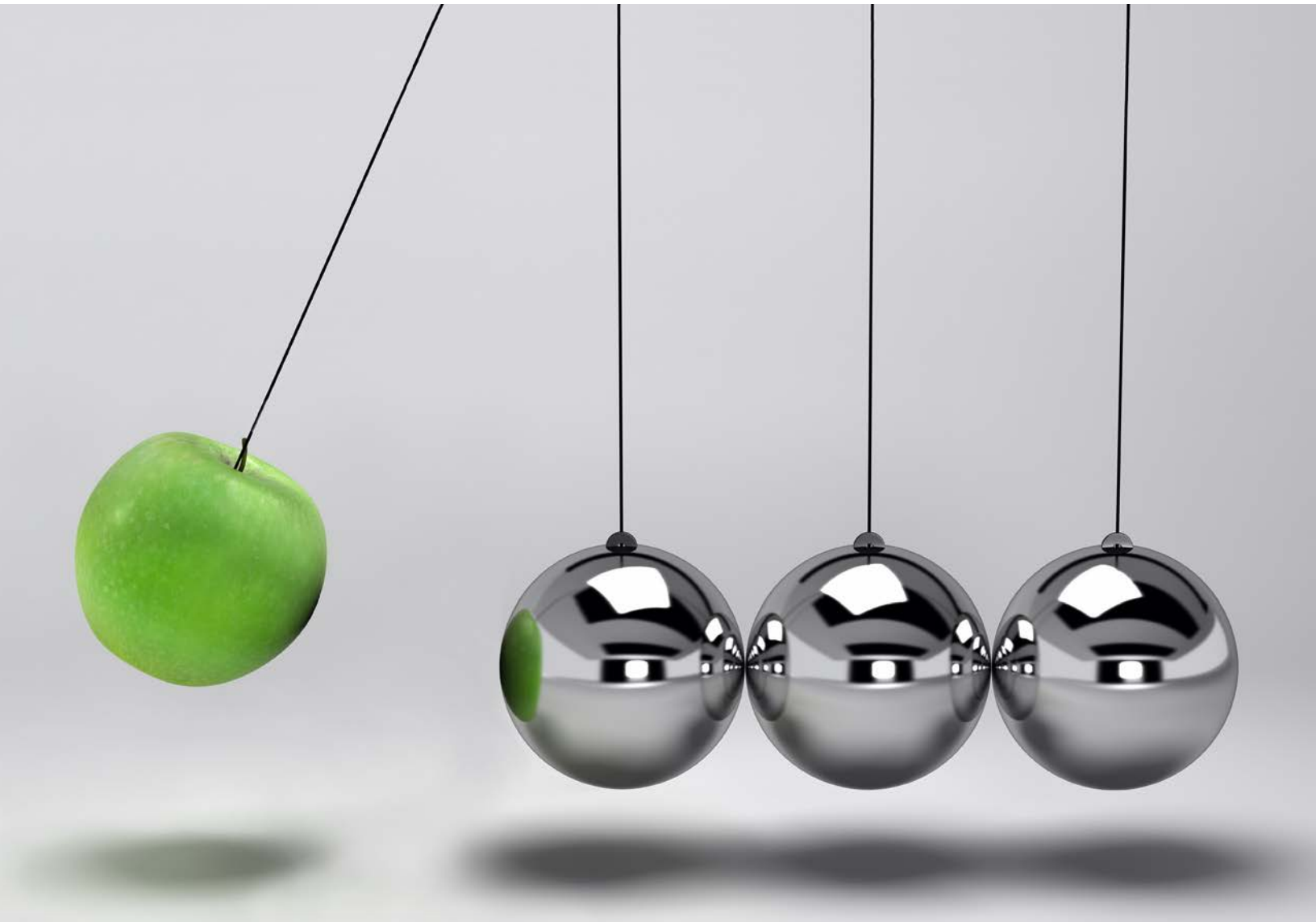
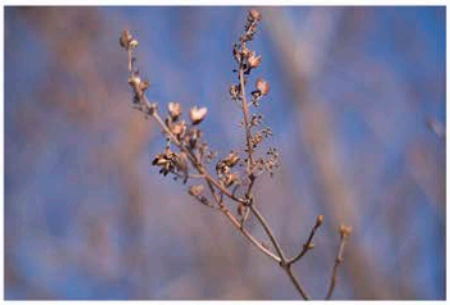
UNIVERSITY OF REGINA RESEARCH MAGAZINE SPRING / SUMMER 2017

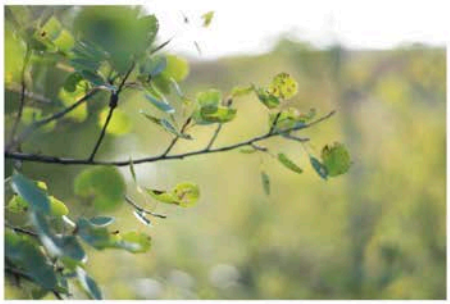
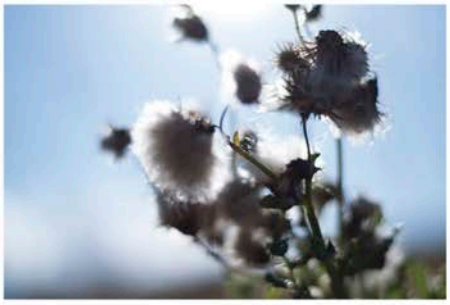
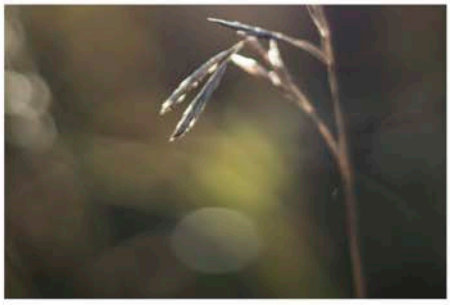
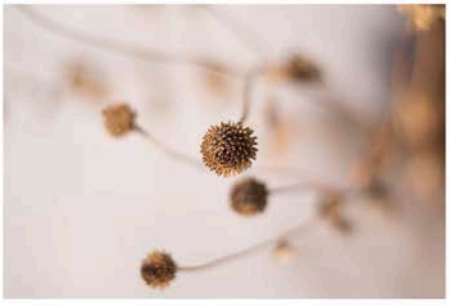
Discourse

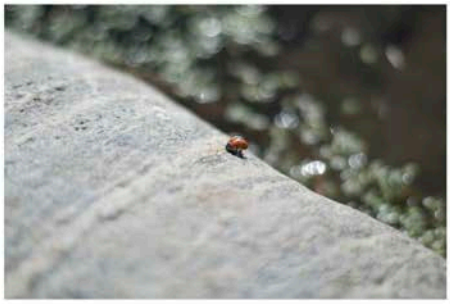
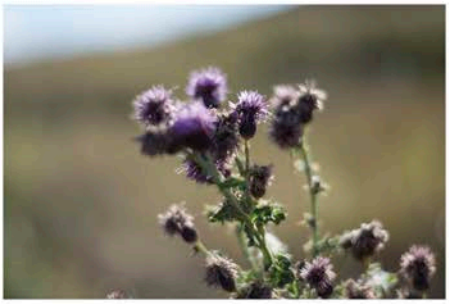


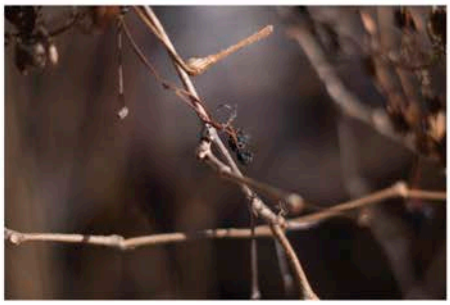
Discover the impact of University of Regina health research

University of Regina






Photos by Haley Holtslander, a visual arts major in the Faculty of Media, Art, and Performance (MAP). This body of work represents a portion of a larger photo entitled *A Closer Look*, 2016, and is part of a group exhibition called *In Plain Sight*.

The show emerged from ART 325, Prairie Landscape Photography, taught by MAP professor Risa Horowitz. *In Plain Sight* aims to bring attention to the often unseen attributes found in the Saskatchewan landscape through digital photography.

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Discourse

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Discourse is a bi-annual publication. Call for submissions are sent out through the University research listserv. The call for submissions is open from September 5, 2017, to September 19, 2017, for the Fall/Winter 2017 publication and from February 1, 2018, until February 15, 2018, for a Spring/Sumer 2018 publication.

Discourse is intended to profile new and ongoing research projects by faculty, staff and students, and showcase the breadth and depth of research being conducted at our University.

If you have a research project, recent achievement, award, funding update or publication that you would like to see included in *Discourse*, or if you are working with or supervising students conducting interesting research, please send submissions to: discourse.magazine@uregina.ca.

DEPARTMENTS

Vice-President(Research)Message

"Research touches upon our human bodies, relationships, intellect and emotions. To underplay or misrepresent the importance of this relationship between science and society is as dangerous as it is naïve."

To STEM or not to STEM, that is the question.

I recently had a conversation with an academic turned federal bureaucrat who made the implicit assumption that STEM – or science, technology, engineering and math – is the future for Canadian research.

As the conversation progressed, I had to interject and suggest, much to my companion's surprise, that the key to a bright future for Saskatchewan and the globe is not an exclusive reliance on STEM, but rather its close, intimate, and blended interaction with the social sciences and humanities (SSH). I brought up the classic example of Robert Oppenheimer, who stated:

"When you see something that is technically sweet, you go ahead and do it and you argue about what to do about it only after you have had your technical success. That is the way it was with the atomic bomb."

In other words, Oppenheimer cautioned, the pursuit of pure science divorced from society and ethics can lead us in very dangerous directions indeed.

Our research impacts people – immediately or eventually – regardless of the discipline. Research touches upon our human bodies, relationships, intellect and emotions. To underplay or misrepresent the importance of this relationship between science and society is as dangerous as it is naïve.

As I waxed lyrical about the need to blur the lines and foster collaboration among disciplines, I felt very proud of the work the University of Regina has done to make these connections. Specifically, I think of the areas where our research is particularly strong: our ***Digital Futures*** cluster and the interaction that it facilitates among our faculty and students in the Faculty of Media, Art, and Performance (MAP) and the Department of Computer Science; the collaborations between the Johnson-Shoyama Graduate School of Public Policy (JSGS) and our Faculty of Engineering and Applied Science and their work on carbon capture, utilization and storage in the ***Water, Environment & Clean Energy*** cluster; as well as multidisciplinary strategies for the treatment of PTSD being explored in the ***Anxiety, Stress & Pain*** cluster – to name but a few.

A most recent example of a STEM-SSH integration was the launch in March of the Centre for the Study of Science and Innovation Policy (CSIP), led by JSGS. The express purpose of this Centre is to place science and policy arm-in-arm; to put research and theory into action. This is the mind-set at the University. We have an interdisciplinary culture and truly value the contributions of and interactions among our colleagues in diverse realms.

Joining forces across disciplinary lines helps generate ideas and advancements that alone might not be possible — a great advantage from a research perspective. Such collaboration also finds its way through to our students, who see us work seamlessly with colleagues from a variety of disciplines and bring the same fluidity to their own work.

I am convinced that this is the way research can and should be done, now and in the future, and I see the University of Regina as a prime example of this important synthesis of SSH-STEM. D

DAVID MALLOY
Vice-President (Research)

Editor's Message

"And while University of Regina research impacts people within communities and people within communities impact research, the impact doesn't stop there; both also affect the health system: the healthier people are, the less stress they put on that system."

Picture four metal balls hanging from wires, side by side like swings in a park. Pull one ball back from the rest, let it go, and watch as the two middle balls remain still while those at the end alternate in swinging out and back.

This pendulum, pictured on the front cover and commonly known as Newton's Cradle, works on the principle of conservation of momentum and energy, while the apple symbolizes both health and education – fitting metaphors for the impact of the University of Regina's health research.

Many of our researchers work directly with various communities – including older adults, youth, caregivers, people struggling with mental health, sports teams and health regions. These research projects, many of which you will read about in our feature article, "Health research with impact," often directly impact the health of those with whom they work.

Much like the spheres that swing back and forth in Newton's Cradle, those same community members impact our researchers by contributing feedback and data that lead to recommendations, better programming and information, and therefore to better physical and mental health.

And while University of Regina research impacts people within communities and people within communities impact research, the impact doesn't stop there; both also affect the health system: the healthier people are, the less stress they put on that system.

Because of this dynamic relationship between our scholars and the community, people are living better, healthier lives. This translates into significant health-care savings.

In this way, once in motion, University health research releases energy into the health care system, as our researchers work with our wider community to turn research into action that positively impacts society.

KRISTA BALIKO
Editor

StudentFocus

Cheyanne Desnomie with a copy of the journal Histories of Anthropology Annual, where her paper "The File Hills Colony Legacy" appears.

Research takes student back to her First Nations home

When Cheyanne Desnomie was searching for a research topic for her anthropology honours paper, she didn't need to look far.

She returned home to the Peepeekisis Cree Nation, located on Treaty 4 land near Belcarres, Saskatchewan, to examine a centuries-old issue that continues to haunt band members and has created a social divide among them for generations.

"I decided that rather than going away to learn about other people's traditions and cultures, I would stay and learn about my own history. There are so many stories about my own people I can tell," says Desnomie.

Her paper, entitled "The File Hills Farm Colony legacy," is published in the well-respected journal Histories of Anthropology Annual from University of Nebraska Press. It now forms the basis for her master's thesis in history.

Her ongoing research delves into the matter of band membership at Peepeekisis – one of four First Nations that constitute the File Hills Colony in Saskatchewan – where Desnomie says membership is deeply rooted in various colonial and assimilationist policies.

"The legacy of Peepeekisis is social experimentation imposed by the federal government," says Desnomie, who also works as the student success facilitator at the University of Regina's Aboriginal Student Centre.

"The government was trying to create an agrarian First Nation utopia," she says. "And most Canadians know nothing about this."

Desnomie says that during the late 1800s and early 1900s, graduates from the Indian residential and industrial schools were handpicked to be transferred to Peepeekisis on land specifically set aside by the federal government for use in the project, leaving original Peepeekisis members displaced and prohibited from using land that was originally assigned to them.

"The government deemed the project a success," says Desnomie. "But under close examination, the project was rife with eugenic implications, land displacement, and a general disregard for the original members of the Peepeekisis band."

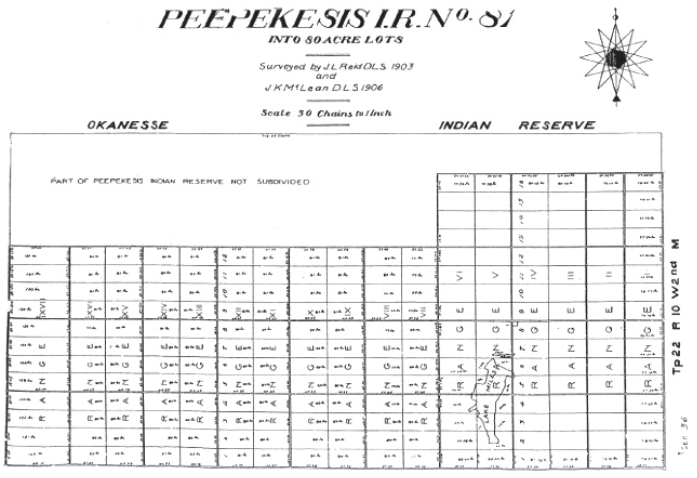
Desnomie says individuals who stayed in Peepeekisis were eventually granted full band membership.

Then, in 1955, the ongoing friction between the two groups led the original band members to take legal action. The judge ruled in favour of the more recent band members maintaining full membership.

"Now I'm examining the matter through the eyes of descendants of the original band members," says Desnomie. "My aim is to give a voice to those who may not have had the opportunity to tell their stories – those overlooked and unrecognized original band members of Peepeekisis Cree Nation."

She says her interviews reveal that people's memories of the past and ideas about the present still bring up painful feelings, questions of identity and a desire for unity.

"There is hope the band can settle their claims and that the community will come together. There is also a desire for the story of the band's past and present to be told. I aim to realize that for the people of Peepeekisis."



Peepeekisis reserve after the second subdivision in 1906. Colony placements resided and farmed in the subdivided area, while original Peepeekisis band members inhabited and utilized the Northwest portion of the reserve (Indian Claims Commission 2004b:7D).

New sounds for a silent classic

A famous silent film returned to the big screen with a brand new score thanks to University of Regina PhD candidate Jason Cullimore.

The Cabinet of Dr. Caligari, a psychological horror film released in 1920, featured a new concert score composed by Cullimore, who is an interdisciplinary studies student in the Faculty of Media, Art, and Performance.

Eight musicians, many of them members of the Regina Symphony Orchestra, brought the film to life as they performed Cullimore's score as part of a city-wide event focused on German Expressionism.

"I couldn't be happier with the result," says Cullimore. "We staged a unique performance. The musicians performed brilliantly. Everybody worked together and it turned out as flawlessly as I could have hoped."

Cullimore, whose research focuses on adaptive, interactive computer music, says this remarkable composition project is the most complex one he has been involved in to date because he had to meet both technical and artistic challenges. Because everything worked so smoothly the night of the performance, the experience has boosted his confidence as an artist – while the interdisciplinary approach to the composition provided him valuable insights on his PhD research.

"One of the biggest challenges and most exciting aspects of the project was having the freedom to approach the music according to my own vision. This is an unusual situation for a film composer, and a great responsibility," says Cullimore, who won a Western Canadian Music Award for Classical Composition of the Year in 2016 and one for Classical Recording of the Year in 2013.

He says his goal was to ensure the music would engage the audience throughout the entire 74-minute film. He also wanted to create a piece that would stand on its own.

"The audience was taken on a musical journey into the strange and compelling world of Dr. Caligari, and they responded with a standing ovation at the end. I'll remember that evening for the rest of my life."

Photo courtesy of Daniel Paquet.

Musicians performing Jason Cullimore's score to the film *The Cabinet of Dr. Caligari*.

Cullimore's work is supported by the Social Sciences and Humanities Research Council (SSHRC) and the Saskatchewan Arts Board.

Success at JDC West

Students from the Paul J. Hill School of Business at the University of Regina celebrate their JDC West win.

The Paul J. Hill School of Business students' hard work and preparation for the JDC West Case Competition paid off.

Business students from 12 of Western Canada's top post-secondary institutions gathered in Alberta to compete in Western Canada's largest and most prestigious business case competition. The University of Regina team was awarded School of the Year and placed first in the categories of Finance, International Business, Volunteer Hours, Social and Participation.

The Executive of the Year was awarded to the two co-captains of the team, Cari-Lynn Schoettler and Danielle Lane, for their strong leadership and selflessness, and for exhibiting the qualities of true JDC West spirit.

The Hill team has now placed in the top three as School of the Year nine times in the 12-year history of the competition, more than any other school.

The Hill team also placed second in the Marketing and Debate categories, and third in both Accounting and Athletics. The entire University JDC West team logged a total of 3,377 volunteer hours and raised close to $25,500 for Hope's Home Charity, which provides care for children – including those with complex medical needs.

JDC West provides opportunities for business students in Western Canada to achieve excellence in academics, social responsibility, sports and social competitions.

Photo courtesy of Mike Konieczny.

The winning team with their prototype at the Western Engineering Competition in Banff, Alberta. (l to r) Emma Fraser, Kaylee Hayko, Kailey Lowe and Tennille Kowalchuk.

Engineering team hits the mark

A team of second year students from the Faculty of Engineering and Applied Science catapulted its way to top spot at a major design competition.

Emma Fraser, Kaylee Hayko, Tennille Kowalchuk and Kailey Lowe finished first in the junior design division at the 2017 Western Engineering Competition, which brings together leading students from 13 schools across Western Canada.

Competitors were given four hours to build a prototype able to deliver supplies to stranded people in the mountains before rescue personnel arrive.

"It was a tall order, given the catapult had to shoot supplies to a target at least six metres away using only typical craft materials, like popsicle sticks, string, cups and clothespins," says Fraser.

The team, who met and became friends during their first week of University, outperformed everyone; they came within a mere 14 centimeters of the target, impressing the panel of industry judges.

"While the four of us were very confident in our design and presentation, we were nervous for the results. Hearing we took first place left us speechless," recalls Hayko, who adds they are proud to be an all-women team representing the University of Regina.

> "Even though our University is one of the smaller ones in Western Canada, moving on to nationals really speaks to our program. Our team competed against and also outperformed many larger schools."
>
> - Kaylee Hayko

The team competed at the event last year and says being twice part of the event has proved beneficial.

"Our problem-solving and time-management skills have improved and we have honed our presentation and communication skills – all while working together as a team," says Lowe.

Lowe also says competing alongside top engineering students in Canada has helped them grow.

Kowalchuk agrees. "Whether a small or a large scale problem, this competition has enhanced our creative and innovative thinking."

The team's win at the Western competition advanced them to nationals. While they didn't place in the top three at that event, they are proud of their accomplishments.

"Even though our University is one of the smaller ones in Western Canada, moving on to nationals really speaks to our program," says Hayko. "Our team competed against and also outperformed many larger schools. It is truly an honour to be among the top eight in Canada." D

The team was supported by the Association of Professional Engineers and Geoscientists of Saskatchewan, the Faculty of Applied Science and Engineering, the Regina Engineering Students' Society, the University of Regina Students' Union and Hillberg & Berk.

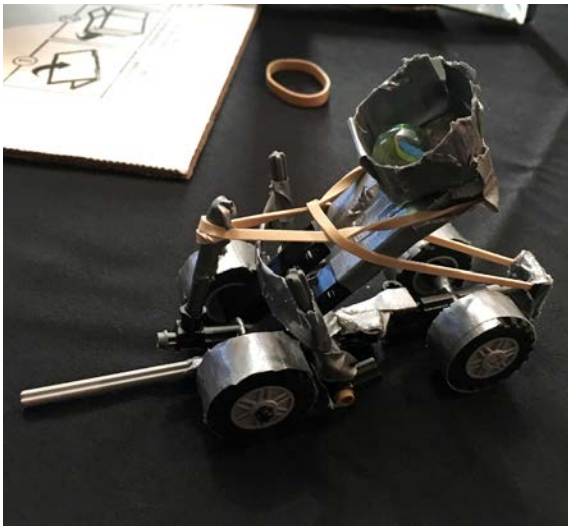


Photo courtesy of Kaylee Hayko.

Right: The team's prototype at the Canadian Engineering Competition, where their task was to build a Mars rover out of Lego to carry food supplies (a marble) down a cardboard track and through an obstacle course, where it would then launch the "supplies."

Survival of the kula trade

In the remote islands of the Massim region of Papua New Guinea, the survival of the ancient practice of kula trading – the reciprocal exchange of valuable shells – is in jeopardy as the youth of the region take more interest in the global cash economy than in gift exchange. But University of Regina anthropologist Susanne Kuehling, who studies the way humans construct, negotiate and create value, is working with island elders to reinvigorate kula and reinforce the area's traditions, history and communities.

"Kula exchange is key to the islanders' economic independence," says Kuehling, who has been working in the area since 1993 and was asked by elders on the islands to assist in preserving kula trading.

Kuehling explains that the shells can be traded for resources like food. One island, for instance, is more prone to drought than others, and kula shells can be used to trade for food in dry times. Trading also provides an exciting way to travel and network across the many islands that dot the region.

The shells are also used to solve problems – especially familial issues.

"There is far less domestic violence in this area because of kula trading," says Kuehling. "In this matrilineal society, for example, if a man assaults his wife, he is forced to leave the community. Before he can return, he must present a kula shell to his wife's family. Obtaining the shell means he must also involve his family. In this way everyone is aware of the situation, resulting in greater external pressures placed on him not to reoffend. For others, it's a great deterrence for this kind of behaviour in the first place."

While some aspects of kula may seem unfamiliar to Westerners, Kuehling says gift exchange is not particularly exotic and that all humans engage in some form of it.

"For many Westerners it happens on birthdays, at Christmas, even paying for the car behind you at Tim Hortons."

Working with a team from the islands to help revitalize the kula trade, Kuehling is cataloguing photos of more than 1,600 surviving artifacts currently in circulation – the oldest of which has been carbon dated to around 500 years old. She is also creating a curriculum and designing an app to help teach youth about the worth of each kula shell, along with the rules of trading.

Kuehling says kula is the social pulse of the region. She hopes the work being done will help the kula exchange survive. D

Kuehling's work is supported by the Social Sciences and Humanities Research Council.

Kula shells used in the exchange.

Projects focusing on older adults, mental health and active living exemplify research that has an impact from day one, as well as the potential for long-lasting and widespread social and economic benefits.

Feature

Health research with impact

BY DEBORAH SPROAT

In homes across southern Saskatchewan, frail older adults work one-on-one with home care therapists, learning basic exercises aimed at helping them stay mobile and independent.

Meanwhile, on the University of Regina campus, space in the Faculty of Education is being transformed into Natawihowikamik Lodge, a new counseling and healing space designed to embrace Indigenous healing pedagogies.

And across Saskatchewan, individuals suffering from depression and anxiety access help through online cognitive behaviour therapy.

These three University initiatives, and several others profiled below, connect researchers to the community and the community to researchers. Projects focusing on older adults, mental health and active living exemplify research that has an impact from day one, as well as the potential for long-lasting and widespread social and economic benefits.

At the Saskatchewan Population Health and Evaluation Research Unit (SPHERU), community-based research is the modus operandi. SPHERU works with rural communities and involves community members at all stages of its studies.

Bonnie Jeffery, a SPHERU researcher and a professor in the Faculty of Social Work, has done community-based research her entire career and has mentored many colleagues, students and community leaders on how to go about doing it.

"To me, it makes sense that if you want to do research that has an impact at the community level, then you work with the people there and they help define what the issues are," Jeffery says. "They then tell us how they need that information so they can actually use it."

Currently, SPHERU is conducting a project that looks at factors that affect the ability of older adults in rural communities to "age in place." Carried out in three phases, the project consists of group and home-based exercise programs for older adults, a survey of the challenges for mobility in four rural communities and an assessment of how older adults access information.

In another major project, SPHERU will work with three organizations on projects aimed at reducing the isolation of older adults living in rural Saskatchewan. SPHERU's role will be to evaluate the impact the groups make by working together instead of independently.

"It's a collective impact approach — evaluating how agencies can collaborate to address common issues," Jeffery says.

Exercise for older adults was also the subject of a study by **Shanthi Johnson**, a professor in the Faculty of Kinesiology and Health Studies (KHS). The project, aimed at improving functional capacity and preventing falls, was done in partnership with Regina Qu'Appelle and Sun Country Health Regions.

Johnson devised a simple exercise program for frail older adults living on their own. Taught by home care staff, the exercises were based on regular physical activities such as standing from a seated position, walking from room to room, and reaching. Testing after six months showed a significant improvement in function and an increase in confidence.

"Participants' ability to move around the house improved significantly," she said. "That means they are able to do the simple things that they want to do for themselves." In addition, participants were more likely to venture outside their homes.

The project made a difference for home care staff as they took on a new role; it also helped strengthen the working relationship between researchers and the health regions.

Older adults are also the chief focus of clinical psychologist **Thomas Hadjistavropoulos**, who holds a Research Chair in Aging and Health. He has done extensive work on pain assessment in people with severe dementia and limited ability to communicate.

"People with severe dementia most often will not be able to tell you if they have pain and they will not be able to tell you how that pain fluctuates," Hadjistavropoulos says. As a result, pain problems are frequently missed, leading to unnecessary suffering and sometimes behavioural problems.

Hadjistavropoulos' team has developed a tool for assessing whether people with dementia are in pain — a checklist of non-verbal pain indicators. That tool is now used widely in Saskatchewan, across Canada and internationally.

Now, Hadjistavropoulos is working with biomedical engineers and computer vision experts to develop an automated assessment tool that uses computer vision technologies to identify and record pain behaviours. The technology would help ensure pain is assessed on a regular basis, and is a response to staff concerns about limited resources for ongoing pain assessment.

Right: Youth learning how to erect a tipi at IPHRC's Tipi Camp.

Photo courtesy of the Acting Out Research Team.

At the Indigenous Peoples' Health Research Centre (IPHRC), the practice of involving the community in research is embraced and taken one step further, becoming what community researcher **Dustin Brass** describes as "community-embedded." Such research, he says, is based on relational ethics, or forming kinship bonds with the community.

"We know we're doing things right when we pull up to buildings and youth are banging on the window to make sure we see them," he says. "That to me is embodying that relational ethics. It all comes back to kinship."

Brass was one of a team of researchers who worked on the IPHRC project *Acting Out? But in a Good Way*, run in partnership with File Hills Qu'Appelle Tribal Council and Lac La Ronge Indian Band. The arts, especially drama, were used as a vehicle for youth to better understand themselves and explore the choices open to them. In recent years, the program has become a way to approach suicide ideation and help youth identify alternatives.

"The arts invite you to think about life through a different lens, and that is really what we are doing," he says. With the program winding down, the emphasis now is on sharing what was learned with the communities in the hope that the knowledge and arts skills passed on will allow the work to continue. Brass says it will be many years before the true impact of *Acting Out!* is known.

"We won't know for generations what impact it had on them in the moment, or what impact it has had on their community," he says. "What about how it impacts the next generations? If we have learned anything from intergenerational learning, it's how much the story of one individual impacts other individuals and the inter-generational stories."

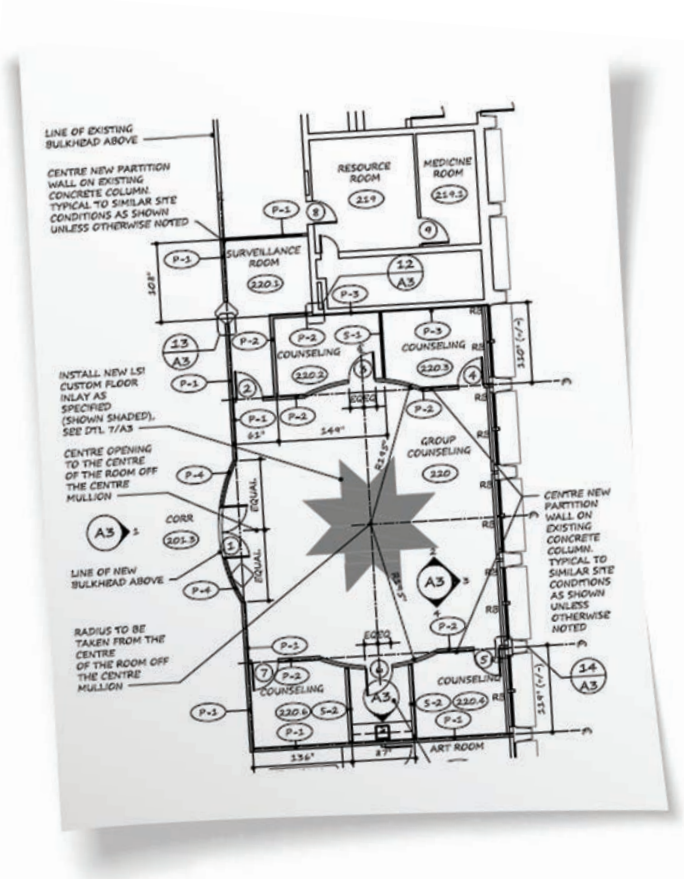
Education faculty members **JoLee Sasakamoose** and **Angela Snowshoe** work closely with community in ongoing research focused on examining culturally responsive mental health services for First Nations youth. Both are IPHRC research affiliates.

Their project has three parts: learning what place means to young people; studying Indigenous pedagogical methods, which often involves taking people on the land; and creation of a new counseling and healing space that reflects First Nations ways of knowing and being.

The space, called Natawihowikamik Lodge — Cree for healing place — will be housed within the Faculty of Education and was designed in prayer and consultation with elders. The result will be very different from western counseling spaces — round, with tipi poles, a medicine wheel in the ceiling, a star blanket built into the floor, and ventilation that allows for smudging — to allow for Indigenous ways of healing and knowing.

Sasakamoose says the primary purpose of the lodge is to assist in the development of "culturally responsive, culturally humble health-care practitioners." The space will also be available for other uses, such as group therapy, and for other education faculty who want to practice Indigenous pedagogies and ways of knowing with their students.

"The whole idea is that Indigenous and non-Indigenous people will come into a place that has a middle ground," she says. "And that middle ground is where we use evidence-



Far right: Floorplans for the Faculty of Education's new counseling and healing space, Natawihowikamik Lodge, currently under construction.

> "The whole idea is that Indigenous and non-Indigenous people will come into a place that has a middle ground. And that middle ground is where we use evidence-based practices, which harmonize with Indigenous ways of knowing. That way, we can all move forward."
>
> - JoLee Sasakamoose

based practices, which harmonize with Indigenous ways of knowing. That way, we can all move forward."

In the Department of Psychology, the search for alternative ways of helping people has resulted in the creation of an online therapy unit that offers cognitive behaviour therapy programs for managing depression, anxiety and pain. Based on programs developed in Australia, and adapted for Canadian use, the programs consist of a set of lessons participants work through, supplementary information and access to a therapist on a weekly basis by email or telephone.

Faculty of Arts psychology professor and program head, **Heather Hadjistavropoulos**, says research trial results show online therapy is effective, as well as being accessible to people who are reluctant or unable to attend face-to-face therapy. The program has helped 2,400 people since it began six years ago and is now offered through the University's Online Therapy Unit and through nine mental health clinics in Saskatchewan.

"We know from feedback from clients that this has made a significant difference in their lives — we have people expressing such gratitude for having access to this," she says. "And that's been an incredible experience as a researcher to have that impact."

Hadjistavropoulos says online cognitive behaviour therapy can be more cost-effective than face-to-face treatment because it involves less of the therapist's time and means the patient can avoid costs such as travel, childcare and taking time off work. Another benefit is that 25 percent of those who access online therapy are first-time users of mental health services.

"We know that when you treat mental health problems, you improve productivity of people at work and their ability to engage in life," she says. "There are definitely benefits."

The value of online cognitive behaviour therapy was apparent to graduate psychology students **Luke Schneider** and **Dale Dirkse**, who chose to adapt the program for other users as their PhD research projects. Schneider's program is directed at cardiac patients coping with depression and anxiety and Dirkse's is aimed at cancer survivors. These programs involve access to information and coaches but do not involve therapists.

Schneider said guidelines for rehabilitation for cardiac patients often recommend psychosocial support, but few such programs are offered. Already, he has seen some participants benefit from the program — one patient felt able to return to work sooner because the program helped him deal with his anxiety about physical activity.

Psychology PhD candidate **Holly Parkerson** is using online therapy to help smokers wanting to quit. As her doctoral project, she adapted an online smoking cessation program developed in the U.K. and tested it with Canadian users. Her program is called Guide to Quit.

Approximately 22 percent of the participants remained smoke-free at follow-up, twice the success rate of individuals making an unaided attempt. As well, Parkerson says, the study yielded important information about the links between smoking, attempts to quit and chronic pain.

"Participants with pain who stayed smoke-free experienced significant reductions in pain severity and related disability at follow-up," she says. "The findings highlight an important role for incorporating stop-smoking support within pain treatment settings."

In another major project underway in the psychology department, associate professor **Nick Carleton** is studying the operational stress injuries suffered by public safety personnel, including correctional officers, dispatchers, firefighters, paramedics and police. Carleton's team is analyzing data from a large, nationwide survey completed earlier this year — an analysis that he hopes will help clarify the extent and nature of the problem.

The results will provide a baseline for assessing the impact of future change, and will help inform federal government efforts to create a national action plan to address post-traumatic stress disorder (PTSD) and other operational stress injuries. The project follows an earlier study that showed an urgent need for more research on the programs

Accessing online help

Individuals who are interested in learning more about Online Cognitive Behaviour Therapy can go to www.onlinetherapyuser.ca or phone 306-337-3331.

The Online Therapy Unit has four programs:

- The Wellbeing Course helps clients manage depression and anxiety.
- The Pain Course assists clients with chronic pain, depression and anxiety.
- Wellbeing After Cancer helps cancer survivors manage symptoms of anxiety and/or depression.
- The Cardiac Wellbeing Course helps people who have had a cardiac event manage symptoms of anxiety and/or depression.

Individuals who want to learn more about the online quit smoking program can get information at www.guidetoquit.ca.

(l to r) Jyotpal Singh and Ryan Dech, graduate students in KHS, and KHS professor Patrick Neary (far right) perform a squat/stand concussion test on Scott Bishop, a graduate of the KHS master's program.

currently offered to public safety personnel, something Carleton says is already beginning to happen.

"Over time, it will make a huge difference because we are going to be able to identify what works well and what doesn't," he said. "We are going to be able to build smarter, better ways of helping those tasked with helping all of us."

Elsewhere on campus, research is focused on active living.

Katya Herman, assistant professor in KHS, is investigating variations in physical activity and sedentary behaviour seasonally over the course of a year, as well as within a week. The goals are to determine whether consistency in physical activity is important to health outcomes, and to shed light on physical activity guidelines that recommend 150 minutes of physical activity a week.

"Is it safe to encourage people to get physical activity in any way they can, even if it's all on the same day?" Herman asks. "At what point do seasonal or weekly variations make a difference to health?"

One group of people that has trouble finding the time to exercise is informal caregivers. **Andi Martin**, a PhD candidate in KHS, recognized this need and is directing her research at addressing it.

Martin assigned informal caregivers to a yoga or tai chi exercise program, to be done 150 minutes a week for 12 weeks, then assessed physical health outcomes and quality of life. Yoga and tai chi were chosen because they are "mind-body medicines" that include meditation, mindfulness and breathing exercises, in addition to aerobic and strength training.

The impact on caregivers' health was positive: some participants reported improved sleep, increased energy, less time away from work and an improved relationship with care recipients. Six weeks after completing the program, participants who were tested again maintained most of the physical benefits.

"They didn't realize the importance of taking care of themselves — they viewed self-care as a kind of selfish thing," she says. "They have realized it actually helps them to be better caregivers."

The experience has left her determined to find ways to create more exercise programs for caregivers. She says protecting the well-being of informal caregivers is important to the Canadian health system since their contribution is estimated at more than $26 billion annually.

Psychology professor **Gord Asmundson's** research shows that physical exercise might also be a good prescription for people suffering from some mental health disorders. Findings from his ongoing studies of individuals suffering from PTSD showed exercising before psychotherapy results in better mental health outcomes, and exercising alone results in mental health outcomes that rival or approach outcomes with psychotherapy.

"Not everybody can access a psychotherapist, even online," he says. "But everybody can exercise with an exercise prescription."

Asmundson and his students continue to study this concept, applying it to other anxiety disorders and to non-clinical levels of anxiety.

"The findings are consistent: exercise reduces not only anxiety but depression, and increases functionality. It's intuitive, but nobody has really investigated it systematically. People are really picking up on that. The potential impact is huge."

Active living does have its risks, however. **Patrick Neary**, a KHS professor, is addressing one such risk with research aimed at finding an objective way to diagnose concussions. He says the results could be important in convincing parents and coaches to take concussions seriously.

Working with athletes involved in high-level competitive sports, Neary is studying what happens in the physiology of the brain after a concussion, and as the brain recovers. This involves looking at variables such as oxygen levels in the brain, cerebral blood flow, heart rate and blood pressure.

"What we have been able to show is that under normal conditions, blood pressure regulation has some variation and goes up and down — and that's a good thing," he says, as an example of what they are learning. "But when we have

a concussion, we have a finite range of changes in blood pressure, as we do in heart rate."

Research answers questions, but inevitably also leads to more questions.

"How do we scale that up? How do we make that the standard operating procedure, as opposed to just an interesting pilot project or an interesting experiment?" asks SPEHRU associate director **Tom McIntosh**. "How do we take an interesting intervention to other levels, across regions, the province, other parts of the country?"

Shanthi Johnson is working to find a solution. She knows that a simple exercise program can be very effective in improving the functional capacity of frail older adults. But how can the program be expanded so that more older adults benefit?

"Once we see that it is beneficial, that's not a good place to stop," she says. "We need to find out how we can scale it up and make it more sustainable. That's where we are at right now — seeing how it can be beneficial to more than just the participants."

Another hard-to-answer question is economic impact. It is easy to see the potential impact of the research but more difficult to put a dollar figure on it. But some researchers are trying.

Measuring economic impact wasn't part of Johnson's project but she knows the potential for savings is tremendous because falls, and the resulting fractures, cost the health care system a lot of money. She points to U.S. figures that show a fall and subsequent hospitalization can cost the system about $30,000. And beyond the economic benefit, she says, is the "human costs we are saving."

One researcher trying to assess economic impact is Thomas Hadjistavropoulos. He has anecdotal evidence that his pain assessment tool makes a difference, and he has worked with other researchers on studies that showed that use of the tool resulted in better pain management for patients and reduced stress for staff. Now, a University of Regina-led team is embarking on a cost analysis of pain in long-term care.

"Part of the problem we have is that nobody we know of has ever done a cost analysis of how much it costs the system to have untreated pain in long-term care," Hadjistavropoulos says. Using data from the Saskatchewan Health Quality Council, they will compare costs for people who have continuing pain versus people whose pain is treated.

McIntosh believes researchers are becoming more and more interested in figuring out how the impact of their work can be measured and demonstrated. Another consideration, he says, is value for money.

"For me, economic questions should be focused on whether we can spend dollars in a more effective way and get better improvement in health outcomes than we're getting now," he says.

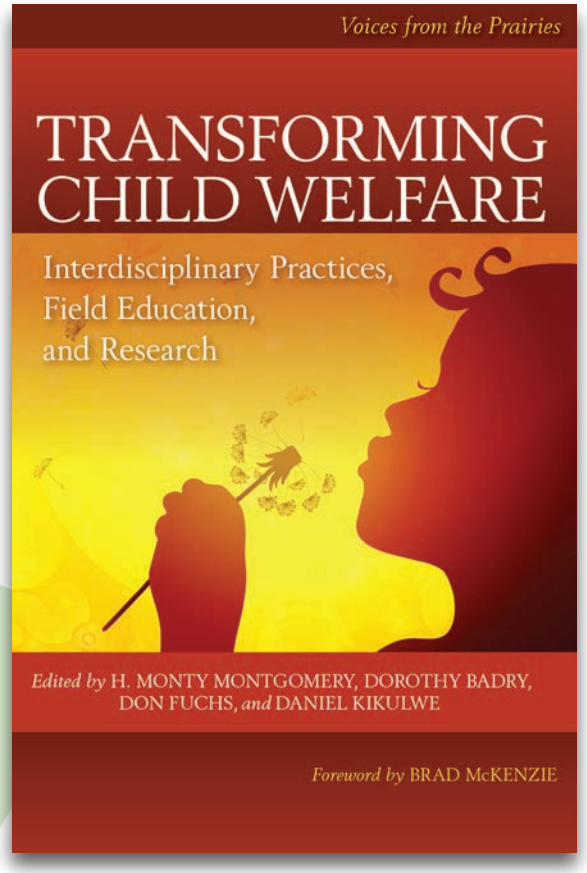
Meanwhile, researchers across campus are hard at work collecting the evidence that could lead to change. As a special advisor to the University's integrated human health research cluster, McIntosh has a front-row seat to view the important and exciting health-focused research underway in both the social and biomedical areas.

"The diversity of research on this campus, and the resulting benefit to our community, is really remarkable," he says.

Deborah Sproat is a Regina freelance writer and editor.

Carol Bryce performing a stretching exercise as part of her in-home program with Avril McCready Wirth, Occupational Therapist Physical Therapist Assistant from Regina Qu'Appelle Heath Region. The program was initiated by KHS professor Shanthi Johnson.

By the Book



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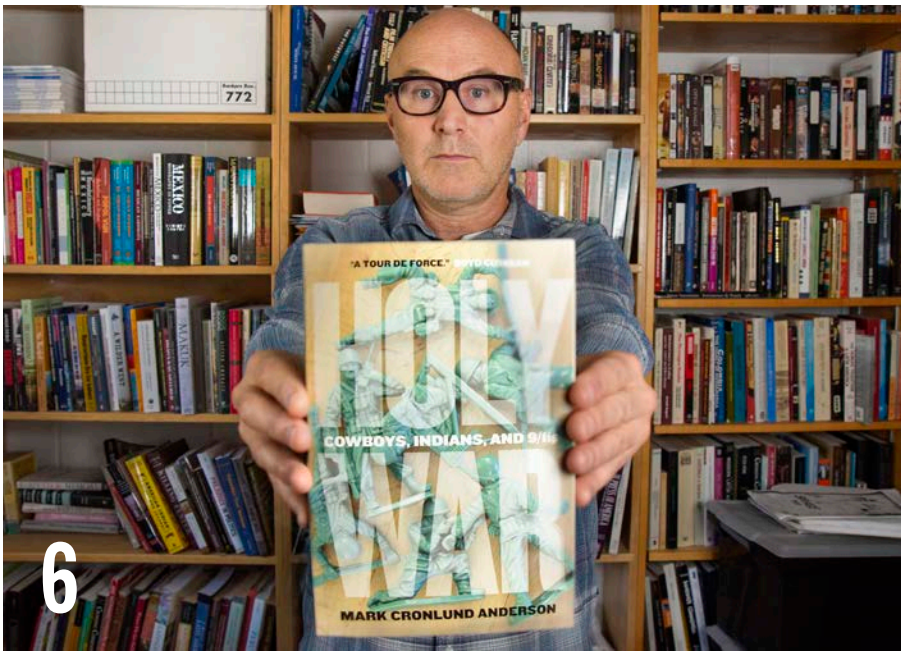
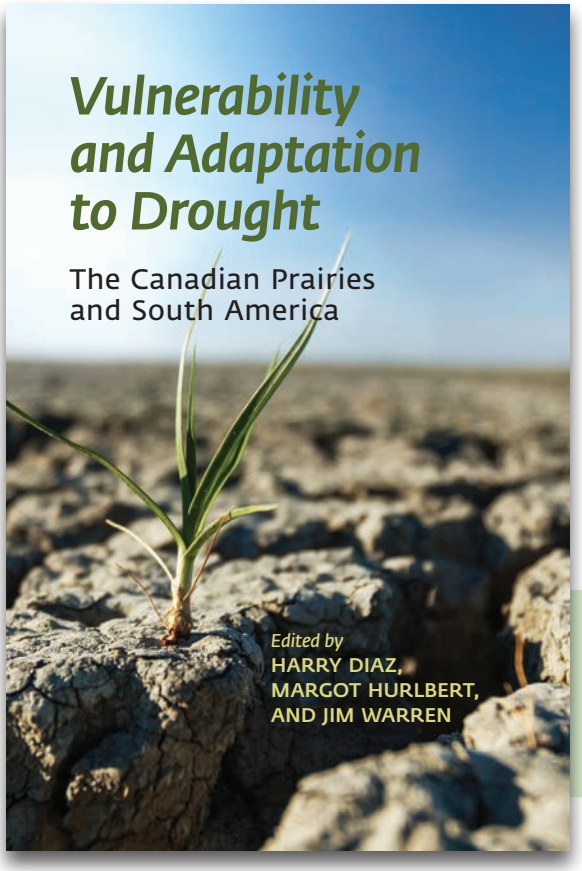
1. In her newest book, *Contemplating Friendship in Aristotle's Ethics* (Suny Press, 2016), **Ann Ward** examines how Aristotle posits political philosophy and the experience of friendship as a means to bind strictly intellectual virtue with moral virtue. Ward, associate professor in the Department of Philosophy and Politics and International Studies, focuses on the progressive structure of the argument to explore Aristotle's *Nicomachean Ethics*.

2. Canada has among the highest prevalence of children in foster care in the developed world. Reflecting on established wisdom and integrating contemporary research with practical experience in their edited collection, *Transforming Child Welfare: Interdisciplinary Practices, Field Education, and Research* (University of Regina Press, 2016), lead editor **H. Monty Montgomery** and co-editor **Daniel Kikulwe**, both from the Faculty of Social Work, gathered works from leading scholars to provide professionals with best practice solutions for application across interprofessional contexts.

3. In the summer of 2014, at the height of Saskatchewan's recent oil boom, geography professor **Emily Eaton** and photographer Valerie Zink travelled to oil towns across the province, from the sea-can motel built from shipping containers on the outskirts of Estevan to seismic testing sites on Thunderchild First Nation's Sundance grounds. In text and photographs, *Fault Lines: Life and Landscape in Saskatchewan's Oil Economy* (University of Manitoba Press, 2016) captures the complexities of engagement, ambivalence and resistance in communities living amid oil.

Mark Cronlund Anderson's *Holy War: Cowboys, Indians, and 9/11s* examines the role of mass media, government propaganda, editorial cartoons, film, television and a seemingly complacent public that gives the U.S. license to attack.





4. Maurice Merleau-Ponty was an existentialist philosopher who worked alongside Jean-Paul Sartre and Simone de Beauvoir in reimagining philosophy and politics after the Second World War; his ideas are now studied around the world. **Jérôme Melançon**, professor at La Cité, published his annotation, transcription and presentation of radio interviews given by the French philosopher in his recently released book entitled *Entretiens avec Georges Charbonnier et autres dialogues, 1946-1959* (Éditions Verdier, 2016).

5. According to a new book, droughts on the prairies could become more frequent, more severe and longer lasting in the years ahead. *Vulnerability and Adaptation to Drought: The Canadian Prairies and South America* (University of Calgary Press, 2016), edited by three sociology and social studies faculty members, **Harry Diaz**, **Margot Hurlbert** and **Jim Warren**, examines drought through an interdisciplinary lens encompassing climate science and the social sciences.

6. In his book *Holy War: Cowboys, Indians, and 9/11s* (University of Regina Press, 2016), **Mark Cronlund Anderson** explores how America's response to the 9/11 attacks was not something new, but rather a continuation of the superpower's behaviour that's as old as the republic itself. Anderson, a professor in the Department of History, examines the role of mass media, government propaganda, editorial cartoons, film, television and a seemingly complacent public that gives the U.S. license to attack.

Indigenous Research Day

> "The event was a great opportunity to find out about the range of Indigenous research being conducted, and for scholars from across campus and the wider community to connect with one another."
>
> - David Garneau

David Garneau presenting his research at the inaugural Indigenous Research Day at the University of Regina.

Indigenous-centred research was the focus of the inaugural Indigenous Research Day held at the University of Regina on October 27, 2016.

The event featured original work by faculty, staff, students and community members who shared research that showcased or was inspired by significant Indigenous content.

Indigenization is an overarching theme in the University's 2015-2020 Strategic Plan, *peyak aski kikawinaw*, and an immediate aim of the day was to make Indigenous-centred research more visible on campus and to shine a spotlight on researchers engaged in work that impacts Indigenous peoples and communities.

This inaugural event featured a wide range of presentations and displays that fell under seven main themes, from Indigenizing the academy to health care to Indigenous residential school impacts to spirituality and healing.

David Garneau, associate professor in the Department of Visual Arts, presented an artist talk about his Métis-themed paintings, performances and international Indigenous curatorial projects, as well as offering a talk on aesthetic action and cultural decolonization.

"The event was a great opportunity to find out about the range of Indigenous research being conducted, and for scholars from across campus and the wider community to connect with one another," says Garneau.

The next Indigenous Research Day is scheduled for October 26, 2017.

Accolades


The Honourable Kirsty Duncan discussing carbon capture, utilization and storage with Raphael Idem, director of the Clean Energy Technologies Research Institute.

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Photo courtesy of Vivian Doan.

1. As part of a tour of western Canadian universities, the Honourable **Kirsty Duncan**, Federal Minister of Science, visited the University of Regina in January 2017 to find out more about research conducted on campus.

"It was wonderful to have had the opportunity to speak with the students and researchers at U of R about their important work, and to see how the University is working to ensure an inclusive learning environment. We need all minds welcomed in the classroom if we are to build a bold, bright future for all Canadians," says Duncan.

The tour included visits to three research labs and many lively discussions with researchers and students engaged in groundbreaking work.

"I couldn't ask for a federal Minister of Science who is more engaged with research," says University of Regina President and Vice-Chancellor, Vianne Timmons. "The time we spent with Minister Duncan was important for the University's research enterprise, and I look forward to her future visits."

2. Jesse Archibald-Barber's short story "Beneath the Starry Map" was recently published in *Mitêwâcimowina: Indigenous Science Fiction and Speculative Storytelling* (Theytus Books, 2016). *Mitêwâcimowina* is Cree for "extraordinary stories." Archibald-Barber's tale follows a community of Indigenous people on an interstellar voyage, allegorically examining the way traditions are preserved in a modern context. As the first anthology of Indigenous science fiction in Canada, the collection is breaking new ground in a relatively untapped genre for Indigenous writers. "Science fiction is very liberating for the imagination," says Archibald-Barber, an English professor at First Nations University of Canada. "And while it offers critical ways to represent our history, it is ultimately future-looking."

3. Jennifer Gordon, assistant professor of psychology, was presented with a Saskatchewan Health Research Foundation (SHRF) Excellence Award at the 13th annual Santé Awards. The annual SHRF event celebrates achievement, excellence and impact in Saskatchewan health research. The Excellence Awards are given to the top-ranked researchers and teams from the past year's funding competitions. Gordon's award was in the category of Top Establishment Grant: Socio-Health Research for her work examining the relationship between mood and hormone fluctuation to better understand why some women are at increased risk of depression during the menopause transition. Gordon received a $119,985 SHRF Establishment Grant for her work.

4. Sandra Zilles, computer science professor and Canada Research Chair in Computational Learning Theory, was recently inducted into the Royal Society of Canada's College of New Scholars, Artists and Scientists. "It's a great honour to be elected for membership. It means my work is being recognized nationally and gives me reassurance that my research and training methods are successful and of impact," says Zilles. The Royal Society of Canada, founded in 1882, recognizes scholarly, research and artistic excellence, advises governments and organizations, and promotes a culture of knowledge and innovation in Canada and around the world.

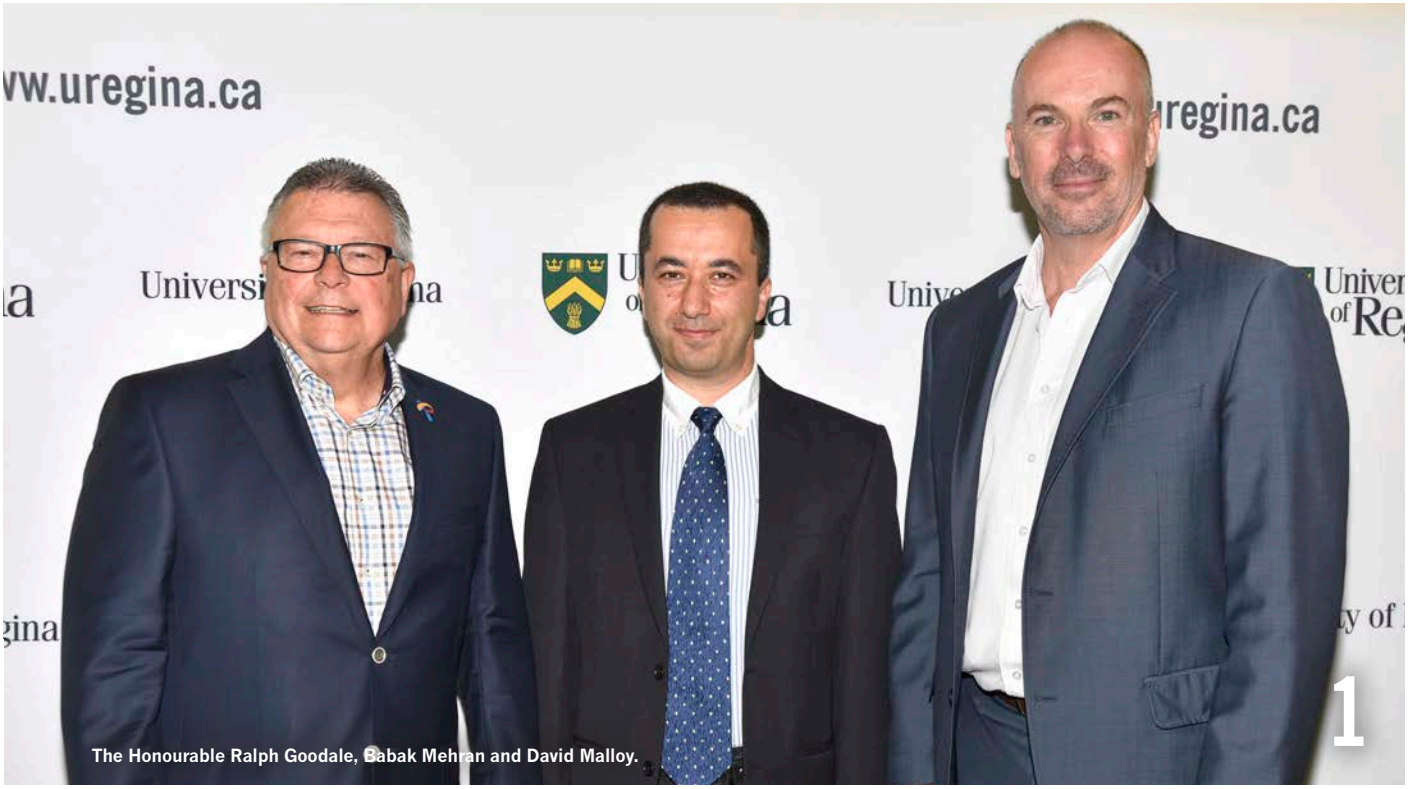
The University of Regina is home to more than 400 researchers across 10 faculties, two academic units and dozens of academic departments with innovative programs and established reputations for excellence. Over the last decade the University has emerged as a research-intensive Canadian university that leads in in research impact, international collaborations and graduate student training. The University of Regina's rich research enterprise expands the boundaries of knowledge. With the support of both private and public funding, our scholars engage in cutting-edge research that is meaningful and responsive to the needs of society.

The Research and Innovation Centre at the University of Regina.

Funding

"Investments in science and innovation drive greater productivity and competitiveness, and lead to a more prosperous future. With these investments in natural sciences and engineering brainpower, the government is demonstrating our commitment to research excellence in Regina."

– The Honourable Ralph Goodale



The Honourable Ralph Goodale, Babak Mehran and David Malloy.

1. The Honourable Ralph Goodale, Minister of Public Safety and Emergency Preparedness, announced funding for University of Regina researchers worth more than $1.6 million from the Natural Sciences and Engineering Research Council (NSERC) for work that is set to shape the future of our environment, climate, health and society.

"Investments in science and innovation drive greater productivity and competitiveness, and lead to a more prosperous future," says Goodale, who is also the Member of Parliament for Regina–Wascana. "With these investments in natural sciences and engineering brainpower, the government is demonstrating our commitment to research excellence in Regina."

Sixteen projects were funded as part of the NSERC Discovery research programs. They ranged from looking at the impact of chemicals in our water to advancing nuclear imaging technologies and improving driving safety in the winter.

Babak Mehran, assistant professor in the Faculty of Engineering and Applied Science, was a funding recipient.

"My research aims to develop reliable and efficient weather-responsive traffic management systems to improve traffic safety and operations in winter, something all too necessary in a province like Saskatchewan," says Mehran. "This significant support helps me to recruit highly qualified graduate students and purchase required research tools and instruments to ensure a successful research project."

NSERC Discovery Grants recipients

Eman Almehdawe (Faculty of Business Administration), *Queueing models and optimization for healthcare system design and improvement.*

Chunjiang An (Faculty of Engineering and Applied Science), *Risk assessment of endocrine disrupting chemicals in prairie surface water under changing climate.*

Kathryn Bethune (Faculty of Science), *Tectonic evolution of the WSW Rae craton, Athabasca region, Canada: Laboratory for study of Precambrian crustal processes.*

Bruce Gilligan (Faculty of Science), *Symmetries in complex geometry.*

Garth Huber (Faculty of Science) *Studies of hadronic structure using electromagnetic probes.*

Babak Mehran (Faculty of Engineering and Applied Science), *Development of strategies for improving traffic safety and operations in winter.*

Funding


Daniel Kikulwe

Malek Mouhoub (Faculty of Science), *Preference reasoning in constraint-based systems.*

Aram Teymurazyan (Faculty of Science), *Nuclear imaging technologies: Imaging from plants to humans.*

Christopher Yost (Faculty of Science), *Characterizing gene networks involved in cell envelope development in Rhizobium leguminosarum.*

Discovery Development Grants recipients

Christine Chan (Faculty of Engineering and Applied Science), *Integrating ontology and data analysis: Development and application of an intelligent knowledge acquisition infrastructure for enhancing efficiency and comprehensibility of industrial process systems.*

Remus Floricel (Faculty of Science), *E-semigroups and related structures.*

Amr Henni (Faculty of Engineering and Applied Science), *Adsorptive absorption studies of carbon dioxide capture using novel functionalized zeolites and ZIFs in solutions of ionic liquids and amines.*

R. Scott Murphy (Faculty of Science), *Photoresponsive lipid-based self-assemblies.*

Samira Sadaoui (Faculty of Science), *Adaptive and incremental auction fraud detection and combinatorial auction winner determination.*

Daoyong Yang (Faculty of Engineering and Applied Science), *Integrated reservoir characterization and performance optimization for enhancing hydrocarbon recovery with nanoagents under uncertainty.*

Fanhua Zeng (Faculty of Engineering and Applied Science), *Fundamental study of solvent-based EOR processes for post-CHOPS reservoirs.*

2. As the number of immigrants and refugees living in Regina grows, newcomers face challenges settling into their new lives. Faculty of Social Work's **Daniel Kikulwe**, **Donalda Halabuza** and **Crystal Giesbrecht** and **Christine Massing** from the Faculty of Education obtained a contract for nearly $20,000 with Regina Region Local Immigration Partnership for research into identifying barriers faced by newcomers in accessing childcare, education and employment opportunities, as well as identifying supports for successful adaptation. Graduate students **Needal Ghadi** (Education) and **Akram Kangouri** (Sociology) were research assistants on this project.

3. Using a smartphone app, **Tarun Katapally**, assistant professor in the Johnson Shoyama School of Public Policy, will crowdsource data on the physical activity of Saskatchewan residents to understand and map their movement patterns. The goal is to discover how, where, when and how much we move to help enable residents to be more active, and to map barriers and facilitators for active living. This "SMART" study (**S**askatchewan, let's **M**ove **A**nd map ou**R** activi**T**y) is supported by $118,500 from Saskatchewan Health Research Foundation (SHRF), plus in-kind contributions of $360,000 from the YMCA.

4. The University of Regina was awarded close to $1 million to help advance important projects that significantly impact the lives of Canadians.

The Social Sciences and Humanities Research Council (SSHRC) awarded Insight Grants and Insight Development Grants for researchers to support a number of projects, from examining the Sixties Scoop – the wave of Indigenous child welfare apprehensions between 1960 and 1985 – to climate hazards, such as floods and fires, to exploring how youth engage with their society through digital citizenship.

These federal grants celebrate the curiosity and commitment of researchers to tackle complex questions, build understanding, increase knowledge and contribute to society.

Insight Grants recipients

Raymond Blake (Faculty of Arts), *Confederation and the quest for citizenship: Social rights and the union of Newfoundland and Canada.*

Amber Fletcher (Faculty of Arts), *Social dimensions of climate hazards: Adapting to wildfire and flood in Saskatchewan's farm, forestry, and First Nations communities.*

Raven Sinclair (Faculty of Social Work), *A genealogical study of Indigenous adoption in Canada: A multi-faceted examination of events in the removal of Indigenous children with a concentration on child welfare policy shifts between 1950 and 1985.*

Insight Development Grants recipients

Andrew Stevens (Faculty of Business Administration),


Raven Sinclair

Saskatchewan in the global division of migrant labour.

Rebecca Genoe (Faculty of Kinesiology and Health Studies), *Strengthening our services: Identifying the strengths, needs and opportunities of therapeutic recreation professionals within Saskatchewan.*

Alison Molina-Giron (Faculty of Education), *Digital citizenship: Investigating the civic and political engagement of Canadian youth.*

Megan Smith (Faculty of Media, Art, and Performance), *Durational performances in physical computing: A X-Canada bike journey through Google Streetview.*

5. Every year millions die due to bacterial infections caused by E. coli and other bacterial pathogens, because bacteria are becoming resistant to the antimicrobials used to fight them.

The Honourable Ralph Goodale announced more than $1.1 million in federal funding for **Mohan Babu**, assistant professor in the Department of Chemistry and Biochemistry, who is working to understand and combat antibiotic resistance.

"Saskatchewan is home to some of Canada's leading health researchers. This project is an example of the leading-edge research being done in the province," says Goodale. "It also highlights the strong support for research and innovation at the University of Regina."

Babu says he is grateful for the support from the Canadian Institutes for Health Research (CIHR), a federal funding agency.

"This award has come at the right moment. My team has accomplished a lot in the area of bacterial genetics and systems biology, and we now have the financial capability and innovative strategies to take the next steps toward identifying new drug targets," says Babu. "This means we are closer to coming up with new, broad-spectrum drugs that will kill bacterial infections like E. coli."

Babu says the work his lab is doing on E. coli will be applied more broadly in the future. "Our goal is to produce effective therapeutic strategies to mitigate antibiotic resistance."

"My team has accomplished a lot in the area of bacterial genetics and systems biology, and we now have the financial capability and innovative strategies to take the next steps toward identifying new drug targets.This means we are closer to coming up with new, broad-spectrum drugs that will kill bacterial infections like E. coli."

- Mohan Babu

5

Collaborate

REVOLUTIONIZING PLANT RESEARCH

A project with the potential to revolutionize plant research and contribute to global food security is underway in Saskatchewan.

The international collaboration, which involves the University of Regina, the Sylvia Fedoruk Canadian Centre for Nuclear Innovation, the Global Institute for Food Security and the Thomas Jefferson National Accelerator Facility in Virginia, focuses on a real-time imaging detector called the PhytoPET.

The PhytoPET, developed at the Jefferson Lab, works like a CT scan and is used to study plants under various conditions. Using radioisotopes, the nuclear imaging allows researchers to delve deeper into how plants respond to a number of environmental stresses, from drought to infections to insect infestations. It's a Canadian first and will add a new dimension to the power of genomics through the emerging field of digital agriculture.

The PhytoPET will permanently operate in the Saskatchewan Centre for Cyclotron Sciences in Saskatoon, where researchers from across the country will have access to the technology and train other scientists and students in its use.

"This transformative research has the potential to change plant research in Saskatchewan and globally in a most profound way," says Zisis Papandreou, principal investigator and University of Regina professor in the Department of Physics.

This project was supported by a $1.45 million contribution from the Fedoruk Centre, funding it received from Innovation Saskatchewan.

BIG DATA COULD HELP REDUCE CRIME

A partnership between a team of researchers from the University of Regina's Department of Computer Science and ISM Canada is looking at ways to tackle crime in the streets.

A specialist in information technology storage and analytics, ISM provides support to many clients. One of those clients, the Ministry of Justice, wondered if connections could be made using millions of pieces of data to help them create new crime reduction initiatives in Saskatchewan.

ISM teamed up with University researchers Howard Hamilton, Robert Hilderman, Orland Hoeber, Xue Dong Yang, Jingtao Yao, Yiyu Yao, Sandra Zilles and several students to apply their data science expertise to answering the Ministry's query.

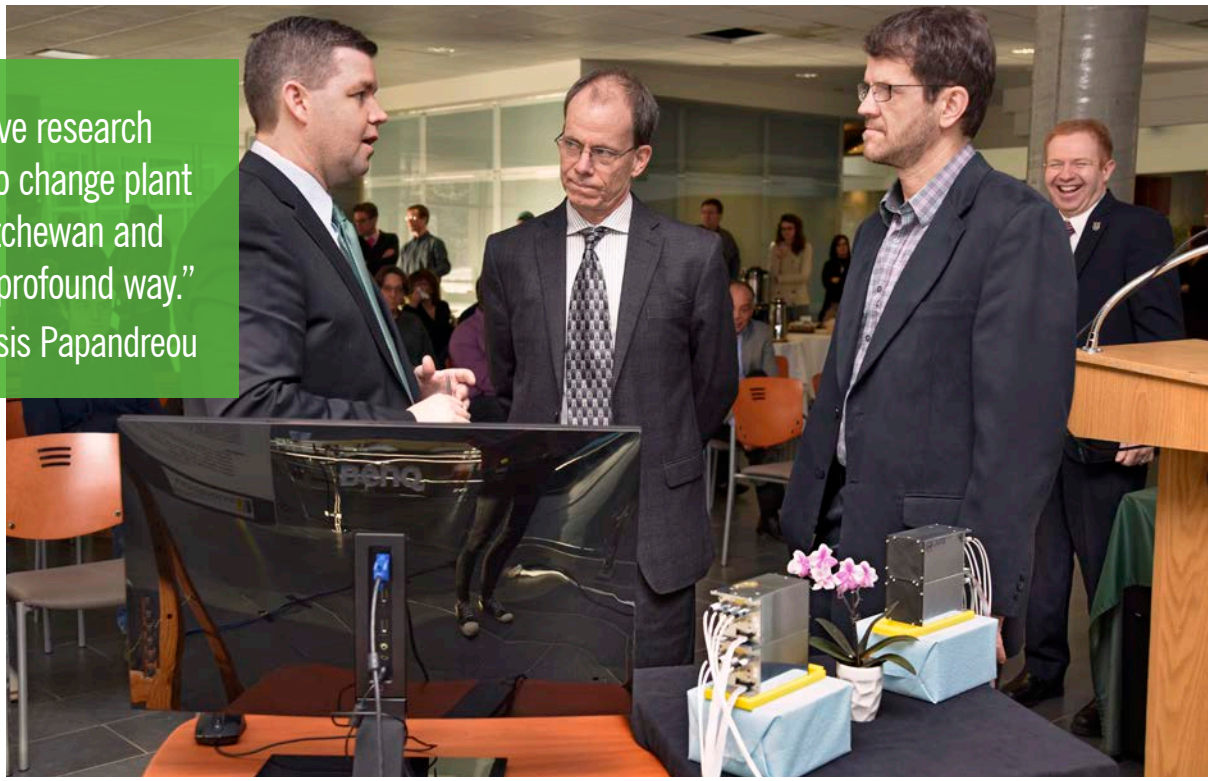
One project uses big data to see if connections can be made between different crimes taking place in similar locations, such as increased graffiti and break-and-enters, with the aim of reducing crime.

Another uses publically available data, such as tweets or posts to social media sites, to determine if someone expresses intent to commit crimes. Combined with other available information, the data allows for a much richer picture of how and where crimes might take place.

When completed, the data mining and visualization software could prove to be important tools to support crime-reduction programs.

This project is funded by Mitacs, a national, not-for-profit organization that works with universities, companies and federal and provincial governments to support innovation in Canada.

"This transformative research has the potential to change plant research in Saskatchewan and globally in a most profound way."
- Zisis Papandreou



The Honourable Jeremy Harrison, Minister responsible for Innovation Saskatchewan, speaking with Drew Weisenberger (Jefferson Lab) and Zisis Papandreou (U of R physics) about the PhytoPET (lower right) – a small but sophisticated piece of scientific equipment that can study plants in different conditions.

"Our discovery was made possible by our varied research backgrounds and our ability to work together to make something happen."

- Brian Sterenberg

DEVELOPING STRATEGIC ALLIANCES IN FIRST NATIONS COMMUNITIES

Researchers at the First Nations University of Canada, in partnership with the University of Regina and an international team of investigators, are tackling an issue that's crucial to Aboriginal peoples in Canada: how to sustainably and profitably develop resources within the jurisdiction of First Nations' communities while preserving heritage and culture.

Bob Kayseas, professor and associate vice-president academic at the First Nations University of Canada, and Peter Moroz, professor in the Paul J. Hill School of Business at the University of Regina, are co-principal investigators in a project that seeks to answer this question. They have engaged in a partnership with the Onion Lake Cree Nation to tackle this problem using a research design founded upon mutual respect, identifying individual community needs and reciprocity.

The urgency of this research is clear: First Nations land and human capital assets have long attracted the attention of private companies seeking to exploit the vast deposits of natural resources within traditional Indigenous territories. The outcomes have yielded mixed results. Yet, certain partnerships between Aboriginal and non-Aboriginal organizations have played a key role in driving economic and community development within First Nations communities. A collection of Saskatchewan-based First Nations is working with the research team to shed light on the processes used in forming and leveraging these partnerships so as to improve well-being and secure independence in the governance of their communities.

This research is supported by the Social Sciences and Humanities Research Council and the Onion Lake Cree Nation.

SASKATCHEWAN RESEARCHERS HONE IN ON ANTIBIOTIC FOR STAPH INFECTIONS

An interdisciplinary team of researchers has created a potent new synthetic antibiotic that is effective against several drug-resistant pathogens, including the bacteria responsible for Staph infections.

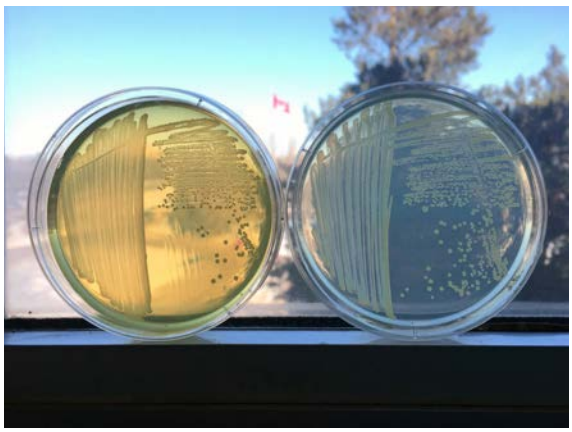
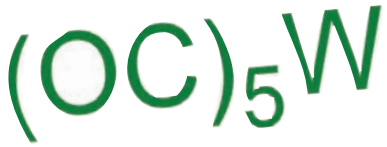
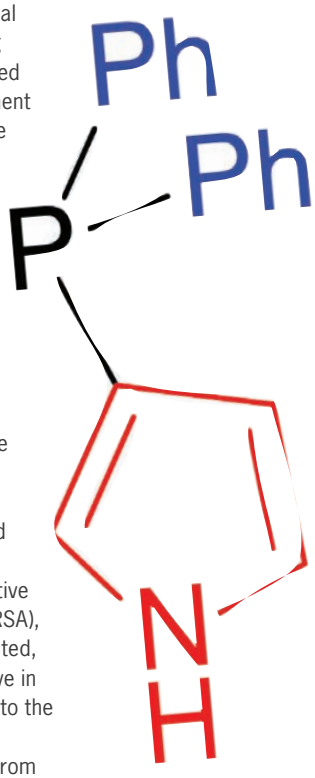


Photo courtesy of Ashley Williams

The antibiotic that researchers from the University of Regina and the University of Saskatchewan are working on could prove successful in the battle against antibiotic resistance because the new compound, phosphopyricin, is synthetic. John Stavrinides, University of Regina microbiologist, explains the significance of this shift to synthetic antibiotics.

"First, this synthetic antibiotic doesn't occur naturally so is evolutionarily foreign to bacteria, possibly making it less prone to antibiotic resistance mechanisms used by drug-resistant bacteria. Second, widespread antibiotic use results in antibiotic residuals accumulating in the general environment, contributing to the evolution of multi-drug resistance. But our antibiotic breaks down when exposed to light, so it's less likely to accumulate in the environment compared with other antibiotics. This may help slow the evolution of resistance to our antibiotic."





Jane Alcorn, University of Saskatchewan professor of pharmacy, says the antibiotic does not appear to be toxic to mice when given orally. "The next step will be to identify the specific mechanism of action, and also determine how effective this synthetic antibiotic would be in the human body."

The team found the antibiotic compound to be effective against methicillin-resistant *Staphylococcus aureus* (MRSA), which can cause life-threatening infections if left untreated, and vancomycin-resistant Enterococcus (VRE), which live in the human intestine and urinary tract and are resistant to the antibiotic vancomycin.

The interdisciplinary team, which includes students from both universities, was initiated years ago through a casual conversation between Stavrinides and Brian Sterenberg, associate professor in the Department of Chemistry and Biochemistry at the University of Regina. Stavrinides then enlisted the help of Alcorn to evaluate the toxicity of the synthetic compounds.

"One potential impact of this work is that it may encourage others to look for antibiotics in unconventional areas," says Sterenberg. "Our discovery was made possible by our varied research backgrounds and our ability to work together to make something happen."

The team's research was published in Scientific Reports, an online, open access journal from the publishers of Nature.

This research is supported by the Natural Sciences and Engineering Research Council (NSERC), Canada Foundation for Innovation (CFI), the Saskatchewan Health Research Foundation (SHRF) and a Saskatchewan Innovation and Opportunity Scholarship.

Above: The compound phosphopyricin.

Left: The compound developed by the research team is found to be effective against two types of bacteria (shown here) responsible for Staph infections.

Riding through walls

> "As people engage more with social media, they are leaving digital traces of themselves behind in multiple places and ways."

A vintage Air Wing stationary bike and $40 worth of technology are propelling University of Regina researcher Megan Smith across Canada – without ever leaving campus.

Using Google platforms like Google Street View and YouTube, Smith is riding, virtually, from Dallas Road in Victoria to the tip of Cape Breton Island to explore society's relationship with data.

"As people engage more with social media, they are leaving digital traces of themselves behind in multiple places and ways," says Smith, a new media artist in the Faculty of Media, Art, and Performance. "I'm exploring these snippets of data by virtually biking along the Trans-Canada Highway and examining how Google mobile has recorded data and stitched the imagery together."

The stitching isn't always seamless; this road trip has seen Smith flung inside of shops and dropped off roads as the Google camera jumps between images. She's also witnessed some strange sights, including a helicopter being towed down a deserted road.

Smith encourages public participation by live-casting this real-time research and documenting the journey – feeding data back into the system from which it came. You can join the journey at: www.ridingthroughwalls.megansmith.ca.

Smith's research is supported by the Social Sciences and Humanities Research Council (SSHRC).

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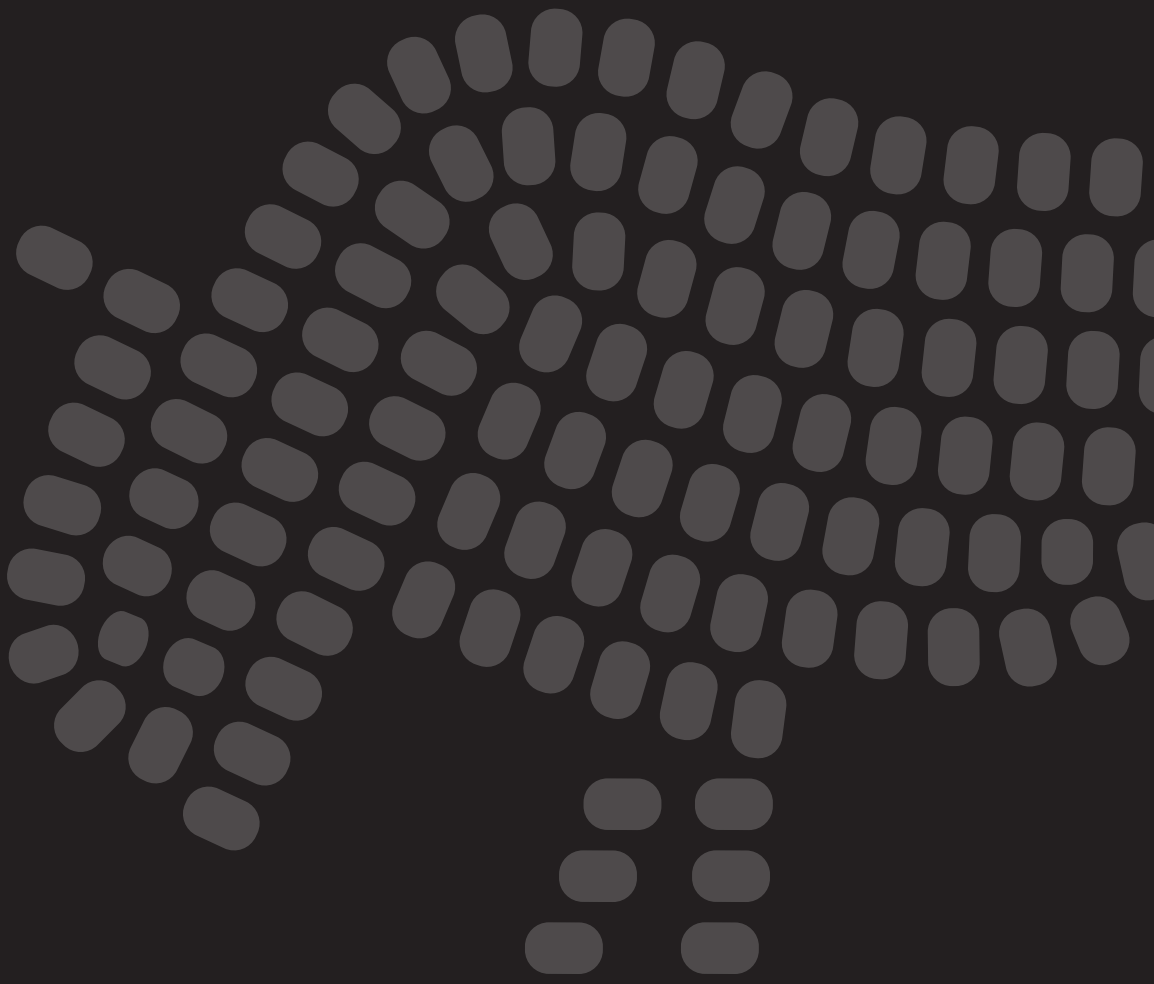

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