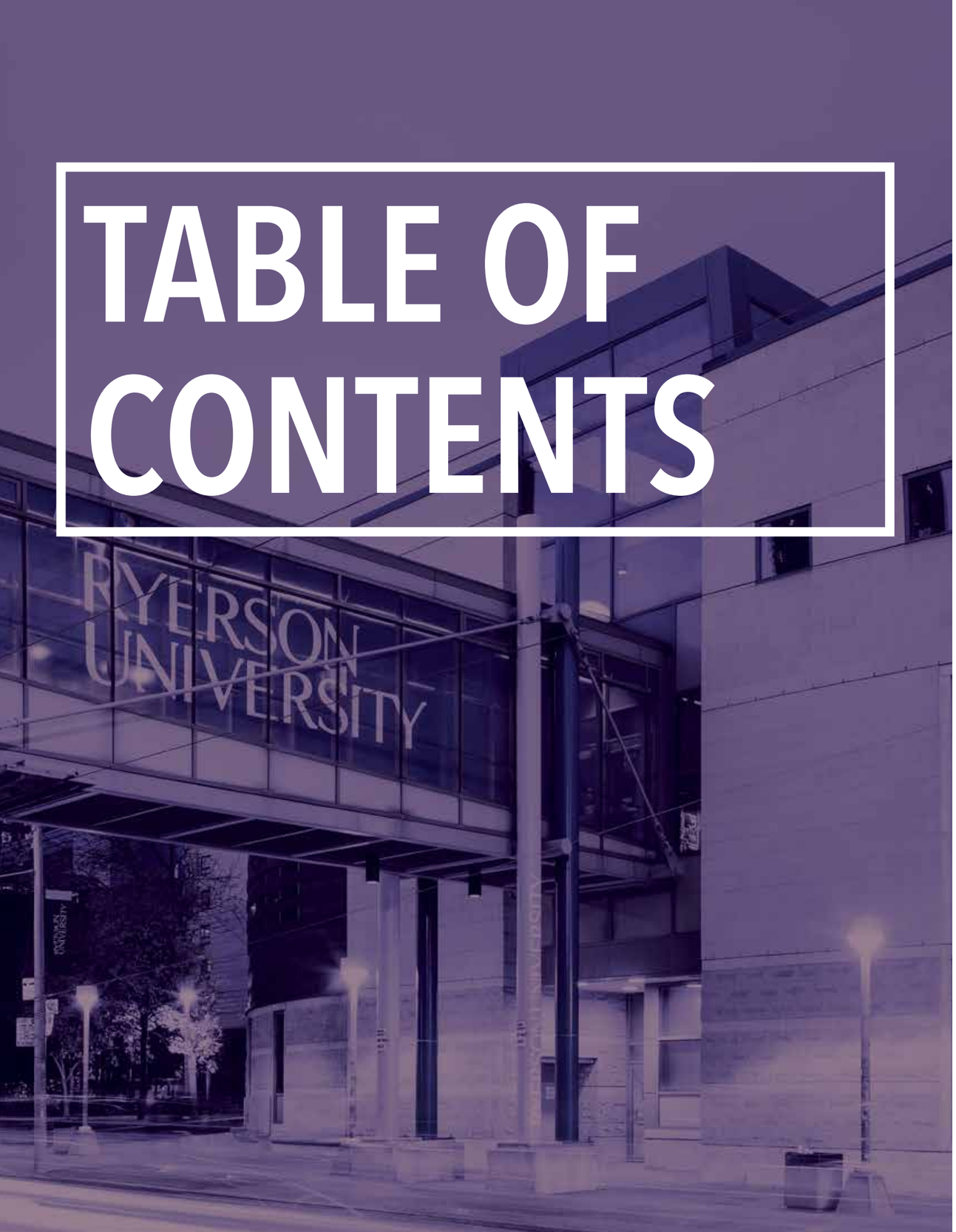
IDEAS INNOVATION IMPACT

ANNUAL REPORT 2013-14

OFFICE OF THE VICE-PRESIDENT
RESEARCH & INNOVATION

RYERSON UNIVERSITY



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MESSAGE FROM THE VICE-PRESIDENT, RESEARCH & INNOVATION

“Ryerson has once again surpassed previous record numbers for key research indicators in 2013-14. Our researchers continue to achieve unparalleled success each year.”

Ryerson has once again surpassed previous record numbers for key research indicators in 2013-14. With more publications, citations, and research funding leveraged than ever before, our researchers continue to achieve unparalleled success each year. Our share of funding from Tri-council Agencies has increased and we continue to receive strong support from industry partners. We also celebrated big wins from non-government organizations this year, including a $3 million grant over three years from the Movember Foundation, and a $1.2 million grant from the Canadian Partnership Against Cancer for a two-year research program.

The scope of research at Ryerson is comprehensive and innovative in nature, addressing key industry and community priorities. The University has more than 125 innovative research centres, institutes, and labs across a wide range of disciplines, in addition to 17 allocated Canada Research Chairs (CRC).

Our researchers create positive socioeconomic impact, addressing our priority research themes that include Digital Media and Technology; Energy and Sustainability; Health and Well-Being; Technological and Industrial Innovation; City Building and Social Justice; Design, Culture and Creative Industries; Management, Entrepreneurship and Competitiveness; and Teaching and Learning for the New Economy.

In September 2013, Ryerson was officially named Canada’s first Ashoka Changemaker campus, joining a worldwide network of like-minded institutions, and organizations that drive social innovation. Our students benefit from experiential learning in an innovative research environment, receiving training to become highly qualified personnel (HQP) that solve complex problems and think critically. Ryerson HQP are equipped with essential skills to build meaningful careers in diverse professions, or to launch their own ventures.

We congratulate our faculty and students on their efforts to push boundaries and pursue excellence. This report highlights just some of our research accomplishments and prolific collaborations with funders and partners.

Wendy Cukier, Vice-President, Research and Innovation

EXPANDING SCHOLARLY, RESEARCH & CREATIVE ACTIVITY

> “Our Scholarly, Research and Creative (SRC) activities continue to expand at an astonishing rate, reflecting recognition of our comprehensive and collaborative approach to research and innovation.”

Ryerson surpassed the $40 million mark in research funding for the first time in 2013-14, growing 26% since 2012-13. Our Scholarly, Research and Creative (SRC) activities continue to expand at an astonishing rate, reflecting recognition of our comprehensive and collaborative approach to research and innovation that delivers results. Ryerson's faculty and students continue to demonstrate SRC excellence and build our reputation.

In 2013-14, Ryerson increased research funding by 14% from the Tri-Council agencies – SSHRC[1], NSERC[2], and CIHR[3] – and filled an additional Canada Research Chair (CRC) allocation. Ryerson also boosted research growth by strengthening partnerships with industry and community organizations and expanding investment from provincial and international agencies, as well as non-government organizations such as foundations and businesses.

Ryerson measures SRC success in funding numbers and in real-world impact. Our research impacts the economy and society by contributing new services, processes, and products in the areas of Digital Media and Technology; Energy and Sustainability; Health and Well-Being; Technological and Industrial Innovation; City Building and Social Justice; Design, Culture and Creative Industries; Management, Entrepreneurship and Competitiveness; and Teaching and Learning for the New Economy.

This report describes our successes in research funding, commercialization, student training, and international achievements. A small sample of grants awarded to our researchers and SRC activity accomplished in 2013-14 will be highlighted throughout these sections. More details of some of the grant recipients and funders are included at the end of the report.

1 SSHRC - Social Sciences and Humanities Research Council of Canada; 2 NSERC - Natural Sciences and Engineering Research Council of Canada; 3 CIHR - Canadian Institutes of Health Research

TOTAL RESEARCH FUNDING

$40.72M

IN TOTAL RESEARCH FUNDING

26%

INCREASE IN TOTAL RESEARCH FUNDING FROM THE PREVIOUS YEAR

Ryerson research revenue is on an upward trend. In 2013-14, Ryerson received a total of $40.72 million in research funding, representing a 26% increase from the previous year.

The Tri-Council agencies – Natural Sciences and Engineering Research Council of Canada (NSERC), Social Sciences and Humanities Research Council of Canada (SSHRC), Canadian Institutes of Health Research (CIHR) – remain the largest individual sources of funding for Ryerson. Increased funding allocation for graduate studies scholarships and post-doctoral fellowships indicate that our research programs are attracting world-class faculty and high-caliber students. Researchers come to Ryerson to further their cutting-edge intellectual pursuits and scientific discovery in a supportive, forward-thinking setting, drawing top students who benefit from experiential learning through applied research projects.

Ryerson also diversified its funding through contributions from provincial agencies, international organizations, foundations, and industry. With the investments of over 192 local, national, and global funding partners, Ryerson's approach to collaborative Scholarly, Research and Creative (SRC) activity has positioned the University as a leader in innovative research that improves socioeconomic well-being and quality of life for Canadians.

SOURCE: Council of Ontario Universities; Office of the Vice-President, Research and Innovation, Common University Data Ontario

TRI-COUNCIL FUNDING

Ryerson's Tri-Council funding increased by 14% from the previous year with approximately $14.5 million in research revenue received in 2013-14. This is remarkable in a climate where Tri-Council funding budgets have remained flat while the number of funding applications have increased.

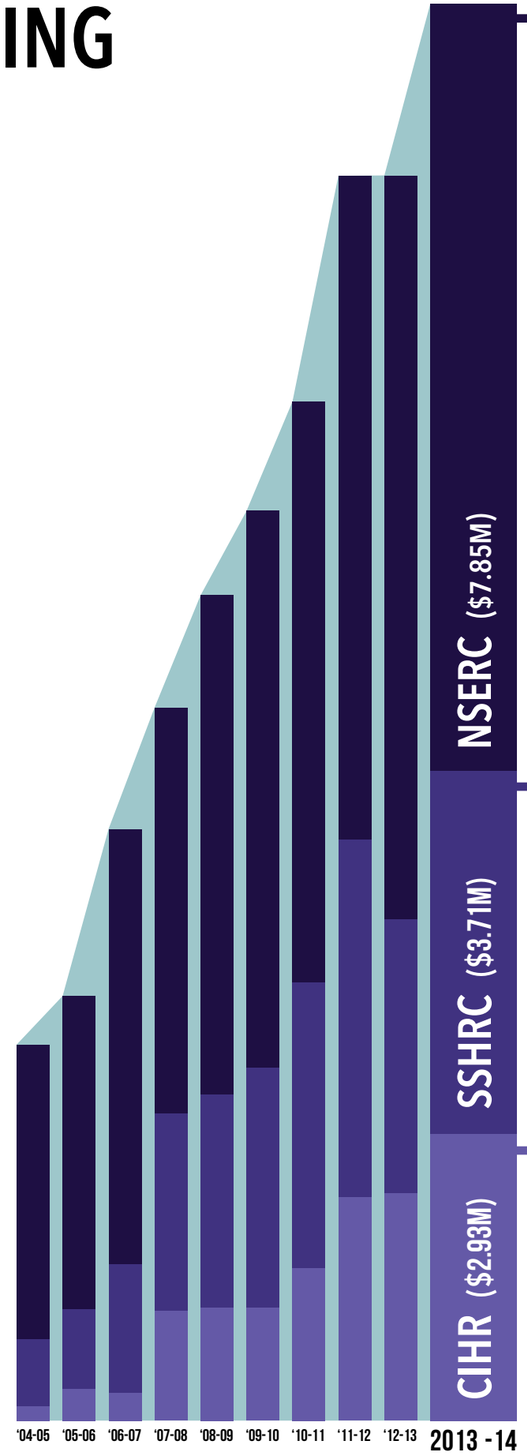
Tri-Council funding accounted for almost 36% of Ryerson's total research revenue. Natural Sciences and Engineering Research Council of Canada (NSERC) accounted for 54% of Ryerson's Tri-Council total, Social Sciences and Humanities Research Council of Canada (SSHRC) accounted for 26% and Canadian Institutes of Health Research (CIHR) accounted for 20% of the total.

Ryerson has continued to outperform other universities. In doing so, the University has increased its share of Tri-Council funding from all three agencies. Increasing in the Tri-Council market share is important because it determines Ryerson's access to certain programs. For instance, the Canada Foundation for Innovation's Infrastructure funding and the number of Canada Research Chair (CRC) allocations are directly proportional to the share of total Tri-Council funding received by the University.

Ryerson researchers received $7.85 million from NSERC in 2013-14, including record numbers of Collaborative Research and Development Grants, totaling $1.2 million, and Engage Grants, totaling $1.3 million.

SSHRC research funding grew by 33% from the previous year. Ryerson researchers received a total of $3.71 million in SSHRC grants.

CIHR research funding grew by 26% from the previous year. Ryerson researchers received a total of $2.93 million in CIHR grants.



EBRAHIM BAGHERI

Dr. Ebrahim Bagheri (Electrical and Computer Engineering) was awarded two multi-year NSERC Collaborative Research and Development Grants and leveraged private investments to lead cutting-edge research addressing consumer needs.

Bagheri is working with Warranty Life on a three-year project entitled "Intelligent Infrastructure for Large-Scale Product Knowledge Management," to collect and describe information about consumer products. To prevent wasteful consumption, Bagheri is also developing algorithms and tools to maintain a large-scale knowledge base to help consumers make informed decisions about using, reselling, or recycling their products.

OJELANKI NGWENYAMA

Dr. Ojelanki Ngwenyama (Information Technology Management) was awarded a SSHRC Partnership Development Grant to collaborate with industry partners Deloitte, IBM Canada, the Ontario Chamber of Commerce, and others to accelerate digital technology adoption in Canadian companies.

Ngwenyama is examining organizational practice and policies that affect technology adoption to advance scholarship in the areas of digital economy and innovation. His research will help Canadian companies keep pace with technology advancements around the world and maintain their global competitiveness.

ELIZABETH MCCAY

Dr. Elizabeth McCay (Nursing) was awarded a Partnership for Health System Improvement grant for her study which seeks to support youth who have experienced early psychosis.

To promote sustained recovery, she will work with clinical and community partners to improve the transition of care for at-risk youth, as they go from specialized medical care to community-based primary care.

SOURCE: NSERC Awards Database, SSHRC Awards Search Engine, CIHR Funded Research Database

CANADA RESEARCH CHAIRS

$1.55M

IN FUNDING RECEIVED FOR THE CANADA RESEARCH CHAIR PROGRAM

17

ALLOCATED CANADA RESEARCH CHAIRS

Canada Research Chairs (CRC) are some of the world's most accomplished and promising researchers, making major contributions to the advancement of knowledge in engineering and the natural sciences, health sciences, humanities, and social sciences. CRC designations are allocated every two years based on the University's share of total Tri-council funding over the three most recent years.

Through their research excellence, Ryerson's CRCs are positively impacting the socio-economic well-being of Canadians and advancing their fields of study internationally. Based on our continued Tri-Council funding success, Ryerson received $1.55 million in funding for our CRC program, accounting for 3.8% of Ryerson's total research funding.

Ryerson holds fourteen Tier 2 and three Tier 1 CRC allocations. In 2013-14, Ryerson awarded a Tier 2 Canada Research Chair in Digital Media and Innovation to **Dr. Alexandra Mazalek** (RTA School of Media) for her research into integrations of physical and digital worlds. Ryerson also renewed the Tier 1 Canada Research Chair in Design and Evaluation of Health Interventions, held by **Dr. Souraya Sidani** (Nursing) for her research refining methods and measures for determining the clinical effectiveness of interventions and advanced practice roles.

Other active CRCs at Ryerson in 2013-14 include:

- **Dr. Joseph Chow** (Transportation Systems Engineering)
- **Dr. Irene Gammel** (Modern Literature and Culture)
- **Dr. Ling Guan** (Multimedia and Computer Technologies)
- **Dr. Michael Kolios** (Biomedical Applications of Ultrasound)
- **Dr. Sri Krishnan** (Biomedical Signal Analysis)
- **Dr. Krishna Kumar** (Space Systems Engineering)
- **Dr. Guangjun Liu** (Control Systems and Robotics)
- **Dr. Catherine Middleton** (Communication Technologies in the Information Society)
- **Dr. Marcello Papini** (Abrasive Jet Technology)
- **Dr. Gideon Wolfaardt** (Environmental Interfaces and Biofilms)
- **Dr. Victor Yang** (Bioengineering and Biophotonics)

ALEXANDRA MAZALEK

Dr. Alexandra Mazalek (RTA School of Media) uses computing and interactive design to integrate physical objects and spaces with digital worlds. In addition to her CRC allocation, Mazalek was also awarded a SSHRC Insight Grant to research the use of digital media to create an interface based on a human being's perception and imagination. The physical interface could be manipulated using computer-generated action in a virtual environment.

Working with a team of international collaborators, her work is further supported by industry and government organizations.

SOURCE: Council of Ontario Universities; Canada Research Chairs, Government of Canada

MUNICIPAL, PROVINCIAL & OTHER FEDERAL FUNDING

Ryerson received $4.38 million in research revenue from provincial agencies, representing a 63% increase. Provincial funding accounted for 11% of total SRC funding. Ryerson received Ontario Government funding grants from ministries such as the Ministry of Economic Development, Employment and Infrastructure and the Ministry of Research and Innovation, among others. The Ontario Centres of Excellence (OCE) contributed $750,000 in funding to Ryerson to help create jobs and drive prosperity in the province through industry research and development collaborations. Ryerson also received $309,000 from municipal agencies to address city-specific needs.

Ryerson received $9.02 million from other non-Tri-Council federal funding sources including the Networks of Centres of Excellence and the Federal Development Agency of Southern Ontario (FedDev Ontario). With federal funding from organizations such as the International Development Research Centre and Grand Challenges Canada, our research reputation is growing beyond Canada and the impact of our researchers is addressing international problems.

$9.02M

RECEIVED IN NON-TRI-COUNCIL FEDERAL FUNDING

$4.38M

RECEIVED IN PROVINCIAL FUNDING

SCOTT TSAI

Dr. Scott Tsai (Mechanical and Industrial Engineering), recipient of Grand Challenge Canada's "Stars in Global Health" seed grant, is tackling the problem of poisoning due to arsenic groundwater in Bangladesh.

Grand Challenges Canada offers seed grants to support inventive new ideas that address health problems in resource-poor countries. Recognizing the need to improve expensive and time-consuming laboratory techniques for determining arsenic concentration in water, Tsai has developed an inexpensive and portable lab-on-a-chip technique to test wells in Bangladesh. His research and innovation has the potential to save millions of lives, as up to 77 million people in Bangladesh alone drink well water with toxic arsenic concentrations that can cause serious diseases.

SOURCE: Council of Ontario Universities

INDUSTRY & OTHER NON-GOVERNMENT FUNDING

With the support of matched funding programs and industry contracts, our researchers develop innovative products and processes with partners, which can be commercialized to enrich the world around us. In 2013-14, Ryerson received $3.79 million from industry partners, including grants and contracts with business enterprises, to undertake applied research projects. Such collaborations lead to economic stimulation, societal improvement, and more competitive Canadian goods and services in a global market. These partnerships also contribute to Canada's HQP, helping to build the capacity of Ryerson graduate students, and empowering them to become the next industry leaders.

Ryerson also attracted significant research investments from non-government sources including not-for-profit organizations and foundations that direct funds to other organizations to further their scientific, educational, cultural, or other charitable purposes.

Ryerson received a five-fold increase in funding from foundations and not-for-profit organizations in 2013-14. With contributions from Mitacs, Canadian Partnership Against Cancer, and foundations such as the Movember Foundation and the John Templeton Foundation, Ryerson's total funding from other non-government sources was $5.37 million.

Mitacs, a Canadian not-for-profit organization, invested $1.23 million at Ryerson to create research and training opportunities for students. More information on Mitacs student programs is available in the Building the Next Generation section of this report.

$3.79M

IN FUNDING RECEIVED FROM INDUSTRY PARTNERS

5 X

INCREASE IN FUNDING FROM FOUNDATIONS AND NON-PROFIT ORGANIZATIONS

$5.37M

IN TOTAL FUNDING FROM OTHER NON-GOVERNMENT SOURCES

SEPALI GURUGE

Dr. Sepali Guruge (Nursing) and her co-principal investigators **Dr. Josephine Wong** (Nursing) and **Dr. Souraya Sidani** (Nursing) were awarded a $3 million research grant over three years from the Movember Foundation to reduce the stigma of mental illness among men and boys in Asian communities across Canada.

The research team is studying the effectiveness of two pilot anti-stigma interventions with 2,160 men living in Vancouver, Calgary, and Toronto. The project focuses on mitigating internalized stigma and promoting knowledge and skills to advance mental health support for these communities.

THOMAS TENKATE

Dr. Thomas Tenkate (Occupational and Public Health) was awarded a $1.2 million grant from Canadian Partnership Against Cancer for a two-year research program looking at public and occupational exposure to UV rays from the sun.

The collaborative, pan-Canadian research project is investigating levels of sun exposure and protective measures used by outdoor workers. Partners in Tenkate's Sun at Work initiative include Sun Safe Nova Scotia, Alberta Health Services, the Save Your Skin Foundation, the Centre for Research Expertise in Occupational Disease, and the Occupational Cancer Research Centre.

SOURCE: Council of Ontario Universities; Office of the Vice-President, Research and Innovation

FACULTY HONOURS & AWARDS

EXTERNAL AWARDS HIGHLIGHTS

Ryerson is proud of the impact our faculty are creating in their fields. The Scholarly, Research and Creative contributions of our faculty are also being recognized beyond the University. Here are just a few examples of external honours and awards our faculty received:

MARTIN M. ANTONY

Dr. Martin M. Antony (Psychology) was elected a Fellow in the Academy of Social Sciences by the Royal Society of Canada in November 2013. The Royal Society of Canada recognizes Canadian scholars, artists, and scientists who are peer-elected as the best in their field.

Antony is Director of the Anxiety Research and Treatment Lab at Ryerson and a world leader in research on anxiety and related disorders, receiving numerous awards for creating highly effective treatments in the areas of anxiety, cognitive-behavioral disorders, and other psychological conditions.

Dr. Trevor A. Hart (Psychology) was appointed the Ontario HIV Treatment Network Applied HIV Research Chair in December 2013 to advance HIV prevention for gay and bisexual men.

Dr. Khaled Sennah (Civil Engineering) was awarded the A.B. Sanderson Award for 2013 to recognize his outstanding contributions to the development and practice of structural engineering in Canada.

Dr. Candice M. Monson (Psychology) was named the Traumatic Stress Psychologist of the Year in June 2013 by the Canadian Psychological Association. She was also elected a Fellow of the American Psychological Association in 2014.

Dr. Ravi Ravindran (Mechanical and Industrial Engineering) received the 2013 MetSoc Award for Research excellence, and was named a Fellow of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM). Ravindran was also the 2013-14 President of American Society of Materials (ASM) International. He is the fourth Canadian President in the 101-year history of ASM International.

Dr. Alan Fung and **Dr. Marcello Papini** (Mechanical and Industrial Engineering) were appointed the designation of Fellows of the Canadian Society for Mechanical Engineering in July 2013.

Dr. Janice Waddell (Nursing) received the 2014 Lifetime Member Award from the Registered Nurses Foundation of Ontario.

Dr. Akua Benjamin (Social Work) received the YWCA Women of Distinction Award in the social justice category in March 2014.

Dr. Kathryn Woodcock (Occupational and Public Health) received the I. King Jordan Award for Distinguished Achievement from the Association of Late-Deafened Adults in October 2013, and was named one of the Top 10 Canadian Heroines at the Canadian Institute for Diversity and Inclusion in June 2013.

UNIVERSITY-WIDE SRC AWARDS

Each year, Ryerson acknowledges its researchers at its SRC Awards Luncheon. In 2013-14, the inaugural university-wide SRC Awards was launched, which includes the previously established Sarwan Sahota Distinguished Scholar award, and the addition of four new awards recognizing Collaborative Research, Early Research Career Excellence, Knowledge Mobilization and Engagement, and Social Innovation and Action. Together, these awards acknowledge the diversity and range of scholarly, research and creative activity at Ryerson and commend the many contributions of our renowned faculty in different areas of research and at various stages of their careers.

The **Sarwan Sahota Distinguished Scholar Award** is presented annually to a faculty member who has made an outstanding contribution to knowledge or artistic creativity in their area of expertise. The award is made possible through the joint contributions of Sarwan Sahota, a retired professor, and the University. In 2013-14, two awards were presented to **Dr. Candice Monson** (Psychology) and **Dr. Bala Venkatesh** (Electrical and Computer Engineering).

The **Collaborative Research Award** was granted to **Dr. Habiba Bougherara** (Mechanical and Industrial Engineering), who excels at creating and maintaining collaborations with industry, university, and community partners.

The **Early Research Career Excellence Award** was granted to **Dr. Seth Dworkin** (Mechanical and Industrial Engineering) for his pioneering work in the fields of clean air and renewable energy.

The **Knowledge Mobilization & Engagement Award** was granted to **Dr. Colleen Carney** (Psychology) and **Dr. Janet Lum** (Politics and Public Administration) each, for their demonstrated outstanding effort in communicating research beyond the University.

The **Social Innovation & Action Research Award** was granted to **Dr. Marco Fiola** (Languages, Literatures and Culture) for his extensive research program to develop a more fair and equitable society by leveling language and culture.

DEAN'S SRC AWARDS

Individual faculty members are also recognized through the Deans' SRC Awards for outstanding achievement in SRC activity, having made an impact within their disciplines during the previous academic year. Here are the recipients for 2013-2014:

Faculty of Arts:

- **Dr. Trevor A. Hart** (Psychology)
- **Dr. Tomaz Jardim** (History)
- **Dr. Andrew O'Malley** (English)

Faculty of Communication and Design:

- **Dr. Jeffrey Boase** (Professional Communication)
- **Dr. Bruno Lessard** (Image Arts)

Faculty of Community Services:

- **Dr. Eric Liberda** (Occupational and Public Health)
- **Dr. Mandana Vahabi** (Nursing)

Faculty of Engineering and Architectural Science:

- **Dr. Alagan Anpalagan** (Electrical and Computer Engineering)
- **Dr. Ebrahim Bagheri** (Electrical and Computer Engineering)
- **Dr. Farhad Ein-Mozaffari** (Chemical Engineering

Faculty of Science:

- **Dr. Andrea Burgess** (Mathematics)
- **Dr. Dérick Rousseau** (Chemistry and Biology)

Ted Rogers School of Management:

- **Dr. Pnina Alon-Shenker** (Law and Business)
- **Dr. Shavin Malhotra** (Global Management Studies)

INNOVATION, COMMERCIALIZATION & IMPACT

> **“Our collaborative approach to innovation provides industry, government and not-for-profit organizations with access to world-class expertise to improve enterprises, policies, products, and services.”**

Ryerson has experienced unprecedented growth and success in recent years as a direct result of our efforts to mainstream a culture of innovation across the University.

Our collaborative approach to innovation provides industry, government, and not-for-profit organizations with access to world-class expertise and facilities to improve enterprises, policies, products, and services. The Office of the Vice-President, Research and Innovation (OVPRI) actively matches researchers with companies to align academic research with their business needs. We are also linking students with partners in sectors crucial to the Canadian economy, providing them with practical experience and helping to build the pipeline of highly qualified innovators. Furthermore, we are home to a number of leading interdisciplinary research centres, institutes, and innovation zones that strongly support collaborative research and commercialization activities.

For example, the Institute for Biomedical Engineering & Science Technology (iBEST) announced in November 2013, is an exciting new collaboration between researchers at Ryerson and St. Michael’s Hospital, seeking to align biomedical research directly with patient care. Based in a 22,000 sq. ft. centre in the Li Ka Shing Knowledge Institute, iBEST will house around 15 Ryerson faculty members and approximately 40 Ryerson students. iBEST will also feature an incubator focused on biomedical products. The initiative will foster synergies in applied health care research from the “bench to bedside” for the next 20 years.

FROM IDEA TO MARKETPLACE

30

INVENTION DISCLOSURES FILED IN 2013-14

300 +

STUDENT-LED APPLIED RESEARCH PROJECTS AND JOBS IN SOCIAL INNOVATION

OVPRI's Applied Research and Commercialization Unit (ARC) was created to address the gap between research and commercialization, and to encourage collaboration. ARC provides essential services to researchers such as negotiating industrial contracts, filing patents, and actively promoting Ryerson's technology and expertise.

With ARC's help, Ryerson researchers are continuing to oversee commercially viable inventions and concepts. In 2013-14, Ryerson researchers filed 30 invention disclosures for patent protection, a record number once again.

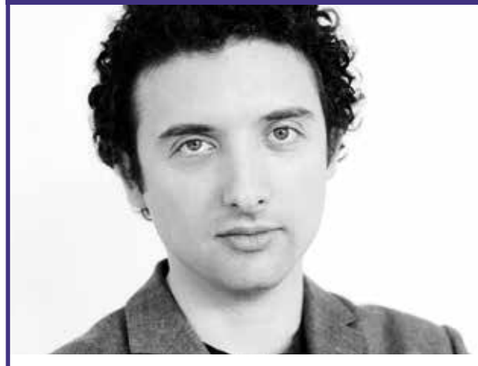
Ryerson is also a leader in research-driven entrepreneurship, providing support and unique opportunities for rising innovators while advancing economic development through spin-off companies and job creation. In 2013-14, Ryerson created more than 300 student-led applied research projects and jobs in social innovation.

HABIBA BOUGHERARA

Dr. Habiba Bougherara (Mechanical and Industrial Engineering) is fixing bones using organic implant materials such as natural fibers. Her research and development is creating orthopedic implants that are lighter, less stiff, and more durable than conventional metallic implants.

These implants also promote the body's ability to remake bone and reduce the need for revision surgeries. In 2013-14, Bougherara started testing some prototypes at St. Michael's Hospital and filed a patent for her invention.

GREGORY LEVEY



Dr. Gregory Levey (Professional Communications) is streamlining the use of digital media and information sharing between medical professionals. Levey created a new app called Figure 1, in partnership with mobile developer Richard Penner and physician Joshua Landy.

Figure 1, dubbed "Instagram for Doctors," enables the real-time sharing of images between health care professionals on their smart devices via the app or their computers via the website. The team formed a start-up company, Moveable Science, at Ryerson's Digital Media Zone (DMZ) and launched the app in May 2013.

SOURCE: Office of the Vice-President, Research and Innovation

KNOWLEDGE MOBILIZATION

Ryerson places a strong emphasis on knowledge mobilization (KM). The application of knowledge to impact on policy and society is at the heart of Ryerson's mission to meet societal needs.

KM is an important and complex aspect of the research process that is essential to improving products, services, policies, and communities. The Office of the Vice-President, Research and Innovation, as well as individual faculties at Ryerson, regularly hold educational workshops, lectures and panels, and government and industry networking events, all with the intention to promote KM activities.

Our faculty, students, and staff are engaged in a diverse range of KM and commercialization activities. Ryerson celebrated the accomplishments of two faculty members with the new Knowledge Mobilization and Engagement Award in 2013-14.

JANET LUM

Dr. Janet Lum (Public Policy and Administration) leads the Canadian Research Network for Care in the Community (CRNCC), an international network of researchers, care providers, consumers, and policy makers that share evidence about the crucial role of community services within health care.

CRNCC now includes over 500 members across the world. Together, they are advancing efficient community care by identifying areas that require more evidence and by highlighting key issues.

COLLEEN CARNEY

Dr. Colleen Carney (Psychology), Director of the Sleep and Depression Laboratory, applies cognitive behaviour therapy for insomnia (CBT-I) to help people reduce behaviour that can lead to insomnia.

By applying therapy to patients, Carney discovered that the improvement of sleep among people with depression leads to significantly better recovery rates than just depression treatment alone. She developed insomnia training materials that are being used to train hundreds of U.S. Veteran's Affairs treatment providers to deliver effective insomnia treatments.

PUBLICATIONS & CITATIONS

860

ACADEMIC PUBLICATIONS IN 2013-14

10%

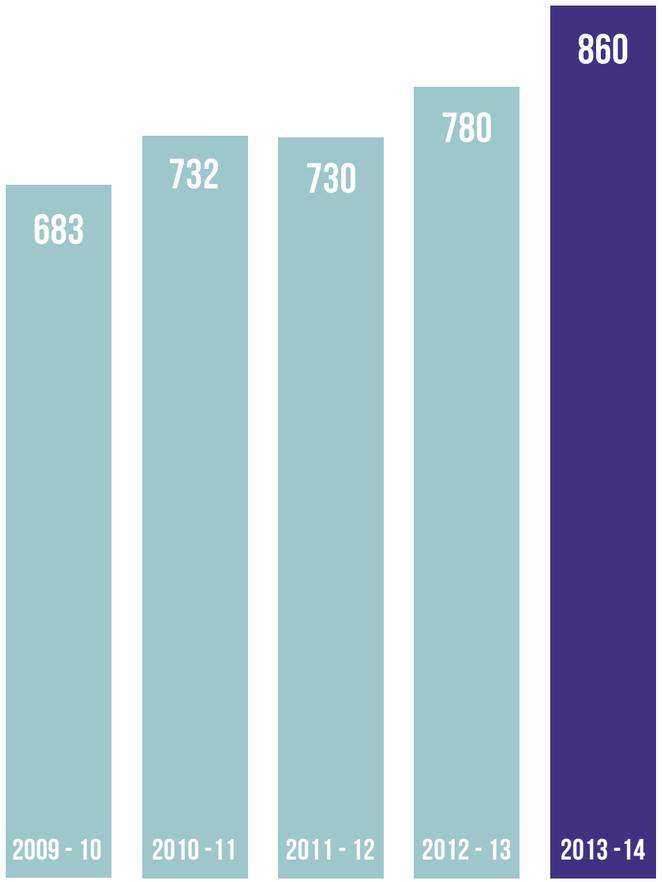
INCREASE IN PUBLICATIONS OVER THE PREVIOUS YEAR

8,667

CITATIONS OF RYERSON RESEARCHERS BY OTHER SCHOLARS

Two indicators of Ryerson's successful knowledge mobilization performance are the total number of SRC publications produced by faculty members and the number of times they have been cited in other publications. Ryerson's publications and citations have grown significantly over the past year, once again revealing a steady upward trend in the University's research impact.

In 2013-14, Ryerson researchers produced over 860 academic publications. This reflects a 10% increase over the previous year. Additionally, Ryerson saw a 17% increase in citations over the previous year with our researchers cited 8,667 times by other scholars.



ACADEMIC PUBLICATIONS BY YEAR

NOTE: Academic publications include journal articles, conference papers and book reviews.
SOURCE: Web of Science, Thompson Reuters as of November 12, 2014. Totals fluctuate as information is made available.

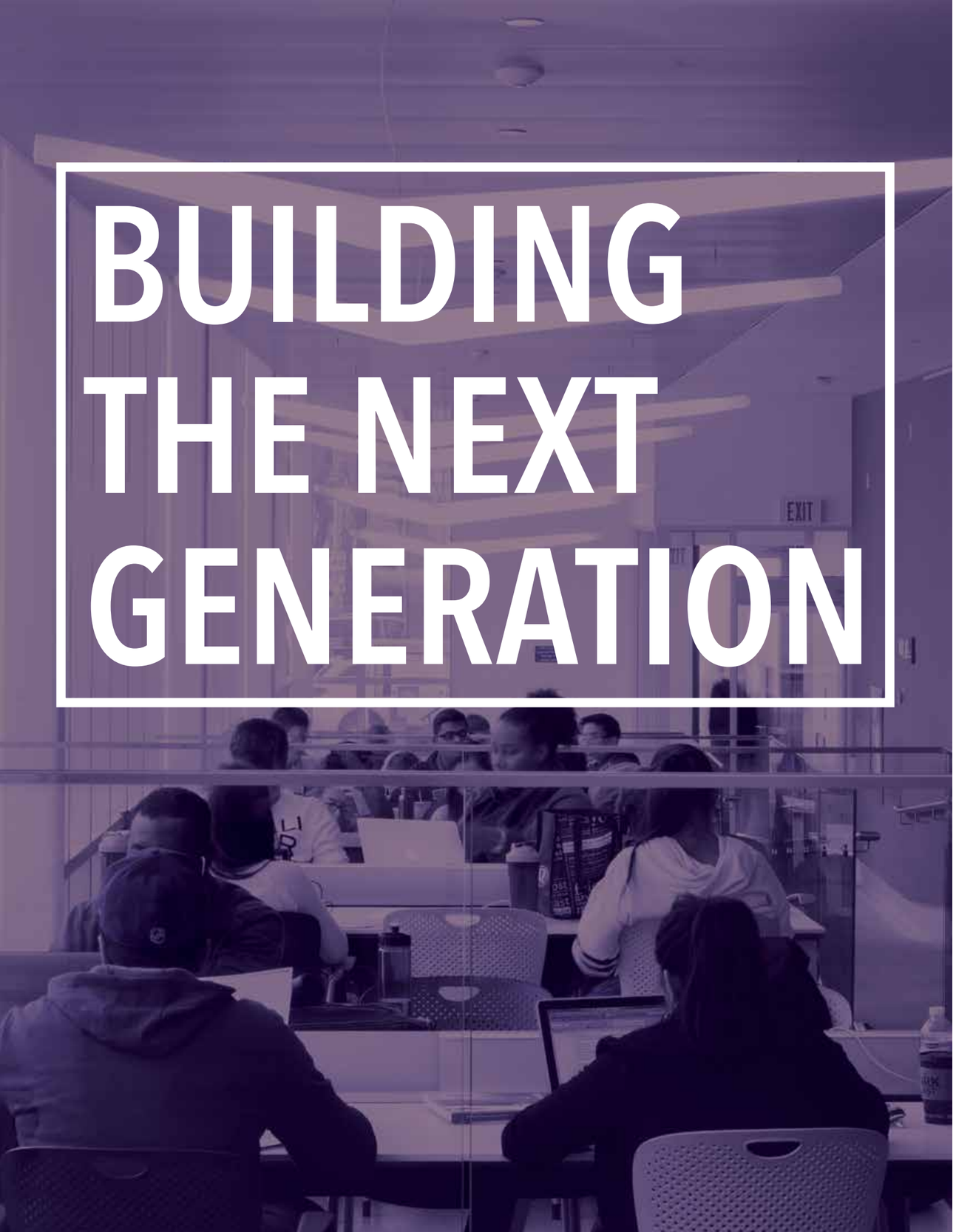
THE SOCIAL ENTREPRENEURSHIP FELLOWSHIP PROGRAM

In 2013-14, the Ontario Centres of Excellence (OCE) introduced the Entrepreneurship Fellowship Program to support knowledge mobilization activities in partnership with innovative social enterprises across disciplines in Ontario. The OCE requires a social enterprise to partner with a researcher who has received a SSHRC Connections Program grant to co-create knowledge in Ontario. Ryerson received four out of seven Social Entrepreneurship Fellowships in the province.

Ryerson's Business Management student **Ilya Zatolokin** received support for his social enterprise Drive EV, a one-stop-shop application where consumers can get information on electric vehicles (EVs) to help them make an informed purchasing decision. Zatolokin is working with Associate Professor **Dr. Philip Walsh** (Entrepreneurship and Strategy) to push EVs into the mainstream.

MBA student **Elliott de Launay** created Lokeel.com, a geographically-based, community-oriented web service focused on original news reporting to fill gaps in news coverage and promote civic engagement. De Launay is working with Associate Professor **Dr. Kim Bates** (Entrepreneurship and Strategy) to increase the diversity of media coverage for communities, local individuals, and businesses.

Several other startup companies also received support. Madeleine Co. Inc., an art and design agency, partnered with **Dr. Wendy Cukier** (Vice-President, Research and Innovation) to focus on servicing social enterprises and nonprofit organizations to reach audiences through the power of art. Every1Games received support to engage autistic youth and adults through the video game industry in order to build valuable social and employment skills. Every1Games founder **Sarah Anne Drew** of Ryerson's Digital Media Zone partnered with Assistant Professor **Dr. Jason Nolan** (Early Childhood Studies), who is also Director of the Experiential Design and Gaming Environments (EDGE) Lab at Ryerson.



BUILDING THE NEXT GENERATION

> “Ryerson is training the next generation of highly qualified personnel (HQP) to become future leaders.”

Ryerson is working with government, communities, and industry to train the next generation of highly qualified personnel (HQP) to become future leaders in the private, public, and not-for-profit sectors. The University’s holistic approach to education ensures our students gain critical thinking, analytical, and practical skills that prepare them for future pursuits in entrepreneurship, research, or employment.

As the first Canadian Ashoka Changemaker campus, Ryerson collaborates with Ashoka U, a division of Ashoka, to foster a campus-wide culture of social innovation. Our students have been recognized for their active community engagement and research excellence. Our innovative ‘zone’ model of education promotes ‘learning by doing,’ providing students with scholarly training as well as on-the-job experiences and career-relevant skills through applied research projects and internships. Ryerson actively leverages funding programs that support research and work opportunities for students and new graduates both within the University and with industry partners.

DEVELOPING TALENT

Ryerson is committed to cultivating talent and building a pipeline of highly qualified personnel (HQP). The University actively works with government and industry to build experiential learning into our student research programs through applied research projects and real-world experience. Ryerson's research centres, institutes, and labs offer academic collaborations for industrial development, and provide world-class training for students. Graduate students benefit by expanding their research capacity under field experts and industry leaders. Others have continued to build upon their research and development projects, by forming start-up companies with their academic supervisors.

FEDDEV ONTARIO

The Federal Development Agency for Southern Ontario (FedDev Ontario) sponsors two programs that offer learning opportunities to students and new graduates with the goal of developing highly skilled workers in Southern Ontario: the Graduate Enterprise Internship (GEI) program and the Scientists and Engineers in Business (SEB) program.

The GEI program supports internship opportunities for graduate students and recent alumni of science, technology, engineering, and mathematics (STEM) programs, providing them with business and management experience in small and medium-sized enterprises. In 2013-14, the GEI program created 101 internships for new Ryerson graduates.

The SEB program supports the development of business and management skills of entrepreneurs in the STEM fields, helping them successfully launch their own businesses or careers. Through this program, Ryerson provided 14 commercialization fellowships in 2013-14. Additionally, FedDev created a subset of the SEB Fellowship program called the Scientists and Engineering Business Fellowships in Social Innovation. This program provided support to four fellows who may not be scientists or engineers themselves, but are creating social ventures that draw on the expertise and skills of the science and engineering fields.

SEB FELLOWSHIP

Dr. Adrian Mariampillai (pictured), an Electrical and Computer Engineering post-doctoral fellow, was awarded an SEB Fellowship. Mariampillai co-founded **7D Surgical** at Ryerson with his supervisor **Dr. Victor Yang** (Electrical and Computer Engineering) and team.

The company developed a surgical navigation device that drastically reduces the time needed to begin surgery. The funding from SEB has helped 7D Surgical to address regulatory requirements and to prepare for an FDA submission. Additionally, some of the funding received was put toward the filing of patent applications, including two US design patents.

SEB FELLOWSHIP IN SOCIAL INNOVATION

Rubina Quadri (pictured), a graduate of Ryerson's Early Childhood Studies program, received an SEB Fellowship in Social Innovation. Quadri is the creator of **Talking Buttons**, a wearable, programmable device that helps children who have speech disabilities communicate with others. Quadri's Fellowship is enabling her to streamline her product and to develop her prototype design for upcoming beta testing.

MITACS

Mitacs receives government funding to provide research and training programs for graduate students and post-doctoral fellows. Participants conduct collaborative research between their University and a company or organization of their choice, applying their specialized expertise to business research challenges while gaining real-world experience.

In 2013-14, Ryerson created 70 internships for graduate students and postdoctoral fellows through Mitacs-Accelerate, and 4 fellowships through the Mitacs-Elevate program. Mitacs also provided interactive workshops on entrepreneurship and business-related topics to 50 Ryerson students and fellows through the Mitacs-Step program, which offers funding support for networking and training purposes.

NETWORKS OF CENTRES OF EXCELLENCE

The Connect Canada internship program, administered by Auto 21 Inc. and supported through the Networks of Centres of Excellence, provides research-focused internships for graduate students and postdoctoral fellows. In 2013-14, Ryerson created 43 research internships and fellowships for students through this program, working in collaboration with partners such as Toronto Hydro, Bombardier Aerospace, and Celestica.

ADAPT-ICT

Ryerson used research conducted at the University to develop the Advanced Digital and Professional Training - Information Communication Technology (ADaPT-ICT) program, in partnership with the Ontario Ministry of Economic Development, Employment and Infrastructure. The ground-breaking program trains Social Sciences and Humanities (SSH) students and graduates for employment in the Information and Communication Technology (ICT) sector. In 2013-14, the ADaPT program provided 31 Ryerson students and new graduates with practical skills and real-world experience needed to excel in the ICT sector. Topics covered include management and digital literacy, with electives such as big data analytics and 3D printing.

MITACS-ACCELLERATE

Fourteen Ryerson students worked with Industry partner **S2E Technologies Inc.** to develop a smart net-zero energy community in London, Ontario that produces as much energy as it consumes. Each of the internships funded through Mitacs-Accelerate addressed an issue in community development sustainability.

For example, **Dr. Milijana Horvat** (Architectural Science) (pictured) supervised **Madeline Craig**, a Master's of Building Science student, to research decentralized water conservation technologies, for use in a single family home in Canada. All research findings were compiled into a report to inform the development of the smart net-zero energy community.

CONNECT CANADA

Under the supervision of **Dr. Raffi Karshafian** (Physics) (pictured), Faculty of Science graduate students **Amanda Tran** and **Christine Tarapacki** helped to develop a portable, reliable, and easy-to-use ultrasound-therapy system that can be used to treat cancerous cells.

Through the support of the Connect Canada program, the students work with industry partner **MD Precision Inc.** to develop new techniques that apply ultrasound energy with microbubble agents. This technique will allow gold nanoparticle and laser thermal therapy or radiotherapy treatment to be targeted onto diseased cells and tissues, while minimizing damage to surrounding healthy cells.

STUDENT HONOURS & AWARDS

Ryerson University builds capacity in research and innovation by training our students through research projects. The following is a list of just some of the research awards and grants received by Ryerson students in 2013-14.

Civil Engineering Master's student **Zakia Alam** won the poster competition at the Canadian Institute of Geomatics Annual Conference and International Conference on Earth Observation for Global Change Student Poster Presentation Competition.

Master of Professional Communication students **Laura Baker**, **Nicola Brown**, **Victoria Larson**, **Natasha Medonca**, **Stefan Miloseic** and **Cayley Montmarquette** won a Merit Award for Research Innovation from the 2014 International Association of Business Communicators (IABC) Gold Quill Awards Program. The team won the award for their RTA School of Media Content Strategy investigating the link between communications effectiveness and staff engagement.

Hospitality and Tourism Management student **Danielle Barbe** received the Best Paper Award at the 45th Annual Travel and Tourism Research Association International Conference "Tourism and the New Global Economy" in Brugge, Belgium. Her paper entitled, "Your festival in 140 characters or less: Exploring festivals' use of Twitter," was co-authored by her supervisor Dr. Kelly MacKay (Associate Dean of Research, Ted Rogers School of Management).

Urban Development graduate students **Leah Frances Bennett Cooke**, **Catherine Nancy Buckerfield**, and **Michael Testaguzza**, received SSHRC Canada Graduate Scholarships that are awarded to outstanding students pursuing master's or doctoral studies in a Canadian university in social sciences or humanities.

Olivia Cimo, a master's student in Public Policy and Administration, won the 2013-2014 Graduate Research Award in Disarmament, Arms Control and Non-Proliferation from The Simons Foundation and the International Security Research and Outreach Programme (ISROP) of the Department of Foreign Affairs, Trade and Development Canada (DFATD).

Physics PhD student **Eric DaSilva** won the Best Young Researcher award at the 10th International Society of Trace Element Research in Humans forum for his paper "In vivo quantification of strontium in bone using handheld X-ray fluorescence spectrometers."

Communication and Culture master's student **Daniel Guadagnolo** received a Fulbright Canada Student Award to research the role of the market, economics and capitalism in everyday life, at the University of Wisconsin-Madison.

Peter He, a PhD candidate in electrical engineering, and his supervisor Lian Zhao won the Best Paper Award for their paper "Recursive geometric water-filling for wireless links with hybrid energy" at the 2013 International Conference on Wireless Communications and Signal Processing.

Beth Joanne Martin, a PhD student in Policy Studies, was awarded a Vanier Canada Graduate Scholarship by the Social Sciences and Humanities Council. Beth's doctoral research explores how immigration policy affects the experiences of immigrants who are separated from their families and how applicants experience the family reunification program.

Molecular Science PhD student **Ali Naqvi** placed third in the Ontario competition and won the Ontario 3MT® People Choice Award. 3MT® is a university wide competition for graduate students in which participants present their research and its wider impact in three minutes or less to a panel of non-specialist judges.

Dr. Peter Siegler, a post-doctoral fellow in biomedical engineering, was one of eight neuroscience entrepreneurs awarded a $50,000 OBI–OCE fellowship. The fellowship provides funds to help recipients pursue entrepreneurial endeavors and commercialization of technology. Siegler is investigating a technique to accurately detect the spatial position of biopsy needles used during neurosurgery.

James Steenberg, a PhD candidate in the Environmental Applied Science and Management program, received a Fulbright Canada Student Award to research sustainable urban forest ecosystems. Fulbright Canada fosters educational exchange between the United States and Canada, provides research and teaching opportunities to exceptional scholars and students.

Dr. Eric Strohm, a post-doctoral fellow in Physics, received the Governor General's Academic Gold Medal award for his thesis on photoacoustic characterization using frequencies over 100 MHz. The Governor General's Gold Medal recognizes the outstanding scholastic achievements of students in Canada at the graduate level.

Eve Townsend, Master's student in Fashion, received a SSHRC Canada Graduate Scholarship. At Ryerson, she created an interactive installation piece, When Clothes Speak, to examine the social biographies of garments and accessories and how they reflect the social and political climate of the eras in which they were made.

INTERNATIONAL ENGAGEMENT

> “New partnerships with leading institutions expand our research capacity and enhance our academic mission.”

Ryerson’s research and academic initiatives continue to expand their global reach. The University is enriched by engaging with new and existing partners through a range of collaborative activities involving students, faculty and staff.

New partnerships with leading institutions expand our research capacity and enhance our academic mission. In 2013-14, Ryerson had 134 partners across 36 countries. The alignment of Ryerson’s international goals with those of the federal and provincial governments has led to close relationships with Canadian embassies, consulates and high commissions abroad, as well as the Ontario International Marketing Centres. Ontario government ministries routinely include a visit to Ryerson on the itineraries of visiting international delegations, building our profile and enhancing our reputation.

Ryerson’s international strategy continued to evolve in the 2013-14 fiscal year. Our ‘Internationalization Framework’, approved by the Ryerson Executive Group and Academic Planning Group, identifies six key priorities: pursuing partnerships and collaborations, enhancing learning opportunities, supporting SRC activities, attracting high quality graduate students, supporting innovation and entrepreneurship, and building Ryerson’s reputation and profile. Ryerson’s reputation continues to build internationally; the University welcomes opportunities for further global collaboration and new strategic partnerships.

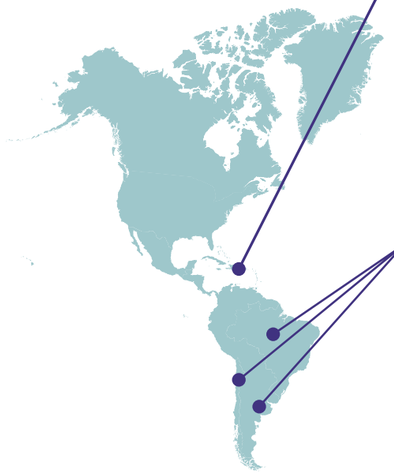
INTERNATIONAL PARTNERSHIPS

53
VISITING RESEARCHERS

209
INBOUND EXCHANGE STUDENTS FROM PARTNER INSTITUTIONS

230
OUTBOUND EXCHANGE STUDENTS FROM RYERSON

AMERICAS



HENRY PARADA (SOCIAL WORK)

Dr. Henry Parada (Social Work) is conducting a five-year "Children and Youth Human Rights Empowerment" research project, sponsored by the Canadian International Development Agency (CIDA), to advance policy and education that will protect children against violence and abuse on a system-wide basis in the Dominican Republic.

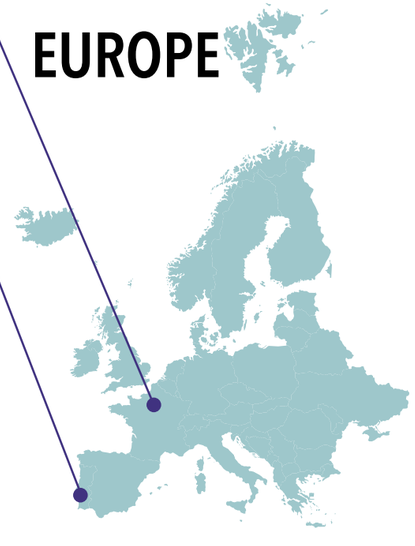
Parada is partnering with local educational institutions, government agencies, and community-based organizations, including the Dominican Republic's Autonomous University of Santo Domingo, to create the first school of social work in the country. He traveled to the Dominican Republic in September 2013 with Faculty of Community Services Dean Usha George to launch the School.

EMERGING LEADERS IN THE AMERICAS PROGRAM (ELAP)

Ryerson University participated in the Emerging Leaders in the Americas Program (ELAP) that provides scholarships for students and researchers from Latin America and the Caribbean with short-term exchange opportunities for study or research.

From January to June 2014, Ryerson hosted scholars from Argentina, Brazil, and Chile to conduct research under the supervision of Ryerson faculty members in a range of disciplines. For example, PhD student **Degano Iván** from Mar Del Plata National University in Argentina will conduct research on financial mathematics at Ryerson under **Dr. Sebastian Ferrando** (Mathematics).

EUROPE



MARGARETH ZANCHETTA (NURSING)

Dr. Margareth Zanchetta (Nursing) specializes in issues of global health. She spent March to August 2013 at Université Paris Diderot in Paris, France collaborating on a study that explored French male understandings of prostate cancer.

Zanchetta undertook this work to improve French-language educational material on prostate cancer care, with support from the Yamagiwa-Yoshida Memorial International Study Grant (Union for International Cancer Control).

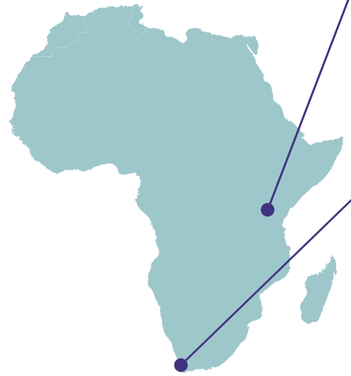
PSYCHOLOGY GRADUATE STUDENTS

Students in Ryerson's Psychology MA and PhD have been active participants at international conferences, with the support of the International Conference and Research Support Fund (ICRSF). In 2013-14, psychology grad students saw their proposals to present papers and poster sessions accepted at a number of prestigious conferences around the world.

For instance, PhD student **Vanessa Villani** presented her work, focused on the biopsychosocial model, at the 21st World Congress on Social Psychiatry in Lisbon, Portugal. An abstract was subsequently published by the World Association for Social Psychiatry (WASP).

SOURCE: Ryerson International Database, Ryerson University

AFRICA



SOCIAL ENTREPRENEURSHIP IN KENYA

Ryerson students engaged in a number of unique social innovation activities in Kenya in 2013-14. For example, fashion students **Eva Parrell** and **Kiersten Hay** worked with Ryerson graduate and founder of SupaMaasai, **Teriano Lesancha**, to help female artisans in a Maasai community sell their fair-trade, Maasai-inflected beaded clothing and accessories to western countries.

WATER CENTRE AT STELLENBOSCH UNIVERSITY

The Water Centre at Stellenbosch University is led by **Dr. Gideon Wolfaardt** (Chemistry and Biology), who is cross-appointed at Stellenbosch University in Stellenbosch, South Africa and who holds the new ERWAT Chair in Wastewater Management. The chair focuses on scientific and technical advances in wastewater management, water quality, water use, and demand. Wolfaardt will also foster partnerships between Ryerson and universities in South Africa to improve the water research and management skills of scientists, engineers and technical personnel.

CANADA-CHINA INSTITUTE FOR BUSINESS & DEVELOPMENT (CCIBD)

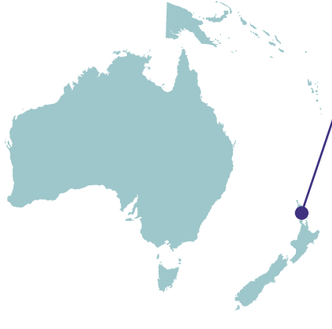
Led by **Dr. Howard Lin** (Business Management), the CCIBD builds transnational connections between Canada and China, and advances entrepreneurship through research partnerships, educational programs, and knowledge exchange. CCIBD has hosted several students, at the undergraduate and graduate level, from universities across China under its visiting scholars program. **Dr. Jiaming Li,** the latest visiting scholar, came from Beijing University of Technology in October 2013 to conduct a one-year study on the finances of small or medium-sized enterprises.

ASIA

CENTRE FOR URBAN ENERGY (CUE) IN TAMIL NADU

In September 2013, students from **Anna University** in Chennai, India entered the Ryerson's Centre for Urban Energy (CUE) inaugural two-year master's program in Power Engineering and Management. The graduate program is recognized by the Tamil Nadu government. In its first year, the program admitted 20 students, including six students who visited Ryerson on exchange in the summer of 2014. Anna University and CUE have also signed a Memorandum of Understanding with the Tamil Nadu Generation and Distribution Corporation to undertake future research and development projects.

OCEANIA



THE GLOBAL CITY

RTA Professors **Rick Grunberg** and **Marion Coomey** created the Global Campus Network (GCN) at the RTA School of Media. The GCN is the first collaborative, international student media network in the world.

The first show of the GCN, The Global City, brought together students and educators from around the world to produce current affairs programming in real time. The Auckland Institute of Technology (AUT) in Auckland, New Zealand was one of the first collaborators, with other partner institutions now located in Ireland, Denmark, Israel, Scotland, South Africa, India, The United States, and soon, Brazil.

RESEARCH ETHICS BOARD

The Ryerson Research Ethics Board (REB) supports the advancement of Ryerson research programs by ensuring that researchers are informed of research ethics policies and are in compliance with federal guidelines. Our ethics review activities have increased as a result of the increased scope and complexity of research projects undertaken by Ryerson researchers.

In 2013-14, Ryerson researchers submitted 1620 applications for ethics review. Most notably, amendments to approved protocols increased by 58% from 362 to 496 between 2011-12 and 2013-14, while submissions of annual reports and renewals increased by 54% from 304 to 519 during the same period.

Dr. Lynn Lavallée (Social Work) was appointed Chair of the Research Ethics Board (REB) in July 2013 for a two-year term. She is an expert in the area of First Nations, Inuit and Métis research, with experience in both qualitative and quantitative research methods. As Chair of the REB, she is also Vice-Chair of the Scholarly, Research and Creative Activity Standing Committee of the Senate.

SRC ACTIVITY ADVISORY COMMITTEE

The Scholarly, Research and Creative (SRC) Activity Advisory Committee is the leading venue for discussion, advice, and guidance of the strategic research issues and directions of Ryerson University. On behalf of the research enterprises across Ryerson, the SRC Activity Advisory Committee addresses all aspects of scholarly, research, and creative activities including basic and applied research, knowledge translation, commercialization, and industry. Members of the SRC Activity Advisory Committee also serve on the SRC Activity Standing Committee of the Senate.

Wendy Cukier
Vice-President, Research and Innovation

Anthony Bonato
Associate Dean, Yeates School of Graduate Studies

Gillian Byrne
Associate Chief Librarian

Charles Davis
Associate Dean, Faculty of Communication and Design

John Enright
Interim Associate Dean, Faculty of Engineering and Architectural Science

Murtaza Haider
Associate Dean, Ted Rogers School of Management

Michael Kolios
Associate Dean, Faculty of Science

Madeleine Lefebvre
Chief Librarian

Janet Lum
Associate Dean, Faculty of Arts

Janice Waddell
Associate Dean, Faculty of Community Services

2013-14 SRC ACTIVITY FUNDING PARTNERS

Ryerson would like to sincerely thank its 2013-14 research partners:

7D Surgical Inc.
Aboriginal Affairs and Northern Development Canada
Agriculture & Agri-Food Canada
Aiolos Engineering Corporation
American Concrete Institute
Associated Medical Services Inc.
Association of Universities and Colleges of Canada (AUCC)
Astra Zeneca
AWE Company Limited
Bombardier Inc.
Bristol Aerospace Limited
British Columbia Cancer Agency
Bruce Tree Expert Company Ltd.
Calgary Exhibition and Stampede
Canada Foundation for Innovation
Canada Research Chair
Canadian Academic Accounting Association
Canadian Cancer Society
Canadian Institutes of Health Research
Canadian International Development Agency
Canadian Journal of Philosophy
Canadian Partnership Against Cancer
Canadian Space Agency
Candu Energy Inc.
Celestica International Inc.
CFN Precision
Christopher Bentley
City of Toronto
CMHC - Canada Mortgage and Housing Corporation
Consulate General of France
Consultative Group
CSR+ Vermicast Industries Inc.
CyclePods Canada Corporation
Danone Institute of Canada
Department of Foreign Affairs and International Trade
DYWIDAG-Systems International Canada Ltd.
EidoSearch, Inc.
Electro-Pack Inc.
Electrovaya Inc.
Enbridge Gas Distribution Inc.
Environment Canada
Ericsson Canada Inc.
Federal Economic Development Agency for Southern Ontario
Found Aircraft Canada Inc.
Genome Prairie
George Cedric Metcalf Charitable Foundation
Goodrich Corporation
Google Inc.
Grand Challenges Canada
Green On Industries Inc.
Groundheat Solar Wind Corp.
Halifax Water
Hassan Firoozmand
Higher Education Quality Council of Ontario
Honeywell ASCa Inc.
Hospital for Sick Children
Hydro One Networks Inc.
Information Systems Audit and Control Association
Innovative Bio-Medical Technologies Ltd.
International Science and Technology Partnerships Canada Inc.
John Templeton Foundation
Kaben Wireless Silicon Inc.
Kanetix Ltd.
Kidobi
Kinetics Noise Control
Luminautics
Lunanos Inc.
Lystek International Inc.
MaRS Innovation
MD Precision Inc.
Mental Health Commission of Canada
Metrolinx
Microsoft Corporation
Ministry of Community and Social Services
Ministry of Economic Development and Trade
Ministry of Finance
Ministry of Training, Colleges and Universities
Mitacs Inc.
Mount Sinai Hospital
Movember Foundation
National Institutes of Health
Natural Resources Canada
Natural Sciences and Engineering Research Council
NCE: AUTO21 Inc.
NCE: CWN - Canadian Water Network
NCE: MITACS - The Mathematics of Information Technology and Complex Systems Inc.
Network for Aboriginal Mental Health Research
Network of European Foundations
Networks of Centres of Excellence (NCE)
Norman Esch Awards
Obesity Society
Office of the Ombudsman
Office of the Privacy Commissioner of Canada
Ontario Ministry of Agriculture, Food and Rural Affairs
Ontario Ministry of Energy
Ontario Ministry of Health and Long-Term Care
Ontario Ministry of Research and Innovation
Ontario Ministry of the Environment
Ontario Ministry of Transportation
Ontario Arts Council
Ontario Brain Institute
Ontario Cancer Biomarker Network
Ontario Centres of Excellence Inc.
Ontario College of Art & Design University
Ontario HIV Treatment Network
Ontario Media Development Corporation
Ontario Ministry of Children and Youth Services
Ontario Ministry of Economic Development and Innovation
Ontario Power Authority
Ontario Problem Gambling Research Centre
Parkinson Society Canada
PetaCube
Phonak AG
Point in Time Centre
PowerStream Inc.
Pratt & Whitney Canada Corp.
Public Safety Canada
Public Works & Government Services Canada
QNX Software Systems
RBS Consulting Engineering Group Inc.
realSociable
Regional Municipality of Niagara
Regional Municipality of Peel
Rockwell Automation Canada, Inc.
Royal Bank of Canada
Rx&D Health Research Foundation
Safran Electronics
Shastri Indo-Canadian Institute
SickKids Foundation
Sigma Theta Tau International
SimentIT Inc.
Sir Mortimer B. Davis Jewish General Hospital
Smith-Kettlewell Eye Research Institute
Social Sciences and Humanities Research Council
Sonaca Montreal Inc.
SPP Canada
Stantec Consulting Ltd.
Steel Structures Educational Foundation
Sunnybrook Health Sciences Centre
Surface Measurement Solutions Inc.
Tanenbaum Fund
The Banting Research Foundation
The City of Calgary
The Energy Research Corporation
The Hershey Company
The Law Foundation of Ontario
The Ontario Mental Health Foundation
The Regents of The University of California
The Regional Municipality of Halton
Toronto Atmospheric Fund
Toronto Hydro-Electric System Limited
Toronto Rehabilitation Institute
United Way Worldwide
US - Department of the Army - USAMRAA
Vibra Finish Limited
Ville de Paris
VL Robotics Inc
Warranty Life Inc.
waveDNA
Woodcock Foundation
Workplace Safety & Insurance Board
World Bank
YYZ Pharmatech Inc.

SELECT EXTERNAL RESEARCH FUNDING AWARDED IN 2013-14

The following is a list of some external research grants from major funding competitions awarded to Ryerson faculty in 2013-14. The list does not include sub-grants or awards that are not yet public. Available and announceable details, reported as of September 2014, are provided for the awards. For full details granted during the 2013-14 fiscal year, visit: **www.ryerson.ca/research/2013-14awardlist**

NATURAL SCIENCES AND ENGINEERING RESEARCH COUNCIL

Collaborative Research and Development Grants

Ebrahim Bagheri (Electrical Engineering)	Intelligent Infrastructure for Large-Scale Product Knowledge Management	$440,300
Ling Guan (Electrical Engineering)	An Intelligent Rendering Framework for Adaptive Mixed Reality Applications on Canada's Historic Heritage Sites	$400,000
Marcus Escobar-Anel (Mathematics)	Modeling a Fund of HedgeFunds by means of stochastic covariance processes	$220,000
Xavier Fernando (Electrical Engineering)	Green, Hybrid Communication Network for Localization in Underground Mines	$200,000
Shudong Yu (Mechanical and Industrial Engineering)	Modelling vibration of 37-element CANDU fuel string in an aged pressure tube	$134,667

Other NSERC Collaborative Research and Development grants were also received by the following faculty members: Ebrahim Bagheri (Electrical Engineering); Xavier Fernando (Electrical Engineering); Mark Gorgolewski (Architectural Science)

Discovery Grants

Marcello Papini (Mechanical and Industrial Engineering)	Models to determine the process parameters required to sculpt desired micro-feature topographies on flat and curved surfaces using abrasive jet technology	$290,000
Lian Zhao (Electrical Engineering)	Dynamic Radio Resource Management for Advanced Wireless Communication Systems	$200,000
Alan Fung (Mechanical and Industrial Engineering)	Novel Building Integrated Energy Systems Toward Net-zero Energy Status	$190,000
Victor Yang (Electrical Engineering)	Optical coherence tomography, optical topographical imaging and fluorescence guided surgical laser ablation	$175,000
Debora Foster (Chemistry and Biology)	Environmental modulation of the virulence program of enterhemorrhagic E. coli	$165,000
John Marshall (Chemistry and Biology)	Biophysical and biochemical techniques for the analysis and targeting of the Fc receptor supramolecular complex	$165,000
Habiba Bougherara (Mechanical and Industrial Engineering)	Towards Sustainable Green Composite Materials for Medical Implants	$160,000
Lixia Yang (Psychology)	The Integration of Emotion and Cognitive Control in the Aging Brain	$145,000
Mark Towler (Mechanical and Industrial Engineering)	Inorganic biomaterials with therapeutic potential	$145,000
Xijia Gu (Electrical Engineering)	Development of High power all-fiber Q-switched and mode-locked Lasers for industrial and medical applications	$145,000
Michael Arts (Chemistry and Biology)	Biochemical changes in aquatic organisms in a warming world	$135,000
Lili Ma (Psychology)	A developmental approach to the effects of scarcity on judgment and decision-making	$125,000
Fei Yuan (Electrical Engineering)	Design techniques for remote calibration of passive wireless microsystems	$120,000
Kaamran Raahemifar (Electrical Engineering)	Unsafe Driver Behavior Detection Using Novel Dictionary Algorithm	$120,000
Cory Searcy (Mechanical and Industrial Engineering)	Measuring Sustainability Performance in Supply Chains	$115,000
Khaled Sennah (Civil Engineering)	Development of Cost-Effective Accelerated Bridge Construction in Skew and Right Alignments	$115,000
Serhan Guner (Civil Engineering)	Development of Nonlinear Analysis Tools for Concrete Frame Structures under Extreme Loads	$110,000
Jinyuan Liu (Civil Engineering)	Fundamental investigation of compensation grouting using transparent soil	$105,000
Comondore Ravindran (Mechanical and Industrial Engineering)	Phenomenological studies on solidification and casting of aluminum and magnesium alloys	$100,000
Farhad Ein-Mozaffari (Chemical Engineering)	Investigation of Continuous-Flow Mixing of Non-Newtonian Fluids through Advanced Flow Visualization Techniques (e.g. Tomography and Ultrasonic Velocimetry) and Computational Fluid Dynamics	$100,000
Kathryn Woodcock (Occupational and Public Health)	Human factors engineering tools for amusement attraction design and evaluation	$95,000
Khandaker Hossain (Civil Engineering)	High Performance Engineered Concrete Materials and Structural Systems for Innovative and Sustainable Construction	$95,000
Russell Richman (Architectural Science)	Research and Development to Support an Ultra-Energy-Efficient Residential Building Stock in Ontario	$95,000
Marcus Escobar-Anel (Mathematics)	Stochastic covariance and first passage time for multidimensional stochastic processes.	$90,000
Jahan Tavakkoli (Physics)	Ultrasound Guidance and Monitoring of High-power Ultrasound Therapies	$85,000

Other NSERC Discovery grants were also received by the following faculty members: Abdolreza Abhari (Computer Science); Alexander Alvarez (Mathematics); Dietmar Cordes (Physics); Janet Koprivnikar (Chemistry and Biology); Pablo Olivares (Mathematics); Ziad Saghir (Mechanical and Industrial Engineering); Simant Ranjan Upreti (Chemical Engineering); Stephen Waldman (Chemical Engineering)

Research Tools and Instruments

Robert Botelho (Chemistry and Biology)	A Facility for Environmentally-controlled Live-Cell Imaging	$125,697
Comondore Ravindran (Mechanical and Industrial Engineering)	An Apparatus for Measuring the Thermal Conductivity of Various Materials	$62,860

Engage Grant

NSERC Engage grants were received by the following faculty members: Ahmed Abdelrahman (Civil Engineering); Alagan Anpalagan (Electrical Engineering); Soosan Beheshti (Electrical Engineering); Ayse Bener (Mechanical and Industrial Engineering); Sanjiwan Bhole (Mechanical and Industrial Engineering); Lesley Campbell (Chemistry and Biology); Joon Chung (Aerospace Engineering); Alexandre Douplik (Physics); Seth Dworkin (Mechanical and Industrial Engineering); Zouheir Fawaz (Aerospace Engineering); Deborah Fels (Information Technology Management); Alexander Ferworn (Computer Science); Khandaker Hossain (Civil Engineering); Raffi Karshafian (Physics); Mohammed Kianoush (Civil Engineering); Bryan Koivisto (Chemistry and Biology); Joseph Kumaradas (Physics); Jinyuan Liu (Civil Engineering); Guang Jun Liu (Aerospace Engineering); Der Chyan (Bill) Lin (Mechanical and Industrial Engineering); Hua Lu (Mechanical and Industrial Engineering); John Marshall (Chemistry and Biology); Hesham Marzouk (Civil Engineering); Kristiina McConville (Electrical Engineering); Jelena

Misic (Computer Science); Ali Miri (Computer Science); Pawel Pralat (Mathematics); Russell Richman (Architectural Science); Ziad Saghir (Mechanical and Industrial Engineering); Abhay Sharma (Graphic Communications Management); Jahan Tavakkoli (Physics); Mark Towler (Mechanical and Industrial Engineering); Scott Tsai (Mechanical and Industrial Engineering); Gideon Wolfaardt (Chemistry and Biology); Dewei (David) Xu (Electrical Engineering); Fei Yuan (Electrical Engineering); Lian Zhao (Electrical Engineering)

Other NSERC Grant Recipients

Other NSERC grants were also received by the following faculty members: Ebrahim Bagheri (Electrical Engineering); Lesley Campbell (Chemistry and Biology); Joon Chung (Aerospace Engineering); Michael Kolios (Physics); Mehrab Mehrvar (Chemical Engineering); Mark Towler (Mechanical and Industrial Engineering); Balasubramanian Venkatesh (Electrical Engineering); Stephen Waldman (Chemical Engineering)

SOCIAL SCIENCES AND HUMANITIES RESEARCH COUNCIL

Insight Grants

Alexandra Mazalek (RTA School of Media)	Supporting Spatial Ability with Tangible and Embodied Interactions	$468,365
Jane B. Sprott (Criminal Justice and Criminology)	Punishment Before Trial: Girls, Bail, and Conditions of Release	$64,436

Partnership Development Grants

Ojelanki Ngwenyama (Global Management Studies)	Accelerating Digital Technology Adoption in Canadian Companies	$197,296
Donna Koller (Early Childhood Studies)	Mobilizing Knowledge: Partners for Social Inclusion for Children with Disabilities	$182,218
Bryan Evans (Politics and Public Administration)	Policy Engagement at Multiple Levels of Governance: A Case Study of the Living Wage and Minimum Wage Policy	$170,962

Insight Development Grants

Insight Development grants were received by the following faculty members: Jason Boyd (English); Colleen Derkatch (English); Tomaz Jardim (History); Lynn Lavallee (Social Work); Sheri Madigan (Psychology); Shavin Malhotra (Global Management Studies); Andrew O'Malley (English); Sejal Patel (Early Childhood Studies); Kathleen Peets (Early Childhood Studies); Matthew Tiessen (RTA School of Media)

Connection Grants

SSHRC Connection grants were received by the following faculty members: Kimberly Bates (Management & Entrepreneurship); Wendy Cukier (Information Technology Management); Sepali Guruge (Nursing); Graham Hudson (Criminal Justice & Criminology); Jennifer Martin (Child and Youth Care); Jason Nolan (Early Childhood Studies); Cecilia Rocha (School of Nutrition); Philip Walsh (Management & Entrepreneurship)

Other SSHRC Grant Recipients

Other SSHRC grants were also received by the following faculty members: Irene Gammel (English); Jeremy Shtern (RTA School of Media)

CANADIAN INSTITUTES OF HEALTH RESEARCH

Partnership for Health System Improvement

Elizabeth McCay (Nursing)	Sustaining Recovery: Supporting the Transition from Specialized Services to Community-based Primary Care for At-Risk Youth Who Have Experienced Early Psychosis	$599,987
Celeste Alvaro (Architectural Science)	Assessing the impact of healthcare facility design on health outcomes: Implications for strategic investments in design	$252,009

Operating Grant

Colleen Carney (Psychology)	A Longitudinal Assessment of Cognitive Risk for Insomnia	$417,641
Naomi Koerner (Psychology)	An Experimental Investigation of the Effects of Concrete Thinking on Worry, Problem-Solving and Cognitive Processing in Individuals with Generalized Anxiety Disorder	$200,160

Collaborative Health Research Projects (CHRP)*

Mark Towler (Mechanical and Industrial Engineering)	Transformative Bioglass Coatings for Surgical Applications	$320,161
Michael Kolios (Physics)	Characterization of blood storage lesions using photoacoustic technologies	$242,595
Stephen Waldman (Chemical Engineering)	Patient-specific cartilage implants: Development and Surgical Implantation	$151,389

*Matched funding was also awarded from NSERC Collaborative Health Research Projects grants.

New Investigator Award - Grant

Josephine Wong (Nursing)	Mobilizing ethnoracial minority and newcomer communities to reduce HIV/STI stigma and health disparities	$300,000

Other CIHR Grant Recipients

Other CIHR grants were also received by the following faculty members: Morton Beiser (Psychology); Donna Koller (Early Childhood Studies); Michelle Nelson (Nursing); Patrick Neumann (Mechanical and Industrial Engineering); Madhura Mitu Sengupta (Politics and Public Administration); Kathryn Underwood (Early Childhood Studies); Emily van der Meulen (Criminal Justice & Criminology); Josephine Wong (Nursing); Victor Yang (Electrical Engineering)

CANADA RESEARCH CHAIRS

Souraya Sidani (Nursing)	Tier 1 Canada Research Chair in Patient-Centered Health Interventions: Design and Evaluation (Renewal)	$1,400,000
Alexandra Mazalek (RTA School of Media)	Tier 2 Canada Research Chair in Digital Media and Innovation	$500,000

CANADA FOUNDATION FOR INNOVATION

Leaders Opportunity Fund*

Victor Yang (Electrical Engineering)	Joint Translational Optical Coherence Tomography (JTOCT) facility	$154,967
Sridhar Krishnan (Electrical Engineering)	Biomedical Signal Analysis Research Laboratory	$99,013
Ying Jun (Joseph) Chow (Civil Engineering)	Testbed for Cyber-Physical Urban Logistics Systems	$77,995

*Matched funding was also awarded from the Ministry of Research and Innovation - Ontario Research Fund.

OTHER FEDERAL GOVERNMENT

Grand Challenges Canada – Stars in Global Health

Scott Tsai (Mechanical and Industrial Engineering)	Ultra low cost, simply operated, lab-on-a-chip detection of arsenic contamination in Bangladesh's well waters	$113,000

AUTO 21 Inc. Connect Canada Internships

AUTO21 Inc. grants were received by the following faculty members: Alagan Anpalagan (Electrical Engineering); Cyndy Baskin (Social Work); Soosan Beheshti (Electrical Engineering); Anton de Ruiter (Aerospace Engineering); Seth Dworkin (Mechanical and Industrial Engineering); Alan Fung (Mechanical and Industrial Engineering); Mark Gorgolewski (Architectural Science); Richard Grunberg (RTA School of Media); Xijia Gu (Electrical Engineering); Aziz Guergachi (Information Technology Management); Darko Joksimovic (Civil Engineering); Raffi Karshafian (Physics); Matthew Kyan (Electrical Engineering); Richard Lachman (RTA School of Media); Songnian Li (Civil Engineering); Jason Lisi (Graphic Communications Management); Hua Lu (Mechanical and Industrial Engineering); Izabella Pruska-Oldenhof (Image Arts); David Naylor (Mechanical and Industrial Engineering); Ramani Ramakrishnan (Architectural Science); Comondore Ravindran (Mechanical and Industrial Engineering); Russell Richman (Architectural Science); Bin Wu (Electrical Engineering); Lian Zhao (Electrical Engineering)

Other Federal Government Grants

Other federal government grants were also received by the following faculty members: David Atkinson (Geography); David Day (Psychology); Deborah Fels (Information Technology Management); Sepali Guruge (Nursing); Janet Koprivnikar (Chemistry and Biology); Julia Lu (Chemistry and Biology); Marcello Papini (Mechanical and Industrial Engineering); Fiona Yeudall (School of Nutrition); Frauke Zeller (Professional Communications)

ONTARIO GOVERNMENT & MUNICIPAL GOVERNMENTS

Ontario Centres of Excellence – Collaborate-to-Commercialize (C2C)

Rafik Loutfy (Mechanical and Industrial Engineering)	Self Health Monitoring for TrackSafe	$149,997

Other OCE grants were also received by the following faculty members: Seth Dworkin (Mechanical and Industrial Engineering); Richard Grunberg (RTA School of Media); Xijia Gu (Electrical Engineering); Raffi Karshafian (Physics); Lev Kirischian (Electrical Engineering); Bryan Koivisto (Chemistry and Biology); Krishna Kumar (Aerospace Engineering); Matthew Kyan (Electrical Engineering); Richard Lachman (RTA School of Media); Jason Lisi (Graphic Communications Management); Hua Lu (Mechanical and Industrial Engineering); Ramani Ramakrishnan (Architectural Science); Russell Richman (Architectural Science); Colin Ripley (Architectural Science); David Naylor (Mechanical and Industrial Engineering); Khaled Sennah (Civil Engineering); Fengfeng (Jeff) Xi (Aerospace Engineering); Lian Zhao (Electrical Engineering)

Ministry of Research and Innovation - Early Researcher Award

Catherine Beauchemin (Physics)	Using mathematical models to optimize Ontario's emergency antiviral stockpile in time for the next flu pandemic	$190,000
Julia Spaniol (Psychology)	Behavioural and neuroimaging studies of decision making across the lifespan	$140,000
Naomi Koerner (Psychology)	Development and Evaluation of Two New Interventions for Generalized Anxiety Disorder	$140,000
Robert Botelho (Chemistry and Biology)	Functional and molecular characterization of lysosomes and tubular lysosomes in immune function	$140,000

Ontario HIV Treatment Networks

Trevor Hart (Psychology)	HIV Prevention for Gay and Bisexual Men	$750,000
Emily van der Meulen (Criminal Justice & Criminology)	Prison-Based Needle and Syringe Program Guidelines: Participatory Research with Prisoners and Prison Health Care Staff in Ontario	$75,000

Other Ontario Government Grant Recipients

Other Ontario government grants from the Ministry of Agriculture, Food and Rural Affairs; Ministry of Energy; Ministry of the Environment Ministry of Training, Colleges and Universities; Ministry of Transportation; and the Ontario Arts Council, were also received by following faculty members: Wendy Cukier (Information Technology Management); Rachel Dodds (Hospitality & Tourism Management); Deborah Fels (Information Technology Management); James Li (Civil Engineering); Lynda McCarthy (Chemistry and Biology); Bhagwant Persaud (Civil Engineering); Hossein Rahnama (RTA School of Media); Khaled Sennah (Civil Engineering); Medhat Shehata (Civil Engineering); Balasubramanian Venkatesh (Electrical Engineering); Arnold Yuan (Civil Engineering)

Municipal Grants

Other municipal government grants were received by the following faculty members: Lynda McCarthy (Chemistry and Biology); Ramani Ramakrishnan (Architectural Science); Myer Siemiatycki (Politics and Public Administration)

INSTITUTIONAL GRANTS

Ontario Centres of Excellence – Campus Linked Accelerator Program

Office of VP, Research and Innovation	Campus Linked Accelerator	$2,000,000

Ontario Ministry of Training, Colleges and Universities - On-Campus Recruitment

Office of VP, Research and Innovation	Campus Connect	$1,173,000

Ontario Centres of Excellence – Campus Linked Accelerator Program

Office of VP, Research and Innovation	Advanced Digital and Professional Skills	$800,000

NOT-FOR-PROFIT ORGANIZATIONS & FOUNDATIONS

Movember Foundation – Movember Canada

Sepali Guruge (Nursing)	Canadian Men's Health Network	$2,999,992

Canadian Partnership Against Cancer – Request for Proposals

Thomas Tenkate (Occupational and Public Health)	A Sun Safety Program Initiative for Outdoor Workers	$1,199,912

Mitacs Inc. – Industrial Contribution and Federal and Provincial Matching Funds

Alan Fung (Mechanical and Industrial Engineering)	Energy efficiency assessment and cost/benefit analysis for selected small and medium capacity industrial customers of Enbridge Gas Distribution Inc.	$80,000
Kaamran Raahemifar (Electrical Engineering)	Development of an On-body Sensor Network using a combination of INS and USID systems and its application to ExoLegs	$80,000
Ling Guan (Electrical Engineering)	Correction of Non-ideal Lighting Conditions for Facial Recognition in Alcohol Ignition Interlock Devices	$80,000

Other Mitacs Inc. grants were also received by the following faculty members: Javad Alirezaie (Electrical Engineering); Kimberly Bates (Management & Entrepreneurship); Wendy Cukier (Information Technology Management) ; Joseph Chow (Civil Engineering); Charles David (RTA School of Media); John Enright (Aerospace Engineering); Alan Fung (Mechanical and Industrial Engineering); Mark Gorgolewski

(Architectural Science); Siyuan He (Mechanical and Industrial Engineering); Vincent Hui (Architectural Science); Miljana Horvat (Architectural Science); Farrokh Janabi-Sharifi (Mechanical and Industrial Engineering); Darko Joksimovic (Civil Engineering); Mohammed Kianoush (Civil Engineering); Wey Leong (Mechanical and Industrial Engineering); Kelly McShane (Psychology); Andrew Millward (Geography); Henry Parada (Social Work); Marco Polo (Architectural Science); Kaamran Raahemifar (Electrical Engineering); Claus Rinner (Geography); Frank Russo (Psychology); Philip Walsh (Management & Entrepreneurship); Shudong Yu (Mechanical and Industrial Engineering)

Other Not-for-Profit and Foundation Grant Recipients

Other non-government grants were also received by the following faculty members: Celeste Alvaro (Architectural Science); Nick Bellissimo (School of Nutrition); Joseph Chow (Civil Engineering); Jonathan Farrar (Accounting); Alexandra Fiocco (Psychology); Alan Fung (Mechanical and Industrial Engineering); Richard Grunsberg (RTA School of Media); Sepali Guruge (Nursing); Miljana Horvat (Architectural Science); David Hunter (Philosophy); Michael Kolios (Physics); Klaas Kraay (Philosophy); Nina-Marie Lister (Urban & Regional Planning); Henry Parada (Social Work); Claus Rinner (Geography); Cecilia Rocha (School of Nutrition); Janice Waddell (Nursing); Louise Zimanyi (International Affairs)

RESEARCH CONTRACTS

Balasubramanian Venkatesh (Electrical Engineering)	Fellows at the Centre of Urban Energy with the Ontario Power Authority	$1,530,000
Ebrahim Bagheri (Electrical Engineering)	Intelligent Infrastructure for Large-Scale Product Knowledge Management with Warranty Life Inc.	$230,000
Frank Russo (Psychology)	Hear the World Research Chair in Music, Emotion, and Hearing Technology with Phonak AG	$154,000
Rafik Loutfy (Mechanical and Industrial Engineering)	Self Health Monitoring for TrackSafe with Bombardier Transportation Canada Inc.	$115,001
Marcus Escobar-Anel (Mathematics)	Modeling a Fund of HedgeFunds by means of stochastic covariance processes with Sigma Analysis and Management Ltd.	$110,000
Xavier Fernando (Electrical Engineering)	Green, hybrid communication network for localization in underground mines with PBE Canada Inc.	$100,000

Other industry research contracts were also received by the following faculty members: Abdolreza Abhari (Computer Science); Seth Dworkin (Mechanical and Industrial Engineering); Zouheir Fawaz (Aerospace Engineering); Alan Fung (Mechanical and Industrial Engineering); Ling Guan (Electrical Engineering); Aziz Guergachi (Information Technology Management); Mark Gorgolewski (Architectural Science); Darko Joksimovic (Civil Engineering); Raffi Karshafian (Physics); Mohammed Kianoush (Civil Engineering); Krishna Kumar (Aerospace Engineering); Jennifer Lapum (Nursing); Songnian Li (Civil Engineering); Jason Lisi (Graphic Communications Management); John Marshall (Chemistry and Biology); Ali Miri (Computer Science); Ramani Ramakrishnan (Architectural Science); Comondore Ravindran (Mechanical and Industrial Engineering); Russell Richman (Architectural Science); Derick Rousseau (Chemistry and Biology); Balasubramanian Venkatesh (Electrical Engineering); Bin Wu (Electrical Engineering)

INTERNATIONAL GRANTS

Dietmar Cordes (Physics)	Improving the Detection of Activation in High Resolution fMRI using Multivariate	$344,331
Paul Soon Huat Poh (Architectural Science)	Bim-Hub; A learning hub for international problem-based learning with Loughborough University	$9,650

ABOUT THE OFFICE OF THE VICE-PRESIDENT, RESEARCH & INNOVATION

The Office of the Vice-President, Research and Innovation (OVPRI) is Ryerson's central research administration office. OVPRI helps foster a collaborative and interdisciplinary culture across the campus to find impactful solutions to real-world problems. OVPRI is made up of various departments that work with researchers and partners to strengthen collaboration across the University.

Research Grants provides information on funding opportunities and strategic advice on research applications. For more information, contact **Dr. Greg Singer**, Director, Research Grants.

Applied Research and Commercialization facilitates industry- and community-focused research, and the commercialization of university-created intellectual property. For more information, contact **Jennifer MacInnis**, Legal Counsel and Senior Director, Applied Research and Commercialization.

Business Development and Strategic Planning develops research strategies to support new partnerships and market opportunities aligned with Ryerson's strategic goals and priorities. For more information, contact **John MacRitchie**, Senior Director, Business Development and Strategic Planning.

Research Partnerships helps researchers find industry and community partners, as well as potential sources of funding. For more information, contact **Mark Patterson**, Director, Research Partnerships.

Research Communications and Knowledge Mobilization helps enhance Ryerson's reputation for research and innovation through integrated outreach, events, and communications channels. For more information, contact **Amanda Gaspard**, Director of Research Communications.

Ryerson International works within the University community to strengthen Ryerson's international partnerships and expand the range of overseas experiences for students and faculty. For more information, contact **Marsha McEachrane Mikhail**, Director, Ryerson International and International Liaison Officer.

Research Planning, Finance, and Administration provides financial leadership, data analysis, and records management to manage finance and evaluation systems, advise on complex multi-stakeholder projects and grants, and develop strategies to promote research productivity. For more information, contact **Dr. Vivian Chan**, Senior Director, Research Planning, Finance and Evaluation.

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