

2020-2021

Report *on* Research *and* Creative Works



ST. FRANCIS XAVIER
UNIVERSITY



Tim Hynes PhD
Academic Vice-President & Provost

MESSAGE FROM THE ACADEMIC VICE-PRESIDENT & PROVOST AND THE ASSOCIATE VICE-PRESIDENT, RESEARCH & GRADUATE STUDIES

The **2020-21 StFX Report on Research and Creative Works** highlights key accomplishments of research and creative scholarship by faculty, staff, and students. StFX faculty members continue to have tremendous success in obtaining research grants, winning prestigious research awards, publishing monographs with leading university presses, and publishing work in leading peer-reviewed journals.

A key factor impacting and coinciding with this reporting period was the onset of the COVID-19 pandemic. Although the university was forced to lockdown for an initial period, efforts were made to develop a framework for the re-launching of research efforts in line with public health guidelines, as well as pursuing funding support established by government to help support and sustain research efforts throughout the pandemic. Key actions and accomplishments during the reporting period include:

- implementing research extensions (of funding and time) for all eligible Tri-Agency research grant holders;
- successfully applying for research funding available through the federal government's Canada Research Continuity Emergency Fund (CRCEF);
- providing increased flexibility (timing and completion of projects) for student recipients of summer research awards and increasing the number of research awards made available to StFX students through the Canada Summer Jobs Program;
- successfully applying for a two-year \$400,000 Equity, Diversity, and Inclusion Capacity Development grant from the federal government;
- leading the development of several research workshops offered through the Maple League of Universities (i.e., Equity, Diversity, and Inclusion provisions in NSERC Discovery Grants; Canadian Common CV; Canada Graduate Scholarships-Masters applications);
- securing an additional one-time \$200,000 allocation from the Canada Foundation for Innovation (CFI) matched by \$200,000 from Research Nova Scotia for the purchase of a new confocal microscope;



Dr. Richard Isnor
Associate Vice-President
Research & Graduate Studies

The research and creative work of StFX faculty continues to be highly cited, referenced, recognized, and celebrated by peers throughout the world. We are also engaging in many knowledge translation activities that find their way into policy and best practices. Congratulations to our colleagues who set and aspire to such high research standards and creative excellence.

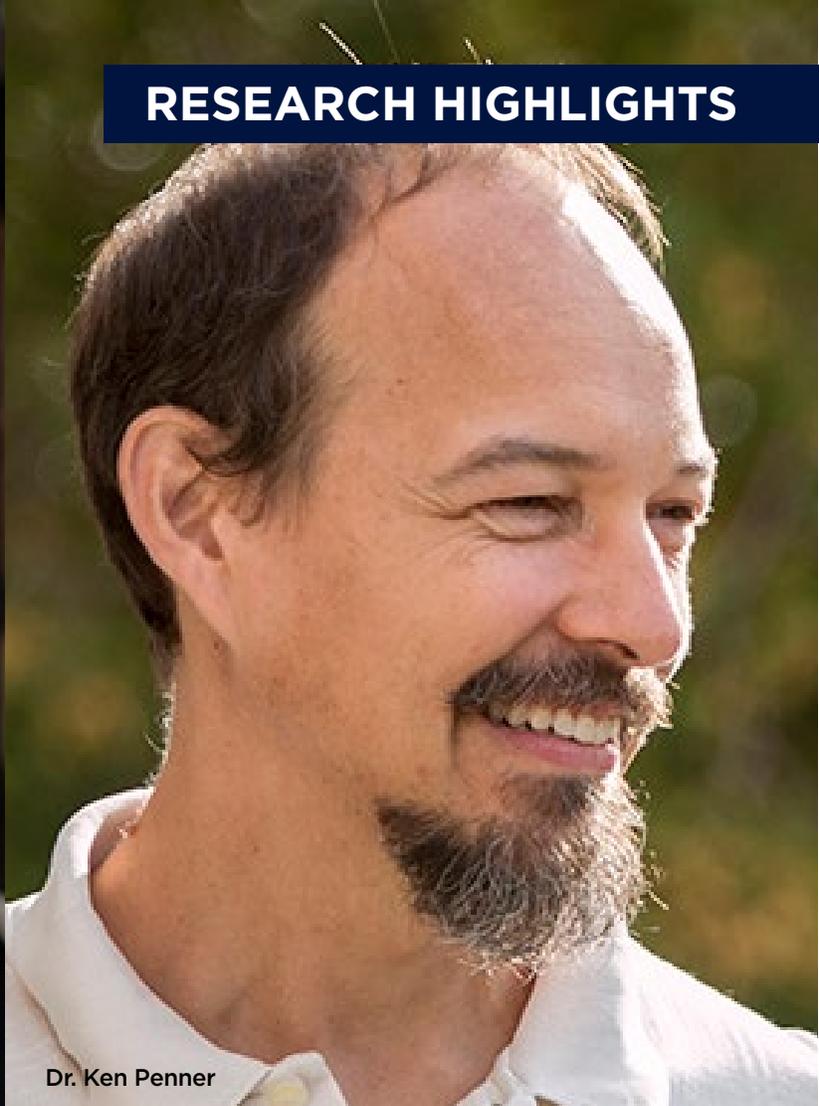


DR. TARA CALLAGHAN – PROFESSOR, DEPARTMENT OF PSYCHOLOGY

Dr. Tara Callaghan is internationally recognized as a leading researcher in the development of children’s symbolic representation. Her research into the cross-cultural effects of symbolic understanding in children has led her to broaden her investigations into children’s understanding of reciprocity, fairness, and sharing across cultures. She has studied children’s development in Canada, India, Peru, Thailand, Samoa, and Japan. Dr. Callaghan brings rigor, creativity, and energy to her research program. In her cross-cultural work, she often takes student interns into the field where they hone their research skills and problem-solving abilities as they learn to appreciate the issues and challenges of doing this type of research. Currently Dr. Callaghan holds two federally funded research grants, one in which she is longitudinally investigating preschool children’s reciprocal sharing in two cultures, India and Canada, and a second in partnership with international agencies in which she is investigating altruism, sharing, and compassion in Rohingya refugee children in refugee camps in Bangladesh. Her most recent project in Rohingya refugee camps has the potential to benefit the lives of children who have been witnesses or victims of conflict, violence, and displacement, as well as add to our understanding of how such experiences affect children’s development.



Dr. Laura Estill



Dr. Ken Penner

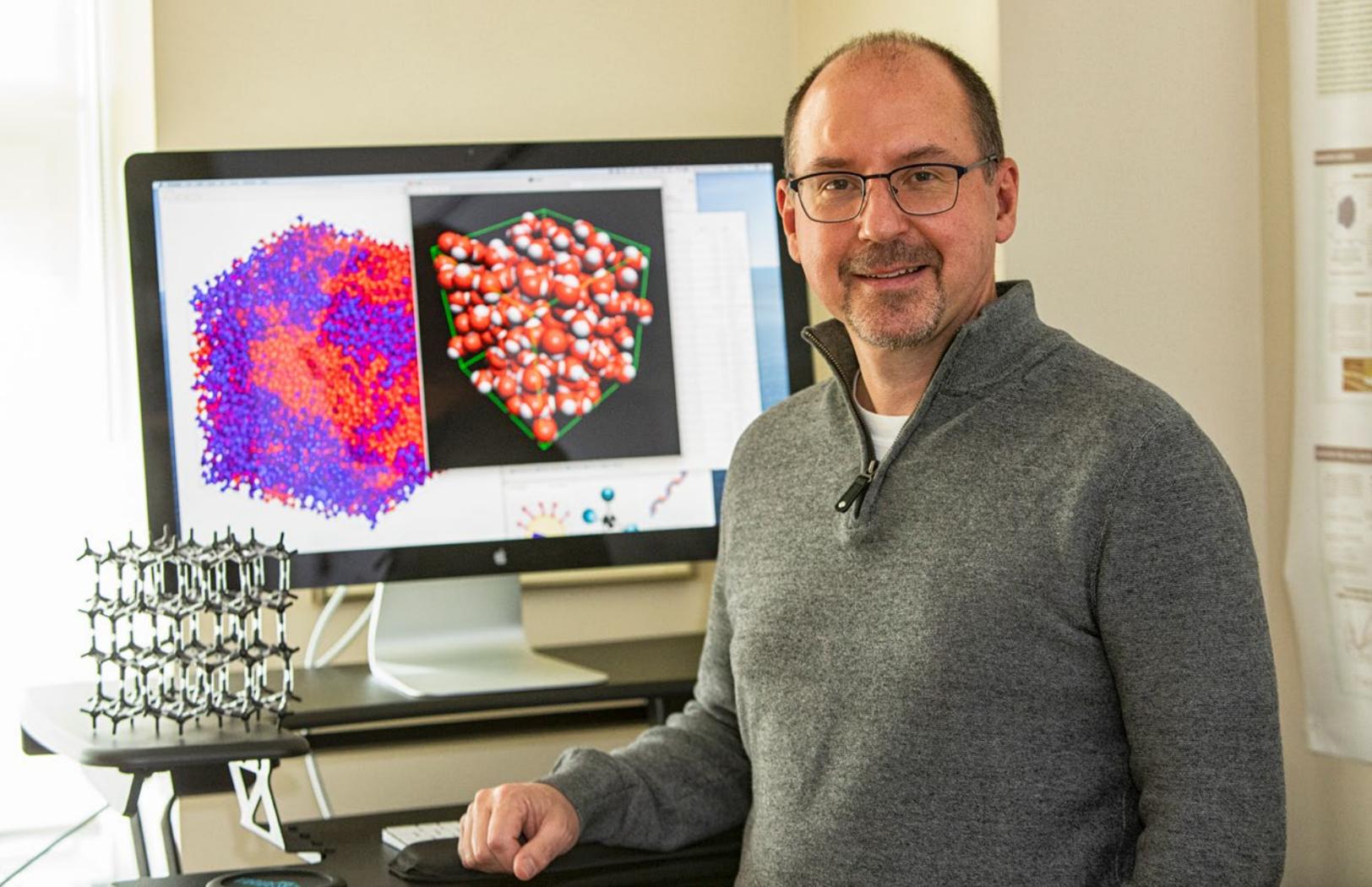
STFX FACULTY ELECTED TO INTERNATIONAL BOARD SERVING THE WORLDWIDE COMMUNITY OF DIGITAL HUMANISTS

Two StFX faculty members, Dr. Ken Penner (Religious Studies) and Dr. Laura Estill (English) have been elected to international positions for the *Text Encoding Initiative* (TEI), a consortium that collectively develops and maintains a standard for the representation of texts in digital form. Dr. Penner will serve on the TEI Governing Board, while Dr. Estill (who holds a Canada Research Chair in Digital Humanities at StFX), has been elected to the TEI Archiving, Publishing, and Access Service (TAPAS) Advisory Board. TAPAS focuses on making digital editions easier to produce and supporting teachers who want to use TEI in their classes. The TEI serves the worldwide community of digital humanists who produce and process transcribed texts mainly by establishing standards that enable the computer data and tools to work with each other. The TEI is an active scholarly community, with a journal (jTEI), an annual conference, and many training sessions held around the world. Many digital humanities projects use TEI to share and represent information. These include TextTHREAD (a Toolkit for Humanities Research & Editing Ancient Documents) produced by Dr. Penner and Dr. James Hughes (Computer Science), and Dr. Estill's *DEx: A Database of Dramatic Extracts*, co-edited with Dr. Beatrice Montedoro (University of Zurich).



STFX MARINE ECOLOGY LAB PUBLISHES MULTIANNUAL STUDY UNRAVELING SPATIOTEMPORAL PATTERNS IN INTERTIDAL TEMPERATURE ALONG NOVA SCOTIA'S ATLANTIC COAST

StFX's Marine Ecology Lab, led by Dr. Ricardo Scrosati, published a large multiannual study in 2020 that for the first time documents the latitudinal and temporal changes in air and sea temperature in intertidal habitats along the Atlantic coast of Nova Scotia. Dr. Scrosati, together with postdoctoral fellow Dr. Julius Ellrich and StFX Master of Science student Matthew Freeman, co-authored the article, "*Half-hourly changes in intertidal temperature at nine wave-exposed locations along the Atlantic Canadian coast: a 5.5-year study*" that appears in the journal, *Earth System Science Data*. The study applied an unprecedented level of sampling effort, measuring temperature every half hour at nine intertidal locations spanning more than 400 km of coastline for a period of 5.5 years (2014-2019). The temperature loggers deployed along the coast generated more than 800,000 data points during the study. Through this work, Dr. Scrosati's lab has been able to establish links between the thermal conditions of coastal waters and patterns of invertebrate recruitment and predator abundance along the coast. In addition, the team has shown how El Niño-related changes in coastal winds relate to the intensity of upwelling, a coastal phenomenon that cools down the ocean surface and increases productivity. The study also reveals alongshore differences in upwelling that consistently occur every year, a previously unknown occurrence. It provides the first baseline data set on intertidal temperature for this coast, a dataset that will be useful for years to come for various researchers interested in addressing a diversity of questions on coastal marine ecology, oceanography, and climatology in Nova Scotia.



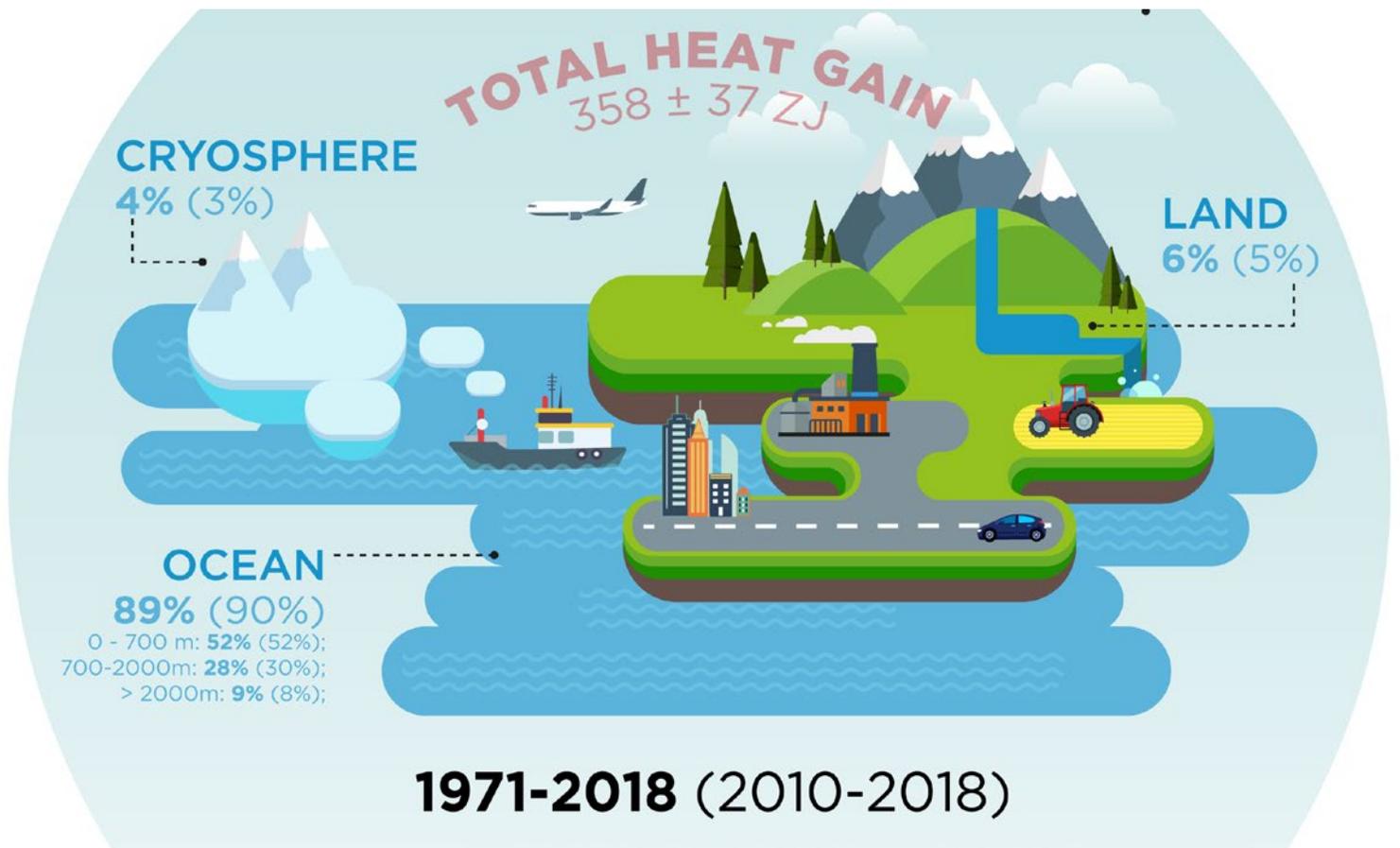
INTERNATIONAL TEAM OF SCIENTISTS TAKE BIG STEP TO UNDERSTANDING SUPERCOOLED WATER

Unsolved questions about the way water behaves and why it is so different from other liquids is a problem that has puzzled scientists for many years. But now, StFX physics professor Dr. Peter Poole is part of an international collaboration of scientists who've taken a big step forward in understanding how water behaves. In 2020, the team published a paper in the prestigious journal *Science*, presenting work believed to be the most convincing experimental demonstration to date of a liquid-liquid phase transition in supercooled water. It's a problem Dr. Poole has been involved in working on since he was a graduate student in Boston in the 1990s. In the paper, "*Experimental observation of the liquid-liquid transition in bulk supercooled water under pressure*," the research team present the results of the first experiment in which supercooled water is 'caught in the act' of switching from high-density liquid (HDL) to low-density liquid (LDL), a problem that has evaded scientists for years. Achieving this result required assembling an international team of twenty-one scientists from Sweden, Korea, the U.S., Germany, and Canada, led by Dr. Anders Nilsson at Stockholm University. Samples of frozen ultra-pure water were prepared in a custom-designed sample holder in Sweden and then shipped in a cryogenic container to South Korea. There, one of the most powerful x-ray lasers in the world was used to capture precise snapshots of the liquid molecular structure before ice formation could occur. This allowed the research team to follow the phase transition from HDL to LDL in detail as it happened. The results presented in this *Science* paper open a great many new directions for future research. For example, supercooled water plays a central role in cloud formation and rain, which is a major influence on Earth's climate. Understanding the molecular structure of water, and how it can change, is also central to understanding many aspects of cell biology. Clarifying the behavior of water under low temperature conditions is also key for understanding our solar system, where water occurs in great quantities in comets and the outer planets.



ADVANTAGES AND DISADVANTAGES OF EX-POLITICIANS, FORMER GOVERNMENT OFFICIALS ON BOARDS

Does having a former politician or ex-governmental official provide a firm with a competitive advantage over firms that do not have such representation on their boards? Do Canadian directors wish to have an ex-politician, or a former government official serve alongside them on a corporate board in place of other prospective directors? Those are the questions that StFX Gerald Schwartz School of Business faculty member Dr. Mark Fuller and co-author Chris Bart from the Caribbean Governance Training Institute asked and answer in a recent research study published in the open access journal *Corporate Board: Role, Duties and Composition*. In researching the article, “*The political duality: On the advantages and disadvantages of ex-politicians and former government officials serving on boards of directors*,” Drs. Fuller and Bart conducted a survey of 82 Canadian board members and followed up with in-depth qualitative interviews with 10 directors. Their findings suggest that firms in heavily regulated industries, firms that sell a lot to government, and firms that frequently interact with foreign governments may benefit from having a former politician or an ex-government official on their board of directors. Nonetheless, 61 per cent of their survey respondents preferred someone without political or government experience to join their board of directors. This study has had important implications for corporate governance since prior research in the literature has suggested that the appointment of someone with previous political or government experience to the board may affect expected future returns by the firm.



STFX CLIMATE RESEARCHERS CONTRIBUTE TO INTERNATIONAL GROUND-BREAKING CLIMATE STUDY: HEAT STORED IN THE EARTH SYSTEM: WHERE DOES THE ENERGY GO?

A group of StFX researchers are key members of an international research team that has just published the first comprehensive assessment of Earth's heat inventory. The report is based on the concerted efforts of Dr. Karina Von Shuckmann and 37 co-authors from scientific institutions across the globe, including two PhD students working at the StFX Climate Services and Research Centre under a StFX-Memorial University of Newfoundland Doctoral agreement (Almudena García-García and Francisco José Cuesta-Valero), and Dr. Hugo Beltrami, StFX's Canada Research Chair in Climate Dynamics. This collaborative effort, supported by the Global Climate Observing System, combined cutting edge climate science and a team of multi-disciplinary researchers to answer the question of where heat is distributed into the Earth system using a fundamental metric called the Earth Energy Imbalance (EEI). This single number holds significant value in characterizing the current state of Earth's climate and, along with knowledge of other metrics such as atmospheric CO₂ amounts and global surface temperatures, will be critical in our race to understand and mitigate impacts of global climate change. The authors conducted a state-of-the-art heat inventory for the period 1971-2018 that includes an assessment of ocean warming and estimates of heat gains in the atmosphere, on land, and in the cryosphere. Their findings indicate that the EEI is continuing to grow, and that it is also accelerating. The study broke down the amount of heat gain in the various components of the Earth system over two periods of time: 1971-2018 and (2010-2018), with most of the heat gain reported in the global ocean at 89% (90%), 6% (5%) experienced over land, 4% (3%) available for melting of ice, and 1% (2%) available for atmospheric warming. The StFX team was responsible for the analysis of geothermal data and the evaluation of the land energy component for this assessment. Dr. James Hansen, a prominent former NASA climate scientist and activist for the mitigation of global warming, dubbed the research team "Sentinel of the Home Planet" in a recent article and stressed the importance and attention it deserves if we are to work towards a healthier planet for future generations. He highlighted the importance of reliable monitoring of the energy imbalance, specifically in the oceans as their thermal inertia is the cause of planetary energy imbalance.



RESEARCH AWARD TO DEVELOP A MORE ENERGY AND COST-EFFECTIVE MEANS OF DEGRADING COMMON FOSSIL FUEL POLLUTANTS

StFX chemistry professor Dr. Geniece Hallett-Tapley was one of only 20 researchers nationally selected as a \$25,000 Imperial Oil University Research Award recipient. Dr. Hallett-Tapley's lab was successfully funded for the project: *"Visible Light Mediated Refinery Waste Degradation using Noble Metal Nanoparticle/Niobium Oxide Composite."* The grant is renewable over two years. The aim of the research is to design a new class of chemical solids. These materials will then be examined in waste product degradation in the petroleum industry. The most important aspect of this work is that the solids can be activated by visible light, the portion of the solar spectrum that is most exploited in the solar cell industry – considerably lower in cost and energy than many other light sources that are employed in past photodecomposition studies. The hope is to develop a more energy and cost-effective means of degrading common fossil fuel pollutants, to contribute towards and improve the environmental sustainability of the fossil fuel industry.



STFX STUDY SHEDDING LIGHT ON COPING DIFFICULTIES WITH COVID-19, NOVA SCOTIA SHOOTING

Research based at StFX is shedding light on coping difficulties individuals are having against the backdrop of COVID-19 and the mass shooting in Nova Scotia in April 2020. The study, *“Tragedy during COVID-19: A qualitative study of coping with a spree shooting during a pandemic,”* was led by StFX psychology professor Dr. Karen Blair, StFX adjunct professor Dr. Rhea Hoskin, and StFX graduate and Queen’s University PhD student Laura de la Roche, who took the lead in analyzing the survey data. Ms. De la Roche completed her undergraduate degree in psychology at StFX, where she took multiple classes with Dr. Blair. A key objective of the research is to understand coping strategies during multiple simultaneous tragedies. Dr. Blair has been studying collective grief responses to mass shootings since 2016, including those at the Pulse Nightclub, Pittsburgh Synagogue, and Christchurch Mosques.



DR. BRITNEY BENOIT NAMED INAUGURAL NOVA SCOTIA HEALTH SCIENCES RESEARCH CHAIR AT STFX RANKIN SCHOOL OF NURSING

A new research partnership between StFX and the Nova Scotia Health Authority has resulted in Dr. Britney Benoit being appointed the inaugural Nova Scotia Health Authority's Health Sciences Research Chair at St. Francis Xavier University's Rankin School of Nursing. The role of this research chair is to build capacity for research that is relevant to provincial health priorities. As research chair, Dr. Benoit will place emphasis on conducting research that leverages academic and health systems partnerships to support knowledge generation and translation for the care of children and families across the province, with a focus on eastern Nova Scotia. Dr. Benoit is a StFX graduate, a registered nurse and a researcher who works to improve care for patients with a primary focus on maternal child health and care, assessing and managing infant pain and finding interventions that have strong evidence for optimizing health outcomes. A core focus of this three-year research chair appointment is to build collaborative partnerships that not only include health researchers and research centres, but also health system leaders, decision-makers, clinicians, and families with a particular focus on network development in eastern Nova Scotia. The research chair appointment provides dedicated protected research time and has dedicated mechanisms to support provincial health research partnerships, such as engagement in the Nova Scotia Health Community of Scholars Network.



INDIGENOUS-ACADEMIC COLLABORATION RECEIVES CIHR FUNDING TO IMPROVE INDIGENOUS HEALTH IN ATLANTIC CANADA BASED ON HEALTH PRIORITIES OF INDIGENOUS PEOPLES

Building capacity for Indigenous-led and supported community-based health research is the aim of a dynamic, diverse, interdisciplinary, and inclusive network of Indigenous and academic partners who have come together to form the Wabanaki-Labrador Indigenous Health Research Network. The network is led by Indigenous communities and regional partners, with the Labrador Institute of Memorial University, St. Francis Xavier University and Dalhousie University, and includes Mi'kmaq, Wolastoqiyik, Passamaquoddy, Inuit, and Innu community members, organizations, health professionals, students, academics, traditional healers, and allies from the four provinces of Atlantic Canada. The initiative is funded by the Canadian Institutes for Health Research (CIHR) for up to 15 years, with a maximum funding amount of \$700,000 per year. Through a Two-Eyed Seeing, co-learning, and relational approach, this network prioritizes community-initiated and directed research to improve Indigenous health in Atlantic Canada, based on the health priorities of Indigenous peoples. Dr. L. Jane McMillan, a StFX faculty member, is serving as a co-principal investigator (PI) on the project, along with Dr. Debbie Martin, Dalhousie University/ NunatuKavut (named principal investigator); Dr. Margot Latimer, Dalhousie University; Dr. John Sylliboy, McGill University/Eskasoni and Millbrook First Nation; and Dr. Ashlee Cunsolo, Labrador Institute at Memorial University. Also involved are StFX faculty members Drs. Katie Aubrecht, Ann Fox, Cathy MacDonald, and Joanne Whitty-Rogers. The objectives of the Wabanaki-Labrador Indigenous Health Research Network are to enhance capacity for undertaking meaningful, relevant and respectful Indigenous health research in the region; shift the balance of power in the research relationship from academic institutions to Indigenous communities in the region; support communities to address their health research priorities through top-tier research and research capacity-building; and share the experiences of the network widely and foster its sustainability. The name for the network comes from the reference to this vast and diverse region as Wabanaki-Labrador, since *Wabanaki* refers to the easterly location, where the sun rises first, of the Mi'kmaq, Passamaquoddy, and Wolastoqiyik and *Labrador* encompasses the northern and sub-arctic territory of the Inuit and Innu. The team is directed by the Wabanaki-Labrador Advisory Committee and Elders and Knowledge Keepers from across the Atlantic region and include members of Nunatsiavut Government, Mi'kmaq Confederacy of PEI, Ugpi'ganjig Health Centre, Eel River Bar FN, Madawaska FN, NunatuKavut Community Council, the Atlantic Policy Congress of FN Chiefs Secretariat, Mi'kmaq Native Friendship Centre in Halifax, Eskasoni Community Health, Millbrook FN, Union of Nova Scotia Indians and the IWK.



STFX EDUCATION PROFESSOR RECEIVES \$25,000 STANDING TOGETHER GRANT TO EVALUATE SCHOOL-BASED PROGRAMMING THAT COULD HELP DISRUPT CYCLES OF DOMESTIC VIOLENCE

StFX education professor Dr. Chris Gilham received \$25,000 in funding from the Nova Scotia government in 2020 through its Standing Together to Prevent Domestic Violence Connect Grants. The Connect Grants provide one-year funding to support ongoing projects that help community groups and organizations develop and test new ways to prevent domestic violence, support victims and their families, and share the story of what they are learning about how to address this complex issue. The current grant brings people together to share results, build stronger networks and future plans. Dr. Gilham received funding for a project entitled, *“Guys’ Work 7/8: Gendered Healthy Living Classes Nova Scotia,”* a partnership with the Department of Education and Early Childhood Education, Bridges Counselling, Family Services of Northeastern Nova Scotia, and five Regional Centres of Education. Dr. Gilham is working closely with Moe Green, who has been facilitating and training facilitators for high school “guys” groups across the province for many years now. Schools across the province are implementing Healthy Living classes and groups for male identified youth in Grades 7 and 8. The Connect grant will allow for the next phase of the project, which will involve sharing the results with guys group facilitators and community organizations, to discuss lessons learned, facilitator experiences, and how the work can continue to move forward effectively.



STFX STUDENT SHAE NICKERSON WINS GEOLOGICAL ASSOCIATION OF CANADA MEDAL FOR BEST HONOURS THESIS

Shae Nickerson, of Hazel Hill, Guysborough County, NS, capped off her student career at StFX in 2020 by winning a national medal for outstanding work on her thesis. Ms. Nickerson, who graduated from StFX in May 2020 with an honours BSc in Earth Sciences, was awarded the Léopold Gélinas Medal for her BSc thesis from the Geological Association of Canada's Volcanology and Igneous Petrology Division. This annual award recognizes the most outstanding undergraduate thesis written by a Canadian student or an international student studying at a Canadian university that comprises material related to volcanology (the study of volcanoes and volcanic rocks such as basalt) and/or igneous petrology (the study of the processes responsible for the origin of igneous rocks such as granite). Nominated theses are evaluated based on originality, validity of concepts, organization, and presentation of data, understanding of volcanology and petrology, and depth of research. Shae's thesis entitled, "The mineralogy and petrogenesis of rare-element granitic pegmatites in north-eastern Nova Scotia," was rated very highly by the award adjudicators. Ms. Nickerson's research investigated the origin of uncommon rocks known as granite pegmatites, rocks that can host very high concentrations of rare elements such as tin, lithium, tantalum, and beryllium. In this work, she was able to demonstrate the degree of rare-element enrichment and determined the geological processes that formed these rare rocks, in addition to incorporating her data into the regional geological framework. Shae's thesis is very well written, and she was a pleasure to have as a student.



STFX COMPUTER SCIENCE STUDENT'S RESEARCH ON INTERACTIVE MUSICAL ACCOMPANIMENT TOOL ACCEPTED AT TOP INTERNATIONAL CONFERENCE

Summer research work conducted by StFX undergraduate student Travis MacDonald of Greenhill, Nova Scotia was accepted for presentation at a prestigious international conference. Mr. MacDonald's research led to the creation of an app that combines music and computer science to help assist musicians practicing their instrument - the app listens to the user play and matches the key. Mr. MacDonald conducted the research during the summer of 2019 in the StFX Computer Science Department under the supervision of Dr. James Hughes. In 2020, Mr. MacDonald wrote a scientific article from the work, which was accepted for publication in a top international venue, *New Interfaces in Musical Expression (NIME)*, and he was invited to present a poster at a conference that was scheduled to take place at the Royal Birmingham Conservatory, Birmingham, UK. Due to COVID-19, the conference transitioned online, but Mr. MacDonald participated virtually. During 2020, Mr. MacDonald was again awarded summer research funding from the Alley Heaps Chair in Computing Science to undertake new research on machine learning and music - to try and generate satisfactory sounding music by applying artificial intelligence techniques.



STFX STUDENTS PRESENT RESEARCH FINDINGS AT CANADIAN CONFERENCE FOR UNDERGRADUATE WOMEN IN PHYSICS

Two third year honours StFX physics students who attended the Canadian Conference for Undergraduate Women in Physics held in Toronto in January were inspired to meet many successful female scientists, as well as undergraduate colleagues from across Canada. Claire MacDougall, an honours physics student from Halifax, NS, serves as chair of the Canadian Association of Physicists Student Advisory Council. Catherine Boisvert, a joint physics and math honours student from Montreal, QC, serves as President of the StFX Physics Society. Ms. MacDougall also presented her research, “Determination of Radiative Efficiency and Global Warming Potential of Several HFC’s and HFE’s” at the conference, which was held at the University of Toronto.



Dr. Karen Blair



Dr. James Hughes



Dr. Katie Aubrecht

STFX RESEARCHERS RECEIVE FUNDING FOR PROJECTS TO HELP INFORM BEST COVID-19 PRACTICES, SUPPORT NS HEALTHCARE DECISION MAKING AND PLANNING

Three StFX faculty members, Dr. Katie Aubrecht (Sociology), Dr. James Hughes (Computer Science) and Dr. Karen Blair (Psychology) each received funding in 2020 to conduct research to inform the best COVID-19 practices and support healthcare decision making and planning that benefits Nova Scotia. The three researchers received nearly \$130,000 in funding from the Nova Scotia COVID-19 Health Research Coalition. Partners in this initiated included the Nova Scotia Health Authority, Dalhousie University, Dalhousie Medical Research Foundation, IWK Health Centre, IWK Foundation, QEII Health Sciences Foundation, Dartmouth General Hospital and Research Nova Scotia. Dr. Aubrecht, a StFX sociology professor and Canada Research Chair in Health Equity & Social Justice, received \$54,908 to enhance supports for vulnerable older adults living with dementia and their caregivers in the context of the COVID-19 pandemic. Dr. Hughes, a computer science faculty member, received \$42,000 to provide direction on deployment of COVID-19 tests and other interventions. Dr. Blair, a psychology professor, received \$32,560 to co-lead a study with Dr. Kathryn Bell of Acadia University examining interpersonal relationships as a source of risk and resilience during the COVID-19 pandemic, including LGBTQ+ experiences.



STFX RANKIN SCHOOL OF NURSING PROFESSOR PART OF CIHR STUDY LEADERSHIP TEAM TO HELP IMPROVE COVID-19 POLICY EFFECTIVENESS

StFX Rankin School of Nursing Professor Dr. Donna Halperin is a co-principal investigator on a successful \$500,000 grant from the Canadian Institutes of Health Research (CIHR) to address the effects of the COVID-19 public health outbreak on control policies and implementation on individuals and communities. The project, entitled “Understanding the effects of public health outbreak control policies and implementation on individuals and communities: a path to improving COVID-19 policy effectiveness” is examining the cultural dimensions of the coronavirus (COVID-19) epidemic such as examining how individuals and communities understand and react to the disease, studying the response of public health, and exploring how public health policy affects individuals and communities. Quarantine, limitations in movement and public gathering, and other restrictive public health measures are often effective public health policies, but they can also put a social and economic burden on individuals, which may be disproportionate, depending on their socioeconomic status and other factors. The researchers are using a qualitative methodology (document review, key informant interviews, focus groups) and quantitative methods (surveys) to examine policy and implementation from the public health/policy perspective as well perspectives of the media, communities, healthcare providers, patients and their caregivers, and members of the public. The data generated by this study will be used to improve the process by which public health policies are created and implemented.

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RESEARCH CHAIRS



CANADA RESEARCH CHAIRS

- **Dr. Hugo Beltrami** (Earth Sciences) - Tier 1 Canada Research Chair in Climate Dynamics
- **Dr. Katie Aubrecht** (Sociology) - Tier 2 Canada Research Chair in Health Equity and Social Justice
- **Dr. Jacob Levman** (Computer Science) - Tier 2 Canada Research Chair in Bioinformatics
- **Dr. Jonathan Langdon** (Development Studies) - Tier 2 Canada Research Chair in Sustainability and Social Change Leadership
- **Dr. Laura Estill** (English) - Tier 2 Canada Research Chair in Digital Humanities and New Media

ENDOWED RESEARCH CHAIRS

- **Dr. Don Abelson** (Political Science) - Steven K. Hudson Chair in Canada-US Relations, Brian Mulroney Institute of Government
- **Dr. Mike Melchin** (Earth Sciences) - Dr. W.F. James Research Chair of Studies in the Pure and Applied Sciences (supported by the James Chair endowment fund)
- **Dr. Laurence Yang** (Computer Science) - Dr. W.F. James Research Chair of Studies in the Pure and Applied Sciences (supported by the James Chair endowment fund)
- **Dr. Stephen Finbow** (Mathematics and Statistics) - Dr. W.F. James Research Chair of Studies in the Pure and Applied Sciences (supported by the James Chair endowment fund)
- **Dr. James Hughes** (Computer Science) - Dr. W.F. James Research Scholar in Pure and Applied Sciences (supported by the James Chair endowment fund)
- **Dr. Hossain Ahmed** (Physics) - Dr. W.F. James Research Scholar in Pure and Applied Sciences (supported by the James Chair endowment fund)
- **Dr. William Sweet** (Philosophy) - Jules Léger Research Chair (supported by the Jules Léger Endowment for the Faculty of Arts)
- **Dr. Susan Vincent** (Anthropology) - Jules Léger Research Chair (supported by the Jules Léger Endowment for the Faculty of Arts)
- **Dr. Karen Blair** (Psychology) - Jules Léger Research Scholar (supported by the Jules Léger Endowment for the Faculty of Arts)
- **Dr. Rachel Hurst** (Women and Gender Studies) - Jules Léger Research Scholar (supported by the Jules Léger Endowment for the Faculty of Arts)
- **Dr. Jamie Levin** (Political Science) - Jules Léger Research Scholar (supported by the Jules Léger Endowment for the Faculty of Arts)
- **Dr. Kailin Wright** (English) - Jules Léger Research Scholar (supported by the Jules Léger Endowment for the Faculty of Arts)

SPONSORED RESEARCH CHAIRS

- **Dr. Peter Kikkert** (PGOV) - Irving Shipbuilding Inc. Research Chair in Arctic Policy, Brian Mulroney Institute of Government (sponsored by Irving Shipbuilding Inc.)
- **Dr. Adam Lajeunesse** (PGOV) - Irving Shipbuilding Inc. Research Chair in Canadian Arctic Marine Security, Brian Mulroney Institute of Government (sponsored by Irving Shipbuilding Inc.)
- **Dr. Dave Risk** (Earth Sciences) - Altus Group Chair in Emissions Research (sponsored by Altus Geomatics Inc.)
- **Dr. Lisa Lunney Borden** (Education) - John Jerome Paul Chair for Equity in Mathematics Education (supported by the Jeannine Deveau Educational Equity Endowment Fund)
- **Dr. Britney Benoit** (Nursing) - Nova Scotia Health Authority Health Sciences Research Chair

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EXTERNAL RESEARCH GRANTS

Note: New awards made effective April 1 2020, to March 31 2021;
only external research grants held by a StFX Principal Investigator are listed.



FACULTY OF ARTS

Catherine (Katie) Aubrecht, Sociology; Erin Austen, Psychology

Accessibility as collaborative practice

Maple League of Universities, Maple League Research Fund

\$9,300

Catherine (Katie) Aubrecht, Sociology

Evidence to assess the impact of COVID-19 on community-based dementia care in Nova Scotia

Research Nova Scotia, COVID-19 Rapid Response Grant

\$54,908

Karen Blair, Psychology

The ties that bind: Interpersonal relationships as a source of risk and resilience during the COVID-19 pandemic

Research Nova Scotia, COVID -19 Rapid Response Grant

\$32,599.99

Peter Kikkert, Public Policy & Governance

Identifying and assessing search and rescue and emergency response capabilities in the North American Arctic & the Canadian Rangers and COVID-19

Department of National Defence, Mobilizing Insights in Defense & Security (MINDS)

\$10,000

Lavinia Stan, Political Science

Closing the gap: A gender-based analysis of Gladue

Change Lab Action Research Initiative (CLARI), Community Engagement Assistance

\$7,500

Fraser Summerfield, Economics

Intergenerational mobility in Canada: Historical patterns and the role of education

Social Sciences and Humanities Research Council, Insight Development Grant

\$42,204

Kara Thompson, Psychology

An examination of the sex-specific psychophysiological markers of risk for physical and mental health disorders across modes of cannabis use.

Canadian Centre on Substance Use and Addiction, Research Grant

\$99,970

Kara Thompson, Psychology

Strengthening alcohol policies on Atlantic Canadian campuses: Working collaboratively to reduce alcohol-related harm among students

Research Nova Scotia, New Health Investigator Grant

\$99,385

Norine Verberg, Sociology

Employment transitions of refugees: Refugee, employer, and sponsorship group perspectives in Pictou County

Change Lab Action Research Initiative (CLARI), Community Engagement Assistance

\$7,500

Norine Verberg, Sociology

What Works? The strategies of community volunteers facilitating the economic transitions of refugee newcomers living in rural Nova Scotia

Social Sciences and Humanities Research Council, Partnership Engage Grant

\$25,000

FACULTY OF BUSINESS

Mark MacIsaac, Management

Evaluation of the Antigonish Community Sport Hub Pilot
Change Lab Action Research Initiative (CLARI), Social Enterprise Action Research Challenge
\$6,500

FACULTY OF EDUCATION

Christopher Gilham, Education

Increasing educator mental health literacy and self-efficacy for inclusive practices during COVID-19 with a self-directed online mental health literacy course
Social Sciences and Humanities Research Council, Partnership Engage Grant
\$24,262

Christopher Gilham, Education

Grade Seven Boys Group Programming & Guys Work Nova Scotia project
Nova Scotia Advisory Council on the Status of Women, Connect Grant
\$25,033

Gregory Hadley, Ingrid Robinson, David Young, Education

Evaluative review of the NS Dept of Education and Early Childhood Development's implementation of the Technology Advantage Program
Nova Scotia Education & Early Childhood Development, Research Contract
\$5,000

Lori Mckee, Lisa Lunney Borden, Education

Exploring the impact of Antle Discovers His Voice
Nova Scotia Education & Early Childhood Development, Inter-University Research Network
\$17,384

Katarin MacLeod, Education

Efficacy of online games for ocean career education
Mathematics of Information Technology and Complex Systems (MITACS), Accelerate Undergraduate Research Internship Program
\$15,000

Daniel Robinson, Jennifer Mitton, Greg Hadley, Jeff Orr, Education

A critical, exploratory study of Sacred Heart School's single sex pedagogy
Sacred Heart School, Research Grant
\$9,000

Ingrid Robinson, Education

Language, identity, and citizenship: Exploring the effects of an EAL summer program for newcomer Syrian immigrants through action research
Change Lab Action Research Initiative (CLARI), Community Engagement Assistance
\$7,400

FACULTY OF SCIENCE

Donnelly Archibald, Earth Sciences

Mineralization associated with granitoid plutons in the eastern Meguma terrane, Nova Scotia
Nova Scotia Department of Energy & Mines, Mineral Resource Development Fund Research Grant
\$71,500

Britney Benoit, Nursing

Optimizing the measurement and management of infant pain: A translational clinical program of research
Canada Foundation for Innovation, John R. Evans Leaders Fund
\$62,566
Research Nova Scotia, Matching Provincial Funding
\$62,566

Britney Benoit, Nursing

Provincial implementation of the Baby-Friendly Initiative: A collaborative, theoretically driven study
Research Nova Scotia, New Health Investigator Grant
\$99,889

Erwan Bertin, Chemistry

Exploring pulsed laser ablation in liquids as a new synthetic path towards electrocatalysts
Natural Sciences and Engineering Research Council, Discovery Grant
\$120,000
Natural Sciences and Engineering Research Council, Discovery Launch Supplement
\$12,500

Erwan Bertin, Chemistry

Pulsed laser ablation in liquids: A new green technique to prepare electrocatalysts
Canada Foundation for Innovation, John R. Evans Leaders Fund
\$74,984
Research Nova Scotia, Matching Provincial Funding
\$74,985

Erwan Bertin, Chemistry

Development of accelerated durability tests for CO₂ reduction
Mathematics of Information Technology and Complex Systems (MITACS), Research Training Award
\$6,000

Erwan Bertin, Geniece Hallett-Tapley, Brian MacLean, Chemistry

Investigation of antiviral properties of noble metal nanoparticles against SARS-CoV-2
National Research Council of Canada, Industrial Research Assistance Program
\$5,000

Erwan Bertin, Geniece Hallett-Tapley, Brian MacLean, Chemistry

Exploiting the photothermal characteristics of noble metal nanoparticles towards the elimination of SARS-CoV-2
National Research Council of Canada, Industrial Research Assistance Program
\$5,000

Erwan Bertin, Geniece Hallett-Tapley, Brian MacLean, Chemistry
Nanoparticle coated fabrics for visible light induced surface disinfection
Springboard Atlantic, Innovation Mobilization Program
\$22,050

Marcia English, Human Nutrition

Determining the chemical composition of Nova Scotia wild lowbush Blueberry (*Vaccinium angustifolium*) leaves and their potential application in product development
Atlantic Canada Opportunities Agency, Consulting Advisory Services
\$5,000

Tracy Everitt, Human Nutrition

Local food system resilience
Change Lab Action Research Initiative (CLARI), Community Engagement Assistance
\$7,500

Stephen Finbow, Mathematics & Statistics

Colouring, domination, and discrete dynamic graph
Natural Sciences and Engineering Research Council, Discovery Grant
\$120,000

Ann Fox, Human Nutrition

Catalysing dietetics: Exploring the experiences, needs and emerging roles of dietitians in Nova Scotia during the COVID-19 pandemic
Social Sciences and Humanities Research Council, Partnership Engage Grant
\$24,561

Ann Fox, Human Nutrition

Exploring seniors' perceptions of Canada's New Food Guide in Atlantic Canada
Mathematics of Information Technology and Complex Systems (MITACS), Research Training Award
\$6,000

Ann Fox, Human Nutrition, Karen Brebner, Dean of Arts

Spring Institute in Arts & Health
Maple League of Universities, Spring Institutes & International Field Studies Fund
\$5,020

David Garbary, Biology

Cell walls and symbioses of the economically important brown seaweed *Ascophyllum nodosum*
Natural Sciences and Engineering Research Council, Discovery Grant
\$140,000

David Garbary, Biology

Defining a shared vision for watershed stewardship
Change Lab Action Research Initiative (CLARI), Community Engagement Assistance
\$6,600

David Garbary, Biology

Obtaining Canadian Heritage Rivers status for the St. Mary's River
Change Lab Action Research Initiative (CLARI), Community Engagement Assistance
\$7,100

Geniece Hallett-Tapley, Chemistry

Semi-conductors and photochemical research

Maple League of Universities, Maple League Research Fund

\$5,994

James Hughes, Computer Science

Evolutionary algorithm development for applications in brain connectomics and other complex systems

Natural Sciences and Engineering Research Council, Discovery Grant

\$120,000

Natural Sciences and Engineering Research Council, Discovery Launch Supplement

\$12,500

James Hughes, Computer Science

Hyperheuristics for informing vaccination strategies

Research Nova Scotia, COVID-19 Rapid Response Grant

\$42,000

James Hughes, Computer Science

IRAP with Prompt Technologies Inc

National Research Council of Canada, Industrial Research Assistance Program

\$5,000

James Hughes, Computer Sciences

Predict and recommend conditioning programs for coaches and athletes

Mathematics of Information Technology and Complex Systems (MITACS), Accelerate Entrepreneur

\$60,000

Lisa Kellman, Earth Sciences

Examining the protection of organic carbon in mineral soils of managed landscapes

Natural Sciences and Engineering Research Council, Discovery Grant

\$215,000

Derrick Lee, Mathematics & Statistics

The impact of epistasis and gene-environment interactions on colorectal cancer risk in Atlantic Canada

Beatrice Hunter Cancer Research Institute, Discovery Grant

\$24,958

Jacob Levman, Computer Science

Machine learning technology for predicting blood lactate in pediatric intensive care patients

Springboard Atlantic, Innovation Mobilization Program

\$22,050

Innovacorp, Early-Stage Commercialization Fund

\$50,000

Brendan Murphy, Earth Sciences

The thermal legacy of Pannotia

Natural Sciences and Engineering Research Council, Discovery Grant

\$255,000

M. Shajahan Razul, Chemistry

Optimizing seafood preservation solution for whole-cooked shell-on lobster products

Nova Scotia Business Inc, P&I - Tier II

\$25,000

Ryan Reid, Human Kinetics

Using activity monitors to improve primary care for individuals at risk of obesity and cardiovascular disease living in rural areas of Nova Scotia

Research Nova Scotia, New Health Investigator Grant

\$78,813

David Risk, Earth Sciences

Alberta Energy Regulator

Alberta Energy Regulator, Research Contract

\$17,000

David Risk, Earth Sciences

Bringing the EXACT emissions sensing technology to market

GeoVerra Inc., Research Contract

\$37,500

David Risk, Earth Sciences

CanERIC – Canadian Emissions Reduction Innovation Network

Petroleum Technology Alliance Canada, CanERIC HQP Initiative

\$ 119,600

David Risk, Earth Sciences

Development of a quantitative framework for methane emissions from soil gas migration issues in the oil and gas sector

Mathematics of Information Technology and Complex Systems (MITACS), Accelerate Graduate Research Internship Program

\$120,000

David Risk, Earth Sciences

Fugitive and vented emissions by truck and gas migration

Whitecap Resources Inc., Research Contract

\$42,000

David Risk, Earth Sciences

Inter-comparison project to define methane calibration gas and measurement accuracy, and calibration protocols, across the CanERIC (Canadian Emissions Reduction Innovation Network)

Petroleum Technology Alliance Canada, CanERIC Equipment Initiative

\$86,753

David Risk, Earth Sciences

Measuring the methane footprint of Canadian oil and gas operations

Natural Sciences and Engineering Research Council, Discovery Grant

\$255,000

David Risk, Earth Sciences

Methane abatement simulation

McCall MacBain Foundation, Research Contract

\$80,000

David Risk, Earth Sciences

Regional-scale measurement of fugitive and vented methane from oil and gas and increasing their comparability to inventory estimates
Environment and Climate Change Canada, Research Contract
\$75,000

Tammy Rodela, Biology

Comparative and Environmental Physiology Facility (CEPF)
Canada Foundation for Innovation, John R. Evans Leaders Fund
\$74,065
Research Nova Scotia, Matching Provincial Funding
\$74,065

Truis Smith-Palmer, Chemistry

STEM and coding for girls and underserved rural youth
Natural Sciences and Engineering Research Council, PromoScience
\$90,000

Russell Wyeth, Biology

Environmentally Conscious Anti-Fouling Technician
Colleges and Institutes Canada, Career-Launcher Internship Program
\$15,000

Russell Wyeth, Biology

Field testing of antifouling performance of graphene coat testing anti-fouling properties of graphene marine coatings
Nova Scotia Business Inc., P&I - Tier I
\$15,000

Russell Wyeth, Cory Bishop, Jantina Toxopeus, Biology

Laser scanning confocal microscope for cellular studies of biofouling, neuroanatomy, symbiosis, and freeze tolerance
Canada Foundation for Innovation, John R. Evans Leaders Fund
\$200,000
Research Nova Scotia, Matching Provincial Funding
\$200,000

Russell Wyeth, Biology

Neuroethology of odour-based navigation in aquatic gastropods
Natural Sciences and Engineering Research Council, Discovery Grant
\$235,000

Russell Wyeth, Biology

Testing marine anti-fouling performance of a proprietary graphene coating
National Research Council of Canada, Industrial Research Assistance Program
\$5,000

Russell Wyeth, Biology

Testing potential utility of acoustic signals for attracting American Lobsters
Nova Scotia Business Inc., P&I - Tier I
\$15,000

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STUDENT RESEARCH SCHOLARSHIPS AND AWARDS



SSHRC CANADA GRADUATE SCHOLARSHIP – DOCTORAL AWARDS

Kelly O’Neil, Education

\$20,000

Elissa Cohen, Education

\$20,000

NSERC ALEXANDER GRAHAM BELL CANADA GRADUATE SCHOLARSHIP – MASTERS

Megan Fass, Biology

\$17,500

Lauren Viana, Biology

\$17,500

NOVA SCOTIA GRADUATE SCHOLARSHIPS

Kelly O’Neil, Education (Doctoral Award)

On the Air – a participatory action research project engaging older women in becoming change agents through a community radio initiative

\$15,000

Nicole Cameron, Biology (Masters Award)

Oceanographic drivers of coastal inter-tidal biodiversity in Nova Scotia

\$10,000

Ahmed Elgendy, Chemistry (Masters Award)

Activity measurements in cationic dimeric surfactants and in their mixed aggregates with polymers and other surfactants

\$10,000

Rachel Lewis, Earth Sciences (Masters Award)

Vehicle tethered, automated soil gas flux system for detection, characterization, quantification, and source ID of gas migration issues

\$10,000

Alvaro Sanchez Fonseca, Earth Sciences (Masters Award)

Regional climate downscaling

\$10,000

Sean Freeborne, Earth Sciences (Masters Award)

Magmatism in the heart of a supercontinent: Implications for our understanding of the evolution of mountain building

\$10,000

Olivia Pushie, Earth Sciences (Masters Award)

Syn-collisional magmatism and crust mantle interaction

\$10,000

Hang Yu, Computer Science (Masters Award)

A residual deep computation model for medical image classification in smart medicine

\$10,000

ALLY HEAPS GRADUATE SCHOLARSHIP - MASTERS

Sai Ram Kaleru, Computer Science

\$10,000

Md. Mostafizur Rahman, Computer Science

Convolutional Neural Networks for deep learning of brain MRI examinations for diagnosing, characterizing and better understanding autism and healthy brain development

\$10,000

Deepak Ramegowdra, Computer Science

\$10,000

Fatemeh Zaremehrijardi, Computer Science

Assessment of association between physical, psychological, and environmental factors, physical behaviors and eating habits in Canadian patients with Bariatric surgery and long-term regaining weight

\$10,000

UNDERGRADUATE STUDENT RESEARCH AWARDS

(\$6,250 EACH)

ALLY HEAPS UNDERGRADUATE RESEARCH INTERNSHIP

Yinan Gu, Computer Science

An incremental tensor-based multiple clustering approach for clustering big data in cyber-physical-social systems

Travis MacDonald, Computer Science

Using deep learning for discovering rules of musical styles

Zihao Shen, Computer Science

Privacy-preserving Convolutional Neural Network Model for medical diagnosis on cloud computing

Jueqi Wang, Computer Science

A development CNN Model that accepts 3D MRI to solve the regional segmentation problem

IRVING SUMMER RESEARCH MENTORSHIP AWARD – McKENNA CENTRE FOR LEADERSHIP

Alec Foran, History

An odyssey from Italy to South Africa: Exploring the meaning of Manuscript MS 4.c.14 across time and cultures

Elle Levesque, Psychology

Investigating creepiness in verbal and non-verbal behaviour

Chelsey MacPherson, Celtic Studies

Mac-Talla: Glengarry County connections

Kierra Maika, Psychology

Women's perceptions of, and emotional responses to, depictions of sexual violence in film or series

Devon Parris, English

Narrative form and race within literature and film

Brandon Richardson, Psychology

The effects of cannabis flower on motor coordination and learning: are field sobriety tests a valid indication of intoxication?

Adelaide Strickland, Development Studies

The stories we tell: Effective storytelling methods in rural communities

Rhiannon Walker, History

Tracing parchment: Medicine and wealth in the medieval book

NATURAL SCIENCES AND ENGINEERING RESEARCH COUNCIL - UNDERGRADUATE STUDENT RESEARCH AWARD (USRA)**Noah Barrett, Computer Science**

Scaling an Earth sized problem using deep learning

Catherine Boisvert, Physics

Simulations of crystallization in water nanodroplets

Amy Dodge, Biology

Do adenosine A1 receptors regulate the ability of zebrafish to tolerate both ammonia and hypoxia?

Taylor Doucet, Chemistry

Cloud points and calorimetry in additive-nonionic surfactant mixtures

Allison Hancock, Mathematics & Statistics

Optimizing a power play: Eternal domination

MacKenzie Le Vernois, Chemistry

Photocatalysts for sp³ C-H bond activation

Brigid McKay, Human Nutrition

Identification and characterization of potential Angiotensin 1-Converting Enzyme Inhibition from Nova Scotian bean protein concentrates

Abigail Moore, Chemistry

Green nanomaterials for green electrocatalysis

Anna O'Brien, Health Program – BA & BS

Isoconfigurational molecular dynamics investigation of the ice/water interface

Katherine Robinson, Earth Sciences

Choosing a high-resolution configuration of the WRF Model for future simulations of climate change over Atlantic Canada

Alexis Trevor, Biology

The use of ultraviolet light to suppress biofouling on aquaculture netting

Daniel Winters, Mathematics & Statistics
Gravity as a Gauge Theory: Teleparallel Gravity

RESEARCH NOVA SCOTIA – SCOTIA SCHOLARS UNDERGRADUATE RESEARCH AWARD

Alexa Davis, Nursing
A multifaceted evaluation of provincial maternal Tdap (tetanus, diphtheria, and acellular pertussis vaccine) immunization programs

Charlotte Elliott, Health Program – BA & BS
Enhanced microbial detection using DNA aptamer functionalized gold nanoparticles

Prahar Ijner, Computer Science
Ensemble learning using Convolutional Neural Networks for detecting abnormalities in medical images

Claire Joseph, Nursing
Barriers and facilitators to accessing sexualized violence prevention and response services for racialized students on a university campus in Canada

Catherine Kennedy, Sociology
A phenomenology of rest: Implications for well-being

Juliana Khoury, Psychology
The role of risk perception in sexual Victimization

Gregor Andreina Marquez de la Plata, Sociology
Barriers and facilitators to quality late-life long-term care: An intersectional analysis of care relationships

Mackenzie Muir, Psychology
University sexual violence policies: Perceptions of students and university counselors

Margaret Oliver, Human Kinetics
The comradery effects of a group fitness program on the quality of life of older men living in rural Nova Scotia

Kamy Roberge-Carrington, Computer Science
Health and violence: A cross-country comparison of the role of health professionals in policy debates on gun violence

RBC FOUNDATION UNDERGRADUATE SUMMER RESEARCH INTERNSHIP – BRIAN MULRONEY INSTITUTE OF GOVERNMENT

Anola Campbell, Sociology
Undergraduate experiences of learning disabilities: The invisible disability

Bailey Chisholm, Public Policy & Governance
Improving children's health through Nova Scotia schools

Brianna Gottschall, Health Program
Precision medicine and patient outcomes

Natashia Gushue, Education

Exploring pre-service teachers' understanding and awareness of indigenous perspectives through the reading of contemporary novels

Isaac Ketchum, Engineering

Understanding methane from thaw slumps in the Canadian Arctic

Zoljargal Osojamaa, Economics

The use of e-cigarettes and cigarettes among Canadian youth: Compliments or substitutes?

Sydney Van De Wiel, Women's & Gender Studies

The hidden cost of abortion in Nova Scotia

Christopher Yurris, Political Science

Consensus confusion: Why do incumbent candidates lose in non-partisan electoral systems?

SCHWARTZ BUSINESS SCHOOL RESEARCH INTERNSHIP AWARD

Emily Chisholm, Accounting & Finance

To Incorporate or not, from a fisherman's perspective

Anna Doyle, Marketing & Enterprise Systems

An exploration of Canadian pharmacy regulators' attitudes toward pharmacy working conditions.

Yitong Liu, Accounting & Finance

The relationship between cultural dimensions and corporate tax avoidance

Bailey Wasdal, Accounting & Finance

Effects of gender diversity of corporate boards on dividend policy for Canadian companies

UNIVERSITY COUNCIL FOR RESEARCH (UCR) - UNDERGRADUATE SUMMER RESEARCH AWARD

April Long, Mathematics & Statistics

Determining the hyperopic cop number of Cayley and Halin Graphs

Payton Robinson, Chemistry

Light-active gold nanospecies for removal of microplastics

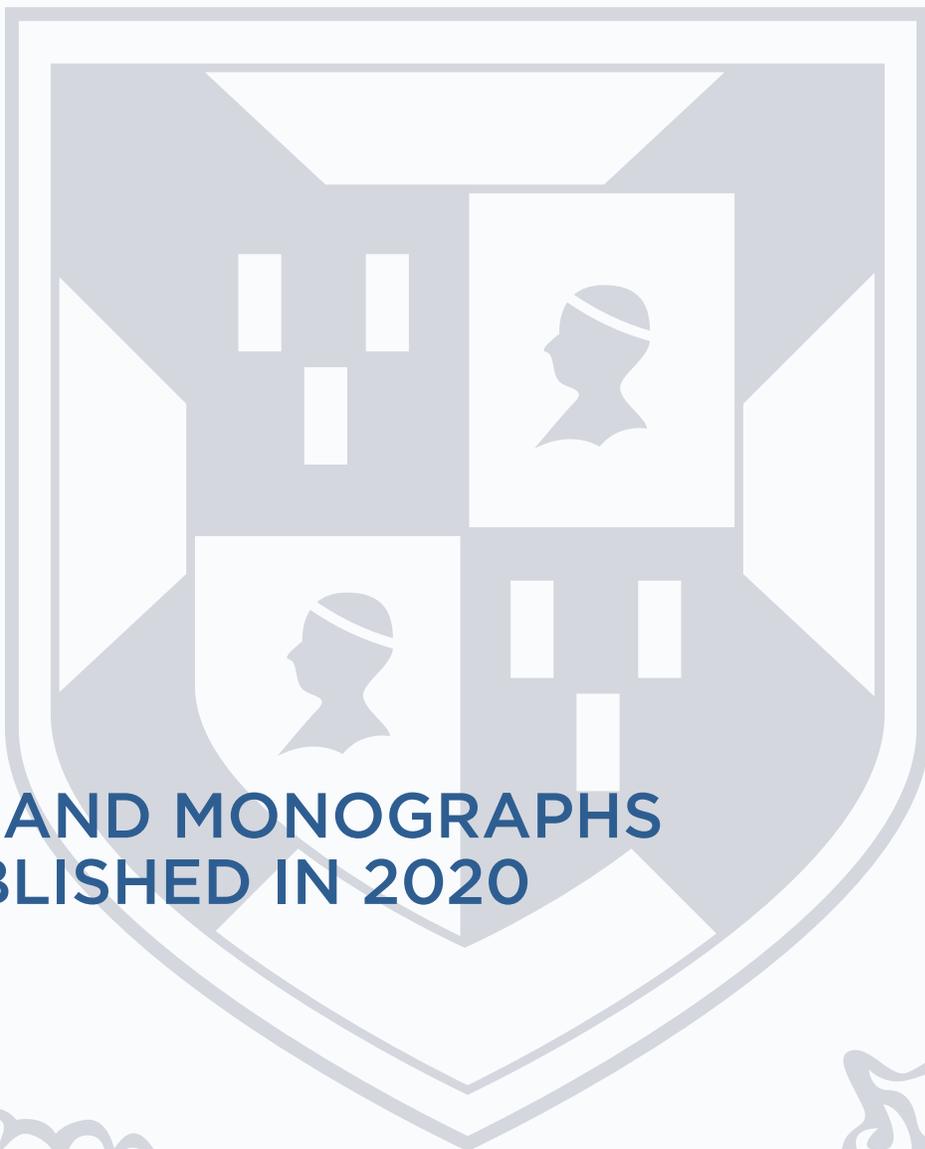
Lauren Sobot, Biology

Characterization of 4-way DNA junctions in HlyU-regulated genes of *Vibrio* species

Carmen Ucciferri, Biology

Chemosensory cells in the tentacle and lip nerves of the pond snail, *Lymnaea stagnalis*

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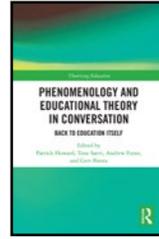
**BOOKS AND MONOGRAPHS
PUBLISHED IN 2020**





Donald E. Abelson, Brian Mulroney Institute of Government, Political Science

Donald E. Abelson. (2020). Do Think Tanks Matter? Assessing the Impact of Public Policy Institutes. Third Edition. Revised and Expanded. Simplified Chinese Translation. Shanghai: Shanghai Academy of Social Sciences Press.



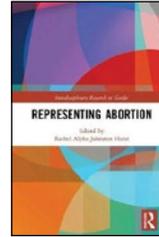
Andrew Foran, Education

Patrick Howard, Toni Saevi, Andrew Foran and Gert Beista. (2020). Phenomenology and educational theory in conversation: Back to education itself. Oxfordshire, UK: Routledge.



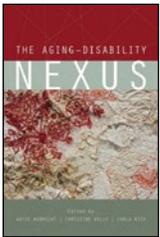
Doug Al-Maini, Philosophy

Eldon Soifer, Doug Al-Maini, Anne Levey, Angus Taylor. (2020). Ethical Issues: Perspectives for Canadians. Fourth Edition. Broadview Press.



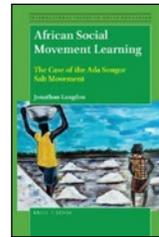
Rachel Hurst, Women's and Gender Studies

Rachel Hurst. (2020). Representing Abortion. Taylor & Francis Group.



Katie Aubrecht, Sociology

Katie Aubrecht, Christine Kelly, and Carla Rice. (2020). The Aging-Disability Nexus. Vancouver: UBC Press



Jonathan Langdon, Development Studies

Jonathan Langdon. (2020). African Social Movement Learning: Case of Ada Salt Movement in Ghana. Leiden: Brill Sense Publisher.



Jim Bickerton, Political Science

Jim Bickerton and Alain G. Gagnon. (2020). Canadian Politics. Seventh Edition. Toronto: University of Toronto Press.



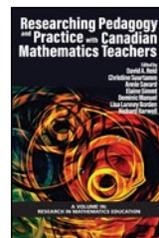
Jamie Levin, Political Science

Jamie Levin (ed.) (2020). Nomad-State Relationships in International Relations: Before and After Borders. Palgrave Macmillan.



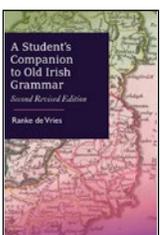
Cory Bishop, Biology

Cory D. Bishop and Brian K. Hall. (2020). Deferring Development: Setting Aside Cells for Future Use in Development and Evolution. New York: CRC Press.



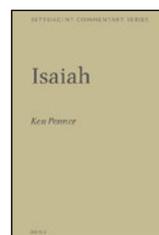
Lisa Lunney-Borden, Education

Lisa Lunney-Borden, David A. Reid, Christine Suurtamm, Annie Savard, Elaine Simmt, Dominic Manuel and Richard Barwell. (2020). Researching Pedagogy and Practice with Canadian Mathematics Teachers. Information Age Publishing.



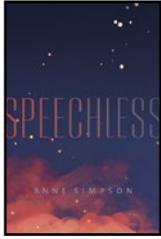
Ranke de Vries, Celtic Studies

Ranke de Vries. (2020). A Student's Companion to Old Irish grammar. Second Revised Edition. Burlington: Forgotten Scholar Press.

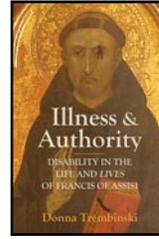


Ken Penner, Religious Studies

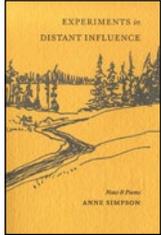
Ken Penner. (2020). Isaiah. Brill Academic Publishing.



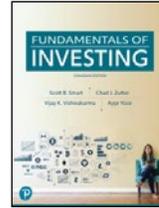
Anne Simpson, Adjunct Professor English
Anne Simpson. (2020). Speechless. FreeHand Books.



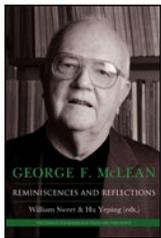
Donna Trembinski, History
Donna Trembinski. (2020). Illness and Authority: Disability in the Life and Lives of Francis of Assisi. Toronto: University of Toronto Press.



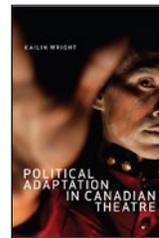
Anne Simpson, Adjunct Professor English
Anne Simpson. (2020). Experiments in Distant Influence. Gaspereau Press Ltd.



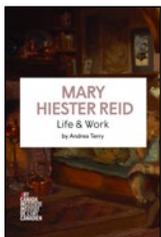
Vijay Vishwakarma, Accounting & Finance
Scott B. Smart, Chad J. Zutter, Vijay K. Vishwakarma and Ayse Yüce. (2020). Fundamentals of Investing. First Canadian Edition. Toronto: Pearson.



William Sweet, Philosophy
William Sweet and Hu Yeping. (eds.) (2020). George F. McLean: Reminiscences and Reflections: Washington, DC: The Council for Research in Values and Philosophy.



Kailin Wright, English
Kailin Wright. (2020). Political Adaptation in Canadian Theatre. McGill-Queen's University Press; Cultural Studies, Drama / Theatre Studies.



Andrea Terry, Art Gallery
Andrea Terry. (2020). Mary Hiester Reid (1854-1921). Toronto: Art Canada Institute / Institut de l'Art canadien.
<https://www.aci-iac.ca/art-books/mary-hiester-reid>

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BOOK CHAPTERS AND CONFERENCE PROCEEDINGS PUBLISHED IN 2020



- Abelson, D.E.** (2020). Canada. In: Lewis, D.S. & Slater, W. (eds.) *The Annual Register: World Events 2020*. Cambridge, UK: Proquest. 129-30.
- Aubrecht, K.** & Boaf, A. (2020). Deconstructing dependency and development in global dementia policy. In: Aubrecht, K., Kelly, C. & C. Rice (eds.), *Aging/Disability Nexus*. Vancouver: University of British Columbia Press. 200-217.
- D'Arcy, M.** (2020). Dialectic of Enlightenment: Origin stories of Western Marxism. In: Freeman, K. & Munro, J. (eds.), *Reading the Postwar Future: Textual Turning Points from 1944*. Bloomsbury. 43-59.
- Estill, L.** (2020). Shakespearean extracts, manuscript cataloguing, and the misrepresentation of the archive. In: Stern, T. (ed.), *Rethinking Theatrical Documents in Shakespeare's England*. Arden Shakespeare. Bloomsbury. <https://dx.doi.org/10.5040/9781350051379.ch-009>
- Estill, L.** (2020). Legacy technologies and digital futures. In: Crompton, C., Siemens, R. & Lane, R. (eds.), *Doing More Digital Humanities: Open Approaches to Creation, Growth, and Development*. Routledge.
- Hurst, R.A.J.** (2020). Photographing fatness: Resisting assimilation through fat activist calendars. In: Rinaldi, J., Friedman, M. & Rice, C. (eds.), *Thickening Fat: Fat Bodies, Intersectionality and Social Justice*. London: Routledge. 171-182.
- Reyes, J., Miller, T., Gibbins, R., Cohen, A., Greenidge, A., **Chattopadhyay, S.** & Gahman, L. (2020). Activist geographies. In: *International Encyclopedia of Human Geography*. London: Elsevier.
- Kikkert P.** & Lackenbauer, P.W. (2020). The militarization of the Arctic to 1990. In: Coates K. & Holroyd C. (eds.), *The Palgrave Handbook of Arctic Policy and Politics*. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-20557-7_30
- Lajeunesse, A.** (2020). Arctic geopolitics and security from the Canadian perspective. In: Weber, J. (ed.), *Handbook on Geopolitics and Security in the Arctic*. Springer.
- Lajeunesse A.** & Lackenbauer, P.W. (2020). Defence policy in the Canadian Arctic: From Jean Chrétien to Justin Trudeau. In: Juneau T., Lagassé P. & Vucetic S. (eds.), *Canadian Defence Policy in Theory and Practice. Canada and International Affairs*. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-26403-1_21
- Langdon, J.**, Jackson, M. & Kitcher, S. (2020). Pedagogy of song and restor(y)ing hope: Stories and songs as social movement learning in Ada Songor salt movement. In: Finnegan, F. & Grummell, B. (eds.), *Doing Creative and Critical Research in Adult Education*. Leiden: Brill Sense Publisher. <https://brill.com/view/title/56609>
- Levin, J.** & de Carvalho G., Cavoukian K. & Cuthbert R. (2020). Before and after borders: The nomadic challenge to sovereign territoriality. In: Levin J. (ed.), *Nomad-State Relationships in International Relations*. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-28053-6_4
- Levin, J.** & MacKay J. (2020). Introduction: Nomad-state relationships in international relations. In: Levin J. (ed.), *Nomad-State Relationships in International Relations*. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-28053-6_1
- Moore, C. & **Corbit J.** (2020). Social cognition in infancy. In: Tremblay, R.E., Boivin, M., Peters, R.D. (Series eds.) Zelazo P.D. (Topic ed.), *Encyclopedia on Early Childhood Development*. <https://www.child-encyclopedia.com/sites/default/files/dossiers-complets/en/social-cognition.pdf>
- Nilges, M.** (2020). The novel's novelty now. In: Lanzendörfer T. & Norrick-Rühl C. (eds.), *The Novel as Network*. New Directions in Book History. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-53409-7_3

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EXTERNALLY SPONSORED RESEARCH REVENUES

	2020-21	2019-20	2018-19
Sponsored Research	7,261,071	5,956,278	5,940,000
Federal Indirect Costs Research Grant	769,569	770,468	752,772
Coady GAC Grant in SPS RSH	-	112,367	112,367
Coady Research	-	-	529,533
		6,726,746	7,334,672

SOURCES OF EXTERNAL RESEARCH REVENUE - STFX REPORT TO CAUBO

	2020-21	2019-20
SSHRC	753,335	655,647
Health Canada	-	-
NSERC	1,245,009	957,361
CIHR	37,034	33,251
CFI	841,965	179,016
CRC	694,283	684,165
Other Federal	2,611,021	2,442,771*
Provincial	1,191,271	797,204†
Municipal	-	-
Other provinces	10,412	76,794
Foreign	-	-
Business	300,448	460,035
Not-for-profit org.	322,255	409,310
Misc.	23,607	4,496
Total	8,030,640	6,726,746

*See Breakdown Other Federal †See Breakdown Provincial

BREAKDOWN OTHER FEDERAL SOURCES

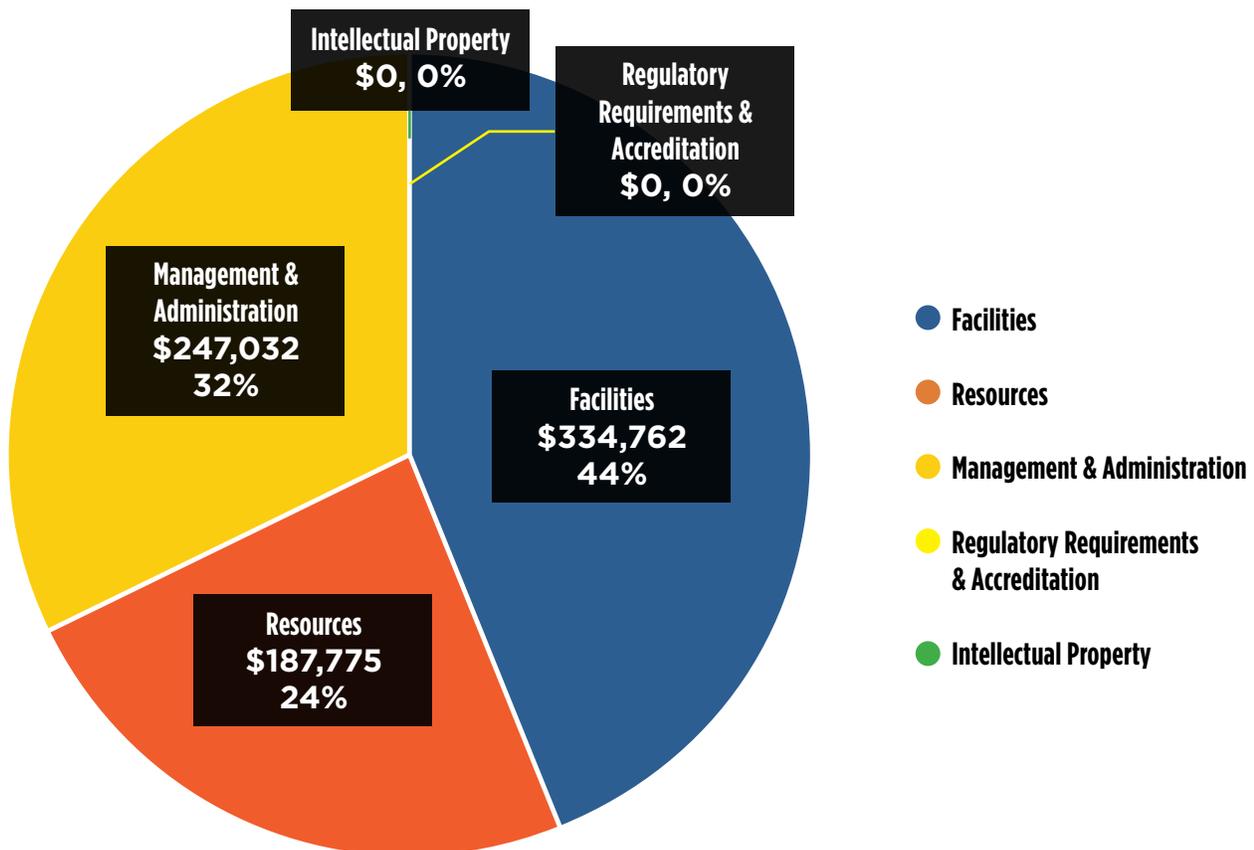
	2020-21	2019-20
Indirect Costs of Research	769,569	770,468
GAC (Coady)	-	-
NCCDH (PHAC)	1,114,112	986,194
AIF/ACOA	338,313	254,288
CFI	-	146,955
NRC	22,500	48,331
NRCan	36,100	45,000
	123,894	
Other Federal	206,534	208,611
Total	2,611,022	2,459,848

BREAKDOWN PROVINCIAL SOURCES

	2020-21	2019-20
CFI matching funds (NSRIT/RNS)	376,061	308,582
Other Provincial Funds	488,622	488,622
Other Prov - LAE	236,858	-
Other Prov - RNS	202,617	-
Total	1,191,271	797,204

RESEARCH SUPPORT FUND (RSF) FUNDING AND OUTCOMES 2019-20

Total Research Support Fund Expenditures 2020-21 = \$769,569



FACILITIES: \$334,762 (43.5%)

High-quality, well-maintained research facilities are a critical component in a university's ability to attract and retain high-quality faculty researchers and in turn, students at the undergraduate and graduate levels. Accordingly, the largest portion of our Research Support Fund grant is allocated towards the ongoing operating costs of maintaining (including cleaning and security) of our research facilities.

This investment contributes to support services that ensure a healthy and safe research environment for our faculty and student researchers, and our research support staff. The Research Support Fund gives StFX University the ability to address a significant portion of the indirect costs of research associated with research facilities, including technical support and upkeep of StFX Animal Care Facilities and the StFX Electronics and Machine Shops.

StFX is continuing to maintain its existing base of research facilities, and the COVID-19 pandemic in 2020-21 required additional attention to cleaning and maintenance than would normally be incurred. StFX was able to maintain research activities throughout most of this year due to the low number of cases in Nova Scotia. As operational costs of research facilities continue to grow, the Research Support Fund grant has become a vital funding component for the University's research enterprise as it assists in offsetting these costs. Without this funding, we could not operate our research facilities at the current high standard, and it would have been exceedingly difficult to support research at its current level. The Research Support Fund grant is an essential piece of funding that contributes to our success through its use in maintaining our high-quality research facilities for our researchers.

RESEARCH RESOURCES: \$187,775 (24.4%)

Providing access to efficient research management and administration support is another critical component in StFX's overall ability to attract and retain high-quality researchers. Enhancing the quality of our research-related administration service standards while simultaneously addressing increasing research funding compliance requirements is making research administration more challenging and complex. The demands of broad research management and administration requirements at a small university like StFX continually challenge us to continually strive to improve our overall research administration efforts within a framework of limited resources. As part of this, we continue to support the maintenance of our research grant, contract and certification tracking platforms. StFX invests a portion of RSF in an annual license for the ROMEO software package that staff use to track research applications and link certification requirements (e.g. Research Ethics Board and Animal Care Committee approvals).

This reduces the administrative burden placed upon the researchers while enhancing the institution's ability to ensure that the many administrative functions related to research are being addressed. We have expanded our use of ROMEO in 2019-20 with the addition of the researcher portal, at additional cost to the institution, in an effort to create efficiencies in research facilitation, management and administration. Improvements in processes and procedures related to the administration of research grants enhance the ability of our research-focused administrative personnel to support our research faculty members. With approximately one third of the Research Support Fund grant allocated towards the management and administration of research the RSF has helped us provide stronger administrative support for our overall research enterprise. Funding is also directed towards research administrative staff training. Had we not made the investments in research management and administration, it would not have been possible for us to maintain our administrative support to StFX's researchers.

MANAGEMENT AND ADMINISTRATION: \$247,032 (32.1%)

Providing access to efficient research management and administration support is another critical component in StFX's overall ability to attract and retain high-quality researchers. Enhancing the quality of our research-related administration service standards while simultaneously addressing increasing research funding compliance requirements is making research administration more challenging and complex.

The demands of broad research management and administration requirements at a small university like StFX continually challenge us to continually strive to improve our overall research administration efforts within a framework of limited resources. As part of this, we continue to support the maintenance of our research grant, contract, and certification tracking platforms. StFX invests a portion of RSF in an annual license for the ROMEO software package that staff use to track research applications

and link certification requirements (e.g., Research Ethics Board and Animal Care Committee approvals). This reduces the administrative burden placed upon the researchers while enhancing the institution's ability to ensure that the many administrative functions related to research are being addressed. We expanded our use of ROMEO in 2019-20 with the addition of the researcher portal, at additional cost to the institution, to create efficiencies in research facilitation, management, and administration. We have continued to invest efforts in this internal research project management software and provide researchers with guidance and support in its use.

Improvements in processes and procedures related to the administration of research grants enhance the ability of our research-focused administrative personnel to support our research faculty members. With approximately one third of the Research Support Fund grant allocated towards the management and administration of research the RSF has helped us provide stronger administrative support for our overall research enterprise. The performance of this unit has increased significantly, with higher numbers of research grant applications processed and higher number of research grant professional development sessions organized in each of the past several years. RSF funding is also directed towards research administrative staff training. Had we not made the investments in research management and administration, it would not have been possible for us to maintain our administrative support to StFX's researchers.

REGULATORY REQUIREMENTS AND ACCREDITATION: \$0 (0%)

As the indirect costs of research exceed the funds provided by the RSF program, the University makes allocations against the RSF program funds only for those expenses in sections 1, 2 and 3. Indirect costs incurred for items in this section (4) and the following section (5) are covered from the operating budget or from specific funding allocations from other agencies.

INTELLECTUAL PROPERTY: \$0 (0%)

As the indirect costs of research exceed the funds provided by the RSF program, the University makes allocations against the RSF program funds only for those expenses in sections 1, 2 and 3. Indirect costs incurred for items in this section (5) are covered from the operating budget or from specific funding allocations from other agencies.

OVERALL IMPACTS OF THE RESEARCH SUPPORT FUND AT ST. FRANCIS XAVIER UNIVERSITY

1. ATTRACTION AND RETENTION OF RESEARCHERS

There are many components to an effective research platform: modern high-quality research facilities; capable administrative supports; access to research resources. All are critical. In an increasingly competitive research and employment market, the Research Support Fund grant assists the University by providing foundational support for these core components of a successful research platform - a platform that is highly attractive to world-class researchers and that meets their expectations for a supportive research environment.

2. ATTRACTION OF ADDITIONAL FUNDING

While the Research Support Fund grant is not used as matching funding or as seed money, it supports the facilities, resources and support structures that need to be in place to attract research funding. The Research Support Fund enables researchers at StFX University apply for research funding from a broad range of provincial, regional, national, and international funding sources, as well as attract research partners in government, industry and no-government and philanthropic sectors. These also help support the University's overall effort to involve undergraduate and graduate students in substantive research training efforts.

3. REDIRECTION OF FUNDS

No

4. OTHER OVERALL IMPACTS

The investments we have been able to make with the Research Support Fund grant have supported and increased the overall StFX research footprint, helping maintain morale and research productivity among the researchers at our university. Supporting and strengthening the research culture at StFX is an institutional priority and is an acknowledgement that excellent research can also take place at a smaller university. The Research Support Fund also enables a small University such as StFX to continue offering exceptional research training opportunities to undergraduate students, as well as a modest number of graduate students.

PUBLIC DISCLOSURE

<https://www.stfx.ca/research/research-publications-and-reports/research-support-fund>

The Research Support Fund Program helps provide basic infrastructure and administrative support for attracting and retaining high-quality faculty and student researchers at our university. At StFX we have directed the funding to targeted areas that needed support and where that support would have the largest positive impact on our institution, while also playing a key role in the maintenance and growth of our research platform. With the continued growth in research activities, the pressure on the University's infrastructure has increased. Within this climate the University strives to remain responsive to the needs of a modern competitive research environment. Without the funds provided by the Government of Canada Research Support Fund, StFX would certainly have had a significantly diminished research capacity and reduced opportunities for student involvement in research. The Research Support Fund grant is a critical foundational piece of funding in our overall research platform.

