



## December 2024 - Issue 83

*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!](#)

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## TEDx University of Saskatchewan tickets are now live!



Is the art of war good business? Can leftovers be turned into wealth? Will building a cancer map pave the way to a cure?

**TEDx University of Saskatchewan** is back with an invigorating roster of USask faculty, staff and students who are taking to the TEDx stage to ask tough questions, push boundaries and inspire impact for meaningful change with and for our communities. In the spirit of ideas worth spreading, this event will profile compelling stories of ambition, achievement, innovation and inspiration.

- When: February 2, 2025, 1:00–5:00pm
- Location: Leslie and Irene Dubé Theatre, University of Saskatchewan
- Registration: Limited tickets available. Reserve yours today!

Meet the 2025 speakers and performer and secure a ticket to the live event [here](#).

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## 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. The first three episodes are live and can be accessed below:

- 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?](#)

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## This Month's Stories



### [Let it snow: Frosty facts about flurries with Dr. John Pomeroy](#)

Snowfall struck Saskatchewan with full force in the final days of November and leading into December, piling up in urban areas and swirling across the countryside.

But while the thick snow might slow things down for us, how much do we actually know about it?

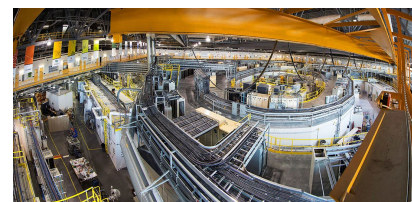
**Dr. John Pomeroy (PhD)** is the director of the University of Saskatchewan (USask) Centre for Hydrology, a member of the Global Institute for Water Security, a UNESCO Chair in Mountain Water Sustainability, and a distinguished professor in the Department of Geography and Planning in the College of Arts and Science.

One of the world's leading hydrologists, Pomeroy knows a lot about snowfall and snowmelt. Research Profile and Impact spoke with him to get the facts about our big dump of snow.

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### [Spotlight on USask history: The CLS shining a light on the path to brilliance](#)

Twenty years ago this fall, CBC's Peter Mansbridge hosted The National from the centre of USask's huge synchrotron experimental hall to mark the impending launch of the nation's largest science project in a generation—the Canadian Light Source (CLS).



Today, more than 1,000 academic, government and industrial scientists use the CLS beamlines to shed light on a wide variety of scientific and medical challenges. These include improving drug delivery in patients, finding vaccines against gastric cancer or pig diseases, developing a way to convert patient blood types into the universally useful O-negative, discovering new materials for electronic devices, finding ways to turn mine waste into

healthy soil, and using pulp and paper waste to scrub carbon from emissions.

Building the CLS, a dream of scientists for decades, catapulted USask into the big leagues of scientific research. The 20th anniversary will be celebrated during this 2024/2025 academic year.



### [Innovative Hepatitis C roadmap aims to boost access to care in the Prairies](#)

The ‘Journeys to Wellness: Prairie Hepatitis C Roadmap’ is the result of a two-year project spearheaded by the Waniska Indigenous Centre, based out of Pewaseskwan (the Indigenous Wellness Research Group) at USask.

The roadmap contextualizes the Canadian Network on Hepatitis C (CanHepC) Blueprint to inform hepatitis C elimination efforts in Canada and was developed through a lived experience and community lens. The roadmap assesses the context, challenges and enablers to hepatitis C care and suppression, and includes priorities to address the hepatitis C wellness journey in Alberta, Saskatchewan and Manitoba.

Waniska developed the roadmap with the support of dedicated team members, participating organizations, passionate community members and experts. The project was completed under the guidance of **Dr. Alexandra King (MD)**, project co-chair (Saskatchewan), associate professor in the College of Medicine and Cameco Chair in Indigenous Health and Wellness, and Carrielynn Lund, project co-chair (Alberta).

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### [A new way to farm: Precision agriculture redefines research and technology](#)

From using satellites thousands of kilometres above the Earth’s surface to examining chemical compositions in soils and plants, the goal of precision agriculture boils down to one word: efficiency.



USask’s **Drs. Preston Sorenson (PhD), Greg Penner (PhD)** and **Steve Shirliffe (PhD)** in the College of Agriculture and Bioresources are among the researchers leading the charge of precision agriculture.

“We’re getting more granular data, which we can use to guide more precise land management decisions – hence, precision agriculture,” said Sorenson. “But also with more granular data, we’re able to get much more accurate, scaled-up estimates.”

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### [USask-city research aims to improve supply chains.](#)



### [shorten water main break repairs](#)

A project jointly led by researchers at USask and officials with the City of Saskatoon will help keep the city well-prepared for major pipe breakages.

**Dr. Hamed Samarghandi (PhD)**, a professor of management science in USask's Edwards School of Business with a degree in mechanical and manufacturing engineering, pointed to the recent water main break in Calgary that resulted in a water supply crisis for the entire city, as one of the inspirations for this project.

Samarghandi is working with Amanda Munshaw, an engineering manager with the City of Saskatoon's technical services department. Munshaw said this joint venture aims to help develop a strategy for Saskatoon to maintain its vital infrastructure.

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Looking for more research stories? [Visit Discovery Digest online.](#)

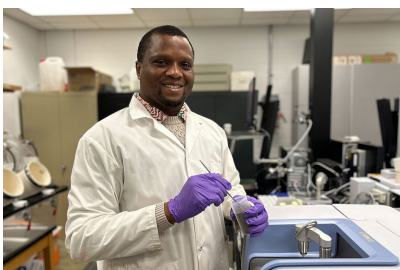
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### [USask researcher probing AI's potential for health care](#)

Many clinicians are anticipating the massive wave of impact Artificial Intelligence (AI) will have on the field of medicine. But instead of watching from the shore, **Dr. Stephen Lee (MD)** is jumping right in.

Lee recently published an article in *JAMIA Open* based on his work developing a chest X-ray machine learning model – using consumer-grade equipment he purchased at a local computer store. He received a College of Medicine Research Award (CoMRAD) to support similar work in the past.

His intent is to show how accessible it's becoming to create this type of AI-guided diagnostic tool.



### [USask researchers shining a light on soil fertility](#)

Do you remember the device used by Dr. "Bones" McCoy on *Star Trek*? He'd point his tricorder at a patient and diagnose the medical problem within seconds.

That future may not be here yet, but if **Dr. Derek Peak (PhD)** and **Gbenga Adejumo** have their way, something similar will be coming soon for diagnosing soil fertility.

Peak, a professor of soil science in the College of Agriculture and Bioresources at USask, and

Adejumo, a PhD candidate, are exploring the use of spectroscopy in testing soil for properties such as organic carbon, nitrogen, moisture, and texture.

Spectroscopy peers closely at the chemical forms of things in natural systems.

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### [USask researcher brings insight to proposed groundwater boundaries](#)

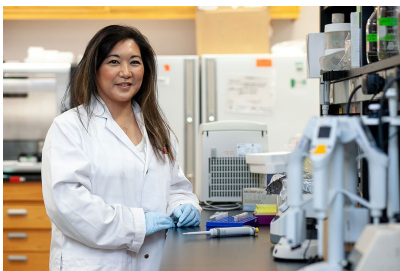
The water beneath our feet is not often the first thing on our minds and yet, as the largest freshwater source on our planet, groundwater is relied upon by communities and industries all over the world.



Researchers like **Dr. Grant Ferguson (PhD)**, professor in the College of Engineering and the School of Environment and Sustainability (SENS) at USask and member of the Global Institute for Water Security (GIWS), have been studying groundwater dynamics for years and have only scratched the surface.

In a recent Matters Arising article published in *Nature*, Ferguson and his colleagues bring attention to the complexity of groundwater systems, cautioning that the recently proposed Earth system boundaries (ESB) on groundwater needs to be strongly rooted in both groundwater theory and its use, in order to reduce potential environmental injustices.

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### [Insights on what makes cows efficient, allowing better decision-making on farms](#)

An impressive array of tools – from data analytics and precision agriculture to livestock vaccines, crop development, genomic selection and more – is ushering in the future of farming.

Located at the heart of one of Canada’s agricultural powerhouses, USask has developed an impressive portfolio of achievements related to creating stronger and more resilient food systems.

**Dr. Mika Asai-Coakwell (PhD)**, professor in the Animal and Poultry Science department with the College of Agriculture and Bioresources at USask, focuses her efforts on “finding an efficient cow” through a project called, “Genomic association analysis of forage efficiency in beef cows.”

“When you have animals that are more efficient over the long term, one benefit is that producers can rely on these cows longer – and don't need as many replacement heifers to become breeding cows,” she explains. “Higher calving rates would lead to a more productive farm overall.”

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### [USask researcher wins prestigious award for turning waste](#)

## [into high-value products](#)

**Dr. Bishnu Acharya (PhD)** has been awarded the prestigious Mitacs Innovation Award, for his research into turning canola, oat and flax waste into feed for microbes, nutritional food additives and sustainable packaging.



Acharya, the Saskatchewan Ministry of Agriculture Endowed Research Chair in Bioprocess Engineering and associate professor of chemical and biological engineering in USask's College of Engineering, is leading a research effort to turn canola meal into a low-cost, nutrient dense feed for microbes to use in fermentation. This fast-growing segment of the biotechnology sector benefits the development of new foods, beverages, medicines and other applications.

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## [Unlocking the 'genetic magic' of beef cattle](#)



## [USask to host Canadian National Nuclear Energy Management School](#)



## [Groundbreaking research with global impact](#)

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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.

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

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## **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!**

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## **Upcoming events**

**Do you have a research-focused event to share? Please email the details to [research.communications@usask.ca](mailto:research.communications@usask.ca)!**

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## **NEW - Information for researchers**

### **University closed for the holidays**

A reminder that the university is closed from Dec. 25 through Jan. 1, opening again on Jan. 2. We hope everyone has a safe and happy holiday season!

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### **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](mailto: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.**

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**If you have any important information for USask researchers, please contact**

## ***In the news***

- Dec. 13 – CBC News – [Sask. HIV rates are worst in Canada, recent stats show](#)
  - Dec. 12 – CTV News – [Nearly 1,500 people in Saskatoon are homeless, according to the latest count](#)
  - Dec. 10 – CBC News – [U of Sask. study to give people weed gummies and a driver's test to measure impairment](#)
  - Dec. 10 – CBC News, SaskToday, CTV News, Global News – [New research project to prepare Saskatoon for major water main breaks](#)
  - Dec. 9 – Global News – [University of Saskatchewan researchers find ways to detect osteoarthritis earlier](#)
  - Dec. 5 – The Canadian Press, MSN News – [By the numbers: Which food categories will see the biggest price increases next year?](#)
  - Dec. 5 – CTV News – [These foods will be hit hardest by inflation in 2025, according to AI modelling](#)
  - Dec. 2 – Axios – [Alarms raised over bird flu response under Trump](#)
  - Nov. 26 – BNN Bloomberg – [How this USask prof. turned canola waste into high-value products](#)
  - Nov. 20 – CBC News, CTV News – [Where did COVID-19 originate? Saskatoon lab helps with genetic analysis that points to animal market](#)
  - Nov. 16 – Yahoo! News, CBC News – [Researchers diagnose 27 cases of scurvy in northern Sask. community](#)
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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.





BE WHAT THE WORLD NEEDS

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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](#).

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