

April 2019 - Issue #16

Discovery Digest

Highlights of U of S research news

In this issue: USask researcher helps crack durum wheat genome, USask experts call for revised national water policy, more than \$480K to help arts organizations develop digital outreach, and much, much, more!

Every month, USask Research Profile and Impact highlights research from across campus. *Discovery Digest* is a glimpse into how U of S research, scholarly and artistic work is making a difference for Saskatchewan, Canada, and the world.



[USask crop scientists help crack the durum wheat genome](#)

USask plant breeder Dr. **Curtis Pozniak** (PhD) played a key role in an international consortium that has sequenced the entire genome of durum wheat, which is four times as large as the human genome. The results were published in [*Nature Genetics*](#).

Pozniak, along with University of Alberta scientists Dr. **Gregory Taylor** (PhD) and Dr. **Neil Harris** (PhD), identified the gene in durum wheat responsible for accumulation of cadmium, a toxic heavy metal found in many soils. The USask team discovered how to significantly reduce cadmium levels in durum grain, ensuring the safety and nutritional value of the grain through selective breeding.

The research has had coverage around the world in publications such as *Popular Science*, *Physics.org*, *Agricultura*, and *Farm Business*. [Read the full story.](#)



[USask water experts call for revised national water policies](#)

USask hydrologist Dr. **John Pomeroy** (PhD), director of the USask-led Global Water Futures (GWF) program and Canada Research Chair in Water Resources and Climate Change, was part of a team of water experts from USask and across Canada contributing to [*Water*](#)

[*Security for Canadians: Solutions for Canada's Emerging Water Crisis*](#), a national forum on water security held in Ottawa, Apr. 11. Researchers presented a dire picture for water security based on scientific evidence and proposed key areas for solutions:

- centralizing water information through the creation of a Canada Water Security

Centre;

- strengthening transboundary water management and improving collaborative river basin planning with provinces, territories, and Indigenous communities.
- ensuring the Canada Water Act is consistent with the United Nations Declaration on the Rights of Indigenous Peoples;

[Read the full story.](#) [Watch a recorded stream of the event.](#)

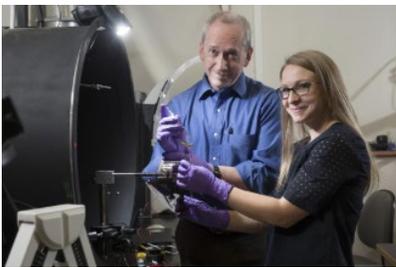


[USask awarded more than \\$480,000 to develop digital service for provincial arts organizations](#)

USask Art Galleries and Art Collection has been awarded \$482,150 by the Canada Council for the Arts for a three-year project to develop a digital service that will help arts organizations in the province better engage with their audiences. The project aims to

employ user-centred and service design methods—with help from USask digital design experts—to make new technologies accessible to smaller arts organizations in the province.

[Read the whole story.](#)

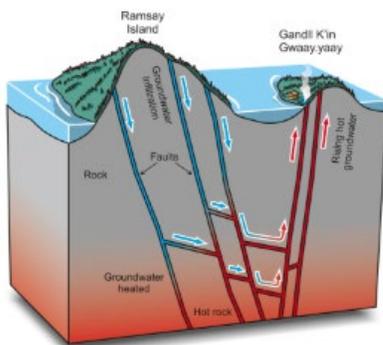


[USask research shows tiny traces of neonicotinoid pesticides impair insects' ability to spot predators](#)

Traces of widely-used neonicotinoid pesticides can impair a flying insects' ability to spot predators and avoid collisions with objects in their path, new research by biologist Dr. **John Gray** (PhD) and doctoral student

Rachel Parkinson shows.

Residual traces of the pesticides can profoundly affect a flying insects' ability to detect movement—a skill crucial to survival, according to the paper [published](#) in the journal *NeuroToxicology*. [Read the full story](#)



[USask study finds Haida Gwaii hot springs turned off, back on like a faucet after earthquake](#)

Research conducted on the northern British Columbia Haida Gwaii archipelago by USask engineering researcher Dr. **Grant Ferguson** (PhD) has demonstrated the sudden running dry and subsequent turning-on of hot springs on one of the islands on was due to shifts in underground geology, and not due to a new path or

source for the water. After a 7.8 magnitude earthquake in Oct. 2012, the Gandll K'in Gwaay.yaay hot springs, a significant tourist feature, mysteriously ran dry. The finding confirms the traditional knowledge of Haida Nation members whose oral history records previous stoppages and restarts, induced by earthquakes, at the hot springs. The results

were just published in the journal [Applied Geochemistry](#).



SSHRC awards almost \$170,000 to USask-based journals

Two journals, edited by academics at the University of Saskatchewan, have been awarded funding from a federal funding body, the Social Sciences and Humanities Research Council.

- The *Canadian Medical Education Journal*, edited by Dr. **Marcel D'Eon** (PhD) of the College of Medicine (pictured on the left), has been awarded \$87,685 over three years, until 2021. The journal, an online, open-access peer-reviewed journal, explores new developments in medical education and issues relating to training of health-care professionals.
- The *Canadian Journal of Educational Administration and Policy*, edited by Dr. **Paul Newton** (PhD) of the College of Education, has received \$81,900 over three years, until 2021. The journal is devoted to scholarly and critical works in the field of educational administration and is currently hosted by USask's educational administration department.

Major accolades

Lung plague vaccine wins international award

A vaccine against contagious bovine pleuropneumonia (CBPP), developed through a partnership between VIDO-InterVac, the Kenya Agricultural and Livestock Research Organisation, and the International Livestock Research Institute, won the award for Best Veterinary Vaccine at the 12th World Vaccine Congress in Washington DC. CBPP, an infectious lung disease of cattle, affects the livelihoods of approximately 24 million small-scale cattle farmers in Africa. The subunit vaccine will be used to control the disease and improve food security for Africans, and was licenced to the Kenya Veterinary Vaccines Production Institute to ensure local production capacity.



[USask researcher one of 30 'rising stars' in nuclear medicine and molecular imaging](#)

Chemistry researcher Dr. **Eric Price** (PhD) is “one to watch” — one of 30 young professionals identified as making a difference and working to shape the future of medical imaging and nuclear medicine—by the Society of Nuclear Medicine & Molecular Imaging (SNMMI).



SNMMI, a non-profit scientific and professional organization that promotes the science, technology and practical application of nuclear medicine and molecular imaging, represents 15,000 members worldwide. Price is using the USask cyclotron to examine how to improve radiopharmaceuticals, the radioactive drugs that can be used to detect or treat cancers.

[Read the whole story.](#)

[USask researcher honoured for achievements in computer science](#)

Computer science research Dr. **Chanchal Roy** (PhD) is one of only three Canadian computer scientists selected by [CS-Can/Info-Can](#) to receive a [2018 Outstanding Young Computer Science Researcher Award](#). The awards recognize excellence in research and are given to top young faculty members in Canadian computer science departments, faculties and schools who are within the first 10 years of their careers beyond the completion of a PhD. CS-Can/Info-Can is a national non-profit society dedicated to representing all aspects and interests of computer science across Canada. [Read the whole story.](#)



Indigenous focus

[Indigenous studies class develops oral history inventory for descendants of Big Bear](#)



Seven USask students enrolled in “Indigenous Oral Histories Research,” a class taught by Dr. **Winona Wheeler** (PhD), have been assisting a local group in tracing the history of Big Bear’s descendants through a unique experiential learning project. [Read the full](#)

[story.](#)

Green and white globe

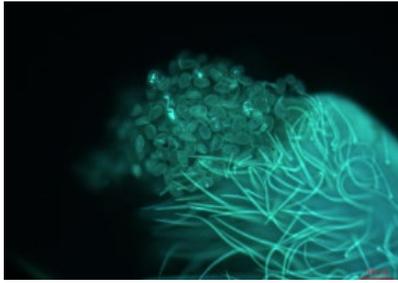
[World Class Day: USask hosts online student research conference](#)



USask hosted *World Class Day*, an online micro-conference focused on undergraduate and graduate student research, Mar. 24 and 25. The event developed by Dr. **David Parkinson** (PhD) in partnership with an international organizing committee involved 21

students from universities in India, China, Canada, the Netherlands, and Nigeria presenting summaries by live video link of research projects they have undertaken as part of their

Telling your research story



[Winners announced in *Images of Research 2019*](#)

The USask Images of Research competition, organized by Research Profile and Impact, received 114 photo submissions and eight videos—a record number. Top prizes were awarded to images that run the gamut from pigs being playful, to Q’eqchi’ Maya children in a bucket, to new insights into ecological change from plants, birds, bees, and glaciers. [See all the](#)

[submissions and winners, online.](#)



[NSERC’s Science, Action! Video Contest: USask student videos in Top 25](#)

Videos by three USask students have advanced to the Top 25 round of NSERC’s Science, Action! Competition. Videos from [Caroline Aubry-Wake](#), [Arthur Situm](#), and [Kalhari Goonewardene](#) will now be adjudicated by a

judges panel to become one of the “Final Fifteen” cash prize winners.

[Check out all 25.](#)



Dance your PhD Competition – Start planning now!

With the summer ahead of you, it’s time to start planning your video submission for *Nature’s* magazine [Dance your PhD Competition!](#)

If you are a doctoral student or PhD graduate in a science discipline, represent your research as a dance for a chance to win a \$1000 prize. You want to have your video ready for submission when the competition re-opens at the beginning of 2020. Stay tuned for more info about deadlines!

In the meantime, have a peak at this year’s winner, who turned his research in superconductivity into a dance: <https://www.youtube.com/watch?v=wZvUNIHxWic>

Featured in THE CONVERSATION

[Faster, more accurate diagnoses: Healthcare applications of AI research](#)

Dr. Seokbum Ko (PhD)

A USask research team has developed a computer-aided diagnosis system that can detect abnormal blood vessels in the retina, simply by reading an image. The system reduces the work required by eye-care specialists and ophthalmologists, and works 10 times faster than current methods, while retaining high accuracy.



Immigrant children's health declines rapidly after arrival in Canada

Dr. Hassan Vatanparast (MD, PhD) and Dr. Ginny Lane (RD, PhD)

Research shows that many immigrants are healthier than Canadians when they arrive in the country. The longer they stay, the more their health declines.



The new Brazilian government is devoid of ideas

Dr. Lenin Cavalcanti Brito Guerra (PhD)

The popularity of Brazil's new president has decreased significantly in just a few months. Why? Too much controversy and too few ideas.



Why agricultural groups fiercely oppose the carbon tax

Dr. Tristan Skolrud (PhD)

For provinces with large agricultural sectors, the lowest-cost option for reducing greenhouse gas emissions may very well be in agriculture. Can Canada reach its climate goals without incentivizing meaningful emissions reductions in agriculture?



How Canada can solve its emerging water crisis

Drs. John Pomeroy, Chris DeBeer, Phani Adapa, (all PhDs) and Stephanie Merrill

USask researchers offer water solutions that could save Canada billions of dollars by preventing damage to infrastructure and ecosystems, and reducing disaster



payments.

[Write about your own research in The Conversation](#)

Articles written by USask researchers have been read 1.09 million times since the university entered into a partnership with the SSHRC-funded Conversation Canada in June 2017. USask is a founding member of The Conversation Canada, an online academic journalism hub/newswire where researchers write plain-language editorials and explainers articles about their research.

Want to reach a broad audience with your research? Consider submitting an item to the Conversation. [Wondering where to start? Read a short explainer on how to write for the Conversation Canada. Read previous USask articles here](#) and [get in touch with Daniel Hallen](#).

Commercialization



[Unique USask-led event brings together academics and industry to tackle Internet of Things \(IoT\) challenges](#)

University of Saskatchewan's Innovation Enterprise hosted an AIMday™ IoT event at Innovation Place on Mar. 27, partnering with University of Regina and Saskatchewan Polytechnic—the first step in a process that is expected to lead to joint research projects in

how internet-connected "smart devices" could address industry needs of tomorrow. Six projects were awarded \$1,000 each to advance to the next stage of development.

[Read the details.](#)



[USask team developing unique harness to help save injured horses](#)

Working with RMD Engineering Inc. of Saskatoon, Dr. **Julia Montgomery** (DVM, PhD) is leading a research team to create a unique harness designed to help in the recovery and rehabilitation of horses from limb injuries—often fatal because currently available equipment is

inadequate. [Read the whole story.](#)

[Sask pump monitor research high-tech opportunity for Saskatchewan manufacturer](#)

A USask research team led by engineering researcher Dr. **Travis Wiens** (PhD) and fluid power systems



company Wil-Tech Industries Ltd. (WTI) are partnering to develop monitoring technology for predicting the failure of hydraulic pumps—an innovation that will avoid costly shutdowns at mines and other industrial sites and help ensure worker safety.

[Read the whole story.](#)

Young Innovators

[New policies needed to combat grain fungus of cattle](#)

PhD student **Vanessa Cowan**, supervised by Dr. **Barry Blakley** (PhD) and Dr. **Jaswant Singh** (PhD), has found that beef cows that ate ergot-contaminated feed showed signs of poisoning even at concentrations deemed safe by Canadian livestock guidelines, and after a short-term exposure to the toxin. Ergot is a harmful fungal toxin in grain that negatively affects cows' milk production and causes symptoms of gangrene, which means the flesh rots due to the decreased blood flow in the body. [Read more in the story.](#)



[Pep talks secret to better sporting performance](#)

Kinesiology PhD student **Margo Adam**, supervised by Dr. **Leah Ferguson** (PhD) found that giving oneself a pep talk may be key to improving female athletes' sporting performance and mental health. Women who reported being self-compassionate could reframe sporting failures as learning experiences rather than defeats, and be more confident in facing difficult situations. [The story is part of the Young Innovators series, an ongoing collaboration between USask and the StarPhoenix.](#)



Undergraduate research

[Undergraduate USask student creates video games for assessing depression](#)

Third-year computer science undergraduate **Sarah Vedress** with supervisor Dr. **Regan Mandryk** (PhD) has been helping create video games modelled after



psychological tests that can indicate depression. [Read the whole story.](#)

Upcoming events

[USask Life and Health Sciences Research Expo—May 2](#)

The Office of the Vice-Provost Health is showcasing student research across the health science disciplines via the 2019 Life and Health Sciences Research Expo. The event will feature two poster presentation sessions and a keynote address from Dr. **Alan Rosenberg** (MD). The event will be held in the D-Wing of the Health Sciences building, starting at 8 a.m. [See the agenda.](#)



[With Glowing Hearts: How Ordinary Women Worked Together to Change the World \(And Did\) April 26 — May 12, 2019](#)

Based on real-life events, *With Glowing Hearts* is the story of the beginnings of the women's labour movement in Canada and how it spread across the country. The show is a one-act play by USask history alumna **Jennifer Wynne Webber** which was commissioned by USask sociologist Dr. **Elizabeth Quinlan** (PhD). The show is being performed by Dancing Sky Theatre in Meacham, SK, Apr. 19-May 12. [Tickets are available online.](#) [Watch a short documentary about the play.](#) (13 min.)



[Pan-American Light Sources for Agriculture \(PALSA\) conference—July 6-7](#)

Register now for PALSA 2019, an international conference in Saskatoon, organized by the Canadian Light Source at the University of Saskatchewan, in partnership with the CHESS synchrotron in the United States and the Brazilian Synchrotron Light Laboratory in Brazil, meant to increase awareness about the value of light sources for agricultural research, and to engage with potential customers to increase the use of advanced imaging synchrotron tools, by showcasing leading research in the field.

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