August 2022 - Issue 55

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!**

Looking for more research stories? Visit Discovery Digest online.

This Month's Stories

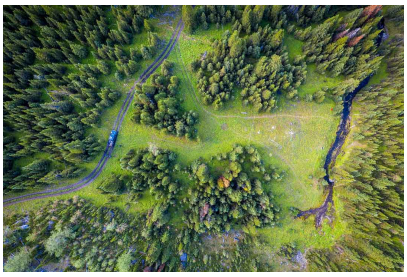
Huanan market identified as epicentre of COVID-19 pandemic

A study published in the prestigious journal, Science, provides evidence that the Huanan Seafood Wholesale Market in China was the early epicentre of the COVID-19 pandemic. Virologist Dr. **Angela Rasmussen** (PhD), from the Vaccine and Infectious Disease Organization (VIDO) at the University of Saskatchewan (USask), was part of the international team that published the study and is the only author from a Canadian institution.

The scientists developed a detailed map of the market and showed a clear association of SARS-CoV-2-positive samples (reported by Chinese researchers in early 2020) and the western portion of the market, where live or freshly butchered animals were sold in late 2019. The study has gone through peer review and now includes additional analyses and

conclusions, virtually eliminating alternative scenarios that have been suggested as origins of the pandemic. **Read the full story from the University of Arizona**.

USask researchers explore how floods and droughts are challenging science and society globally



In a new paper published in *Nature*, a team of USask and international researchers presented their findings from a global investigation to determine gaps in science and policy that require closing to better protect the world from droughts and floods.

The study found that when two flood or drought events occurred in the same region at different times, the second event usually produced worse effects than the first, even with infrastructure and policy changes put in place after the first event. Forty-five case studies from around the world were used to evaluate when, where, and how current risk management strategies might fail, and where potential improvements could be made. The USask contingent of the study was led by associate professor Dr. **Saman Razavi** (PhD). **The full story.**

USask archaeological research digs into evolution of dog diets in new study

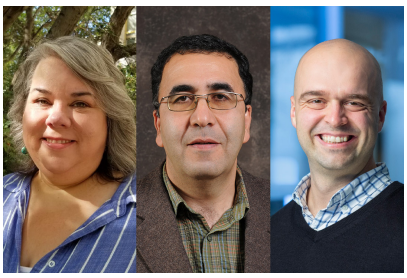
Most people know their dogs as the furry friend who greets them at the door after a long day's work, but dogs have an interesting and complex history all their own. A new study published in the journal *Science Advances* examines the lives of dogs in ancient times and the ecological impacts of their diets.

USask archeologists Dr. **Tatiana Nomokonova** (PhD) and Dr. **Robert Losey** (PhD) studied the bones of several hundred ancient dogs and discovered that although a specific genetic adaptation that appears in dogs approximately 7,000 years ago suggests they ate a mostly starch-rich, there are clues to indicate dog diets were much more diverse than those of their wolf ancestors and extended far beyond consuming starch and grains. **The full story**.

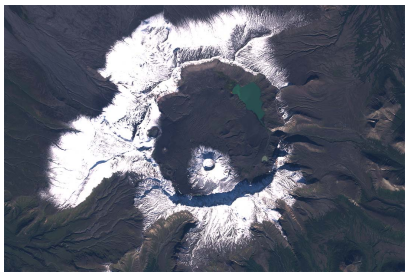
City-USask projects target Métis history, clean runoff, green rental housing

In three new projects, led by Dr. **Cheryl Troupe** (PhD), Dr. **Jafar Soltan** (PhD) and Dr. **Martin Boucher** (PhD), USask researchers are aiming to trace and reconcile Métis history

in Saskatoon, prevent a toxic compound from entering the river, and expand participation of low-income renters and landlords in civic home energy efficiency programs.



The projects have been awarded a total of more than $86,000 through Research Junction, an innovative collaboration between USask and the City of Saskatoon to apply advanced research methods to addressing contemporary urban issues for the benefit of residents. **The full story.**



Reconstructing volcanic eruptions to help scientists predict climate risks

USask researcher Dr. **Matthew Toohey** (PhD) was part of a team that developed an updated, more accurate reconstruction of volcanic eruptions that can help scientists understand future climate risks. When volcanoes erupt, they release much more than an impressive, photogenic spray of lava into the air.

In fact, gases such as sulfur and carbon released from volcanoes into the atmosphere can impact the global climate. The international research team has used modern technologies to better understand historical volcanic eruptions and how they have contributed to climate alterations and radiation transmission in the atmosphere. **The full story**.

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USask Wellness Wheel developing peer mentor network to address community health needs

The Wellness Wheel mobile medical clinic, led by USask researchers including Dr. **Stuart Skinner** (MD), is working with peer mentors to identify and effectively address community healthcare needs, ranging from diabetes to HIV.

With a new Saskatchewan Health Research Foundation grant, training opportunities involving land-based therapy for peer mentors to connect and develop their

communication, harm reduction, health education and boundary setting skills will be prioritized. **The full story.**

USask research aims to improve water management with better streamflow forecasts

A team led by USask College of Arts and Science water researcher Dr. **Martyn Clark** (PhD) has been awarded $180,000 over three years by Environment and Climate Change Canada to improve seasonal streamflows forecasts for river basins across the country.

With highly sophisticated mathematical modelling and data collection methods available to them through a synergistic relationship with the USask-led pan-Canadian Global Water Futures (GWF) program, the team can take measures to diminish the unpredictability inherent to streamflow forecasts. **The full story**.

USask graduate student examines theatrical practice of genderbending Shakespeare's plays

USask graduate student **Emily Pickett**, who is studying genderbending in Shakespeare's work, had an opportunity to put her research into action this summer as an assistant director at Saskatoon's annual Shakespeare on the Saskatchewan Festival.

Her research focuses on a theatrical practice called genderbending, which involves changing a character's pronouns in a script to present them with a gender identity different from the one originally assigned by the playwright. In a recently published paper, Pickett advocates for genderbending by examining what happens to Shakespeare's infamous play Macbeth in an all-female environment. **The full story**.

USask Canada Research Chairs to use Indigenous knowledge, stories to create social impact

Two USask researchers have been awarded a total of $1.2 million in funding through the federal government's Canada Research Chair program to support new insights into Indigenous storytelling and Indigenization in engineering programs.

USask College of Arts and Science professor Dr. **Kristina Bidwell** (PhD) will investigate how stories—both written and oral—create meaning and influence actions within intercultural collaborations and conflicts. USask College of Engineering and School of Environment and Sustainability assistant professor Dr. **Lori Bradford** (PhD) will lead a project that aims to teach future engineers to consider social and cultural impacts alongside environmental and economic impacts of their projects. **The full story.**

Discovery of 'young' deep groundwater tells surprising tale: USask researcher

The findings of a recently published study of ancient groundwaters have important implications for such practices as carbon sequestration and deep underground storage of waste from nuclear power and oil and gas production, says USask researcher Dr. **Grant Ferguson** (PhD).

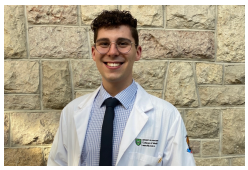
Groundwater at depths of several hundred metres or more can be hundreds of millions of years old and are often thought of stagnant and isolated from the atmosphere and the water cycle. A new study co-authored by Ferguson and USask adjunct professor Dr. **Jennifer McIntosh** (PhD) describes the surprising findings in the Paradox Basin, located in southeastern Utah and southwestern Colorado, where the research team found unexpectedly young groundwater at a depth where conventionally much older aquifers are located. **The full story**.

Three top-100 global subject rankings for USask

The latest Global Ranking of Academic Subjects (GRAS) by the independent ShanghaiRanking Consultancy has placed USask in the top 100 worldwide in three subjects. USask ranked 23 globally and first in Canada in water resources, 51-75 globally and fourth in Canada in veterinary sciences, and 76-100 globally and sixth in Canada in environmental science and engineering.

Other strong standings for USask were in agricultural science (101-150th, tied for fourth in Canada), as well as 150-200th placements in energy science (tied for fourth in Canada), earth sciences (tied for seventh nationally) and law (tied for ninth in Canada). **Read the full results**.

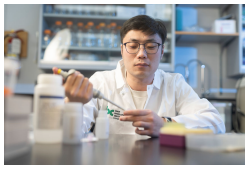
[USask Research Minute: Dr. Scott Napper (PhD) of USask part of collaborative team awarded $1.2M to develop and evaluate vaccines for certain types of neurodegenerative diseases]



[USask researcher examines how our bodies regulate water]

[Family or foe? How prey and predator animals can develop mother-infant bonds]

[USask Livestock and Forage Centre of Excellence joins Pan-Canadian Smart Farm Network]



[USask student uses genomics to accelerate pea breeding for heat resistance]

[Studying rheumatoid arthritis in modern-day patients may shed new light on disease's past]

[USask researcher weighs in on mustard seed shortage]

[USask researcher aids partners, remote communities in expanding Canadian biomass industry]

[College of Medicine *Researchers Under the Scope* podcast: Using CBD Oil to Treat Severe Epilepsy in Children, with Dr. Richard Huntsman (MD)]

[USask researcher provides input on plan to reduce fertilizer emissions]

[Dr. Jeff Schoenau (PhD) inducted into Saskatchewan Agricultural Hall of Fame]

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.

To discover more research stories and past newsletter editions, visit Discovery Digest online.

From the Office of the Vice-President Research

Call for Royal Society of Canada Fellows and Members - *INTERNAL DEADLINE Sept. 12, 2022*

The Royal Society of Canada recognizes Canada's leading intellectuals, scholars, researchers and artists. The call for fellows and college members will soon open with a deadline of December 1, 2022. To help potential candidates develop exceptional

nomination packages, we will be holding an internal process to ensure alignment with the criteria of the calls. **Learn more about the RSC.**

Internal submissions should be sent by Sept. 12 at noon to research.communications@usask.ca and **include**: Nominee name and affiliation, a 500-word statement of the candidate's suitability to meet RSC requirements, an up-to-date CV, and potential nominator names (either existing RSC members or fellows, or indicate by the institution). **See our webpage** for more Awards and Recognition opportunities.

Stay connected with research news

Click the icon to the left to follow the USask Research **Twitter page** to stay in-the-know, with exciting research news delivered right to your newsfeed. Don't forget to follow **USask Research on LinkedIn**, **@VPR_USask** and **@USask** on Twitter for more of the latest research and university news.

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

Upcoming events

Upcoming events are 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**.

- **Sept. 7 - Awards Information Session - Fall 2022**

In the news

- July feature – *The Economist* - **Targeted Medicine: Canada's hive of innovation in medical isotopes is attracting scientists from around the world**
- July 19 – *CJWW* – **International project involving University of Saskatchewan aims to predict flooding**
- July 19 – *Global News* - **How current climate change trends are impacting severe weather in Saskatchewan**
- July 25 – *The Scientist* - **Preprints Propose Constellation of Causes for Kids' Liver Disease**

- July 26 – *Washington Post* - **Scientists hone argument that coronavirus came from Wuhan market**
- July 27 – *USA Today* - **Climate change exposes growing gap between weather we've planned for – and what's coming**
- July 27 – *People Magazine* - **New Studies Support That Coronavirus Came from Animal Market in Wuhan, Not a Lab**
- July 27 – *Science Magazine* - **Massive undersea eruption filled atmosphere with water**
- July 28 – *The Globe and Mail* - **COVID-19 almost certainly did not come from a lab leak. Here's how we know**
- July 29 – *New York Times* - **Your Questions About Monkeypox, Answered**
- August 2 – *BBC* - **Why people lash out at service workers**
- August 3 – *CNN* - **The next extreme floods could be even worse, a new study shows. But there's a way to prevent that**

UNIVERSITY OF SASKATCHEWAN

BE WHAT THE WORLD NEEDS

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