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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



[Innovative USask 'mini-brains' could revolutionize Alzheimer's treatment](#)

Dr. Tyler Wenzel (PhD), a postdoctoral fellow in the College of Medicine's Department of Psychiatry, developed the idea for the "mini-brain" - or more formally, a one-of-a-kind cerebral organoid model – while working under the supervision of **Dr. Darrell Mousseau (PhD)**.

These "mini-brains" are built by creating stem cells from a blood sample, and then transforming these stem cells into functioning brain cells. Using small synthetic organoids for research is not a novel concept – but the "mini-brains" developed in Wenzel's lab are unique. As outlined in Wenzel's recent published article in *Frontiers of Cellular Neuroscience*, the brains from Wenzel's lab are comprised of four different types of brain cells while most brain organoids are comprised of only neurons.

And for those "mini-brains" created from the stem cells of individuals who have Alzheimer's, Wenzel determined that the artificial organ displayed the pathology of Alzheimer's – just on a smaller scale.

[USask celebrates launch of Canada's freshwater monitoring network](#)

Led by USask in partnership with eight other Canadian

universities, The Global Water Futures Observatories (GWFO) was officially launched on April 17.

GWFO is a network of freshwater monitoring and observation stations placed strategically across Canada which consists of 64 instrumented basins, lakes, rivers and wetlands, 15 deployable measurement systems and 18 state-of-the-art water laboratories. This infrastructure collectively serves as a national scientific freshwater observation network for Canada’s critical freshwater systems.

“The funding provided to GWFO shows our government recognizes the importance of critical and informed research into our water resources. The ongoing efforts of those running GWFO facilities, or using its data, will play a key role in determining the security and sustainability of Canada’s freshwater,” said **Dr. John Pomeroy (PhD)**, director of GWFO.



USask delegation in Germany to strengthen international partnerships

Senior leaders from the University of Saskatchewan (USask), along with leadership from Innovation Saskatchewan, travelled to Germany earlier this month to continue forging strong global partnerships for Saskatchewan.

The delegation’s agenda centered on activities that built and strengthened ties with government, top research institutions, and private industry. Discussions with these groups focused on topics ranging from quantum technologies to agriculture and sustainability.

“USask is developing world-class research programs by building and strengthening partnerships with Germany. This mission presents an opportunity to respond to global challenges, leverage our strengths, and unlock new collaborative research opportunities,” said USask president **Peter Stoicheff**.

USask researchers explore new cell target for cystic fibrosis treatment

A team of USask researchers are exploring the role of a newly identified cell type in cystic fibrosis (CF), which could lead to effective new types of treatment.

Researchers led by the College of Medicine’s **Dr. Juan Ianowski (PhD)** in the Department of Anatomy, Physiology and Pharmacology, and **Dr. Julian**



Tam (MD) in the Division of Respiriology, Critical Care and Sleep Medicine, recently published a paper in the *American Journal of Respiratory and Critical Care Medicine* highlighting the function of pulmonary ionocyte cells in CF.

“It’s been shown that abnormal airway acidity is an important component of CF lung disease pathobiology,” Tam said. “What we found is that pulmonary ionocytes regulate the acidity of CF airways.”



[Minister Champagne highlights USask’s VIDO in post-budget tour](#)

The Government of Canada’s commitment to invest in research innovation, talent development and pandemic preparedness was celebrated earlier this month during Minister of Innovation, Science and Industry François-Philippe Champagne’s visit to USask’s Vaccine and Infectious Disease

Organization (VIDO).

The visit followed Canada’s federal budget announcement, which proposes to provide \$30 million to VIDO to complete critical infrastructure that establishes the organization as Canada’s Centre for Pandemic Research—including a new animal housing facility and upgrades to containment Level 4. This investment will enable the study of priority pathogens (including high-risk pathogens with pandemic potential) to support vaccine and therapeutic development, a key pillar in Canada’s Biomanufacturing and Life Sciences Strategy.

“The investments made by the Government of Canada are instrumental to VIDO’s evolution as Canada’s Centre for Pandemic Research—supporting the development of the next generation of scientific talent and advancing the creation of vaccines that will benefit the world,” said **Dr. Volker Gerdts (DVM, PhD)**, director and CEO of VIDO.

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

[USask researchers develop eggshell ‘bioplastic’ pellet as sustainable alternative to plastic](#)

What if there was plastic-like material that could absorb excess nutrients from water and be used as a fertilizer when it decomposes?

That product – a “bioplastic” material – has been created by USask chemistry professor **Dr. Lee Wilson (PhD)** and his research team detailed in a paper recently published in the *Royal Society of Chemistry Sustainability Journal*. The research team includes PhD candidate **Bernd G. K. Steiger**, BSc student **Nam Bui** and postdoctoral fellow



trainee **Bolanle M. Babalola**.

“We’ve made a bioplastic material that functions as an absorbent and it takes phosphate out of water, where elevated levels of phosphate in surface water is a huge global water security issue,” Wilson said. “You can harvest those pellets and distribute them as an agricultural fertilizer.”



USask research uses innovative techniques to trace lithium deep underground

A USask- led research team has been awarded nearly \$1.39 million through the NSERC Alliance Missions grant for critical minerals research to help detect deposits of lithium that are key to renewable energy initiatives.

Spearheaded by **Dr. Chris Holmden (PhD)**, a professor in Geological Sciences in the College of Arts and Science and the co-director of the Saskatchewan Isotope Laboratory, the NSERC-supported research project will trace lithium-brine origins using lithium isotopes to advance an innovative project to better predict and track economic concentrations of lithium located deep below Saskatchewan’s surface.

Dr. Lambert Baraut-Guinet (PhD), one of the project’s leading geochemists from the Saskatchewan Isotope Lab, said lithium is more important than ever as the world explores new sources of energy – and this project is crucial to the development of a brine-lithium industry in Saskatchewan.

USask explores small modular reactors fuel with federal funding

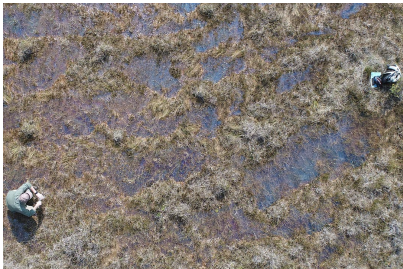
Researchers at USask received \$900,000 to explore new and more efficient uranium-based fuels for small modular nuclear reactors (SMRs).



Dr. Jerzy Szpunar (PhD), a professor in USask’s College of Engineering specializing in advanced nuclear materials, and his team of researchers will use advanced simulations and experiments to evaluate the performance of uranium-based fuels adopted for Canadian SMR technology.

SMRs are nuclear energy producers that are small in size and intended to be factory-constructed and portable. Particularly in provinces like Saskatchewan, where providing energy to remote regions can be challenging, SMRs are potentially game-changing technology.

USask partnership with Ukraine advances global



conservation efforts

Parallels between Saskatchewan and Ukraine are paving the way for researchers to examine the benefit of grassland and wetland conservation globally.

Dr. Vladimir Kricsfalusy (PhD), associate professor in USask’s School of Environment and Sustainability (SENS), is leading a two-year project between USask and the National Academy of Sciences of Ukraine’s Institute of Ecology of the Carpathians (IEC) to build on a decade of international collaborative ecosystem research. With support from USask’s International Research Partnership Fund, this project aims to forecast the negative consequences of climate change within endangered ecosystems and to support future conservation efforts in both countries.

“This is the place where we learn from each other,” Kricsfalusy said. “From our experiences, from our successes, and sometimes, from our failures.”

USask agriculture research receives \$25 million boost from Governments of Canada and Saskatchewan

The federal and provincial governments have announced an investment of \$25 million for continued support of 15 strategic research chairs at USask's College of Agriculture and Bioresources through the Sustainable Canadian Agricultural Partnership.



Funding is provided through the Strategic Research Program and is focused on supporting crop genetic improvement, livestock development, food and bioproducts development and soils and environment.

“This investment in USask research is an investment in the success and sustainability of Saskatchewan’s agriculture sector,” said **Dr. Angela Bedard-Haughn (PhD)**, dean of the College of Agriculture and Bioresources. “USask researchers are advancing innovative solutions that meet the needs of farmers, industry and consumers.”



'We're building a powerhouse': USask hosts international conference on energy

USask is playing host for some of the world’s best and brightest at a crucial international energy conference.

The 2024 International Energy Forum took place at USask’s Convocation Hall from May 14 to 16, 2024. **Dr. Greg Poelzer (PhD)**, a professor of USask’s School of Environment and Sustainability (SENS) and co-lead of the Energy and Mineral Resources for a Sustainable Future Signature Area, said the

conference gives USask a global stage to be at the forefront of the energy transition conversation.

“We’re helping to advance the conversation about what’s possible in the world of energy,” Poelzer said. “Some people refer to Saskatchewan as a flyover province. We’re making all the planes land here to show the world what rich resources we are, and how strong USask can truly be.”

The power of collaboration: Storytellers Challenge winners emphasize the importance of synergy in research

A collaboration between graduate students from USask and the University of British Columbia (UBC) secured a winning spot in the 2024 Social Sciences and Humanities Research Council (SSHRC) Storytellers Challenge, marking the first time a collaborative entry has placed top five in the contest’s eleven-year history.



USask PhD candidate and settler scholar **Olivia (Liv) Abram** and collaborator **Leah Alfred-Olmedo**, UBC PhD student and member of the Namgis First Nation, have been co-writing a chapter about Indigenous-led collaboration in the Indigenous literary arts over the past year.



USask to celebrate distinguished honorary degree recipients



Nine USask faculty members named distinguished professors

‘A golden opportunity’: USask collaboration spans global borders



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

In *The Conversation*...

[Saskatchewan recognized ASL and Indigenous sign languages as official languages — and resources are needed for services](#)

By: Dr. Marguerite Koole (PhD), Educational Technology & Design, USask College of Education

Saskatchewan recently became one of four Canadian provinces that recognize sign languages as official languages with the passing of the Accessible Saskatchewan Act or Bill 103 in December.



[Economic growth tops the priority list for Canadian policymakers — here's why](#)

By: Dr. Michael Atkinson (PhD) and Dr. Haizhen Mou (PhD), USask's Johnson Shoyama School of Public Policy

In our recent book, *Fiscal Choices: Canada After the Pandemic*, we explain why Canada's anemic growth rate is worrying and why politicians and their advisors believe, almost unanimously, that economic growth is a policy imperative.

Upcoming events



Campus Conversations with OVPR leadership

Campus Conversations are a series of constructive discussions between members of the campus community regarding research, scholarly and artistic works at USask. All faculty, staff, postdoctoral fellows and students welcomed.

- Campus Conversations – Wednesday, May 29, 12:00 – 12:45pm, Administration Building C280

20th Biennial Symposium on Violence and Aggression

The Biennial Symposium on Violence & Aggression has been a collaborative effort of Correctional Service Canada, USask and other government, public, and academic contributors since 1986. Targeted to frontline workers, as well as clinicians and other professionals and administrators in criminal justice and forensic mental health, the Symposium translates research and theory into practice and provides an opportunity to highlight excellence and innovation within a variety of correctional and criminal justice environments.



Register at [the link here](#).

- 20th Biennial Symposium on Violence and Aggression – May 26-28, USask Health Sciences Building



Myrtle Crawford Memorial Lecture Series

Myrtle Evangeline Crawford (1923 –1989) was a long-time faculty member of the College of Nursing. Professor Crawford completed her Bachelor of Science (BSc) in Nursing in 1946 at USask. During her 35-year career, Professor Crawford

influenced the education of hundreds of nurses. She was actively involved in the Saskatchewan Registered Nurses Association, the Canadian Nurses Association, the Canadian Association for University Schools of Nursing and the Canadian Association of History in Nursing. She was also influential in establishing the Master of Nursing program at the University of Saskatchewan.

USask's College of Nursing is pleased to welcome Dr. Lucy Mkandawire-Valhmu (PhD, RN, FAAN), Professor, School of Nursing, University of Minnesota, as the featured speaker for the Myrtle Crawford Memorial Lecture Series.

Register at [the link here](#). Registration closes May 17.

- Myrtle Crawford Memorial Lecture Series – May 21-23, Health Sciences Building and via Zoom

The Yes Factor: Secrets to Building a Fundable Startup

Are you a founder looking to start fundraising or someone interested in learning more about venture capital? If so, this Opus seminar is for you! Maninder Dhaliwal joins us from TiE —the world’s largest angel investment group—to share the seven secrets to building a fundamentally fundable startup. Light food and beverages will be provided. This event is offered free of charge.



Register at [the link here](#).

- The Yes Factor: Secrets to Building a Fundable Startup – Tuesday, May 21, 5:30 – 7:30pm, Collider Hub – 230, 15 Innovation Blvd



VIDO Community Liaison Committee (CLC) Public Meeting

The Community Liaison Committee (CLC) of the Vaccine and Infectious Disease Organization invites you to join their upcoming public meeting at the Willows Club. The meeting will feature presentations from scientist **Dr. Scott Napper (PhD)** on Chronic Wasting Disease (CWD) and VIDO director **Dr. Volker Gerdtz (PhD)** with an update on VIDO becoming Canada’s Centre for Pandemic Research. Question and Answer period to follow. 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’s biocontainment facilities.

[Sign-up at the link here.](#)

- **VIDO CLC Public Meeting** – Wednesday, June 12, 7 – 9 p.m., The Willows Club

NEW - Information for researchers

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

- May 9 – The Globe and Mail – [Thirteen Saskatchewan ministries refuse to comply with information commissioner’s decision](#)
- May 9 – Global News – [The science behind roadside THC testing and diving into Sask.’s zero-tolerance policy](#)
- May 6 – CBC News – ['They suck': Sask. MP takes aim at paper straws, tables bill pushing back against single-use plastics ban](#)
- May 6 – AP News, Global News, Toronto Star – [Lumenix announces new partnership to address future pandemic threats in Canada and around the world](#)
- May 5 – Global News – [New virtual reality tool created by students brings the ocean to the Prairies](#)
- May 2 – Reuters, Yahoo News, CBC News – [Bird flu likely circulated in US cows for four months before diagnosis](#)
- April 29 – CBC News – [As tick season takes off in Sask., scientists monitor for new disease-carrying species](#)
- April 28 – CBC News – [Faba beans used to make plant-based wrap that also keeps food fresh for longer](#)
- April 25 – CBC Radio – [New truckers in Canada aren't being trained well enough. How do we fix that?](#)
- April 23 – CBC Radio – [University of Saskatchewan researchers developing plant-based packaging for food](#)
- April 22 – Regina Leader Post, Saskatoon StarPhoenix – [Federal minister highlights \\$30 million investment in Saskatchewan’s VIDO research institute](#)
- April 21 – Global News, CBC News, Saskatoon StarPhoenix – [USask leading Canadian freshwater monitoring system](#)

Banner image photo credit: **Caribou and the Climate Calamity** - by **Dr. Kayla Buhler (PhD)**, alumnus, Department of Veterinary Microbiology, WCV

Images of Research 2024 - *Runner-up, Best Description*

Whether it be the wild caribou herds across northern Canada or the large semi-domesticated reindeer herds in Fennoscandia, all face uncertainty as climate change rapidly alters their environment. These animals have significant cultural value for indigenous peoples. As the environment shifts, new viruses, bacteria, and parasites that impact their health move further north. Our lab partners with indigenous communities across Arctic Canada to collect hunter-harvested samples to identify the presence of food-borne and vector-borne diseases in wild caribou. Given that these animals already face significant challenges with their fitness (such as altered migration patterns and winter icing events that reduce their ability to forage), new pathogens are poised to overtake struggling herds.

Funding: ArcticNet, NSERC, Weston Family Foundation



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