD, Associate Professor

Funded Amount: \$4,000

Project Title: Teaching Kitchens: Innovative Nutrition Training for Family Medicine Residents

NOSM University Research Development Grant:

Dr. Gayle Adams-Carpino, Lecturer

Funded Amount: \$6,600

Project Title: Identifying and Addressing Gaps in Interprofessional Collaboration Between Child Protection Agencies and Medicine within Northern Ontario

Dr. Geoffrey Hudson, Associate Professor

Funded Amount: \$7,125

Project Title: The Accidental History of Northern Ontario

Dr. Tom Kovola, Associate Professor

Funded Amount: \$7,125

Project Title: The Unfolded Protein Response and Ribosomal RNA Degradation in Response to Chemotherapy

Dr. Carita Lanner, Associate Professor

Funded Amount: \$7,125

Project Title: Investigation of mechanisms of RNA disruption in response to chemotherapy treatment

Dr. David MacLean, Professor

Funded Amount: \$7,125

Project Title: Use of a multi-targeted dietary supplement as a protective mechanism against cancer cachexia in a preclinical mouse model

Dr. Darrel Manitowabi, Associate Professor

Funded Amount: \$7,125

Project Title: A conceptual Framework for Training and Mentorship of Indigenous Traditional Healers

Dr. Brian Ross, Professor

Funded Amount: \$7,125

Project Title: Development of a rural sense of place during health care education

Dr. T.C. Tai, Assistant Dean, Research and Professor

Funded Amount: \$7,125

Project Title: Regulation of Adrenaline Biosynthesis by SRY

Dr. Sujeenthara Tharmalingam, Assistant Professor

Funded Amount: \$7,125

Project Title: Investigating the molecular mechanisms underlying radiation resistant breast cancer using whole transcriptome profiling

Dr. Chris Thome, Assistant Professor

Funded Amount: \$7,125

Project Title: Removal of naturally occurring radioactive ⁴⁰K to investigate the sub-background radiation response in yeast (*Saccharomyces cerevisiae*)

Dr. Marina Ulanova, Professor

Funded Amount: \$7,125

Project Title: Studies of innate immune responses to genetically and phenotypically diverse strains of *Haemophilus influenzae* type a

Rene Guilbeault Research Award:**Dr. Sujeenthara Tharmalingam**, Assistant Professor

Funded Amount: \$8,000

Project Title: Rewiring DNA methylation signatures for the treatment of radiation resistant breast cancer

Learner Awards

Adjudicated by the Research Awards Committee

Drs. David and Teresa Marsh Graduate Student Scholarship:**Dr. Jenna Darani**

Funded Amount: \$1,000

Project Title: The impact of the COVID-19 pandemic on doctor of medicine degree students participating in a distributed longitudinal integrated clerkship
Supervisor: Dr. Brian Ross, Professor

Dr. Roger Strasser NHRC Student Travel Award:**Omolara Odulaja**

Funded Amount: \$1,000

NHRC Abstract Title: Indigenous Youth, Identity Expression, and Cultural Engagement on Social Media

NOSM University Summer Medical Student Research Award:**Nada Abdel-Dayem**

Funded Amount: \$4,400

Project Title: Safety and Effectiveness of Middle Meningeal Artery Embolization for Treatment of Chronic Subdural Hematomas
Supervisor: Dr. Stefano Priola, Assistant Professor

Kayleigh Bastin

Project Title: Conducting health research in First nation communities
Funded Amount: \$4,400

Supervisor: Dr. Lorrilee McGregor, Assistant Professor

Caleigh Bourdon

Project Title: Exploring COVID-19 Vaccine Confidence among Indigenous Youth in Timmins

Funded Amount: \$4,400

Supervisors: Dr. Marion Maar, Associate Professor and Dr. Maurianne Reade, Assistant Professor

Nicole Costanzo

Project Title: The Molecular Effects of Prostaglandin Analogues on Glaucoma Receptor Activation

Funded Amount: \$4,400

Supervisor: Dr. Neelam Khaper, Professor

Ericha Hendel

Project Title: Using Mobile Devices and Game-Based Methods to understand Health-Related Knowledge, Attitudes, and Perceptions in Northern Ontario: A Pilot Project

Funded Amount: \$6,600

Supervisor: Dr. Rene-Anne Montpelier, Assistant Professor

Del John Houle

Project Title: Historical Understandings of Mental Health Disorders: Medicalizations in and of Ancient Authors

Funded Amount: \$4,400

Supervisor: Dr. Geoffrey Hudson, Associate Professor

Matthew Jones

Project Title: Assessing the Impact of on-line education during the COVID pandemic on NOSM learners

Funded Amount: \$6,600

Supervisor: Dr. Florence Morriello, Assistant Professor

Dayton Kelly

Project Title 1: Examining Emergency Physicians' Knowledge and Perceptions of Electronic Clinical Decision Tools: A Quality Improvement Study.

Project Title 2: Estimating the Canadian Incidence of Pediatric Traumatic Brain Injury: A Critical Review.

Funded Amount: \$6,600

Supervisor: Dr. James Crispo, Assistant Professor

Konnor Kennedy

Project Title: Novel clinical predictors of death at 90 days in ischemic stroke patients treated with endovascular thrombectomy in the Northern Ontario population

Funded Amount: \$6,600

Supervisor: Dr. Ruba Kiwan, Assistant Professor

Catherine Kibiuk

Project Title: Quality improvement of opioid substitution therapy in remote communities

Funded Amount: \$6,600

Supervisor: Dr. Ruben Hummelen, Associate Professor

Melissa Lacasse

Project Title: Effects of electronic medical information systems on health service delivery in the emergency department: examining timeliness of care

Funded Amount: \$6,600

Supervisor: Dr. Dominique Ansell, Assistant Professor

Jeremy Lamothe

Project Title: Characterizing the number of computed tomography scans and the associated radiation dose that high frequency emergency department users receive

Funded Amount: \$6,600

Supervisor: Dr. David Savage, Assistant Professor

Elycia Monaghan

Project Title: Developing a Model for Trauma-informed First Nations Policing to address the mental wellness needs of survivors and first responders to the opioid crisis

Funded Amount: \$4,400

Supervisor: Dr. Marion Maar, Associate Professor

Kara Passi

Project Title: Experiences of new physician graduates transitioning to practice in rural Ontario

Funded Amount: \$6,600

Supervisor: Dr. Sarah Newbery, Associate Dean, Physician Workforce Strategy and Associate Professor

Ashley Perrault

Project Title: Barriers to Treatment: Access to Fertility Services in Northern Ontario

Funded Amount: \$4,400

Supervisor: Dr. Karen Splinter, Assistant Professor

MacKenzie Senior

Project Title: Longitudinal, interdisciplinary simulation training for in-hospital cardiac arrest and its impact on team efficacy

Funded Amount: \$6,600

Supervisor: Dr. Adam Bignucolo, Assistant Professor

**Summer Medical Student Research Award
- Mach-Gaensslen Foundation:****Megan Clark**

Project Title: Evaluation of clinical and cardiac outcomes in patients referred to multidisciplinary Cardio-Oncology Clinic: observational retrospective study (chart review)

Funded Amount: \$4,400

Supervisor: Dr. Olexiy Aseyev, Associate Professor

Field of Research: Cardiology

Alexandra Klem

Project Title: Investigating anti-cancer compounds for novel immunotherapy applications

Funded Amount: \$6,600

Supervisor: Dr. Hoang-Thanh Le, Assistant Professor

Field of Research: Cancer

Alyssa Labelle

Project Title: Pediatric Spinal Cord Injury: Using Administrative Claims Data to Examine Long-Term Health Outcomes and Healthcare Utilization

Funded Amount: \$6,600

Supervisor: Dr. Melanie Squarzolo, Associate Professor

Field of Research: Cardiology

Julie Leroux

Project Title: Exploring cultural program supports for Indigenous patients with opioid use disorder: Indigenous provider perspectives in a pandemic

Funded Amount: \$4,400

Supervisors: Dr. Marion Maar, Associate Professor, Dr. Darrel Manitowabi, Assistant Professor and Dr. Lorrilee McGregor, Assistant Professor

Field of Research: Psychiatry

Mathieu Rheault-Henry

Project Title: Obesity Paradox in Cardiac Surgery

Funded Amount: \$6,600

Supervisor: Dr. Rony Atoui, Associate Professor

Field of Research: Cardiology



Graduate Studies

NOSM University's Master of Medical Studies (MMS) program provides foundational research skills for physicians who want to develop a robust approach to answering health care questions. The program focuses on developing the necessary skills to acquire grant funding, obtain ethics approval, develop a research question using appropriate methodology, complete a research study, and finally write and present the results in publication and at conferences.

Our goal is for learners to focus on health care problems in the north to improve the health status of all people in northern, rural, and remote communities. The MMS uses an asynchronous online model to deliver the course material. Students can complete this program remotely with a flexible schedule. In the fall of 2022, there were six part-time and five full-time domestic students enrolled in the program.

Visit our website to learn more about the MMS program, which includes a list of our [faculty supervisors](#).

Meet two MMS students



Dr. Jenna Darani

Dr. Jenna Darani, a second-year student in the MMS program, was the recipient of the 2022 CAME Rising Star, Certificate of Excellence - Graduate Student. Dr. Darani's thesis is titled 'The impact of the COVID-19 pandemic on doctor of medicine degree students participating in a distributed longitudinal integrated clerkship.'

Under the supervision of Dr. Brian Ross, Professor, Dr. Darani has surveyed and interviewed NOSM MD students in Phase 2 (third year) of their program, as well as staff members, to understand how COVID affected their academic and personal lives.

She found that although academically students' learning was not greatly affected, there were difficulties with mental health and wellbeing. She hopes that her findings from this study will help improve student and staff support during Phase 2 of the MD Program in the future. Dr. Darani expects to defend her thesis in 2023.

Dr. Darani was also the inaugural recipient of the Drs. David and Teresa Marsh Graduate Student Scholarship. Drs. David and Teresa Marsh generously endowed funds to create this scholarship with the express goal to support and recognize MMS' student academic excellence. The annual scholarship of \$1,000 is awarded to one domestic graduate student currently enrolled and in good standing in the Master of Medical Studies program based on excellence in academic performance.



Dr. Hiba Al-Bayati

Dr. Hiba Al-Bayati is researching northern **mental health care for marginalized populations**, with a focus on women's mental health for immigrants living in Northern Ontario. Her research topic will focus on the "Impact of social determinants of health on behavioural changes in rural areas."

"As an immigrant, I want to advocate for the best approaches to care. There is an important focus on our mental health right now and this research will focus on how marginalized people access care and cope with all the challenges that come with being a newcomer and living in communities in Northern Ontario," she shared, "I was really interested in the NOSM MMS program because it focuses on Northern Ontario health and I also have a strong interest in Indigenous health."

"At first, I was attracted to the Master of Medical Studies at NOSM because it is a virtual program and I am able to research and study remotely while I continue to do work in clinics and volunteer. It's the flexibility and diversity of the program that is important to me. It conveniently gives busy physicians the opportunity to do their research, while they continue working," she says.

Dr. Al-Bayati also volunteers for Lakehead University's **Nijjii Indigenous Mentorship Program** helping deliver education and hands-on experience to Indigenous youth in Northwestern Ontario. She says a strength of the MMS program is that she was able to align her research interest with an appropriate supervisor based in Northern Ontario who also shares her interest.

"The NOSM University MMS has given me a new passion to make a difference in the lives of marginalized women living in rural and remote communities in the North. My supervisor, Dr. Elizabeth Levin (Professor and Division Head, Human Sciences), aligns well with this research and is also very interested in this topic."

She aims to share the findings of her research by 2023. "I hope the research will also shed some light on other needs and ways to approach and help marginalized people overcome unique hardships or barriers to the health-care system in the North."



Faculty Publications

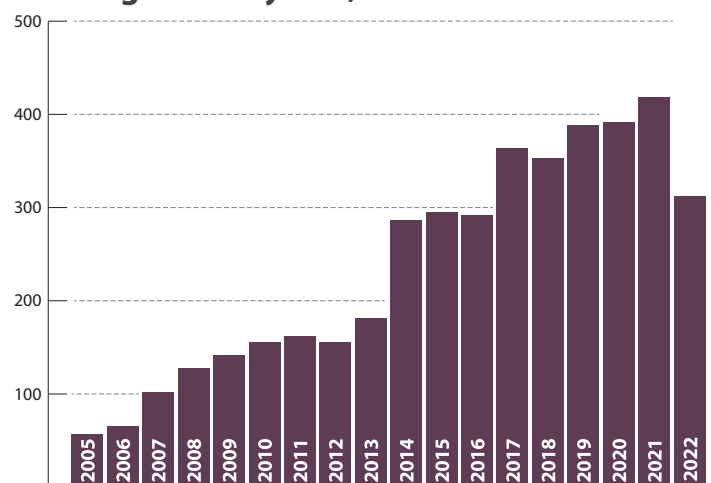
Annual Faculty Publications Search & Results

Each year, the Health Sciences Library conducts its **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 given the available information.

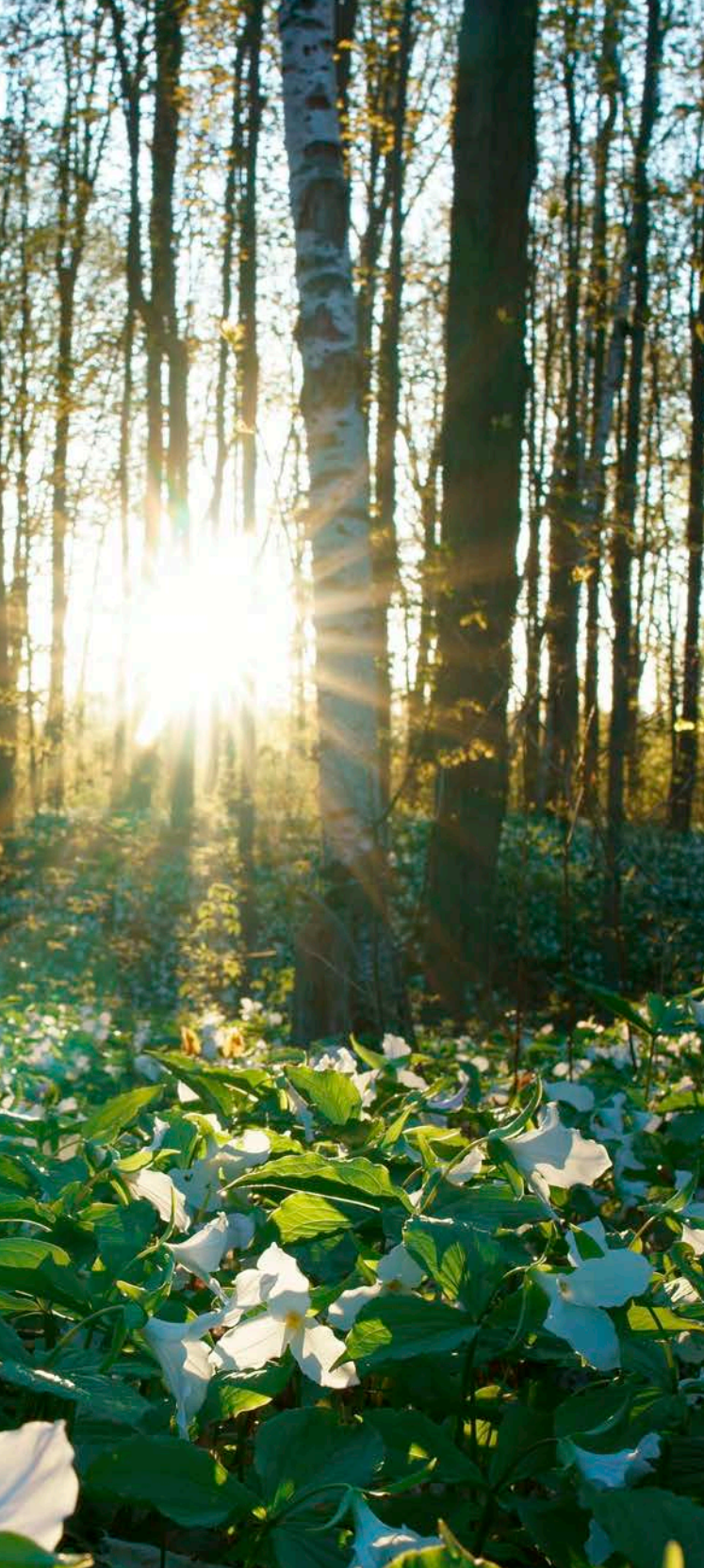
The **2022 NOSM University Faculty Publications Bibliography** represents the unique citations from the previous year; unique citations are articles listed only once in the bibliography, even if there were multiple NOSM University faculty who authored a particular article. NOSM University faculty members are denoted in bold within each citation.



Total Number of Unique¹ Publications Organized by Year, 2005-2022



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.



Research Office

ROMEIO Research Portal Officially Launched

On October 1, 2022 NOSM University's ROMEIO Research Portal launched. This provides a user interface for the completion of the necessary research approval form (RAF), facilitates easier approvals, helps researchers to keep track of their projects and improves reporting for the Research and Graduate Studies Office. All NOSM University researchers are required to fill out a Research Approval form regardless of where the funding is held.

Training sessions and additional resources were shared with the NOSM University research community, as well as important emails that provided information on how to login, navigate and use the new system. The portal and training tools are available on the [website](#).

Responsible Conduct of Research Policy

Following several months of consultation with a breadth of stakeholders, NOSM University's Responsible Conduct of Research Policy was approved at the December Senate meeting. Research integrity is a part of the foundational fabric of a University, and NOSM University recognizes the importance of research, including innovation and scholarly inquiry, in the advancement of new knowledge.

This policy outlines the expectations for researchers in support of research integrity, as well as the procedures the University must follow if there is a breach of integrity. The NOSM University Responsible Conduct of Research Policy adheres to the guidelines established by the Tri-Agency Framework: Responsible Conduct of Research (2021). More information about the policy and training resources are available on [nosm.ca](#).

2022: A Reflection

**APRIL
1**

NOSM University becomes
Canada's first stand-alone
medical university

Change in title for Dr. David
Marsh to Vice Dean, Research,
Innovation and International
Relations and Patty Fink to
Director, Research, Innovation
and International Relations

**MAY
16**

NOSM University and
Lakehead University sign
Research Agreement

**AUGUST
2**

New NOHFC Intern
Hope Lachapelle

**AUGUST
4**

New Research Services
Manager Sean Parsons

**SEPTEMBER
1**

New Research Services
Administrative Coordinator
Linda Liboiron-Grenier

**OCTOBER
1**

ROMEO launch

**OCTOBER
3**

New Administrative Assistant
Isabella Scola-Lawryshyn

**NOVEMBER
21**

New Research Lab
Coordinator Jessica Dougherty

**DECEMBER
15**

Responsible Conduct of
Research Policy approved

2022 NOSM University RESEARCH OFFICE METRICS

We're Listening

The NOSM
University Research
Office received
2109 emails
to **research@nosm.ca**



We're Helping Our Researchers Manage Their Funding

19 REB
Applications
Reviewed

39
Agreements Reviewed



We're Investigating

2507 Data
Points Collected in
Environmental Scan
of Clinical Research



We're Helping Our Researchers Get Funding

47 Research Consultations

13 Internal Faculty Awards
\$89,850

23 Internal Student Awards
\$120,800

79 Award Applications Reviewed
\$10,069,505

64 Externally Funded Awards
\$3,565,080

121 active awards with
\$5,414,295
dispersed in 2022



We're Supporting Our Research Labs

- ➔ Training & Trouble Shooting **81 HRS**
- ➔ Maintenance & Repairs **327 HRS**
- ➔ Health & Safety, Process Improvement **122 HRS**
- ➔ **21** Faculty & Students Onboarded



We're Communicating

Through the NOSM University Newsletter

- **23** Issues
- **240** Subscribers
- **38.5%** Open Rate



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