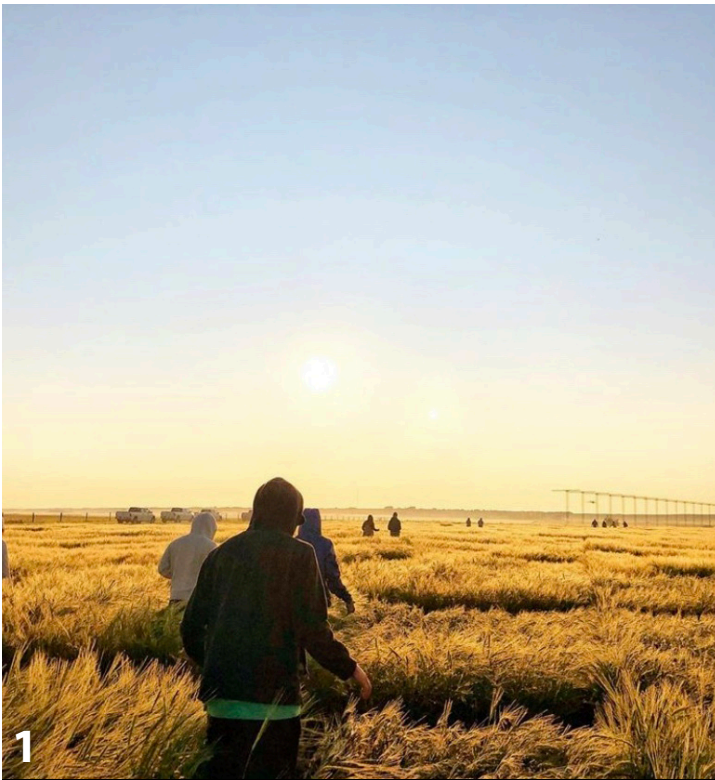




REFLECTIONS

OF A VICE-PRESIDENT RESEARCH

Karen Chad, Ph.D.
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University of Saskatchewan
January 2021



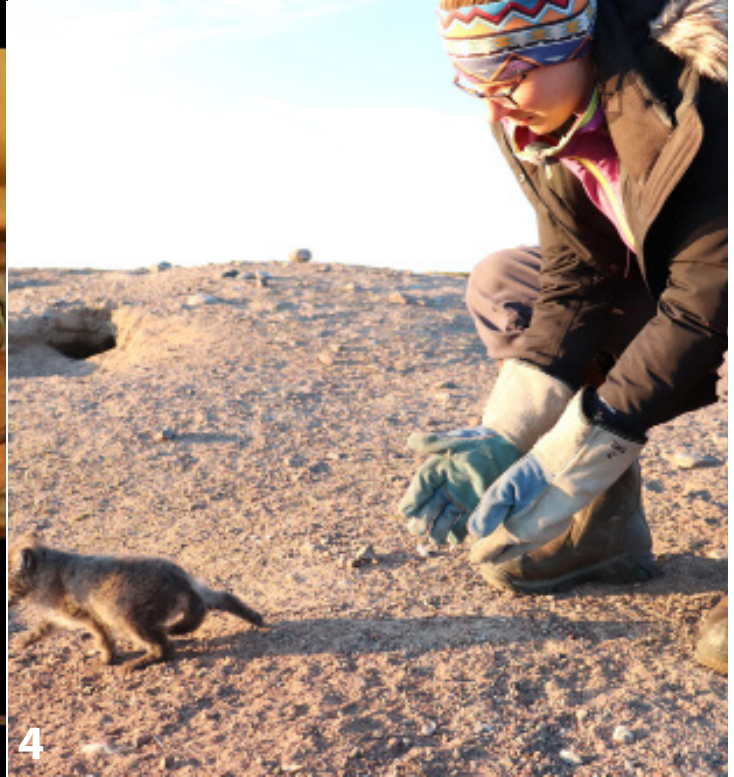
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Photographic images in this report are courtesy of the University of Saskatchewan's Research Profile and Impact unit and its annual *Images of Research Competition*. This competition enables researchers to capture with a compelling image and short description the impact of their research—how it makes a difference to society, the economy, the environment, our health, and other research or global challenges.

1. "Heavenly Sunrise at Kernen Farm" by Harjot Tur
2. "Eye on Fortress" by Mark Ferguson
3. "Gender Equity in Basic Education: A Reality or an Illusion?" by Zita Seshie
4. "Oh, the Places You'll Go" by Robin Owsiacski



Over a Decade of Achievement

At no point in our university's past has our research, scholarship, and creative activity enjoyed greater recognition than it does today.

Over the past decade and more, the University of Saskatchewan's (USask) research community has undergone significant change, witnessing an unprecedented period of growth and impact. We have emerged as one of Canada's leading institutions of learning and discovery.

In the spirit of celebration and learning, I want to share my reflections on this period.

As Vice-President Research, I have had the great privilege to lead our university community towards a bold vision of "discovery with impact"—a vision that has resonated in every corner of campus. I have also had the great privilege of working with academic and administrative leaders to develop strategies and disciplined activities that have guided the university to achieve this vision.

Through the combined efforts of many, it has been rewarding to witness the remarkable progress and momentum that has been achieved.

My intent with this document is to describe the strategy we adopted for our research, scholarly, and artistic works, highlight the impact, and celebrate some of the successes that we as a university have achieved across the span of a little more than a decade.

I invite you to read about the journey that enabled USask to realize more of its potential, to unleash "discovery with impact", to ready ourselves for further decades of achievement, and to lay claim to being the university the world needs.

Warm regards,

Karen Chad, Ph.D.
Vice-President Research
University of Saskatchewan



Reflecting on our Past

Institutional Profile

In 2008, our university completed its first century of operation. But as an institution we had only begun to set our sights on becoming a national leader in research, discovery, and innovation. At that time:

- Research intensiveness was evident in a few areas of the university but underdeveloped across broad swaths of disciplinary expertise.
- Our research infrastructure was underdeveloped and underutilized, and there were clear deficits in major areas.
- Our researchers were in need of critical research services and supports.
- Researchers mostly worked within disciplinary or department-specific silos. Our university lacked strategies to stimulate and reward cross-disciplinary research endeavors and struggled to act as a strong and integrated USask research community.

- We were not effective at attracting significant Tri-Agency funding, nor were we broadly successful in securing or leading major research initiatives.
- We were not recognized by our peers as one of the nation's top research universities, as we were not a member of the U15 Group of Canadian Research Universities.

National Research Landscape

The national research landscape was also undergoing significant change and was dramatically different than it was a decade earlier. It was characterized by:

- Increased competition for funding and top-quality researchers, as well as a growing emphasis on collaborative and interdisciplinary initiatives.

- Growing expectations that universities develop innovative research programs to address political, social, economic, environmental, and technological challenges.
- Increased differentiation among universities as each institution sought to attract resources and profile.
- Calls for greater transparency, accountability, and a more stringent regulatory environment.

Potential for Growth

USask was well placed to grow from its existing assets, to thrive within the changing national landscape, and to emerge as a recognized leader for discovery with impact:

- We had a diverse mix of basic and applied disciplines, spanning across an array of academic programs, that well-positioned USask to be a leader in interdisciplinary scholarship.
- We were home to some unique research facilities which could be leveraged to support more cutting-edge research.
- We had some existing strengths, and were positioned to become national leaders in other areas of discovery.
- We had begun to unite around a “renewed dream” to be a university that was true to its sense of place, committed to rigorous international standards in all that we do, and aspiring to be among the very best in the world in key areas of research pre-eminence.
- We had approved a research, scholarly and artistic work foundational document that committed the institution to being one of the top research universities in Canada and to be recognized internationally for our strengths in key areas.

Envisioning a Path Forward

Leading, inspiring, and supporting USask as we worked towards becoming one of Canada’s top research-intensive, medical-doctoral universities was the greatest privilege—and most important responsibility—of my career in academia.

Coming into the role, my overarching vision was for USask to become known as a place where “discovery with impact” occurs, with a particular focus on making a difference for our health, economy, and quality of life.

Working collaboratively and collegially with researchers and members of our local community, we developed guideposts for future progress:

- Focus on USask becoming one of the top 10 medical-doctoral universities in the country and maintaining our position as Saskatchewan’s leading research university.
- Aspire for USask to be recognized among the very best in the world in identified areas of research and scholarship.
- Establish USask’s reputation as a place where “discovery with impact” occurs; where significant contributions are made through research, scholarly, and artistic work to achieve a better future for all people, locally and globally.
- Ensure that all stakeholders—public and private, national and international, individuals and communities—view USask as a trusted and key partner to pursue shared interests and achieve shared goals.
- Foster a research environment where discovery and learning flourish together, where creativity and innovation flow through and from our research and scholarly work, and where faculty staff and students feel a sense of meaning.
- Create appropriate and supportive environments, both physical and non-physical, that enable researchers to achieve their goals.



Creating the Strategy

In 2012, the Office of the Vice-President Research (OVPR) initiated a planning process to develop a research strategy to strengthen our research performance and profile.

Environmental Scan

As a starting point, we undertook an environmental scan of the top 10 medical-doctoral universities in Canada. Our intent was to “learn from others,” exploring strategies and practices to identify the factors that made these institutions unique and highly successful. We augmented our comprehensive scan with a deeper analysis of research at two universities—each of which had demonstrated significant growth in their research outcomes.

Our scan revealed five broad thematic areas employed in various combinations by successful institutions to drive research, scholarly, and artistic work success:

- Focus on select research areas where the institution could achieve national and international impact.
- Enhance leadership in and accountability for research outcomes.
- Recruit a research-intensive faculty complement.
- Provide a supportive environment to enable research and discovery to flourish.
- Track and celebrate research progress and outcomes.

Developing Consensus

Throughout 2012, the OVPR held a series of workshops and discussions with deans, associate deans of research, centre directors, the Research, Scholarly & Artistic Work Committee, research chairs, and members of our broader research community.

The five thematic areas were further explored and existing USask approaches and levels of achievement were assessed in light of these leading practices. The result was a consensus to:

- Take action across the five thematic areas we identified from our environmental scan;
- Develop USask specific strategies—reflective of our size, character and ambitions; and
- Secure for USask the distinction of being known for discovery with impact.

Guided by these thematic areas, USask has launched new initiatives, introduced policies and programming, pursued ambitious projects, and recruited stellar talent. Throughout, we were constant in our determination to try new approaches, assess their impact, and adapt or adopt new practices or change course when needed. The result has been a period of collaborative transformation.

Areas of Focus

USask's environmental scan indicated that a dominant practice of highly successful research-intensive institutions was to identify a select number of research areas—both at the institutional and college/school level—in which to focus developmental efforts. USask had already begun to move in this direction. We completed a comprehensive review of our research, scholarly, and artistic landscape (*Extending Horizons*) and University Council approved six signature areas of existing or emerging research strength: agriculture, energy and mineral resources, Indigenous peoples, one health, synchrotron sciences, and water security.

Building on this work, USask has:

- Implemented strategic approaches to develop our institutional signature areas. Focusing initially on water security and agriculture, we maximized external funding programs to recruit internationally recognized scholars and leaders; secured local and international partners to drive research with impact; and

created frameworks—centres and training programs—to support unique interdisciplinary scholarship. The tremendous impact of the signature areas on USask's research success and profile has been captured in the [Reflecting on our Signature Areas of Research](#) report.

- Supported college leadership in identifying college-level areas of focus, seeking areas which either complemented our institutional signature areas or described emerging opportunities for collaborative interdisciplinary research. Although success has been uneven, reflecting variations in college approaches to discovery and leadership capacity, progress has been made.
- Developed and implemented an *International Blueprint*, inclusive of a country strategy, to strategically drive partnerships and research development in key areas.

Leadership and Accountability

Institutions demonstrating significant and sustained research success had all woven—tightly and irrevocably—research, scholarly, and artistic work goals and activities into their institutional strategic planning and decision-making processes. This required senior leaders and decision-making forums to have an understanding and appreciation of research as essential for the university's success, and to proactively support research. Given this, we:

- Established and maintained a strong working relationship between the vice-president research and the deans and executive directors, centre directors, associate deans of research, and other research leaders through regular meetings and forums.
- Developed consistent profiles for associate dean research positions across campus, with rigorous expectations and responsibilities for research-related activities.
- Ensured accountability of deans and executive directors for unit-level research performance by implementing research-related indicators and linking merit allocation to research performance and impact.

- Incorporated research-performance measures into the university's budgeting model and resource allocation practices, thus incentivizing research performance within academic units and across the academy.

Research-Intensive Faculty Complement

A strong, research-focused faculty complement in an ongoing state of renewal and development has been core to USask achievements over the last decade. To ensure maximum impact of our recruitment efforts, our institution:

- Introduced research performance as a key hiring criteria.
- Developed and launched a University Chairs Strategy to retain leading faculty (Centennial Enhancement Chairs), recognize and celebrate achievements (Distinguished Professorships), and capitalize on prestigious external programs (CERC, CRC, C150) to attract top scholars.
- Developed our interdisciplinary research clusters (based on signature areas and college/school themes) through complementary and cluster recruitments that ensured exemplary research leadership (usually through chairs) and a breadth of core faculty, ranging from early career to senior researchers. The international prominence of our Global Institute for Water Security and Global Institute for Food Security exemplifies the power of this strategy.
- Committed to recruiting a faculty complement reflective of our local and national community (e.g., committed to equity, diversity and inclusion, or "EDI"). Initially focused on hiring Indigenous faculty, which continues, this commitment expanded to embrace inclusive excellence across all equity groups.
- USask has demonstrated early leadership in EDI at the national level. We are one of 17 institutions invited to participate in the federal Dimensions EDI Pilot program, and we are one of the only institutions to receive a "fully satisfies" rating on our Canada Research Chair (CRC) EDI Action Plan.

Creating Supportive Environments

The last 10 years was a time of transformation in the physical infrastructure, policy environment, and programs and services crucial to supporting the success of our researchers, scholars, and artists. Highly criticized as being non-existent or limited in 2010, our research infrastructure now includes:

Physical infrastructure

- Investments of over \$375M in new and renewed research facilities across the full spectrum of disciplinary and interdisciplinary undertakings, including: agriculture (e.g., Livestock and Forage Centre of Excellence, Raynor Dairy Research and Teaching Facility, phytotron renewal); water and environment (e.g., RJF Smith Centre for Aquatic Ecology, Mine Overlay Site Testing Facility); imaging (e.g., new CLS beam lines, crystallography facility, MRI facilities, cyclotron), health (e.g., InterVac, Clinical Trial Support Unit, Centre for Drug Research and Development); the social sciences (e.g., Canadian Hub for Applied and Social Research); and the Saskatchewan Centre for Patient-Oriented Research (SCPOR).
- An orientation towards collaborative use of research infrastructure. Based on leading examples from other institutions, and local experiences, USask is developing and expanding core research facilities which will provide researchers with improved access to foundational infrastructures, equipment, and technical support.

Programs & Services

- A full spectrum of institutional and college-level research programs, services, and supports, which facilitate research, discovery, and artistic creation. Core offerings have expanded beyond traditional supports, such as grants, contracts, animal care, ethics review, and intellectual property management, to more tailored offerings, such as internal/peer review, workshops, research cafes, seed and bridge funding, research facilitation, grant editing, as well as start-up and commercialization supports.

- A successful Tri-agency leadership model with faculty experts providing mentorship and support in each of SSHRC, CIHR, and NSERC.
- An effective and one-of-a-kind research mentorship program which has helped grow and support early career researchers.
- Evolving supports for community and publicly engaged scholarship. Current initiatives include Research Junction (supporting City-USask collaborations), dedicated Indigenous research facilitation, the Publicly Engaged Scholarship Initiative, and implementation of our MOUs with Remai Modern and Saskatoon Symphony Orchestra.
- Research facilitation and financial investment across several artistic discovery initiatives, including the Artist in Residence program, Chief Poundmaker project, and the Canada Council Grant for a Digital Hub, to name just a few.

Policy environment

- New or revised institutional research policies creating a supportive environment for innovation that is ethical, sustainable, and safe. Policy revisions have included the Human Research Ethics Policy, Responsible Conduct of Research Policy, Institutional Cost of Research Policy, Eligibility to Apply For, Hold, and Administer Research Funding Policy, Centres Policy, and an Inventions Policy (under development).

In developing our research environment, we set our expectations high—rigorously assessing each of our program and service innovations. They needed to be at the leading edge of scholarship support, positively impact researcher success, sustainable, and reflective of institutional priorities.

Track and Celebrate

Our goals have been ambitious, perhaps even audacious. We committed to being nationally and internationally recognized as a leading Discovery with Impact institution. Over the last decade, we have stayed the course—reporting and celebrating our achievements to maintain momentum and course-correcting as required. In doing so, USask adopted an explicit strategy to:

Celebrate our achievements by:

- Bolstering a dedicated Research Profile & Impact unit to drive strategic research storytelling across campus—both internal (e.g., Discovery Digest, research website) and external (e.g., news releases, Young Innovator features, newspaper supplements, videos, “Images of Research” competition, events, etc.), profiling the regional, national, and international impact of USask research, scholarly, and artistic work.
- Putting in mechanisms and supports that enable us to actively nominate faculty for national and international awards. Between 2010 and 2020, USask researchers received over 100 national and international awards and recognitions.

Track our progress by:

- Reporting bi-annually to USask governing bodies on research performance, successes, and emerging opportunities.
- Identifying a selection of reputable national and international ranking instruments to monitor our research progress against our peers. USask currently follows and maintains a public report card on our progress in three international (ARWU, QS, THE) and two national (Maclean’s, ReSearch Infosource) rankings.



Measuring our Progress

USask's progress towards our goals has been promising, with exceptional progress in some areas of our research, scholarly, and artistic work and lesser progress in others. The national and international environment in which we function is ever changing, requiring us to regularly assess our performance, learn from ourselves and others, and continuously improve.

As we enter 2021, it is clear that USask's five-part strategy has served us well toward achieving the goals established a decade earlier:

- In 2012, USask was invited to join the U15, Canada's select group of research-intensive universities. This would not have been possible without having identified and invested in our six signature areas, with the success in performance and impact that ensued.
- USask now consistently ranks among the top 100 universities in four subject areas that align with our signature areas: Water Resources; Environmental Science & Engineering; Veterinary Sciences; and Agricultural Sciences (ARWU rankings).
- We have forged partnerships that extend from the local to the international. These partnerships help inform our research questions and are key to ensuring that our research is translated into policy, practice, and products. They also provide resources and networks that enable us to support and empower a daring culture of innovation with the courage to confront humanity's greatest challenges.
- Our research environment—inclusive of physical infrastructure, programs and services, and policy—is robust, state-of-the-art, and researcher-focused, helping to enable leading-edge research.
- Our campus research community is more diverse and more integrated with examples of research excellence in every corner of the university.

Research Rankings

In 2010, USask committed to benchmarking its performance against the best research institutions nationally and internationally. Taking stock, a decade later, provides a positive picture of change and advancement.

Academic Ranking of World Universities (ARWU)

- In 2020, USask placed in the top quintile of the 2000 universities ranked by this instrument, falling into the 301-400 category. This is a marked improvement since 2012 (moving up from the 401-500 category) and a position we have held for four years.
- We have achieved “a top 100 placement” in four subject areas that correspond to some of USask signature areas: Water Resources; Environmental Science & Engineering; Veterinary Sciences; and Agricultural Sciences.

Quacquarelli Symonds (QS)

- Ranked as 439 in the world in 2020, USask is positioned amongst the top 1.7% universities globally.

Times Higher Education (THE)

- In 2015, we secured global placement in the 400-501 category, and have maintained this position ever since.
- In 2020, we achieved placement in the top 100 in the world for the new THE Global Impact ranking which measures institutional progress against the United Nation’s Sustainability Development Goals (SDG). We scored exceptionally well in SDG 2: Zero Hunger (4th globally), and SDG 3: Good Health and Wellbeing (12th globally).

ReSearch Infosource

- USask ranked 11th out of 50 research-intensive universities and for the second time in five years, led Canada’s medical universities in research revenue growth.

MacLean’s

- USask has ranked between 11th and 15th in the medical-doctoral university category since we joined the U15 group in 2012.

Research Revenues

- USask total annual research revenue has increased by approximately 30%. Significantly, twice in the last five years (2020, 2017), USask has led all other Canadian universities in its research revenue growth. In 2020, when the average Canadian increase was 2%, USask had a substantive increase of 28%.
- Our sustained focus on Tri-Agency funding as an indicator of research excellence has resulted in an overall 18% increase in Tri-Agency funding since 2010: 16% in NSERC, 35% in SSHRC, and a remarkable 157% in CIHR.
- Guided by our signature area strategy, our remarkable ability to forge interdisciplinary research clusters has enabled us to “punch above our weight” in Canada’s premiere funding competitions. We are the only institution in Canada to be awarded two Canada First Research Excellence Fund (CFREF) programs, securing \$115M from the Tri-Agencies which has leveraged millions more from other sources.
- USask has been awarded a total of two Canada Excellence Research Chair (CERC) grants, an exceptional outcome for an institution of our size. These successes clearly demonstrated that USask can and does compete extremely effectively.
- Over the past decade, USask’s total Canada Foundation for Innovation (CFI) funding increased by an astounding 347%, reflecting our increased performance in research, scholarly, and artistic work at USask.
- In 2020, USask was awarded more than \$77M - a third of the total \$230M announced by CFI through its Major Science Initiatives (MSI) Fund.

Research Partnerships

Forged at all levels of the academy, partnerships have been key to USask's success over the last 10+ years, enabling us to establish a vibrant research ecosystem, which in turn have driven innovation and research.

- Public and private partnerships have led to the creation of, and significant initial investment in, several successful enterprises, such as the Global Institute for Food Security (\$50M), Global Institute for Water Security (\$30M), Sylvia Fedoruk Canadian Centre for Nuclear Innovation (\$30M), International Minerals Innovation Institute (\$18M), and the Saskatchewan Centre for Patient-Oriented Research (\$62M).
- Partnerships are also the driving force behind two centres currently in incubation: an institute of excellence with Wanuskewin Heritage Park, and the proposed international Indigenous health research institute (with the Saskatchewan Indian Institute of Technologies, Whitecap Dakota First Nation, and many other partners).
- Partnerships also create unique opportunities to establish state of the art research facilities. For example, the Omics and Precision Agriculture Laboratory (OPAL) at the USask Global Institute for Food Security is the result of a partnership between USask and federal research agencies to collaborate in genomics, phenomics, and bioinformatics.
- USask currently manages 377 international partnership agreements with more than 200 institutions in over 50 countries around the world, enabling research collaborations and mobility.

Commercialization and Innovation

- Over the last decade, USask has filed 285 patents, licensed 181 technologies to companies, supported the formation of 19 start-up companies, led Canada's universities in technology-licensing income with annual

revenues up to \$20M, and contributed significantly to Saskatchewan's increasingly vibrant innovation ecosystem.

- To address the gap between industry and academia, USask brought researchers and industry together to focus on mining, imaging, big data, ag-tech, and the internet of things, generating over 80 collaborations to date. USask also established mutually beneficial relationships with Co.Labs, Saskatchewan's first technology incubator, and other such as Innovate Canmore, a business accelerator, to connect ideas, talent, and resources to better support researchers to deliver solutions the world needs.

Culture of Excellence

Faculty Complement

- We have been highly successful in recruiting excellent scholars and researchers to our campus. Over the last decade, USask faculty received over 100 institutional awards for outstanding achievements in teaching, learning, research, and discovery.
- Committed to the concept of inclusivity, we have secured opportunities for members of equity-seeking groups at all levels of our institution (as faculty, chairs, leaders, and award recipients) and have embraced different ways of knowing. As a testament to this, over 140 USask scholars are now engaged in research with Indigenous scholars and communities.

Training Environment

- We have launched innovative and unique graduate training programs attracting talented students from across the globe. Over the last decade, we have secured eight NSERC CREATE grants and one CIHR STIR grant in areas as diverse as water security, computer games, space science, as well as food and feed security.
- Our graduate student population, which has grown by nearly 10% in five years, is more diverse than ever before – 38% international and 7% Indigenous.



Thank You

It is truly remarkable how much we have achieved in a little more than a decade. We have transformed from a predominantly local, undergraduate institution to an internationally recognized, research-intensive university.

It has been a rewarding journey made possible by the engagement and participation of an entire campus community. Behind the many strategies, initiatives, and successes described on the previous pages are the people that made our progress possible. These include all the faculty members who pursued their research passions; researchers who developed and executed research ideas and writing grants; committee members who provided thoughtful critiques; deans and associate deans who co-ordinated searches, committed funding, and drove projects; students and post-doctoral fellows who added to the pool of talent; hardworking and dedicated staff who upheld and advanced our research enterprise in myriad ways—and the list goes on.

USask's five-part strategy has served us well to bring discipline and accountability behind actions to increase research intensity, and to place us on track towards achieving our goals. Make no mistake—there were things that didn't go quite as well as we had wanted or expected, and most

certainly many lessons were learned along the journey that will need to be incorporated in the future. But we have adapted to address both challenges and new opportunities.

We have always known that we can learn from others: now we know for certain that we can also be at the leading edge of innovation, a “go-to” place for others seeking to learn from leaders and to collaborate with us. We learned that creativity, risk-taking, and challenging the status quo are essential for success. Above all else, we affirmed that our people, who are among the most promising researchers and scholars in the world, are our most critical asset.

It is impossible to capture all of USask's successes and recognize everyone in a few short pages. Nevertheless, I would like to thank and congratulate every member of our university community—our researchers, faculty, students, staff, alumni, and donors, as well as our government, industry, and community partners—for their contributions. We are a better university because of you.

Thank you for granting me the privilege, opportunity, and honour of serving as Vice-President Research for the past 12 years.



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