

Discovery Digest

BE WHAT THE WORLD NEEDS

February 2021 - Issue 37

In this issue: USask VIDO's first COVID vaccine begins human clinical trials, a new perspective on trilobytes, new major funding for livestock research, USask discovery leads to a rethinking of how Alzheimer's Disease works, and much, 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!**

Get the latest in [COVID-19 Updates online](#).



Paper accepted for publication? Get in touch!

Contact USask's **Research Profile and Impact** unit before your newsworthy publication comes out! We need at least one week lead time to properly support your work, so don't wait—get in touch early! Email: Research.Communications@usask.ca

Top Stories



USask's VIDO begins COVID-19 vaccine clinical trials at CCFV

The first volunteers have been selected for a vaccine trial of COVAC-2, a COVID-19 vaccine developed by the Vaccine and infectious Disease Organization (VIDO) at USask. The combined Phase 1/Phase 2 study will involve giving two doses to 108 healthy volunteers in a placebo-controlled study at the Canadian Center for Vaccinology (CCFV) in Halifax. The Phase 2 trial will then involve expanded safety and efficacy testing in involving hundreds of volunteers across Canada.

COVAC-2 is the first of VIDO's two subunit vaccines to enter clinical testing. The technology is already used in several commercially available vaccines and use non-infectious viral protein. This vaccine will not require ultra-cold storage temperatures. **Read**

the details.



USask research rewrites the story of early arthropods

Until now, trilobites—the hard-shelled animals whose fossils dominate the record of early life on Earth—were thought to have lived only in oceans. A new study led by Dr. **Gabriela Mángano** (PhD) and Dr. **Luis Buatois** (PhD) of the USask Department of Geological Sciences challenges this assumption. Mángano, Buatois and a team of Argentinian researchers discovered fossil evidence of trilobites that were able to venture upstream into estuaries during the Ordovician Period approximately 460 million years ago. The discovery shows that some trilobite groups could tolerate environments with lower salt concentrations, taking advantage of reduced competition with other species in these settings. [Read the paper in *Proceedings of the Royal Society B*.](#)



USask livestock research receives significant investment to advance industry

Saskatchewan's Agriculture Development Fund (ADF) has awarded more than \$6.5 million to support livestock research efforts at USask. The funding includes support for operations at the Prairie Swine Centre (\$1.9 million) and \$1.58 million for operations at the Vaccine and Infectious Disease Organization (VIDO).

The funding was also awarded to 19 individual projects tackling topics from chemical-free methods of egg decontamination to easing the pain of castration in cattle. [Read the details.](#)



USask-led research team shows alternate form of brain protein that causes Alzheimer's actually protects against the disease

Findings from a new study on Alzheimer's disease (AD), led by USask neuroscience researcher Dr. **Darrell Mousseau** (PhD), could eventually help clinicians identify people at highest risk for developing the irreversible, progressive brain disorder and pave the way for treatments that slow or prevent its onset.

The research, [published in the journal *Scientific Reports*](#) in early January, has demonstrated that a shorter form of the protein peptide believed responsible for causing AD (beta-amyloid 42, or A β 42) halts the damage-causing mechanism of its longer counterpart. [Read the full story.](#)

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



USask awarded \$650K to work with First Nations and Métis communities to address the impacts of COVID-19

USask team was named one of the 15 winners of the North American 2020 TD Ready Challenge presented by TD Bank Group and awarded a \$650,000 grant to conduct research which will help emergency response planners better meet the needs of Elders, women, girls, and gender-diverse people with training and support, particularly at emergency evacuation sites and during COVID-19 restrictions.

Working with partners the Federation of Sovereign Indigenous Nations (FSIN) and Métis Nation-Saskatchewan (MN-S), researchers with the First Nations and Métis Health Research Network (FMHRN) based at USask led by medical anthropologist Dr. **Caroline Tait** (PhD), a member of Métis Nation-Saskatchewan (MN-S), and Dr. **Simon Lambert** (PhD), a Māori researcher with expertise in Indigenous disaster risk reduction, will focus their research efforts on mitigating how natural disasters, including COVID-19, threaten First Nations and Métis communities. [Read the full story.](#)



USask COVID-19 research to track online hate directed at Asian community

What makes a social media post racist and how does that hatred spread? USask researchers Dr. **Zhi Li** (PhD), Dr. **Hongming Cheng** (PhD), and adjunct computer scientist Dr. **Roy Ka-Wei Lee** (PhD), partnered with the Saskatchewan Human Rights Commission (SHRC), will measure how social media hatred directed at the Asian community has risen dramatically during the COVID-19 pandemic.

The project was awarded almost \$25,000 by the Social Sciences and Humanities Research Council of Canada (SSHRC). [Read the full story.](#)



Unlocking how SARS-CoV2 stymies a cell's defences

USask molecular virologist Dr. **Anil Kumar** (PhD) is part of an international research team that has been studying the mechanisms the SARS-CoV2 virus uses to dampen the immune response of host cells during infection. The results just published in *Science Advances* focus on how a viral protein (NSP1) interferes with the communication between the nucleus and cytoplasm. NSP1 binds to key cellular proteins involved in messenger RNA export, inhibiting their function ultimately leading to poor antiviral response.

The research may lead to developing novel antiviral drugs and to better understanding

how SARS-COV2 variants adapt to overcoming antiviral defences and may correspond to more severe disease. [Read the full text.](#)



Adapting your research in a time of COVID

Have you been adapting your research program in innovative ways to pivot to our current pandemic reality? Have you changed your focus to study something COVID-specific? Have you found a new way to conduct your research remotely? *Research Profile and Impact* wants to tell that story. Send brief examples of how you have been coping to research.communications@usask.ca

Food security research



Global Institute for Food Security launches Canada's first integrated Omics and Precision Agriculture Laboratory at USask

The Global Institute for Food Security (GIFS) at USask has launched the Omics and Precision Agriculture Laboratory (OPAL)—the state-of-the-art facility combines the digital data analysis of microbial, plant and animal genes and traits with the latest precision agriculture technologies.

OPAL is the only facility in the country to provide analytical and computational services including genomics, phenomics, and bioinformatics, combining them with imaging such as Global Positioning Systems (GPS), Unmanned Aerial Vehicles (UAV), the remote aerial imaging of plants and in-field environmental monitoring.

The goal is to provide clients with a complete diagnostic profile of samples, and speed up innovation towards new agricultural and food products and services. [Read the details.](#)

Water security research



USask researchers use Fort McMurray model to develop ice-jam flood mitigation assessment process

A USask research team led by Dr. **Karl-Erich Lindenschmidt** (PhD) have developed a novel methodological approach to help flood managers assess the feasibility of three ways to mitigate ice-jam flooding—dredging river sediment at jam-prone sites, artificially breaking up ice using amphibious excavators (Amphibex), and building dikes.

Their findings, based on a sophisticated computer modelling framework of Fort McMurray, Alta., which has a lengthy history of flooding, were published in the *Journal of Flood Risk Management*. [Read the full story.](#)



USask researcher appointed to second term as science director of national Indigenous health institute

USask researcher in community health and epidemiology Dr. **Carrie Bourassa** (PhD) has been reappointed as science director to lead the Canadian Institutes for Health Research (CIHR) national Institute of Indigenous Peoples' Health (IIPH), based at USask. Since 2017 through the IIPH, she has led the advancement of a national health research agenda to improve and promote the health of First Nations, Inuit and Métis Peoples in Canada. In Dec. 2020, Bourassa was also awarded the Saskatchewan Health Research Foundation (SHRF) Achievement Award



Three research awards—Deadline Feb. 26

The Office of the Vice-President Research invites nominations for faculty members who have demonstrated excellence in their research, scholarly or artistic work.

The *Distinguished Researcher Award* applies to candidates that received their Ph.D or terminal degree 10 or more years ago whereas the *New Researcher Award* applies to candidates who are within 10 years of receiving their Ph.D or terminal degree. There is also a new award, The *Publicly Engaged Scholarship Team Award*, which is open to all tenured and tenure-track faculty members and/or members of the College of Graduate and Postdoctoral Studies at the university, their postdoctoral and graduate student researchers, and their collaborating and partnering communities.

Find more information here:

- *Distinguished Researcher Award*: [Nomination Process and Selection Criteria](#)
- *New Researcher Award*: [Nomination Process and Selection Criteria](#)
- *Publicly Engaged Scholarship Team Award*: [Nomination Process and Selection Criteria](#)

Please submit nomination packages and any questions to [Christopher Martin](#)

From the Office of the VP Research



New Vice President, Research offers greetings

Dr. **Baljit Singh** (PhD) officially assumed the role of USask's Vice President, Research, on Feb. 1.

He wrote a letter of greeting and intention to share with the community as he began his duties.

“The University of Saskatchewan is a great university with a glorious history in education, knowledge creation and dissemination, and contributions to the prosperity of local and global communities,” he wrote.

Singh left Saskatchewan to become Dean and Professor for the Faculty of Veterinary Medicine at the University of Calgary in 2016. He had previously spent 17 years at USask, including acting as associate dean of research at the Western College of Veterinary Medicine from 2011 to 2016.

Read the message.



Karen Chad reflects on her role as Vice President, Research

Dr. **Karen Chad** (PhD) poured the lessons and accomplishments of her more than a decade of leadership into a recollective document: Reflections of a Vice-President Research. In it she explores the accomplishments of the OVPR and research at USask in general, shares her approach and thanks those who supported her along the way.

Chad was honoured with an online celebration, led by USask President Peter Stoicheff on Jan. 29. **Read the reflections.**

Telling your research story



Images of Research 2021 – Submit from Mar. 1

USask’s Images of Research competition, organized by Research Profile and Impact, launches in March. Snap your research, scholarly, and artistic work and enter your images for the chance to win glory and cash prizes.

Get those shutters clicking and check [Research.USask.ca](https://www.usask.ca/research) for past winners and contest details. Submit your photo and artwork March 1-16, vote on your favourites March 17-31, and celebrate the winners in April.

In **THE CONVERSATION**

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 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.**

Commercialization



USask and Innovate Canmore partner to give researchers more commercialization opportunities

USask has had a long-standing relationship with the Town of Canmore and the broader Bow Valley Region, through the world-leading work of our Global Institute for Water Security and Global Water Futures program, strategically located at the headwaters of the Saskatchewan Rivers.

Now, we are excited to partner with the great team at Innovate Canmore to expand technology-commercialization opportunities for researchers, by tapping into the expertise and resources at Innovate Canmore to turn more USask discoveries into innovative technology products and global market-driven companies. **Read the details.**

Undergraduate research



UrbanFYRE at USask

The First Year Research Experience (FYRE) program at USask was developed to provide students with opportunities to jump into the research process early in their academic careers. In Fall 2020, undergraduate students in USask's Geology 130 FYRE course worked with City of Saskatoon data sets to create "UrbanFYRE."

Students used Census of Population data to explore and analyze local neighborhoods, presenting their research questions, methods and findings in three-minute videos. USask faculty, Dr. **Corinne Schuster-Wallace** (PhD) and Dr. **Paul Hackett** (PhD), worked with librarian Sarah Rutley to develop UrbanFYRE and bring students a unique research-based learning opportunity. **Read the full story.**

Opportunities

USask-founded project takes research data further

USask researchers can now use the Federated Research



Data Repository (FRDR – pronounced “fur-dur”), a new national data repository bringing together data from institutions across Canada.

One terabyte of repository storage is available to all faculty (more storage may be available upon request). Rather than serving as simply another cloud storage service, FRDR is robust repository option into which large research datasets can be ingested, curated, processed for preservation, discovered, cited, and shared. It employs a team of curators who help researchers prepare their datasets for final publication and can assign a unique digital object identifier to the data.

FRDR also brings together disparate repositories from across Canada into one accessible, searchable index. **Read the details. Find out how you can use FRDR now.**



MentorSTEP opens summer internships

The MentorSTEP program at USask for Indigenous women in STEM has opened their call for summer internships. Saskatchewan mining companies or USask faculty working in STEM disciplines related to Saskatchewan’s mining industry may apply to host an Indigenous woman for a 2021 summer internship. The MentorSTEP program at USask was highlighted by the federal minister of Crown-

Indigenous Relations **on Twitter** in honour of International Day of Women and Girls in Science. Check out the MentorSTEP **program and internship applications here.**

Make your research stand out with ORCID

Join the rapidly growing network of USask academics setting up their own ORCID (Open Researcher and Contributor ID) identifier.

Open ty, lecturers, graduate students and post-doctoral fellows who researches—ORCID is free to use and takes less than a minute to set up. Your ORCID ID is a career-long, unique-to-you, 16-digit identifier that ensures you are more consistently and accurately credited for your work, and helps to advance the university's reputation.



Register now for your ID make sure to **link it to your USask NSID.**

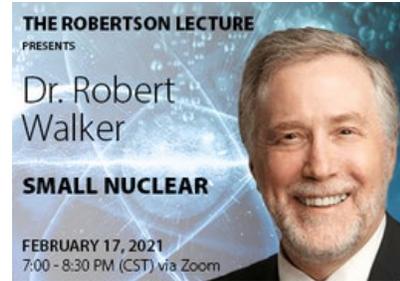
For more information on ORCID and how to get started, visit **library.usask.ca/orcid**

Upcoming events

The 2021 Robertson Lecture: Small Nuclear – Feb. 17

Dr. **Robert Walker** (PhD) explores what role Small

Modular Nuclear Reactors (SMRs) have in providing Saskatchewan with reliable power while helping meet climate change mitigation targets? How does Saskatchewan fit into Canada's SMR action plan?



Following the keynote presentation, Dr. **Margot Hurlbert** (PhD), Canada Research Chair in Climate Change, Energy, and Sustainability Policy, will lead a panel discussion with Dr. Walker, Dr. **Shannon Bragg-Sitton** (PhD), Lead of Integrated Energy Systems, Idaho National Laboratory; and **Diane Cameron**, Director of the Nuclear Energy Division, Natural Resources Canada. [Register now.](#)

Bacon & Eggheads - Dr. Volker Gerdts - Feb. 18

There is still time to join Dr. **Volker Gerdts** (PhD) this Thursday, Feb. 18 for the Bacon & Eggheads webinar: *Better Pandemic Preparedness – How Canadian science can be ready for future threats*. Register for this event sponsored by The Partnership Group for Science and Engineering at [Eventbrite](#).



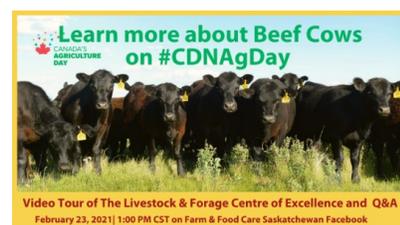
Protein Innovates: NSERC Capture Seminar Series—Feb. 23

Sask. Ministry of Agriculture Strategic Research Program (SRP) Chair in Protein Quality and Utilization Dr. **Michael Nickerson** (PhD) will present an online seminar on the future of plant protein research in Canada. The seminar is the first in a monthly NSERC-funded series bringing together researchers, students, and industry experts to discuss innovations and technologies in the plant protein sector. Feb. 23, 12:00 p.m., [register for the free event at EventBrite](#).



Canada's Agriculture Day - Learn about beef cows – Feb. 23

Hosted by Farm & Food Care Saskatchewan and Canadian Food Focus, learn more about cows and how scientists are studying how cattle are raised: take a video tour of the Livestock & Forage Centre of Excellence (LFCE) at USask, then ask questions in real time with experts from the LFCE.



Clinton Monchuk, Farm & Food Care Saskatchewan's Executive Director, will host a Q&A session with **Lana Haight**, Outreach & Engagement Specialist with the LFCE and Dr. **Colin Palmer** with the Western College of Veterinary Medicine at USask. [Join the event online, Feb. 23, 1 p.m. to 1:30 p.m.](#)

2021 Beef and Research Forum – Feb. 25

The f and Research Forum will connect scientists presenting ideas for future research with producers providing feedback on these ideas. The event is sponsored by Agriculture and Agri-Food Canada, Saskatchewan Agriculture, Saskatchewan Cattlemen's Association, and USask AgBio, WCVM, and the Livestock and Forage Centre of Excellence.



Feb. 25, 9 a.m. to 4 p.m., online. Register for this free event: [EventBrite](#).

**thá:ytset: shxwelí li te shxwelítemelh xíts'etáwtxw /
Reparative Aesthetics:
The Museum's Incarceration of Indigenous Life – Mar. 5**

Prof. **Dylan Robison** (PhD), xwélmexw (Stó:lō/Skwah) artist and writer and the Canada Research Chair in Indigenous Arts at Queen's University, will present a lecture as part of **Critical Conservations 2021 lecture series**, presented by USask Art Galleries and Collections. **More info. Register for the free event** on Mar. 5, 2 p.m. – 3:30 p.m.



11th Annual New Feminist Research Lecture—Mar. 8

Dr. **Emily Snyder** (PhD), assistant professor in Indigenous Studies and Women's and Gender Studies, will present a talk entitled "Settler News Narratives of HIV Non-disclosure: Deconstructing Representations of Indigeneity, Sexuality, and Law."



The focus of the talk will be on how Indigenous people accused of HIV non-disclosure are represented in Canadian news. **Register here** for the free lecture, to be held Mar. 8 at 4 p.m.

In the news

- USask's VIDO efforts in researching a COVID-19 vaccine have been featured on *CBC News*, *CBC Power and Politics*, *The Saskatoon StarPhoenix*, *Global News*, *CTV News*, *CBC Saskatoon Morning*, *CKOM*, and *CKRM*
 - In particular, the story **USask's VIDO begins COVID-19 vaccine clinical trials at CCFV** was seen by more than 226 million people, and featured by *The Toronto Star*, *CBC News*, and *MSN Lifestyle Canada*
- **Stretching more effective than walking to lower high blood pressure: USask study** -- the story was seen by more than 221 million people, and featured by *MSN Portugal* and *MSN Switzerland*, *CBC News*, and the *Toronto Star*
- **Melting ice and glaciers could lead to water crisis (CBC The National)** – USask Canada Research Chair in Water Resources and Climate Change Dr. **John Pomeroy** (PhD), director of the **Global Water Futures Programme**, was **featured about on-going research in**

Canmore, Alta.

- **USask COVID-19 research to track online hate directed at Asian community** – the research was featured in *CBC News*, *Global News*, and *The Guardian*, and seen by more than 29 million people
- **USask study finds COVID isolation worsens student diets, inactivity, and alcohol intake** – the story was covered by *The Times of India*, *CTV News*, and *Medical Xpress*, and seen by more than 23 million people.
- **USask awarded \$650K to work with First Nations and Métis communities to address the impacts of COVID-19** – the story was viewed by more than 20 million people, and covered by *CBC News*, *the Toronto Star*, and *The Buffalo News*

Hot off the press

- **Collective Care: Indigenous Motherhood, Family, and HIV/AIDS** - USask medical anthropologist Dr. **Pamela Downe** (PhD)'s new book is the first full-length ethnography on family life and HIV/AIDS in Canada. An ethnographic account of urban Indigenous life and caregiving practices in the face of Saskatchewan's HIV epidemic, based on a five-year study conducted in partnership with AIDS Saskatoon, now known as Prairie Harm Reduction. The research, part of Downe's career-long focus on infectious diseases and pandemics, was supported by two grants from the Canadian Institutes of Health Research (CIHR) as well as the national Network for Aboriginal Mental Health Research (NAMHR).
- **On the Edge of Magnetic Fusion Devices** - USask physics and engineering researcher Dr. **Andrei Smolyakov** (PhD) has co-written a new book addressing edge plasma—one of the keys to a solution for harnessing fusion energy in magnetic fusion devices.
- **Indigenous-Industry Agreements, Natural Resources and the Law (1st Ed)** - edited by USask law professors Dr. **Ibironke T. Odumosu-Ayanu** (PhD) and Dr. **Dwight Newman** (D.Phil), this collection is an interdisciplinary and international collaborative book that critically investigates the growing phenomenon of Indigenous-industry agreements – agreements that are formed between Indigenous peoples and companies involved in the extractive natural resource industry.
- **Domestic Violence and Access to Justice: A Mapping of Relevant Laws, Policies and Justice System Components Across Canada**—USask law professor **Wanda Wiegers** has co-written an eBook providing a survey of legislation, key government policies, and justice system components that apply to domestic violence across Canada, documenting comprehensively the diversity of government responses to this social problem and providing access to legal information.



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