



UNIVERSITY OF MANITOBA

ResearchLIFE

WINTER 2018 | VOLUME 1

UNCONVENTIONAL SOLUTIONS

FOR KEEPING
STRUCTURES SAFE

IMPROVING CANOLA

Canada's Best Crop

BRIDGE BUILDER

In Peace and Conflict

DRIVEN BY DATA

Improving Health Care

MESSAGE

FROM THE VICE-PRESIDENT
(RESEARCH AND INTERNATIONAL)



When you read this issue, think about where we have come from in society's quest for knowledge and answers. The University of Manitoba and its faculty members have built a legacy of research excellence over its first 140 years.

Our theme for this anniversary year has been one of Identity. As a university, and as individuals, we explore important questions about who we are every day. As scholars, artists and scientists, we know that the right questions have the power to change our thinking—to alter our understanding of ourselves and one another—and create a better future for the next 140 years.

The way we see the world and study our surroundings will be influenced by many factors. We have travelled a great distance in a short span of time, yet there is still some distance to go—and new directions to explore—in many fields of research.

Within this issue you will learn about the legacy of Infectious Disease research from a clinician-scientist who led the way, Allan Ronald. You will also learn about the latest work in our other signature research areas including: population health and human rights and social justice. The future is bright.

—Digvir S. Jayas, PhD, PEng, PAg, FRSC

On the cover: Reinforcement bars at the W.R. McQuade Structures Lab. Photo: Mike Latschislaw



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OF MANITOBA

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ResearchLIFE

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Member of the University Research
Magazine Association: www.urma.org

umanitoba.ca/research

Publication of this magazine
is supported by funding from the
Government of Canada's Research
Support Fund, as is all research at
the University of Manitoba.

ISSN# 1918-144

RESEARCH EXCELLENCE




CIVIL ENGINEER JOHN (JAY) DOERING was inducted to the Canadian Academy of Engineering (CAE) as a Fellow, in recognition of his long service to

the engineering profession and distinguished achievements. Doering was instrumental in working with the Manitoba Floodway Authority when 1997’s ‘Flood of the Century’ hit southern Manitoba and he continues his role on the expansion project committee to this day. Currently serving as associate vice-president (partnerships) at the university, Doering became vice-provost (graduate education) in 2012, after serving as dean of the Faculty of Graduate Studies from 2005 to 2012 and head of civil engineering from 2001 to 2005. CAE Fellows are committed to ensuring that Canada’s engineering initiatives are applied to the benefit of all Canadians.



THE RESEARCH ACCOMPLISHMENTS of Canada Research Chair Marc Del Bigio have been recognized by the Canadian Academy of Health Sciences

(CAHS), which recently elected him as a new Fellow. Developmental neuropathy is his field of expertise, and he is a world expert in the diagnosis of pediatric disorders of the nervous system. “It is a great honour to have been elected to the CAHS,” says Del Bigio. “I hope to use my broad experiences in studies of neurological diseases to offer guidance for future research which will ultimately benefit the health and well-being of Canadian citizens.” An alumnus of the university, Del Bigio has won a number of awards including the 2014 Mentor of the Year from the Royal College of Physicians and Surgeons of Canada. 



A DISTINGUISHED FELLOW

BEST KNOWN FOR TRANSFORMING THE LIVES of tens of thousands of families through his discovery that excessive circulating prolactin caused infertility, living legend and alumnus Henry G. Friesen was recently named a Distinguished Fellow of the CAHS, one of 10 in Canada.

Friesen successfully isolated and purified the human pituitary hormone prolactin, laying the groundwork for other investigators and resulting in the development of an antagonist drug, bromocriptine, to treat this cause of infertility. His research on growth hormones also led to the development of new treatments for children with hormone deficiencies.

Graduating from the university in science and medicine in 1958, Friesen is a Distinguished Professor Emeritus in the Rady Faculty of Health Sciences.

Friesen’s influence on academic medicine extends beyond his own field of research. He developed partnerships between research councils and the pharmaceutical industry and was appointed to a number of leadership positions nationally. He led the transformation of the Medical Research Council of Canada to the Canadian Institutes of Health Research to support the breadth of health research in Canada. He chaired a working group that led to the creation of the Canadian Health Services Research Foundation, and was appointed the founding chair of Genome Canada, the federal government’s lead corporation supporting genomics research in Canada. 

BETTER TOOLS

IMAGINE A NANO-SIZED ANTI-CANCER DRUG that can destroy a breast tumour without damaging the surrounding tissue. Or a self-healing skin graft made from nanomaterials that treat the wounds of people with diabetes. These two biomedical technologies being developed by a U of M research team could greatly improve the quality of life for patients and save millions in healthcare costs for Canadians.

Malcolm Xing, an emerging leader in biomedical engineering and nanomedicine and his team will now have the tools needed to engineer 3D printed nanocomposites for skin grafts used in treating foot ulcers in diabetics. His project is one of four to receive funding from the Canada Foundation for Innovation (CFI) Innovation Fund. U of M teams received \$1.2 million in funding.

“The Innovation Fund encourages institutions and its researchers to think big and strive to be global leaders by conducting world-class research,” said Roseann O’Reilly Runte, president and CEO of CFI. “This funding pushes researchers to aim higher in their pursuits by collaborating

Minister of Science Kirsty Duncan (centre) with students and recipients of the Innovation Fund awards.

across disciplines, institutions and sectors. With this support, institutions can build on their current research strengths and set their sights on accelerating research that will create social, health, environmental and economic benefits for all Canadians.”


Modern radio telescopes collect an overwhelming amount of data every day. U of M physics and astronomy researchers—Stefi Baum, Christopher O’Dea and Samar Safi-Harb—in collaboration with computer science researchers also received funding from CFI to turn the raw data into images and catalogues that astronomers can use to

“The Innovation Fund encourages institutions and its researchers to think big and strive to be global leaders by conducting world-class research,”

investigate cosmic magnetism, the evolution of galaxies, exotic stars, and more. The researchers are collaborating with colleagues at the University of Toronto, who are leading the national multi-million dollar project.

How do corporate tax rates affect international trade?

How do health outcomes vary in relation to provincial policy approaches? Evelyn Forget (community health sciences) will be working with data research centres across Canada to find the answers, through the creation of the Canadian Research Data Network Transition to High Performance Computing: Liberating Data for Research and Policy.

Andrew Frederiksen (geological sciences), an expert in earthquake seismology, is partnering with a team at Dalhousie University to create a National Facility for Seismic Imaging. The team will design, build and operate 120 next-generation ocean-bottom seismometers to serve the needs of Canadian researchers to better understand the seismic activity on the seafloor and how industrial activity impacts it. 



CELEBRATING EXCELLENCE



HISTORIAN ADELE PERRY and composer Michael Matthews were the university’s most recent inductees as Fellows of the Royal Society of Canada (RSC), the country’s most esteemed association of scholars and scientists. Election is considered the highest honour an academic can achieve in the arts, humanities and sciences. The two professors are among 89 new Fellows of the RSC that were honoured at the RSC 2017 Celebration of Excellence (COE), held in Winnipeg from November 23 to 26. The university was this year’s presenting sponsor.

“We are proud and privileged to host you here in the vibrant heart of Canada,” said David Barnard, president and vice-chancellor of the university in his message to new Fellows. “What a wonderful way for us to cap off this year of celebration and reflection, as the nation marks its 150th anniversary, and the University of Manitoba its 140th.”



Joining them as news Members of the RSC College of New Scholars, Artists and Scientists were community health sciences professors Tracie Afifi and Salah Mahmud. The College is Canada’s first national multidisciplinary recognition system. It honours emerging and productive academics for their contributions to society, with an emphasis on those who take interdisciplinary approaches to their research.

Perry is internationally recognized for her award-winning research on the history of colonialism in Canada and beyond. Matthews has been a significant, important figure in the field of Canadian music, composing more than 100 works, including three symphonies, an opera, five concertos and four string quartets.



Afifi’s research program investigates child maltreatment: its effects on a child’s mental and physical health, what factors provide children with resilience to its harms, and what interventions work to halt the maltreatment. Mahmud holds a Canada Research Chair in Pharmacoepidemiology and Vaccine Evaluation and leads research that will develop cost effective ways to prevent and treat some cancers and common infections.

“I congratulate these exceptional individuals on receiving these honours that recognize their outstanding achievements,” says Digvir Jayas, vice-president (research and international) and Distinguished Professor. “They are regarded by their peers in Canada and abroad as exemplary scholars in their fields and are fitting additions to the prestigious RSC. We are proud of their accomplishments.”



A CHANGING CLIMATE

THERE ARE TWO SIDES TO EVERY STORY, and so it follows that among the many challenges our world faces from the monumental effects of climate change, there are also opportunities. This was the focus of the symposium Climate Change: From Challenges to Opportunities held in conjunction with the RSC COE.

Hundreds of symposium attendees—students, RSC Fellows and Members, and the public—attended the free, day-long symposium where U of M experts and others from across Canada discussed this multi-faceted, global issue, and its impact on geography, business, natural resources, the Arctic and national security.

U of M president and vice-chancellor David Barnard opened the day, indicating, “The research clearly indicates that climate change is not something that is going to happen in the future—it is already here.”

“We are now estimating an ice free Arctic in 12 to 14 years,” reported David Barber, Canada Research Chair in Arctic-System Science, in his keynote.

He outlined his findings over the past four decades and his journey from a ‘climate change denier’ [he had not seen evidence 30-40 years ago] to now being labelled as an ‘alarmist,’ due to the scientific evidence validating the changes both in the Arctic and around the world and his sharing of that information.

Barber played a clip of the award-winning *Chasing Ice* video, which captured the largest glacier calving event ever filmed, in Greenland in 2008. “These calving events are producing more icebergs moving into the marine system and are showing up in different places than in the past on the planet,” said Barber.



ABOVE: Arctic waterways are open for longer periods of time

LEFT: (L-R) David Barber and Michael Spence at the symposium.

Michael Spence, the mayor of the town of Churchill, spoke passionately about the challenges that the town has been experiencing with the loss of rail service, due to flooding of the rail line in spring 2017. The flooding occurred due to a ‘storm of the century’ that took place over three days and covered a good portion of North America, with Churchill at the eye of the storm. The town received 100 centimeters of snow in 30 days from three main storms.

“The storm was a wake-up call that climate change is real and is directly affecting us,” said Spence. “We need to develop strategies to adapt.”

He cited other powerful examples of climate change, including four sightings in the past seven years of killer whales in Churchill and the southern Hudson Bay area, and an increase in severe electrical storms.

“The resilience of the people of Churchill has been inspiring,” said Spence. “We view science as being the key driver in helping to plan our new reality.”

In the afternoon, two moderated panels explored issues relating to climate change. Bob Cox, publisher of the Winnipeg Free Press moderated the panel who spoke about the challenges of a changing climate. Later in the day, Paul Samyn, the paper’s editor oversaw discussions on the opposite end of the spectrum: the opportunities.

“The research clearly indicates that climate change is not something that is going to happen in the future—it is already here.”

LEADERS IN THE MAKING



GRADUATE STUDENTS Nickolas Kosmenko, Deirdre Khan, and Jacqueline Hay are investigating issues that affect every aspect of our lives—food, health and activity. The trio were among 166 recipients of the Vanier Canada Graduate Scholarships, who each receive \$150,000 over 3 years.

Vanier scholars are an exceptional group of driven individuals. To receive the prestigious title, they must show a record of excellence in academics, leadership and research.

“We believe in the potential of the next generation of researchers whose curiosity and ambition is driving us towards a bolder, brighter future for all people,” said The Honourable Kirsty Duncan, Minister of Science.

Kosmenko (sociology) will investigate the factors that influence rural Indigenous athletes to participate in varsity sport. Khan (biological sciences) will focus on how we can improve canola seed yield and nutrition. Hay (kinesiology and recreation management) is exploring the complex interactions between genes, the ecosystems of bacteria in the gut, and personal lifestyle factors to see how they relate to risk factors for chronic diseases.

Hay is a Certified Exercise Physiologist who started personal training while an undergrad student, she became aware of a study looking at the role of different intensities of exercise on type 2 diabetes risk in youth. She volunteered as a trainer for the study and that involvement led her to pursue her master’s degree.

“Throughout my research experience I noticed that even when individuals performed the same

ABOVE: 2017 Vanier Canada Graduate Scholarships recipients Jacqueline Hay (r) and Deirdre Khan (l). Missing from photo: Nickolas Kosmenko

amount of exercise that people responded differently—this got me interested in genetic differences,” says Hay. “Then I heard about the Manitoba Personalized Lifestyle Research Program [a U of M project], which I am now a part of. It’s groundbreaking stuff. The research looks at the interaction between lifestyle, genes, and organisms in the gut; it and may play an important role in moving towards personalized medicine.”

Khan is interested in making the oil properties of the canola seed better, including making seeds with more oil. “The nice thing about canola is that [molecules that are not ideal for our health] have been bred out.... But I’d like my project to affect which fats end up in the seed, how much of them, which types of proteins end up in the seed

coat as well—because after they press the oil out of the seeds, the seed coat remains and it’s used as animal feed. So increasing the nutritional value of that is also important. Basically, making a healthier, more productive canola plant.”

“We believe in the potential of the next generation of researchers whose curiosity and ambition is driving us towards a bolder, brighter future for all people.”

The Vanier program honours distinguished Canadian soldier and diplomat Major-General the Right Honourable Georges Philias Vanier (1888-1967), who served as Governor General of Canada from 1959 to 1967. The scholarships are administered by Canada’s three federal granting agencies: the Canadian Institutes of Health Research; the Natural Sciences and Engineering Research Council of Canada; and the Social Sciences and Humanities Research Council. **IN**

INSTITUTE OF CARDIOVASCULAR SCIENCES

BY SHARON CHISVIN



LORRIE KIRSHENBAUM HAS BEEN FASCINATED by the heart since he was a child. Although he can’t say precisely where or why that fascination originated, he does recall that he spent countless hours of his youth thinking about the heart and wondering how it works. By the time he enrolled at the U of M, Kirshenbaum had decided that he was going to build his professional life around the study of that amazing organ.

And that is just what he has done.

Kirshenbaum completed all three of his degrees—a BSc, MSc and PhD in cardiovascular physiology—at the U of M, before pursuing a post-doctoral fellowship at Baylor College of Medicine. He returned to Winnipeg in 1995 when he was recruited to the Institute of Cardiovascular Sciences (ICS) a joint institute of the university and St Boniface Hospital located at the St Boniface Hospital Albrechtsen Research Centre. In June 2017, he was named the institute’s director of research development.

“I never thought I’d come back to Winnipeg,” he says, “but I’ve been able to establish a very fine, productive world-class program here. It was an opportunity that I wouldn’t have had elsewhere.”

Since its establishment in 1988, the ICS has evolved into one of the pre-eminent cardiovascular research institutes in the world. Its researchers hail from around the globe and, like Kirshenbaum, who teaches physiology and pharmacology, all have cross appointments from the university to the institute. Kirshenbaum estimates that 95 per cent of Manitoba’s cardiovascular research takes place at ICS.

Currently, 14 lab groups and 150 personnel share the multidisciplinary centre’s space—imaging, examining, experimenting, publishing and collaborating on groundbreaking research about heart health, disease and prevention.

Kirshenbaum’s 12-person group focuses mainly on the topic of heart failure and, in particular, on why the heart’s cells, in contrast to all other cells in the body, do not regenerate.

“Understanding how the cells die in response to heart attack-like conditions gives us a better idea of how we can develop new therapies and drugs to prevent heart failure from occurring,” Kirshenbaum explains.

“Towards that goal,” he adds, “we’ve identified a particular gene that gets switched on when people have heart attacks. This gene reprograms the heart muscle and tells the heart muscle to die, and in animal model systems, we’ve been able to show that if we can prevent this gene from getting switched on, we can actually prevent heart failure.

“Understanding how the cells die in response to heart attack-like conditions gives us a better idea of how we can develop new therapies and drugs to prevent heart failure from occurring.”

In addition to trying to better understand this genetic influence on the heart, Kirshenbaum’s group has seen significant success in its research related to chemotherapeutic drugs and how and why they induce heart cell damage. But he is equally proud of the advances and achievements being made by all the other lab groups at ICS, in such areas as hypertension, diabetes, diet and exercise.

As the ICS director, Kirshenbaum supports and coordinates the work of all of these separate groups while also ensuring that the institute maintains and enhances its reputation as a pioneer in the field of cardiovascular research.

He also appreciates how fortunate he is. After all, being ICS’s director, as well as one of its top researchers, provides him with the perfect platform from which to do what he has been doing since he was a kid—thinking about and asking and answering questions about that vital organ called the heart. **IN**

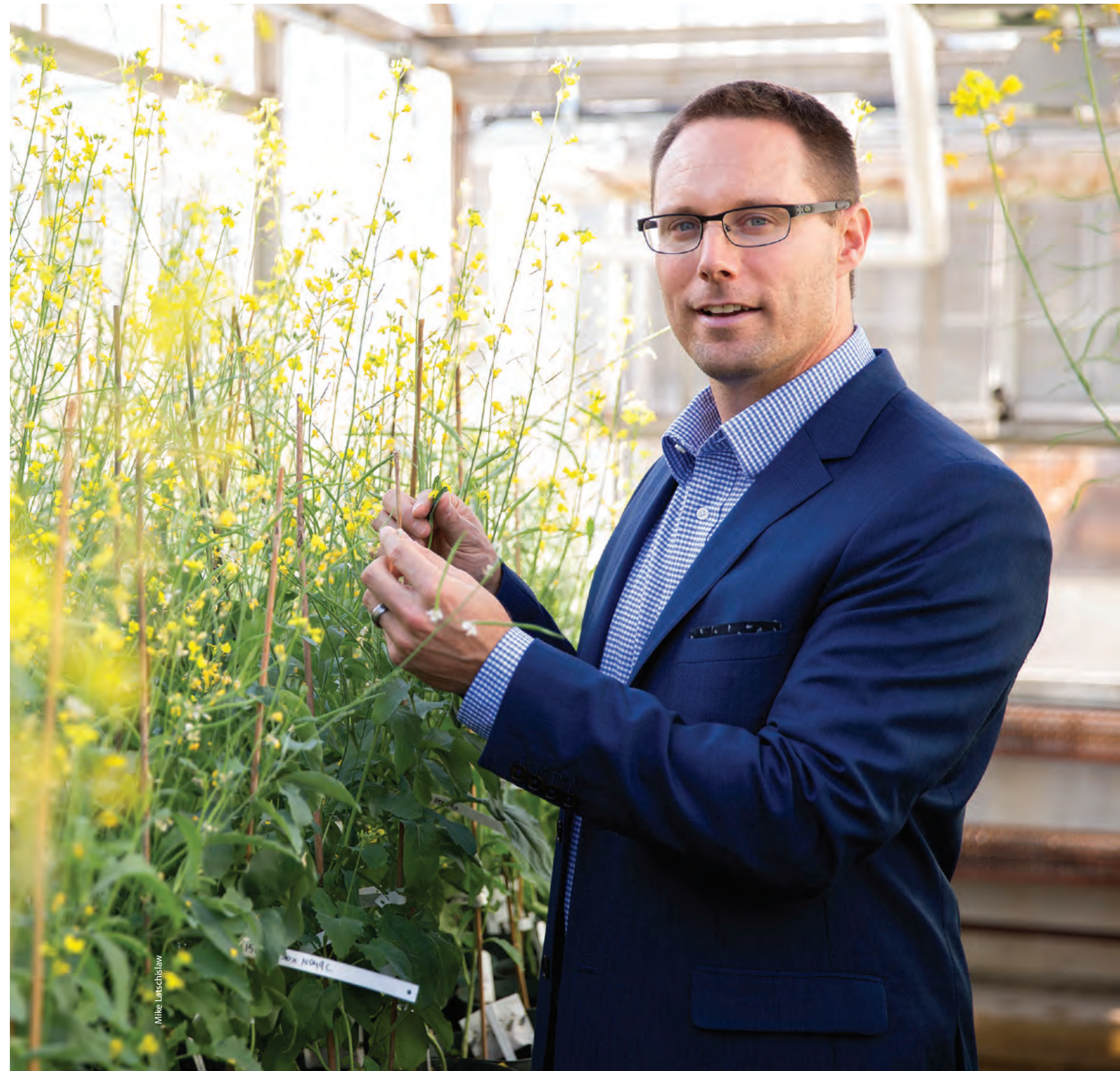
Canada Research Chair in Molecular Cardiology, Lorrie Kirshenbaum in his lab at the St Boniface Hospital Albrechtsen Research Centre

IMPROVING IMPROVING IMPROVING

CANADA'S MOST
IMPORTANT CROP

BY CRYSTAL JORGENSEN

A group of researchers led by plant scientist Rob Duncan is seeking to take a well-known Canadian crop into exciting and underexplored territory. The Brassica Breeding Program in the Faculty of Agricultural and Food Sciences is working to identify and improve canola's protein content and quality, a move that could boost the crop's utility to producers and position it solidly in the highly competitive and growing plant-based protein market.

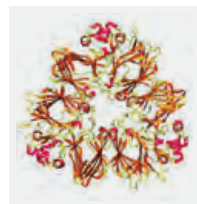


Mike Latschlaw



Mike Latschlaw

“THE FOOD AND AGRICULTURE Organization of the United Nations recognizes the need for more plant-based protein sources for both human and livestock consumption,” says Duncan. Currently, canola’s primary value lies in the oil—but the crop is also the source of other valuable products. Canola meal (what’s left of the canola seed after the oil has been extracted) is one of the most widely used protein sources for animal feed. “If we can increase the protein content and modify the content of the two main storage proteins (cruciferin and napin), the resulting meal and/or protein extracts may be highly valuable in human food products. These developments could transform canola meal from a by-product to a high-value co-product,” explains Duncan. “Due to the previous emphasis on oil and fatty acid content, little research effort has been directed to improving aspects of protein-related traits. Our current research will create an immense opportunity to expand the utilization of Canada’s most



Ribbon diagram of cruciferin A trimer.

TOP: Ashley Ammeter, Robert Duncan, Mohamed Elhiti, Kenny So: Examining populations in the greenhouse that vary for seed storage protein content.

important crop,” says Duncan. “This could be a game changer.” Cruciferin and napin each have specific functional properties valuable in the food industry. Cruciferin acts as an excellent emulsifying, gelling and binding agent. Napin provides strong solubility, the ability to form transparent solutions, foaming properties and excellent nutritional value. Duncan’s group hopes to identify or develop variation for protein content and quality, and understand the genes and mechanisms that control protein content and quality. The result may lead to tailored genotypes for use in specialty, high quality food products. In addition to characterizing the *Brassica* germplasm and genes, the team will explore how the genetic variation interacts with processing methods for developing products with improved protein quality and digestibility. Duncan is working with colleagues in food and human nutritional sciences—James House and Rotimi Aluko—to further understand canola’s protein interaction with processing methods and functionality. He and his group are also collaborators with larger teams of researchers from Agriculture and Agri-Food Canada to expand the understanding and utilization of protein in canola meal.

“THIS COULD BE A GAME CHANGER.”

THE TEAM

Perhaps one of the most beneficial aspects of research conducted in the university setting is the opportunity to provide training of highly qualified personnel, which ultimately contributes to a highly skilled labour force for Canada. The Brassica Breeding Program team includes graduate students and research associates, all who are developing expertise in high demand areas like plant breeding, genetics, genomics, protein chemistry and functionality. The team working on the canola protein research includes: Mohamed Elhiti, Ashley Ammeter, Kenny So, Danica Swaenepoel and Ralph Kowatsch.

“THESE DEVELOPMENTS COULD TRANSFORM CANOLA MEAL FROM A BY-PRODUCT TO A HIGH-VALUE CO-PRODUCT.”

“These are the people that are making the discoveries on a daily basis,” says Duncan. In a short period of time, these students and staff have made notable progress in growing a diversity of Brassica genotypes in the field, analyzing the seed quality, extracting the seed storage proteins and quantifying the contents of cruciferin and napin. Swaenepoel is one of the first students to examine the variation for amino acid content in a diversity of genotypes. Elhiti and Kenny are making significant advancements utilizing genome-editing to study the impact of altered seed storage protein contents on other seed quality traits. Duncan is also quick to highlight the many staff members of the Brassica Breeding Program over the past several decades as well as the immense support from the department of plant science, the faculty, the U of M, the Natural Sciences and Engineering Research Council of Canada, Bunge Canada, DL Seeds, Crop Protection Services, Manitoba Canola Growers and the Canola Council of Canada. “The continued success of *Brassica* cultivar and genetics development would simply not be possible without funding support and many scientists and staff members who have supported the research program in areas such as seed quality, molecular, doubled haploid, data analyses and management, greenhouse, field and pathology research and development.” Duncan says he is “honoured to be a small piece of this tradition and flag-ship program at the University of Manitoba.”

THE CANOLA STORY



IN 1961, A U OF M PLANT BREEDER named Baldur Stefansson—known as the Father of Canola—tackled the challenge of modifying rapeseed, a *Brassica* crop (a genus of plants in the mustard family) used primarily for industrial applications, into a source of healthy oil for human consumption. After years of research and collaboration—and competition with his colleague Keith Downey at Agriculture and Agri-Food Canada, Stefansson released the first canola cultivar, Tower, in 1974, paving the way for other varieties of this healthy oilseed that was ultimately dubbed “canola.” Today the Canadian canola industry contributes over \$26 billion to the economy annually, and heart-healthy canola oil can be found in kitchens and restaurants across the country. From those early days, the oilseed research program at the university has continued at breakneck speed. Stefansson’s work was primarily aimed at lowering components such as erucic acid, a fatty acid component deemed unhealthy to humans, and glucosinolates, pungent organic compounds found in cruciferous plants. Other research leaders such as Peter McVetty, Rachael Scarth and Roger Rimmer developed other cultivars, focusing on oil quality, disease and herbicide resistance and high yields. The university was the first to develop high erucic acid rapeseed (HEAR) varieties, grown for their oil which is used in lubricants, plastics, coatings and some cosmetics. Research was not confined to plant breeding and agronomy. Nutrition studies completed by professors Vivian Bruce and Bruce McDonald found canola oil effective in lowering blood cholesterol, and food quality studies by professors Marion Vaisey-Genser, Michael Eskin and Linda Malcolmson confirmed shelf life and deep-fry stability of canola oil and canola shortening.

REMINISCENCES

ON THE HISTORY OF INFECTIOUS DISEASE AS AN ACADEMIC DISCIPLINE

BY ALLAN RONALD/DISTINGUISHED PROFESSOR EMERITUS



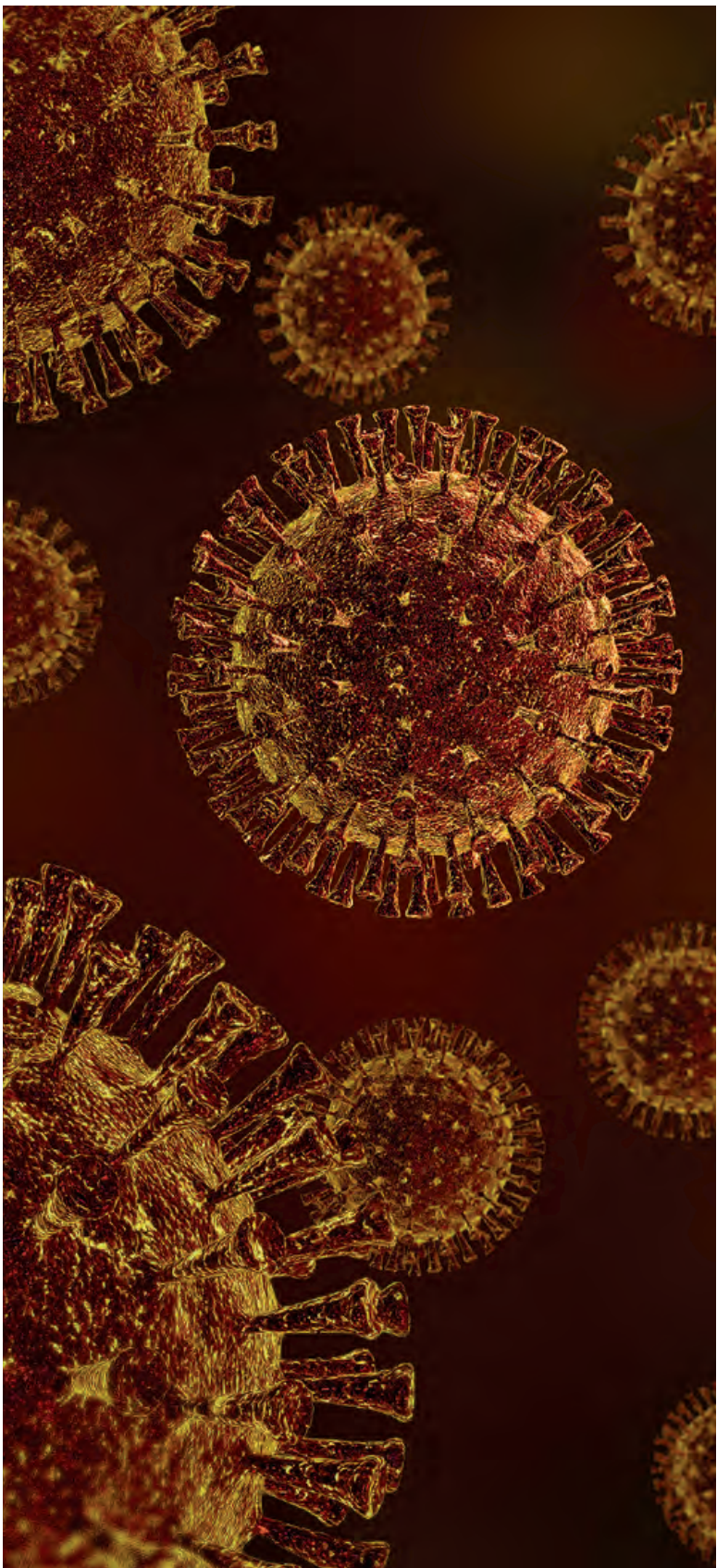
My introduction to Infectious Disease (ID) occurred during my third year in the Faculty of Medicine while working at the Winnipeg King George Infectious

Diseases Hospital. I cared for children with measles, chicken pox, pertussis and an occasional diphtheria case, as well as old and new cases of polio. And I learned that 20 million individuals died globally each year from infections.

ON GRADUATING, I SOUGHT entry to internal medicine programs where ID was prominent and I was rewarded with a residency at the University of Maryland, which included eight months in Pakistan. There, I cared for patients with small pox, typhoid fever and rabies under the supervision of Ted Woodward. I then moved to Seattle for an ID Fellowship. During that time I acquired skills in clinical trials methodology under the mentorship of Marvin Turck. However, no one wanted ID physicians in Canada, so I continued in clinical microbiology with John Sherris.

In 1968, I returned to Winnipeg. Both the dean and the head of internal medicine at the University of Manitoba assured me that sanitation, vaccines and antibiotics made ID an unnecessary discipline. Thanks to Dr. J.C. Wilt, head of medical microbiology, I was offered a position as a clinical microbiologist. But from day one, I was a busy clinician, seeing more patients than I could manage, with opportunities to teach and initiate research.

Winnipeg and the U of M provided the support needed to build the discipline. I recruited trainees locally and from across Canada and mentored them in clinical care and science. Marc Gurwith, a Harvard MD graduate joined me in 1974; Bill Albritton, an MD PhD at Stanford, was recruited by pediatrics to build ID in 1975. As well, two Manitoba MD recruits, Godfrey Harding and Grant Stiver, after ID training in Winnipeg, spent two years in the U.S. and returned with research skills. In 1976, I was selected as Wilt’s successor. Fred Aoki—an exemplary teacher—returned from McGill in 1977 and provided the faculty with expertise in virology and clinical pharmacology. Forty years later, pediatric and internal medicine ID continue to have integrated rounds and shared learning activities.



A PRIORITY OF PATIENT CARE AND KNOWLEDGE-BUILDING

As a group, we shared expectations of clinical excellence. Patient care was the priority. We valued the opportunity to bring clinical microbiology to ill patients and make the lab an exciting venue for learning. And we expected each other to create a research niche in which we would build excellence, seek grant support and generate new knowledge. My initial area was urinary infections and for three decades, with colleagues, we were among the 8 to 10 centres with this research expertise.

I had learned hospital infection control in Seattle. With a nurse colleague, we initiated a hospital-wide program addressing health care-related infections and trained a cadre of 20 nurses.

The medical microbiology administrative staff led by Theresa Birkholz made work fun. Fellows were applying to our program: Tom Marrie, Jim Brunton, Lindsay Nicolle, Greg Hammond, Bill Cameron and Don Low are a sample of the outstanding individuals

who each went onto academic careers that eclipsed my own as ID physicians and scientists.

“WE ENDEAVORED TO COMPETE WITH THE BEST AND PUBLISH IN HIGHLY REGARDED JOURNALS WHERE THE INFORMATION COULD CHANGE THE WORLD.”

In 1975, an epidemic of an ugly, ulcerating sexually transmitted infections (STI) appeared and we recognized it as

chancroid. My fellow, Greg Hammond, pursued the disease, eradicating it from Winnipeg. Then the World Health Organization STI committee, on which I was serving, requested our assistance with a huge chancroid outbreak in Kenya. Margaret Fast, a remarkable ID pediatric fellow, went to Kenya to set up a research program with professor Herbert Nzanze.

Following Frank Plummers’ recruitment in 1981 and the appearance of AIDS, the focus became HIV/AIDS. Frank brilliantly led a series of groundbreaking studies. Robert Brunham joined our group and the enterprise in Kenya and became head of medical microbiology and ID, adding to the expertise in STIs, including the basic biology of Chlamydia trachomatis.

Looking back, what were the lessons? My success was due to colleagues who shared the journey. We focused on sick individuals who needed and valued what we had to offer. Patients also taught us to be good doctors. But research had an equal status from the beginning. We endeavored to compete with the best and publish in highly regarded journals where the information could change the world. The challenge of AIDS and a host of other unknown infections were off in the future. But together we intended to be prepared. ■

CREATING

DAGMAR SVECOVA

UNCON-

IS HELPING KEEP

VENTIONAL

MANITOBANS

SOLUTIONS

SAFE

BY SHARON CHISVIN



Mike Latschlaw

“MOST OF MY WORK IS FOCUSED ON INFRASTRUCTURE AND TESTING NEW CONCEPTS AND MATERIALS.”

A

CIVIL ENGINEERING PROFESSOR and head of the department, Dagmar Svecova specializes in structural engineering research.

“I specialize in the area of reinforced and pre-stressed concrete, fibre-reinforced polymers (FRPs) and timber,” Svecova explains. “Most of my work is focused on infrastructure and testing new concepts and materials.”

Once tested, re tested and approved, these new concepts and materials are applied to and integrated into the construction and rehabilitation of roadways, culverts, bridges, balconies and buildings across the province and around the world. They make infrastructure steadier, sturdier, more robust and more reliable.

Born and raised in the former Czechoslovakia, Svecova came to Canada to pursue a MSc and PhD at Carleton University in Ottawa. In 1998, she moved west to join the U of M as a post-doctoral fellow, and in 2000 was hired as an assistant professor. A dozen years later Svecova was named director of SIMTReC, the Structural Innovation and Monitoring Technologies Resource Centre formerly known as the ISIS Canada Research Network. While she remains a program leader at SIMTReC, Svecova gave up the directorship in 2017 when she was appointed department head.



ABOVE:
Reinforcement cage at the W.R. McQuade Structures Lab.

BELOW:
Concrete cylinders in the structures lab.

Svecova carries out the bulk of her research at the W.R. McQuade Structures Lab on the Fort Garry Campus, with support from Research Manitoba, Manitoba Infrastructure, NSERC, SIMTReC and industry partners. Abetted by a nine-person research group, she designs samples and custom-designed loading frames, conducts testing, analyzes components and data, and imagines and invents new ways to construct, strengthen, renovate and repair essential infrastructure.

Two of Svecova’s current projects involve assessing the performance of high strength concrete as joint fill material for bridge decks, and developing a load testing facility to assess the strength of deteriorating and debilitated steel culverts.

“This will be a unique facility that will enable us to test culverts in conditions very similar to field conditions,” she explains. “Soil-structural interaction is very complex and we can learn a lot from being able to simulate the actual loading conditions in the lab and by monitoring the strains in the structure during load application.”

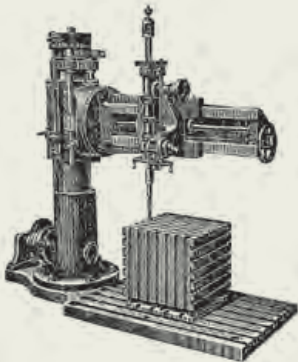
A third project, being conducted in collaboration with Red River College and local engineering consulting firm, Crosier Kilgour and Partners, is researching the development of a new kind of thermal break, or barrier, to help reduce the significant heat loss that occurs in high rise buildings with large concrete balconies.

“I TRY TO HELP SOLVE ACTUAL PROBLEMS THAT ARISE IN THE FIELD USING NEW MATERIALS, MONITORING TECHNOLOGIES, OR INNOVATIVE REHABILITATION SCHEMES.”

“Commercial alternatives of thermal breaks are available but prohibitively expensive,” Svecova says. It is her intention, she elaborates, to create a thermal break that will be both affordable and effective in lowering heat loss, especially during Manitoba’s harsh winters.

“I try to help solve actual problems that arise in the field using new materials, monitoring technologies, or innovative rehabilitation schemes,” Svecova says.

“Usually,” she continues, “the province or somebody comes to me and says we are having an issue with this, and we will look together on finding a solution, and how this problem can be alleviated. Most of the time, as one part of the solution, there will be a model set up in the laboratory for testing.”



TINY WIRELESS ANTENNAE, micro machines and fibre-optic sensors are just some examples of the tremendous strides that the university is making in the area of life-altering technologies. These technologies, the end result of years of diligent scientific inquiry in diverse fields of study, are being designed, developed, tested and perfected in dozens of labs across the university campuses.

At the massive W.R. McQuade Structures Lab, the hands-on home of SIMTReC—the Centre for Structural Innovation and Monitoring Technologies Inc. formerly known as ISIS Canada Resource Centre—civil engineers are injecting construction dowels with fibre polymers, devising fibre optic sensors to monitor the structural health of infrastructure, and loading giant weight-bearing scales with cement to discern cracks and corrosion in bridges and buildings.

In the considerably smaller nano-system fabrication lab, electrical engineer Cyrus Shafai is developing a series of micro electronic mechanical systems that have been successfully integrated into hydro utility towers, implantable medical devices, vehicle air bags and a host of other essential items.

Nearby, Lot Shafai, a former Canada Research Chair in Applied Electromagnetics, is also working with miniscule particles, building tiny compact antennae that are proving highly effective in improving sound quality in navigation, wireless and satellite communication systems. And, in the busy Electromagnetic Imaging Lab, electrical and computer engineers continue to explore innovative ways to use electromagnetic phenomena to enhance biomedical, magnetic resonance and ultrasonic imaging.

These technologies, and hundreds more being imagined and invented on campus, epitomize the university’s commitment to research that enhances the ‘Understanding and Communicating of Information’—one of three cross-cutting themes identified by the Strategic Research Plan as integral to the university’s future success and global recognition.





IN HER DETERMINATION to solve critical structural problems, and in so doing make those structures sounder and safer, Svecova has tested myriad materials and components, and savoured significant breakthroughs. Recently, she helped devise a method to rehabilitate several old bridges in the province that were originally designed and constructed out of lumber.

“We have more than 800 of these bridges in the province,” Svecova says, “and they were built many years ago. Right now the loads are increasing on the bridges and the bridges have been in service for many years, so they need to increase their capacity.”

After months of testing, Svecova and her team decided that the best way to increase that capacity, and strengthen the bridges, was to incorporate fibre-reinforced polymers into the infrastructure. To date, that method has been used to revive about a half dozen local bridges that would be far too expensive to replace.



“WE ALWAYS TRY TO SEE HOW CAN WE SOLVE A PROBLEM UNCONVENTIONALLY AND FOR A REASONABLE COST, OR USE SOLUTIONS THAT, IN SOME CASES, HAVE NOT BEEN APPLIED OR TRIED BEFORE, OR THAT MAYBE NEED IMPROVING.”

ABOVE: Dagmar Svecova with students Arezo Rasouli, Sarah Boila, Saeed Gerami, Dibasadat Yamout-zavareh, Maha Ghaib, Rushangkumar Dave and Heather Stefaniuk.

“We always try to see how can we solve a problem unconventionally and for a reasonable cost,” says Svecova, “or use solutions that, in some cases, have not been applied or tried before, or that maybe need improving.”

In addition to actively seeking these solutions, lecturing students on structural analysis and reinforced concrete, and overseeing her department, Svecova sits on two national committees tasked with developing civil engineering codes for the use of FRPs in buildings and in bridges.

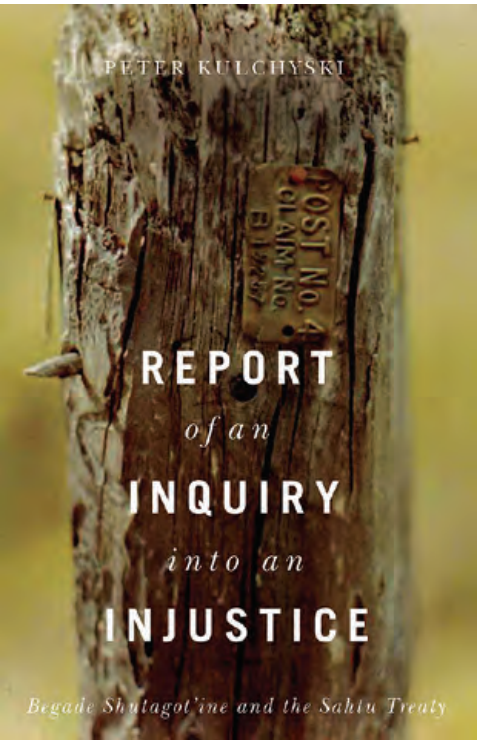
Engineering codes, after all, are essential to ensuring structural safety, and ensuring structural safety is essential to Dagmar Svecova. **R**

A REPORT OF AN INQUIRY INTO AN INJUSTICE

A REPORT OF AN INQUIRY INTO AN INJUSTICE chronicles Peter Kulchyski’s experiences with the Begade Shuhtagot’ine, a small community of a few hundred people living in and around Tulita (formerly Fort Norman) on the Mackenzie River in the heart of Canada’s Northwest Territories. Despite their formal objections and boycott of the agreement, the band and their lands were included in the Sahtu treaty, a modern comprehensive land claims agreement negotiated between the Government of Canada and the Sahtu Tribal Council, representing Dene and Métis peoples of the region. While both Treaty Eleven (1921) and the Sahtu Treaty (1994) purport to extinguish Begade Shuhtagot’ine Aboriginal title, oral history and documented attempts to exclude

Kulchyski bears eloquent witness to the Begade Shuhtagot’ine people’s two-decade struggle for land rights.

themselves from treaty strongly challenge the validity of that extinguishment. Structured as a series of briefs to an inquiry into the Begade Shuhtagot’ine’s claim, this manuscript documents the negotiation and implementation of the Sahtu treaty and amasses evidence of historical and continued presence and land use to make eminently clear that the Begade Shuhtagot’ine are the continued owners of the land by law: they have not extinguished title to their traditional territories; they continue to exercise their customs, practices, and traditions on those territories; and they have a fundamental right to be consulted on, and refuse or be compensated for, development projects on those territories. Kulchyski bears eloquent witness to the Begade Shuhtagot’ine people’s two-decade struggle for land rights, which have been blatantly ignored by federal and territorial authorities for too long.



Peter Kulchyski (U of M Press, 2018)



ABOUT THE AUTHOR

Peter Kulchyski is a professor of Native Studies in the Faculty of Arts at the U of M. He grew up in northern Manitoba and was one of the few non-Indigenous students to attend a government-run Residential high school. He has a PhD from York University and is a senior Canadian scholar in Native Studies. He is the co-editor of *In the Words of*

the Elders: Aboriginal Cultures in Transition and co-author of *Tammarniitt [Mistakes]: Inuit Relocation in the Eastern Arctic*, which won the Erminie Wheeler-Voegelin Prize of the American Society for Ethnohistory.

ABOUT U OF M PRESS

This year marks the fiftieth anniversary of the founding of University of Manitoba Press, the first university press in western Canada. In 1967, UMP’s first editorial Statement of Policy emphasized a commitment to both scholarly books and “Books dealing with topics of particular interest to those living in the Prairie region.” In recent years, UMP’s range of publications has continued to build on this tradition, expanding into new areas such as food studies, environmental studies and gender studies. The press also remains committed to its core publishing areas, including Indigenous studies and Canadian history. **R**

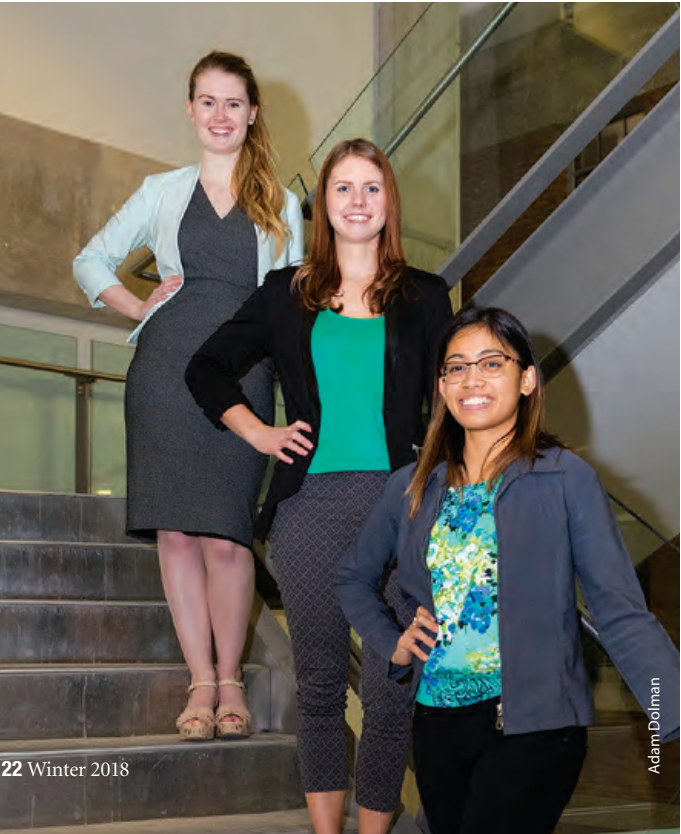
CHANGING THE GAME IN MANITOBA

TEAM HOUR OFF TAKES GRAND PRIZE

BY JENNIFER PEPNECK

MANITOBANS CHALLENGED THEMSELVES to think in new way, from new perspectives, and to work together to find solutions to the biggest problems they could imagine in the final stage of the Game Changer competition. The two-phase competition got underway in September when people from across Manitoba were encouraged to submit an idea—one that identifies real-world challenges with a potential to enact positive change if solutions are found. Seven finalist teams addressing five challenges moved forward to the final competition on November 14.

This year’s Grand Prize and People’s Choice award winners were Team Hour Off. When their team was announced the winner members recall feeling “amazed! We put so much thought into this solution and to see all the hard work pay off was pure bliss. Winning the People’s Choice award made it even more surreal, as we weren’t just the judges’ top choice, but everyone watching loved it too.”



LEFT: Team Hour Off grand prize winners (top) Indigo Adam-Grant, Kira Pearson and Piesebel Berlane Pasco.


The team answered the question: “With technology filling all our free time, how can we reclaim boredom as a productive or creative force?” Team Hour Off members: Kira Pearson (University of Manitoba, Asper School of Business), Piesebel Berlane Pasco (University of Manitoba, Faculty of Science), and Indigo Adam-Grant (University of Manitoba, Asper School of Business) were thoughtful about the problem they worked on and picked one that they had a connection to. “We can all relate with being extremely dependent on technology to fill our free time,” said Team Hour Off.

“With technology filling all our free time, how can we reclaim boredom as a productive or creative force?”

Their solution is to curb people’s addiction to technology by creating a social movement through a community of people committed to one hour a day “screen free.” Hour Off will support this movement through a monthly subscription boxes filled with activities and ideas of things to do for an hour each day that don’t involve screens and create a community of people dedicated to disconnecting every day and being comfortable with themselves in boredom.

Subscription boxes are filled with hour-long activities such as puzzles, board games, books and snowshoes. To make this project sustainable, boxes will come with return labels so that users can return the boxes at the end of the month, allowing the boxes and activities to be reused and allowing consumers to try different activities each month without filling their homes.

What’s next? Team members said they are excited about making their idea a reality after graduation in April. “We will focus on developing a website and home for the community and platform to sell subscription boxes.”

Game Changer solution entries were scored on multiple factors, including novelty of solution, clarity and conciseness (no scientific jargon), feasibility and ease of implementation, entrepreneurial spirit, sustainability and innovation. To learn more about the competition, which will take place again in 2018, visit umanitoba.ca/gamechanger 



UNDERSTANDING SOFTWARE LEARNING IN RURAL CANADA

BY PATRICK DUBOIS

THE FIELD OF HUMAN-COMPUTER INTERACTION investigates how people use computers. We design, implement and evaluate interactive systems to further gain knowledge on human abilities with regards to computers. We can then use this information to build systems that are easier to use, or that help us complete more tasks. It is a multidisciplinary field, including computer science, psychology, and more specialized areas, depending on the application’s domain.

One group of people that we’ve been studying is Canadians in rural and isolated areas. There are unique challenges in these areas, such as lower quality infrastructure. This could lead, for example, to unstable or slow internet connectivity. Of course, as technology advances, it becomes easier and easier for everyone to access these resources, but these upgrades are years away and there will always be some individuals in locations where it is unfeasible to offer infrastructure upgrades. As a consequence, people in rural areas have mentioned that they can only access online services when the skies are clear, or that they have to go to a certain spot outside of town to use their phone, for example. We suspect the way rural and isolated Canadians learn software is similarly affected.


Software learnability is the ability of users to learn how to use complex software. This can both be done through the software itself, or through some external resources. Some popular methods to learn software include software exploration and experimentation, taking

courses, using software manuals and accessing online tutorials. How people learn using these methods can inform us on how to improve upon both the design of software and of external resources. Like Canadians in urban centres, rural individuals use complex software to operate businesses and to connect to online communities. However, they have adopted a different set of commonly used learning methods. For example, traditional classrooms are inaccessible to rural people, so they use online courses with a higher frequency, despite connectivity issues. Alternatively, some users prefer to use in-software documentation so that they don’t have to suffer through slow or unstable internet. Some rural people have also described a sense of mistrust of resources created by an online community, not seen with urban individuals.

“I’m looking forward to exploring solutions with rural Canadians to develop more inclusive technologies.”



Patrick Dubois is a PhD student studying human-computer interaction in the department of computer science, Faculty of Science. He is a recipient of the Doctoral NSERC Canada Graduate Scholarship, as well as the Indigenous Doctoral Excellence Award.

Living in a rural area myself, I understand the frustrations of learning interesting software when resources are inaccessible. Some solutions will simply be to design applications tailored to rural users. However, the more interesting work will be to understand why some of these non-technological issues arise in the first place, such as the mistrust of online communities. In both cases, we will use human-computer interaction research methods to understand our users and develop solutions according to their needs and preferences. I’m looking forward to exploring solutions with rural Canadians to develop more inclusive technologies. 

BRIDGE-BUILDER



BY JENNIFER PEPNECK

**MAUREEN FLAHERTY'S
FIRST VISIT TO UKRAINE
IN 2000 REPRESENTED
A "TURNING POINT"
IN HER LIFE.**

She'd been invited to teach a social work course at the Lviv Polytechnic National University (LPNU) in Lviv, Ukraine. The course was part of the Canadian International Development Agency project titled Reforming Social Services: Canada-Ukraine. Eventually, her experience led her to a career in peace and conflict research.

“WHEN I MET THEM, my colleagues in Ukraine were trying to work through the next steps forward with democracy including reforming and building social services,” she explains.

“When I left Ukraine and the work I was doing there, I vowed to continue to work with these people,” she says. “We looked for projects that we could work on together.”

Flaherty returned to Winnipeg to complete her PhD in Peace and Conflict studies at St. Paul’s College, at the University of Manitoba, the first doctoral program of its kind and one of only few programs like it in the world. “I finished my PhD in Peace and Conflict studies based on research conducted in collaboration with the people I met in Ukraine. That first trip to Ukraine ... was really life changing for me,” says Flaherty.

“WHEN I LEFT UKRAINE AND THE WORK I WAS DOING THERE, I VOWED TO CONTINUE TO WORK WITH THESE PEOPLE. THAT FIRST TRIP... WAS REALLY LIFE CHANGING FOR ME.”

Now her research brings together the volunteers, NGO workers, government groups and academics working with internally-displaced people and already-present community members to address different community needs. She helps people collaborate on research to make connections and better understand their common world, supporting the development of democracy and peace and conflict education halfway across the globe.

In December, Flaherty travelled to Ukraine to further develop their research program by adding Participatory Action Research a collective, self-reflective inquiry process to understand and empower people with increased control over their lives in educational institutions, supported by Academics Without Borders (AWB), an organization that fosters post-secondary education in countries around the world. Working with faculty members at Lviv Polytechnic, she facilitated a five day AWB participatory research workshop, ‘Building Community Capacity through Participatory Research’, to inform the development of a culturally appropriate research course for graduate students.

The objective of the AWB workshop is to bring together people from different parts of the country in conflict to do research and work on a common problem. Workshop exercises and participating in research allows participants to know each other better and start to build



ABOVE: Maureen Flaherty, assistant professor in peace and conflict studies.

“MOST OF THE WORK I DO IS ABOUT BRINGING DIVERSE COMMUNITIES TOGETHER TO FIND OUT ABOUT THEIR COMMON QUESTIONS AND CONCERNS.”

bridges in and between their communities.

“A lot of the organizations involved know each other but they don’t often have the time to stop and get together and look at common concerns. How we might meet both agendas, further develop community and assess what the community needs while at the same time help the university develop its research agenda,” says Flaherty.

The research workshops help people to learn more about their own groups and others. For example, one exercise requires them to do parts of a needs assessment

together. Participants decide on research questions, the data they will collect and how they will do it. Often participants in the workshop see potential in the information for further collaborative research. At the end of the workshop, participants complete a survey about what they found most useful. The survey results will be used as the foundation for Flaherty and other academics at LPNU to further develop the research course for students.

Summarizing the outcomes of her work, Flaherty says, “The research helps people ask questions and develop tools that will assist them to understand and live better in their own environments, enabling participants to connect better with the people around them.

“Most of the work I do is about bringing diverse communities together to find out about their common questions and concerns—bridge building between these different groups,” she adds.

“It is a real privilege.”

HUMAN RIGHTS AND SOCIAL JUSTICE



WINNIPEG AND MANITOBA have a deep history of social justice and human rights activism. As the home of the National Centre for Truth and Reconciliation and with national and international attention focused on the Calls to Actions from the Truth and Reconciliation Commission of Canada, the university is well placed to lead research, scholarly work and creative activities for human rights and engagement in Indigenous communities.

University researchers engage extensively with knowledge development and dissemination, and are responsive to the growing field of Indigenous self-determination, a part of which is the revitalization, growth and celebration of Indigenous worldviews, knowledge, languages and practices.

Hundreds of university researchers on human rights and social justice cross departmental and disciplinary boundaries. These collaborations find a home in and are supported by the Arthur V. Mauro Centre for Peace and Justice; the Centre for Professional and Applied Ethics; the Centre for Human Rights Research; RESOLVE; the Manitoba First Nations Centre for Aboriginal Health Research; the Centre for Environmental Health Equity; the Health, Leisure and Human Performance Research Institute; and the Canadian Journal of Human Rights.

The university has Canada's first and only doctoral program in Peace and Conflict Studies, which seeks to prepare leaders in the many contexts that encompass peace and conflict locally, nationally and internationally.

On December 8th, alumnus Arthur Mauro, OC, OM, QC, [BA/49, LLB/53, LLM/56, LD/87] announced a \$5 million gift from the Mauro Family Foundation to the university's Front and Centre Campaign. The funds will be used to endow a cross-faculty Chair in Human Rights and Social Justice and support local and international peace-building initiatives.

BIRD BRAINS AND BACKYARD MAPPING

THE UNDERGRAD RESEARCH POSTER COMPETITION

BY JENNIFER PEPNECK

MORE THAN 100 U OF M UNDERGRAD STUDENTS had the opportunity to practice their presentation skills and research creativity at the Undergraduate Research Poster Competition, now in its 13th year. The competition showcases undergrad passion and research expertise via research posters.

This year, Hera Casidsid and Leanna Fehr each took first place in the competition’s categories of natural sciences and social sciences and humanities, respectively. This year, Hera Casidsid and Leanna Fehr each took first place in the competition’s categories of natural sciences and social sciences and humanities, respectively.

BIRD BRAINS AND SOCIAL COGNITION HERA CASIDSID

Tell me about your research project. My project is all about exploring the social cognition of pinyon jays, a big-brained bird in the crow family. Humans behave differently depending on who they are with, and we are interested in investigating whether pinyon jays share this same ability.

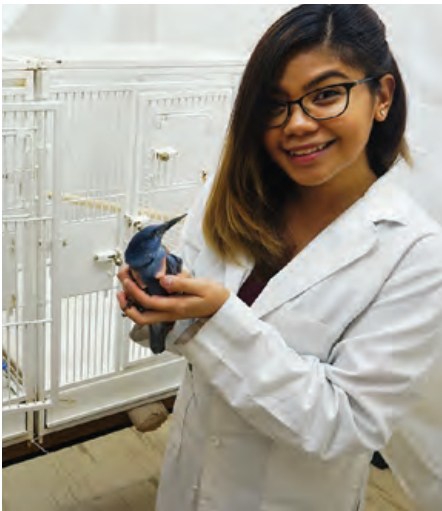
How did you get involved in this research? I am very interested in the brain and how it functions, as well as social factors that affect the way we think, leading me to examine potential advisors in the area of cognition. My research supervisor is professor Debbie Kelly, Canada Research Chair in Comparative Cognition, Faculty of Arts.

What do you think is the most exciting part of your research? I am most excited about the results. Once data collection is complete, it

would be interesting to know whether pinyon jays, like humans, possess the ability to differentiate between two individuals and modify their behavior accordingly.

What do you love most about this project? I love that I got to work with animals in this project. I was surprised to know that behaviour of animals can be that complex, we don’t give them that much credit. It was also a different experience compared to working with humans as participants.

Any words of advice to other students who might be considering getting involved in research? Don't be discouraged by the challenges that arise while you're doing your research project. Face these challenges and it'll be a good learning experience. I assure you, it will be very rewarding.



TOP: Hera Casidsid (left) in the lab with a pinyon jay. Leanna Fehr (right) with friend and mentor Susan Crawford-Young on the Manitoba Escarpment. CENTRE: Meadow in the Manitoba Escarpment that has never been broke for cultivation. BOTTOM: Pinyon jays enemy condition (left). Grassland native species (right) Big Blue-stem (Andropogon gerardi).



GRASSLANDS MAPPING LEANNA FEHR


Tell me about your research project. My research focused on mapping the location of grasslands and how they are valued and used on the Manitoba Escarpment. I've collaborated with organizations and people in the area. The research will involve sharing their perspectives and knowledge about grasslands.

“CONNECT WITH PEOPLE WHO ARE DOING SOMETHING YOU ARE INTERESTED IN, THEN SEE HOW YOU CAN BECOME INVOLVED.”

How did you get involved in your research? I wanted to pursue a project along the Manitoba Escarpment because I had always been fascinated by it, having grown up in the area. I approached several people from my community and asked them if I were to do research, and what would be most useful? They suggested I focus my study on the grassland habitat remaining because it’s one of the most vulnerable habitats globally. My research supervisor is professor Jill Oakes at the Clayton H. Riddell Faculty of Environment, Earth, and Resources.

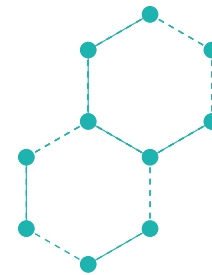
What is the most exciting part of your research? The most exciting part was being able to work in my own backyard. Several land-owners that participated in the interviews offered me a tour of their grassland areas. It was fascinating to learn more about these landscapes from people that work closely with the land.

What do you love most about this project? I love that the project challenges so many of my interest areas and I've really grown as a person and as a researcher throughout the process. The project challenged my skills in collaborating, storytelling, planning and organizing. Seeing everything coming together after a lot of hard work has been extremely rewarding.

Any words of advice to other students who might be considering getting involved in research? Connect with people who are doing something you are interested in, then see how you can become involved. 

DRIVEN BY DATA

BY
ALISON
MAYES



**WHEN MALCOLM DOUPE
WAS A GRADUATE STUDENT,
HE GOT HIS FIRST GLIMPSE
AT HOW DATABASES CAN
BE PROBED TO REVEAL
NEW EVIDENCE ABOUT
PEOPLE'S HEALTH.**

For his master's thesis in kinesiology at the U of M, he created formulas to estimate people's muscle mass loss as they age, then applied the formulas to data from national surveys. "That's what got me into big data systems," says Doupe, now an associate professor of community health sciences in the Max Rady College of Medicine.



ABOVE: Malcolm Doupe at River Park Gardens Personal Care Home in south Winnipeg.

DOUPE IS STILL FASCINATED with using computers to dig into data sets, exposing patterns and correlations that can be used to inform health policy. He's a senior research scientist at one of the foremost places in Canada for such investigation: the Manitoba Centre for Health Policy (MCHP).

But the scientist, raised on a farm in Hamiota, Man., often reminds students not to get lost in percentages and projections. "Never forget that we're talking about real people," he says.

In most of Doupe's work, those real people are seniors—a rapidly growing population. His doctoral research predicted the future use of home care services and personal care homes (also known as nursing homes) by older Manitobans.

Now a nationally recognized expert on elder care, he has visited nursing homes across Canada and abroad. "I have been in facilities where I've said, 'How do I get my name on the waiting list?' And I've been to others where I've sat down and cried about things that are going on. These are clinically complex environments, but they are also people's homes."

In 2016, Doupe led a major MCHP study of Manitoba elder care data. "Manitoba already has a high supply of nursing home beds compared with other provinces," he says. "Do we really need more of them, or do we need an alternative?"

Examining anonymous health data, Doupe's team compared two groups: about 5,300 seniors who moved into personal care homes and about 900 seniors who moved into supportive housing in the Winnipeg Health Region between 2006 and 2011.

In government-subsidized supportive housing, seniors have their own apartments and typically receive help from staff with meals, laundry, housekeeping and personal care. At about \$15,000 annually per tenant, the province's subsidy for supportive housing is much lower than its subsidy of about \$60,000 annually per resident at personal care homes.

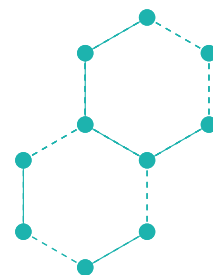
"NEVER FORGET THAT WE'RE TALKING ABOUT REAL PEOPLE."

The study revealed that about 10 per cent of seniors admitted to personal care homes were very similar to those admitted to supportive housing. They had relatively minor problems with independent living and could have functioned in supportive housing.

The higher cost to the individual for supportive housing appeared to be a factor. Many in the 10 per cent came from low-income neighbourhoods.

Another factor was that a supportive housing tenant usually relies on an informal caregiver (often a family member) for help. The study showed that many seniors in the 10 per cent had an informal caregiver who was burnt out or ill.

"Out of this comes a very rich discussion," Doupe says. "We can expand supportive housing, but without also addressing the cost inequities



and taking some strain off informal caregivers, it may be difficult for supportive housing to reach its potential."

In addition to studies for MCHP, Doupe has a sizable independent research program. He recently spent three months in Norway, where he advised academics on using databases for research purposes.


"I PROMISED MYSELF THAT I WOULD TRY TO DO THINGS THAT HELPED MAKE A DIFFERENCE."

In Manitoba, he says, it's rare for a senior to "travel backwards" in the system if he or she has gotten healthier. In Norway, a nursing home and a supportive housing facility are often located next door to each other. "People can travel back and forth," he says.

Among Doupe's many projects, he is the Manitoba lead for Translating Research in Elder Care (TREC), a national research initiative that empowers front-line staff, such as health care aides, to identify problems and test solutions.

He recalls a TREC research project at a Winnipeg personal care home. "The staff wanted to reduce residents' behavioural outbursts at mealtimes. They realized that the way the staff communicated, calling to each other during mealtimes, was upsetting residents. It was a simple thing to do differently."

Simple, perhaps, but it enhanced residents' quality of life. Doupe is committed to research that translates into real-world improvement, resulting in greater dignity, respect and choice for older adults. Flashing back to grad school some 25 years ago, he remembers a decision that set his course.

"I promised myself that I would try to do things that helped make a difference." 

WHAT MAKES PEOPLE HEALTHY?



THIS QUESTION IS THE PRIMARY FOCUS of population health experts at the Manitoba Centre for Health Policy (MCHP). Since 1990, the internationally recognized team of researchers, graduate students, and analysts have been figuring out how we can best use our health-care resources and what factors determine our well-being, like income and education. They are expert at bringing various constituencies—both government and non-government—together on projects that have far-reaching impacts to the health of people around the world.

Home to the Manitoba Population Research Data Repository, the centre offers the widest range of data in Canada for population health research. The repository—developed, housed, and maintained at MCHP—is a unique resource for research and public policy analysis which uses de-identified data from administrative records of Manitobans (personal data collected for other purposes stored by a variety of government departments).

Knowledge translation is a key priority of research activities at MCHP. The award winning Need to Know Team which brings together a multidisciplinary group of researchers with policy planners and service providers to ensure that research asks relevant questions and translates into system improvements. Recent studies for the province have addressed topics such as emergency department wait times, children's mental health and the health-care costs of smoking.

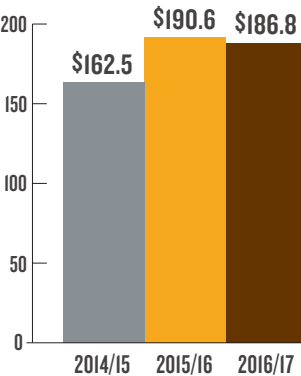
MCHP is based in the department of community health sciences at the Max Rady College of Medicine, Rady Faculty of Health Sciences.

BY THE NUMBERS

29,498	9,235	67	
students (Fall 2017) 25,065 undergraduate; 3,721 graduate; 712 post-graduate medical education	staff (2016/2017) 5,378 academic faculty; 3,857 support staff	Endowed and sponsored research chairs; 34 Canada Research Chairs and the Canada Excellence Research Chair	
8	55	8.3%	16
National Synergy Awards for Innovation	research centres, institutes and shared research facilities	of students are self-declared Indigenous students	Canadian Academy of Engineering Fellows
54	17.9%	27	
Royal Society of Canada Fellows (47) and Members (7)	of students are international students, representing 122 countries	Canadian Academy of Health Sciences Fellows	

SPONSORED RESEARCH INCOME
THREE YEAR COMPARISON
(\$ MILLION)

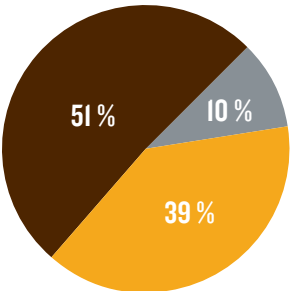
- 2014/15: \$162.5M
- 2015/16: \$190.6M
- 2016/17: \$186.8M



SPONSORED RESEARCH INCOME
BY SOURCE (2016/17)

TOTAL: \$186.8 MILLION

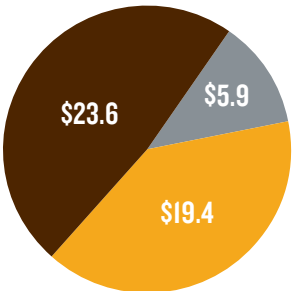
- OTHER 51%
- FEDERAL GOVERNMENT 39%
- PROVINCIAL GOVERNMENT 10%



TRI-COUNCIL FUNDING
2016/17

TOTAL: \$49 MILLION

- CIHR (Canadian Institutes of Health Research) \$23.6 M
- NSERC (Natural Sciences & Engineering Research Council of Canada) \$19.4M
- SSHRC (Social Sciences & Humanities Research Council of Canada) \$5.9M



UNIVERSITY OF MANITOBA SPEAKER SERIES

THE UNIVERSITY OF MANITOBA HOSTS SEVERAL ENGAGING SPEAKER SERIES AND STUDENT COMPETITIONS, BOTH ON AND OFF CAMPUS, ENGAGING AND INFORMING THE COMMUNITY ABOUT ONGOING RESEARCH AND ISSUES OF INTEREST.



CAFÉ SCIENTIFIQUE

Join us in talking and learning about different research taking place at the university. These Café Scientifiques bring together experts with non-researchers (you, me, neighbours and friends) in a relaxed atmosphere at McNally Robinson Booksellers, to talk about their research and the questions it raises. Come and join the discussion!

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THREE MINUTE THESIS

Hear our innovative, trailblazing graduate students explain their research—in three minutes or less. Challenging? You bet it is. It takes years for a thesis to be researched and finalized, never mind condensing it and presenting in front of our panel of judges and a live audience. Cheer on the competitors and vote for the people's choice winner!

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VISIONARY CONVERSATIONS

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Evaluating variation
for seed storage protein
content in Robert
Duncan's lab
(see story page 10).



Research**LIFE**