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

This Month's Stories

VIDO awarded U.S. contract for its Vaccine Development Centre

USask's Vaccine and Infectious Disease Organization (VIDO) has been awarded an Indefinite Delivery/Indefinite Quantity (IDIQ) contract, 75N93023D00013, by the United States' National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health (NIH).

USask's VIDO Vaccine Development Centre is one of only seven organizations selected as a member in the NIAID service provider pool. It is also the only non-U.S. organization and the only university-based organization selected. VIDO can participate in providing NIAID's Preclinical Services for Biopharmaceutical Produce Development in two main areas: Process Development and Related Activities and cGMP Manufacture and Related Activities. The seven-year IDIQ contract is valued up to US$30 million.

"Our scientists at VIDO are developing vaccines and treatments to help us prepare for the next pandemic. This contract with the NIAID reinforces our commitment to being the university the world needs," said USask president **Peter Stoicheff.**

GIFS at USask partnership receives $56 million

commitment for Bangladesh agtech centre

A research and training initiative launched by the Global Institute for Food Security (GIFS) at USask and the Bangladesh Agricultural Research Council (BARC) of the Ministry of Agriculture in Bangladesh has received a $56.2 million commitment from the Government of the People's Republic of Bangladesh.

The funding, to be invested over five years, will support the establishment of the Bangabandhu-Pierre Elliott Trudeau Agriculture Technology Centre (BP-ATC) as a centre of excellence at the Bangladesh Rice Research Institute in Gazipur, Bangladesh.

USask strengthens research partnerships with University of Bonn

Members of the University of Saskatchewan's (USask) senior leadership team took part in a "research summit" during a recent trip to Frankfurt, Bonn and Berlin, with the goal of fostering and reaffirming USask's commitment to Germany in both research and education.

The summit also emphasized the connection between USask, UBonn and the Government of Saskatchewan's international ties to Germany, while identifying shared areas of research expertise on which to collaborate.

Dr. Markus Brinkmann (PhD), the director of the Toxicology Centre and USask's Special Advisor to the Vice-President Research on Strategic Research Partnerships with Germany, said the summit was beneficial for the top-quality researchers from both Canada and Germany.

USask climbs worldwide sustainability rankings

In the second-ever QS world sustainability rankings, USask has risen to 89th in the world from a rank of 91 in the inaugural rankings in 2022.

USask also maintained its position in the top 100 in the rankings, despite the pool of participating institutions more than doubling from 700 to 1,403 in 2023.

"We are very proud of the concerted efforts and continued commitment our community has made to achieving the goals within our sustainability strategy. This excellent work deserves to be celebrated and recognized, and these rankings play a part in that recognition," said **Janelle Hutchinson**, USask's chief sustainability officer.

USask researcher leading charge in the fight against AIDS

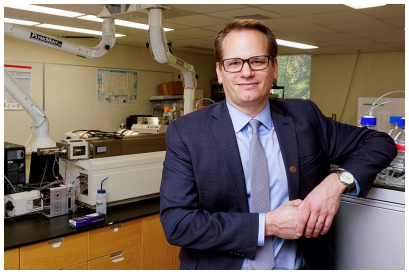
As the global fight against HIV and AIDS continues, this challenge is particularly evident in Saskatchewan, where HIV infection rates are more than five times the national average.

According to the Public Health Agency of Canada's 2021 surveillance data, there was an 11.3 per cent increase in cases nationwide over one year.

USask research **Dr. Kerry Lavender (PhD)** with the College of Medicine is working on a targeted treatment towards curing AIDS caused by HIV infections, with a goal of finding new strategies to eliminate the virus rather than suppress the effects of HIV. She received an $879,750, five-year grant for this work from the Canadian Institutes of Health Research (CIHR).

Looking for more research stories? Visit Discovery Digest online.

Award recognizes USask researcher's commitment to the public good



Dr. Markus Brinkmann's (PhD) internationally celebrated investigations into the compounds found in public waterways tell an important story about the health of humans and the environment, and are in-part why he has been awarded the James J. Morgan Early Career Award by the American Chemical Society (ACS) in the ACS Journal of Environmental Science & Technology (ES&T).

Brinkmann now serves as the director of USask's Toxicology Centre, an associate professor and the Centennial Enhancement Chair in Mechanistic Environmental Toxicology in the School of Environment and Sustainability (SENS), a faculty member in the Global Water Futures program, a member of USask's Global Institute for Water Security, and the special advisor to the Vice-President Research on strategic partnerships with Germany.

The Pearl Harbor raid radar: Roots of USask research

Eighty-two years ago, in a moment of time frozen in history, the Japanese surprise attack on Pearl Harbor was detected—but rejected—by radar technology that would later help the University of Saskatchewan (USask) become a national and international leader in space and atmospheric studies.

The historic radar unit—cutting edge technology at the time—helped USask researchers

conduct some of world's earliest radar research into the aurora as the university quickly become a leader in atmospheric research, a tradition that continues to this day through work in the Canadian SuperDARN (Super Dual Auroral Radar Network) national research centre led by USask.

USask part of SSHRC-funded nationwide theatre school research project

The Staging Better Futures/Mettre en scène de meilleurs avenirs project received $2.5 million from a Social Sciences and Humanities Research Council (SSHRC) Partnership Grant, one of the largest grants offered by SSHRC, as well as additional funding from numerous organizational partners in both the academic and professional community.

Deneh'Cho Thompson, an assistant professor and the co-ordinator of the wîcêhtowin Theatre Program in USask's Department of Drama in the College of Arts and Science, said there is an opportunity for "a lot of knowledge exchange" through Staging Better Futures, adding that one of his goals with the project is creating an inclusive space for the progressive theatre movement that has started to take place across Canada.

USask pioneering wearable kidney and other patient-centric solutions

Losing a close family member to kidney failure inspired **Dr. Amira Abdelrasoul (PhD)** with the College of Engineering to pivot her research direction and use her expertise in membrane science and nanotechnology to pursue a life-saving innovation: a wearable kidney.

Joining Dr. Abdelrasoul in the quest for better dialysis membranes are a wide range of partners – from Canada and around the world – with expertise in chemical and bioengineering, material science, nanotechnology, synchrotron science, nephrology and health care.

"For this complex research topic, interdisciplinary collaboration is crucial," she says. "We're also working with nurses, social workers, psychologists and patient advisers. We need all these perspectives to move forward in an innovative and patient-centric way."

Two new Rhodes Scholars make USask history

Two students from USask are among only 11 from across the country to be awarded prestigious Rhodes Scholarships this year. This success marks the first time since 1991 that USask

has celebrated two recipients selected in the same year.

Biological sciences student **Rachel Andres** and nursing student **Taron Topham** were named Rhodes Scholars this week, joining a legacy of USask students awarded the honour since 1907. It is the second straight year that USask students have been named Rhodes Scholars, joining Cassidy Serhienko, who was one of last year's 11 recipients in Canada.

USask cattle feed innovations good for the planet and our pockets

By exploring novel treatments to existing agricultural byproducts, USask researchers are working to establish environmentally sustainable and economically feasible feed alternatives to benefit Saskatchewan producers and consumers alike.

With winter upon them, Canadian beef and cattle producers are facing a familiar challenge: keeping their herds fed outside of grazing season. The reality of cold-climate cattle production relies heavily on the storage and use of feed crops, such as hay and other cereal grains. As **Dr. Gabriel Ribeiro (PhD)**, assistant professor in the Department of Animal and Poultry Science at the College of Agriculture and Bioresources notes, climate change has caused drier growing seasons that make these traditional feed sources less available and more costly.

Seeking a holistic understanding of soil health at USask

Today, USask researchers are evaluating a much bigger picture including various environmental, economic, socioeconomic, and agronomic factors, he said.

In the College of Agriculture and Bioresources, **Dr. Richard Farrell (PhD)**'s own research is focused on greenhouse gas measurements and mitigation. He notes that air quality, water quality and soil quality are all tightly related.

"If soils are poorly managed, you can have runoff; you can have nitrates and phosphates moving into the water. Pollutants can move into the ground water if they're not properly managed," he gave as an example.

Mitigating rural poverty through sustainable biomass production: USask research

A recently published paper by University of Saskatchewan (USask) researchers explores the nexus between climate change, biomass production, and rural poverty, and outlines a hopeful path to a future where environmentally sustainable practices advance the economic and social well-being of vulnerable people around the globe.

"When I learned that 1.2 billion people could be displaced by climate-related issues by 2050, and that the reason has changed from war, civil unrest and those kinds of issues to climate change, it opened my eyes to what is happening," said **Dr. Hassan Vatanparast (PhD)**, professor at USask's College of Pharmacy and Nutrition and School of Public Health, an author of the study.

USask professor co-chairs panel on the future of Arctic and Northern research

USask students receive SaskBarley Scholarships for research

SENS student Laliberte-Pewapisconias represents Canada at Y20 Summit

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Stay connected with USask research news

Make sure to follow the USask Research **Twitter page** to stay in-the-know, with exciting research news delivered right to your newsfeed. Don't forget to also follow **USask Research on LinkedIn**, and **@VPR_USask**

and **@USask** on Twitter for more of the latest research and university news.

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

In *The Conversation*...

Striving for transparency: Why Canada's pesticide regulations need an overhaul

By Dr. Christy Morrissey (PhD), USask Toxicology Centre, Dr. Sean Prager (PhD), USask College of Agriculture and Bioresources, Dr. Valerie Langlois (PhD), Institut national de la recherche scientifique (INRS), Dr. Eric Liberda (PhD), Toronto Metropolitan University

Canada is long-overdue for scientifically-driven, robust and transparent pesticide regulation. A newly created Science Advisory Committee aims to address this.

Repeated concussions can alter heart activity and impact the 'heart-brain' axis

By By Dr. Payam Dehghani (MD), USask College of Medicine, Dr. Jyotpal Singh (PhD), University of Regina, Dr. J. Patrick Neary (PhD), University of Regina

Concussion doesn't just affect the brain, but the whole body. The interaction of the 'heart-brain axis' means that as the brain works to heal its injury, it puts extra stress on the heart.

Are small nuclear reactors the solution to Canada's net-zero ambitions?

By Dr. Martin Boucher (PhD), Johnson Shoyama Graduate School of Public Policy

Small modular reactors may hold the key to Canada's net-zero energy future.

How universities relate with students changed in the past century, but a duty of care remains

By Dr. Vicki Squires (PhD), USask College of Medicine

Especially since the Second World War, an increasingly diverse university student body and advocacy for student rights have affected how universities understand a duty of care for students.

Upcoming events

Women Plus Water Lecture Series 2024

The Women Plus Water Lecture Series, hosted by the Global Institute for Water Security and the College of Arts and Science, will occur monthly from January to April. The series will showcase research, support young professionals and provide a space for dialogue and networking. Additionally, the series will explore water-related challenges, roles of women in water, gendered water-related impacts, and challenges and opportunities facing women in water research.

The event will take place on Thursday, January 11, 2024 via Zoom from 10:30 to 11:30 a.m. CST. Please register at the link below.

- **Lecture #1 – Women and the Water SDG – Thursday, Jan. 11, 2024**

NEW - Information for researchers

Meet the TEDxUniversityofSaskatchewan 2024 speakers and performer!

Universities play a vital role in nurturing, empowering, and unleashing the curiosity that allows us to imagine a brighter, more sustainable future. To face humanity's greatest challenges and opportunities we need to ask tough questions, push boundaries, and invigorate impact for meaningful change with and for our communities. The TEDxUniversityofSaskatchewan 2024 theme of 'Courageous Curiosity' does just that.

Meet the speakers and performer who will take to the TEDxUniversityofSaskatchewan 2024 stage **at the link here!**

Social Sciences and Humanities Research Council launches Storytellers Challenge

SSHRC is challenging postsecondary students to show Canadians how social science and humanities research affects our lives, our world and our future for the better.

The challenge is open to all students, graduate and undergraduate, enrolled at Canadian postsecondary institutions. Their task is to tell the story of a SSHRC-funded research project —their own or a researcher's—in up to three minutes or 300 words. A jury will select 20 finalists, who will each receive $3,000, specialized training in research communications, and be invited to present at a showcase event in spring 2024, for an opportunity to receive an additional $1,000 (top five winners) in recognition of their communication skills.

For more details on this year's Storytellers Challenge, follow us on social media and visit our website. Should you have any questions, don't hesitate to reach out to us at **Storytellers@sshrc-crsh.gc.ca**.

Applications for the 2024 Opus i2Build program are now open

Applications for the 2024 i2Build cohort program at Opus are now open! Learn what it takes to launch your deep tech startup by applying before February 5, 2024, to the 10-month i2Build program. Programming starts in April 2024.

Designed as a pre-accelerator, Opus provides access to entrepreneurial programming, infrastructure, and a network of mentors and experts to help you successfully build your venture on campus. Applications are open to aspiring entrepreneurs who are current USask students, faculty or staff with technology in a STEM-related field.

For more info and to apply, visit **opus.usask.ca**.

Have questions? Join us on January 9, 2024, for an Opus info session to learn about what campus tools and resources are available to help you on your startup journey. Food and refreshments will be provided. Register at **https://OpusInfoSessionJan9.eventbrite.ca**.

Fisher Scientific preferred supplier for laboratory supplies

USask and its' Saskatchewan Advanced Education Collaborative (SAEC) partners, University of Regina and Saskatchewan Polytechnic, have executed a new contract with Fisher Scientific as its preferred supplier for laboratory consumables, chemicals, small scientific equipment, and personal protective equipment (PPE) supplies.

Fisher Scientific was awarded the preferred supplier contract through a collaborative, competitive bid process held earlier this year, in alignment with USask's updated Procurement Policy.

The new contract contains many benefits, including:

- limit increased to $25,000 for direct ordering goods and/or equipment
- delivery prepaid to campuses on stocked, contracted items
- no minimum order fees
- 30 per cent discount from Unity Lab Services on service/labour and 5 per cent discount

on parts

The process for ordering will remain unchanged. If you need to set up an account, please refer to the **Where do I buy Lab Supplies and Equipment?** Knowledge Base article.

Science Exposed 2024 is now open

Eye-catching images coming from research projects from all fields can be **submitted until January 30, 2024.** The individuals or groups that have the most successfully combined creativity and science will be awarded one of the many cash prizes. The contest is organized by the Natural Sciences and Engineering Research Council (NSERC) and Acfas.

The goal of Science Exposed is to help foster a science culture in Canada by capturing vibrant research images that showcase the work of our talented research community. These images will help the Canadian population better understand and see, through the same lens as the research community, the work that is being done behind the scenes.

Learn more about CIHR

The Canadian Institutes of Health Research (CIHR) is Canada's federal funding agency for health research. Composed of 13 Institutes, CIHR collaborates with partners and researchers to support the discoveries and innovations that improve our health and strengthen our health care system.

CIHR has provided new resources to learn more about what the agency is able to provide. To find out more about the CIHR funding process, check out **this playlist of videos**.

For additional information visit CIHR's **Health Research Explained website**.

In the news

- Dec. 14 – CBC Radio – **Vaccine research in our city just got a huge boost with a multi-million injection of cash from south of the border**
- Dec. 12 – CBC News - **Experts say Sask. premier's COP28 comments on oil and gas industry need fact checking**
- Dec. 8 – CBC News – **Report urges change to address 'incredible inequalities' between southern researchers, northern communities**
- Dec. 6 – CTV News, Global News, CBC News – **Here's how much more it's expected to cost to feed a family of 4 in Canada next year**
- Nov. 30 – Global News – **Farmers suggest more drought precautions following provincial budget hit**
- Nov. 29 – CNN, MSN News – **Buffy Sainte-Marie is the latest public figure accused of being a 'Pretendian.' Here's why that matters**
- Nov. 28 – Regina Leader-Post, Saskatoon StarPhoenix – **Sask. calling tribunal to parse costs of federal clean energy policy**

- Nov. 26 – Global News – **What is biomass? The latest fuel source to get clean tech tax credits**
- Nov. 23 – Axios, MSN News - **"Super pigs" in Canada threaten to spread across border into U.S.**
- Nov. 23 – CBC Radio - **U of S PhD grad is researching how climate change affects Indigenous and racialized women**
- Nov. 24 – CBC News – **'Regressive' carbon capture tax credit open to projects that extract more oil, climate experts say**
- Nov. 23 – Saskatoon StarPhoenix – **Research and music combine in SSO's symphonic celebration of birds**
- Nov. 20 – Saskatoon StarPhoenix, Regina Leader-Post – **Clinical trial in Sask. to help ovarian cancer patients make more informed decisions**

Banner image photo credit: **What does the fox say? -** by **Dr. Kayla Buhler (PhD)**, recent alumna in Veterinary Microbiology

Images of Research 2023 - *Runner-up, Research in Action*

Many of you have heard of this song that overtook the internet almost a decade ago. Most of my research focuses on wildlife diseases in Nunavut, but I noticed some very interesting sounds while working on arctic fox dens. In general, dogs and other canids with strong family units are thought to have more complex vocalization with lots of quiet sounds for close range communication, while solitary foxes should have a simple vocal repertoire with loud noises for long distance communication. However, video recordings on dens revealed many unique sounds that foxes make while rearing their young, including a range of low frequency noises between parents and pups. So, what does the fox say? The truth is - a lot!

Funders: NSERC, ArcticNet, Weston Family Foundation, Earth Rangers

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