



RESEARCH UPDATE

NATIONAL IMPACT

Minister of Science visits

Federal Minister of Science Kirsty Duncan visited the U of S Saskatchewan Centre for Cyclotron Sciences radiochemistry lab on January 19, and met with **Eric Price** (Radiochemistry) and **Kate Dadachova** (Radiopharmacy), pictured above, to discuss their respective research into targeted cancer therapy. Duncan also held roundtable discussions on research and innovation at the Canadian Light Source. [Read more here](#)

NEW INITIATIVES

U of S and Saskatoon Symphony Orchestra sign partnership agreement

U of S and the Saskatoon Symphony Orchestra (SSO) signed a memorandum of understanding (MOU) on January 28 for future research and artistic collaborations between the two institutions that could include shared artist-in-residence programs, research chairs, and development of joint online programs. [Further details are available in this release.](#)

Saskatoon wins U of S-led bid to host global One Health research congress in 2018

Led by the U of S, Saskatoon will be the first North American city to host the *International One Health Congress*, June 21 to 25, 2018. The event at the U of S campus and TCU Place is expected to bring more than 1,000 researchers and health professionals from around the world. The congress theme will be *One Health in Underserved Communities*, focusing on underprivileged or subsistent communities where there's a complex interplay of environmental, animal and human health issues. [More details are available here](#)

U of S joins *Fusion 2030* to make fusion energy a national priority

A national consortium of academic, industry and non-profit organizations has come together to make fusion energy a national priority. The overall aim of the project is to participate in the design and deployment of a demonstration prototype fusion power plant by 2030.

The program, outlined in a new report, *Fusion 2030: Roadmap for Canada*, aims to foster collaboration among all of Canada's fusion projects, including research leaders such as the University of Saskatchewan, University of Alberta, University of Ontario Institute of Technology, General Fusion (Burnaby, B.C.), and other private sector companies, academic institutions and government laboratories. The Sylvia Fedoruk Canadian Centre for Nuclear Innovation at the University of Saskatchewan and the Alberta-Canada Fusion Technology Alliance are also active partners in the initiative. [More details on U of S's involvement are available](#), as is the [text of the report](#).

RESEARCH INFRASTRUCTURE

U of S flagship research centres awarded \$69M to advance innovation

Three U of S research centres have been awarded almost \$69 million for their continued operations as part of the Major Science Initiatives (MSI) fund of the Canada Foundation for Innovation (CFI). Of a \$328-million purse granted to 17 national science centres over the next three to five years, three U of S centres were awarded over one-fifth of the total:

- \$48 million for the Canadian Light Source (CLS),
- \$19.3 million for the International Vaccine Centre (InterVac), part of the Vaccine and Infectious Disease Organization (VIDO),



- ❖ \$1.56 million for SuperDARN Canada, a U of S-led initiative operating five radar arrays across Canada, providing critical radar mapping of electromagnetic “space weather” just above Earth’s atmosphere.

[More details are available here](#)

RESEARCH CHAIRS

Federal Funding for New and Renewed Canada Research Chairs at the U of S

The UofS will receive a total of \$ 3.8M in federal CRC Funding over the next seven years for one new and three renewed chairholders.

- ❖ **Eric Price** (Radiochemistry) [was awarded a five-year, \\$100,000-a-year, new Tier 2 CRC](#)
- ❖ **Ajay Dalai** (Bioenergy and Environmentally Friendly Chemical Processing) was renewed as a Tier 1 CRC
- ❖ **Markus Hecker** (Predictive Aquatic Ecotoxicology) was renewed as a Tier 2 CRC
- ❖ **Philip Griebel** (Neonatal Mucosal Immunology), was renewed as a Tier 1 CRC

Additionally, Eric Price was awarded \$125,000 (\$351,608 project total) in associated Canada Foundation for Innovation funding through the John R. Evans Leaders Fund for his project, *Radiopharmaceuticals for Imaging and Treating Cancer and Bacterial Infections*.

New \$8.4 million Saskatchewan MS research chair announced at U of S

A new \$8.4-million U of S Chair in Multiple Sclerosis Clinical Research will lead a drive toward a cure for multiple sclerosis (MS), a debilitating disease of the central nervous system. Rates of MS are among the highest in the world in Saskatchewan where 3,500 to 3,700 residents live with the disease.

Dr. Michael Levin, neurologist and professor at the College of Medicine at the University of Tennessee Health Science Center, and Director of the Multiple Sclerosis Center and Laboratory of Viral and Demyelinating Diseases, in Memphis, Tennessee, will lead a team of researchers, clinicians and students during a seven-year term, starting March 2017. The team includes **Dr. Katherine Knox**, whose research focuses on MS and mobility, and **Dr. Valerie Verge**, director of the Cameco Neuroscience Research Centre, whose research focuses on nerve injury and repair mechanisms.

Support for the chair is provided by the Saskatoon City Hospital Foundation, the Saskatchewan Health Research Foundation, the MS Society of Canada and the U of S Centennial Enhancement Chair program, as well as the U of S College of Medicine and the Saskatoon Health Region. [More details are available here.](#)

DISCOVERIES WITH IMPACT

U of S researchers discovers possible source of Earth’s water

Canada Research Chair **John Tse** (Physics and Engineering Physics) and **Yuanming Pan** (Geological Sciences), working with **Xue Yong** (former PhD student, now at the Institute of High Performance Computing, Singapore) and colleagues from University College Dublin have discovered a possible explanation for the origins of water on Earth: water was created within the upper mantle of Earth’s crust rather than having arrived via ice-rich comets. Using computer simulation, the researchers demonstrated that liquid hydrogen and quartz react to form liquid water and silicon hydride at temperatures and pressure consistent with conditions in the Earth’s upper mantle. The discovery may also explain earthquakes which occur hundreds of kilometres below the surface of



the Earth. The results were published in [Earth and Planetary Science Letters](#) and were also featured in [New Scientist](#).

Saskatchewan researchers working towards new breast cancer treatment

Research teams of **Andrew Freywald** (Medicine), **Franco Vizeacoumar** (Medicine, Saskatchewan Cancer Agency) and the Saskatchewan Cancer Agency are organizing clinical trials for a new made-in-Saskatchewan breast cancer treatment. By selectively turning off the SRC gene, breast cancer cells and some tumours could be eliminated without affecting normal cells. The researchers are currently testing which types of breast cancer their discovery will benefit and are seeking funding to support clinical trials. [Read the details here](#)

U of S technology approved by USDA APHIS

A microbial endophyte, developed at and owned by U of S, has passed regulatory approval by U.S. Department of Agriculture Animal and Plant Health Inspection Service (USDA APHIS), a significant achievement towards commercialization. The technology which was licensed to Boston-based Indigo Agriculture in 2013, will improve crop yield in drought conditions, can now be sold to millions of farmers in the U.S., and is scheduled for registration in many more countries in coming years.

In the past three years, Indigo Agriculture and the U of S, through the Industry Liaison Office, have built an extensive collaborative research program around this technology and secured almost \$3 million in research grants and an additional \$11 million from industry. Indigo Agriculture has grown from a two-person workshop to a company with more than 100 employees and has raised \$165 million USD in investments.

CONTRACT AND GRANT FUNDING SUCCESS

CONTRACTS

- Ekaterina Dadachova (Pharmacy) has received \$340,837.50 USD funding from Defense Threat Reduction Agency for the project, *Investigation of radiation resistance mechanisms in melanized fungi*.

GRANTS

Mounders McNeil Foundation Inc.

- Jonathan Dimmock (Pharmacy) has received \$270,000 funding for the project *Creation of tumour-selective compounds*.

MITACS Accelerate

- Andrew Van Kessel (Animal and Poultry Science) with intern Michael Wellington was awarded \$120,000 for *Impact of dietary fibre and immune challenge on threonine requirements and pig robustness*, in partnership with Prairie Swine Centre Inc.
- Kerry McPhedran with Won Jae Chang and Bradley Schmid (all from Civil, Geological, and Environmental Engineering) with intern Raquibul Alam have won \$45,000 for *Assessing bioremediation potential for arsenic released from mine waste rock* in partnership with Areva Resources Canada Inc.
- John McKinnon (Animal and Poultry Science) with intern Katelyn Stehr were awarded \$30,000 for *Alkaline treated straw and micro machine technology to improve digestive health and profitability of feedlot cattle*, in partnership with Gowans Feed Consulting.



MITACS Elevate

- ❖ **Robert Clark** (Biology) with post-doctoral fellow **Chrystal Sharon Mantyka-Pringle** was awarded \$55,000 for *Prioritizing decision-making for agriculture and conservation in North America's prairies under climate change and land-use change* in partnership with Ducks Unlimited (Manitoba).

NSERC Engage

- ❖ **Ajay Dalai** (Chemical and Biological Engineering) was awarded \$25,000 for *Production and techno-economic evaluation of carboxymethyl cellulose (CMC)*, in partnership with Titan Clean Projects Corporation.

INTERNATIONAL

❖ **GRANTS**

Korea Institute of Energy Research (KIER) "Global Research Collaboration Project"

- ❖ **Gap Soo Chang** (Physics and Engineering Physics), one of only two projects selected from Canada, was awarded \$112,000 for *Development of biodegradable organic solar cells based on new eco-friendly metal/cyclolinopeptide biosemiconductors*.

Mitacs Globalink Research Award, Campus France

- ❖ **Jeffery Zielinski** (Physics and Engineering Physics) supervised by **Andrei Smolyakov** was awarded \$10,000 for the project *Drift Wave Turbulence in the Presence of Neoclassical Forces*.

International Delegations to U of S

- ❖ **Consul General of the U.S. in Calgary** – December 09, 2016. Consul General Tom Palaia had meetings with President Stoicheff; Lorna Butler of the International Centre for Northern

Governance; Howard Wheeler of the Global Institute for Water Security; and Maurice Moloney and Leon Kochian of the Global Institute for Food Security.

International Agreements

MOU Student Training Agreement

- ❖ Northwest Agriculture & Forestry University, **China** – Joint Programme for Innovative Talent Training in Leading-edge Soil and Water Resources – signed October 06, 2016

MOU and Undergraduate and Graduate Student Exchange Agreement

- ❖ Ghent University, **Belgium** – signed December 08, 2016

Undergraduate Student Exchange Agreement

- ❖ University of Chile, School of Economics and Business, **Chile**, and Edwards School of Business – signed October 20, 2016