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A GLOBAL PERSPECTIVE

A world where everyone has access to safe and nutritious food: that is the bold vision of the Global Institute for Food Security (GIFS) at the University of Saskatchewan (USask). Established in 2012 by three founding partners—Nutrien (formerly PotashCorp), the Government of Saskatchewan and USask, GIFS works with a diverse research community to discover, develop and deliver innovative solutions for the production of globally sustainable food. In this edition of *On Campus News*, we chat with researchers like Dr. Andrew Sharpe (PhD), pictured here, and take a look at some of the work currently underway in GIFS.

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On Campus News aims to provide a forum for the sharing of timely news, information and opinions about events and issues of interest to the USask community.

The views and opinions expressed by writers of letters to the editor and viewpoints do not necessarily reflect those of USask or *On Campus News*.

We acknowledge we are on Treaty 6 Territory and the Homeland of the Métis. We pay our respect to the First Nation and Métis ancestors of this place and reaffirm our relationship with one another.

EDITOR
James Shewaga

WRITER
Chris Morin

DESIGNERS
Brian Kachur
Pierre Wilkinson

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UNIVERSITY OF SASKATCHEWAN
MARKETING AND COMMUNICATIONS
G16 THORVALDSON BUILDING
110 SCIENCE PLACE
SASKATOON, SK S7N 5C9

Email: news@usask.ca

Engagement project right on track

JAMES SHEWAGA

A new state-of-the-art information system designed to streamline and enhance engagement with University of Saskatchewan (USask) students, alumni, donors and stakeholders is on pace to go live in the summer of 2020.

“We are on track,” said Dr. Debra Pozega Osburn (PhD), vice-president, University Relations. “We are moving well in terms of building and implementing the system, and will soon move into the training and the testing. I would say that mid-July to early-August is when you would see us going live, and that’s well within the timelines we expected.”

The establishment of the new relationship management system, specifically designed for post-secondary institutions, is a \$3.6-million project that started in the fall of 2018. The system features three applications implemented in three stages: recruitment, student retention and

success, and alumni and donors.

“When it comes to the kind of relationship tracking infrastructure that you need at the modern university, this is an essential project,” said Pozega Osburn. “Your relationship management system is one of the most important initiatives for you to get right. It’s really, really critical that we relate to our stakeholders in new ways and in the kind of ways that our stakeholders expect us to engage with them. A relationship management system of the type that we are putting in allows us to do exactly that.”

The new system will centralize and co-ordinate information to avoid duplication, saving time and money. One of the other big benefits will be to address the issue of donor fatigue, by streamlining and limiting contact with current and future donors and alumni by better pinpointing projects that they want to support the university on in future fundraising



DAVID STOBBE

Dr. Debra Pozega Osburn (PhD) is vice-president, University Relations.

campaigns, as well as volunteer and mentoring initiatives.

“It allows us to have a deeper understanding of what’s motivating alumni, donors, corporate partners and others, to partner with us,” said

Pozega Osburn. “How can we understand their interests in a way that allows us to build and sustain these mutually beneficial relationships?”

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IN CASE YOU MISSED IT

A lot happens at the USask during the weeks when *On Campus News* isn’t published. Here are a few of the top stories from news.usask.ca:

Métis Nation MOU

The University of Saskatchewan and Métis Nation–Saskatchewan (MN-S) signed a Memorandum of Understanding (MOU) designed to improve the education status of Métis people, remove barriers and close the university achievement gaps between Métis and non-Indigenous populations. USask and MN-S committed to formalize, expand and enhance their relationship, identify common priorities and maximize beneficial opportunities. The MOU will include partnerships, planning, and sharing of ethical research initiatives that would advance the interest of the Métis Nation and residents of Saskatchewan.

Dental award

For the first time, a USask dental researcher has earned the right to take part in the world’s most prestigious international student research competition. Dr. Lina Marin (DDS), a post-doctoral fellow working with Dr. Walter Siqueira (DDS) in USask’s College of Dentistry, finished in first place in the Senior Basic Science category of the Canadian Association for Dental Research – Network for Canadian Oral Health Research Student Research Award competition. She now moves on to the International Association for Dental Research/Unilever Hatton Competition on March 17, 2020 in Washington, D.C.

Algae warning

As blue-green algae proliferates around the world, a USask researcher cautions that current municipal drinking water monitoring that focuses on a single toxin associated with blooms is likely to miss the true public health risks. “We typically test only for microcystin in drinking water, but the toxicity risk is greater than that one toxin,” said Dr. Helen Baulch (PhD), an associate professor in USask’s School of Environment and Sustainability. The frequency and severity of algal blooms are increasing across the globe due to phosphorus and nitrogen in lakes caused by runoff from agricultural land, and municipal effluent.

PTSD initiative

Learning how psychiatric service dogs can help veterans living with post-traumatic stress disorder (PTSD) recover from problematic alcohol and drug use is the focus of a new \$1.4-million research program led by USask, in partnership with five universities and a dozen community organizations. Dr. Colleen Dell (PhD), a USask sociology professor specializing in addiction and animal-assisted interventions, has been awarded \$850,000 by Health Canada to lead a national project that will help veterans suffering from trauma who are coping through the problematic use of substances.

FOR MORE UP-TO-THE-MINUTE NEWS, VISIT: news.usask.ca @usask

PEOPLE OF THE PLAN

The University of Saskatchewan's new seven-year plan through to 2025 is entitled *The University the World Needs* and has been gifted Indigenous names *nīkānītān manācihitowinihk* (Cree) and *ni manachihitoonaan* (Michif), which translate to "Let us lead with respect." In each issue of *On Campus News* in 2019, we take a closer look at the 12 major goals of the new plan by profiling individuals involved in the university's commitment to Courageous Curiosity, Boundless Collaboration and Inspired Communities. In this issue, we chat with Grit McCreath, the university's new chancellor and honorary ambassador.

COMMITMENT: INSPIRED COMMUNITIES

(Inspire the world by achieving meaningful change with and for our communities)

GOAL: ENERGIZE CHAMPIONS

(Galvanize and diversify relationships with our alumni and donor community)

Grit McCreath: Energizing champions

JAMES SHEWAGA

When it comes to being an advocate for the University of Saskatchewan (USask), you won't meet a more passionate supporter than Grit McCreath.

The university's new chancellor and first honorary ambassador, McCreath has long been a proud promoter of her alma mater, with a relationship that has spanned more than 30 years since earning her Bachelor of Education degree at USask in 1991. In fact, McCreath's connection to campus goes back much further than that.

"My parents were academics in Europe and when we came to Saskatchewan and the University of Saskatchewan ... my parents were always students and I was always hanging out on the campus waiting for them to go to class or come out of class, so the university is definitely in my DNA," she said.

In addition to her chancellor and honorary ambassador roles for the university, McCreath has served on the Senate and the Board of Governors, has chaired the human resources committee and has been a member of the land and facilities, and audit committees. The McCreath family has also created a scholarship for Indigenous students attending USask's Edwards School of



Longtime USask supporter, alumna, donor and honorary ambassador Grit McCreath was installed as the University of Saskatchewan's 16th chancellor at Fall Convocation on Nov. 13.

DAVID STOBBE

Business. Grit serves as an advisor for the College of Education, with Grit and her husband Scott recently funding a new state-of-the-art Active Learning Classroom.

For McCreath, engaging and

activating alumni—now totalling 159,000 world-wide—as well as donors and other stakeholders, is her favourite way to share the story of the success of USask.

"I think it is just such a huge

motivator for students to hear the stories of the alumni from this university," said McCreath. "Every single college has amazing stories that they can share and tell and then in turn the alumni can be the

ambassadors for the university and share those stories all the way down the line. Once you talk to people who have graduated from this university and you hear what they've done and you share what's happening on campus, I think it's just such an automatic response to want to be part of that excitement."

After graduating from USask, McCreath went on to spend 32 years as an educator, serving as a teacher and an administrator, in Saskatoon, Edmonton, Calgary and Toronto. With her new roles as chancellor and honorary ambassador, she has come full circle with USask, proudly supporting the university that has meant so much to her, in her home province.

"I think there is something extremely unique about students and alumni from this province," said McCreath, who was officially installed as USask's 16th chancellor at Fall Convocation on Nov. 13 at Merlis Belsher Place. "We have common roots, wonderful work ethic, a sense of community, and there is a kind of humbleness about the people that graduate from this university. And I need to reiterate again just that amazing sense of pride. We are University of Saskatchewan proud." ■

Wāhkōhtowin model enhances teacher training

MEAGAN HINTHER

When Chris Scribe and Dr. Dawn Wallin (PhD) were reviewing the evaluation committee comments on their successful Social Sciences and Humanities Research Council (SSHRC) Insight Grant application, it reaffirmed what they already knew to be true: the College of Education and partners' efforts to decolonize teacher education were unique in North America.

"We're working to give our students field experiences in professional development schools with an Indigenous focus, right from the ground up," said Scribe, director of the college's Indian Teacher Education Program (ITEP) at the University of Saskatchewan. "This is something that people in the research community are taking note of."

ITEP has always had a strong reputation for community-based and on-campus education. Since 2016, students in the program have been enrolling in professional development (PD) schools across the city and at Kakhewistahaw First Nation. PD schools are common throughout North America and are built from university partnerships with school divisions to achieve professional education in the context of practice.

What is not common in the PD school model, however, is an Indigenous focus within teacher training.

"We brought well-respected Cree Elders and Knowledge Keepers from all over Saskatchewan together and we talked about what our steps should be to give our students strong field experiences," said Scribe.

What developed from those conversations and ceremony was an education model with an Indigenous worldview embedded within, named *Wāhkōhtowin*. The main theme of the *Nēhiyaw* model is relationship and kinship, using the visualization of a tipi. Each partner becomes a pole of the tipi that is tied together, reinforcing its strength.

ITEP teacher candidates learn alongside facilitators, mentors and Elders in PD schools that foster their



Chris Scribe (left), director of the Indian Teacher Education Program at the University of Saskatchewan, and Professor Dr. Dawn Wallin (PhD).

MEAGAN HINTHER

development.

"Through *Wāhkōhtowin*, we're trying to make the link between theory and practice so that it becomes a seamless part of teacher education, coursework and professional growth," explained Wallin, associate dean, undergraduate programs, partnerships and research in the College of Education. "Students are practicing what they learn directly in a school and they get to reflect in the moment and bring it all together. Students start seeing their program as a continuum of learning."

The *Wāhkōhtowin* partnership began with ITEP, Greater Saskatoon

Catholic Schools and Saskatoon Tribal Council. It grew over time to include Saskatoon Public Schools and Kakhewistahaw First Nation. As the model began having success in teacher candidate training and student and partner responses, Scribe and Wallin started looking for ways to support research on the model.

"When you have something that no one is doing and it's good and it's valuable for Indigenous people, you need to put the research down," said Scribe. "That's where the fire was started for us to get research funding."

Their funding application to SSHRC was successful, and awarded \$365,097 to support the

Wāhkōhtowin model's emphasis on culturally responsive teacher education, and its work to improve educational outcomes for Indigenous learners.

"Often one thing that gets lost in recognition of knowledge sharing is remuneration for Elders. Elders' knowledge is crucial to *Wāhkōhtowin*," said Wallin. "This research funding makes sure that Indigenous perspectives become an integral means of shaping the data collection."

"It demonstrates to our Elders and Knowledge Keepers that their knowledge is being appreciated," added Scribe. "We like to talk

about Indigenization, but when push comes to shove, often it's the Indigenous knowledges that need to fit into Western paradigms. "Through this research, we are trying to push those boundaries and those paradigms and shift that perspective to make the Western paradigms fit into Indigenous knowledge systems."

Through its Indigenous and student-centred approach, the *Wāhkōhtowin* model is changing teacher training for the future. ▀

Meagan Hinder is the manager of communications and external relations in the College of Education.

ALUMNI SPOTLIGHT

Every month in *On Campus News*, we highlight an exceptional graduate of the University of Saskatchewan in our Alumni Spotlight feature series. This week, as the United Nations observes Human Rights Day, we chat with USask professor, human rights lawyer and social justice advocate Sarah Buhler (LLM'11).

College of Law Associate Professor Sarah Buhler earned her Master of Laws at the University of Saskatchewan in 2011 before becoming a faculty member.

KATIE BRICKMAN-YOUNG

Sarah Buhler: Champion of human rights

KATIE BRICKMAN-YOUNG

For Sarah Buhler, human rights are a core value she has held from an early age.

Growing up in Thailand, her parents worked in international development with organizations that were focused on human rights and sustainable development.

"I was exposed at a very early age, so it has always been important for me to look around and see that the world is not fair, equal or just," said Buhler (LLM'11), an associate professor with the College of Law at the University of Saskatchewan (USask).

That experience led Buhler to a life of helping others. After her undergrad degree, she worked as a volunteer co-ordinator for a Winnipeg inner-city drop-in centre. Her experiences led her to an interest in pursuing law as a career.

"I think I wanted to believe that the legal system could be a

place where some of these struggles for justice could be resolved," she said.

Buhler completed her law degree at Osgoode Hall Law School in Toronto in 2002 and then moved back to Saskatoon and was called to the bar in 2003, receiving the Saskatoon Bar Association Award for highest standing in the provincial admission examinations. She went on to complete her Master of Laws from USask in 2011.

In Saskatoon, Buhler worked for a private law firm, but kept looking for opportunities to do work that felt aligned with her values and interests.

"One of the coolest things I did in private practice was I was co-counsel for the same-sex marriage challenge in Saskatch-

“ I feel like we are in a time right now in politics and in history where it seems that there are people who have forgotten about the importance of human rights and it should be central to everything we do in society.

— Sarah Buhler

ewan in 2004," she said. "That was an amazing opportunity to be working on such an incredibly important case at the time."

Buhler continued to look for opportunities in which she could connect her education with human rights and access to justice in the community, which led her to

becoming involved with the new community legal clinic in Saskatoon, Community Legal Assistance Services for Saskatoon Inner City (CLASSIC) in 2007. She eventually took on the role of CLASSIC's first executive director and supervising lawyer.

After completing her master's degree, a position opened in the College of Law with a vision to have a faculty member who would be connected to CLASSIC, an opportunity she was well positioned for.

"It was a matter of following my heart and I feel so lucky to be in this position and to get to do work that I really feel connected to," she said.

December 10 marks the day that the United Nations General

Assembly adopted the Universal Declaration of Human Rights. For Buhler, the day holds a lot of meaning and is a reminder that human rights are for everyone.

"I feel like we are in a time right now in politics and in history where it seems that there are people who have forgotten about the importance of human rights and it should be central to everything we do in society," she said. "It feels more important than ever to reflect on what that means and how human rights is an ongoing struggle and everyone needs to be engaged."

Buhler is continuing her research in the area of access to justice and was recently awarded the Elizabeth Fry Society of Saskatchewan Lady of Justice Award in 2018. ♥

Katie Brickman-Young is a communications officer in Alumni Relations.



Department of Chemistry Professor Dr. Tara Kahan (PhD) is the Canada Research Chair in Analytical Environmental Chemistry at USask.

CHRIS PUTNAM

Examining environmental pollutants in ice and snow

SHANNON BOKLASCHUK

As a longtime Saskatchewan resident, Dr. Tara Kahan (PhD) is no stranger to the cold.

Perhaps it's a natural fit, then, for the award-winning University of Saskatchewan (USask) researcher—who grew up in Regina—to be focused on environmental pollutants in snow and ice.

“Most of the world, including Saskatchewan, is covered with snow or ice for some portion of the year and chemistry just doesn't stop,” said Kahan, a professor in the Department of Chemistry in

USask's College of Arts and Science. “It's still happening and it's still affecting water quality and air quality, but we don't really know anything about it.”

Some environmental pollutants undergo different chemical reactions in frozen form than in liquid water, meaning the health effects of the pollutants may be different in the presence of snow and ice. Until the early 1990s, however, scientists didn't really investigate the chemical transformations of pollutants in ice and

snow, Kahan said.

“I guess the idea was because it was very cold that probably not much chemistry would happen, because it takes energy for reactions to occur. So, the warmer it is, the faster they will occur,” she said. “It wasn't until scientists went to the Arctic to make what they thought were background measurements, where there would be no chemistry happening, that they realized that everything they thought they knew was wrong.”

Because of Canada's cold

weather, people living in this country also tend to spend a significant amount of time indoors. As a result, Kahan is interested in understanding the chemistry that affects air quality in our homes, vehicles and workplaces, and has developed an instrument to measure the composition of air indoors.

In June, Kahan's work was recognized at the federal level, when she was named Canada Research Chair (CRC) in Analytical Environmental Chemistry. As a Tier 2 CRC, she will receive \$120,000 per

year for five years to support her research. Tier 2 CRCs are awarded to excellent emerging researchers who have been recognized by their peers as having potential to lead in their field.

Kahan jokes that she should have chosen something warmer than ice and snow to focus on.

“I had friends during my PhD who would say, ‘I'm off to Costa Rica to collect my samples,’” said Kahan, who did however have the opportunity to go to Greenland as part of her research.

“Camping on top of a glacier, it's an experience,” she said.

Kahan laughs when asked if she always wanted to be a scientist, admitting that she actually hoped to become a gymnast as a youth. After high school she worked as a legal secretary for a couple of years before registering for university, with the goal of becoming a sociology major.

“Then I sort of fell into chemistry,” said Kahan, who also considered applied mathematics and physics as potential majors.

“I was looking through the course calendar, looking at all my prerequisites, and I thought, ‘These chemistry classes seem so interesting.’ Then I remembered yes, in fact, chemistry was one of my favourite high school classes. ... So, finally everything fell into place and I did a chemistry degree.”

Kahan obtained her Bachelor of Science from the University of Regina in 2004, before moving to Ontario to complete a PhD in environmental chemistry at the University of Toronto in 2010. She was then hired as a professor at Syracuse University until 2018, when she was recruited by USask.

Kahan is enjoying working at USask and is happy to be back in her home province.

“I was just really excited when a position opened up that's in Saskatchewan—and it was also the perfect fit for me,” she said. “I think the day the job ad came out, six different people emailed me and said, ‘Tara, this is you.’”

Shannon Boklaschuk is a communications officer in the College of Arts and Science.

MS researcher dedicated to improving lives

 KRISTEN MCEWEN

In nearly 40 years of investigating how the body repairs its nervous system, Dr. Valerie Verge (PhD) hasn't found all of the answers yet, but she's getting closer.

"I would hope that at this stage in my career, I'm at the point where I'm turning on light switches that are truly important in the process and we are getting far closer to understanding what some of those key processes are," Verge said.

Verge is a neuroscientist and professor in the Department of Anatomy, Physiology and Pharmacology in the College of Medicine at the University of Saskatchewan (USask). She's also the director of the

Cameco MS Neuroscience Research Centre located at Saskatoon City Hospital and an emerita Medical Research Council of Canada Fellow and Scholar.

Verge was honoured at the 2019 Women Against MS Gala Luncheon on Nov. 21. The event recognized Verge's remarkable contributions as a multiple sclerosis (MS) researcher based in Saskatchewan.

MS is a highly prevalent autoimmune disease in Saskatchewan. The disease causes damage to the myelin surrounding the axons of nerve cells, which disrupts effective signaling between cells. It can result in loss of eyesight, paralysis



Dr. Valerie Verge (PhD) is director of the Cameco MS Neuroscience Research Centre and a professor in the College of Medicine at the University of Saskatchewan.

 KRISTEN MCEWEN

and pain.

"It's been a long-time goal for me to make a difference in people's lives, especially those that suffer from MS," Verge explained.

The researcher has close connections to the disease. Her best friend was diagnosed with MS just as Verge entered graduate studies in 1986.

"It's one thing for you to intel-

lectually know about the pathology of a disease, and to know these are the expected steps of disease progression," Verge said. "But to actually know someone who is living day-to-day with the disease, and what it's robbing them of ... MS is pretty insidious."

Verge has been working at USask since 1992. Prior to moving to

Saskatchewan, Verge completed her PhD at McGill University. As Verge completed her post-doctoral studies in Stockholm, Sweden, she found her connection to Saskatchewan. On the plane back to Canada, she met a farmer by the name of Ole Olson from Plenty, Sask.

SEE VERGE, PAGE 15

PRESIDENT'S HOLIDAY MESSAGE

With the first semester behind us and the holiday season now here, it is time to reflect upon our many accomplishments in 2019. This was a significant year for the university, as it was the first in implementing the University Plan 2025 and our collective journey toward becoming *The University The World Needs*. There are many reasons for why it was an outstanding year for our university, including the following highlights:

- USask researchers played a key role in international collaborations to crack the durum wheat genome, as well as the pea genome, in one of our signature areas of research (agriculture) and our commitment to help feed the world.
- We again saw faculty inducted into the Royal Society of Canada.
- We are on track to reach record enrolment this academic year (26,000), including notable increases in Indigenous and international students.
- We strengthened our community commitments and connections by signing five more memorandums of understanding in 2019, including with the City of Saskatoon ("Research Junction"), Métis Nation of Saskatchewan, the Saskatoon Tribal Council, the Prince Albert Grand Council, and Northern Lights School Division.
- Our building infrastructure renewal project is now underway, courtesy of our \$85-million bond initiative to refit five core campus buildings that are essential to the university's academic mission – Physics, Thorvaldson, W.P. Thompson (Biology), Murray Library, and Arts.
- Also in 2019, there were appointments to some key USask positions: Grit McCreath was appointed Chancellor; Chelsea Willness, University Secretary and Chief Governance Officer; Dave Hardy, Chief Athletics Officer in Huskie Athletics; and Jane Alcorn, Dean of Pharmacy and Nutrition.



As this decade draws to a close, I want to wish you and your loved ones a peaceful and happy new year.

- PETER STOICHEFF

GIFS: Advancing global food security to feed a growing world

OLUFUNKE OKOCHI

By 2050, there is expected to be 9.7 billion people living on this planet—two billion more than today's population. However, more compelling is what this means for agriculture and food supply.

While global population explodes, resources such as land and water are finite, and according to the United Nations (UN), a third of food produced for human consumption is lost or wasted. The implication? The world will need to figure out how to feed its rapidly expanding population more resourcefully. This is the challenge facing researchers in the Global Institute for Food Security (GIFS) at the University of Saskatchewan (USask).

"We are committed to helping build a food-secure world from Saskatchewan-out," said Dr. Steven Webb (PhD), chief executive officer at GIFS. "This commitment involves us contributing to the province's economic, environmental and



Dr. Steven Webb (PhD) is the chief executive officer of GIFS.

social well-being while combining ingenious science and the brightest minds in a variety of fields, in order to solve some of the world's most urgent challenges."

Projections show the global need to significantly increase the amount of food produced to meet growing demand. Add to this the recent UN Intergovernmental Panel on Climate Change special report that calls for sweeping changes

to agricultural practices, and the pressure is palpable.

The verdict? We need innovative ways to tackle the challenge of feeding a growing world, making the most efficient use of finite resources.

GIFS was created to tackle some of these challenges. The public-private partnership is focused on agri-food innovation and conveniently located at USask, in the heart of a massive agriculture biotechnology industry. The province is home to 30 percent of this industry in Canada, and USask alone contains one of the world's largest clusters for agri-food and bioscience—with centres like the Crop Development Centre, the College of Agriculture and Bioresources, the

Global Institute for Water Security (GIWS), the Fedoruk Centre, the Canadian Light Source and the Johnson-Shoyama Graduate School of Public Policy.

With a thriving research and development ecosystem involving multiple players with strengths in varied fields, GIFS is well-positioned to tackle food security challenges, through collaboration with diverse partners. But how exactly does GIFS address these challenges?

"There are several components to the food security ecosystem, including producers, institutions, industry and distributors," said Webb. "GIFS is part of that ecosystem, primarily at the production agriculture end, providing



Global Institute for Food Security researcher Dr. Andrew Sharpe (PhD) with the PromethION high throughput DNA and RNA sequencing device at the University of Saskatchewan.

DAVID STOBBE



Dr. Andrew Sharpe (PhD) examines plants in the phytotron.

DAVID CONLIN

innovative solutions for an accessible, safe, nutritious and reliable food system.”

One such solution is the Omics and Precision Agriculture Laboratory (OPAL). With funding from Western Economic Diversification Canada and currently in a soft launch, the GIFS-managed initiative is a collaboration between USask, the National Research Council of Canada, and Agriculture and Agri-Food Canada. OPAL will offer genomics and phenomics technologies that analyze crop genes and traits with bioinformatics tools. It is the first laboratory in Canada to provide integrated crop data and precision agriculture technologies to support a wide range of research

and commercial stakeholders.

The outcome will be accelerated crop breeding, reduced waste and increased efficiency for agronomists, breeders, producers and other clients.

At the helm of OPAL's operations for GIFS is its director of Genomics and Bioinformatics, Dr. Andrew Sharpe (PhD). A plant molecular geneticist, Sharpe brings extensive experience to help build integrated crop analyses tools to support GIFS and its partners.

“OPAL's mission is to serve as a hub to help agriculture researchers make discoveries that will lead to better crops using fewer resources such as water, nutrients and plant protection products,” said Sharpe.

“It will be a huge enabler for our clients, promoting the efficient use of agricultural resources, while reducing environmental impact.”

Sharpe is also the director of the GIFS-managed Plant Phenotyping and Imaging Research Centre (P2IRC). P2IRC was founded in 2015 with \$37.2 million awarded to USask by the Canada First Research Excellence Fund (CFREF). USask is the only university in Canada to have been awarded two CFREF-funded programs, with Global Water Futures (managed by GIWS) being the other.

“P2IRC was created to develop innovative technologies to accelerate breeding, leading to new crops that are more resilient to

climate change,” said Sharpe. “It's a truly multidisciplinary program at USask, as we work with researchers from various disciplines, including biology, computer science, engineering and the social sciences.”

Its USask location enables P2IRC to benefit from the unique ecosystem that supports the discovery, development and delivery of new crop varieties. This end-to-end capability and interaction with grower and producer groups is essential to ensure alignment with market need.

“We're able to combine diverse expertise to develop cross-cutting technologies to help accelerate plant breeding,” said Sharpe. “Using innovation to breed quality crops in less time and with fewer resources will improve the production of safe and nutritious food, without compromising on the environment.”

Now in its second phase, the P2IRC program has led to the creation of a number of innovations, including additional tools for visualizing roots in soil, and for the hyperspectral imaging of crops and soils, providing an additional dimension of data.

Internationally, GIFS works to ensure its research and development solutions are scalable and tailored to local needs. This has led to international development projects with USask colleges and other partners, to improve nutrition and crop yield at the local level. One such project in Bangladesh involved research into fortifying lentils with iron and other

micronutrients, led by USask's Dr. Albert Vandenberg (PhD) and an international team of collaborators.

Factors contributing to food security are varied and complex. For this reason, GIFS proactively partners with social scientists at the start of its projects. Such input is necessary to develop well-rounded, applicable solutions to meet regulatory and market expectations.

“The best solutions need to be embraced by producers to succeed,” said Webb. “For example, zero-tillage is standard practice that enhances the economic and environmental sustainability of western Canadian agriculture, including helping curb erosion. But it took many years after it was introduced before it began to be adopted on a large scale and the benefits seen widely.”

Collaboration is critical to GIFS' strategy of a solution-oriented approach to research and development.

“We see GIFS as a catalyst of great science,” said Webb. “We can't work in isolation, as food security solutions must be diverse and all-encompassing. For this reason, GIFS fully embraces its role as a catalyst, complementing and not competing with the great work that's being done to enhance production agriculture and, by extension, advance food security—here in Saskatchewan and across the world.”

Olufunke Okochi is the director of communications for the Global Institute for Food Security at USask.

Crop development breeds patience for Hucl



Dr. Pierre Hucl (PhD) is a researcher at the Crop Development Centre in the University of Saskatchewan's College of Agriculture and Bioresources.

CHRIS MORIN

CHRIS MORIN

It's taken 20 years for this particularly purple wheat to go from grain to glass, but it's all music to Dr. Pierre Hucl's (PhD) ears.

A University of Saskatchewan (USask) College of Agriculture and Bioresources professor with the Crop Development Centre (CDC), Hucl specializes in the breeding of bread wheat and canary seed, work that aims to benefit agriculture across Western Canada. He also works on what he calls "alternative wheats" which are specialized wheat classes. That includes one vividly violet wheat variety that is increasingly finding its way out into the world.

Hucl, who has been at USask for nearly 30 years, first started his work

with the purple grain in 1986, a time when wheat varieties in a given market class had to have a specific shape, size and colour. Looking for something that could be used for wheat suited for animal feed or ethanol production, Hucl took notice of a purple wheat variety that had been produced in New Zealand, and obtained his initial parental material from there to start breeding a variety for use in Canada.

That was when he got the bright idea to make the purple even more vibrant.

"Anthocyanins are the pigments that give blueberries their colour. They are also found in this wheat," said Hucl. "So, I developed some breeding populations and we realized that we could increase the anthocyanins by tenfold to make it more commercially attractive. Suddenly, this became a 20-year research effort. It took me until 2012 to release the first purple

wheat developed here at the CDC. I waited 14 years from the first tests that were done in 1998."

Years later, it's liquor lovers who are singing the praises of the purple grain. While several Saskatchewan distillers have picked up on using local ingredients in their grogs, Saskatoon's Stumbletown Distilling was the first to create a vodka made from the purple wheat developed at USask—a spirit that's since become an award-winning liquor.

The purple wheat is one of many products developed on campus that has found its way into locally-produced alcohol. USask researchers are responsible for breeding malting barleys, which are increasingly being used by local craft brewers. Even the mighty



haskap berry, which has similarly been developed for the past two decades by the college's Fruit Breeding Program, is an ingredient that is increasingly turning up in pint glasses across the province.

Despite the recent rise in these grains being used in liquor, Hucl is quick to point out that it's a long road for any researcher to see the fruits of their labour take off.

"It takes up to three years of official field trials for variety registration purposes," said Hucl, who earned the 2019 Canadian Seed Trade Association Plant Breeding and Genetics Award in July. "It takes another three years to multiply the seed for commercial release, plus you have to factor in all the early generation testing. When something finally comes out, it may succeed or it may not. Sometimes

you don't know until five or even 10 years down the line whether a variety of wheat was a commercial success or if it's made any difference to crop production here in Saskatchewan or in Canada."

Having recently received funding in 2019 from the province's Agriculture Development Fund to look into the milling quality of purple wheat for use in baking, Hucl emphasizes that even though there is much more work to be done, following through on an idea helps keep him motivated.

"Most ideas are dead ends, as are most research efforts, so I am used to disappointment. But every once in a while, things work out as anticipated," said Hucl. "Otherwise, it is back to the drawing board and a different approach to answering the question that led to the idea. In order to be a plant breeder, you have to be patient. There is no instant gratification to be had." ■

Dowling masters the art of change

✍️ JEANETTE NEUFELD

It may seem unusual to walk away questioning your own judgments and biases after a conversation with a veterinary pharmacologist, but this is exactly the type of deep-thinking Dr. Trisha Dowling (DVM) inspires.

After more than two decades of teaching, the Western College of Veterinary Medicine (WCVM) professor has turned traditional classroom learning upside down.

“You have all the books right here,” said Dowling, picking up her smartphone.

This recognition of the accessibility of information and an affinity for technology has led her down a different path for delivering lectures at the WCVM. Dowling uses a “flipped classroom” approach, inviting students to review the materials in advance with an online system called Perusall.

Before class, Dowling logs in and checks out how students are responding to the material—and to each other.

“When somebody doesn’t understand and the other student explains it to them and draws a diagram, I get tears in my eyes,” said Dowling.

Dowling then uses class time to work through clinical cases. She incorporates storytelling, videos, photos and podcast recordings into her lectures to ensure that her students’ knowledge of drugs is based on understanding rather than memorization.

“She’s had a major impact on a generation of veterinarians,” said Dr. Chris Clark (MVetSc), the WCVM’s associate dean (academic). He led Dowling’s nomination for the

University of Saskatchewan’s (USask) Master Teacher Award, bestowed at the 2019 Fall Convocation ceremonies at Merlis Belsher Place.

Clark said Dowling deserves the award for her approach to veterinary pharmacology alone, but added her work in teaching USask graduate student courses and developing a veterinary mindfulness elective course are equally worthy of accolades.

Dowling’s success as a professor didn’t happen overnight: Dowling describes being “terrified” during her first days of teaching 25 years ago.

A self-described space brat, Dowling’s father built lunar modules in New Mexico before the family moved to Texas. Dowling earned her Doctor of Veterinary Medicine at Texas A&M University and then practised for a short time in Ohio and North Carolina. She went on to complete a residency in large animal internal medicine and earned a master’s degree in clinical pharmacology at Auburn University, earning double board certification in large animal internal medicine and clinical pharmacology.

After a decade of teaching, Dowling tapped into the resources available through USask’s Gwenna Moss Centre for Teaching and Learning. She also met her own “personal Yoda”—Dr. John Thompson (PhD), a retired professor of sociology at St. Thomas More College, and an award-winning teacher himself.

Through Thompson’s mentorship, Dowling took a graduate studies course called Thinking Critically. She has been instrumental in

helping graduate students prepare for employment outside of academia.

In 2008, after enduring her own mental health struggles, she discovered mindfulness and developed a meditation and yoga practice. These healthy habits have allowed her to balance a full teaching load with clinical research and work as one of three Canadian veterinarians overseeing the Canadian Global Food Animal Residue Avoidance Databank.

She also sits on the equine medications committee for Equestrian Canada, delivers public education on antimicrobial stewardship, and teaches wellness and mindfulness practices to veterinarians and technicians across North America.

Dowling’s popular Mindful Veterinary Practice elective course allows third-year veterinary students to engage in self-care practices for credit. The skills developed go beyond students taking a break and extend to their own communication skills, particularly when dealing with clients.

“With mindfulness, you learn to check in with yourself and your state of mind before you walk in the door of the exam room,” she said. “And once in there, not only do you ask the client questions, but listen to the answers with an open mind and heart.”

And just like that, she makes you question yourself and how you see the world around you—the true mark of a successful teacher. ♥

Jeanette Neufeld is a communications co-ordinator at USask’s Western College of Veterinary Medicine.



Western College of Veterinary Medicine Professor Dr. Trisha Dowling (DVM) with her dog Zipper.

CAITLIN TAYLOR



Global impact begins at local level for Muhajarine

 KRISTEN MCEWEN

Dr. Nazeem Muhajarine (PhD) felt his family always wanted him to go into medicine, but he decided to follow in his father's footsteps.

"He was a public health inspector for 35 years," Muhajarine said. "I was raised in a family that was steeped in public health because of my father's work."

At the end of October, Muhajarine's father passed away. His father played a significant role in how Muhajarine chose his career path as an epidemiologist.

Muhajarine is a professor in the Department of Community Health and Epidemiology in the College of Medicine, and director at the Saskatchewan Population Health and Evaluation Research Unit. His research primarily focuses on population level interventions, maternal health and early child development.

During 2019 Fall Convocation, Muhajarine received the University of Saskatchewan's (USask) Distinguished Researcher Award. The

award is given to individuals who demonstrate excellence in research and scholarly work; help train and educate students, post-doctoral fellows and staff; and contribute to research locally, nationally and internationally.

"It is poignant to think of (my father) as I received this award," he said. "I think he would have been very happy."

Growing up in Sri Lanka, Muhajarine often got to see his father at work, vaccinating kids and giving presentations about using mosquito nets to prevent malaria. Often, people arrived at their house seeking his father's advice.

"I always wanted to work with communities," Muhajarine said. "I became fascinated with the strength of communities and their ability to help individuals be successful and resilient in the face of adversity."

While a neuroscience student at Oberlin College in Ohio, Muhajarine participated in a project funded by

UNICEF in his home country. The purpose of the project was to provide clean water and sanitation to slum and squatter communities. Muhajarine's job was to talk to individuals in these communities and gather data about their knowledge of, and satisfaction with, the project.

"I was amazed at how readily they welcomed me into their homes," Muhajarine said. "I came away from that experience moved by the generosity of the people in those communities."

Inspired by this project and his father's public health career, Muhajarine earned his master's in epidemiology at the University of Massachusetts before arriving at USask in 1990 to complete his PhD in interdisciplinary social epidemiology. As an epidemiologist, he has adopted the motto "Think globally, act locally." In his research, Muhajarine and his teams strive to improve families' living conditions and create healthy communities.



USask Epidemiologist Dr. Nazeem Muhajarine (PhD) the Health Sciences Building at the University of Saskatchewan.

 KRISTEN MCEWEN


While completing his PhD, he and his wife, Kathryn, had a daughter, followed shortly after by the birth of their son. Muhajarine's research at the time was focusing on the importance of early childhood development.

"I was living that work at my home," he said. "There was that personal connection, it wasn't abstract. It was about my own children and wanting good neighbourhoods and a good world for my children."

One of the projects Muhajarine is currently working on is the Canada-Mozambique Maternal Health project. Mozambique feels

like a global project but it starts at a local level by working with women, providing needed transportation, infrastructure and health care to expectant mothers in 20 remote communities, he said.

Muhajarine noted that the impact the project has in these communities will reverberate to other places. By starting children on the right path, it will in turn have an impact society-wide, he explained.

"You have got to start locally, because that's where we live." 

Kristen McEwen is a communications co-ordinator in the College of Medicine.

HUSKIES HIGHLIGHTS:

USask's **Nelson Lokombo** was named U Sports football defensive player of the year at the annual Vanier Cup awards on Nov. 21 in Quebec City. The third-year defensive back, who had four interceptions and returned two for touchdowns and racked up 23.5 tackles, was also one of five Huskies named first-team All-Canadians, joining record-setting running back **Adam Machart**—the runner-up to Western University quarterback **Chris Merchant** for the Hec Crighton Trophy as player of the year—along with offensive linemen **Connor Berglof** and **Mattland Riley** and defensive tackle **Evan Machibroda** ... Three former Huskie football players—offensive lineman **Patrick Neufeld**, long snapper **Chad Rempel** and defensive back **Dexter Janke** (injured)—were members of the CFL's Winnipeg Blue Bombers, who captured the Grey Cup on Nov. 24 in Calgary.

Mortensen makes his mark on and off court

✍️ JAMES SHEWAGA

Dylan Mortensen is showing a remarkable ability to mix business with pleasure for the University of Saskatchewan Huskies.

The Edwards School of Business student and Huskie men's volleyball all-star is once again holding court as one of the top players in the country while also taking care of business in the classroom, successfully combining his fascination with finance and his passion for volleyball.

"It's definitely great being a Huskie student-athlete and I am definitely proud to wear the jersey," said Mortensen, who is in his fourth year in his Bachelor of Commerce program. "We are here for both school and sports, and I really enjoy being here at the University of Saskatchewan. And it is great to have the opportunity to represent the university every weekend."

The 6-foot-7, 200-pound power hitter from Swift Current has helped the Huskies serve notice they plan to be in the playoff mix this season under new head coach Sean McKay.

"We definitely have the talent and we have definitely been



Dylan Mortensen is an all-star player with the Huskie men's volleyball team.

progressing," said Mortensen. "Our goal is to host a playoff game, which means we would finish in the top four in the conference, which is something we haven't done in a while and would be great for the program. And I think if we are playing are best volleyball by the end of the year, I think we will have a chance to make it to nationals."

Mortensen's success in both academics and athletics is testament to his commitment on and off the court, juggling classes and passes, and books and blocks, excelling in both parts of the student-athlete equation. Selected as a Canada West conference second-team all-star player, Mortensen was also named an

Academic All-Canadian for earning an average of 82 per cent while completing a full course load of 24 credit units in 2018/19.

"For sure it was super being named an Academic All-Canadian," said Mortensen, who juggles six days a week of volleyball practices, games and travel, with attending full-time classes five days of the week. "It's a huge honour. And excelling in school, especially in Edwards, which is a fairly tough program with my finance degree, it's great when your work pays off. You definitely have to focus on getting your schoolwork done before and after practice. So, you do have to make some sacrifices in the social aspect, but it is definitely worth it."

On the court, Mortensen was named the men's volleyball rookie of the year in the country in 2018, and continued his rapid rise in U Sports in 2019 when he was picked for the national men's B team that competed in the Pan American Cup in Mexico in June and also selected to represent Canada at the World University Games in Italy in July. Facing the best young university-aged players on the planet, Mortensen stepped into the international spotlight and led the Canadian team in both kills (70) and blocks (14) at the World Universiade.

"I was speechless going into that first game, wearing that Canadian jersey," said Mortensen. "Making the team and going through that whole process was pretty special. Being able to represent your country on the international stage for the first time and having those memories forever is pretty cool."

Mortensen is once again putting up all-star numbers this season in the Canada West conference, currently among the league leaders in points and kills on a Huskies team that is on the rise. While he is pondering possible professional volleyball opportunities overseas after he graduates in 2021, the 21-year-old Mortensen is also anxious to follow in his parents' footsteps and put his business degree to good use.

"My dad was a finance major here at the university too, and my family has a farm and they deal a lot with the finance side of things, so I think running my own business is something I would be interested in at some point," he said. "I think our Edwards professors do a great job of preparing us for working in business, so I think I will have lots of opportunities to choose from in the future." 🍀

HUSKIES HOME ACTION:

FRIDAY, JANUARY 3

Volleyball: vs. MacEwan at the PAC, Women's: 6 pm. Men's: 8 pm.

Men's Hockey: vs. Alberta, at Merlis Belscher Place, 7 pm.

SATURDAY, JANUARY 4

Volleyball: vs. MacEwan at the PAC, Women's: 3 pm. Men's: 5 pm.

Men's Hockey: vs. Alberta, at Merlis Belscher Place, 7 pm.

FRIDAY, JANUARY 10

Track and Field: Sanderson Classic,

at Saskatoon Field House.

Basketball: vs. Victoria at the PAC, Women's: 6 pm. Men's: 8 pm.

Women's Hockey: vs. Lethbridge, at Merlis Belscher Place, 7 pm.

SATURDAY, JANUARY 11

Track and Field: Sanderson Classic, at Saskatoon Field House.

Basketball: vs. Victoria at the PAC, Women's: 5 pm. Men's: 7 pm.

Women's Hockey: vs. Lethbridge, at Merlis Belscher Place, 7 pm.



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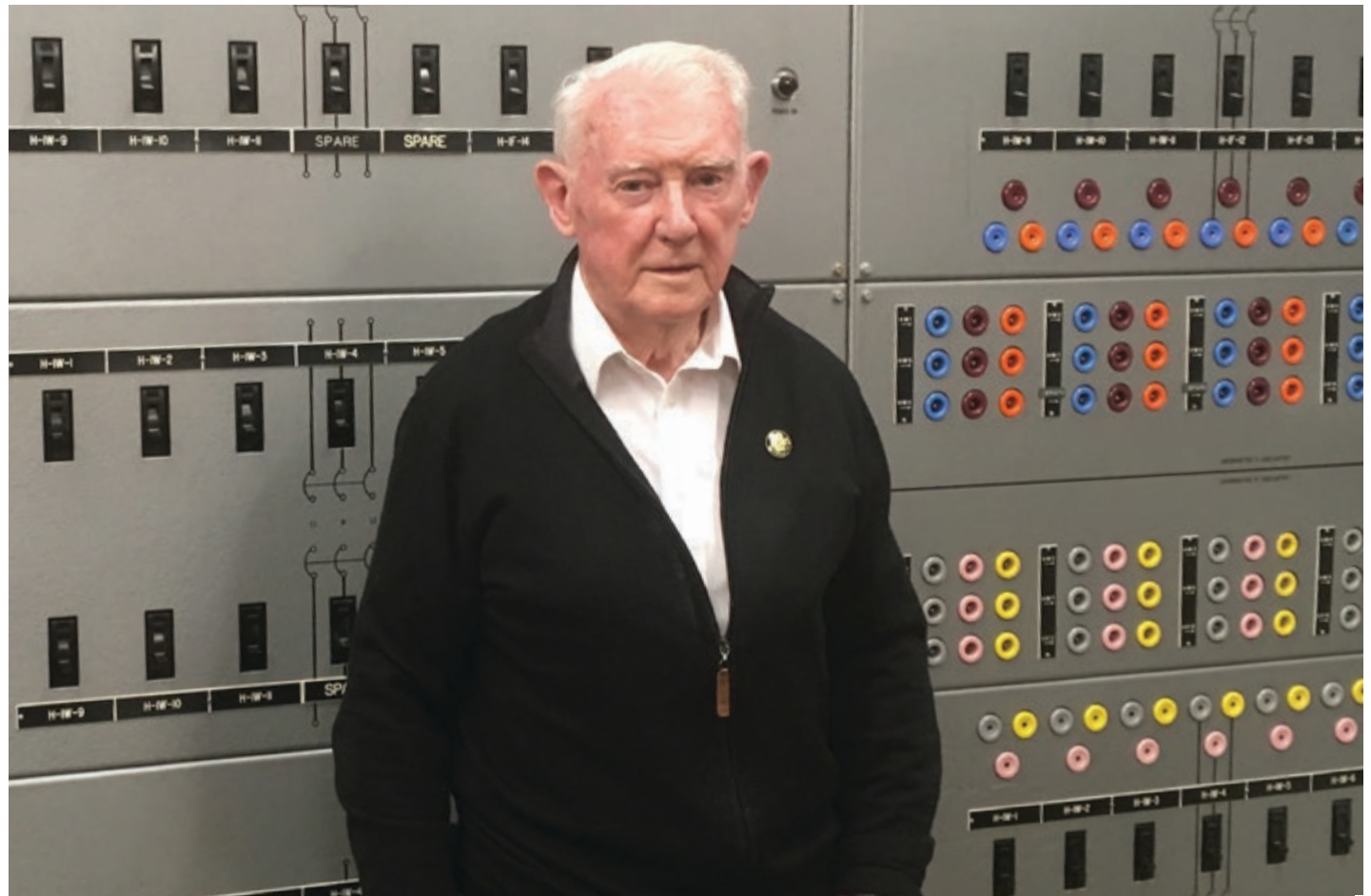
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“ I have always been excited about the work I was doing. We created and developed many concepts and techniques that advanced power system reliability.

— Dr. Roy Billinton (DSc)

Distinguished Professor Emeritus Dr. Roy Billinton (DSc) in a Department of Electrical and Computer Engineering lab in the University of Saskatchewan's College of Engineering.

 DONELLA HOFFMAN



USask's Billinton honoured for lifetime achievement

 DONELLA HOFFMAN

When Roy Billinton was 16, he arrived in Canada with his father and began working as an apprentice electrician. At night, he studied to get his Grade 12 diploma so he could go on to university.

Billinton's mother and the rest of his family arrived in Canada a year later and he ultimately achieved his goal of attending university, earning the bachelor's degree in electrical engineering that became the foundation of his remarkable career.

Dr. Billinton (DSc), a University of Saskatchewan (USask) distinguished professor emeritus, is recognized as a pioneer in power system reliability engineering. The book he published in 1970 is considered to be the first book in English on the subject. In total he authored or co-authored 10 books and more than 975 technical papers. He has

a Google Scholar h-index of 91—which is considered exceptional—with more than 42,000 citations.

“He's a major figure in power systems engineering who's known worldwide. He pioneered the field and set the standards,” said Dr. Safa Kasap (DSc), Billinton's longtime colleague in the USask Department of Electrical and Computer Engineering.

In his area of research—power system reliability, economics and performance—Billinton developed a range of techniques to evaluate the reliability of engineering systems including large electric power generation, transmission and distribution systems.

Billinton's impact on his field was recently recognized when he received the Lifetime Achievement Award from the Institute of Electrical and Electronics Engineers

(IEEE) Power & Energy Society. The occasion became even more memorable as Billinton and his wife Joyce celebrated their 63rd wedding anniversary at the award ceremony in Atlanta.

“I have always been excited about the work I was doing. We created and developed many concepts and techniques that advanced power system reliability,” said Billinton, whose quiet, courteous presence belies his larger-than-life reputation.

Billinton earned bachelor's and master's degrees at the University of Manitoba and PhD and DSc degrees from USask. But before beginning his career at the university, he spent four years at Manitoba Hydro, gaining valuable experience that he said provided him with the vision to blend the theoretical and the practical.

When Billinton joined USask in 1964 he was tasked with establishing the Power Systems Research Group. It soon gained an international reputation and more than 55 years later, Billinton, now 84, is still an active member, attending on-campus meetings and staying busy in his home office.

He recalls with satisfaction and pride the work he did beyond the university—consulting with many large utility providers in North America and abroad—reaching out to exchange knowledge and ideas decades before boundless collaboration was a commitment in the university's strategic plan.

“My work and travel enabled me to meet many other people in the reliability world and develop lasting relationships,” he said.

In all, Billinton delivered presentations or courses in 42

countries, along with 100-plus short courses to electric power utilities, flying more than a million airline miles in the process.

He did this work while making considerable contributions to teaching and learning at the engineering college, supervising more than 135 graduate students. He also served as head of the Department of Electrical Engineering; associate dean responsible for graduate studies, research and extension; assistant dean; and acting dean.

Reflecting on his career and the lifetime achievement award, Billinton, though pleased with the recognition, offers a typically understated response: “It's a nice way to finish up.”

Donella Hoffman is the communications officer in the College of Engineering.



COMING EVENTS

SEMINARS / LECTURES

Philosophy in the Community

7–9 pm, The Refinery, Emmanuel Anglican Church basement. 609 Dufferin Ave. This community lecture and discussion series is organized by the Department of Philosophy to share the rewards and pleasures of philosophical reflection. Free and open to the public. For more information, visit: usask.ca/philosophy/community

- Dec. 13, *Police Street Checks as a Roadblock to a Free and Inclusive Saskatchewan*. By Glen Luther.
- Jan. 10, *Is the World Getting Better or Worse?* By Dwayne Moore.
- Feb. 14, *What is Socialism? The Past and the Future of an Ideal*. By Pierre-Francois Noppen.
- March 13, *Enlightenment and Intoxication*. By Sarah Hoffman.

COURSES / WORKSHOPS

Science on Saturdays

1–3 pm, Museum of Natural Sciences, 114 Science Place. Join the science outreach team in the Museum of Natural Sciences for hands-on science fun for the whole family. Free and open to kids of all ages, with no registration required.

- Jan. 4, *Designing Tessellations: How many cool patterns can you create? We will be designing original shapes to create beautiful tessellations and fractals.*

- Feb. 1, *Be a Colour Detective: Is that black marker really black? Come and discover the hidden colours in water-soluble markers, using chromatography.*
- March 7, *Geology Dig Challenge: Our rocks, minerals and fossils are all mixed up. Can you help us sort and classify these specimens?*

THE ARTS

Greystone Theatre presents: *The Secret in the Wings*

Feb. 4–8, 8 pm, Greystone Theatre, John Mitchell Building, 118 Science Place. Directed by Treena Stubel. Mary Zimmerman's *The Secret in the Wings* adapts a group of lesser-known fairy tales to create a theatrical work that sets their dark mystery against her signature wit and humor. The framing story concerns a child and the frightening babysitter with whom her parents leave her. As the babysitter reads from a book, the characters in each of the tales materialize, with each tale breaking off just at its bleakest moment before giving way to the next one. Tickets go on sale two weeks before each show, available by calling 306-966-5188 or go on-line at: <https://artsandscience.usask.ca/drama/greystone/greystone-theatre.php>

**NEXT OCN: Jan. 10, 2020
DEADLINE: Dec. 23, 2019**

New Blackbaud system

FROM PAGE 2

The right relationship management system helps us do that.”

In University Relations, the new Blackbaud system will replace the outdated UFriend database that has been in place for decades. As with any data system, security is critical and will feature enhanced safeguards.

“Across the university, we work every day to ensure that all of the records that are held by the university are as safe as possible,” said Pozega Osburn. “We continuously improve systems and undertake additional training to ensure the highest possible level of safety and security for all the information held at the university.”

With the new relationship management system now just months away from going live, Pozega Osburn said front-line staff are excited about the potential and the possibilities it provides.

“For people who do this kind of work, engaging with stakeholders and engaging with external communities in the way that we do, it’s exciting to see new systems brought into place that can help us really accomplish our goals of connecting with people,” Pozega Osburn said. “There is nothing more important than staying connected with people and this system will help us forge the best relationships we possibly can.”

LETTER TO THE EDITOR:

The Salvation Army Donor of the Month

As 2019 draws to a close, I would like to take this opportunity to thank the University of Saskatchewan campus community for your continued support of The Salvation Army. I am pleased to recognize you as the Donor of the Month.

Over the past 31 years, you have raised over \$383,259.10. These

funds have helped to support the most vulnerable in our society through various programming. You have helped provide practical assistance for families and children in need, sent kids to summer camp, helped people learn to manage their finances, and provided meals and residential services. Without

you, The Salvation Army would not be able to provide the support we do. On behalf of those who have received your support, thank you.

Best wishes for a safe and happy holiday season.

**Shawn Critch CPA, CGA
Major Divisional Commander
The Salvation Army**

Verge researching nerve repair

FROM PAGE 7

Verge described her now-husband as a “total science geek” which allowed them to bond on the way home. She eventually went on to apply for a position at the College of Medicine where she continued her research into repair of the nervous system.

Her current research focuses on how to encourage cells within the nervous system to repair themselves—to prevent some of the progression of symptoms in people with MS. Her research team is investigating how to non-invasively stimulate nerve cells and impose a low level of stress that the team has recently found is linked to more effective repair. She compared the repair process to exercising and the stress that’s put on the heart. Exercising causes a small amount of damage to the heart, with the heart muscle turning on repair responses and the heart becoming stronger, she explained.

“This is the beauty of neuroscience research, it is constantly evolving,” Verge said. “Every time you think you have a handle on one aspect, another crops that sheds new light, sometimes by your own findings.”

Verge compares her research on effectively repairing the nervous system to putting together a 5,000-

piece jigsaw puzzle.

“Once you’re down to the last few 100 pieces, they’re much easier to put in place than the ones before,” Verge said. “You spend a lot of time trying to create the picture you’re going to need, and the solutions you’re going to need.”

It’s her determination that has

steered the course of Verge’s research.

“If you’re as stubborn and as persistent as most scientists are ... it’s those qualities that really keep you going,” Verge added. “And it’s the small victories along the way.”

**Kristen McEwen is a
communications co-ordinator
in the College of Medicine.**

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WESTERN CANADA'S FIRST X-RAY MACHINE

 JAMES SHEWAGA

A turn-of-the-century medical marvel and prized piece of the province's health-care history sits quietly tucked away in the corner of a storeroom in the basement of the Physics Building at the University of Saskatchewan (USask).

The university is home to the first piece of medical X-ray imaging equipment in Western Canada, brought to Saskatoon by Dr. Herbert Weaver (MD) back in 1906, just one year after Saskatchewan became a province. In a room filled with an array of antique artifacts, rudimentary relics and specialized scientific instruments, the early X-ray unit—a Ranney-Wimshurst-Holtz Static machine—is the prized piece of a collection lost in time.


"It's incredible to see a piece like this," said Dr. Mark Wurtz (PhD), who earned his bachelor's and master's at USask and now serves as an instructional assistant in the Department of Physics and Engineering Physics. "It was state-of-the-art medical technology at that time and this was the first one in Western Canada. It's a valuable part of Saskatchewan's history and the history of Western Canada."

The early imaging machine was first used by Weaver just five years after the discovery of X-rays by German physicist Wilhelm Rontgen, who earned the first Nobel Prize in physics in 1901. The unit was operated by hand crank and generated up to 800,000 volts, but also produced dangerous after-effects. The

machine required exposing patients for more than a minute in order to create the X-ray image, which resulted in excessive amounts of radiation for early users who were not aware of the health hazards.

"The operators would be exposed to X-rays, but at the time, they didn't know how dangerous it was," said Wurtz. "So, the operators would often get sick and some even died of cancer."

Weaver himself had an index finger amputated due to radiation exposure. But while the early X-ray machines came with risks, they also opened the door to a whole new world of medical diagnosis.

"You can see how they took the basic concepts that we still learn in physics today, and used them with this machine," said Wurtz. "When we look at old hand-crank machines like this, we can see how basic principles of physics were used to perform a basic task. The fact that it still works to this day is a testament to how well it was built, and how basic the mechanism is, but also how basic concepts of physics were applicable." 



The physics department is home to the first X-ray machine in Western Canada.



Dr. Mark Wurtz (PhD) holds an X-ray tube from the century-old Ranney-Wimshurst-Holtz Static machine in the Physics Building.

 JAMES SHEWAGA