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In this issue: a USask study finds that a high-fish diet may not lead to dangerous levels of mercury ingestion as previously thought, a mental health study reveals effects of pandemic on youth, researchers explore art as a way to learn about how

youth are coping with climate change, and much more!

Every month, USask Research Profile and Impact highlights research from across campus. *Discovery Digest* is a glimpse into how USask research, scholarly and artistic work is making a difference for Saskatchewan, Canada, and the world. [Feedback welcome!](#)

This Month's Stories



[USask ranks 58th among 1,400 universities worldwide in advancing sustainable development](#)

The University of Saskatchewan (USask) tied for 58th place in the 2022 Times Higher Education University Impact overall rankings, which measured the success of more than 1,400 universities around the world in advancing the United Nations' Sustainable Development

Goals (SDGs).

USask's two other top-25 rankings were in SDG 11, Sustainable Cities and Communities (17th), which was added this year to the university's signature areas of research, and

22nd in SDG 3, Good Health and Well-being. USask was second among the U15 universities in SDG 3 and third in SDG 11. [The full story.](#)



[USask-led study finds a high-fish diet may not be bad for you](#)

A synchrotron-based study led by University of Saskatchewan researchers Dr. **Graham George** (DPhil), Dr. **Ingrid Pickering** (PhD) and Dr. **Ashley James** (PhD) shows that the chemical form of mercury found in the brains of people who ate a lot of fish over a lifetime is completely different from the mercury form found in the brains of people who were poisoned.

Researchers on the team, including Canadian Light Source senior scientist Dr. **Gosia Korbas**, employed synchrotron light techniques to analyze mercury compounds in brain tissue. As many populations worldwide rely on fish as a primary or sole source of protein, clarity on the consequences of ingesting low levels of mercury from fish is an important issue for global food security. [The full story.](#)



[USask-led study aims to understand, mitigate change in western boreal forest](#)

University of Saskatchewan wildlife ecologist Dr. **Philip McLoughlin's** (PhD) research team has been awarded \$1.87 million by a federal granting agency for an interdisciplinary project to study complex environmental changes occurring in Western Canada's Boreal Plains and help mitigate the consequences.

The five-year Alliance Grant from the Natural Sciences and Engineering Research Council (NSERC) is the largest yet awarded to USask. The project was years in the making, and brings together First Nations and Métis groups, academics from Saskatchewan, Alberta and Québec, industrial partners from the energy, forestry, and peat harvesting sectors, and the governments of Saskatchewan, Alberta, and Canada. [The full story.](#)

[USask research reveals pandemic had negative impact on mental health of Sask. children, youth](#)

Nearly 40 per cent of children and youth in Saskatchewan reported their mental health was worse compared to the beginning of the pandemic, according to survey results



published by an interdisciplinary USask research team led by Dr. **Tamara Hinz** (MD) and Dr. **Nazeem Muhajarine** (PhD).

The project, See Us, Hear Us 1.0: Mental Health Experiences of Children, Youth, and Families in Saskatchewan During the First Year of the Pandemic, used a survey to discover how children and youth described their mental health during the pandemic. The goal of the project is to bring key policymakers and advocates together to have a conversation about children and youth mental health in the province. [The full story.](#)



[USask research will focus on social justice and physical health in vulnerable populations](#)

Two USask-led research projects will highlight the importance of equitable opportunities for Two-Spirit, lesbian, gay, bisexual, trans and queer (2SLGBTQ+) and Indigenous peoples to participate in their communities throughout life as adult leaders and during their youth. Dr. **Rachel Loewen Walker** (PhD) from the College of Law and Dr. **Lee Schaefer** (PhD) from the College of Kinesiology and their respective research teams will receive funding over a three-year period to undertake important work focused on increasing opportunities for marginalized communities to participate in initiatives that improve social and physical well-being.

As a co-investigator on a project directed by the University of the Fraser Valley and University of Regina, Dr. **Jaime Lavallee** (SJD) from the College of Law will work alongside a research team to develop strategies for addressing Indigenous-specific racism in Canadian academies. All projects have been awarded funding from the Social Sciences and Humanities Research Council of Canada (SSHRC) through the Race, Gender and Diversity initiative. [The full story.](#)



[Wildfire smoke accelerates glacier melt, affects mountain run-off](#)

As global temperatures rise, wildfires are becoming more common. A new study by USask hydrology researchers found that exposure to wildfire smoke can cause glaciers to melt faster, affecting mountain runoff that provides major freshwater resources for life downstream.

Study findings, including a 10% increase in glacier melt on sunny days due to soot deposits and the effects of smokey air on ice preservation, were recently published in the journal *Earth's Future*. The research team included PhD students **Caroline Aubry-Wake** and **Antoni Bertoncini** and director of the Centre for Hydrology, Dr. **John Pomeroy** (PhD). [The full story.](#)



[USask research team to establish community-informed program to help smokers quit](#)

A USask research team led by respirologist Dr. **Erika Penz** (MD) along with **Riaz Alvi** at the Saskatchewan Cancer Agency is creating a provincial program framework to help community organizations better implement smoking cessation programs. The community-informed approach aims to streamline and coordinate existing supports for smokers.

Penz' smoking cessation framework will identify gaps in existing programs, and will be developed with input from community organizations, along with First Nations and Métis partners and stakeholders. [The full story.](#)



[USask, international researchers will work with Inuit youth, explore art as a tool for monitoring impacts of climate change](#)

A Canadian-United Kingdom research team has received \$1,538,725 in funding to undertake a three-year project titled 'Carving out Climate Testimony: Inuit Youth, Wellness & Environmental Stewardship' that will address two important questions: how does climate change impact Inuit youth and what factors enhance youth mental health and well-being?

Co-led by Dr. **Karla Jessen Williamson** (PhD) of USask's College of Education, the research team will work alongside Inuit artists to explore how traditional practices of Unikkausivut (storytelling) can be used to convey how Inuit youth are experiencing climate change in the Canadian Arctic. Youth participants will partake in art projects to demonstrate their personal experiences and interactions with their changing environment. [The full story.](#)

[Researchers at USask providing Indigenous leadership in national heart failure research network](#)



Leading Indigenous researchers at USask will play a critical role in a new national, patient-driven network addressing the challenges of heart failure, a common condition that is often fatal and on the rise in Canada and which disproportionately impacts Indigenous people.

The Canadian Heart Failure Transformation Alliance spans eight provinces and one territory, and involves 12 patient/caregiver partners, 13 Indigenous partners, and 132 investigators (42 per cent women; 24 early-career investigators). Six university-based research hubs will form the backbone of the Canadian Heart Failure Transformation Alliance, and at USask, which is one hub, Dr. **Alexandra King** (MD) and Dr. **Malcolm King** (PhD) will lead this critical research. [The full story.](#)



[USask research aims to help cows, forage plants deal with stress](#)

USask researchers Drs. **Jon Bennett** (PhD) and **Gregory Penner** (PhD) have been awarded \$322,000 in total by a federal agency for developing drought and salinity-tolerant forage crops, and reducing heat stress in dairy cattle.

Bennett's team aims to reduce the need for inputs and increase forage production by optimizing plant interactions with symbiotic arbuscular mycorrhizal fungi (AMF) that colonize plant roots. AMF can increase plant tolerance to low water, salinity, and pathogen resistance, and in turn thrive on plant-derived carbon. Penner's team will study variables such as animals' core body temperature, feed intake, milk production, and indicators for inflammation, to see if the feed strategies help mitigate heat stress. [The full story.](#)



[FutureNow event at Saskatchewan Legislature showcases undergraduate student work](#)

On May 3, the FutureNow event brought undergraduate students from four of Saskatchewan's major post-secondary institutions (USask, the University of Regina, First Nations University and Saskatchewan Polytechnic) together to share their best research, scholarly, artistic, and applied work with Saskatchewan legislators.

Examples of the 13 USask student projects that were presented include an overview of how social media played a role in providing COVID-19 information to the public and influenced decision-making, and an analysis of Saskatchewan firms and their views on how effects of climate change will impact supply chains. [The full story.](#)



[Becoming a nurse researcher to advocate for change](#)

College of Nursing student **Jordan Sherstobitoff** (RN) is completing her Master of Nursing (MN) for one reason – to become a nurse researcher. Sherstobitoff is completing her first year in the College of Nursing MN program, alongside her thesis supervisor and College of Nursing assistant professor Dr. **Geoffrey Maina** (PhD).

Sherstobitoff and Dr. Maina’s research project focuses on the mental health of new immigrant youth in Regina, SK. They will be working with the Regina Community Clinic to assess the mental health knowledge and self-care practices of immigrant youth. The information gathered from Sherstobitoff’s research will be used to develop relationships with stakeholders in Regina that will be foundational to the success of Dr. Maina’s research project to help the immigrant communities in Saskatchewan. [The full story.](#)



[USask digital exhibit showcases dining practices of ancient Romans](#)

A new USask digital exhibit is shedding light on dining and reclining practices dating back to 300–400 CE. The virtual exhibit, *Cēna*, is a project of USask’s Museum of Antiquities, which is home to a collection of Greek, Roman, Egyptian and Near Eastern sculpture in full-scale replica as well as original artifacts.

[Cēna](#)—which means “meal” in Latin—was developed by graduate student **Christie Fender**, a digital collections assistant at the museum, and is housed on USask’s Shared Spaces app. Fender created some of the images with various computer programs based on research she conducted about life during 300-400 CE. After downloading the app, viewers can interact with a digitally replicated dining scene dating back to 3rd- to 4th-century Rome and learn more about tableware and meals in ancient contexts. [The full story.](#)

USask announces new Beef Industry Integrated Forage Management and Utilization Chair



Bree Kelln has been selected as the new Beef Industry Integrated Forage Management and Utilization (IFMU) Chair for USask. She will be the first person to hold the new research chair position that was created to address a gap in forage research. The beef and cattle industry are increasingly seeing forages as a high-value feed source that also provide significant environmental benefits.

Kelln will begin her position on Sept. 1, 2022 in the USask College of Agriculture and Bioresources as a joint appointment between the Dept. of Plant Sciences and Dept. of Animal and Poultry Science. The full story.



[USask student uses digital tools to explore 19th century British fashion](#)

A USask undergraduate research project is showcasing 19th-century British fashion and is using digital tools to share information about the historical and social contexts associated with the clothing materials. The online project, Piece by Piece, was undertaken by College of Arts and Science student **Sam Huckerby** for a digital history course taught by Dr. **Jim Clifford** (PhD) in the winter term.

One of the things Huckerby found most interesting in her research was learning about hats worn by British women that were adorned with stuffed birds—a fashion statement that was connected to other changes occurring at the time. [The full story.](#)



[USask soil health research helps sustain and expand Indigenous farming operations](#)

Understanding how agricultural practices affect soil health and quality on Indigenous agricultural lands is crucial to the sustainability and resiliency of the land in the face of climate change.

The research team that includes undergraduate student **Stephanie Le Courtois** and USask College of Agriculture and Bioresources professor Dr. **Melissa Arcand** (PhD) is focusing on creating a detailed profile of soil health and quality of lands on the Mistawasis Nêhiyawak and Cowessess First Nations, working in collaboration with their lands departments. The knowledge will be shared with the communities to help with agricultural decisions. [The full story.](#)



[USask researcher investigates Prairie superstorms](#)

USask School of Environment and Sustainability PhD student **Mostofa Kamal** is studying supercell thunderstorms and the threshold factors that can predict the severity of storms—critical in a region that is susceptible to these types of volatile storms, which are increasing in frequency and severity with climate

change.

Despite the enormous socioeconomic impact, it remains poorly understood to what extent the vertical wind shear, lifting mechanism, moisture availability, and convective available potential energy control which aspects of supercell characteristics over the Canadian Prairies, and how future climate change would affect these environmental factors. [The full story.](#)



[Practically changing the world](#)

USask alumnus Dennis Whyte (BE'86) is leading efforts at the Massachusetts Institute of Technology (MIT) to make clean, economical fusion energy a reality. Whyte is a recognized leader in magnetic fusion research – the same process that keeps our sun and the stars burning bright. The magnetic confinement of plasmas is

considered a faster path to producing fusion energy, which would help end the world's reliance on fossil fuels.

Whyte is the director of the Plasma Science and Fusion Center at MIT, a professor in MIT's Department of Nuclear Science and Engineering and the Hitachi America Professor of Engineering at MIT. He is one of the leaders of the SPARC project, a collaboration between MIT and Commonwealth Fusion Systems (CFS), an MIT spinoff, to design and build the world's first fusion power plant. [The full story.](#)



[USask professor named one of the 2022 Influential Women in Canadian Agriculture](#)

Dr. Karen Tanino (PhD), professor and researcher at the USask College of Agriculture and Bioresources, has been named one of the '2022 Influential Women in Canadian Agriculture'! As one of the seven women named, she will share her story, wisdom and insights in the [IWCA](#)

[podcast series](#) on AgAnnex Talks.



[USask professor serves as expert on artificial intelligence panel](#)

Artificial intelligence (AI) is poised to transform how science and engineering is conducted and funded in Canada, bringing both tremendous opportunities and risks, according to a new expert panel report from the Council of Canadian Academies (CCA). AI has the potential to spur innovation and further scientific understanding beyond the limits of human abilities but could also deepen existing inequities, perpetuate human biases, and even create new ones.

USask computer science professor Dr. **Raymond Spiteri** (PhD) served on the Expert Panel on Artificial Intelligence for Science and Engineering for the CCA Leaps and Boundaries report, where opportunities and challenges for AI in Canada were explored. [Read the report here.](#)



USask researcher named guest editor of academic journal's call for Indigenous health research

Dr. **Gary Groot** (MD, PhD) is the guest editor of a special issue of the International Journal of Environmental Research and Public Health. This issue invites researchers to submit their research findings on Indigenous health and wellness, building on the World Health Organization's definitions of health and wellness from the perspective of community strengths and knowledge.

[USask collaborates in SWAT MAPS project](#)



Croptimistic, a Canadian AgTech company, has assembled an impressive partnership to automate and scale SWAT MAPS to advance Canadian agriculture. This \$5 million project will see academic and on-farm researchers, industry players, and smart farm staff collaborate to develop new soil and crop technologies and validate them with agricultural producers. Collaborators include researchers at the University of Saskatchewan, the University of Regina, and the University of Prince Edward Island. [Find more information.](#)



Reducing potholes in cold climates

Dr. **Haitthem Soliman** (PhD) and PhD candidate **Mai Alawneh** with USask's College of Engineering conducted experiments at the Canadian Light Source (CLS) on campus to see if recycled materials can be used to build durable roads in climates with significant temperature swings between seasons.

Their project will assess the impact of Canadian winters on the performance of roadway materials. The BMIT beamline at the CLS allowed the team to see the damage within roadways and asphalt materials at a very small scale. The group hopes their findings will one day lead to sturdier roadways that are produced with recycled materials and therefore with a lower carbon footprint. [The full story.](#)

From the Office of the Vice-President Research



USask launches tech start-up incubator for USask founders

Start your entrepreneurial journey on campus. A new startup incubator named Opus designed for the unique needs of USask founders is launching soon! Gain business knowledge, access to infrastructure, learn from experienced mentors and advisors, and connect with other aspiring entrepreneurs on campus.

Current USask students, faculty, staff and alumni with a technology in a STEM-related field are eligible to apply. Details and pilot program applications are now available at opus.usask.ca. Apply by May 30, 2022!



Country Conversations event - USask-France Partnerships

The upcoming Country Conversations featuring France will be held virtually on Thursday, May 19 from 12:00 pm – 1:30 pm. During the May Country Conversations, USask is thrilled to welcome Dr. **Chantal Barin** (PhD, HDR), Science and Higher Education Attachée with the Cultural and Scientific Services French Embassy in Canada (Vancouver). Dr. Barin will deliver a presentation on France-Canada higher education collaboration priorities and funding support; she will be joined by three USask faculty members as panelists to share their knowledge, experience, and expertise on building longstanding collaborations with

partners in France. We hope you can join this exciting and global dialogue! / Nous espérons que vous pourrez nous rejoindre dans cette conversation globale! For more information and to access the event Zoom link, visit the [event page](#) or contact international.office@usask.ca.

Awards and Recognition

research.usask.ca/awards

Awards and Recognition

Don't miss the upcoming awards deadlines this summer! Check out our [external awards list](#). If you are interested in pursuing a potential nomination or know of an award we should have on our list, please reach out to research.communications@usask.ca. If you are interested in pursuing a potential nomination, please reach out to research.communications@usask.ca to discuss what support is available.

In THE CONVERSATION

USask is a founding partner of national academic newswire, [The Conversation Canada](#), which provides independent, high-quality journalism. Get in touch with [Research Profile and Impact](#) if you are interested in submitting a story or opinion piece.

Hemodialysis: New research could vastly improve this life-sustaining treatment for kidney failure patients

USask assistant professor of chemical and biological engineering, Dr. **Amira Abdelrasoul** (PhD)

Hemodialysis is a life-sustaining treatment for kidney failure patients to clean and filter their blood of waste products, salts and excess fluid. However, this membrane-based therapy is not perfect. As a membrane science researcher, I am working on creating hemodialysis membranes that are more compatible with the human body than current membranes.



Immigrant families had to fend for themselves during online schooling

USask College of Education PhD candidate, **Emma Chen**

The outbreak of COVID-19 affected almost everybody's lives in one way or another. Globally, schools took different steps to adjust to public health measures,



including switching to online schooling. In particular, remote schooling posed a special challenge for immigrant families whose first language is not English.

[Link between Epstein-Barr virus and multiple sclerosis is a crucial discovery for people living with MS](#)

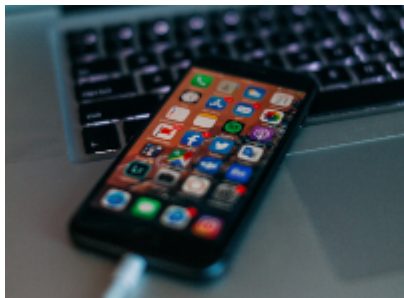
USask professor of neurology and Saskatchewan Multiple Sclerosis Clinical Research Chair, Dr. **Michael Levin** (MD)



The evidence that EBV infection puts someone at high risk for getting MS is a significant discovery. It means researchers can begin to design preventive treatments for MS, such as vaccines and anti-virals.

Telling your research story

[www.linkedin.com/company/usask-research-profile-impact]



[Sharing USask research on social media](#)

Use the hashtag **#USaskResearch** when sharing about USask-related research findings, publications or achievements on social media. Using our hashtag will allow OVPR and USask to find your posts and share them on our own channels.

Don't forget to follow [@VPR_USask](#) and [@USask](#) on Twitter for the latest research and university news. Follow the USask Research [LinkedIn page](#) (formerly the Research Profile and Impact page) to stay in the know, with exciting research news delivered right to your newsfeed.

Upcoming events



Upcoming events are now featured in the USask Office of the Vice-President Research website event calendar for your convenience in finding events of interest to attend. [Visit the full calendar here](#). Upcoming events include:

May 17 - 1 PM CST - [Dimensions of Ethical Principles in Indigenous Research](#)

May 25 - 1 PM CST - [Plain Language for Researchers](#)

In the news

- USask research has been featured in:
 - Apr. 19 – *Washington Post* - [Esports stars have shorter careers than NFL players. Here's why.](#)
 - Apr. 20 – *Saskatoon StarPhoenix* – [Report recommends Saskatoon seek exemption for drug decriminalization](#)
 - Apr. 21 – *National Post* – [Immigrant families had to fend for themselves during online schooling](#)
 - Apr. 21 – *Western Producer* – [Sask. climate scientist points to drier future](#)
 - Apr. 26 – *Saskatoon StarPhoenix* - [Young Innovators: Breath of fresh air — U of S researcher combats odours and emissions from sewage plants](#)
 - Apr. 26 – *CTV News* – ['We are getting closer': Canadian research team develops tool to minimize dialysis complications](#)
 - Apr. 26 – *The Globe and Mail* – [Boosting Canada's pandemic preparedness](#)
 - Apr. 28 – *Saskatoon StarPhoenix* – [U of S research looks at ways to make the stage inclusive through design](#)
 - Apr. 29 – *National Post* - [COVID in the \(waste\) water: How testing sewage for coronavirus variants can be 'life-saving'](#)
 - May 5 – *Study Breaks Magazine* - [Why City People In Europe Are Choosing Sports Face Masks To Protect From Extreme Weather, Pollen, Pollution, Dust, Microbes And More](#)
 - May 6 – *Western Producer* – [Getting to the bottom of bad vibrations](#)
 - May 9 – *CBC* – [How a software company is microwaving Alberta's oilsands](#)
 - May 10 – *Regina Leader-Post* – [Q+A: Sask. researcher says service dogs prevent suicides](#)



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