

# Discovery Digest

BE WHAT THE WORLD NEEDS

September 2020 - Issue 32

*In this issue:* \$3.2M from CIHR for USask health research, Crop Development Centre awarded \$2.7M for barley breeding, USask researchers honoured by Royal Society of Canada, USask researchers get NSERC funding to develop new tech to fight COVID-19, and so much more!

Every month, USask Research Profile and Impact highlights research from across campus. *Discovery Digest* is a glimpse into how USask research, scholarly and artistic work is making a difference for Saskatchewan, Canada, and the world. **Feedback welcome!**

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## COVID-19 Update:

A total of more than 730 research activity permits involving faculty, staff and students have been issued to USask faculty since the end of March. The result is that around 325 faculty, 775 students and 625 staff have been approved for research activity so far on campus. [COVID-19 research updates are available here.](#)

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## Top Stories



### Innovation Saskatchewan awards \$1M to USask research projects

Nine USask research projects have been awarded a total of more than \$1 million by Innovation Saskatchewan. The projects will include developing new therapies for the HIV virus, creating artificial substitutes for human tissue and organs, and predicting cyberattacks.

The major investment from Saskatchewan's Innovation and Science Fund is in addition to \$1.3 million previously awarded to these USask research infrastructure projects by the Canada Foundation for Innovation. [Read the details of all the projects funded.](#)

### CIHR awards \$3.26 million for six new USask health research projects

- USask kinesiologist Dr. **Heather Foulds** (PhD), Heart & Stroke Foundation/CIHR Indigenous Early Career Women's Heart and Brain Health Chair has



been awarded more than \$1M to lead a study on the physical and mental health benefits of Métis dancing—an important cultural and spiritual activity for Métis people.



- Saskatoon Health Authority radiopharmacist and USask medical imaging professor Dr. **Humphrey Fonge** (PhD), collaborating with USask pathology professor Dr. **Ron Geyer** (PhD), Nutrien Chair in Clinical Research, has been awarded \$970,000 to develop new precision cancer therapeutics against resistant and triple negative breast cancers. The new compounds are expected to be more effective than current treatment methods in more than half of all breast cancers.
- USask researcher Dr. **Ellen Wasan** (PhD) from the College of Pharmacy and Nutrition, working with VIDO-InterVac vaccine researchers Dr. **Yan Zhou** (PhD) and Dr. **Volker Gerdts** (DVM, PhD), and UBC scientists Drs. Bob Hancock and Kishor Wasan, will lead a team awarded \$745,000 over 5 years to study enhancing the activity of nasally-administered vaccines for influenza and pertussis (whooping cough). The project is also supported by \$200,000 from the NanoMedicines Innovation Network.
- USask sociologist Dr. **Elizabeth Quinlan** (PhD) has been awarded \$275,000 to conduct and evaluate participatory theatre workshops with undergraduate and graduate students at USask, Brock University, and University of Waterloo, contributing to their universities' responses to sexual violence.
- USask health researcher Dr. **Malcolm King** (PhD), collaborating with internal medicine specialist Dr. **Alexandra King** (MD), Cameco Chair in Indigenous Health and Wellness, has been awarded a total of \$200,000 to lead two projects: 1) examining how Indigenous concepts of wellness can be applied to benefit a Northern Saskatchewan Cree community, and 2) how a wholistic, community-led substance use program can be adapted and expanded across the North, and how providing assisted living facilities for seniors in a northern Indigenous community can help retain traditional knowledge.



### USask barley breeding research awarded \$2.7 million

The Canadian Barley Research Coalition, a national not-for-profit organization funded by barley producers in Alberta, Saskatchewan, and Manitoba, has announced it will invest \$2.7 million over five years in USask's Crop Development Centre (CDC) through a core breeding agreement to develop barley varieties with improved crop production, disease resistance, and quality. The funding will support skilled personnel, CDC's in-house research labs, and the ability to evaluate many barley breeding lines. CDC

scientist Dr. **Aaron Beattie** (PhD) is pictured above. [Read the news release.](#)



### Three USask female faculty members honored by the Royal Society of Canada

Two USask faculty members—internationally renowned artist and sculptor **Alison Norlen** (M.F.A.) and historian Dr. **Valerie Korinek** (PhD)—have been named Fellows of the Royal Society of Canada (RSC), the national academy of distinguished scholars, scientists, artists and humanists.

As well, the society has named USask biologist Dr. **Christy Morrissey** (PhD), a highly regarded international leader in avian and aquatic ecotoxicology, as a member of RSC's College of New Scholars, Artists and Scientists which celebrates research excellence at an early career stage. [Read the full story.](#) [Watch videos about each awardee.](#)



### Royal Society of Canada honours renowned USask researchers Creed, Dalai

Two internationally renowned University of Saskatchewan (USask) researchers—Dr. **Irena Creed** (PhD) and Dr. **Ajay Dalai** (PhD)—have been recognized by the Royal Society of Canada (RSC) with prestigious awards that rank among the country's highest honours for academics.

Creed, professor in the School of Environment and Sustainability and Associate Vice-President Research, is only the second woman to receive RSC's Bancroft Award since the awards were initiated in 1968 to honour outstanding contributions to earth sciences.

Dalai, USask Canada Research Chair of Bio-energy and Environmentally Friendly Chemical Processing and Distinguished Professor in Chemical and Biological Engineering, was awarded RSC's Miroslaw Romanowski Medal for outstanding contributions to environmental science.

### USask researchers take aim at airborne COVID-19 virus

With COVID-19 rapid-response funding from NSERC, USask research teams working with industry, public, and non-profit partners are developing technologies to combat the pandemic.



- Engineering researchers Dr. **Carey Simonson** (PhD) and Dr. **Jafar Soltan** (PhD) are each leading teams to improve ventilation systems to remove or neutralize airborne virus particles.
- Dr. **Sven Achenbach** (PhD) will use the Canadian Light Source synchrotron, a national research facility of USask, to develop specialized zone plates to focus X-ray beams for improved drug testing.
- Veterinary microbiologist Dr. **Vikram Misra** (PhD) will lead an interdisciplinary team to develop a blood test to monitor many wildlife species for exposure to SARS-CoV-2,

the COVID-19-causing virus.

- Mechanical engineering researcher Dr. **Chris Zhang** (PhD) will study how various types of health data can be integrated to help health care decision makers.

### Read the full story.



#### First Sylvia Fedoruk biography launched with online event

Organized by USask Research Profile and Impact, USask Chancellor Emerita Dr. **Vera Pezer** (PhD) introduced the Sept. 15<sup>th</sup> online launch of *A Radiant Life: The Honourable Sylvia Fedoruk, Scientist, Sports Icon, and Stateswoman* (University of Regina Press).

In this the first biography of Sylvia Fedoruk (1927-2012), USask-trained historian Dr. **Merle Massie** (PhD), who also co-ordinates undergraduate research initiatives at the university, chronicles Fedoruk's remarkable life and career. Well-known for co-developing the cobalt-60 USask technology that revolutionized cancer treatment around the world, Fedoruk went on to become the university's first female chancellor (1986) and the province's first female lieutenant governor (1988).

- [Read the OCN article](#)
- [Watch the recording of the book launch](#)
- [Watch a short video on Fedoruk's life](#)
- [Visit the new USask Cobalt 60 website on the Cobalt-60 discovery and its legacy](#)



#### Dr. Baljit Singh appointed USask Vice-President Research

Following an extensive national and international search, **Dr. Baljit Singh** (PhD), a highly accomplished veterinary researcher, educator and administrator, has been named vice-president research, effective February 1, 2021.

Singh, who spent 17 years at USask, including as associate dean of research for USask's Western College of Veterinary Medicine from 2011 to 2016, is currently dean of veterinary medicine at the University of Calgary. He will succeed Dr. **Karen Chad** (PhD) who has served as USask vice-president research since 2008, and who has agreed to stay on in the role until Jan. 31, 2021. [Watch a video of Dr. Singh's appointment.](#)



#### USask launches Canadian Hub for Applied and Social Research

Today, USask launched the **Canadian Hub for Applied and Social Research** (CHASR), pronounced "chaser," which will support clients—including academic researchers, governments, non-profit organizations and private companies—to advance research projects of all sizes. Evolved from the former Social

Sciences Research Laboratories (SSRL) based in USask's College of Arts and Science, the rebranded research support and consulting hub offers a unique array of research support services, including gathering data on public opinion and human behaviour. [Read the details of the new hub.](#)



### USask alumni medical scientist to be featured on Canadian stamp

Biophysicist Dr. **James Till** (PhD), who completed a bachelor's and master's at USask and studied under Dr. Harold Johns, is one of six Canadian medical scientists featured on a series of Canada Post stamps just announced. Till was one of the discoverers of stem cells, research he did with Dr. Ernest McCulloch while at the Ontario Cancer Centre. Till is also a member of the Canadian Medical Hall of Fame. [Read about the stamp series.](#) [Read about Till's discoveries.](#)



### Safeguarding Your Research

This week, the Canadian government released a **suite of tools and resources** to help university researchers secure their research from unwanted threats. All members of the research community—including those in government, academia, and the private sector—are encouraged to take extra precautions to protect the security of COVID-19 related research, intellectual property and knowledge development.

While this work has been underway for some time, the COVID-19 pandemic has highlighted the importance of these tools; there have been repeated efforts to gain illegal access to Canadian research on a COVID-19 vaccine.

A federal **policy statement** provides additional background information on the tools and context. Universities Canada and the U15 have also developed **two tools** to help sensitize university researchers to some of the security risks associated with international research partnerships and travel.

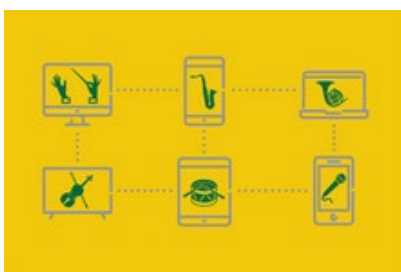
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## COVID-19 Research



### USask respirologist offers tips for wearing masks, and why they work

USask respiratory expert Dr. **Erika Penz** (MD) says there are plenty of good reasons why masks help protect you and others around you. [Read the full story.](#)



### USask music ensembles go virtual

In response to COVID-19, the USask **music ensembles** have been converted to a new virtual format for the Fall 2020 term. Students are invited to join or audition before early September. Details and deadlines are given on each ensemble's webpage. **Read the full story.**



### USask researchers mobilize knowledge on COVID-19

A USask research team led by USask biomedical engineering professor Dr. **Daniel Chen** (PhD) has designed and produced a series of educational comics and videos that teach both children and adults basic information about COVID-19 and its diagnosis and treatment.

PhD student **Amanda Zimmerling** has helped produce the educational materials which **were highlighted in a two-page *StarPhoenix* article.** The project was funded by a \$10,000 Saskatchewan Health Research Foundation (SHRF) COVID-19 Research Connection Rapid Response Grant. **The videos and comics can be accessed on the USask Research website.**



### USask Mozambique maternal health project gets COVID-19 funding boost

Global Affairs Canada will invest \$390,000 in a project led by USask social epidemiologist **Nazeem Muhajarine** (PhD) to support a partnership with the Mozambique-Inhambane government in responding to COVID-19.

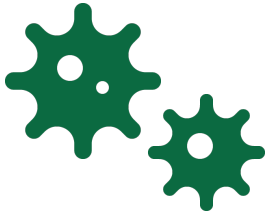
"This funding is very helpful as we work with our health partner in Inhambane to strengthen their capacity to do testing and tracing, procure PPE, and enhance education and information campaigns to stem the spread of the virus," said Muhajarine, who leads the \$16.6-million Mozambique Canada Maternal Health Project funded by Global Affairs.

The project will also raise awareness about combating negative impacts of the pandemic on women and girls, such as not seeking care, partner violence, and lack of opportunities to continue education.



### USask VIDO-InterVac team finds tiny antibody stymies COVID-19 virus

VIDO-InterVac researcher Dr. **Darryl Falzarano** (PhD) and veterinary microbiology doctoral student **Swarali Kulkarni** have determined an engineered antibody — known as Ab8 — was effective in treating and preventing SARS-CoV-2 infection in hamsters. Ab8 was isolated and engineered by a team at the University of Pittsburgh and is the smallest biological molecule to date that completely and specifically neutralizes the SARS-CoV-2 virus. **Read the paper just published in the journal *Cell*.** **Read**



USask researchers in a wide range of fields are undertaking critical research to help combat COVID-19. [Read other stories.](#)

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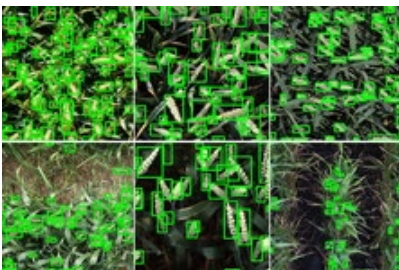
## Food Security



### USask Global Institute for Food Security partners on supercluster project to help lower crop pesticide use

USask digital agriculture researchers led by computer scientist Dr. **Ian Stavness** (PhD) are part of a new Protein Industries Canada (PIC) consortium that will develop technology to help lower pesticide use across Canada, making crop protection more efficient and providing economic benefits for farmers.

Led by Precision.ai Inc., Sure Growth Technologies, Exceed Grain Marketing, and USask's Global Institute for Food Security, the \$26.2-million PIC project will examine using artificial intelligence to target weeds and other pest crops. PIC is investing \$12.8 million in the project, with the partners investing the remaining \$13.4 million. [Read the full story.](#)



### USask and GIFS host global software competition to advance digital agriculture

More than 2,200 international data science research teams competed for a total of \$15,000 in prize money from the Global Wheat Head Detection Challenge, an online research competition led by USask computer scientist Dr. **Ian Stavness** (PhD) and international partners at eight other research institutions.

The goal was to develop a computer software model for more effectively counting wheat heads to estimate yields using image analysis—currently, wheat heads are painstakingly, manually counted by visually examining digital photos. The results will benefit agricultural producers, breeders, and researchers studying plant traits (phenomics) for genetic improvement. [Read the full story.](#)

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## Telling your research story

*Young Innovators*

## supplies

Predicting snowmelt in the mountain headwaters of the world's major rivers is now vastly more accurate thanks to a new USask computer simulation model that can improve forecasts of downstream river flow—an innovation that will improve water management in the face of a changing climate. Dr. **Chris Marsh** (PhD) developed the model as part of his PhD project supervised by hydrologists Dr. **John Pomeroy** (PhD) and Dr. **Howard Wheeler** (PhD), in collaboration with USask computer science professor **Raymond Spiteri** (PhD) and USask computer scientist **Kevin Green**. [Read the full story.](#)



## #MeToo movement needs to be more inclusive—USask study

University students see the #MeToo movement as key to raising sexual assault awareness but think the movement needs to include minorities and gender-diverse people, USask psychology post-doctoral fellow Dr. **Linzi Williamson** (PhD) has found. She was supervised by psychology professor Dr. **Karen Lawson** (PhD). USask psychology post-doctoral fellow Dr. **Melanie Bayly** (PhD) and former master's student **Evan Poncelet** collaborated on her study. [Read the full story.](#)



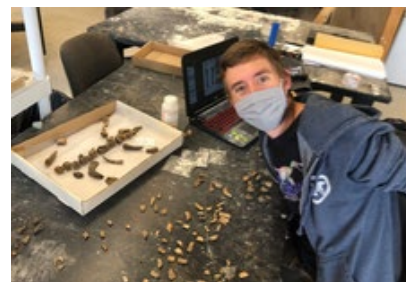
## How science should support researchers with visual impairments

USask chemistry PhD student **Naheda Sahtout** says being legally blind does not fundamentally affect her skills and argues that science needs to start a conversation to attract and empower more researchers like her. Read her piece written for [Nature Careers Community](#).



## USask student finds rare ancient reptile skeleton in Saskatchewan

When undergraduate student **Jack Milligan** spotted the distinctive hourglass shape at his feet near Climax, Sask., he knew immediately what he was looking at a piece of what would turn out to be the second-most complete champsosaur skeleton—a crocodile-like creature—ever uncovered in the province. [Read the full story.](#)



## USask history student featured on SSHRC website

The *Young Innovators* story about USask history graduate **Derek Cameron**'s research on the Spanish flu pandemic's



lessons has been featured prominently on the Social Sciences and Humanities Research Council website. [Read the full story.](#)



### USask physics PhD student makes *Nature*-published discovery about ice

USask PhD student **Robert Bauer**, supervised by Dr. **John Tse** (PhD) and collaborating with researchers from University of Tokyo, Japan's Neutron Science and Technology Center, and the Japan Atomic Energy Agency, has made a discovery that revises understanding of how ice behaves at extremely low temperature and high pressure.



**In the journal *Nature***, the team reports that regular ice behaves like two different substances at extremely low temperatures (-173 C) and at incredibly high pressure (10,000 to 15,000 times atmospheric pressure on Earth). By compressing the ice very slowly, over a period of more than a day, the ice slowly loses its crystalline shape, changing into an unstructured, amorphous form. By then compressing it to more than the equivalent of 15,000 times the Earth's pressure, the ice adopted a cubic, crystalline form. The results refute an earlier study which showed that compressing and cooling ice maintained a crystalline form throughout its transformation. [Read the paper.](#)

*In the news*



### USask VIDO-InterVac research on COVID-19 in the news

VIDO-InterVac's director Dr. **Volker Gerdtts** (PhD) was interviewed on [Pamela Wallin's No Nonsense Podcast](#), as well as on [Global News, CBC Radio's Blue Sky](#). VIDO-InterVac COVID-19 research is also the focus of an on-going podcast series with [CBC Front Burner](#) — [the first episode is now available.](#)

*In* **THE CONVERSATION**

### The throne speech: Fiscal prudes are fretting about the wrong issues

Dr. **Marc-Andre Pigeon** (PhD), researcher in the Johnson Shoyama Graduate School of Public Policy and director of the Canadian Centre for the Study of Co-operatives

"While those on the left, right and middle worry about the federal deficit, the real world that we live in is in trouble. The fiscal prudes are fretting about the wrong issues."



## Write about your own research in The Conversation

USask is a founding member of The Conversation Canada, an online academic journalism hub/newswire where researchers write plain-language editorials and explainers articles about their research. Articles written by USask researchers have been read more than 2.15 million times since the university entered into a partnership with the SSHRC-funded Conversation Canada in June 2017.

Writing is easier than you think!

**Watch a video from Conversation Canada Editor-in-Chief Scott White.**



Want to reach a broad audience with your research? Consider submitting an item to the Conversation. **Wondering where to start? Read a short explainer on how to write for The Conversation Canada. Read previous USask articles here** and **get in touch with Research Profile and Impact.**

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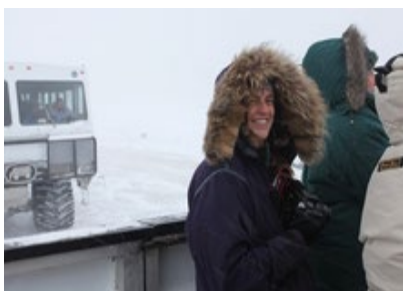
## Animal and Environmental Health



### In vitro fertilization successful with baby bison

In early July, two Wood bison calves were born at USask's Livestock and Forage Centre of Excellence's specialized livestock facility, southeast of Saskatoon. The bison calves are the first to be born from frozen in vitro embryos produced from immature eggs collected from live bison.

The success was achieved by Dr. **Gregg Adams** (DVM)'s team, including veterinary biomedical sciences PhD student **Miranda Zwiefelhofer**. **Read the full story.**



### SENS student researching polar bear-human conflicts

USask School of Environment and Sustainability (SENS) master's student **Katie Manning** is putting her skills to work studying local knowledge of polar bear-human conflicts in northern Manitoba. Supervised by SENS professor Dr. **Doug Clark** (PhD), Manning's study is focused on helping northerners take more active roles in wildlife monitoring and research. **Read the full story.**

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## Arts and artistic work

### USask violinist's new album chosen as "need to hear"

USask violinist and David L. Kaplan Chair in Music Dr.



**Véronique Mathieu** (D.Mus) has just released a new solo violin album, *Cortège*, accompanied by University of Florida pianist Jasmin Arakawa. The album honors the 20th-century output of French composers Debussy, Boulanger, Bacri, and Poulenc. **The album was picked by CBC Music as one of 22 albums you need to hear this summer.** Released by Navona Records, **the album can be streamed on Spotify** and **purchased online.**



### **USask scientist and award-winning author collaborate**

Renowned USask snow hydrologist Dr. **John Pomeroy** (PhD) has helped award-winning local writer **Leona Theis**, a USask alumna, ensure accuracy in a chapter of her book *If Sylvia Had Nine Lives*, released on Sept. 1. The novel is about a woman's adventures and misadventures in nine parallel lives over a span of 40 years. In her "9<sup>th</sup>" most advanced life, the protagonist chooses to become a graduate student at USask working on mountain snow hydrology. Theis is one of 35 writers from across Canada longlisted for the **2020 CBC Nonfiction Prize. Read the full story.**

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## **Webinars and Lectures**



### **Oct. 1 - Online lecture: *International Cooperation in North American Politics***

Hosted by the USask political studies department, USask alumna Dr. Rachel McCormick, Canada's Consul General to the U.S. states of Arkansas, Louisiana, New Mexico, Oklahoma, and Texas, will give an online lecture titled *International Cooperation in North American Politics*. The event is open to the public and free to attend. Oct. 1, 5 p.m. **Read the details. Register for the event.**

### **Fall 2020 Fine Arts Research Lecture Series**

For the past 20 years, the USask music department has hosted an annual series of lectures which feature music faculty and staff, as well as guest lecturers. This year's fall series will be held via **Zoom video conferencing**. (Meeting ID: 851 5579 9357 Passcode: 602390)



- *"Confidence, motivation and self-talk management for musicians"*-- Wed. Sept. 30 at 12:30 p.m. -- featuring McGill music professor **Carolyn Christie** (MHK), and hosted by flutist **Allison Miller**

- **“Being Lost”** -- Wed., Oct. 7 at 12:30 p.m. -- radio broadcaster and trombonist **Tom Allen** presents a pandemic exploration of what it means to be lost
  - **“The Huron Carol: The Construction of Canadian Cultural Icon”** -- Fri., Oct. 16 at 7:00 p.m. -- USask music professor Dr. **Jennifer Lang** (PhD) hosts singing teacher, composer and lecturer Dr. **Jeanette Gallant** (PhD) in a talk on the effects Christianization and colonization had on the Wendat First Nation community
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