

# research MATTERS

MEMORIAL UNIVERSITY'S RESEARCH MAGAZINE WINTER 2014



Exploring the  
student research  
experience

DR. NORIKO DANESHTALAB and undergrad student  
NELSON PEARCE are working on a project related to  
rheumatoid arthritis and stroke – [page 22](#)



# Letter from the vice-president *(research)*

Welcome to the winter 2014 issue of *Research Matters*.

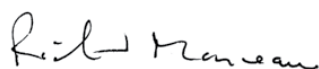
I began my term as vice-president (research) on June 1, 2013, and I'm delighted to be a part of the Memorial community. In my time here so far, I've seen firsthand the energy and intelligence of our students and the dedication and passion of their professors.

To do great research, you have to work on great problems, and Memorial students are showing this to be precisely true. This issue of *Research Matters* is focused on the student research experience. As you will see, students not only learn more effectively when they are personally engaged in research, they are also creating new knowledge that benefits their academic discipline and their entire community.

Take, for example, former undergraduate student Krista Oke, whose research identified the ecological impacts that may occur if genetically modified animals escape confinement; or masters student Stephanie Pile, who is working on a project to develop Innu language children's books to help the Innu language thrive. You can learn about these projects, and many more, in this issue.

As you read through this magazine, I hope you're left with a sense of appreciation and awe for our students. Their stories illustrate the contribution they are making, and will continue to make, to improve our world. This is the type of work that happens every day on all our campuses and that continues to inspire me to provide the support and resources they need to achieve success.

I hope you enjoy reading about the research activities of Memorial University. If you'd like to learn more, I encourage you to visit [www.mun.ca/research](http://www.mun.ca/research).



Richard Marceau, PhD, P.Eng., FCAE  
vice-president (research)

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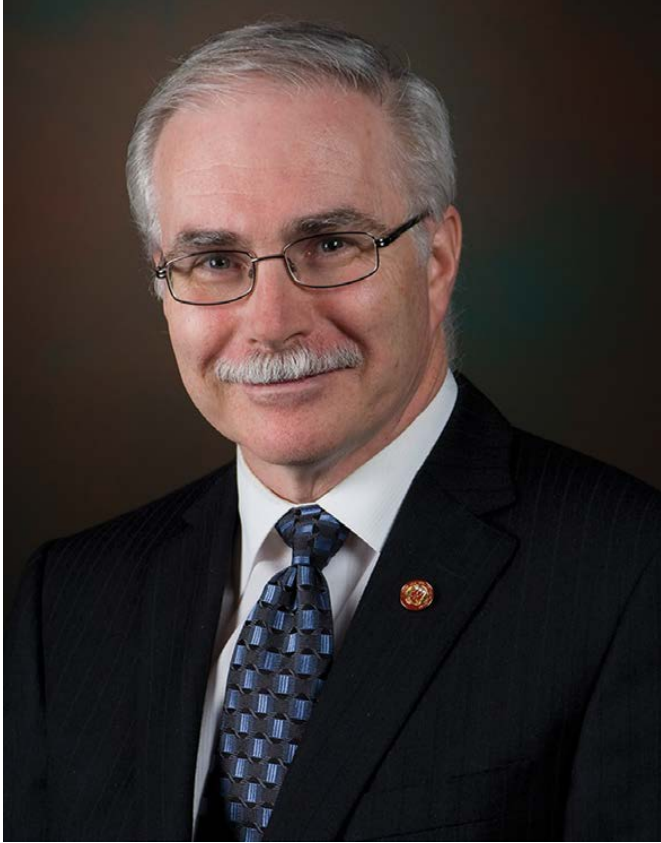
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# Saying *farewell* to vice-president (research)

by Meaghan Whelan

**DR. CHRISTOPHER LOOMIS** finished his term as vice-president (research) on May 31, 2013, concluding a decade of service that has indelibly shaped research at Memorial.

Under his stewardship, Memorial's research capacity, impact and reputation advanced dramatically. He guided the research portfolio through an astounding period of growth, from \$40 million in 2001–02 to more than \$100 million in 2012–13; forged new partnerships with government and industry and developed Memorial's first Research Strategy Framework to guide the university's future direction.

In his convocation address, Dr. Gary Kachanoski, president and vice-chancellor, thanked Dr. Loomis for his service to Memorial.

"Dr. Loomis has led the research portfolio at Memorial for many years, spearheading the significant growth of our research activities. Between that and the valuable leadership Dr. Loomis provided when he served *pro tempore* as president and vice-president (academic), and earlier as dean of pharmacy, as a teacher and researcher of considerable note, he has given his all to Memorial."

His teaching, research and leadership have been recognized with numerous awards. Last fall, he was inducted as a Fellow in the Canadian Academy of Health Sciences and also received the Queen Elizabeth II Diamond

Jubilee Medal in recognition of his sustained and significant contributions to higher education in Canada.

He maintained an active program of funded research and graduate student supervision throughout most of his time as a senior leader and he has authored many papers and presentations in the area of spinal pharmacology of pain.

"Chris has a love and passion for research and truly understands how important it is to support others in pursuit of their research aspirations," said Dr. Ray Gosine, associate vice-president (research). "I have enjoyed working closely with Chris in a variety of roles. He has been an exceptionally supportive boss, a wonderful colleague and a trusted friend."

Dr. Loomis said he is proud of the growth of research during his time as vice-president (research).

"I'm proud of what we, the Memorial community and our partners, have accomplished together. We've built a culture of research founded on excellence and integrity," he said. "I leave confident that Memorial is well-positioned for even greater success."

After stepping down as vice-president (research), Dr. Loomis plans to take some time off before returning to focus on special projects.



## Memorial

# welcomes

## new vice-president (research)

by Meaghan Whelan

**DR. RICHARD MARCEAU** began his term as vice-president (research) on June 1, 2013, and he is focused on building on Memorial's existing research strengths to continue to serve the public good.

"No other university in Canada is better positioned to impact the future of its own province than Memorial at the present time! From my perspective, to do great research, you need to work on great problems, and I see countless opportunities for Memorial's faculty, staff and students across all disciplines to impact Newfoundland and Labrador."

As the only university in the province, Memorial has a unique relationship with the citizens, industry and government of Newfoundland and Labrador.

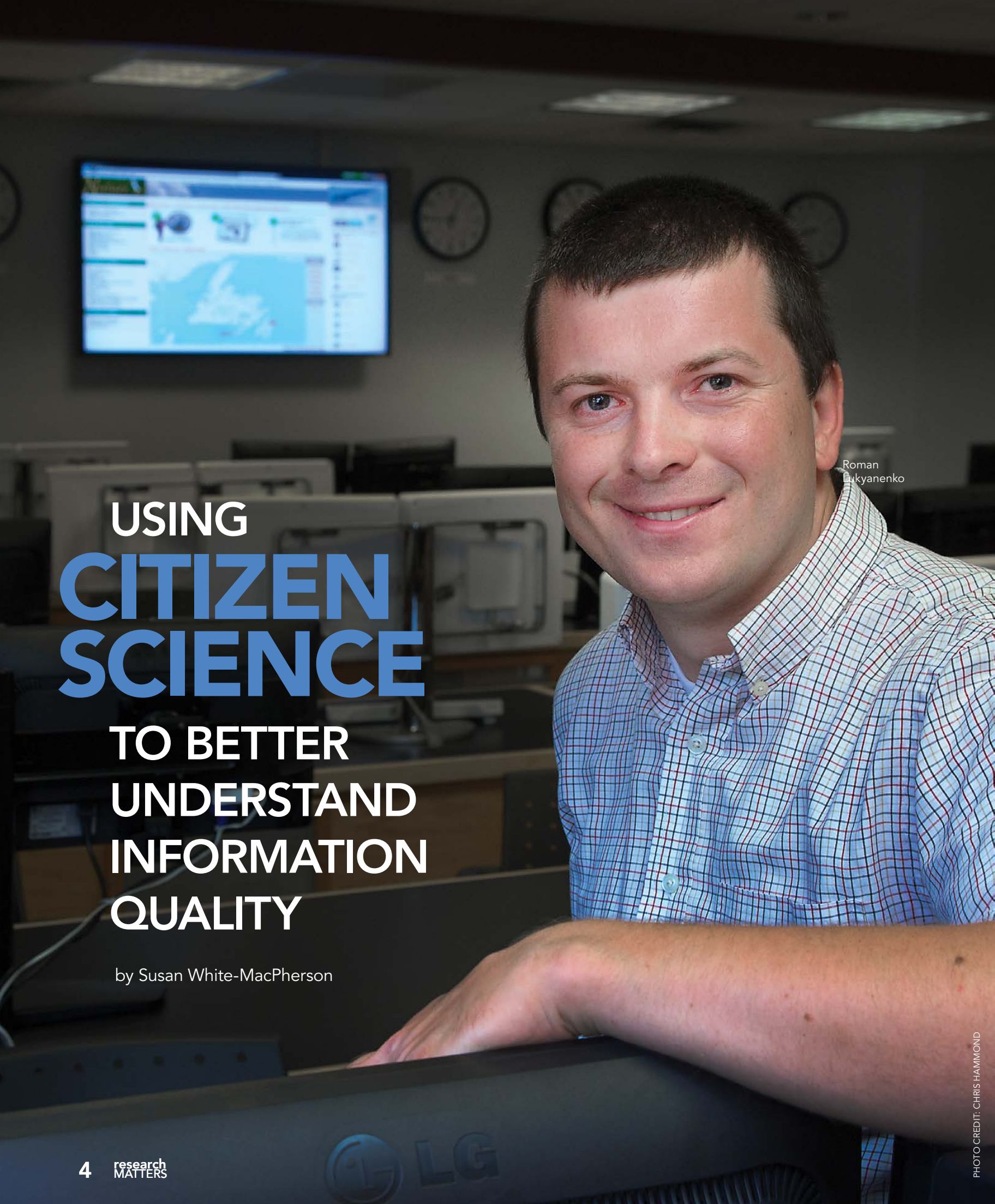
"Memorial's many stakeholders have very different expectations regarding its impact on the society of Newfoundland and Labrador. These include graduating a new generation of university scholars who will propel Newfoundland and Labrador into the future; creating new knowledge; contributing to artistic creation; deepening our understanding of art, music, culture and history both here and elsewhere; advancing our relationship with Aboriginal peoples; facilitating economic growth; and generally enriching our quality of life," he said. "Our size, breadth and depth of activities allow us to do that and I am committed to contributing to this important work in my role as vice-president."

Dr. Marceau said these are exciting times for Newfoundland and Labrador and Memorial University.

"The province is poised to make significant, long-term contributions to this nation's energy economy while strengthening the sustainability of its fisheries, developing new value-added forests products, stimulating the creation of a new agriculture industry, and acting as a springboard to Canada's sovereignty in the Arctic," he said.

"Memorial University is not only an integral part of these developments, the province is counting on Memorial to provide leadership in each and every one of these areas through its diverse research capabilities, its multiple campuses, and especially its incredible pool of talented faculty, staff and students."

Throughout his first few months as vice-president, Dr. Marceau has met with a variety of stakeholders within the university and the larger community. These consultations have informed the priorities that he intends to address in partnership with his colleagues in the coming months.



USING  
**CITIZEN  
SCIENCE**  
TO BETTER  
UNDERSTAND  
INFORMATION  
QUALITY

by Susan White-MacPherson

Roman  
Bukyanenko

**A WEBSITE THAT RECORDS SIGHTINGS** of plants and animals is providing data that could improve information management practices around the world.

Roman Lukyanenko, a fourth-year student in the Faculty of Business Administration's PhD in management program, studies data collected from [www.nlnature.com](http://www.nlnature.com), a citizen science website that gathers sightings of flora and fauna by enlisting ordinary citizens as data providers.

Mr. Lukyanenko developed the website in 2009, shortly after completing his bachelor of technology degree at Memorial. He was hired for the project by Dr. Yolanda Wiersma, an associate professor of landscape ecology at Memorial's Department of Biology, who wanted to collect sightings of various lichens and endangered species across the province.

"We started to realize a couple of things. One was that the project held quite a bit of potential and we could increase the scope to other plants and animals. At the same time, I was meeting with local wildlife groups and citizens to understand some of the challenges in doing something like this. And by the challenges, I mean how do you take the knowledge of ordinary people and convert it into a scientifically useful resource?"

Behind the core mandate of [www.nlnature.com](http://www.nlnature.com) is a broader mission to examine the current models of information management and its applications in fields as diverse as business, medicine and education.

"The biggest challenge of this project is the transfer of knowledge between a large group of non-experts, such as residents and tourists, and a smaller group of experts, such as biologists. And that's not a trivial task," Mr. Lukyanenko said.

His findings to date are contrary to the generally-accepted approaches to ensuring information quality, which is that imposing a standard of data collection increases the quality of the information collected, and that quality is also rooted in expertise.

"Our research is showing that non-experts can provide high-quality information as long as they are able to provide that information at a level at which they are comfortable. So far, this is probably our greatest theoretical contribution," he said.

Mr. Lukyanenko's findings also have broader implications for information management. In tele-medicine, for example, it could improve the transfer of knowledge between a remotely located patient, who is not an expert in medicine but understands his or her symptoms and environment, and a doctor, who is a medical expert. In industry, it could impact how oil companies manage assets by improving knowledge transfer between a small number of engineers and a larger number of equipment operators, thereby preventing equipment failures and the resulting losses.

It also has implications for customer relations, human resources, information management and other aspects of business. For example, Mr. Lukyanenko's research could help companies learn how to properly mine the vast quantities of customer information available online.

"We feel we are, in particular, spearheading an aspect of this information management for companies, which is how do you get quality out of the volume? What do you do with the vast amounts of data and how do you set up the system to collect the data to integrate it into the decision-making process? This is hugely important for companies."

Mr. Lukyanenko says this citizen science setting allows for new theories and practices to be tested in an environment where revenue, security and even lives are not at stake.

"We're using biology and citizen science as a sandbox to test out theories that would otherwise be very difficult to do in traditional corporate settings."

# FROM BRAZIL TO CORNER BROOK

by Pamela Gill

**NOT ONLY HAS JOÃO NETO** gotten a different research experience during his time on the west coast of Newfoundland, he's gotten a taste of a completely different environment.

"Your nature is different; you have different vegetation and animals," he said of the Corner Brook area. "Brazil is just hot. Here, I have the different experience of four seasons. Brazil has two: summer and less summer!"

A second-year biology student, João attends the Uberaba Campus of Instituto Federal do Triangulo Mineiro in Uberaba, Minas Gerais, Brazil. He came to Grenfell Campus, Memorial University, through the Science without Borders Program (SWB) offered in Brazil.

The main goal of SWB is to promote science, technology and innovation in Brazil by means of international exchange.

Mr. Neto first participated in Grenfell's English as a Second Language program and then worked with Dr. Julie Sircom of Grenfell's environmental science program.

He supported Dr. Sircom's research on detritus breakdown in local streams.

"He's been getting very familiar with Newfoundland forests and streams," said Dr. Sircom. "I'm just setting up my research, so we've been sampling pretty frequently,

and doing a wide variety of things. That includes benthic sampling for immature insects, identifying the trees surrounding the streams, and measuring such characteristics of the streams as width, depth, current velocity and so on."

When he wasn't hiking up and down rugged streams, Mr. Neto was in the lab, identifying insects from the benthic samples and measuring chlorophyll levels in algae samples, among other lab tasks.

"As well, he's been learning about the other side of ecology: building field equipment like the detritus bags that will allow me to measure the speed of leaf breakdown," said Dr. Sircom. "His help is crucial to getting this research off the ground, so I'm very pleased that Grenfell participates in the Science without Borders program, and that I get a chance to work with one of the SWB students."

This type of research is a departure from the kind of biology studies Mr. Neto did at home, but he hopes to continue in this vein in Uberaba.

"The time I spent in the lab and in the field has provided me an amazing experience about how it really is to work in the biology and environment department," said Mr. Neto. "I hope that more students could have the same opportunity that I had."





**"Brazil is just hot.  
Here, I have the different  
experience of four seasons."**

JOÃO NETO



# MANY HAPPY RETURNS

## Improving endangered salmon populations

by Kelly Foss

**A MULTI-DISCIPLINARY** and collaborative research project at Memorial University has contributed to 20-year high returns of the endangered Inner Bay of Fundy Atlantic salmon to Fundy National Park rivers.

An individual salmon being released back into the river. Note the small white tag beside its dorsal fin: the tag tells Clarke and his team that this salmon was reared in a conservation sea cage.



PHOTO CREDIT: L. GOODBRAND



PHOTO CREDIT: T. ROBINSON

After being raised in a modified aquaculture sea cage, salmon were released into the Bay of Fundy from a lobster fishing boat. Here, you can see the 'salmon cannon' in action: a tagged adult salmon is about to hit the water.

Corey Clarke, a part-time masters student in the environmental science program, is co-supervised by Dr. Craig Purchase at Memorial and Dr. Dylan Fraser at Concordia.

The New Brunswick native is also a Parks Canada employee and part of a team that has been trying to monitor and retain the Atlantic salmon populations in Fundy National Park.

"After a decade of study, the team repeatedly demonstrated that fish released to park rivers at different juvenile stages did produce smolt migrating to the sea years later, but they continued to fail to return to spawn as adults," Mr. Clarke said.

This is when an innovative project was proposed which aimed to rear a portion of collected smolts in sea cages in the Bay of Fundy where they would live naturally for 18 months before returning to spawn.

"In 2010, a portion of smolts were taken from one of the Fundy rivers and raised in sea cages in southwestern New Brunswick, while a control group were raised in the

hatchery," said Mr. Clarke. "The adults produced were released inside the Inner Bay of Fundy and tracked, or they were used in an experiment comparing the survival of offspring from cage reared and hatchery reared parents."

The effects of juvenile captive exposure (i.e. release stage) on fish phenotype, like growth and survival later in life and into the next generation, became the basis of his masters project with Drs. Purchase and Fraser.

"For the tracking project, approximately 300 fish were loaded into the hull of a boat and steamed to the Inner Bay of Fundy and released," said Mr. Clarke. "About 10 per cent of them had acoustic tags for detection by receivers placed at the mouth of the park and adjacent rivers should the salmon return.

"In addition to acoustic tags, every fish had a coloured tag on the outside that divers could see and a small tag implanted under the skin, about the size of a grain of rice, which you could scan to get a number. So every fish is permanently identifiable as part of this project."

(con't on next page)

That year, at least a dozen fish returned to their river of origin and another three-dozen to an adjacent river, more than had returned in the last decade.

Back at the hatchery, the eggs from the cage-reared fish were surviving better than the eggs from hatchery-reared parents.

“Preliminary results suggest fish released to the wild just after hatching as fry produced better surviving offspring than those released after five months as parr.”

In late fall of 2011, after all experiments were complete, the cage- and hatchery-raised adult fish were released where they had been collected. The following year, during the park’s 2012 dive surveys, Clarke received a radio call from a diver reporting dozens of salmon in a pool he was surveying.

“At first we thought it could simply have been a surprise good year for wild returns, but all but one fish carried a pit tag proving they were our fish. So, a year later they had come back and with greater success than the release at sea.”

A hopeful sign, two tagged salmon have been detected in the same park river already in late summer of 2013.

“One large fish had a tag from the 2012 sampling of adult returns, so it had survived a second winter to return again. The other smaller fish had a tag from cage-reared adults released at the mouth of Upper Salmon River in 2012.

“It is a good sign that both adults which had returned last fall (released in 2011) and adults that were released in fall 2012 could return in fall of 2013. We are hopeful that this is an early indication of another increase in salmon returning to Fundy National Park.”

Managers of the park’s salmon recovery program, as well as other salmon conservation groups, are now considering incorporating the sea cage rearing strategy into ongoing recovery efforts.



It takes a lot of help to successfully seine the pool. In this picture, you can see individuals from Parks Canada, DFO, Fort Folly First Nations and the Department of Natural Resources.

Project leader Corey Clarke is about to release a salmon back into the river.



PHOTO CREDITS THIS PAGE: L. GOODBRAND



# DEVELOPING BROADER HORIZONS

by Naomi Osborne

**AFTER NEARLY 30 YEARS IN THE WORKFORCE,** Paul Murray decided to become serious about finishing his undergraduate degree.

The Manitoba native began his career in aerospace manufacturing in Winnipeg before moving to Los Angeles in 1998 to advance his career.

While living and working in LA, Mr. Murray completed his Bachelor of Technology degree at Memorial University through distance education. Initially combining work and school, Mr. Murray eventually decided to make school a priority and switch to part-time work when he enrolled in the Marine Institute's (MI) Master of Technology Management (MTM) program.

"I was very interested in organization behavior, but the graduate study options I found at American universities would have also required me to bolster my psychology background with at least a year of additional courses," said Mr. Murray. "In the end, I found that the MTM program at MI offered the right mix of technical, business and organization behaviour content I was looking for."

Having graduated from the MTM program this fall, Mr. Murray now works as a Supply Chain Engineer with the Thermal Equipment Corporation, the world's largest manufacturer of composite bonding autoclaves for the aerospace and defense industries.

"I was fortunate to find a job that closely matched my master's research project on Supply Chain Risk Management," said Mr. Murray.

Mr. Murray's research project involved the development of a template to improve the management of risks in the supply chains of small and medium enterprises (SMEs).

This focus stems from the theory that SMEs are experiencing increasing levels of risk in their supply chains, but do not have the resources to address those risks. Mr. Murray's research strives to develop an effective method for SMEs to manage these new supply chain risks without expending excessive resources.

"I hope my research will demonstrate that SMEs do not have to be victims to the risks that emerge as their supply chains evolve," explained Mr. Murray. "The application of simple risk management tools, at the appropriate time and place, would enable SMEs to better deal with new risks."

Mr. Murray attributes the MTM program with equipping him with a new way of thinking about business. At the onset, his intent was to improve his knowledge, gain the credibility of a master's degree and then return to his career in aerospace manufacturing, hopefully at a higher level. This, however, may not be the case.

"The MTM program has been a bit of a double-edge sword for my career path. It has introduced me to new areas of interest including technology innovation, risk management, and sustainability. This broader view of contemporary issues in manufacturing, and obtaining my master degree, has opened up many potential opportunities for my career," said Mr. Murray. "The studies in the MTM program with Drs. Christian Coronado, Marco Barajas and others were rewarding to the point that I am even considering continuing on to a PhD program."





# HIT THE GROUND RUNNING: **BAREFOOT**

By Michelle Osmond

**IN THE RUNNING WORLD**, going barefoot is gaining popularity. Research has shown that when running barefoot, the forces on the body are reduced because we no longer hit the ground with our heels (because it would hurt too much) but strike first with our forefoot.

**“When people take up barefoot running they change the way they move and therefore the way they use their muscles.”**

DR. JEANETTE BYRNE

Many believe this reduction in force reduces injury rates. However, as Dr. Jeanette Byrne points out, forces on the feet are not the only source of injury. “When people take up barefoot running they change the way they move and therefore the way they use their muscles. This change in muscle use can also lead to injury.”

Human Kinetics and Recreation student Nicolas Snow and some friends, all of whom are frequent runners in minimalist footwear, which is also becoming more popular, were discussing how this footwear felt very different from traditional running shoes. “After pouring over the existing research literature, my supervisors, Dr. Fabien Basset and Dr. Byrne, and I observed that there was very little research examining how barefoot running influences muscle activation. Many articles discussed differences in running efficiency, ground-reaction forces, foot-strike patterns and more; however, there was little that alluded to how muscle activation might either underlie, or be affected by, the differences studied. So we thought, ‘Well, somebody has to do this!’”

Mr. Snow, an undergraduate honours student at the time, set out to determine whether differences in muscle activation occurred during barefoot versus running in traditional sneakers. Eight competitive male distance runners ran twice on a treadmill — both barefoot and wearing traditional running shoes. Muscle activity from the hamstrings, quadriceps, gluteus maximus, calf and tibialis anterior were recorded using electromyography.



PHOTO CREDIT: TERRY UPSHALL / HSIMS

Nicholas Snow observes Dr. Fabien Basset running barefoot on a treadmill while hooked up to EMG sensors.

What Mr. Snow and his team found was that when running barefoot, there was increased activity in the gluteus maximus and the calf while activity in the tibialis anterior was reduced. The runners also exhibited greater stride frequency and shorter contact time while barefoot. The changes they saw in calf and tibialis anterior activation supported existing research. However, this study was the first to demonstrate increased activity in gluteus maximus when running barefoot, providing further insight into how we use our muscles.

Dr. Byrne noted that these results are important for runners and to those who train runners. “If someone were to go from running 10 kilometres in shoes to trying to run 10 kilometres barefoot they would quickly get injured because they are placing more stress on both their calf and buttock muscles,” added Dr. Byrne. “The more they know about how they use their muscles when running with minimalist footwear, the better chance they can design a transition program that allows them to adopt barefoot running with a lower risk of injury.”



# SPY GAMES:

## Delving into the history of Canada's domestic intelligence operations

by Meaghan Whelan

### **SURVEILLANCE, ESPIONAGE AND COVERT**

**GOVERNMENT OPERATIONS:** it's not the opening of a James Bond movie, it's the focus of doctoral candidate Trevor Ford's research.

Mr. Ford, a student in the Department of History, is studying the history of domestic intelligence and surveillance in Canada, before, during and after the First World War. He credits his supervisor, Dr. Mark Humphries, with opening his eyes to the rich and interesting history of Canadian intelligence gathering.

"I was originally interested in U.S. or British intelligence operations, but Mark encouraged me to shift my gaze to Canada," Mr. Ford explained. "Other agencies, like the CIA or MI5, have seen former spies write memoirs, but that has never happened in our country, so we are less familiar with this aspect of Canadian history."

"Since 9/11, there has been an ever-increasing presence of domestic intelligence in Canada through Canadian Security Intelligence Service (CSIS), but we have limited knowledge about how it began or how its roots influence the current system," said Mr. Ford.

Mr. Ford's research primarily relates to the Military Intelligence Branch (MIB) of the Department of Militia and Defence, a precursor to CSIS. MIB played a key role in monitoring the activities of Canadians, infiltrating organizations targeted as problematic and assessing the threat they posed to state interests.

In many cases, immigrants and labour organizations were the focus of their espionage.



Trevor Ford

SUBMITTED PHOTO

"The government at the time was distinctly white, Anglo-Saxon protestant. If you didn't fit that mould, they assumed you were suspect," Mr. Ford explained.

Government thought that labour organizations were run by eastern Europeans, so MIB operatives, or hired spies, went undercover to infiltrate labour groups and report back on membership and activities.

"The fear of the unknown led the Canadian government to use a military organization against its own citizens, primarily targeting groups they saw as anti-capitalist or individuals with a different nationality. I think it's important for Canadians to realise that this did happen and that the often presumed rosy view of our history isn't necessarily accurate."

One of the challenges Mr. Ford has faced is the scarcity of information on the MIB and their activities.

"MIB had a very extensive network but we know almost nothing about its operations—largely because it has long been thought that its records were destroyed when the RCMP took responsibility for domestic intelligence," he explained. "It is my hope that my study of MIB, using newly discovered military intelligence records at Library and Archives Canada, will make the first systematic examination of this organization and its relationship to both Canadian society and other Canadian domestic intelligence services between 1866 and 1922."

Mr. Ford received a Joseph-Armand Bombardier Canada Graduate Scholarship – Doctoral Scholarship from the Social Sciences and Humanities Research Council (SSHRC) to support his research.





# 'WEIGHTLESS like the fog itself'

A unique visual arts approach to book design

By Melanie Callahan

**VISUAL ARTS STUDENT** Meagan Musseau recreated the rugged landscape and the unique experience of Newfoundland rural life in the design of the artwork for *Fog of the Outport*.

*Fog of the Outport*, written by Grenfell English professor Dr. Robin Durnford, is a story based on her father's childhood in Francois, a small outport community in southwestern Newfoundland.

Dr. Durnford sought Ms. Musseau as a collaborating artist for the book of poetry and prose.

The process of creating the book began with a trip to Francois. At the end of August 2012, the pair went to the community so they could experience the place to get source material for the illustrations and design.

The cover is extraordinary, each book bound by a silkscreen print.

"It is intended to be weightless, like the fog itself, and it is through these blank pages that readers move into the story, into the world of the outport," explained Ms. Musseau.

She credits her work as a printmaking research assistant with Marlene MacCallum, an artist and printmaking professor, in her ability to make individual covers for each book. Ms. Musseau worked with Ms. MacCallum on an

Insight Development Grant, funded by the Social Science and Humanities Research Council (SSHRC).

"I had never taken on a project of this size and demand but the process was exciting, exhilarating and enjoyable," Ms. Musseau said. "So many times I found myself recalling projects Marlene and I worked on as a way to problem solve and develop a system that would work to produce 200 silkscreen prints that would then be manipulated, folded and bound to make 100 covers for the books."

After the digital format layout for the text and illustrations was printed came the tedious job of hand binding the text block into the strategically folded covers, with not much material available for error. Ms. Musseau called it an exercise in technical skill and patience.

A year later, she joined Dr. Durnford and her family to return to Francois for a book launch. The CBC program *Land and Sea* filmed an episode about the project to air in Nov. 2013. A second launch took place at the publisher JackPine Press in Saskatoon, and a final launch took place at the Grenfell Campus Art Gallery.

"I am very excited and feeling quite lucky to bring this project back to the place that has supported so much of my learning and experience," Ms. Musseau said of the Grenfell launch.



MASTER'S CANDIDATE BRINGS  
**DIVERSE OUTLOOK**  
TO NL FISHERY

by Naomi Osborne

PHOTO CREDIT: NAOMI OSBORNE

**SHE MAY BE A ST. JOHN'S**, Newfoundland native but Hilary Rockwood spent most of her life alongside the Pacific Ocean. Moving to California when she was 11, Ms. Rockwood recently came back to her roots to conduct her Master of Science at Memorial University and its Marine Institute (MI).

Ms. Rockwood completed her Bachelor of Science degree in marine biology, with a focus on predator-prey interactions in rocky intertidal ecosystems, at the University of California in Santa Cruz. She also conducted a portion of her undergrad in Queensland, Australia studying ecology and paleontology.

"I feel it's important to have a global understanding of the ocean. I have a diverse background and spent my undergrad studying the Pacific. Now I'm shifting my focus to the Atlantic," said Ms. Rockwood. "Everywhere I've lived thus far has been near an ocean. I could never be landlocked."

Under the supervision of Dr. Jonathan Fisher, research scientist with MI's Centre for Fisheries Ecosystems Research (CFER), Ms. Rockwood's masters research involves the diets and spatial distributions of gadoids in southern Newfoundland waters under changing ocean conditions, driven by both global climate change and climate cycles. She was drawn to CFER for the hands-on interactions and opportunities it offers as well as the chance to gain a better understanding of marine biology in a way that impacts society.

"So many people all over the world depend on fisheries in different ways," explained Ms. Rockwood. "A newer trend in fisheries ecology and management is a holistic approach. This looks at biological, ecological, environmental, social, economic and political aspects. The multiple facets make it an interesting challenge."

Ms. Rockwood began conducting her project in June using the data collected from CFER's 2012 and 2013 offshore ecosystem surveys on board the RV Celtic Explorer. She is analyzing the diets and spatial distributions of emerging and re-emerging gadoid fishes in southern Newfoundland waters using data collected on multiple species. In addition to collecting specimens, the surveys also gather information on fish sizes, fisheries acoustics data and oceanographic conditions which provide Ms. Rockwood an overview of the species' ecology.

Her research aims to quantify changes that people in both the commercial and recreational fishing communities are noticing and to link what's happening in the environment to responses in species' behaviours, abundances, sizes and reproductive rates.

"The Atlantic Ocean has exhibited changing conditions driven by both global climate change and climate cycles. This includes not only warming of the water, but also changes in salinity and other effects," said Ms. Rockwood. "If we know how and to what extent the fishery is changing, we can help develop management techniques to cope with these changes."

**"If we know how and to what extent the fishery is changing, we can help develop management techniques to cope with these changes."**

HILARY ROCKWOOD





# CHILD'S ALLERGY

becomes research fodder for PhD student and busy faculty member

by Marcia Porter

**MAKING CUPCAKES** is a great way to spend time with children and a favourite activity in the Dobbin-Williams household. But for Karen Dobbin-Williams, a busy mom, assistant professor in the School of Nursing and a PhD student in the Faculty of Medicine's Community Health and Humanities program, it's more than fun family time.

When her youngest son Ian was diagnosed with a life-threatening food allergy to milk and milk products, it became a way to keep him safe and healthy.

"Ian is not able to eat many other foods that are prepared in bakeries or factories because of cross-contamination with milk and milk products," explained Ms. Dobbin-Williams, who is studying what it's like to parent youth with life-threatening food allergies for her PhD topic.

(con't on next page)

Not only is it a relevant and timely research project for the Dobbin-Williams family; it's relevant for the times.

These days about 1.3 million Canadians have at least one food allergy, and a Canadian study in 2012 found that about eight per cent of the student population had at least one food allergy.

It's a dramatic change from years ago when peanut butter sandwiches were a lunchbox staple and you'd rarely see notes in school warning of severe allergies to peanuts, bananas, shellfish and a growing list of other foods.

Yet in spite of these increases, very little qualitative research is available that reflects the experiences of parents who have teens living with these life-threatening food allergies.

When Ms. Dobbin-Williams looked for the research, it simply wasn't there. So she decided to make it the subject of her PhD. Her research is grounded in philosophical hermeneutics, a research approach that draws on the experience of the researcher and participants.

And she brings significant personal experience to her work.

Ian was just five-weeks-old when he suffered his first anaphylactic reaction to a small amount of formula. Since then he's had several severe reactions, but despite those frightening episodes managing life-threatening allergies can be easier in young children. Parents decide what to eat and when, and supply food for their child in school lunches, at birthday parties and family events.

Pushing for greater independence and feeling a strong need to fit in, teenagers can find themselves in situations beyond the control of their parents. It's a time of transition that can be rife with anxiety for parents of teens with life-threatening food allergies. It's not unusual for students in this age group to leave epi-pens in their lockers, out-of-sight and out-of-reach.

"The immediate administration of epinephrine can mean the difference between life and death," said Ms. Dobbin-Williams. "Time is of the essence."

**"When you have a child with a life-threatening food allergy, you are worrying ... will he have his epi-pen with him, will he take a risk and eat something he's not completely sure is free of milk?"**

KAREN DOBBIN-WILLIAMS

"When you have a child with a life-threatening food allergy, you are worrying ... will he have his epi-pen with him, will he take a risk and eat something he's not completely sure is free of milk?"

Ms. Dobbin-Williams wants her research to have practical application, to help policy makers and parents alike identify resources and necessary supports.

"I would like my research to inform health practitioners about resources needed to help families," she said. "Nurses play a key role in helping families transition through living with allergies at various life stages. There are no support groups here in Newfoundland and Labrador. There are no formal supports and that is something that nurses could influence."

She plans to begin her research interviews this winter.

If you are parenting a child or youth with life-threatening allergies, and would like to share your story, you can contact Ms. Dobbin-Williams at [kdobbinw@mun.ca](mailto:kdobbinw@mun.ca) or (709) 777 6756. She'll explain more about the study.

# Teaching TEACHERS

by Meaghan Whelan

**A NEW INITIATIVE** in the Faculty of Education is helping teachers become more confident in teaching science, technology, engineering and mathematics (STEM).

The project, Teachers in Action, is for K-6 teachers across Newfoundland and Labrador who are interested in enhancing their STEM teaching knowledge, abilities and skills.

“Primary and elementary teachers are generalists, and some need support and encouragement to be comfortable teaching the STEM curriculum,” explained Dr. Karen Goodnough, lead researcher for the project. “By enabling teachers to develop their own abilities and skills in these areas, we hope they will become more confident and better equipped to encourage young people to consider STEM disciplines.”

As part of small collaborative teams, participants pose a research question based on their own needs and the needs of their classroom, then work throughout the year on finding answers and collecting information.

“This type of teacher-driven inquiry is ideal for integrating theory and practice. It brings together practical wisdom and allows the participants to collaborate and learn from each other. Hopefully, the experience will help teachers improve their own teaching methods,” Dr. Goodnough said.

One of the pilot projects in Teachers in Action focused on the use of technology to enhance collaborative problem solving in math and science. True problem solving requires students to use prior learning in new ways and contexts. It can be a powerful teaching tool



that empowers students to explore alternatives and helps develop confidence in math and sciences.

Samuel Paterson and Bernice Curtis, both master of education students at Memorial and teachers at Beachy Cove Elementary, were interested in whether using collaborative technology can increase student engagement in problem solving and improve their ability to problem solve.

The teachers used a facebook-like platform to teach the grade five and six fraction and multiplication curriculum.

“The response from students was excellent. They loved the project, and were quite self-aware. They knew what they were participating in, and it seemed to add value to their experience,” explained Mr. Paterson.

Mr. Paterson went on to say that he had an excellent experience in the Teachers in Action program.

“I have fully integrated the practices that I tried out during the Teachers in Action process, to great effect in all areas of the curriculum,” he said. “I learned a huge amount about my own practice, and had a chance to explore topics that interested me with the support of researchers at Memorial.”

The Hibernia Management and Development Company Ltd. provided generous funding support for the project.



# Navigating the vascular highway

by David Penney

**RHEUMATOID ARTHRITIS (RA) IS A CHRONIC AUTOIMMUNE DISEASE** that affects one in every 100 Canadians. Those who are affected will commonly suffer from rapid joint deterioration, while others also experience a variety of other health problems, including heart disease and stroke. Patients with RA often have high blood pressure, and in combination with chronic, systemic inflammation, the likelihood of stroke increases. In addition, for those people suffering from RA, the risk of dying from a first-time stroke is much higher than individuals in the non-RA population who suffer the same fate.

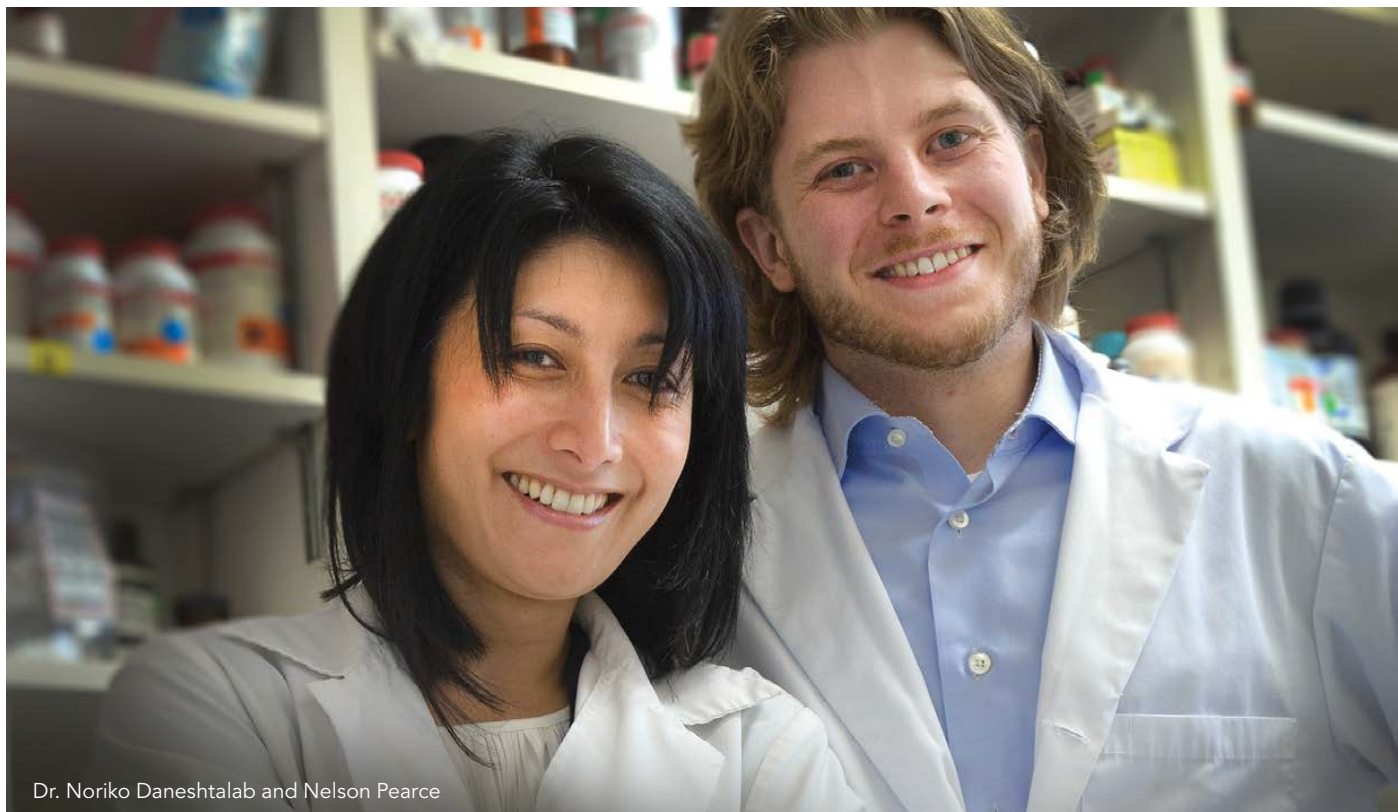
Understanding that vulnerability is a puzzle that follows a complex pattern of vascular changes. Dr. Noriko Daneshtalab is connecting the dots. An assistant professor at the School of Pharmacy, Dr. Daneshtalab believes the inflammation that accompanies RA causes vessels in the brain to lose their ability to respond to high pressure. Her research group investigates how the presence of RA increases the likelihood of stroke, but also why drugs commonly used to treat high blood pressure may not be optimal for RA patients.

Dr. Daneshtalab is particularly interested in what happens with the middle cerebral artery, one of the main arteries supplying blood to the brain, in the presence of systematic inflammation like RA.

In a healthy subject, this artery constricts when blood pressure is elevated, and regulates the amount of blood transferred to the smaller, delicate vessels in the brain. When this regulatory mechanism fails, the smaller vessels are overloaded with blood and may burst, leading to bleeding in the brain, which, at times, can bring about a fatal stroke.







Dr. Noriko Daneshtalab and Nelson Pearce

PHOTO CREDIT: CHRIS HAMMOND

The research team includes graduate and undergraduate students who have contributed to both the development of an animal model and the data collection process over the last few years. Nelson Pearce is a fourth-year undergraduate student at the School of Pharmacy who worked on the project last summer.

“I was involved both with the development of the model and with monitoring the physiological changes associated with RA and hypertension that took place in the stroke-prone and stroke-resistant rats,” said Mr. Pearce. “There is no appropriate model that exists right now that looks at the coexistence of RA and cardiovascular disease. Dr. Daneshtalab is refining her own model by introducing a high salt diet, to induce hypertension, and then inducing a localized RA-like state. I monitor their response by measuring blood pressure and carefully monitoring for signs of inflammation and stroke.”

Mr. Pearce explained the significance of this data.

“In the inflammatory state there are different proteins produced that can influence this constriction,” he said. “Dr. Daneshtalab is looking at how a chronic inflammatory state may cause an expression profile change, which might interfere with the cascade that regulates the constriction.”

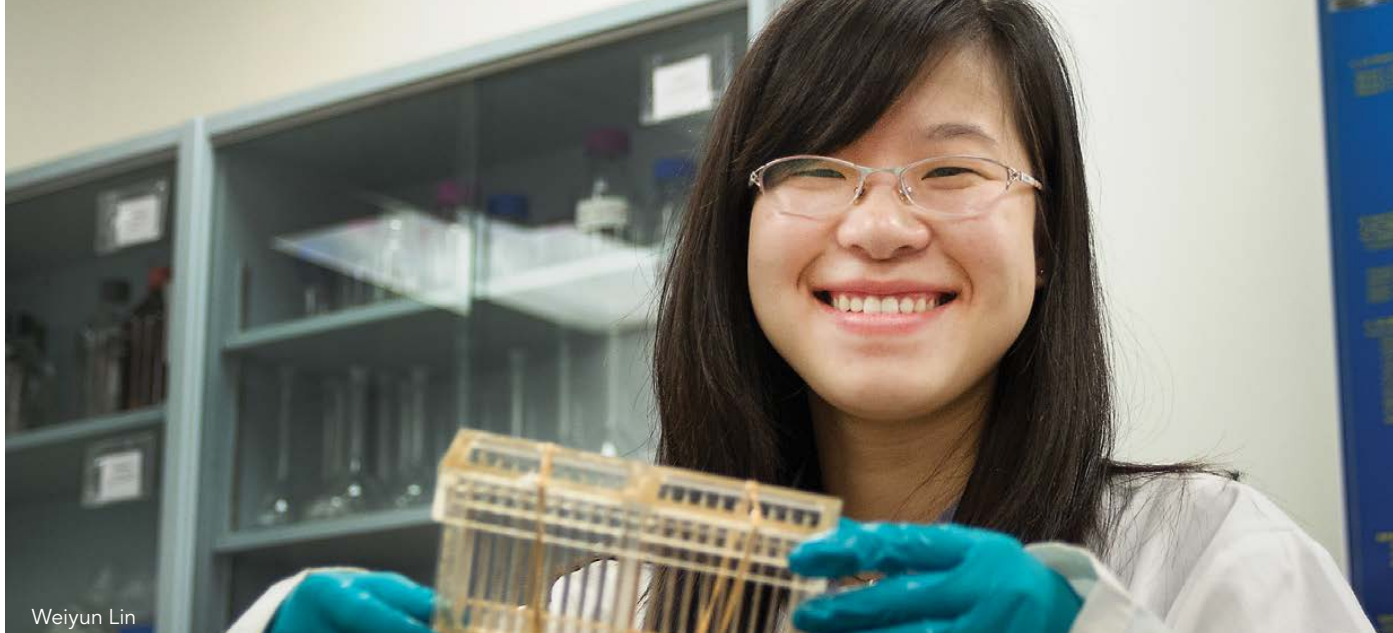
The patterns of brain blood vessel change and dysfunction are also being considered over a longer term, with early results indicating that increased salt intake and age may also play a role in the probability of RA patients developing cardiovascular problems. Dr. Daneshtalab also believes that a specific protein called interleukin 17 may be a key protein connecting arthritis and the constriction problems in question. These observations, in combination with the success of her students and laboratory team, have her excited about the research.

“We are still in the early stages but there is a lot to be enthusiastic about,” she said. “I can’t emphasize enough the important contributions my students have made. When they come into my lab, what they might lack in experience they make up for with enthusiasm and a fresh perspective. It helps me continually re-evaluate and look at things differently, and that’s the key to good science.”

Mr. Pearce added that it was rewarding to play even a small role in the research process.

“The patients that we are trying to help have complex problems that need solutions. The ultimate goal for Dr. Daneshtalab is to identify the most appropriate drugs that will help manage high blood pressure, specifically for those individuals suffering from RA. Her research is not just about saving lives but also improving the quality of life for many people. It feels good to be a part of that.”





Weiyun Lin

PHOTO CREDIT: CHRIS HAMMOND

## Understanding the **ROOT OF THE PROBLEM**

by Jackey Locke

**WITH ANY THRIVING INDUSTRY** comes environmental concerns and mining is no exception.

Tailings, or waste from mineral processing operations, are a major focus of environmental engineers. Although many studies have been conducted on the weathering process of tailings, some component transformation reactions within the system remain unclear, according to Memorial graduate student Weiyun Lin.

Ms. Lin, who completed her undergraduate degree in environmental engineering in China and her masters degree in environmental systems engineering and management at Memorial, is currently completing her PhD research on the behaviour of sulfur species in the tailings environment. The more she explored the topic, the more interested she became.

“Some studies of environmental engineering emphasize the pollutant treatment process and its optimization. I am more interested in exploring the transport and fate of pollutants, to know what is going on in the black box. My research requires knowledge and lab work related to both microbiology and chemistry, and every research endeavour is challenging, exhilarating and inspiring,” said Ms. Lin.

The disposal of mining and metal-refinery wastes has become a major ongoing and widespread environmental concern. Acid mine drainage from tailings and waste rock produced by mining operations tend to contain high metal concentrations with low pH levels due to the various physical, chemical and microbiological weathering processes.

The intermediate sulfur compounds, or thiosalts, are of great importance due to its resistance to conventional treatment processes and its potential to generate acidity and deteriorate water quality. The stability of the sulfur compound and its treatment and disposal are dependent on the chemical and biological compositions of the residue and the tailings pond.

According to Ms. Lin, the chemical effects on the sulfur transformation have been widely documented but in-depth studies on the microbiological effects on the sulfur transformation in the mine tailings environment are limited.

Ms. Lin works under the supervision of Dr. Helen Zhang, who encouraged her to pursue this topic as part of her PhD.

“Dr. Zhang emphasizes that a PhD study should be of substantial depth and broadness and provide opportunities to involve multiple projects and to build one’s skills. She teaches us how to become motivated and that has made my experience at Memorial an enjoyable one,” said Ms. Lin.

# NAVIGATING AN EMERGENCY:

## Simulation takes training to the next level

by Michelle Osmond

**WHAT IF YOU WORKED OFFSHORE** and suddenly found yourself in an emergency. Could you navigate your way to safety? What sort of training do you think would most help you survive?

A group of researchers, including Human Kinetics and Recreation masters student, David Bradbury-Squires, wanted to find out. After all, maritime accidents represent a significant risk to the health and safety of employees and although traditional training might inform about escape, evacuation and rescue procedures, actual training for offshore workers for an emergency is very dangerous.

That's where simulation comes in. As part of a number of projects looking at offshore training, Mr. Bradbury-Squires and the rest of the team studied spatial learning (the process of encoding and retrieving information about one's environment and orientation) in a virtual environment.

They compared two groups in several emergency response scenarios: The first group actively explored their environment during training (i.e. learned to navigate through the virtual environment by making their own decisions), and the second group watched videos demonstrating evacuation routes and then underwent training where they learned those routes. Participants were then exposed to evacuation scenarios.

What they found was that those who actively explored their environment performed better in an emergency. As Mr. Bradbury-Squires explains, their theory is that those allowed to make their own decisions were better able to link together distant places. "For example, when



David Bradbury-Squires

PHOTO CREDIT: CHRIS HAMMOND

confronted with a hazard in a known route, participants in the first group seemed to be able to say 'Instead of taking this stairwell which is close to a fire, I know that if I cross this corridor then I can get to an identical stairway on the opposite side'. Essentially, participants in the first group could better create a global overview of their environment."

The group, led by Drs. Scott MacKinnon, Brian Veitch and Duane Button, also found that participants experienced with video games performed better. "It's likely that participants who had video game experience paid less attention to the interface and controller and thus spent more of their training learning how to navigate through the virtual environment," noted Mr. Bradbury-Squires. "We were surprised by how large a contribution prior experience with video game seems to have with performance in the virtual environment."

As a native of Newfoundland and Labrador, Mr. Bradbury-Squires wanted to contribute to the needs of his province. "Although simulation training in virtual environments has been used in other industries, the use of this type of training in the offshore oil industry is in its infancy, meaning that I could participate in the potential development of new and improved training paradigms for offshore workers." The study is part of his master's thesis, simulation training in a virtual environment of an offshore oil installation. Funding for the project came from the Atlantic Canada Opportunities Agency's Atlantic Innovation Fund. Mr. Bradbury-Squires also received an Ocean Industries Student Research Award from the Research & Development Corporation of Newfoundland and Labrador to support his research.





Stephanie Pile

# GRANDMOTHER MINNIE MAKES GOOD BOOTS:

Creating Innu language children's books

by Janet Harron

**STEPHANIE PILE IS A MASTER'S STUDENT** in linguistics but she's also receiving quite an education in publishing as part of her work on Dr. Marguerite MacKenzie's Innu Language Project ([www.innu-aimun.ca](http://www.innu-aimun.ca)).

A true collaboration between university researchers, Aboriginal organizations and government departments, the Innu Language Project's outcomes have included the development of the Innu-English-French dictionary, glossaries for workplace vocabulary and curriculum materials including 40 children's books published to date.

Ms. Pile is originally from Ontario with an undergraduate degree in linguistics and cognitive science with a minor in Indigenous studies from McMaster University. Dr. MacKenzie, who was aware of her background in Iroquoian and Algonquian languages, invited her to join a growing team of graduate and undergraduate students working with the project.

She's using that background in her work as an archival assistant compiling Innu language children's books for use by project partner Mamu Tshishkutamashutau (the Innu school board).

Although many children are learning Innu as a first language, Ms. Pile explains that historically the majority of primary reading materials have been in English.

"One of the issues has been a lack of printed materials — if children are learning to read in a second language, they are already at a disadvantage," explained Ms. Pile. "The hope is that if we can get more materials into schools to assist with primary reading levels, then parents and teachers would be able to use those materials to help children learn to read in their first language."

These books include works that have been translated into Innu, as well as original works created through writing workshops in the community.

To illustrate, Ms. Pile produces a beautiful softcover book entitled *Nukum Mini minu-massinitsheu* (Grandmother Minnie makes good boots), lavishly illustrated by Elizabeth Jancewicz. Originally written in Naskapi (an Algonquian language related to Innu) using syllabics (a writing system in which each character represents a syllable), it has now been translated into Innu, including a glossary and English translation for reference.

"Dr. MacKenzie works with fluent speakers to translate the books into the two dialects of Innu spoken in Labrador, Sheshatshiu and Mushuau. It's my job to update each individual page with these translations, and then format the books for publications," explained Ms. Pile. However, there are unique difficulties in translating from English into Innu.

English and Innu are very dissimilar and there is often only one way to say something in English but multiple ways of saying the same thing in Innu. In English, the verb "fishing" can be used regardless of whether you're fishing for cod, salmon or plaice. In Innu, there are different verbs depending on what is being fished. Unushu-kusseu means "she fishes for cod" while nutshipapakatishueu means "she fishes for plaice."

Back in the 1980s, the Circle Book series was originally published in English, designed to be ESL books with content and illustrations that children living in First Nations and northern communities could relate to. Ms. Pile has also been working towards the publication of these books in Innu.

"The Circle Books are particularly challenging because the original publication files don't exist anymore," said Ms. Pile. "We've had to start from scratch, scanning the images and using programs like Photoshop to manually replace the text and scale the images."

Ms. Pile has also worked on overall formatting of the two latest workshop books, which emerged from Dr. MacKenzie's strong relationship with Mamu Tshishkutamashutau. Over a two-year period, book-writing workshops with Innu teachers from Sheshatshiu and Natuashish were held to create original stories in Innu for the children of the communities. The result? Over 20 books in Innu and English with original artwork, printed by Memorial's Printing Services, and now available in schools throughout Labrador.

Ms. Pile finds great satisfaction in her work.

"The ongoing development of language resources is essential for the Innu language to continue to thrive. Working with the Innu Language Project makes me feel like I'm making a real difference. Even though I can't speak Innu, this is something within my capacity to do that has a direct impact," she said.



## Potential impacts of **GENETICALLY MODIFIED FISH** interbreeding

by Kelly Foss

**STUDENT RESEARCHERS TOOK THE LEAD** on a paper that illuminates an over-looked avenue for ecological impacts should genetically modified (GM) animals escape containment.

The paper, titled *Hybridization between genetically modified Atlantic salmon and wild brown trout* reveals novel ecological interactions, was released in the Royal Society journal *Proceedings B*.

The lead author is former Memorial undergraduate student Krista Oke, who did her honours thesis with Dr. Ian Fleming of the Department of Ocean Sciences. In addition to Dr. Fleming, the other co-authors are Dr. Peter Westley and Dr. Darek Moreau, former Memorial PhD students.

“Interest in the use of GM animals for human consumption is mounting, and currently the US Food and Drug Administration is evaluating the environmental risk of GM salmon produced by AquaBounty Technologies for aquaculture production,” said Dr. Westley.

“Substantial work has shown the risks of GM salmon interacting with members of their own species, but what has not been done before, and what our paper sought to do, was to investigate what would happen if a GM salmon should escape and interbreed with closely related brown trout.”

The researchers successfully interbred GM salmon with wild brown trout, two naturally hybridizing species, and saw the offspring indeed carried the modified gene.

“The GM hybrids grew really fast, faster than non-GM salmon and they survived well enough to out-compete and reduce the growth of non-GM salmon in semi-natural conditions in the lab,” said Dr. Westley. “These results emphasized that potential interbreeding of a GM animal and a closely related species needs to be considered in risk assessments.”

Dr. Westley adds that the results provide empirical evidence of the successful first steps towards incorporation of foreign genes into the genomes of new species.

“Although we think it’s highly unlikely, if GM hybrids are then able to breed with a brown trout, the foreign growth gene could potentially jump between species via hybridization,” he said. “Broadly speaking, our study shows that hybridization between species is a potential route for new environmental impacts and novel avenues for interactions between GM animals and wild counterparts, though even the likelihood of significant ecological effects due to hybridization will be low given rates of hybridization in nature. Things may be increased slightly through escapes of domesticated farmed fish.

“Ultimately, we agree with AquaBounty’s proposed plan and efforts to ensure containment and sterility so GM salmon can’t interbreed — not only with their own species, but other species as well. Sterile, all-female populations in land-based facilities with redundant biological and physical containment would considerably reduce the likelihood of such environmental risk.”

# Suicide prevention IN LABRADOR

by Sharon Gray

**SUICIDE IS A CRITICAL HEALTH ISSUE** in Aboriginal communities in Labrador, touching many lives and prompting community leaders to look for solutions.

Nathaniel Pollock, a PhD student in the Division of Community Health and Humanities, is trying to help with those solutions. He is co-supervised by Dr. Michael Jong, who has worked in Happy Valley-Goose Bay since 1982 and has close connections with the community; and Dr. Shree Mulay, associate dean of the Division of Community Health and Humanities, who has done extensive research with vulnerable populations and in women's health.

Mr. Pollock initially became interested in finding out more about suicide prevention while he was working in Happy Valley-Goose Bay in 2008-2009 as a social worker while his wife, Dr. Margo Wilson, was a resident in the Faculty of Medicine's Northern Family Medicine Training Program (NorFam). Regarding his decision to change career paths and start a PhD, Mr. Pollock said, "I think the health system and communities can do a better job of engaging young people and providing care and support during times of crisis."

He sees research as playing an important role in providing evidence that is directly relevant to local issues such as suicide.

In 2010-2011, Mr. Pollock completed his course work in St. John's, then moved with his family back to Labrador, where he works out of the Labrador Institute, and while his wife is practising at the Labrador Health Centre. "This was a strategic decision related to my research," said Mr. Pollock. "We like the lifestyle and feel connected socially, which is important in gaining trust in community research."

Mr. Pollock said suicide in Labrador is about three times the rate in Newfoundland and a leading cause of death in some communities.

"Research in this area must be approached carefully and slowly and with a great deal of respect," said Mr. Pollock, who began his research by talking to people throughout the region.

"Suicide has affected a lot of communities, and people in these communities have perspectives to share. I want to find out what people know and what ideas they have about how suicide can be prevented."

In May 2012, Mr. Pollock held a day-long community workshop with frontline mental health staff to talk about what types of programs and interventions are already happening on a local level, and about how research might help provide information to service providers.

Although he is a long way from coming up with solutions, Mr. Pollock said he has been able to take anecdotal information and translate it into research questions. "We know that one concern is about the extent to which there's continuity in mental health services."

Based on feedback from local Aboriginal governments, community members, and those in the health system, Mr. Pollock has started to look at the medical and social histories of people who have died by suicide and those that are at risk. "I am really interested in understanding how the mental health and health systems respond when a person is known to be at risk for suicide. I hope my research can tell us something about how to improve care in this area and keep people from falling through the cracks."





# OF NOTE

## Graduate enrolment continues to break records

**FOR THE PAST FIVE YEARS**, total enrolment at the graduate level has continued to climb. The number of students enrolled in master's or doctoral programs at Memorial went up by 5.3 per cent to 3,565 in fall 2013 from 3,386 in fall 2012. Graduate enrolment has increased by 14.3 per cent over past two years.

"Enrolment in our doctoral programs increased by almost 15 per cent this past year," said Dr. Noreen Golfman, dean, School of Graduate Studies (SGS). "This kind of growth is essential to Memorial and its goal of becoming a world-class research-intensive university."

The results of the newly completed 2013 Canadian Graduate and Professional Student Survey, a Canadian Association for Graduate Studies-administered survey in which 48 Canadian universities participated, suggest Memorial University surpasses the national averages in the areas of academic, research and student life experience.

Memorial's growing international profile has also been noteworthy. International graduate enrolment increased by 14 per cent over the past year. For its effort in this area, the SGS was awarded the 2013 National Association of Graduate Admissions Professionals Promotion of Excellence Award. In addition to its work with Memorial's International Centre on expanding international partnerships and programs, SGS has also recently created new funding packages aimed at increasing the quality and diversity of graduate students at Memorial.

Memorial has launched a number of new graduate programs over the past year, including the graduate diploma in safety and risk engineering, master of health ethics and PhD programs in philosophy and nursing. There are currently more than 100 graduate degree options at Memorial. Information about all programs can be found at [www.mun.ca/become/graduate](http://www.mun.ca/become/graduate).

## \$890,000 investment in student-led oceans research

**STUDENT RESEARCHERS AT MEMORIAL** have received a funding boost thanks to the Research & Development Corporation's (RDC) Ocean Industries Student Research Awards. Approximately \$890,000 has been awarded to 15 graduate and doctoral students, and their supervisors.

"I would like to commend the Research & Development Corporation for creating this program in support of student researchers," said President Gary Kachanoski. "Memorial University prepares its students so that as graduates, they can help this province and the world into a future marked by economic growth, sustainable development and an abiding respect for society. This would be impossible without the support we receive from like-minded partners like RDC and the government of Newfoundland and Labrador."



PHOTO CREDIT: CHRIS HAMMOND

Recipients of the 2013 Ocean Industries Research Awards with President Gary Kachanoski, Glenn Janes and Charlene Johnson.

The Ocean Industries Student Research Awards program will fund six doctoral candidates and nine master's candidates from the Faculty of Engineering and Applied Science, the Faculty of Science and the School of Human Kinetics and Recreation. Awards range from up to \$20,000 per year for master's candidates and up to \$30,000 per year for doctoral candidates.



## School is in for new PhD nursing students

**THE FOUR STUDENTS** enrolled in the School of Nursing's new PhD in nursing program are excited to be part of this inaugural group.

While their backgrounds are diverse and varied – everything from nursing education, cardiovascular nursing and injury prevention – they have at least one thing in common: they each have nursing degrees from Memorial.

"I'm excited about the cohort of students we've recruited. They bring rich and varied perspectives to the program," said Dr. Judith McFetridge-Durdle, who completed her tenure as dean last fall. "We'll learn as much from them as they will from us."

The School of Nursing's PhD program is full time and on-site, which sets it apart from other PhD programs, most of which are offered part time and via distance.



PHOTO CREDIT: JOHN CROWELL

From left are PhD nursing students Darlene Ricketts, Jill Bruneau, Denise English and Kathleen Stevens.

Dr. McFetridge-Durdle credits the hard work and leadership of Dr. Shirley Solberg, former associate dean of graduate studies and research at the school, along with the PhD planning committee, for bringing the program to life.

The new program will help advance nursing knowledge, skills and evidence-based practice within the province and across the country. It will also help attract and retain PhD-prepared faculty, something that is getting more difficult, as PhD-educated faculty are in high demand in Canada, and 50 per cent of them are over the age of 50.

## Memorial student wins SSHRC Storyteller competition

**KIRK LUTHER'S** creative and compelling submission to the SSHRC Storyteller competition has won top prize in the nation-wide challenge.



SUBMITTED PHOTO

Kirk Luther

Mr. Luther, currently pursuing a M.Sc. in forensic psychology, showcased his research with a video that uses music, text and imagery to clearly explain his project, *Creating a Better Tomorrow: Protecting Youth's Legal Rights*.

The SSHRC Storyteller Challenge invited students from across Canada to develop a creative pitch that outlined how research in the social sciences and the humanities is helping us to understand and improve the world around us. The top 25 were chosen to attend Congress 2013, hosted by the University of Victoria, where they were judged by a panel of communicators. The top five were named winners and invited to attend the World Social Science

Forum in Montreal in October.

"The inaugural Storytellers competition set out to recognize new and emerging research communicators and to showcase the positive impact that social sciences and humanities research is having on Canada and the world," said Chad Gaffield, president of SSHRC. "Through their creative, compelling stories, these students stand out as exceptional examples of Canada's next generation of research communicators. Congratulations!"

Margot Maddison-MacFadyen, School of Graduate Studies, was also chosen as one of the top 25 students.

## MEMORIAL UNIVERSITY'S STRATEGIC RESEARCH THEMES

In Memorial's Research Strategy Framework, 10 strategic research themes were identified that represent areas of new research opportunity as well as existing areas of research strength.

Research within these themes span the research spectrum — from fundamental to applied research, including creative activity and scholarship. The strategic research themes also span geographies and in each theme, Memorial has research strengths in addressing provincial, national and international contexts.

Much of the research associated with the strategic research themes is not limited to any one theme; the inter-connectedness among them is a strong defining feature of research at Memorial. It is also important to note that there will be opportunities for researchers to address issues and opportunities outside these thematic areas.



### ABORIGINAL PEOPLES

Research under this theme relates to the pre-history and history of Aboriginal peoples, as well as to contemporary issues and opportunities in Newfoundland and Labrador, nationally and internationally.



### ARCTIC AND NORTHERN REGIONS

Research under this theme relates to people and communities, environment and resources, approaches and technologies for sustainable resource development, and land, ocean and coastal zones in arctic and northern regions.



### COMMUNITY, REGIONAL AND ENTERPRISE DEVELOPMENT

Research under this theme relates to building the capacity of people, organizations, communities, industries, and enterprises to foster social and economic prosperity and development in rural and urban communities, neighbourhoods and regions.



### CREATIVE ARTS, CULTURE AND HERITAGE

Research related to creative production and expression; curation and interpretation; and archaeological, historical, ethnographic and archival research in Newfoundland and Labrador, Canada and internationally.



### ENVIRONMENT, ENERGY AND NATURAL RESOURCES

Research related to the environment, development of natural resources (oil and gas, mining, forestry) and the interaction of people, industry and communities with the natural world, locally, nationally and globally.



#### GOVERNANCE AND PUBLIC POLICY

Research related to organizational and corporate governance, public policy and the relationships amongst governments and non-governmental organizations. Corporate governance consists of the collection of rules, processes, and practices that determine the relationship between managers of an organization and those who have a stake in the organization's performance, including shareholders, creditors, employees, customers, and society at large. Governance, more broadly, includes how government bodies develop and implement public policy, and how governments relate to non-governmental organizations in the shared allocation of decision-making and resources for achieving public policy purposes.



#### INFORMATION AND COMMUNICATION TECHNOLOGY

Research related to the theoretical foundations of information and communication technology (ICT), the design and deployment of ICT in a variety of settings, and the evaluation of the use of ICT and its impact on individuals, organizations, and society. It involves research into the study and design of systems that capture, store, transmit, process, and use information in a manner that is efficient, accurate, reliable, secure, profitable, and responsible.



#### OCEANS, FISHERIES AND AQUACULTURE

Research related to the maritime environment, the interaction of coastal people and communities with the ocean and maritime environment, and the scientific, technological and organizational requirements of industrial development in this environment, particularly relating to conditions in the North Atlantic. Fishery and aquaculture, more specifically, include fresh water and marine fish biology and environments and scientific, technological and organizational aspects of fishery and aquaculture industry development, and their related social, community, environmental and public policy characteristics.



#### SOCIAL JUSTICE

Research related to systems and structures that contribute to more humane, equitable and just societies. Its focus is on building the capacity and enabling the civic engagement of vulnerable populations, locally, nationally and internationally, whose voices are seldom heard in addressing the barriers to their well-being and full participation in society.



#### WELL-BEING, HEALTH AND BIOMEDICAL DISCOVERY

Research related to improvement of health and well-being through building research and knowledge provincially, nationally and internationally especially for the people of Newfoundland and Labrador in areas of unique provincial need and opportunity.

For more information about the Research Strategy Framework, including greater detail about the strategic research themes, visit [www.mun.ca/research/framework](http://www.mun.ca/research/framework).

OFFICE OF THE VICE-PRESIDENT (RESEARCH)

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