

# Research Report

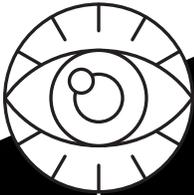
2020

Essential  
Catalyst



Queen's  
UNIVERSITY

# Vision

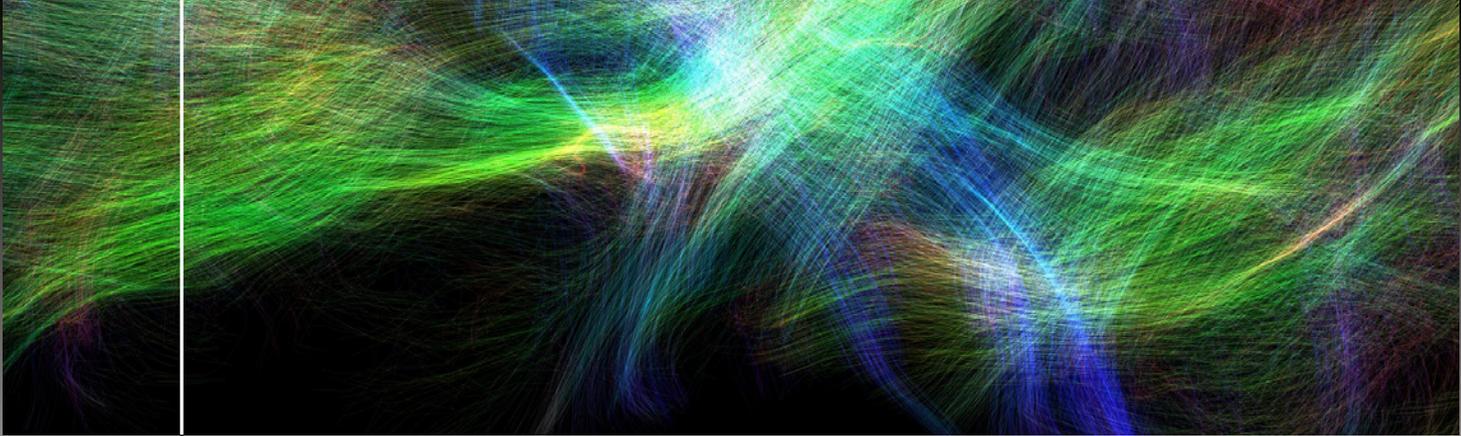


We are an essential catalyst for

- ▶ **advancing research**
- ▶ **knowledge mobilization**
- ▶ **local, national and global impact**

Within our work, we value

**integrity / trust**  
**inclusivity / diversity**  
**collaboration**  
**respect**  
**adaptability**  
**excellence**



## advancing research



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## knowledge mobilization



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## local, national and global impact



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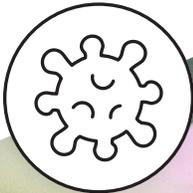


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# COVID-19



## A novel challenge inspires research creativity

2020 was a year full of new challenges when COVID-19 became a major factor in dictating how we work, play, and learn. During the university's response to the COVID-19 pandemic, the continuity of research activity was a key priority. In its state of emergency declarations, the Government of Ontario indicated the importance of research and research organizations as essential activity. To this end, the university deployed a strategy to prioritize the resumption of critical research activity, and in some cases be mobilized to support COVID-19 research and innovations. Scholars at Queen's have shown remarkable resilience, and tremendous innovation, during this time of global crisis.

### **SARS CoV-2/COVID-19 Rapid Response Research Competition**

In late March, the Vice-Principal (Research) launched the SARS CoV-2/COVID-19 Rapid Response research competition to fund and support research projects to contribute to the development, testing, and implementation of medical or social countermeasures to mitigate the rapid spread of COVID-19.

**The list of awarded projects exemplifies the incredible diversity of expertise that Queen's scholars bring to questions of global importance.**

**Stephen Archer**

*Medicine*

Synthesis and preclinical testing of novel small molecule therapies for COVID-19.

**Aristides Docolis**

*Chemical Engineering*

Portable diagnostic prototype (COVID-19 Scanner) for rapid, point-of-care detection of SARS-CoV-2 from nasopharyngeal swabs.

**Tom Hollenstein**

*Psychology*

Digital emotional support: Navigating the effects of social distancing during and after the COVID-19 crisis.

**Setareh Ghahari**

*Rehabilitation Therapy*

Identifying and mitigating educational challenges that refugee youth face during the COVID-19 Pandemic.

**Nazanin Alavi**

*Psychiatry*

Online delivery of psychotherapy, tailored to patients' suffering from mental health problems due to COVID-19 pandemic.

**Xiaolong Yang**

*Pathology and Molecular Medicine*

Development of an ultra-sensitive biosensor tool for COVID-19 therapy.

**Amy Wu**

*Mechanical and Materials Engineering*

Low-cost, medical grade face shields that can be easily produced by the rapid prototyping resources within our community.

**Nicole Myers**

*Sociology*

Virtual bail courts: balancing risks to public safety with risks to public health.

**Robert Clark**

*Economics*

The impact of COVID-19 and the resulting government response on household finances and credit markets.

**John Meligrana**

*Geography and Planning*

Planning for more effective and equitable physical distancing measures for Canada's urban areas.

**Warren Mabee**

*Policy Studies*

Creating an integrated policy response to facilitate Canadian recovery from COVID-19.

**Imaan Bayoumi**

*Family Medicine*

Exploring the hidden social, emotional and mental health impacts of the pandemic and public health countermeasures on local residents.

**Oded Haklai**

*Political Studies*

Assessing the extent to which democracy can be resumed in the aftermath of the pandemic.

**Chantelle Capicciotti**

*Chemistry*

Developing sweet prophylactics: targeting glycans to prevent COVID-19 spread.

**Amrita Roy**

*Family Medicine*

Indigenous peoples living with chronic health issues during the COVID-19 era – examining experiences in Katarokwi (Kingston area).

**Jacqueline Galica**

*Nursing*

The psychosocial implications of COVID-19: How are cancer survivors coping?

**Stephen Vanner**

*Medicine*

COVID-19 testing of health professional students: Informing testing and public policy for universities and society.

**Elijah Bisung**

*Kinesiology & Health Studies*

Mobilizing local stakeholders to address COVID-19 misinformation and mistrust in Ghana.

**Elaine Power**

*Kinesiology & Health Studies*

Leave no one behind: Income security for the 21st century.

**Kristy Timmons**

*Education*

Using social and behavioural science to help teachers and principals mitigate the negative impacts of COVID-19 in K-12 contexts.

## Other COVID-19 Research Highlights

- **The Centre for Advanced Computing** at Queen's is a lead partner in the Ontario Health Data Platform (OHDP), established to assist COVID-19 researchers gain access to new data sets important in decision making related to COVID-19 health, economic and social strategies. The OHDP is a federated high-performance computing environment for secure, accurate, and privacy-protective linkage of large health data sets across various organizations to allow for big data analytics.
- **Queen's researchers** partnered with industry to transform pandemic decision-making and healthcare through two Digital Technology Supercluster COVID-19 program projects, Looking Glass and Project ACTT, focused on predictive modelling and cancer testing and treatment. The projects received over \$4M.
- **Dr. Troy Day** (*Mathematics and Statistics*) serves on the Provincial COVID-19 Modelling Consensus Table, releasing models projecting the future spread of the virus in the province.
- **Dr. Majid Pahlevani** (*Electrical and Computer Engineering*) is collaborating with Genoptics LED Inc. and Harvard University on photodynamic therapy for annihilating the COVID-19 virus and therapeutic nano-optic endoscopy for detection and treatment of COVID-19. The team is fabricating an imaging and treatment device for severe respiratory failure.
- **Dr. Myron Szewczuk** (*Biomedical and Molecular Sciences*) is working with Encyt Technologies Inc. to study the mechanism of COVID-19 induced hyperinflammation.
- **Dr. Tina Dacin** (*Smith School of Business*) is working with Med Duck Solutions Inc. to study the use of AI in primary prevention of health care associated infections.
- **Dr. Steven Brooks** received \$1.2 million in funding to build a provincial database to track COVID-19 patients, which will further contribute to a national registry.
- A team of researchers from the **Departments of Chemistry and Chemical Engineering**, along with GreenCentre Canada, partnered with Kingston Health Sciences Centre (KHSC) and Tri-Art Manufacturing to make hand sanitizer for Kingston hospitals.
- **Researchers at Queen's and KHSC** partnered with Public Health Ontario Laboratories and Hamilton Health Sciences Centre to develop an in-house COVID test that can provide results in 24 hours.
- **Queen's Noble Laureate, Dr. Arthur B. McDonald**, led the Canadian arm of the Mechanical Ventilator Milano (MVM) project, which aimed to create an easy-to-build ventilator that can help treat COVID-19 patients. In May, the Government of Canada announced an agreement with Vexos to produce 10,000 MVM units.



# Increased Internal Investment



## Wicked Ideas

To support researchers thinking outside of the box to solve some of humanity's most complex problems, the Vice-Principal (Research) launched the inaugural *Wicked Ideas* competition to fund high risk, high reward projects. Importantly, this competition supported interdisciplinary teams that are not eligible for traditional funding opportunities. Interdisciplinary activities play an important role in tackling problems from new perspectives, and have become increasingly important for national funding agencies. The program also required engagement of early-career researchers, who will benefit not only from the direct financial support, but also from important mentorship opportunities in larger research teams focused on areas of common interest.

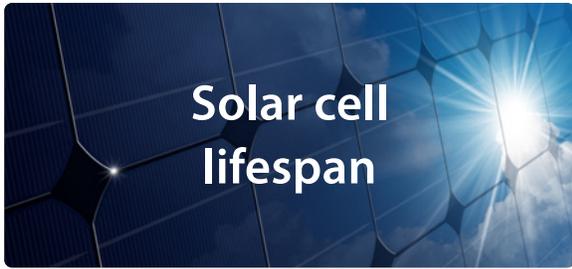
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graph LR; A[Smartphones and personal data] --> B[Cancer metastasis];
```

Smartphones  
and personal data

Cancer  
metastasis

**Sexual abuse in  
UN peacekeeping**

**Macroscopic  
coherence in a  
quantum system**

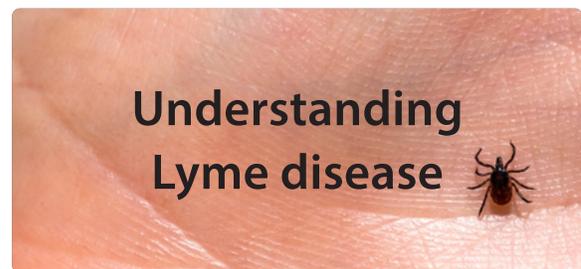


**Geomembranes  
for environmental  
protection**

**Clean technologies  
for chemical  
synthesis**

**Communication tools  
for children with  
profound disability**

**Making milk from  
carbon-neutral algae**



**Two-eyed seeing  
in water pollution  
and protection**

# Funding Successes



Queen's continued to attract leading researchers and competitive funding and awards through a number of national and international programs. Hundreds of grants for new projects and research infrastructure were secured through CIHR, SSHRC, NSERC and CFI, Canada's national funding agencies.

# 3

## Queen's-affiliated research facilities:

**The Canadian Cancer Trials Group**

**SNOLAB**

and

**Canada's National Design Network**

**Received more than**

# \$60 million

in major science initiatives

(MSI) funding from the

**Canada Foundation  
for Innovation**

The MSI fund supports the operation of key national research initiatives by contributing to the ongoing operational and maintenance needs of these facilities. This funding supports cutting-edge, collaborative, international research that is helping to power Canada's scientific productivity and economic competitiveness, as well as allowing these groups to pivot to address the COVID-19 crisis.

# 7

## Queen's research projects

are receiving funding from the

### **New Frontiers in Research Fund (NFRF) 2019 Exploration competition**

a program that fosters discovery and innovation by encouraging Canadian researchers to explore, take risks, and work with partners across disciplines and borders.

Queen's will receive

# \$1.7 million

of the **\$46.3 million in funding** allocated to research projects across Canada.

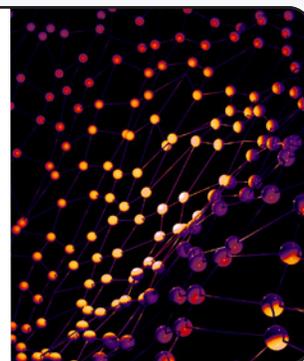
**8th**  
highest  
funded  
institution  
in  
Canada

**3rd**  
highest  
funded  
institution  
in  
Ontario

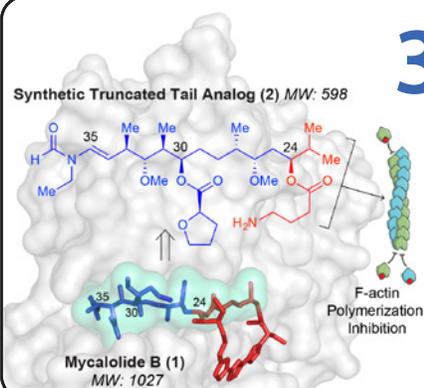
The tremendous success of our scholars at securing this funding is attributed to the support of our researchers through anticipatory programs like *Wicked Ideas*, which aligns its selection criteria directly with those of NFRF. *Wicked Ideas* encourages our researchers to address big problems as interdisciplinary teams and thus be well-positioned for immediate success when new funding opportunities emerge.



**1** Breakthroughs in robotics and machine learning have the potential for significant impact on the way chemical synthesis is performed, and to dramatically accelerate the pace of discovery and optimization. **Cathleen Crudden** (*Chemistry*) and collaborators will apply machine learning-based chemical optimization to the synthesis of metal nanoclusters, which form a key link between molecules and materials.



**2** **Jeffrey Masuda** (*Kinesiology and Health Studies*) and co-applicants, including **Audrey Kobayashi** (*Geography and Planning*), will generate a creative space for community-led policy engagement in the heart of Vancouver's housing crisis. Using materials from archival, qualitative, and humanities-based methodologies gathered through four years of participatory action research, they will develop a permanent exhibit that will tell the histories of governance, activism, and inhabitation surrounding single room occupancy hotels in Vancouver's Downtown Eastside.

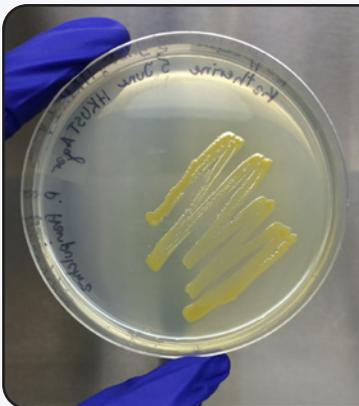


**3** The spread of cancer beyond the initial site (metastasis) occurs frequently and is the cause of 90 per cent of cancer-related deaths. **P. Andrew Evans** (*Chemistry*) with **John Allingham** (*Biomedical and Molecular Sciences*) and **Andrew Craig** (*Biomedical and Molecular Sciences*), will develop small molecule inhibitors inspired by marine macrolide natural products, which target the cellular engine that drives cancer metastasis.

**4** **Stephen Lougheed, Yuxiang Wang** (*Biology*) and collaborators are developing new, real-time, community-based environmental DNA protocols for assessing freshwater ecosystem health. Their platform will combine eDNA approaches with community capacity building, focusing on Lake Ontario and the St. Lawrence River as test cases.

*Photo Grégory Bulté, Department of Biology, Carleton University*

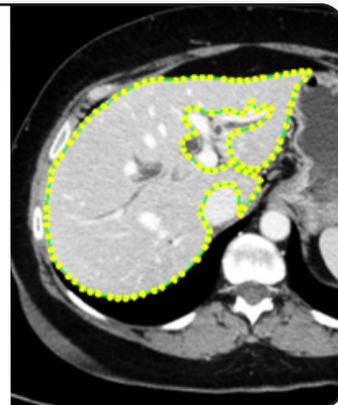




**5** Environmental bacteria are an excellent source of new antibiotics. However, when cultivated in the laboratory, they frequently fail to produce the vast majority of their encoded molecules unless very particular and specific conditions are used. **Avena Ross** and **Richard Oleschuk** (*Chemistry*) will develop a microfluidics platform to identify new antibiotics from bacteria, enabling them to rapidly identify/prioritize new antibiotic drug leads.

**6** **Michael Rauh** and **Susan Crocker** (*Pathology and Molecular Medicine*) are profiling blood for genomic instability associated with neurodegenerative diseases, including Alzheimer's disease (AD). With their combined expertise, they will demonstrate how changes in cell-free and cell-contained DNA in blood contribute to AD pathophysiology.

**7** **Amber Simpson** (*School of Computing; Biomedical and Molecular Sciences*) and **Sharday Mosurinjohn** (*School of Religion*) are developing a cancer digital twin from 400,000 medical images that predicts the pattern of cancer spread while considering the bioethical implications raised by the technology. Their project will bring to bear combined expertise in AI, oncology, religion, philosophy, and cultural sociology to analyze AI's existential risks and rewards.



### **NFRF Transformation**

Two Queen's submissions for the NFRF Transformation program have been invited to the next stage of competition. Of the hundreds of applications received, less than 9% were selected to advance. The Transformation stream is designed to support large-scale, Canadian-led interdisciplinary research projects that address a major challenge with the potential to realize real and lasting change. The challenge may be fundamental, leading to a scientific breakthrough, or applied, with a social, economic, environmental or health impact. Projects are expected to be world-leading, drawing on global research expertise where relevant, and have the potential of millions of dollars of research support per year.



# Realizing Market Potential



The Vice-Principal (Research) portfolio has had significant success attracting matching funds through the **Federal Economic Development Agency for Southern Ontario** (FedDev Ontario) through three programs:

The **Women's Entrepreneurship project (WE-CAN; \$3.2M)** represents one of the portfolio's recent successes leading key Equity, Diversity, Inclusion and Indigeneity (EDII) initiatives. It supports new programs and services to women entrepreneurs from underrepresented groups in Kingston and region, including those who have founded or lead technology companies, women entrepreneurs who identify as Indigenous, and women entrepreneurs from other diverse and underrepresented groups. Among numerous other activities, WE-CAN has launched the Compass North Accelerator that helps women-led technology companies grow; launched Kwe-Biz brand targeting Indigenous entrepreneurs in Tyendinaga Mohawk Territory and the City of Kingston; launched the Rural Mentorship program for rural women entrepreneurs; and completed branding and resource hiring for the Hire Yourself program aimed at newcomer women entrepreneurs to Canada.

Queen's University, together with Launch Lab and St. Lawrence College, are regional partners to Invest Ottawa in the delivery of the **Scale-up Platform** in Eastern Ontario, which provides access to programs, services, and resources to entrepreneurs and companies that are advancing science-based, technology-based and/or software-based solutions.

FedDev Ontario announced a contribution of \$6.5M to **Toronto Innovation Acceleration Partners (TIAP)**. The funding will be matched by TIAP and program collaborators, including Queen's University, to leverage TIAP's decade-long expertise in scouting and incubating health science technologies.

# Impact Beyond the Academy



Queen's has entered into a research collaboration and licensing agreement with **Taysha Gene**

**Therapies** for the development and commercialization of gene therapy for GM2 gangliosidoses – a group of degenerative/inflammatory diseases in which a fat called GM2 ganglioside accumulates, especially affecting the brain. Two of the more common diseases in this group, Tay-Sachs disease and Sandhoff disease, are characterized by rapid neurological deterioration and, typically, early childhood death. Jagdeep S. Walia (Pediatrics), has generated preclinical evidence for a gene therapy approach.

The **WE-CAN** project has resulted in support for more than 70 science or tech-based companies and over 150 women and Indigenous women entrepreneurs in Eastern Ontario. Lana Thomas is the owner of Mi'kmaq Wooden Art in Ottawa, and a participant in WE-CAN's Kwe-Biz program for women entrepreneurs who identify as Indigenous.



The **Cadenza** web-based app was developed by Queen's researchers, in collaboration with

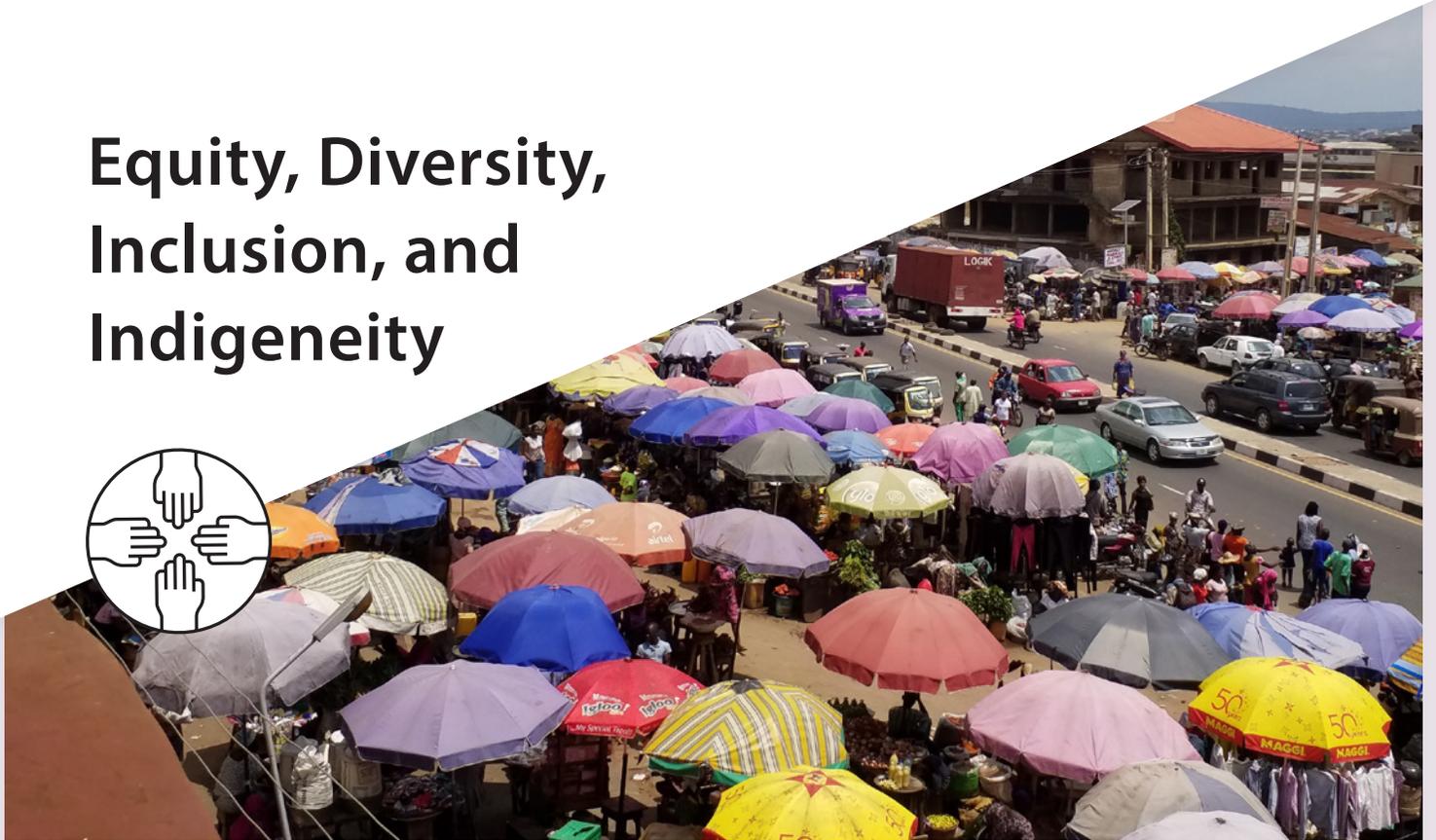


professors and developers at Concordia University and community partners, to connect music teachers virtually to their students. COVID-19 had led to a 10-fold increase in subscribers as people work and play from home. The greatest surge of users has come from the United Kingdom, followed by Canada and the United States. Cadenza represents a great example of research translated to social innovation.

Daniel Desjardins, a Queen's alumnus and assistant professor (Physics and Space Science) at the Royal Military College of Canada, and his team at **Kings Distributed Systems (KDS)**, are collaborating with Queen's to develop a cutting-edge distributed computing model to ensure fast and reliable computing platforms for analyzing data in a timely, cost-efficient way. KDS has built a secure and powerful web-based platform to help researchers and decision-makers with a variety of projects, including the critical analysis and policy making surrounding COVID-19.



# Equity, Diversity, Inclusion, and Indigeneity



Queen's University is committed to advancing the principles of equity, diversity, inclusion and Indigeneity (EDI) in all aspects of research including the production of knowledge, equitable access to funding opportunities, and inclusive and diverse research team composition. The University recognizes that EDI policies and practices strengthen the research community, as well as the quality, social relevance, outcomes, and impacts of research. Queen's University has proudly endorsed the Government of Canada's **Dimensions Charter** – a national program intended to increase EDI within Canada's post-secondary institutions and the university research ecosystem.

## Indigenous Community Research Partnerships (ICRP)

The Indigenous Community Research Partnerships (ICRP) online open education training resource was recently launched. It was designed to assist researchers who are new to research in partnerships with Inuit, Métis and First Nations ("Indigenous") communities, or who are researchers-in-training, to operationalize required regulatory policy requirements and research directives; ensure equitable inclusion of Indigenous and Western-oriented knowledge in research systems; and, in the case of Indigenous-specific enquiry, to privilege or give primacy to Indigenous ways of knowing and doing. The Group for Ethics and Engagement in Indigenous Community Research Partnerships (EIP), author of the training resource, consists of partnerships with Indigenous and non-Indigenous researchers, and Queen's University Arts and Science Online, the Centre for Teaching and Learning, and the Office of Indigenous Initiatives.

*Photo Art of Research Competition Winner 2020: Grace Adeniyi-Ogunyankin, Faculty, Gender Studies; Geography and Planning*

## Indigenous Research Policy

The importance of Indigenous research is firmly embedded in key institutional documents such as *Yakwanastahentéha Aankenjigemi Extending the Rafters: Truth and Reconciliation Commission Task Force Final Report* and the *Strategic Research Plan 2018-2023*. Both documents assert Queen's commitment to the codes of research practice that are grounded in informed consent and reciprocal relationships with Indigenous communities, expressed in the phrase "Nothing about us without us." The VP Research is now developing a more formal *Policy on Research Impacting Indigenous Peoples* to outline appropriate engagement starting at the research design stage. Input and advice from Indigenous researchers working with Indigenous groups, as well as Elders, community, and others will inform the final document.

## WE-CAN

The Queen's WE-CAN project, providing support to three groups of women entrepreneurs from underrepresented groups in and around Kingston, is a major triumph for EDII initiatives in research and entrepreneurship. Since 2019, it has resulted in support for more than 70 science or tech-based companies and over 150 women and Indigenous women entrepreneurs. WE-CAN will continue to inspire and empower women to launch careers, as well as tackle the barriers that prevent their full and equal participation in the economy.

## Canada Research Chairs

Queen's University is home to 47 Canada Research Chairs (CRCs) – a prestigious national honour created to promote leading-edge research and attract and retain the world's best researchers. Queen's is an advocate for equity within the Canada Research Chairs Program, commits to evaluating representation of the four Designated Groups within its program and strives proactively to maintain its equity targets among the exceptional researchers recruited to this program.

### Queen's 7 new CRCs in 2020:

#### **Ning Lu**

*Electrical and Computer Engineering*,  
CRC in Future Communication Networks

#### **Amber Simpson**

*School of Computing; Biomedical and Molecular Sciences*, CRC in Biomedical Computing and Informatics

#### **Stéfanie von Hlatky**

*Political Studies*, CRC in Gender, Security, and the Armed Forces

#### **Grace Adeniyi-Ogunyankin**

*Geography and Planning, Gender Studies*,  
CRC in Youth and African Urban Futures

#### **Laura Thomson**

*Geography and Planning*, CRC in  
Integrated Glacier Monitoring Practices

#### **Susan Bartels**

*Emergency Medicine*,  
CRC in Humanitarian Health Equity

#### **Jacqueline Monaghan**

*Biology*, CRC in Plant Immunology

# Research Metrics



**3**

**rd** in research income growth  
*medical category*

according to national research rankings released in December by RESEARCH Infosource, a research and development intelligence company whose rankings are highly visible in the R&D sector

**leads  
the category  
in total  
corporate income  
as a percentage of total  
research income and  
corporate research  
income growth**

**5**

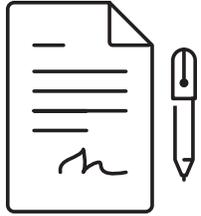
**th** in research intensity  
*research income per  
full-time faculty  
member*

**2nd  
faculty  
member  
prizes/  
awards**

**5**

**th** out of the 15 medical-doctoral universities across the country  
*according to the 2021 Maclean's  
university rankings* for a third year in a row

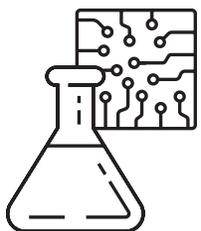
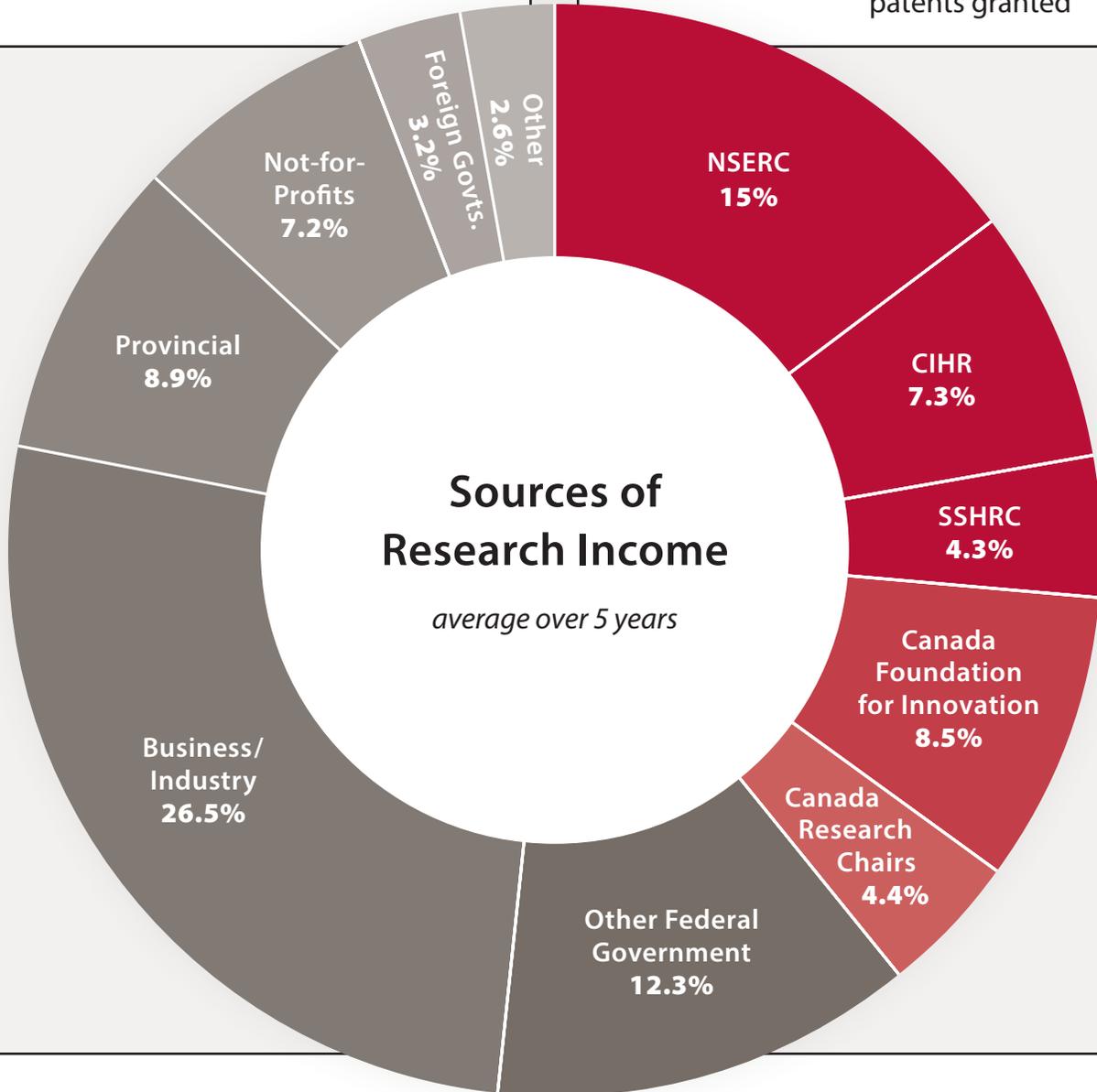
**6th  
medical/  
science  
grants**



**>1300**  
research-related  
contracts negotiated



**>40**  
patents filed  
**>20**  
patents granted



**>70**  
science- or tech-based  
companies  
supported  
in Eastern Ontario



**>150**  
women  
entrepreneurs  
supported  
in Eastern Ontario

# Building Partnerships

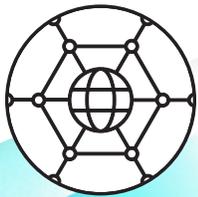


The VPR has an important role in communicating and engaging with government, industry, and local leadership. In 2020, the shift to online events provided an opportunity for many scholars to participate in activities were once unfeasible. *Research Canada*, a national, broad-based alliance dedicated to advancing health research through advocacy, hosted several online events with the Parliamentary Health Research Caucus. Several Queen's researchers were invited to speaking roles. **Dr. Imaan Bayoumi** (Family Medicine) spoke about the psychosocial effects of the COVID-19 pandemic, with a focus on marginalized groups such as those using substances or living in poverty, single parents, children or people suffering from mental health conditions, chronic health conditions or family conflict. **Dr. Anne Ellis** (Medicine) spoke as an expert on environmental health and climate change. Dr. Ellis studies aggravated allergy symptoms and respiratory conditions due to increased pollen and spore production with longer summers and shorter winters in some regions of Canada, yet more intense, shorter seasons in other regions.

The global drive for low-carbon energy sources, combined with a growing worldwide energy consumption, is a challenge to which nuclear energy, in combination with renewables such as wind and solar, provides a realistic, sustainable solution. Canada has an opportunity to position itself at the forefront of advanced nuclear reactor designs, given substantial investment in the development of small nuclear modular reactors (SMRs). Queen's has an important role to play in Canada's SMR development through training programs, development of next-generation talent, and public awareness. Importantly, Queen's is home to the leading Canadian academic research effort on core nuclear materials. Infrastructure includes a world-leading accelerator facility – the Reactor Materials Testing Laboratory, which can be used to introduce irradiation damage in materials, hence simulating the aging of materials inside SMRs.

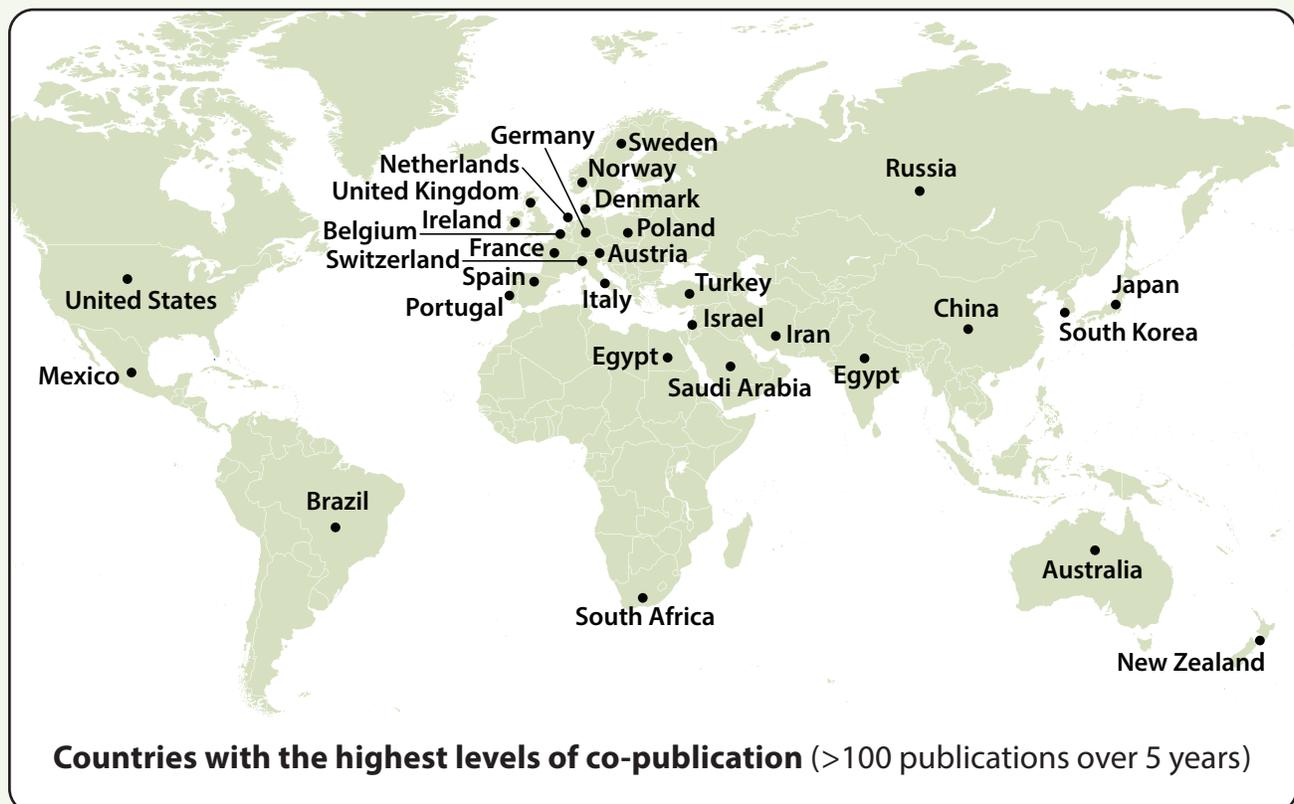
*Photo Art of Research Competition Winner 2020: Sarah Flisikowski, Graduate Student, School of Environmental Studies*

# International Collaboration



Queen's strives to strengthen its global impact. Strong and positive relations with global partners are key to this strategy as Queen's continues to build its international presence. Many of our faculty have international engagement through formal, as well as informal, research collaborations and partnerships.

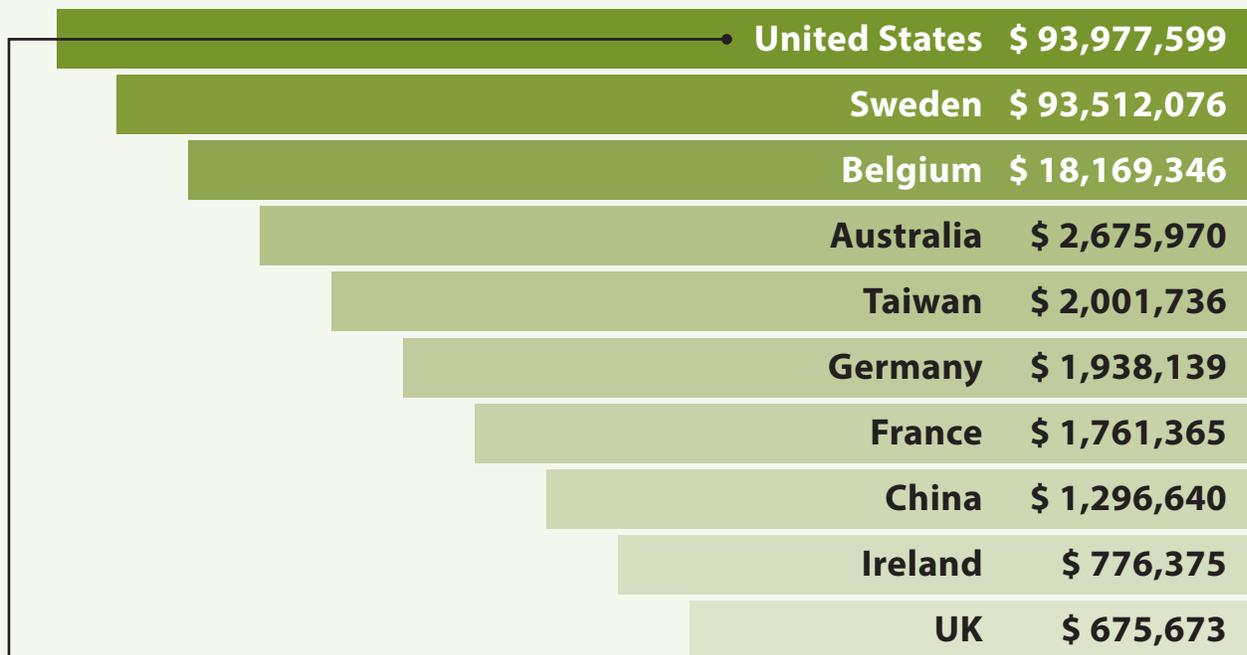
**Queen's researchers co-publish their works with authors around the world.**



In the past five years, Queen's has received more than

# \$219M

in funding from numerous external international sources



Many of our US collaborations reflect our successes with funding by the National Institutes of Health (NIH):

**80** total grant applications

**35** led by Queen's

**76** grants/contracts awarded

**\$51.4M** funding awarded

**\$23.5M** in support of a single clinical trial

# Award-winning Researchers 2020



## Prize for Excellence in Research

Three Queen's researchers received its top recognition for research excellence – the Prize for Excellence in Research. New this year was a consideration of overall research impact and efforts in knowledge mobilization through collaborations and partnerships, and in sharing research beyond the academy.

**Michael Cunningham** *Chemical Engineering*

**Gabor Fichtinger** *School of Computing*

**Yan-Fei Liu** *Electrical and Computer Engineering*

## College of New Scholars, Artists and Scientists

**Amy Latimer-Cheung**

*School of Kinesiology and Health Studies*

**Awet Weldemichael**

*History*

## Fellowship in the Royal Society of Canada

**Nancy van Deusen**

*History*

**Cathleen Crudden**

*Chemistry*

## Canadian Academy of Health Sciences

**Janet Dancey**

*Oncology*

**Marcia Finlayson**

*School of  
Rehabilitation Therapy*

**Graeme Smith**

*Obstetrics and  
Gynaecology*

**Canadian Academy  
of Engineering**

**Michael Cunningham**  
*Chemical Engineering*

**Jean Hutchinson**  
*Geological Sciences and  
Geological Engineering*

**Vector Faculty Affiliates Program**

**Ting Hu**  
*School of Computing*

**Anna Panchenko**  
*Biomedical and Molecular Sciences*

**Bhavin Shastri**  
*Physics, Engineering Physics and Astronomy*

**Fellow of  
the American  
Association for  
the Advancement  
of Science**

**Arthur McDonald**  
*Physics, Engineering Physics  
& Astronomy*

**American  
Academy of  
Arts and  
Science**

*as an International  
Honorary member  
in Class III,  
Social Sciences*

**Katherine  
McKittrick**  
*Gender  
Studies*

**Molson  
Prize**

**David Lyon**  
*Sociology*

**NSERC  
Science  
Promo Prize**

**Lynda Colgan**  
*Faculty of  
Education*

**Massey  
Medal**  
**John Smol**  
*Biology*

**Indspire  
Award for Health**

**Karen Lawford**  
*Gender Studies*

**IEEE TSCE  
New Directions  
Award**

Ahmed Hassan  
*School of  
Computing*

**Distinguished  
Member  
of the  
American  
Society  
of Civil  
Engineers**

Kerry Rowe  
*Civil Engineering*

**Latner  
Writers' Trust  
Poetry Prize**

Armand Ruffo  
*English*

**Fulbright  
Visiting  
Research  
Chair**

Heather  
Castleden  
*Geography  
and  
Planning*

**2020 Polanyi Prize,  
Ontario**

Graeme Howe  
*Chemistry*

**COVID  
Leadership Award,  
Pediatric Chairs  
of Canada**

Kirk Leifso  
*Pediatrics*

**Young Scientist  
Award  
(Donath  
Medal),  
Geological  
Society of America**

Christopher Spencer  
*Geological Sciences  
and Geological  
Engineering*

**IEEE Medal in  
Power Engineering**

Praveen Jain  
*Electrical and  
Computer Engineering*

Dr. Arthur McDonald has been honoured by the Natural Sciences and Engineering Research Council of Canada (NSERC) with a national prize in his name.

The **Arthur B. McDonald Fellowships** will recognize early-stage academic researchers in the natural sciences and engineering and support them to enhance their research capacity, so that they can become global leaders in their field.



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