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Discovery Digest is a glimpse into how University of Saskatchewan research, scholarly and artistic work is making a difference for Saskatchewan, Canada, and the world. Curated by the Research Profile and Impact unit, Office of the Vice-President Research. [Feedback welcome!](#)

This Month's Stories



VIDO scientists receive leadership awards for excellence in vaccine research

Scientists at the University of Saskatchewan's (USask) Vaccine and Infectious Disease Organization (VIDO) have been recognized by the Canadian Institutes of Health Research (CIHR) for their international leadership in vaccine research for infectious diseases.

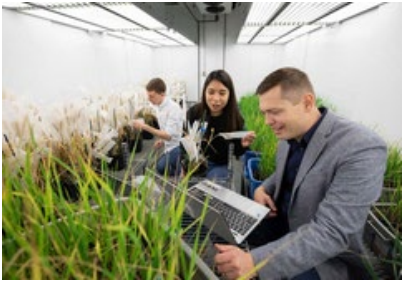
Drs. **Darryl Falzarano** (PhD) and **Alyson Kelvin** (PhD) received CIHR Leadership Awards for Excellence in Vaccine Research for Infectious Diseases of Epidemic Potential. In total CIHR funded six awards, with five in partnership with the Coalition for Epidemic Preparedness Innovations (CEPI). CIHR and CEPI will provide \$2.7 million in grant funding to support Canadian scientists pursuing projects to prepare for epidemic and pandemic threats. [Video about Falzarano's work.](#) [Video about Kelvin's work.](#)

USask research: Building pathways of healing and justice

USask sociologist Dr. **Julie Kaye** (PhD), associate professor in the College of Arts and Science, is spearheading a research project that enacts a transformative vision of access to justice and prevention of gender-based violence. Co-directed by Dr. **Hadley Friedland** (PhD), Dr. **Val Napoleon** (PhD), and Professor **Patricia Barkaskas** (JD), the project has been awarded a \$700,000 grant by the Social Sciences and Humanities Research Council of Canada and Women and Gender Equality Canada.



[USask students training for the future in agriculture](#)



technology

Graduate students at USask will experience a one-of-a-kind training opportunity thanks to a new program that has received a \$1.6 million grant from the Natural Sciences and Engineering Research Council of Canada (NSERC).

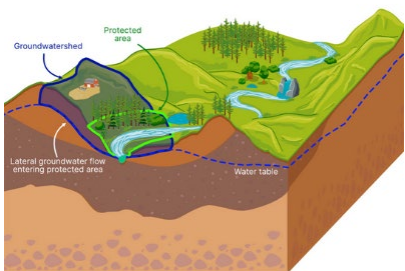
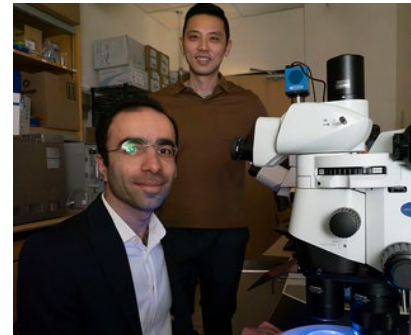
Led by Dr. **Ian Stavness** (PhD), associate professor in the College of Arts and Science, and Enhancement Chair at USask's Global Institute for Food Security (GIFS), the NSERC CREATE grant in Computational Agriculture will explore the deep-rooted collaboration between plant and computer sciences at USask, driving economic competitiveness and environmental sustainability in the agricultural sector through leveraging data-rich processes.

Protein from a round worm may unlock a cellular 'fountain of youth': USask research

A one-millimetre-long nematode worm and its genome may be the key to understanding how human and animal cells age, according to new research from USask published in the journal *Aging Cell*.

Led by WCVN veterinary microbiologist Dr. **Michael Wu** (PhD), the research team which included master's student

Hadi Tabarraei, doctoral student **Brandon Waddell**, and undergraduate students **Kelly Raymond** and **Sydney Murray**, identified a pair of genes responsible for clearing cells of the toxins which accumulate in the body and are responsible for aging. By inactivating genes called CCF-1 and PAL-1, the researchers found nematodes die 50 per cent faster than normal. Approximately 40 per cent of nematode genes, including those studied, have the same function in humans.



Majority of world's protected ecosystems vulnerable to groundwater degradation

Beneath the surface of the Earth's protected ecosystems lies a hidden threat—most of these areas rely on groundwater in danger of being contaminated, drained away, or both.

According to analysis published recently in the journal *Nature Sustainability* and led by USask Global Institute for Water Security (GIWS) doctoral student **Xander Huggins**, most of the world's protected areas—like nature preserves and national parks where human activity is restricted—have ecosystems that rely on groundwater. Of these protected areas, 85 per cent depend on groundwater from beyond protection boundaries, leaving ecosystems at risk from exterior contamination and overuse.

USask study focuses on COVID-19 impact on immigrants

An international team led by USask College of Arts and Science researcher Dr. **Veronika Makarova** (PhD) has been awarded \$500,000 in special funding under Canada's New Frontiers in Research to study the disproportionate impact the COVID-19 pandemic had on immigrants in Canada with weaker English or French language skills. The study is the first in Canada to examine communication and linguistic needs of immigrant populations during and after emergencies, and propose better ways to help. The team will study how pandemic response measures led to destabilizing the health, cultural and language practices of immigrants now living in Saskatchewan, Alberta and Germany, whose mother tongue is Ukrainian or Russian.



Agro-waste could be the solution to a cleaner water supply in Sask

USask graduate student **Bernd Steiger**, supervised by Dr. **Lee Wilson** (PhD), professor in the Department of Chemistry in the USask College of Arts and Science, researches how typically non-consumable agricultural byproducts—like wheat straw, coffee grounds and oat hulls—could serve as the basis for new adsorbent materials

By placing adsorbent materials in simulated aquatic environments that have been contaminated with substances such as lead, Steiger is checking which materials show the most promise in drawing contaminants out of the water supply.

USask's Pierson revolutionizing human-assisted reproduction

A new statistical methodology developed by USask College of Medicine researcher Dr. **Roger Pierson** (PhD), his daughter and USask alumna Dr. **Hannah Pierson** (PhD), and an international team promises to revolutionize the field of assisted reproduction technology. The team has developed an algorithm to tease out the relative contribution of the embryo, the endometrium and embryo transfer efficiency. This algorithm, in combination with another technology Pierson has developed to assess endometrial receptivity to an embryo placement, holds the potential to significantly improve the care of women globally, Pierson says. The findings were published May 1 in the journal, *Reproductive Biomedicine Online*.



USask-led Global Water Futures marks the end of an era and looks to the future

Global Water Futures (GWF), the world's largest university



freshwater research program, was established in 2016 with a \$77.84 million grant from the Canada First Research Excellence Fund (CFREF) and featured a unique partnership between the program's lead institutions: USask, University of Waterloo, McMaster University, and Wilfrid Laurier University, that works with over 500 user groups and supports the research of more than 200 professors at 23 universities across Canada.

Hundreds of scientists and researchers from across Canada gathered in Saskatoon in May for the finale of the seven-year, USask-led initiative.

GWF research will continue thanks to facility research funding from the Canada Foundation for Innovation (CFI) Major Science Initiative (MSI) grant for the Global Water Futures Observatories (GWFO) network.

USask researchers develop new online nutrient calculator for crop needs

USask College of Agriculture and Bioresources soil scientists Dr. **Fran Walley** (PhD) and Dr. **Rich Farrell** (PhD) have launched the ***Prairie Nutrient Removal Calculator***—an online tool to help make on-farm fertilizer decisions. It's not a new concept, but the calculator is fueled by new, local data collected from commercial farms in Manitoba, Saskatchewan, and Alberta, with collaboration from numerous producer groups and industry. The new resource for farmers and agronomists will help build a more complete picture of the nutrient requirements of key crops grown across Western Canada.



Scientists work toward goal of saving bison, one problem at a time

Conservation efforts over the past 100 years have helped restore once-dominant, wild bison herds, but many animals continue to be infected with diseases such as brucellosis—a bacterial infection which causes abortions, infertility, and reduced milk production.

Veterinary student **Nolan Kennedy** worked with WCVI reproduction specialist Dr. **Gregg Adams** (DVM, PhD) and his team to troubleshoot problems related to disinfecting and freezing bison semen before transport, ensuring semen collected from any bison herd can be relocated risk-free to revitalize herds with new genetics.

Critical research a central focus of 'Campaign for USask'

Last month, USask launched its *Be What the World Needs*

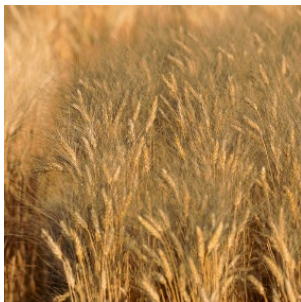
– *the Campaign for USask*. The goal is to raise \$500 million, making it the biggest fundraising campaign in Saskatchewan’s history. One of the four campaign priorities is Critical Research. As one of Canada’s top 15 leading research universities, USask leads critical research by confronting humanity’s greatest challenges and opportunities.



Drone innovation by USask researcher comes from family farm roots



VIDO and VFI collaborate to strengthen pandemic preparedness



CDC durum variety named for its dark awns

Stay connected with USask research news



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Use the hashtag [#USaskResearch](#) when sharing USask-related research findings, publications or achievements on social media.



ICYMI: This year's TEDxUniversityofSaskatchewan videos are now available!

USask is home to pioneers in discovery who are improving lives, expanding opportunities, strengthening social cohesion and protecting the environment. In the spirit of ideas worth spreading, they took to the TEDx stage in January with compelling stories of ambition and achievements, sharing their voice and vision to be what the world needs.

Whether you missed the event or just want to re-watch the amazing talks, [find all the videos online](#).

Learn more [about the event](#).

In the *Conversation*...

Why rural Canadians need public transit just as urgently as suburbanites

By SENS adjunct researcher Dr. Sarah-Patricia Breen (PhD)

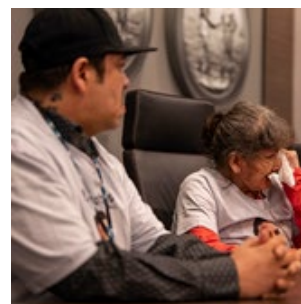
There is a continuing misunderstanding of rural realities by policymakers. Ultimately this puts transit out of reach for many rural areas.



How colonial racism fuels Saskatchewan's criminalization of Indigenous men

By USask researchers Dr. Kathy Walker (PhD) and Prof. Randy Morin

Indigenous people shouldn't have to fear police who are supposed to protect them but instead still act as judge, jury and executioner.



Upcoming events



Join Campus Conversations

Campus Conversations—conversations on research, scholarly, and artistic work at USask— are an opportunity for VP Research Baljit Singh and the OVPR leadership to connect with and hear from staff, students, and especially researchers at USask.

Mark your calendars. Everyone is welcome.

The 2022-23 Campus Conversations will be held in person from **12 - 12:45 p.m.** on:

- **June 14, at Convocation Hall**

In the news

- May 15 – CBC News - **After early heat, experts say Prairies to face climate challenges in season ahead**
 - May 12 – MSN News/Canadian Press - **Visualizing community workshop aims to promote better relations**
 - May 11 – Global News/MSN Video - **USask driving simulator aims to improve skills of new Saskatchewan drivers**
 - May 10 – CBC News, MSN News, ICI Radio Canada, - **You may soon be eating more gene-edited food with Canada's updated seed rules**
 - May 9 – Global News/MSN News - **USask researcher helps couples determine probability of assisted reproduction success**
 - May 4 – CBC News/MSN News - **La Loche latest to evacuate in early start to Sask. wildfire season**
 - May 2 – Globe and Mail - **Ottawa offered striking workers a lump sum payment – that could become a bargaining norm**
 - May 1 – CBC Radio, SaskToday.ca, CTV Saskatoon, Education News Canada - **Researchers discover genes in worms that could slow aging in humans**
 - April 27 – Western Producer - **Project studies how to measure soil carbon**
 - April 24 – Global News/MSN News - **'Super bright and super crazy': Northern lights takes over Saskatchewan sky**
 - April 20 – Western Producer - **New insect lab begins work at Sask. university**
 - April 20 – Toronto Star, Globe and Mail, Vancouver Sun - **B.C. First Nation says 40 unmarked graves found**
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Banner image photo credit: **Meet Your Local Backyard Buddy** - By **Georgiana Antochi-Crihan**, Plant Sciences masters student

Images of Research 2023 - *Runner-up, More than Meets the Eye*

Did you know that there are an estimated 7 million insect species on our planet? Insects play many roles in our ecosystem, including pollination, pest control, and nutrient recycling. This little friend is a thistle tortoise beetle (*Cassida rubiginosa*). They are very effective at reducing Canada thistle (*Cirsium arvense*) populations and are found locally in our backyard!

Interestingly, this beetle was unexpectedly found in the middle of a wheat field. Despite the vast quantity of insects worldwide, little is known about their distribution throughout Saskatchewan. My project aims to fill this knowledge gap by inventorying the insect diversity of our prairies. By gaining insight into the true distribution of insects across the prairies, we can better implement insect management strategies.

Funders: MITACS, Ducks Unlimited Canada, SaskWheat



BE WHAT THE WORLD NEEDS

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