OVPRI Annual Report to Senate 2019-2020

Introduction

By any measure, 2019-2020 was a remarkable year for the Office of the Vice-President, Research and Innovation (OVPRI). We experienced a 63% growth in external research funding to reach a total of $79.4 million, with support from Tri-Agencies exceeding $17 million.

The OVPRI, as a shared service, fulfills a number of important functions, including:

- Providing advice and support to researchers on individual and institutional research proposals;
- Managing the development of institution-led projects and programs and the development of institutional initiatives and strategic partnerships;
- Facilitating and ensuring compliance with federal ethics guidelines and principles of research integrity;
- Enhancing undergraduate research opportunities; and
- Providing the required leadership and support for scholarly, research and creative compliance requirements.

Each year, the OVPRI submits a report to Senate that articulates achievements and key actions to deliver on the Strategic Research Plan.

During 2019-2020, one of the OVPRI's key priorities was to collaboratively develop a new Strategic Research Plan (SRP) for 2020-2025. The new SRP articulates Ryerson's key themes that represent the university's strategic strengths and reflect the diverse scholarly, research and creative (SRC) activity that is taking place across the institution. The SRP sets the stage for the next five years with the identification of research themes, examples of current areas of focus and strategic objectives. The plan was created in a collaborative and collegial manner with Naomi Adelson, Associate Vice-President, Research and Innovation, chairing a Steering Committee that consisted of diverse faculty and student membership, including campus-wide town halls throughout each stage of the process and a dedicated website to share information and receive feedback.

The SRP is an important output of the OVPRI's multi-year effort to build our capacity for scaling the research enterprise through key areas of institutional strength, excellence and impact. This effort fundamentally builds on the foundation of faculty-led initiatives, goals and aspirations.

Supporting SRC excellence and increasing funding success

Ryerson's ambitious and innovative approach to forging relationships with industry, non-profit and community partners is reflected in the university's continued research funding achievements. In the recent Research Infosource Inc. list of the 50 top research universities in Canada, Ryerson has been ranked second for corporate research income growth among comprehensive universities and is among the top 10 non-medical universities in the annual rankings. According to the publication, Ryerson grew its corporate research income by just over 40% in the 2017-2018 fiscal year. Research Infosource also ranked Ryerson as fourth among comprehensive universities for cross-sector collaboration; the university received 449 grants for

collaborative projects involving organizations in other sectors over the five fiscal years between 2014 and 2018.

<u>Support for investigator-led research proposals</u>

The OVPRI supports faculty members applying for funding through grant facilitation, budget preparation support and the sourcing and identification of potential partners for matching programs. This has translated into continuing success with Tri-Agency funding, including:

- A 26% increase in our success rate for the NSERC Discovery Grant program (from 36% to 62%) during the 2018-2019 competition years, along with an average annual amount increase from $23,400 to $33,476 per grant. In the most recent Discovery Grant competition, Ryerson saw 84 applications, an all-time high representing a 24% increase in application rates from the 68 submitted in the 2019 competition (which was the institution's previous all-time high).
- Early success with the NSERC Alliance program. This new program opened in fall 2019, and we have already been awarded a grant totalling $1.9 million ($1.25 million from NSERC and $625,000 from industrial partner FuseForward). This award will allow Jennifer McArthur (Architectural Science) to develop a digital twin of the Ryerson campus to explore smart-building technologies and processes.
- Continued growth of research intensity in the humanities and social sciences. The SSHRC Insight Development Grant program, focused primarily on early career researchers, saw an increase of 84% in the number of applications submitted (from 25 to 46 in the 2020 competition).
- Continued momentum in SSHRC's flagship Partnership Grant program, with two applications at the final stage of adjudication in the 2019 competition, and four applications submitted to the current Letter of Intent stage of the 2020 competition.
- For the first time in Ryerson's history, our CIHR funding success rate of 21.7% exceeded the national average of 16.6% due to five Project Grants totalling $4,153,951 in 2019. Tier I CIHR CRC Michael Olson (Chemistry and Biology) was particularly successful in the most recent competition with two Project Grants funded.
- Another metric of increasing SRC intensity is Ryerson's success in Ontario's highly competitive and prestigious Early Researcher Awards. This year, four faculty members received this award: Idil Atak (Criminology), Elsayed Elbeshbishy (Civil Engineering), Shelagh McCartney (Urban and Regional Planning) and Sharareh Taghipour (Mechanical and Industrial Engineering).
- This past year, Ryerson was pleased to announce that three Ryerson faculty members are being recognized as emerging leaders in their fields. The Canada Research Chair (CRC) program named Miranda Kirby as a new CRC and Roberto Botelho and Julia Spaniol saw their CRCs renewed for a second term.
- Canada Foundation for Innovation (CFI) John R. Evans Leaders Fund (JELF) Unaffiliated stream grants were successfully awarded to Marco Antoniades (Electrical, Computer and Biomedical Engineering), Nariman Farsad (Computer Science), Dustin Little (Chemistry and Biology), Nariman Yousefi (Chemical Engineering) and Sharareh Taghipour (Mechanical and Industrial Engineering).
- CFI Affiliated John R. Evans Leaders Fund and Small Infrastructure Fund (SIF) grants were awarded to Roberto Botelho (Chemistry and Biology) and Julia Spaniol (Psychology) who saw their grants renewed, while Miranda Kirby (Physics) was awarded a new grant.

Expanding research collaborations and partnerships

To support the continued expansion of SRC activity, the OVPRI is looking to scale activities by leveraging strategic investments and placing time, attention and resources on areas of competitive advantage. Building on the solid foundation of excellence and employing a disciplined and focused approach, Ryerson is well positioned to partner, scale and compete locally, nationally and globally.

This focus is exemplified by Ryerson's successful outcome with the final NSERC Industrial Research Chairs (IRC) program, which saw the awarding of two NSERC IRCs to Jeff Xi and Frank Russo, tripling our total number of active IRCs. In 2019, Ryerson was also awarded its first NSERC Collaborative Research and Training Experience (CREATE) grant for the MedTech Talent Accelerator, led by Stephen Waldman (Chemical Engineering) in collaboration with McGill University. The amount awarded was $1,649,500.

Our researchers are also increasingly taking a global approach to their work through, for example, Global Affairs Canada's Funds for Innovation and Transformation (FIT) program. FIT provides funding for particularly innovative pilot projects to assist women and girls in the global South. In July 2019, Ryerson submitted three applications for the inaugural FIT call for preliminary proposals. Of the 75 applications received by FIT, Ryerson was one of 18 invited to submit a full proposal. In December 2019, Mandana Vahabi (Nursing) and Josephine Wong (Nursing) were successful and awarded $250,000 for their project, "Preventing Cervical Cancer in India through Self-Sampling."

This past year, Ryerson submitted and participated in five CFI Innovation Fund and matching Large Infrastructure Fund grants, completely allocating its envelope of $8.1 million. Ryerson led two projects (LG4.0 and SCITLAB), co-led a third project (FIBRE) and participated in two additional projects. LG4.0 is the first substantial partnership ($8.5 million) between Ryerson, Centennial College and the Downsview Aerospace Innovation and Research (DAIR) hub. If successful, LG4.0 researchers will develop innovative aircraft landing gear designs, materials and advanced manufacturing methods to enhance the competitive position of Ontario as a world leader in aerospace. The second Ryerson-led project ($6.9 million) was with our national SCITL partners to construct a purpose-built facility consisting of full-scale office and residential test beds to develop novel technologies to reduce building energy consumption and associated emissions while improving indoor environmental quality. FIBRE, co-led by Ryerson, is a $45.5 million proposal that brings together diverse expertise from eight collaborating institutions to develop functional textiles and garments that address the needs of the health care sector and Canada's population.

The two additional projects that Ryerson participated in include one that builds on the university's relationship with St. Michael's Hospital, The Opioid Research Initiative – Translational Research to Identify Solutions to the Opioid Epidemic is a multidisciplinary research initiative ($8.95 million) that combines clinical and biomedical research, drug discovery and biotechnology in identifying therapeutic solutions to reduce the impact of opioid drugs. The second additional project Ryerson participated in is CADnet: Canadian Design Network for Circuits and Systems. CADnet is a University of British Columbia-led, Canada-wide research project which will equip computer-aided design tools and the technology platforms that are both

foundational to the digital economy (microelectronics, nanotechnology, photonics, system-on-chip, architecture, embedded systems and packaging) and essential to overcoming current technological challenges.

Amplifying SRC impact, knowledge mobilization and transfer

Commercialization and knowledge translation

The OVPRI provides various levels of support for knowledge mobilization and technology transfer across the university for faculty and the Zone Learning network. Activities that the OVPRI has been undertaking to advance Ryerson's innovation impact include providing advice to researchers on commercialization paths and access to market evaluation resources, as well as circulating calls for commercialization and proof-of-principle funding. The OVPRI has been walking the halls and visiting laboratories to establish connections with academics and students, and helping them to gain an appreciation of emerging commercialization opportunities. The current licensing survey indicators will show an almost equivalent commercialization and technology transfer activity to previous years, generating $1,114,448 in royalties from various licensing deals and an increase in active licenses to 31.

We have supported eight patent applications this fiscal year, as well as other commercialization activities, including market assessment and business plan development support, commercialization workshops and information sessions for researchers. More importantly, the OVPRI has cultivated its reputation as a supportive and assistive team that is helping to drive more faculty-led commercialization activities across the campus.

This year, Ryerson University and members of the Incubate Innovate Network of Canada (I-INC) launched the Lab2Market (L2M) program, Canada's first national-level research commercialization program. The L2M program is based on the very successful I-Corps program that was launched by the National Science Foundation (NSF) seven years ago. L2M will provide teams of faculty and their graduate students with $15,000 in funding and the training needed to assess the commercial potential of their university-based research innovations. This pilot program is being led by Ryerson, Dalhousie University and Memorial University, with financial support from FedDev Ontario, Mitacs and the Atlantic Canada Opportunities Agency. Ryerson was awarded $1.3 million from FedDev Ontario to deliver this program in southern Ontario. The call for submissions for the first cohort in 2020 received 60 applications for the 20 available positions, from across southern Ontario.

Rogers Cybersecure Catalyst

The Rogers Cybersecure Catalyst represents an important industry-facing approach to challenges in relation to scaling, training, certification and up-skilling in an area of critical importance to the economic stability, security and growth of the country. The OVPRI provides support to the Catalyst's operations.

Led by Executive Director Charles Finlay, in its first year, the Rogers Cybersecure Catalyst was able to attract $30 million in private sector and government funding.

The Catalyst's remarkable growth and first year achievements include:

- Launching a new training program (which was oversubscribed for its first cohort);
- Establishing the Cyber Accelerator in partnership with the DMZ;
- Deepening relationships with the Cybersecurity Research Lab at the Ted Rogers School of Management;
- Forming partnerships with other post-secondary institutions (e.g., University of Waterloo);
- Creating the Cyber Range; and
- Hosting three major conferences, including co-hosting one with the Consulate General of the United States titled "Cybersecurity, Cross-Border Trade and the Digital Economy."

Future Skills Centre

The Future Skills Centre (FSC) was officially launched on February 14, 2019. In the first full year of this major initiative, Ryerson has made great strides in working with our consortium partners, the Conference Board of Canada and Blueprint, to solidify the FSC's governance.

A key priority of the past year was to undertake a pan-Canadian, bilingual search to hire FSC's Executive Director. Pedro Barata joined the Future Skills Centre as the Executive Director in September 2019. In addition, following a best practice approach, we recruited an exceptional group of distinguished leaders to serve on the FSC's pan-Canadian Advisory Board. They will provide strategic guidance and foresight to the FSC, ensuring a relevant research agenda while reviewing progress against key metrics.

The FSC has enhanced Ryerson's reputation for delivering and making complex partnerships work. In its first year of operations, the FSC has funded more than $19 million in pilot projects and is on track to invest a further $36 million by the end of the fiscal year.

Magnet

Magnet is a not-for-profit, digital social innovation platform co-created in 2014 by Ryerson University in partnership with the Ontario Chamber of Commerce. Led by Executive Director Mark Patterson, its mission is to accelerate inclusive economic growth for all in Canada by advancing careers, businesses and communities. In spring 2019, Magnet's reporting relationship shifted so that it is now reporting in through the OVPRI. This past year, Magnet has experienced unprecedented growth, including being awarded two contracts from Employment and Social Development Canada (ESDC) that together total $51,430,329 for Magnet to support the government's planned Student Work Placement (SWP) Program.

Dimensions – Equity, Diversity and Inclusion Canada

In 2019, Ryerson became a signatory to the Dimensions Charter and was selected as one of 17 institutions across Canada accepted into the two-year Dimensions Pilot Program. In fact, the federal government announced the program here at Ryerson in August 2019.

By endorsing the charter, Ryerson reiterated its commitment to embedding equity, diversity and inclusion principles in its policies, practices, action plans and culture. Working with the Office of the Vice-President Equity and Community Inclusion, the OVPRI has engaged Art Blake (History)

to be the Dimensions Pilot Program Director. He will lead a collaborative process across the campus to engage faculty, staff and students in identifying and addressing inequities within Ryerson's SRC practices and structures.

Equity, diversity, inclusion and access are the guiding principles of our 2020-2025 Strategic Research Plan and underscore our approach to SRC activities. The Dimensions Pilot Program is an example of how we are amplifying multiple world views and exploring research and innovation challenges and opportunities.

<u>Enhancing Reputation</u>

For 2019-2020, the OVPRI continued to focus its communication efforts on enhancing Ryerson's research reputation and increasing faculty recognition.

The OVPRI promotes research at Ryerson to support knowledge mobilization and amplifying the university's stature. In particular, the OVPRI worked with University Relations on a reputation campaign with a focus on research that was promoted through traditional and online media and appeared in the Globe and Mail, the National Post, University Affairs and other various channels. The OVPRI also sponsored and participated in a number of conferences and activities that showcased Ryerson researchers and the impact of their work, such as the Canadian Science Policy Conference and the Ontario Economic Summit hosted by the Ontario Chamber of Commerce. At both of these events, the Vice-President, Research and Innovation moderated panels that explored how to strengthen the intersections between universities, entrepreneurship, industry collaboration and the innovation economy. The OVPRI continues to share research impacts, outcomes and faculty achievements across a range of communication channels. This includes our quarterly Innovation newsletter that is shared with a subscriber base, the news channels on our website, other sites across the university, as well as social media. The OVPRI shared 55 stories profiling the SRC activities of more than 100 Ryerson faculty and students. The OVPRI also promoted 43 stories written by 36 Ryerson faculty in The Conversation Canada.

Strengthening SRC supports and systems

To support SRC excellence and promote SRC impact, a key priority of the OVPRI is to build collaborative partnerships across the university and to strengthen SRC supports and systems. This includes working with Ryerson International towards greater global SRC partnerships and initiatives and with the Yeates School of Graduate Studies in support of training highly qualified personnel at the graduate and post-graduate levels. In addition, as described above, the OVPRI is strengthening the innovation ecosystem in moving university-based research from lab to market by providing various levels of support for knowledge and technology transfer and commercialization.

As the funding landscape changes, the OVPRI is evolving in order to be well positioned to provide comprehensive support and encourage the stimulation of innovation through strengthened multidisciplinary connections and bigger and bolder projects and partnerships. To enhance communication, collaboration and alignment, as well as promote greater cross-training of employees and succession planning and respond to a changing SRC ecosystem, the OVPRI has undertaken an organizational redesign around common goals and outcomes. In fall 2019,

the OVPRI launched a Canada-wide search process to recruit two key leadership positions to the portfolio. As a result of this national search process, Johannes Dyring will be joining Ryerson as the inaugural Assistant Vice-President, Business Development and Strategic Initiatives on May 1, 2020, and Richard McCulloch was promoted to Executive Director, Research Services.

Johannes is a seasoned and diversely experienced business executive, entrepreneur and nurturer of startups, with a career defined by recognizing untapped markets and responding with innovative products and technology. He joins Ryerson from the University of Saskatchewan, where he was the managing director of Innovation Enterprise. In that role he was responsible for applying an entrepreneurial approach to developing and strengthening the University of Saskatchewan's innovation, intellectual property and commercialization capacity.

In addition, Vivian Chan has taken on additional responsibilities to become OVPRI's Chief Administrative Officer. These changes in leadership ensure that the OVPRI is well positioned to implement Ryerson's new Strategic Research Plan, and that we can continue to scale our support for SRC activities and collaborations.

As stated in previous annual reports to Senate, building a comprehensive university requires the development of effective supports and services for researchers. To continue to intensify Ryerson's SRC culture, we must place a greater emphasis on simplifying administrative structures, processes, services and resources. To this end, the OVPRI has continued to work with Ryerson's Finance, HR and the Provost's offices to improve administrative support for researchers. An example of this collaboration is the work done transitioning to the adoption of a principle-based approach to research financial administration as mandated by the Renewal of the Tri-Agency Financial Administration initiative. This move to a principle-based approach will allow us to streamline and simplify the administration and use of Tri-Agency grant funds towards a less directive and burdensome approach for institutions and grant recipients. Ryerson is actively working on having the new model in place for April 2021.

The OVPRI has continued to work with the Deans and Associate Deans of SRC Activity in each faculty to develop relevant SRC activity performance indicators to directly support their Strategic Plans for SRC activity. This also facilitates evidence-based practice in order to enhance OVPRI's planning and decision-making processes, such as the collaborative work that the OVPRI has completed with the University Planning Office to conduct various research-related statistical analyses for different internal and external purposes (e.g., participation in the Times Higher Education rankings).

In 2017-2018, the Senate Scholarly Research and Creative Activity Committee established a more structured approach to the review of SRC-related policies that is in line with the approach that is being taken by other Senate standing committees. The OVPRI developed a schedule for the review of SRC-related policies that allows for the even distribution of policies over the course of the five-year cycle. The intent is for the policies to be discussed and examined, and revised as required, once every five years.

For 2019-2020, the OVPRI reviewed and refined two policies:

● Policy 56: Publication of Research Results (approved at the May 2019 Senate meeting)
● Policy 118: Scholarly, Research and Creative Activity (SRC) Integrity (approved at the June 2019 Senate meeting)

For 2020-2021, the OVPRI will complete the initial five-year review schedule for all policies by reviewing:

- Policy 153: Non-Competitive Agreements (going to the May 2020 Senate meeting)
- Policy 154: Signing of Research Applications and Agreements in Support of Research (going to the May 2020 Senate meeting)
- Policy 63: Policy on Ownership of Student Work in Research (intention to have review complete by December 2021)

These are the final three SRC-related policies that required an initial review. Beginning in 2021, a fresh cycle will begin with the regularly scheduled five-year review of Policy 51: Ethical Conduct for Research Involving Human Participants, which was last examined in 2016.

Implementing Policy 144: Policy on Research Centres

Senate approved revisions to Policy 144: Policy on Research Centres at its December 2018 meeting. Since that time, the OVPRI has been working with Faculties on implementing the revised policy and addressing feedback received during the policy review consultations. Faculties have been provided with templates, guidelines and suggested scheduling plans to assist them in the requisite five-year review of their respective Research Centres, and work is ongoing to provide additional supports such as templates for centre annual reports, terms of reference and centre creation proposals. The focus on consistent implementation of Policy 144 is important because it enhances transparency and also presents an opportunity for Research Centres to showcase areas of strength through their impact, funding, contribution to training (graduate studies), collaborations and partnerships, innovation, national /international reputation, depth and excellence of research.

Support for Students

Students are crucial to supporting Ryerson's SRC productivity and excellence. We have continued to work with the Faculties through the OVPRI Research Assistant (RA) and Undergraduate Research Opportunities (URO) programs to provide undergraduates with the opportunity to participate in faculty-mentored research at Ryerson over the summer. These initiatives create a culture of SRC activity and innovation among undergraduate students and help to increase SRC productivity, especially in departments and schools where there is no graduate support.

The aim of the URO initiative, which is funded by the OVPRI, is to provide students with opportunities to learn important research-related skills and to prepare for academic and career development. In October 2019, approximately 50 students from across Ryerson shared the findings of investigations they conducted in the URO program at a new showcase event. The impressive mix of subjects included the use of microscopic bubbles in cancer treatment, design characteristics of Toronto's Chinatown and the extent to which female politicians face gendered criticism on Twitter.

OVPRI Annual SRC Integrity Report to Senate

As per section 10 of Policy 118, "*for the purpose of educating University members on acceptable and unacceptable practices for scholarly, research and creative activity and research ethics activities*", the OVPRI has prepared an annual summary of SRC integrity complaints and outcomes.

As per Policy 118, a breach of SRC integrity occurs "*when the activity deviates from the commonly accepted standard of conduct in the discipline/field, in accordance with the University and the funder guidelines. A breach can occur at any stage of SRC activity from conceptualization to dissemination. In determining whether conduct deviates from relevant SRC community standards or practice, due regard is given for what the individual reasonably ought to have known, the possibility of reasonable and honest error, and potential differences in the interpretation of data and research designs*."

From May 1, 2019 to April 30, 2020, three allegations of SRC integrity breaches were initiated under Policy 118. The following table highlights the nature of the allegation as defined in Policy 118, and the outcome per complaint.

Complaint #	Allegation of SRC Integrity Breach (Policy 118)	Outcome
1	Section 7.9: Failure to seek Ryerson's Research Ethics Board (REB) approval for research involving human participants or human biological materials when it is required under the Tri-Council Policy Statement and Senate policy 51 Section 7.12: Failure to provide Ryerson's REB, Biosafety Committee and/or ACC with any materials relevant to its decision-making, or failure to notify Ryerson's REB or ACC of adverse events or significant changes to the research as required in the terms of approval	Allegations not substantiated, and matter concluded at the inquiry stage
2	Plagiarism – Section 7.3.4: Claiming, submitting or presenting collaborative work as if it were created solely by oneself or one's group Misleading Publication – Section 7.15.1: Failing to appropriately include as authors other collaborators who prepared their contributions with the understanding and intention that it would be a joint publication	Allegations not substantiated, and matter concluded at the inquiry stage
3	Misleading Publication – Section 7.15.1: Failing to appropriately include as authors other collaborators who prepared their contributions with the understanding and intention that it would be a joint publication Section 7.15.2: Failing to provide collaborators with an opportunity to contribute as an author in a joint publication when they contributed to the research	Complaint withdrawn before initiation of the inquiry stage

	with the understanding and intention that they would be offered this opportunity	

In summary, two complaints underwent an inquiry to establish whether the allegations put forward were "responsible" and the remaining complaint was withdrawn before reaching the inquiry stage. As a result of the inquiries conducted, it was determined that these allegations were not substantiated and concluded at the inquiry stage.

On review of the allegations of SRC integrity breaches, the OVPRI sees that greater clarity is needed on the issues of authorship assignments for publications, intellectual property and what fundamentally constitutes SRC activity as it relates to data collection, highlighting the need for more research integrity training throughout the university community.

Appeals of REB decisions fall under the purview of the Vice President, Research and Innovation. In 2019-2020, one appeal was requested and heard by the Research Ethics Appeal Committee. This appeal was dismissed, and the REB decision upheld.

Appeal #	Allegation under Ethical Conduct for Research Involving Human Participants (Policy 51)	Outcome
1	Recruitment and data collection without REB approval	Retroactive ethics approval not granted by the REB. REB decision appealed by the researcher. A Research Ethics Appeal Committee was struck to review the file, as required by the appeals process. The Vice President, Research and Innovation accepted the Appeal Committee's recommendation to dismiss the appeal.

Conclusion

As the above report has highlighted, Ryerson has a solid foundation of SRC excellence. Ryerson also has a bold strategic research plan and an exceptionally dedicated shared service within the OVPRI. The OVPRI will continue to encourage a bold, collaborative, multidisciplinary approach to scaling SRC activities to maintain the institution's trajectory of excellence and ensuring Ryerson's success now and in the future.