In this issue: Protecting lakes from uranium contamination, developing the best lentils for a changing climate, fighting aggressive forms of breast cancer, the latest in the fight against COVID, 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!

COVID-19 Update: COVID-19 research updates are available online.

Top Stories

Protecting Saskatchewan lakes from contamination

Using the Canadian Light Source (CLS) synchrotron, a USask-led research team has developed a method for monitoring uranium contaminants in mine tailings using samples from McLean Lake, SK.

Researchers at USask and Orano Canada used a technique called X-ray microprobe—focusing a beam of light on the sample to “excite” chemical elements and capturing their fluorescent signals—to determine the specific chemical form of the uranium and precisely where it is located in the McLean Lake tailings. The findings have just been published by a team including USask chemistry PhD student Arthur Situm and chemistry researcher Dr. Andrew Grosvenor (PhD) in the Journal of Electron Spectroscopy and Related Phenomena. Read the details.

USask scientists develop model to identify best lentils for climate change impacts

A USask-led international research team has developed a model for predicting which lentil varieties are most likely to thrive in new production environments. Led by plant scientist Dr. Kirstin Bett (PhD), researchers planted 324
lentil varieties in nine lentil production hotspots across the globe to develop the new mathematical model based on a key predictor of crop yield—days to flowering (DTF). The findings published in the journal *Plants, People, Planet*, will help producers and breeders identify existing varieties or develop new lines likely to flourish in new growing environments. **Read the details.**

**Canada Water Agency will help protect and sustain Canada’s water resources, say USask water scientists**

The new Canada Water Agency—announced in the recent federal Throne Speech—is the first critical step toward transforming how water is managed across the country, said Dr. **John Pomeroy** (PhD), director of the USask-led Global Water Futures (GWF) program. **Read the details.**

**USask researcher targets aggressive breast cancers with new drugs**

More than 5,100 women in Canada—about 75 a day—will die from breast cancers this year. Using the **Saskatchewan Centre for Cyclotron Sciences** cyclotron, USask radiopharmacist Dr. **Humphrey Fonge** (PhD) aims to reduce that statistic with potent new drugs that specifically target two aggressive types of cancer. With $970,000 from the Canadian Institutes for Health Research, Fonge and co-applicant Dr. **Ron Geyer** (PhD), Nutrien Chair in Clinical Research and professor in pathology and laboratory medicine, will develop new molecules to attack two protein molecules that cause these types of breast cancer. **Read the full story.**

**Federal emergency research support funding available – DEADLINE NOV. 16**

Researchers who have been incurring extraordinary and exceptional direct research costs as a result of COVID-19 are invited to apply to the Canada Research Continuity Emergency Fund. USask has been allocated up to $3.2 million to help researchers address costs related to maintaining or ramping up their research programs during the pandemic.

Applicants are encouraged to consider the broad range of factors, including non-traditional and unconventional ways research is undertaken, that could result in maintenance and ramp-up costs.

Applications are due Nov. 16th. **Visit the website for additional information and application procedures.**
A research team of engineering and agricultural scientists has been awarded a $90,000 Mitacs grant to upgrade locally sourced ingredients for hand sanitizers. Supervised by agriculture scientists Dr. Martin Reaney (PhD), and Dr. Sarah Purdy (PhD), engineering researcher Dr. Chris Zhang (PhD), and Saskatchewan Structural Sciences Centre (SSSC) manager Dr. Ramaswami Sammylnaiken (PhD), mechanical engineering post-doctoral fellow Dr. Farley Chicilo (PhD), and chemistry PhD student Josseline Ramos-Figueroa will identify alternative ingredients, investigate impurities, refine the products to meet quality standards, and produce and certify the new disinfectant products.

The one-year project involves the Bioprocessing Pilot Plant and the SSSC, as well as USask spin-off Prairie Tide Diversified and Lanigan firm Pound-Maker Agventures Ltd., which produces a key ingredient, ethanol. Read the story. Watch a video the research team created to help distinguish what makes a particular type of hand sanitizer potentially helpful or harmful.

USask VIDO-InterVac expands international role to test antiviral compounds against COVID-19

USask’s Vaccine and Infectious Disease Organization-International Vaccine Centre (VIDO-InterVac) at has been awarded a grant of almost $830,000 from the COVID-19 Therapeutics Accelerator to determine the effectiveness of several antiviral compounds against COVID-19, using a hamster model of SARS-CoV-2 infection to mimic human infections.

The COVID-19 Therapeutics Accelerator was launched in March by the Bill & Melinda Gates Foundation, Wellcome, and Mastercard, with additional funding from a range of donors, to help speed the discovery and scale-up of effective treatments against COVID-19.

With one of the largest and most advanced Level 3-agriculture (CL3-Ag) research facilities in the world, VIDO-InterVac was the first in Canada to isolate SARS-CoV-2 and the first in the country to establish an animal model for testing vaccines, antivirals and therapeutics. Read the details.

USask research teams awarded $400,000 for COVID-19 mental health projects

Two USask research teams led by nursing professor Dr. Tracie Risling (PhD) and psychology professor Dr. Megan O’Connell (PhD) have been awarded a total of $400,000 in federal funding to expand the reach of innovative digital technology projects aimed at meeting mental health needs of people coping with physical distancing and isolation during the COVID-19 pandemic. Read the details.
USask researcher studying COVID-19 impact on Indigenous businesses

Dr. Ken Coates (PhD), Canada Research Chair in Regional Innovation at USask, has been awarded $25,000 in federal funding to study the impact of COVID-19 on Aboriginal Economic Development Corporations (AEDCs) which have helped to greatly expand the number and scale of Indigenous businesses nationally.

AEDCs are owned by Indigenous communities and serve as umbrella organizations that form and operate businesses on behalf of citizens, holding millions of dollars in assets and generating revenues to help meet community needs. These organizations are also a vital conduit for companies seeking to engage with Indigenous communities. Read the full story.

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

Accolades and appointments

USask Livestock and Forage Centre of Excellence moves into next stage of development with new interim director

Renowned USask forage breeder Dr. Bruce Coulman (PhD), professor emeritus in the plant sciences department of the College of Agriculture and Bioresources, has been selected to lead the university’s Livestock and Forage Centre of Excellence (LFCE) as interim director, effective Oct. 19th. An international search for a permanent director is underway.

Coulman succeeds LFCE director Dr. Kris Ringwall (PhD) who will retire at the end of October, enabling a two-week transition period. Read the full story.

VP Research Karen Chad elected to Protein Industries Canada board

USask Vice-President Research Karen Chad (PhD) is one of four new members elected to the Protein Industries Canada board of directors. The new appointments increase the number of directors to 12 and create gender
Canada’s federal superclusters, and has 11 active projects and more than $160 million committed. Read more about the board’s new directors.

USask water scientist honoured with prestigious international lifetime achievement award

USask hydrologist Dr. Jay Famiglietti (PhD) has been awarded the 2020 Hydrologic Sciences Award by the American Geophysical Union (AGU) for outstanding contributions to the science of water over his career. Famiglietti, executive director of USask’s Global Institute for Water Security (GIWS), has led development of novel remote sensing tools for hydrology and water security, particularly the capability to do remote sensing of groundwater using the NASA Gravity Recovery and Climate Experiment (GRACE) satellite mission. Read the details.

Health research

45th anniversary of VIDO-InterVac

For 45 years, USask’s Vaccine and Infection Disease Organization—International Vaccine Centre (VIDO-InterVac) has been guided by the same vision—providing solutions through research. With more than 150 interdisciplinary personnel, and over $200 million in containment infrastructure, VIDO-InterVac is internationally recognized for its role in vaccine development and is one of Canada’s national science facilities. Watch a video featuring Dr. Volker Gerdts (DVM).

USask researcher takes aim at improving the experience of gynecologic cancer treatment

Dr. Laura Hopkins (MD), professor and gynecologic oncologist at USask’s College of Medicine, was awarded (virtually) the 2020 Royal University Hospital Foundation’s Women Leading Philanthropy (WLP) grant of $100,000 on Sept. 29th. Hopkins is also the Provincial Lead for Gynecologic Cancer at the Saskatchewan Cancer Agency.

Her project, Enhanced Recovery for Gynecologic Oncology (ERGO)—Improving the Surgical Experience of Women with Cancers of the Reproductive Tract—will transform surgical care for women with gynecologic cancers from surgical consultation to recovery. WLP is a program funded by female donors to the RUH Foundation in support of women-led innovative programs of research for women and their families at RUH.
**Water security**

**World-leading water scientists warn of ecological risks in global shift to monoculture crops and tree plantations**

Conversion of large swaths of land to uniform tree plantations and single-crop species may lead to unintended consequences for the water cycle, putting ecosystems at greater risk for fires, floods, droughts and even hurricanes, warns a think-tank group of almost 30 water scientists from 11 countries.

Co-led by USask hydrologist Dr. Irena Creed (PhD) and University of Delaware researcher Dr. Delphis Levia (PhD), the think-thank paper was published in *Nature GeoScience*.

Creed was also part of an international team of scientists that found groundwater depletion in parts of the U.S. High Plains is so extreme that peak grain production in some states is over and production is now declining. Those findings are published in the *Proceedings of the National Academy of Sciences*.

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**Food security**

**Innovation to feed a post-pandemic world**

Researchers at USask’s Global Institute for Food Security (GIFS) collaborate with diverse partners including industry, government, producers and researchers on innovative agtech research to accelerate plant breeding, enhance digital agriculture, increase quality crop yield, and build plant resilience to climate change.

World Food Day, Oct. 16, marked the 75th anniversary of Food and Agriculture Organization of the United Nations (FAO). According to the FAO, more than enough food is produced to feed everyone; however, the imbalance with food systems and challenges such as COVID-19, climate change, and limited water, land and other resources, need to be addressed. [Read the full story.](#)

**BASF marks 25-year partnership with USask Crop Development Centre with $100K investment**

BASF Agricultural Solutions has pledged $100,000 towards the advancement of a new world-class plant breeding facility at USask’s Crop Development Centre (CDC). The announcement celebrates the 25-year partnership between BASF and the renowned CDC field crop research organization. This funding is in addition to the more than $12 million BASF has previously invested with the CDC over the last two decades. [Read the details.](#)
SaskTel and USask collaborate to foster innovation in agriculture

SaskTel and USask have announced that they are partnering to launch a “living laboratory” at the university’s Livestock and Forage Centre of Excellence (LFCE) to test, develop and demonstrate world-class agricultural technologies.

Through a Memorandum of Understanding (MOU), SaskTel and USask will focus on “smart farming” research and innovation to accelerate transformation in Saskatchewan’s agriculture industry. Smart farming involves collecting and analyzing “big data” so that producers can make informed and sustainable farm management decisions that improve productivity. Read the details.

Indigenous focus

A World of Difference: Shining a Light on Indigenous Women in Science

The MentorSTEP program at USask, co-led by the Saskatoon Tribal Council (STC) and funded by the International Minerals Innovation Institute (IMII), supports Indigenous women who are interested in careers in science, technology, engineering, and mathematics (STEM).

The program helps to create learning opportunities for students at the high school and post-secondary level, matches young women with mentors during the academic year, and sets up internships for students in the summer.

In the photo: USask undergraduate Julia Doucette-Garr, who has helped promote the program, in front of the REIXS beamline at the CLS. Read the story.

Exploring technology use with Indigenous elderly for health and well-being

USask post-doctoral fellow Dr. Cari McIlduff (PhD) is one of 21 early career researchers from across Canada awarded $45,000 from AGE-WELL and the Saskatchewan Health Research Foundation (SHRF).

Over one year, McIlduff will support urban members of Star Blanket Cree Nation to learn which technology and telehealth services older Indigenous people would prefer to use for support in leading a healthy lifestyle. She is supervised by Dr. Carrie Bourassa (PhD), USask medicine professor and scientific director of the CIHR Institute of Indigenous Peoples’ Health (CIHR-IIPH) located at USask. Read the full story.
Webinars probe response of Indigenous communities to COVID-19

Do past disasters give Indigenous communities insight into the COVID-19 pandemic? How have Indigenous communities in urban and related homelands been responding to COVID-19?

Since its launch during the pandemic, the new CIHR-funded national co-ordinating centre for the nine Network Environments for Indigenous Health Research across Canada has been hosting webinars to explore these kinds of questions.

USask’s Dr. Simon Lambert (PhD), an expert in Indigenous disaster risk reduction and the centre’s executive director, says including Indigenous voices and perspectives is key to recovery planning, and can be an act of reconciliation. "Indigenous people are on the ground in their communities, know each other, know who needs help, and know what they're doing," he says.

To watch webinars from Lambert and others, and see announcements about upcoming webinars, visit the centre’s [website](#).

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Synchrotron sciences

New book sheds light on development of Canadian Light Source synchrotron

The Canadian Light Source: A Story of Scientific Collaboration, a new book by Michael Bancroft, former CLS interim executive director and director of research, in collaboration with USask professor emeritus Dennis Johnson, former USask associate vice-president research, chronicles the long history of USask science that provided the technical expertise to build the Canadian Light Source (CLS) synchrotron 16 years ago.

The CLS, a national research facility of USask and one of the country’s top science facilities, now attracts more than 1,000 users nationally and internationally each year. The book tells the story of how vision, scientific excellence, lobbying, and commitment at all levels of government led to creation of the flagship facility.

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Telling your research story

Accepted for publication? Get in touch!

Contact USask’s Research Profile and Impact unit when you have a newsworthy publication about to come out. We need at least one week lead time in order to
Young Innovators

USask game teaches healthy eating to online shoppers

A new web game developed at USask that uses clever marketing techniques holds promise for teaching online shoppers how to eat healthily. The game ShopRight was developed by computer science PhD graduate Ifeoma Adaji, supervised by computer science professor Dr. Julita Vassileva (PhD). Read the story.

In the news

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


Dr. Regan Mandryk (PhD) is quoted on a controversy in the esports world surrounding the fairness of "aim assist" technology which helps guide the crosshairs toward opponents automatically.

In THE CONVERSATION

The MEC debacle is a predictable and avoidable governance failure

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

MEC built a leadership team that lacked any obvious understanding of co-operatives and fostered a culture that started to see member involvement as a problem rather than a strength.
Dissidents of the Turkish government are living in fear in Canada

Lakehead University's Dr. Mehmet Bastug (PhD) and USask forensic psychology researcher Dr. Davut Akca (PhD)

As Turkey reaches around the world to spy on and intimidate dissidents, new research shows Turks living in Canada are fearful and make frequent changes in how they live to protect themselves.

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.

Arts and artistic work

Music department offering free online Faculty and Friends concert series

USask’s music department is curating a series of virtual concerts this season entitled Faculty and Friends. The program for these free admission concerts features a wide range of musical styles and is available online.

The October 21 concert will feature music department head Dean McNeill (trumpet), David Kaplan Chair in Strings Director Veronique Mathieu (violin), sessional Bonnie Nicholson (piano), music major Kate Nachilobe (voice), and music graduates Paul Suchan (piano) and Emmett Fortosky (bass).

USask’s Shared Spaces project unveils innovative new app on Nuit Blanche Eve

USask has unveiled the first test version of a new app
being created by students and alumni that will enable people to view artwork in new and innovative ways. USask’s Shared Spaces project, which is housed in the College of Arts and Science, held its first public event on Oct. 2 in partnership with Nuit Blanche Saskatoon. Nuit Blanche Eve—an event that has previously featured artwork created by USask students and alumni installed throughout campus—moved online this year due to the COVID-19 pandemic and was hosted with the Shared Spaces app.

International reach

USask signs partnership agreement with Philippines university consortium

USask has formalized a Memorandum of Understanding with seven prestigious Philippine universities to consolidate a Philippine-Canada Universities Education Consortium for International Collaborative Partnerships. The memorandum provides a partnership framework for joint cooperation in fields of mutual interest, including academic exchanges, joint research, joint degree development and knowledge sharing.

As part of the MOU, two programs have been proposed to strengthen joint research collaborations: Precision Agriculture and Indigenous Knowledge System and Cultural Education (IKSCE).

USask delivers webinar on UN SDGs to Philippines higher ed. officials

Dr. Meghna Ramaswamy (PhD), director of the International Office, and Dr. Anurag Saxena (MD), College of Medicine associate dean for postgraduate medical education, presented a webinar on “United Nations (UN) Sustainable Development Goals (SDGs) and Medicine’s Social Responsiveness in Turbulent Times” on Sept. 24.

The virtual event also featured remarks from Canada’s ambassador to the Philippines Peter McArthur, Canada’s trade commissioner for education Ms. Angel Cachuela, the Philippines Minister of Higher Education Dr. Prospero De Vera (DPA), Philippines education commissioner Dr. Aldrin Darilag (PhD), and USask’s associate vice-president research Dr. Darcy Marciniuk (MD). More than 200 representatives from higher education institutes in the Philippines attended.
Bangladesh Economic Seminar Highlights Trade, Investment Opportunities for Sask. and Canada

Investment and trade opportunities for Saskatchewan and Canada in Bangladesh were the focus of a seminar that took place in Saskatoon, jointly hosted by the Bangladesh High Commission to Canada, the USask Global Institute for Food Security (GIFS) and Ag-West Bio Inc. Read the details.

Opportunities

Biogenius wants you!

The Sanofi Biogenius Canada (SBC) science fair is back for 2020-21 with a reimagined online format. As a longstanding partner, USask is proud to help nurture the researchers of tomorrow.

SBC is seeking volunteer health science and life science researchers to mentor high school students as they develop their projects. Mentorship will take place virtually, with students working with mentors in the same field, assisting in research methodology, critical thinking, and problem-solving. The time commitment is 10 to 15 hours between November and March.

To volunteer, contact competition organizers at: info@biogenius.ca More information is also available online at www.biogenius.ca or by emailing kathryn.warden@usask.ca

Enter the IMII’s Alternative Energy Systems Innovation Challenge – DEADLINE NOV. 20

The International Minerals Innovation Institute (IMII) has launched an inaugural Alternative Energy Systems Innovation Challenge to advance the development and adoption of new technologies that could provide significant benefits in reducing energy use and associated greenhouse gas emissions, increasing energy security and creating new opportunities for clean economic growth in Saskatchewan’s minerals industry.

If you are working on USask research that demonstrates technology readiness, cost-effectiveness, and ease of implementation—all of which are key to advancing adoption—you can apply here until Nov. 20 2020. You can find more information about the Challenge here.

Webinars and Lectures

Pandemic Research at USask—Oct. 28th Online Talk

The Community Liaison Committee (CLC) of VIDO-InterVac
will hold an online information session on COVID-19 vaccine development featuring VIDO-InterVac director Dr. Volker Gerdts (DVM) on Oct. 28th at 7 p.m.

Register at Eventbrite.ca for “VIDO-InterVac Community Liaison Public Meeting”, a free virtual event. A confirmation email will be sent upon registration, followed by a livestream link on Monday, Oct. 26th.

The CLC was created by USask in 2007 to serve as an independent organization working to ensure full and open communication on safety issues related to VIDO-InterVac: intervacclc@usask.ca

Register now for Oct. 21-22 P2IRC Symposium

The Global Institute for Food Security (GIFS) at USask will hold its 5th annual Plant Phenotyping and Imaging Research Centre (P2IRC) symposium October 21-22 online. Registration for the event is free. This year’s theme of “Collaboration. Innovation. Results” provides an opportunity to learn about accomplishments and innovations from P2IRC, a digital agriculture research centre funded by a major grant to the university from the Canada First Research Excellence Fund.

The event brings together 300 researchers, industry leaders and students from around the world to discuss the latest science in genomics, phenomics, machine learning and root plant imaging, as well as research applications for breeders and social scientists. Register now.

Re-Envisioning Policing in Canada – McKercher Lecture Series – Mondays at 12p.m.

The fall edition of the McKercher Lecture Series at the USask College of Law will be held online, focusing on the topic of “Re-Envisioning Policing in Canada.”

Watch the series live on Mondays at 12p.m. or afterwards on YouTube. Read the details.

Saskatchewan Health Research Showcase - Nov.16-18

Registration is now open for the Saskatchewan Health Research Showcase virtual conference. Keynote speakers include Saskatchewan's Chief Medical Health Officer, Dr. Saqib Shahab (MBBS) and Dr. Stirling Bryan (PhD), as well as presentations showcasing research from throughout the province and a full day of relevant and informative workshops. The conference is presented by the Saskatchewan Health Authority and the Saskatchewan Centre for Patient-Oriented Research. Read the details.
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