Discovery Digest

BE WHAT THE WORLD NEEDS

November 2025 - Issue 94

Discovery Digest **is a glimpse into how University of Saskatchewan research, scholarly and artistic works are 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

A lasting legacy: USask shines as a nuclear research hub

This past Nuclear Science Week, the University of Saskatchewan (USask) looked back on our long history of nuclear technology and innovation.

In 1951, USask changed the face of nuclear medicine forever.

Nicknamed the “cancer bomb,” Dr. Harold Johns (PhD) and a team of then-graduate students that included the renowned Sylvia Fedoruk pioneered cancer treatment using cobalt-60 radiation therapy.

The bar set by the cobalt-60 research group is a level of excellence that USask scholars have continuously strived for in nuclear technology and research ever since. Whether in medical treatments or in advanced imaging, mining, engineering, energy resources and more, USask has grown to be a hub for nuclear innovation in Canada and around the world.

“The future is around building nuclear treatments, nuclear technologies, eventually nuclear power in the province,” said **Dr. Jeter Hall (PhD)**, the executive director of the Sylvia Fedoruk Canadian Centre for Nuclear Innovation Inc. (Fedoruk Centre), a research centre at USask.

Protecting lakes for future generations: USask researcher focuses on water quality

Dedicated USask researchers are making sure we can have safe drinking water and hold on to our recreational traditions.

“As a water researcher, my focus is on water quality, which is what makes our lakes swimmable and drinkable. I’m very interested in how we can protect them for the generations to come,” said **Dr. Helen Baulch (PhD)**, professor in the School of Environment and Sustainability (SENS), Centennial Enhancement Chair in Aquatic Ecosystem Biogeochemistry, and member of the Global Institute for Water Security (GIWS).

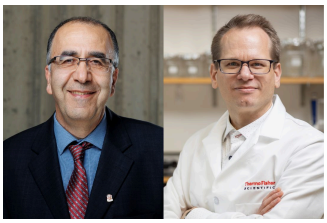
Baulch said that, over the years, water quality has declined not just on the Prairies, but across the globe due to urban expansion, agricultural use and the changing climate. According to Baulch, water quality is a complex problem. Her work focuses on managing water quality while also balancing the needs of people and industries.

USask researchers secure advance imaging tool to improve children's bone health

Dr. Saija Kontulainen (PhD), professor and associate dean of research in the College of Kinesiology, and her colleagues, **Dr. J.D. Johnston (PhD)** from USask's College of Engineering and **Dr. Munier Nour (MD)** from USask's College of Medicine, are conducting a first-of-its-kind pediatric bone study to understand what makes bones fragile. The findings of this project will help inform new therapies that can optimize bone strength development in children and youth who are at risk of bone fragility and fracture throughout their lives.

With a recent investment from the Canada Foundation for Innovation's John R. Evans Leaders Fund (CFI-JELF), Kontulainen and her collaborators have secured an improved imaging tool that brings them closer to their goal.

USask joint research project explores advanced water purification for Saskatoon



Dr. Jafar Soltan (PhD), a professor in the Department of Chemical and Biological Engineering in the College of Engineering, and **Dr. Markus Brinkmann (PhD)**, an associate professor in SENS and the director of USask's Toxicology Centre, are leading a research project that will use a unique chemical process to help deal with micropollutants in wastewater.

A micropollutant is a contaminant, typically a man-made chemical one, found in extremely small quantities but could still have potential adverse effects on the environment. While the city's Wastewater Treatment Plant uses multiple layers of advanced filtration and cleaning systems to remove normal pollutants from wastewater, micropollutants are extremely difficult to deal with because of their low reactivity.

Soltan and Brinkmann are experimenting with advanced oxidation to remove chemicals from wastewater. They are collaborating with **Mike Sadowski**, the manager of Saskatoon's Wastewater Treatment Plant, for this project.

USask Canada Research Chairs focus on One Health, wholistic health, energy security

Dr. Arinjay Banerjee (PhD) and **Dr. Heather Foulds (PhD)** are two new Canada Research Chairs (CRC) at USask who are exploring ways to protect and improve the health of individuals and communities.

Dr. Xiaodong Liang (PhD), professor in the Department of Electrical and Computer Engineering in the College of Engineering, received a renewal of her Tier 2 Canada Research Chair in Technology Solutions for Energy Security in Remote, Northern and Indigenous Communities.

As a new Tier 2 Canada Research Chair in Zoonotic Virus and Animal Reservoirs, Banerjee hopes to expand on his work in the field of One Health, which focuses on the interconnected nature of animals, the environment and humans.

Named the new Tier 2 Canada Research Chair in Wholistic Health and Well-Being Through Physical Activity for Indigenous Peoples, Foulds is looking to continue her work on the importance of community, culture and physical activity for Indigenous health.

Looking for more research stories? Visit Discovery Digest online.

Provincial multi-year funding agreement announced

The Government of Saskatchewan announced a new four-year funding agreement for USask, and for all other post-secondary institutions in the province.

Through this agreement, the Government of Saskatchewan has once again signalled its confidence in USask and in the social and economic impact we have on our province.

"This level of support stands out across the country and will enable our university to continue to deliver a strong return on investment for Saskatchewan and its citizens. We appreciate their continuing commitment to post-secondary education and to the University of Saskatchewan," said **Peter Stoicheff**, president and vice-chancellor of USask. "We are celebrating this investment and certainty around our funding for the next four years."

Groundbreaking mechanical engineer named USask's Distinguished Researcher

For more than two decades, USask researcher **Dr. Daniel Chen (PhD)** has been creating structures designed to support the growth of living cells. The goal? To find new and innovative ways to rebuild tissues and repair organs.

Now, Chen's innovative work, leadership and commitment to training and mentoring the next generation of engineers and researchers was recognized with USask's Distinguished Researcher Award.

Chen's research has helped shape the field of bioprinting and tissue engineering from the ground up, with structures known as tissue scaffolds. These structures are made from biomaterials—the materials that are safe to use in the body—which help regenerate tissue like nerves and cartilage.

Northern lights explained: What makes the sky dance in colour?

From solar storms to Saskatoon's lucky latitude, space physicist **Dr. Daniel Billett (PhD)** explains the science behind the northern lights and why they're glowing so bright.

Billett is an assistant professor in the Department of Physics and Engineering Physics at the University of Saskatchewan (USask). He studies the behaviour and dynamics of Earth's ionosphere, home of the aurora.

"Different colours relate to what atmospheric particle is producing the emission. Green and red come from oxygen, while purples and blues come from nitrogen. Altitude matters too, with red appearing highest and blue lowest," he said

---

USask graduate investigates gene to improve the health of barley

Barley is the world's fourth largest cereal crop in terms of production. This important crop is at risk worldwide from the fungus, Ustilago hordei, which infects barley with a disease called covered smut. This fungal infection starts on the surface of the barley seed and causes the kernels of the barley plant to be replaced by masses of brown spores.

Fan Yang with the College of Agriculture and Bioresources sought to identify a gene that can prevent barley yield loss from covered smut and thus improve economic return for farmers.

In July 2025, she successfully defended her PhD thesis. Yang was supervised by **Dr. Aaron Beattie (PhD)**, associate professor in the Department of Plant Sciences in the College of Agriculture and Bioresources.

GIFS at USask supporting collaborations to unlock breeding acceleration

Every year, the global demand for safe, nutritious food continues to rise.

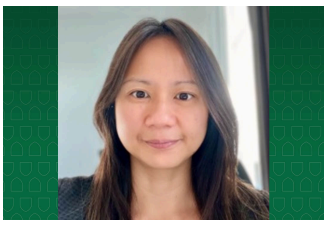
To meet this challenge, plant and livestock breeders are continuously working to develop new crop varieties and animal genetics that are more productive and resilient to environmental stresses and other pressures.

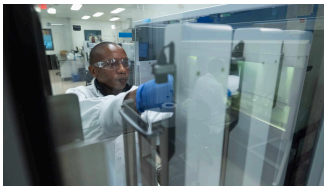
To meet this need, the FCC Breeding Acceleration Program at GIFS is providing breeders and organizations with access to a comprehensive suite of tools designed to accelerate breeding, enhance agricultural resilience and boost competitiveness.

“In Canada, we are trailing our competitors in Australia, the U.S., and elsewhere in our technological approaches to breeding — and we need to remain competitive,” said GIFS CEO **Dr. Steven Webb (PhD)**.

Celebrating Dr. Carol Henry

Governor General’s Gold Medallist uses VR to level up nursing education





[GIFS at USask is striving to be the world's preferred partner for agriculture and food innovation]

USask Signature Series Podcast - Season 2

The USask Signature Series Podcast is an exploration and celebration of the interesting and the innovative, the fun and the fantastic, the cutting-edge and creative of USask research.

You'll hear from USask experts across a variety of disciplines and research areas as they tackle the questions, challenges and opportunities the world needs today.

Check out the podcast on Spotify, Apple Podcasts or wherever you get your podcasts!

Here are the newest episodes of the USask Signature Series:

- S2E03 - Why should humans care about bird and cattle flu?
- S2E02 - How do we remove pollutans from wastewater?
- S2E01 - What are the long-term effects of increasing wildfires?

If you have an idea for an episode of the podcast, please email research.communications@usask.ca.

Stay connected with USask research news

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

How we're tracking avian flu's toll on wildlife across North America

By: **Dr. Damien Joly (PhD)**, CEO of the Canadian Wildlife Health Cooperative, based at USask

Since first being detected in Newfoundland in 2021, a subtype of highly pathogenic avian influenza, HPAI A(H5Nx), has had a dramatic impact on North America.

This is a virus that is clearly a threat to livestock and human health. Our team, a collaboration of governments and academics across the country, recently assessed the extent of HPAI A(H5Nx) in at-risk species across Canada.

In each province and territory, a NatureServe Canada Conservation Data Centre conducts status assessments of wild species and makes the data available through NatureServe Explorer. We identified species of conservation concern in each province and territory, then examined our surveillance data to determine which of these species had detections of HPAI A(H5Nx).

Being involved in *The Conversation* is a unique and renowned avenue for sharing research and study with both colleagues and the public. We strongly encourage researchers to explore *The Conversation* as a way to share and distribute their expertise! Feel free to reach out to research.communications@usask.ca if you have questions.

Upcoming events

Campus Conversations with OVPR

Join **Baljit Singh**, Vice-President Research on Thursday, December 11 at 12pm for the next Campus Conversations event!

Constructive discussions with members of the campus community and OVPR leadership to support research, scholarly and artistic works (RSAW) at USask.

All faculty, staff, postdoctoral fellows and students are welcome. No registration required.

- Campus Conversations – Dec. 11, 12:00 p.m. – Administration Building C280

Join the Conversation: Advancing Brain–Heart Health Together

Health science researchers at USask are invited to an introductory session to learn more about the Brain-Heart Interconnectome (BHI), a $109M Canada First Research Excellence Fund (CFREF) initiative led by the University of Ottawa. The program is dedicated to the study, prevention and treatment of brain-heart disorders. As one of BHI's institutional partners, USask researchers can access funding, join collaborative teams, participate in peer review and benefit from training programs and upcoming funding calls.

Register at the link **here**.

- BHI Session for researchers – Dec. 5, 11:30 a.m. – via Zoom

---

Celebrate USask GIS Day 2025

November 20 is **USask GIS Day** — a dynamic, come-and-go event celebrating Geographic Information Systems and their impact across campus and beyond. Explore interactive projects, chat with presenters and see how GIS is driving innovation in research, community work, government and industry. Whether you're a GIS expert or just curious, come find out how spatial technologies are shaping our world — and where they might take you!

No registration required!

- USask GIS Day – Nov. 20, 11:00 a.m. – Murray Library, Ground Floor (G26)

Tri-Agency Undergraduate Student Award sessions for faculty and students

Ready to apply for a Tri-Agency Undergraduate Student Research Award (USRA)? You're invited to a step-by-step walkthrough of the full application process for NSERC, SSHRC and CIHR awards and outline key responsibilities for both students and faculty.

Register at the link **here**.

- Tri-Agency USRA webinar – Nov. 26, 1:30 p.m. – Online, via Zoom

---

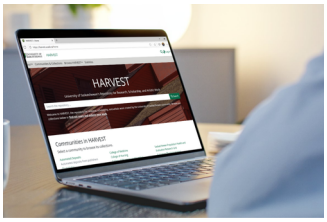
3D printing and cultural heritage at the Museum of Antiquities

In recent years, 3D scanning and printing has become an essential tool for preserving, communicating and teaching about art and artifacts in the field of cultural heritage. This event, co-hosted by the Museum of Antiquities and the Digital Research Center at the University of Saskatchewan, explores the many ways that these technologies have made an impact on the field. This includes preserving or reconstructing artifacts decimated by terrorist activities, to sharing priceless works of art with museum visitors around the world and here in Saskatoon and creating hands-on experiences for our students. Attendees will learn about these different global and local approaches, visit examples in the museum and have the chance to discuss these incredible topics over a selection of refreshments.

Join **Drs. Caroline Arbuckle and Tracene Harvey (PhD)** to explore how 3D technologies are transforming the preservation, communication and teaching of art and artifacts.

- 3D printing and cultural heritage special event – Nov. 20, 4:00 - 6:30 p.m. – Administration Building C280

Information and Community for Researchers



Upcoming changes to Tri-Agency Open Access Policy

The Tri-Agency Open Access Policy on Publications is undergoing revisions aimed at improving compliance and aligning with global standards. A draft revised policy released in early 2025 proposes mandatory deposit of all peer-reviewed articles in a Canadian institutional repository at the time of publication, under an open license. Authors must retain rights to deposit their work, and preprints may be accepted if publisher restrictions apply. Implementation is expected in early 2026, though delays are possible.

The USask Library is ready to support researchers with these changes through HARVEST and expert guidance on rights retention and repository deposit. **Learn more**.

Knowledge synthesis open educational resource survey

A team within the USask Library is developing a custom open educational resource (OER) focused on knowledge synthesis (e.g., scoping, systematic and integrative reviews). This OER aims to serve as a guiding platform for a diverse group of researchers — students, trainees, residents, research staff, librarians and faculty — engaged in knowledge synthesis projects. It will also support the long-term sustainability of the library's knowledge synthesis services.

We're seeking feedback from faculty, staff and students who are currently involved in knowledge synthesis or are planning to participate in such projects.

If this applies to you, please take a few minutes to **complete our survey** before it closes on December 5 at 11:59pm.

GIFS at USask announces new competitive pricing for PacBio Revio sequencing services

The Global Institute for Food Security at USask has announced new and reduced pricing for its PacBio Revio SMRT Cell.

As **Canada's first Revio PacBio Certified Service Provider**, and the only provider in the country with automated library preparation and end-to-end high-throughput workflows, GIFS is proud to deliver sequencing of unmatched accuracy, reproducibility and quality, combining certified HiFi quality with pricing that makes long-read sequencing more accessible than ever.

Learn more about this exciting development here.

If you have any important information for USask researchers, please contact research.communications@usask.ca!

Submitting to Discovery Digest

If you would like to submit a research-focused event or news item for consideration for Discovery Digest, please submit a link and a description of no more than 150 words to **research.communications@usask.ca** with the subject line "Submission – Discovery Digest," along with the month and year you are submitting for.

Please indicate whether your submission is a recommendation for a news item, event or information for researchers. If you would also like to submit a photo, please make sure it is a 3:2 aspect ratio image.

The Discovery Digest goes out on or as close to the 15th of each month as possible. **Please ensure any submissions are sent in by at least the 8th of each month to be considered for inclusion.**

In the news

- Nov. 9 – The Western Producer – **Gene editing digs deeper space in Canadian plant breeding**
- Nov. 6 – CBC Radio – **Event at USask shining light on lasting harm and risks of benzodiazepines**
- Nov. 6 – Global News – **Saskatchewan government introduces Cyberstalking and Coercive Control Act**
- Nov. 3 – National Post Online – **Dwight Newman: How B.C. and Parliament can amend the Constitution to protect property rights ASAP**
- Oct. 29 – CBC Radio – **This U of S grad wants to ensure you can trust AI with your cancer diagnosis**
- Oct. 24 – The Calgary Herald – **'Exceptionally dry:' Little relief in drought conditions facing Calgary area, says top scientist**
- Oct. 23 – Regina Leader-Post, Saskatoon StarPhoenix – **Opinion: Agri-foods a big opportunity for Saskatchewan and Canada**
- Oct. 21 – CBC News – **As Sask. legislature returns for a new session this week, what should we expect?**
- Oct. 20 – CBC News – **Team of researchers calls for reforms to lab animal research**

Banner image photo credit: **A breath of protection! -** by **Mihiprabha Rathnayake,** PhD Student, Western College of Veterinary Medicine

Images of Research 2025 - *Winner, Viewers' Choice*

A delicate cloud of mist swirls inside the transparent chamber as a group of fluffy chicks curiously huddled together, receiving their first shield of protection. The soft golden down of the chicks glows under the light as the nebulizer gently disperse a synthetic DNA molecule called CpG-ODN, ensuring each tiny breath caries a promise of immunity. These young lives embark on their journey with a breath of protection, laying foundation for a healthier life in a world with challenging pathogenic bacteria like *E. coli* and *C. perfringens*.

UNIVERSITY OF SASKATCHEWAN

BE WHAT THE WORLD NEEDS

We want your feedback! **What do you think of Discovery Digest?**

You are receiving this email because you either subscribed manually to Discovery Digest or were a former subscriber to USask Monthly Research Update. Questions? Comments? Send an email to Research Profile and Impact.
