

Discovery Digest

BE WHAT THE WORLD NEEDS

June 2021 - Issue 41

In this issue: Major new NSERC and SSHRC funding for USask projects announced, new synchrotron training program launches, new insight into Burgess shale fossils, COVID-19 research, and 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!](#)

Top Stories



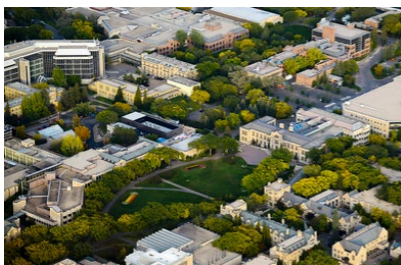
USask researchers awarded over \$5 million in NSERC Discovery Grants

USask researchers were awarded nearly \$5.7 million from Canada's Natural Sciences and Engineering Research Council's (NSERC) Discovery Grants Program to support 32 wide-ranging projects—up to five years of support for ongoing and long-term research which presents creativity

and innovation.

"The diversity of projects awarded Discovery Grant funding this year is representative of USask's impressive, diversified research atmosphere," said USask Vice-President Research Baljit Singh. "Our scientists are on a constant quest to provide discovery the world needs, and this deeply appreciated investment from the federal government will fuel these efforts."

[Complete list of USask recipients.](#)



USask researchers tackle societal issues with \$2 million in funding

Nine USask researchers have been awarded a total of \$2 million in federal funding to address critical societal issues in fields ranging from history, anthropology and sociology to wildlife, music, and art, with two projects relating to the impacts of COVID-19.

Nearly 70 per cent of the total funds committed to the Insight Grants (IG) by the Social Sciences and Humanities Research Council will support research projects with a focus on Indigenous peoples in Canada, Central America and Siberia. [Complete list of USask recipients.](#)



New \$1.65-million project will help develop next generation of scientists

A new training program just launched by USask aims to develop the skills needed for a professional career in synchrotron sciences, thanks to new funding from Canada's Natural Sciences and Engineering Research Council (NSERC).

The NSERC CREATE to INSPIRE program will train students how to work with Canada's only synchrotron, USask's Canadian Light Source (CLS), while learning the essential interpersonal and professional skills to thrive in a fast-paced, high-tech, team environment.

The program is led by ten researchers including Dr. **Ingrid Pickering** (PhD) from USask - spanning six departments across four colleges, and one from the University of Regina, and was one of only 13 projects across the country awarded a Collaborative Research and Training Experience (CREATE) grant. [The full story.](#)



USask researcher investigates the value of police street checks

A multidisciplinary research team led by Dr. **Scott Thompson** (PhD) will use a \$400,000 SSHRC Insight Grant to study prairie police services' use of street checks to determine the community impacts of the practice that is often criticized for unfair treatment of persons based on race and socioeconomic status.

Researchers will gather carding data from 34 municipal police services in Manitoba, Saskatchewan Alberta, and the RCMP, yielding a huge volume of information to be analyzed.

The research results of the usefulness of carding, and how these checks are experienced by citizens, will be shared with police leaders and boards, municipal leaders, and the community to inform future practices. [The full story.](#)



Fossil secret may shed light on the diversity of Earth's first animals

USask researchers, Dr. **Gabriela Mángano** (PhD) and Dr. **Luis Buatois** (PhD), along with a research team from the University of Portsmouth in the United Kingdom, are the first to model how the exceptionally well-preserved fossilized animals in British Columbia's Burgess shale

could have been moved by mudflows.

The finding, published in *Communications Earth & Environment*, offers a cautionary note on how palaeontologists build a picture from the remains of the creatures they study. Until now, it has been widely accepted that the extraordinary fossils of the Cambrian explosion (505 million years ago) are from animals that had all lived together, but the results of this study may suggest otherwise. [The full story.](#)

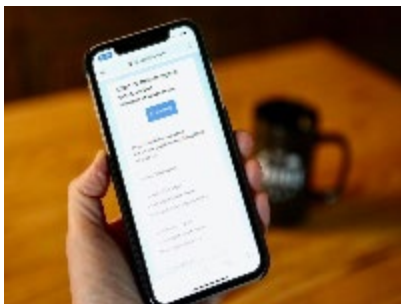
COVID-19 Research



Saskatchewan Blue Cross invests \$150K to help establish USask's VIDO as Canada's Centre for Pandemic Research

VIDO at USask is one step closer to establishing its Centre for Pandemic Research, thanks to a \$150,000 donation from Saskatchewan Blue Cross. The funding will help expand VIDO's research capacity to rapidly respond to emerging infectious diseases, contributing to upgrading and expanding VIDO's infrastructure as well as supporting research and scientific training.

As part of the partnership, Saskatchewan Blue Cross and VIDO are hosting an **"Ask a Scientist"** virtual event on June 24, 2021 for residents of Saskatchewan to ask questions and learn more about VIDO and its ongoing research. [The full story.](#) [Register for the virtual event.](#)



Smartphone survey to collect Saskatchewan residents' perception of COVID-19

A USask research team is asking Saskatchewan residents to use their smartphones and give vital input about COVID-19 public health measures. Using a series of five-minute surveys paired with GPS data, the researchers want to better understand people's perceptions about public health messaging and the risk of COVID-19 over the next four months.

Dr. **Jenny Basran** (MD) of the College of Medicine leads the study that includes Dr. **Patrick Seitzinger** (MD, MPH), veterinary researcher Dr. **Cheryl Waldner** (DVM, PhD), and computer scientist Dr. **Nathaniel Osgood** (PhD). [The full story.](#)



Renowned virologist joins USask as VIDO's newest scientist

The Vaccine and Infectious Disease Organization (VIDO) has welcomed renowned virologist and research scientist, Dr. **Angela Rasmussen** (PhD), to contribute to USask's world-class pandemic research. The former

faculty member of the Columbia Mailman School of Public Health in New York, USA, brings a wealth of knowledge in viral interactions and disease outcomes to USask.

She hopes to focus her work on discovering how vaccines can provide protection against future emerging viruses. [The full story.](#)



COVID-19 impacts on land-based learning

Dr. **Alex Wilson** (EdD), director of the College of Education's Aboriginal Education Research Centre, recently released survey findings that studied how Indigenous educators and knowledge keepers have adapted their land-based learning and cultural programming during the COVID-19 pandemic.

In addition to a discussion of workarounds and practice adaptations shared in the survey by land-based educators, the [report](#) includes a curated list of webinars, videos, podcasts, toolkits, teaching materials and other resources related to Indigenous land-based education.

The report was made in collaboration with Making The Shift Youth Homelessness Social Innovation Lab and the Dechinta Centre for Research and Learning.



'In a war zone': Dr. Alex Wong looks back at the COVID-19 pandemic

USask Infectious disease specialist, Dr. **Alex Wong** (MD), considers public health, politics, and complicated decision making during the pandemic in an episode of the College of Medicine's *Researchers Under the Scope* podcast. Much like HIV-AIDS and Hepatitis C, COVID-19 devastated poor, marginalized and vulnerable

populations in Saskatchewan.

Wong spent the SARS-CoV-2 pandemic treating patients, answering questions, and briefing health teams at the Regina General Hospital. In the near future, he hopes to see a return to more normal life and encourages all to keep getting vaccinated when they are eligible. [The full interview.](#)

COVID-19 Research

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

Health research

[USask researchers funded to tackle MS, osteoporosis, and plant health](#)



Three interdisciplinary, multi-institutional projects led by USask researchers have each been awarded \$250,000 over two years under the federal New Frontiers in Research Fund (NFRF) Exploration grant program. The funding aims to foster innovative high-risk research with the potential for significant and impactful results.

- Dr. **Michael Levin** (MD) and team will combine synchrotron technology, computational biology, and molecular neurobiology to design treatments for decreasing nerve cell deterioration in multiple sclerosis (MS) patients.
- Dr. **David Cooper** (PhD) and his research team will use bone science, biomedical engineering, synchrotron imaging, and computer modelling for developing better treatment regimens for osteoporosis.
- Dr. **Byung-Kook (Brian) Ham** (PhD) and his research team are looking to combine plant biology and plasma physics along with real-time imaging to help improve crops by studying how a live plant's vascular system.

The full story.



Gomez-Picos pursues PhD in a pandemic

Originally from Mexico, Dr. **Patsy Gomez-Picos** (PhD) moved to Saskatoon for her doctoral program at USask. The graduate student in the College of Medicine's Department of Anatomy, Physiology and Pharmacology, received her degree during USask's 2021 Spring Convocation.

Gomez-Picos' research investigated the evolution of skeletal cells, and how cells make cartilage and bone in vertebrae in different animals. The research has real-world applications for osteoarthritis, a disease that affects many individuals in Canada, and has high costs to the Canadian health care system.

For her academic success, Gomez-Picos was awarded the dean's scholarship for three years, along with the departmental scholarship for international USask students. [The full story.](#)



Investment in 'hungry young wolves' yielding dividends

After trailing in U15 rankings for health research among the medical research-intensive universities in 2016, USask College of Medicine Vice-Dean Research, **Dr. Marek Radomski** (MD, PhD), set out to court the best

biomedical researchers.

In 2018, the college began offering a generous startup package of funding and mentorship to equip early career scientists to quickly become competitive in national

grant competitions.

Since then, the college has recruited seven “hungry young wolves” who are quickly making names for themselves and improving the program’s reputation, including Drs. **Scott Widenmaier** (PhD), **Kerry Lavender** (PhD), **Anand Krishnan** (PhD) and **Jenny-Lee Thomassin** (PhD). [The full story.](#)



‘Good Troublemaker’: Manuela Valle-Castro roots out bias in medicine

USask College of Medicine Division of Social Accountability director, Dr. **Maneula Valle-Castro** (PhD), is renowned for championing health equity in the fields of medical education and research and has been featured on an episode of the *Researchers Under the Scope* podcast.

Valle-Castro first became interested in health equity and community engagement following a childhood spent pushing back against oppressive political regimes in her home country of Chile alongside her family.

After completing her PhD in Gender, Race, Sexuality and Social Justice at the University of British Columbia and since joining the College of Medicine in 2020, Valle-Castro is working to dismantle bias and unconscious discrimination in medical training and biomedical research.

She said the key to health equity is to listen, promote, and act on advice from racialized people, immigrants, those with disabilities and different lived experiences. [The full interview.](#)



USask researchers awarded grants to support knowledge mobilization in health research

The Saskatchewan Health Research Foundation (SHRF) Research Connections grants support research initiatives with a direct link to practical applications for Saskatchewan knowledge users with a goal of sharing findings in non-academic settings. Six USask researchers and projects were selected as grant recipients for the 2021-22 year. [The successful recipients and projects are detailed online.](#)

Animal health research

New study evaluates importance of forage for animal health and beef quality

USask agricultural researcher, Dr. **Greg Penner** (PhD), and his team in the Livestock Forage and Excellence Centre (LFCE) have developed multiple projects aimed at



creating better value in livestock for Canadian beef producers using best-practice forage techniques—optimizing digestive health in cattle while minimizing producer costs and environmental impact. The study findings have been published in *Translational Animal Science*. [The full story.](#)

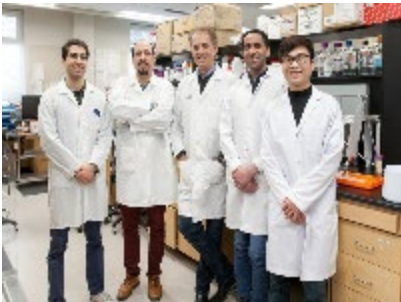


Surveillance project identifies pathogens in dogs on Prairies

Most households include a pet, yet there's no disease surveillance on companion animals in Western Canada. A new Western College of Veterinary Medicine (WCV) project addresses that void by identifying pathogens of concern in dogs.

Dr. **Erica Sims** (PhD,) who leads the canine portion of the Companion Animal Surveillance Initiative, and her graduate supervisor, WCV researcher Dr. **Tasha Epp** (PhD), have listed nearly 600 pathogens in dogs, and identified 84 disease-causing agents in Western Canada.

Once the initiative is developed, an online portal will allow veterinarians to report disease cases and track surveillance trends. [The full story.](#)



Graduate student submits top award-winning thesis research on male reproduction

Master's student Dr. **Tat-Chuan Cham** (DVM), supervised by WCV professor Dr. **Ali Honaramooz** (DVM, PhD), has created an organoid—a simplified version of an organ produced *in vitro*, the first of its kind produced in a non-rodent species—using young piglet testis cells. The innovative research earned Cham the Master's Thesis

Award for the Life Sciences Discipline at USask. [The full story.](#)

Arts and humanities

USask researcher to collaborate with Elders and community members to highlight Métis history in Saskatoon

USask researcher, Dr. **Cheryl Troupe** (PhD), plans to use a technique known as deep mapping to shed new light on urban Métis experiences in 20th-century Saskatoon. She



will begin the research project this summer, in collaboration with Métis Elders in Saskatoon and Gabriel Dumont Local #11.

Deep-mapping techniques highlight the connections between geographical places and people's memories and personal identities, creating a layered sense of place that is interlinked with personal narratives and recollections. [The full story.](#)



USask researcher receives grant to investigate impacts of public transit system disruption

USask Geography and Planning faculty member Dr. **Ehab Diab** (PhD) has received \$30,000 from the Social Sciences and Humanities Research Council of Canada (SSHRC) to pursue an understanding of how disruptions stemming from innovation and upgrading of transit systems can affect ridership.

The project aims to help transport authorities and cities in Canada better anticipate and manage change to facilitate sustainable and secure development of transit systems.

Water security research



Predicting the unpredictable: How scientists are improving cold-region water and climate prediction models

Dr. **Chris DeBeer** (PhD) and his team at the Changing Cold Regions Network (CCRN) and the Global Water Futures (GWF) conducted research aimed at improving forecasting and prediction models to better understand what challenges Western and Northern Canada might be facing in the future as the planet heats up.

The world is changing rapidly, and the past is no longer a guide to the future in terms of extreme events and floods, says the findings of the research program, published in [Hydrology and Earth System Sciences](#). [The full story.](#)

Space research

[Sarty's USask team tests technology for MRI in space](#)



A USask research team headed by Dr. **Gordon Sarty** (PhD) recently completed in-flight testing of a lightweight ankle-sized MRI designed to monitor the health of astronauts on future space missions.

USask graduate students Faezeh Ebadollahi, Hammed Ejalonibu, Pallavir Bohidar and Farnaz Zohourparvaz joined Sarty, head of the Department of Psychology and interim chair of biomedical engineering.

Working with the Canadian Space Agency, Sarty's team successfully tested the MRI technology aboard a National Research Council jet on a series of steep climbs and dives to simulate zero gravity conditions of space flight. [The full story.](#)

Telling your research story



ICYMI: Social Media for Researchers workshop recording now available

On May 26, 2021, USask and Saskatchewan Health Research Foundation (SHRF) jointly presented a workshop so researchers could learn more about the tools, techniques and benefits of using social media to engage audiences with their research.

Panelists included SHRF Engagement Specialist, **Nikki Desjardins**; USask Communications Specialist, **Chris Morin**; Vaccine and Infectious Disease Organization (VIDO) Research Scientist, Dr. **Angela Rasmussen** (PhD); and moderated by USask Research Profile and Impact Director, **Heather Persson**. [The workshop video.](#)

In **THE CONVERSATION**

Canada needs a national public transportation system — here's why

USask researchers Dr. Jacob Albin Korem Alhassan (PhD) and Dr. Lori Hanson (PhD), and University of Regina's Dr. Cindy Hanson (PhD)

Many communities in Canada currently lack intercity and regional transportation. A national public transportation system would improve connectedness between cities and access to essential services.



AstraZeneca second dose: Should I get the same vaccine or choose Pfizer or Moderna?

Infectious disease specialist Dr. Alexander Wong (MD)

Hundreds of thousands of Canadians got a shot of AstraZeneca's

COVID-19 vaccine for their first dose. They now have a choice for their second dose: AstraZeneca again, or Pfizer or Moderna mRNA vaccine?

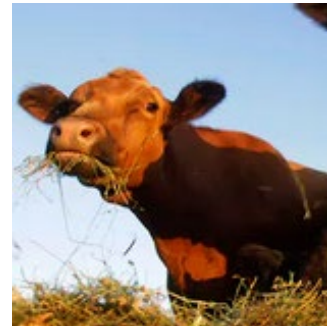
(aussi **disponible en français**)



How plant-based diets could help prevent the next COVID-19

Political scientist **Dr. Kurtis Boyer (PhD)**

Pandemic viruses arise from raising, harvesting and eating animals. Policy strategy for averting the next pandemic should include supporting those already seeking to make plant-based dietary changes.



Is it time to move Ottawa out of Ottawa?

Dr. Loleen Berdahl (PhD), executive director of Johnson Shoyama Graduate School of Public Policy

If work doesn't need to be done in Ottawa-area offices, does it need to be done in Ottawa at all?



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 2.3 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 pitching 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.**



USask and City of Saskatoon named to Smart Cities list for wastewater projects

USask and the City of Saskatoon have been globally recognized with a Smart 50 Award for their collaborative effort in using water-based epidemiology to predict environmental contaminants and trends in Saskatoon. Spearheading the projects are USask toxicologist, Dr. **Markus Brinkmann** (PhD), and the manager of the City of Saskatoon Water Treatment Plant, **Mike Sadowski**.

Smart 50 Awards recognize global “smart cities” projects, honouring “the most innovative and influential work” using technology to improve quality of life in municipal communities.

The award will be presented at the Smart 50 Awards gala in Washington, D.C., in October 2021. **The full story.**



USask faculty member continues reign as board chair of the Canadian Foundation for Innovation

Dr. **Ingrid Pickering** (PhD) has been named to a second, three-year term as Canada Foundation for Innovation (CFI) board of directors chair.

Pickering, a professor in the USask Department of Geological Sciences and Canada Research Chair in molecular environmental science, was first named to the CFI board chair role in 2018, the first woman appointed to the position. She has served on the CFI board since 2013 and will hold the three-year CFI chair concurrently with her USask appointment.

Pickering is also a Fellow of the Royal Society of Canada. Her research involves the use and development of synchrotron light techniques to investigate the roles of metals and other elements in living systems, cross-disciplinary research that encompasses both environmental and biomedical interests.



PhD student receives Weston Family Award in Northern Research

Western College of Veterinary Medicine (WCVN) PhD candidate **Kayla Buhler** is one of 10 young Canadian scientists selected to receive the prestigious Weston Family Awards in Northern Research. The two-year scholarships, worth \$50,000 each, support research in Canada’s North.

Buhler’s research focuses on zoonotic diseases, which are illnesses transmitted between

animals and people. She's studying vector-borne diseases between mosquitoes and other animals — Arctic foxes, small rodents and caribou — in the Arctic.

The award will help Buhler to fund her research and to extend her stay in the North: "Working closely (and in person) with northern communities is vital to ensure that collaborations remain strong," said Buhler. [The full story.](#)



USask psychology and reproduction science students awarded Governor General's Gold Medal

Clinical psychology graduate Dr. **Ian McPhail** (PhD) and reproduction science graduate Dr. **Rodrigo Carrasco's** (PhD) have each been awarded the Governor General's Gold Medal for outstanding academic performance in a graduate program. The award is based on a student's thesis, coursework, publications and other criteria and students in every USask graduate program are eligible to be nominated.

McPhail's research focuses on pedophilia and sexual offending against children. One key finding: pedophilia does not exist as a spectrum but as a set of discrete categories. This discovery could have a significant impact on future research and treatment of pedophilia, allowing researchers and clinicians to identify important differences between groups of individuals who previously would have been mixed together. [The full story.](#)

Carrasco's work focused on the action of a protein called nerve growth factor (NGF) present in the semen of several mammals including llamas, camels and alpacas which may trigger ovulation in these species. Carrasco's findings could potentially lead to new reproductive control methods in both livestock and humans by using drugs to control the function of tanycytes (a group of cells in the hypothalamus). [The full story.](#)



Former USask researchers earn Marie Skłodowska-Curie Action fellowships

Two former researchers at the Western College of Veterinary Medicine (WCVM) have received Marie Skłodowska-Curie Action fellowships, a competitive award based in the European Union that benefits researchers globally.

Drs. **Juan Bertucci** (PhD) and **Emilio Vélez** (PhD) were members of WCVM researcher Dr. **Suraj Unniappan's** (PhD) comparative endocrinology lab. The fellowships will aid both researchers in continuing their postdoctoral work.

Bertucci is now studying sea urchin larvae at the Spanish Institution of Oceanography in Spain while Vélez investigates chaperone-mediated autophagy in fish at the National Research Institute for Agriculture, Food and Environment in France. [The full story.](#)

[USask faculty member nominated for Western Canadian Music Award](#)



Dr. **Véronique Mathieu** (DMus), professional violinist and faculty member in the USask Department of Music, has been nominated for a 2021 Western Canadian Music Award for Classical Artist or Ensemble of the Year along

with pianist, Jasmin Arakawa.

Mathieu's nominated CD work, *Cortège*, explores the works of renowned French composers, Claude Debussy, Lili Boulanger, Nicolas Bacri and Francis Poulenc.

Besides being a soloist and chamber musician, Mathieu is an Associate Professor of Violin at USask and has been named as the first David L. Kaplan Chair in Music. Mathieu is also the co-founder and artistic director of non-profit organization, NAVO, whose work brings world-class music performances to the Midwest (U.S.).



USask veterinarian receives Staff Excellence award for research operations during the pandemic

Kurtis Swekla, clinical veterinarian and Director of Animal Ethics in the Office of the Vice-President Research, has been selected for a 2021 University Staff Excellence Award for his role in adapting USask research to the widespread disruptions of COVID-19.

Swekla ensured vital animal research continued and that the animals received high-quality care through the unexpected challenges of the pandemic.

Swekla has been fundamental in facilitating vital COVID-19 research at the Vaccine and Infectious Disease Organization (VIDO), including vaccine development and testing, ethics reviews, acquisition of animals for research and return of essential research staff to work on campus.

In the news

- VIDO's COVID-19 research has been featured in:
 - *The New York Times* - June 9 - **Wuhan animal markets sold dozens of species that can carry pathogens that infect humans, a study found.**
 - *The Washington Post* - June 4- **We may never know where the virus came from. But evidence still suggests nature.**
 - *The Washington Post* - May 17- **Opinion: Vaccines didn't stop the Yankees' covid-19 outbreak. But the case proves how well they work**
 - *Global News* (1,2), *CBC News* (1,2)
 - A **Government of Canada biomanufacturing video series**
- **New USask research will make bean crops hardier, help improve global food security**, seen by more than 3.3 million, and featured by Lab Manager Magazine,



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