Discovery Digest

BE WHAT THE WORLD NEEDS

February 2025 - Issue 85

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!**

IMPORTANT - Enter USask's 11th Annual Images of Research Contest to win cash prizes

Knowledge is beautiful and USask students, staff, faculty and alumni know it better than anyone. We invite you to enter photography and imaging of your USask research, scholarly and artistic work to the 11th Annual Images of Research Contest by February 21, 2025 (4:00pm CST) to share its beauty and impact with the world and for a chance to win cash prizes.

- **Learn more and enter the contest!**

NEW - USask Signature Series Podcast

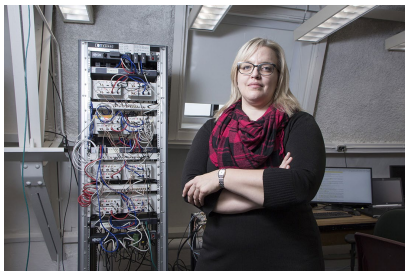
World-leading research and innovation - right in the heart of Canada.

The **USask Signature Series Podcast** explores the cutting-edge research taking place at the University of Saskatchewan across the university's Signature Areas of Research.

Listen today! Streaming online or wherever you get your podcasts.

- Episode 1: **Are your pets good for your health?**
- Episode 2: **How will Saskatchewan lead the energy transition?**
- Episode 3: **How will quantum technology change our lives?**
- Episode 4: **What makes Saskatchewan farmers so efficient?**
- Episode 5: **What should we know about our changing waterscapes?**

This Month's Stories



In memory of Kathryn McWilliams

Dr. Kathryn McWilliams (PhD), brilliant professor of physics and engineering physics at the University of Saskatchewan (USask), innovative director of the SuperDARN (Super Dual Auroral Radar Network), a major science initiative, and the first Canadian to be recognized by the Royal Astronomical Society with an honorary fellowship for “her unquestioned international expertise in the dynamics of field-aligned currents that link solar wind, magnetosphere and ionosphere” has passed away.

You can read more about Kathryn’s achievements and legacy from **Dr. Brooke Milne**, Dean, College of Arts and Science and past-CFI president and CEO **Roseann O’Reilly Runte**.

USask Research, Scholarly and Artistic Work gears up for 2025

As we reflect on the past year, USask has accomplished many outstanding achievements, faced unique challenges and reached unprecedented milestones.

To learn more about the year that was in research, scholarly and artistic work (RSAW) at USask, we sat down with **Dr. Baljit Singh (PhD)**, the vice-president of research (VPR) at USask. In this Q&A, Singh shares his perspectives on USask’s milestones, the impact of recent initiatives and his vision for the future.

"I would tell any student who is interested in pursuing a career in academia or RSAW to embrace your curiosity. Always stay curious and open-minded,” he said.

New $24 million funding to spearhead pandemic preparedness research

While the world continues to recover from the last pandemic, a major investment from the Coalition for Epidemic Preparedness Innovations (CEPI) could help the Vaccine and Infectious Disease Organization (VIDO) prepare

the world for the next infectious disease crisis.

VIDO at USask has been awarded a research grant worth up to $24 million (Cdn) from CEPI, which aims to support VIDO's role in advancing global health and disease prevention.

The new funding will help VIDO continue developing its pan-sarbecovirus vaccine – a broadly protective vaccine designed specifically to protect against different types of potentially deadly coronaviruses, including SARS-CoV-1, as well as SARS-CoV-2, the virus behind the COVID-19 pandemic. If successful, the candidate vaccine will be tested in a Phase I clinical trial in people.

Celebrating women in science: A look inside the labs of USask researchers

The International Day of Women and Girls in Science is celebrated annually on February 11 and promotes gender equality in STEM (Science, Technology, Engineering and Math). For this year, USask celebrated researchers who are making great advancements in their field and forging a path for the next generation of scientists.

Dr. Tara Kahan (PhD), professor and Canada Research Chair (CRC) in Environmental Analytical Chemistry, is a big believer of fostering supportive environments and offers support to everyone who enters her lab, ensuring that it's a place where her students can achieve success. As a woman in chemistry, Kahan said there are still challenges for women starting out in science but supporting one another goes a long way.

As a woman in science, **Dr. Ana Vargas (PhD)**, an assistant professor in the College of Agriculture and Bioresources and Agri-Food Innovation Fund Chair in Lentil and Faba Bean research, said there have been challenges along the way, but she has a lot of fun doing her work and hopes to continue her research and breeding for decades to come. Vargas brings that passion for her research into the classroom, encouraging all students, and especially other women in science, to pursue what they love.

USask-led research team traces ancient fossils for evolutionary clues

Dr. Luis Buatois (PhD) traces a series of hexagons with his finger, following the path carved by tiny organisms millions of years ago that have long since left these unique fossils in their wake.

It's those patterned trace fossils – fossils not of organisms themselves, but the remnants they leave behind like millimetre-sized burrows – that Buatois

and his team explore in their newest paper published in *The Proceedings of the National Academy of Sciences (PNAS)* and may hold the key to understanding the evolution of these fascinating communities among living organisms.

"What we have seen here is how this deep marine ecosystem was constructed through time," Buatois said. "We are trying to look at the timing of innovation; track the origin for modern deep-sea communities."

Looking for more research stories? Visit Discovery Digest online.

Diverse USask livestock research projects receive government support

Livestock and forage research at USask takes a variety of forms, and new government and industry funding will help support cutting-edge livestock research across campus.

Twenty-one livestock-focused research projects have received more than $5.18 million dollars in support from the provincial and federal governments through the Agricultural Development Fund (ADF). From animal vaccines to genomic tools to feed strategies and more, the ADF supports a myriad of research across disciplines at USask.

"USask researchers have a proven record of delivering on both the basic and applied science needed for a sustainable future," said **Dr. Angela Bedard-Haughn (PhD)**, dean of the College of Agriculture and Bioresources at USask. "This important funding through the ADF supports the essential and interdisciplinary research that strengthens Saskatchewan's agricultural leadership in Canada and around the world."

Imagine the future: USask celebrates International Year of Quantum Science and Technology

The year 2025 has been named the UNESCO International Year of Quantum Science and Technology (IYQ), recognizing "100 years since the initial development of quantum mechanics."

But what does celebrating quantum sciences look like at USask and around the world?

USask's **Dr. Steven Rayan (PhD)**, professor in the Department of Mathematics and Statistics in USask's College of Arts and Science, the director of the Centre for Quantum Topology and Its Applications (quanTA), and the lead for USask's Signature Area of Research in Quantum Innovation, affectionately calls quantum research "the science of the very small" – exploring the unique quantum principles and qualities of infinitesimal subatomic particles and how

those can be leveraged in practical ways.

USask researchers investigating benefits of pea-based milk versus dairy

We've all been told that milk makes your bones stronger, but a new USask research project is exploring whether some kinds of milk could be better for bone strength than others.

Led by **Dr. Phil Chilibeck (PhD)**, a professor at USask's College of Kinesiology, a new study will examine whether the benefits of pea protein – ingested as pea milk – could be more beneficial for your bones than dairy.

If this project can confirm pea protein has distinct bone health benefits, it could be used as a supplement for those suffering from osteoporosis.

"We were surprised to find the pea protein, for some reason, had just as good or even superior benefits sometimes when compared to dairy milk," Chilibeck said. "Pulses (like peas) are good for everyone ... If we can show that they're beneficial for bone health, it opens up a new market for pulses."

VIDO researchers collaborate with international team to unlock secrets of bat genomes

Bats are evolutionary marvels that have spent millions of years refining their genetic makeup. This lengthy genetic fine-tuning has likely allowed them to achieve impressive traits that make bats one of the most unique mammals in the world. And while it may seem like we don't have much in common with bats, these unique creatures actually offer a lot of insight into how humans may get sick and even how we age.

Dr. Arinjay Banerjee (PhD), principal scientist at VIDO and adjunct professor in the Western College of Veterinary Medicine (WCVM) at USask, and his students post-doctoral fellow **Dr. Kaushal Baid (PhD)** and PhD students **Victoria Gonzalez** and **Arkadeb Bhuinya** from the Department of Veterinary Microbiology—are trying to identify what makes bats naturally resistant to certain infections and how their genes play a role in their extremely efficient immune response.

Collaborative USask research exploring yeast genetics for better chicken feed

Dr. Natacha Hogan (PhD) and **Dr. Chris Eskiw (PhD)** with the College of Agriculture and Bioresources are examining how yeast byproducts, when added to the feed of hens, could improve the overall health of the hens and the quality

of the eggs they lay.

The research team will first identify the right yeast genome that produces the most beneficial prebiotic molecules for chicken gut health. Eskiw, an expert in yeast genomics, said the key will be exploring which yeast produces the desirable prebiotic byproducts to add to chicken feed.

The research project will not be a short process – Hogan said just the feeding and monitoring side of the project will take 40 weeks – but this time allows the team to accurately monitor animal growth performance as well as egg production and quality (such as shell strength and nutritional components).

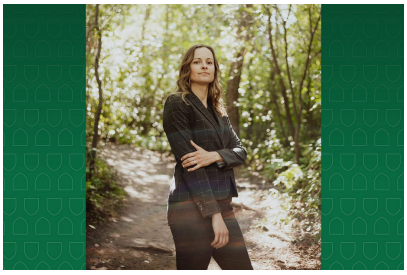
CWRC commits $11.8 million to USask Crop Development Centre

The Canadian Wheat Research Coalition (CWRC) has committed $11.8 million over the next five years to a core breeding agreement (CBA) with USask's Crop Development Centre (CDC).

The new agreement ensures continued CWRC funding for the CDC's industry-leading wheat breeding programs, as the previous CBA concluded at the end of 2024.

"We have had a tremendously successful partnership with the CWRC, and we are grateful for their continued support," said **Dr. Curtis Pozniak (PhD)**, CDC director and wheat breeder at USask. "The continued investment from the CWRC will help support the CDC's mission to deliver high-yielding and reliable wheat varieties for western Canadian farmers."

Inaugural Shklanka Chair in Precambrian Critical Mineral Systems appointed at USask



Dr. Camille Partin (PhD) has been appointed the first Shklanka Chair in Precambrian Critical Mineral Systems at USask.

Partin, an associate professor at the USask College of Arts and Science, will hold the chair for a five-year term in the Department of Geological Sciences, where she has been a faculty member since 2014.

The purpose of the Shklanka Chair is to enhance the work of an outstanding scholar whose research explores fundamental and applied aspects of critical mineral systems including

metallogeny (ore-forming processes) and mineralogy (mineral-metal associations). The work of the chair is intended to integrate with other areas of specialization within the Department of Geological Sciences that range across the entire lifecycle of critical mineral systems.

New USask crop research chair receives Sask Wheat support

The Saskatchewan Wheat Development Commission has committed $6.5 million to support the establishment of the Saskatchewan Wheat Development Commission Applied Genomics and Pre-breeding Chair at USask.

The new research chair will design and deploy cutting-edge technologies and strategies to assess genetic diversity for delivery into new crop varieties, with a primary focus on wheat.

“We are grateful for the Saskatchewan Wheat Development Commission’s support in advancing crop research,” said **Dr. Angela Bedard-Haughn (PhD)**. “This new chair will bolster USask’s leadership in the development of productive, climate-smart varieties that support a sustainable food production system.”

International Development Week highlights global research and collaboration at USask

As Canada celebrates the 35th International Development Week (IDW), USask researchers involved in the Africa Research Group are highlighting the importance of strong global partnerships to promote an equitable, peaceful and sustainable future for everyone.

IDW is an annual event that occurs during the first week of February and recognizes the efforts of organizations and individuals working towards achieving the United Nation’s (UN) Sustainable Development Goals (SDGs) and Pact for the Future. The theme this year is “Building a Better World Together.”

The Africa Researchers Group was established following an event organized by USask’s International Office for IDW 2024 and in celebration of Black History Month. The event highlighted USask’s current collaborations in Africa and facilitated new connections among researchers already working in—or were interested in—working in Africa. The group emerged and now meets monthly, growing in engagement and continued collaboration.

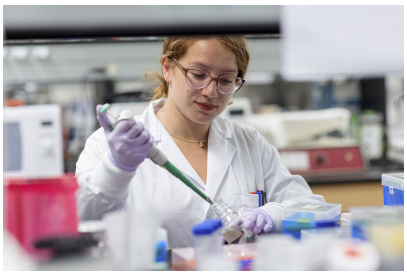
USask researchers harness collaboration in remote field work

Venturing out for a long day of sample collection on a remote island 3,500 km away from USask might be daunting for some researchers, but USask graduate student **Victoria Crozier** and her colleague, undergraduate student

Olivia Andres, jump at the opportunity to explore the sandy shores of Sable Island, Nova Scotia.

The pair of researchers are students in the Department of Biology in the College of Arts and Science at USask and work in the McLoughlin lab, run by associate professor **Dr. Philip D. McLoughlin (PhD)**. As a PhD student, Crozier is studying Sable Island's feral horses—descendants of a small group of horses left on the island in the 18th century. The isolated population offers researchers the unique opportunity to study the horses' genetics, behaviour, and social structures and gather information about their microbiomes.

Government of Canada backs tech entrepreneurs at the University of Saskatchewan



Young Innovators: USask researcher using bat immune systems to find next generation therapies

Austin Hammond embraces teamwork and technology at GIFS to accelerate research

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Stay connected with USask research news

Make sure to follow the USask Research **Twitter/X 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/X for more of the latest research and university news.

USask research also has a new Instagram page! Check us out at **@usaskresearch** on Instagram for news, stories, features and much more content highlighting research here on campus.

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

In *The Conversation*

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

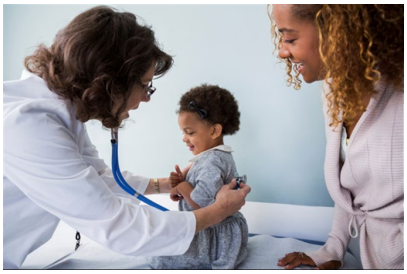
Join the next Campus Conversations event on March 5, 2025

Campus Conversations are a series of drop-in, constructive discussions between members of the campus community regarding research, scholarly and artistic works at USask. Join Associate Vice-President Research (Ethics and Infrastructure) **Dr. Terry Fonstad (PhD)** on March 5, 2025 from 12 – 12:45pm in Administration Building C280. All faculty, staff, postdoctoral fellows and students welcomed. Registration not required.

- Campus Conversations – March 5, 2025 – Administration Building C280

2025 Life & Health Sciences Research Expo

Available prizes total over $8,000 for USask's annual Life & Health Sciences Research Expo taking place on May 1, 2025. Register today to submit an abstract for the research competition, submit a paper for the Best Paper Award and/or nominate an outstanding supervisor for the Best Supervisor Awards. The registration and materials submission period closes March 28, 2025. For information about competition categories, additional award opportunities and more, visit **healthsciences.usask.ca/expo**.



Department of Pediatrics Child Health Research Trainee Day 2025

Please join us on Thursday, April 3 from 12 – 4 pm for this research symposium featuring presentations from residents, graduate students, post-doctoral fellows and undergraduate students engaged in child health research at USask. Abstracts are due March 16. The form to submit abstracts can be **found here,** and you can RSVP for lunch **here**.

Please contact **tova.dybvig@usask.ca** for any questions or submissions.

- Child Health Research Trainee Day 2025 – Thursday, April 3 – Marquis Hall & Zoom

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Data Management and Sharing: Navigating New Mandates with ARCHIMEDES | Webinar

The webinar intends to introduce researchers to ARCHIMEDES, a new health platform developed for data management and sharing. The webinar will take place on February 25 from 12 – 1pm featuring Dr. Peter Liu, Dr. Kelly Cobey and Dr. Jodi Edwards.

- ARCHIMEDES platform webinar – February 25, 2025 – Register at the **link here**

Information for researchers

Thank you for joining TEDxUniversityofSaskatchewan 2025!

On February 2, USask faculty, staff and students took to the TEDxUniversityofSaskatchewan stage to ask tough questions, push boundaries and inspire impact for meaningful change with and for our communities. Full talk recordings coming soon!

Check out the event photos here.

New hosting service underscores university library's commitment to open scholarship

Recently, the University Library at USask welcomed the ***Engaged Scholar Journal (ESJ): Community-based Research, Teaching and Learning*** to its new hosting service. *ESJ* is a multi-disciplinary, peer-reviewed journal and the first and only Canadian journal focused on 'engaged scholarship' informed by community-academic partnerships. *ESJ* is a diamond open access (OA) journal, which means all articles are OA at the time of publication without fees for readers or authors. This enables important community-engaged research to be shared

with the communities that participate in the research, as well as anyone who could potentially build upon, learn from, or put into practice the results regardless of institutional affiliation, geographic location, or financial means.

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

- Feb. 13 – CBC News – **Canadian residents are racing to save the data in Trump's crosshairs**
- Feb. 11 – Phys.org, MSN News – **Trace fossils reveal clues to evolution of tiny organisms in deep marine ecosystems**
- Feb. 10 – ABC News, KFF Health News **– House cats with bird flu could pose a risk to public health**
- Feb. 8 – IFL Science – **"Slime" that generates electricity when squeezed could be used in medicine and green energy**
- Feb. 5 – The Associated Press, Global News – **Second type of bird flu detected in US dairy cows**
- Feb. 4 – CBC News, The Saskatoon StarPhoenix, CTV News, Popular Mechanics – **Carbon dating puts Sask. Indigenous archaeological site at almost 11,000 years old**
- Feb. 3 – CBC News – **Alcohol-related deaths and hospitalizations spiked during the pandemic. Could policy have made a difference?**
- Jan. 27 – Saskatoon StarPhoenix, Regina Leader-Post – **VIDO aims to create 'holy grail' of vaccines with global research grant**
- Jan. 17 – The National Post, MSN News – **Why are egg yolks different colours? From pale yellow to dark orange — and even green**
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Jan. 17 – CBC News – **Multi-year droughts are becoming hotter, lasting longer and causing more damage: study**

Banner image photo credit: **Winter Embrace: Cattle Swathgrazing in Snow -** by **Somtochukwu Obiora,** M.Sc Student, Department of Animal and Poultry Science, College of Agriculture and Bioresources

Images of Research 2024 - *Runner-up, Research in Action*

I see cattle having fun doing what they know best: grazing. While most animals and we humans would love to stay away from the winter cold, these cattle are grateful to be in the field provided there is forage. Traditionally, they would have been fed in barns, but years of continued research have made it possible to continue grazing into the winter months. Having groups of these cattle graze on swathes of monoculture oat and other groups on polycrop mixture (oat, forage pea, and brassicas) tells a lot about the direction of this research aimed at comparing forage systems (monoculture or polyculture) for a successfully extended grazing.

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