2020 Research and Innovation

Annual Report

UNIVERSITY OF TORONTO

A Message from the Vice-President

As Canada's leading university and one of the top public universities in the world, U of T plays a distinctive role in creating and translating knowledge that addresses the important global challenges of our time. U of T's researchers influence the thinking of scholars globally as they pursue answers to some of the world's most important questions. The extraordinary breadth and depth of academic excellence across our three campuses and partner hospitals is visible in the impact of our faculty members' research and its translation to solving the challenges facing our world.

In the 2021 Times Higher Education World University Rankings, U of T rose to 18th in the world, between Columbia and Cornell, and remained 1st in Canada. Our impressive performance reflects the excellence of our faculty, students and postdoctoral fellows and their collaborations with leading researchers and institutions worldwide, enabling us to attract diverse scholars and students from around the globe and further increasing our impact. Nationally, U of T and its partner hospitals serve as leading platforms where our researchers develop therapeutic and clinical interventions, and many serve as key advisors to government, developing policy recommendations and economic and societal recovery strategies.

This past year, U of T and the Division of the Vice-President, Research & Innovation (VPRI) have responded to the unprecedented operational and research challenges posed by the COVID-19 pandemic by relaunching research operations as quickly and safely as possible through the Research Restart Steering Committee. Our central office, including Environmental Health and Safety, worked closely with divisions to develop new operational standards and safety protocols. We launched the Toronto COVID-19 Action Fund and expedited the investment of $10.35 million into 40 COVID-19-related research projects across our campuses, partner hospitals and disciplines.

Community, industry and international research partnerships give U of T access to critical data, hardware, and software that help expand the impact and scope of our research and discovery efforts, while also helping to prepare students for their careers. Among the hundreds of research partnerships we made in 2020, the new Indigenous Stream of the Connaught Community Partnership Research Program awarded $450,000 between U of T researchers and Indigenous communities.

In 2020, we also launched U of T's celebration of the 100th anniversary of the discovery of insulin, which continues through 2021. On this illustrious foundation, U of T and its hospital and industry partners built a culture of discovery, innovation and collaboration that has transformed healthcare and continues to have a ripple effect worldwide.

U of T's Institutional Strategic Initiatives (ISIs) harness the strengths of our multi-disciplinary research networks. One of the most exciting and timely of these is the Student & Youth Mental Health Research Initiative, a unique partnership between U of T and the Centre for Addiction and Mental Health (CAMH) that enables collaboration with students to co-create research-informed, evidence-based solutions that support the mental health and wellness of the campus community.

We will build on our 2020 successes in creating an equitable, diverse and inclusive environment to enable our scholars to reach their full potential. We'll continue to implement all 49 recommendations of the Equity and Diversity in Research and Innovation Working Group. Our progress can be tracked on the new EDI in Research & Innovation website that launched this past January and features workshops on community-engaged research and equity, diversity and inclusion (EDI) practices within research teams.

U of T is one of the few global institutions able to deploy innovative strategic initiatives that span fields and faculties. U of T's global reputation attracts researchers, students and industry partners from across Canada and around the world to join in our interdisciplinary innovation to meet today's challenges.

Sincerely,

Professor Edward H. Sargent
Vice-President, Research and Innovation, and Strategic Initiatives

VPRI
10 Strategic Goals
2020–2024

The VPRI has launched ambitious new strategic goals that set our sights on ensuring that U of T faculty are celebrated, resourced and empowered as leading scholars in Canada.

To help us achieve these goals, **Professor Leah Cowen** has joined the VPRI as U of T's first Associate Vice-President, Research. This newly created role will enhance supports for our researchers, mobilize funding and boost the impact of research across the University's three campuses.

1. **Continue to progress through the global rankings to become ranked alongside University of California, Berkeley, as one of North America's top two public universities.**
2. **Increase U of T's share of prestigious international awards.**
3. **Ensure each U of T faculty researcher is celebrated, resourced and empowered as a leading scholar in Canada, and among the top in the world in their field of research.**
4. **Double industry-sponsored research funding by 2024.**
5. **Double our Tri-Agency research partnerships funding by 2024.**
6. **Develop a 10-year major research infrastructure plan for U of T, leveraging the work of the Core Facilities Working Group, and lead the nation in the CFI Innovation Fund.**
7. **By 2024, transform several ISIs into major institutes by securing new investment from government, industry and philanthropy.**
8. **Support the continued maturation of the Toronto entrepreneurship ecosystem and, with partners, ensure that startups created by the U of T community double their average external investment by 2023–2024.**
9. **Increase global media coverage featuring U of T research and innovation breakthroughs, citing U of T researchers, and featuring U of T entrepreneurs and companies.**
10. **Implement EDI objectives, including the recommendations of the Equity and Diversity in Research and Innovation Working Group and achieving or exceeding the Canada Research Chairs Program diversity targets for 2029.**

Globally Recognized Leadership in Research and Innovation

The remarkable leadership and impact of U of T researchers and innovators is reflected across a diverse set of global rankings.

The 2020 QS World University Rankings by Subject ranked U of T in the top 50 globally for 43 subjects, a result unmatched by any other university. When benchmarked across a broad range of disciplines in the top 10 per cent of the most highly cited publications, U of T places among the top five universities in the world. Our researchers and innovators secure funds from diverse sources, including the federal and provincial governments, the not-for-profit sector, private-sector partnerships, and national and international research and philanthropic foundations. These funds allow U of T researchers and innovators to continue generating the basic and applied knowledge and tools that are needed to address the most pressing issues confronting humanity.

$64 million
in funding from the Canada Foundation for Innovation's (CFI) John R. Evans Leaders Fund
(2019–2020)

$1.4 billion
in research funding from a rich array of national and international sources, including the federal and provincial governments, the not-for-profit sector and private-sector partnerships
(2019–2020)

#1
The most innovative university in Canada
(Maclean's Canada's Best Universities by Reputation: Rankings 2021)

U of T holds
315
Canada Research Chairs (CRCs), more than any other Canadian university and 117 more than the next closest university

U of T ranks
#1
in the world for industry, innovation and infrastructure
(Times Higher Education Impact Rankings 2020)

#1
in Canada by the top-ranking metrics worldwide
(Times Higher Education World University Rankings 2021, U.S. News & World Report 2021)

#18
worldwide, between Columbia (17th) and Cornell University (19th)
(Times Higher Education World University Rankings 2021)

#25
worldwide, tied with Johns Hopkins University
(QS World University Rankings 2021)

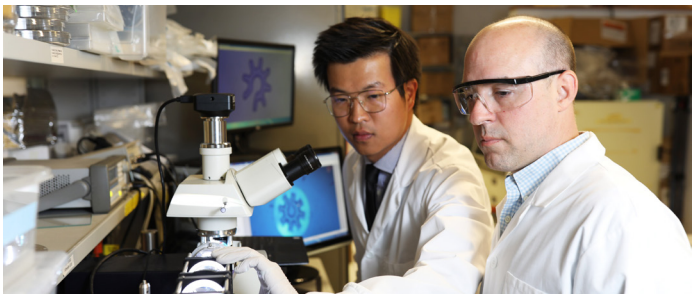
16.3%
of the country's Tri-Agency funding
(2019–2020)

Equity, Diversity & Inclusion in Research & Innovation

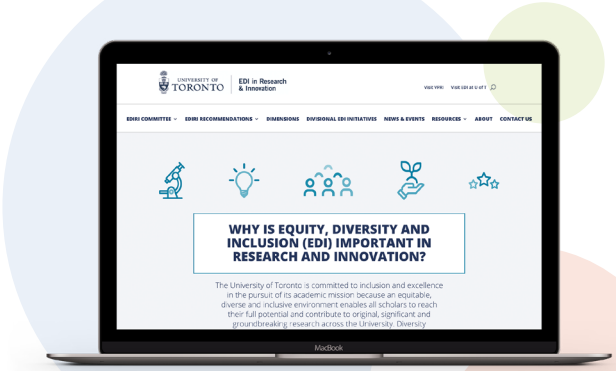
U of T is committed to equity and excellence in the pursuit of its academic mission.

An equitable, diverse, and inclusive environment enables all scholars to reach their full potential and contribute to original and ground-breaking research across the University.

In 2020, supported by the Committee on Equity, Diversity & Inclusion in Research & Innovation, the VPRI continued to move forward in implementing the **49** recommendations of the **Equity and Diversity in Research and Innovation Working Group**.



Our progress can be tracked on the new Equity, Diversity & Inclusion website that launched in January 2021.



U of T is surpassing the equity targets for Canada Research Chairs (CRCs) in all four federally designated groups.

As part of its efforts to increase the participation of under-represented groups, the Canada Research Chairs Program requires participating institutions to meet equity targets for the representation of the four designated groups (women, Indigenous peoples, members of visible minorities, and persons with disabilities) among their chair cohorts. Institutions were required to meet these targets by December 2019. U of T exceeded these equity targets for all four designated groups. U of T recognizes that maintaining and increasing the diversity of its CRC cohort requires proactive initiatives underpinned by a research-informed approach, as well as education and leadership throughout U of T and its network of partner hospitals. The CRC Program has established new equity targets to be met by the end of 2029; we will continue building on the CRC Equity Diversity and Inclusion Action Plan and past initiatives to meet or exceed these targets.

All photos in this report were taken prior to COVID-19.

An Innovation and Entrepreneurship Powerhouse

The University of Toronto is a leader in turning research into products, services, companies and jobs.

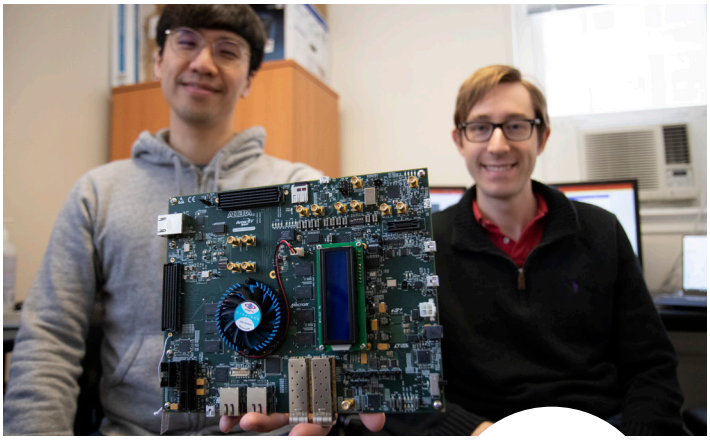
The VPRI supports U of T's innovators and inventors by providing patenting support, commercialization assessment, investor introductions and company creation assistance.

U of T has filed over **1,000** patent applications in the past 10 years—creating more IP-based companies than any other private or public university in North America, except MIT.

U of T has a thriving entrepreneurship community, which is supported by numerous programs located across our three campuses and supported by **University of Toronto Entrepreneurship (UTE)**. These programs have secured U of T's place as Canada's leading engine for startups and a global leader in transforming ideas into products and services that impact the world. The UTE community provides mentorship, expertise, resources and strategic connections for all stages of the innovation pipeline to provide the skills and resources needed to effectively start, build and scale businesses.

UBI Global ranked U of T among the top 10 university-managed business incubators in the world.

U of T entrepreneurs are responsible for the creation of **500+ startups** that have secured more than **$1.5 billion** in investment over the past 10 years, with **$450 million in investment, merger and acquisition activity in the past year alone**. This year, U of T entrepreneurship programs will support over **400** teams and startups across our three campuses.



UTEST

The VPRI created the UTEST (University of Toronto Early-Stage Technology) Program in 2012 to accelerate and support the creation of research- and IP-based companies. The program works with our innovators and provides IP support, legal services, mentoring, incubation space and the opportunity to pitch for seed investment from the Connaught Fund.

Since 2012, UTEST has supported the creation of over 100 companies.

UTEST companies have:

Raised over

$300 million

in investment funding

Created over

600

jobs

Entrepreneurship Opportunities

Deep Genomics

Deep Genomics is a genetic medicine startup founded by U of T **Professor Brendan Frey**, which harnesses artificial intelligence to develop treatments for genetic diseases. Deep Genomics has raised **$70 million** in funding, hired over **60** employees and has recently declared a drug candidate for the genetic disorder Wilson Disease, with plans to announce nine more candidates next year.

U of T Intellectual Property (IP) Education Program

U of T responded to the Ontario government's Expert Panel on Intellectual Property, which sought to improve IP knowledge and protection across Ontario, by creating an IP Education Program led by the VPRI. Free to the U of T community, this interactive, online training program is designed to equip students from all disciplines, postdoctoral fellows, faculty, and staff with a broad foundation in IP and its general applications in today's knowledge economy.

U of T Entrepreneurship Week

During this annual week-long celebration of U of T entrepreneurs, events range from Celebrating Black Business Women to the True Blue Expo, featuring over **50** startups. The week culminates in the RBC Prize for Innovation and Entrepreneurship business pitch competition and the RBC Innovation and Entrepreneurship Speaker Series, which this year featured Derrick Rossi, co-founder of Moderna.

Multi-Disciplinary Institutional Strategic Initiatives

Solving society's grand challenges, from climate change to inequity, requires interdisciplinary research that spans disciplines.

The primary objective of the Institutional Strategic Initiatives (ISI) portfolio is to ensure that U of T remains a globally leading research institution. We foster research networks that leverage significant external support from government, philanthropy, community and industry partners to support high-impact training and research.

For a full listing of Institutional Strategic Initiatives at U of T, visit: isi.utoronto.ca

Acceleration Consortium

Advanced materials innovation has the potential to transform our lives and our world for the better. It can also foster the creation of trillion-dollar markets. These materials are critical for a wide range of technologies in the circular economy, including biodegradable plastics and fabrics; low-carbon and eco-friendly cement; lighter, stronger, corrosion-resistant alloys; biomedical fibres; renewable and clean energy storage; and entirely new materials with the power to launch industries. Given the slow and expensive nature of traditional materials discovery, the scope of this opportunity is enormous; theoretically, the number of unique materials that can be synthesized exceeds the number of atoms in the universe.

To address this challenge, ISI launched the Acceleration Consortium (AC) this year, led by **Professor Alán Aspuru-Guzik** (Faculty of Arts & Science). Leveraging the power of AI, robotics, materials science and quantum chemistry, the AC is a coalition of researchers, tech companies and entrepreneurs from across the University and around the world. Using AI-guided self-driving laboratories, known as materials acceleration platforms (MAPs), the AC will dramatically reduce the time and cost of bringing advanced materials to market—from decades to years—for one-tenth the price. This paradigm shift will lead to a more sustainable, prosperous and healthy future.

SCHWARTZ REISMAN INSTITUTE FOR TECHNOLOGY AND SOCIETY

The Schwartz Reisman Institute for Technology and Society (SRI) explores and addresses the ethical and societal implications of technology. In its first five years, SRI has focused on AI and powerful data-driven technologies. Led by **Professor Gillian K. Hadfield** (Faculty of Law), SRI is working to ensure that these technologies, which could make organizations 40% more efficient by 2035, also serve the global goal of creating societies that are vital, peaceful, inclusive, and just.

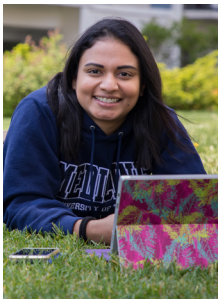
Key to its efforts is a focus on privacy legislation, which is instrumental in protecting data rights and data privacy in an increasingly data-driven world. In 2020, SRI partnered with Diabetes Action Canada and produced a new report exploring how and why outdated privacy legislation that doesn't account for the realities of a digital world can hinder powerful medical technologies that analyze data and significantly improve patient outcomes.

Recently, SRI also partnered with the non-profit AI Global to develop ways to bolster trust in AI systems. Unlike many products and services we use in our daily lives that must abide by safety and security standards, no such broad, internationally agreed upon standards exist for AI. SRI is working to create a globally recognized certification mark for the responsible and trusted use of AI systems.

Student and Youth Mental Health Research Initiative

In 2019, the majority of post-secondary students self-reported "feeling so depressed in the last twelve months that it was difficult to function" (National College Health Assessment survey). One in five Canadians will experience mental health issues in their lifetime, with 70% of those experiencing onset before the age of 18 (Health Canada). The gaps in research evidence identified by the U of T Task Force on Student Mental Health underline the need for innovative new approaches to improve post-secondary student mental health and well-being.

Led by **Professor Kristin Cleverley** (Lawrence S. Bloomberg Faculty of Nursing, Temerty Faculty of Medicine, CAMH), and in partnership with CAMH, this initiative brings together experts in student and youth mental health research to co-create research-informed, evidence-based solutions to the challenges identified by the Task Force on Student Mental Health. In partnership with the entire campus community, this initiative will mobilize and build on the expertise that exists in student and youth mental health across U of T and CAMH to lead high-impact, interdisciplinary research that will strengthen campus mental health and well-being. Through this collaborative work, this initiative will be a global leader in student-engaged research that will reflect the diverse strengths and priorities of today's post-secondary students.

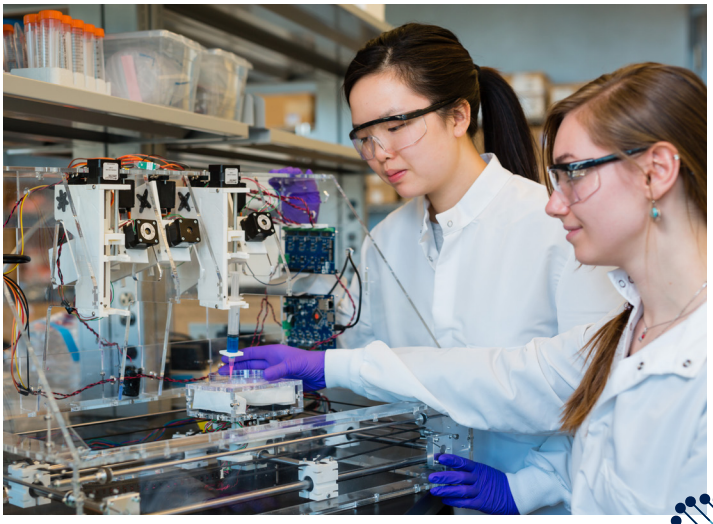


Black Research Network

Spearheaded by **Professors Rhonda McEwen** (UTM), **Maydianne Andrade** (UTSC), **Lisa Robinson** (Temerty Faculty of Medicine) and **Alissa Trotz** (Faculty of Arts & Science), and led by **Professor Beth Coleman** (UTM/Faculty of Information), the vision of the Black Research Network (BRN) is to promote Black excellence at U of T and to enhance the research capacity of Black researchers within the University and on the world stage. The Network will work to increase the visibility of Black scholars' research accomplishments by sustaining a cross-divisional, interdisciplinary network of Black researchers and facilitate robust research engagement across U of T and internationally. The BRN includes U of T Black-identified faculty (research and teaching stream), librarians, postdoctoral fellows, and graduate and undergraduate students. The BRN envisions deep connections with Black communities outside U of T and holds space for non-Black colleagues committed to addressing anti-Black racism to work alongside BRN members to achieve the goals of the Network.

MEDICINE by DESIGN

Regenerative medicine promises to transform healthcare by fundamentally changing the way many devastating diseases are treated. Pushing the frontiers of stem cell biology and biomedical engineering, Medicine by Design is leading this revolutionary shift to recruit the body's regenerative capacities and enable new therapies that have the potential to dramatically improve health outcomes.



Grand Questions Program

The 2020 launch of the **$3 million Grand Questions Program** is galvanizing our community around tackling some of the field's most important unanswered questions, with the goal of redefining regenerative medicine for the next 20 to 30 years. The second round of large multi-disciplinary team projects, receiving a total of **$21 million** over three years, had a very successful first year despite the challenges posed by the COVID-19 pandemic.

$62 million
awarded by Medicine by Design for regenerative medicine research at the convergence of engineering, medicine, and life and physical sciences

150
principal investigators funded by Medicine by Design and

900
trainees across U of T and its partner hospitals worked on Medicine by Design-funded projects

100+
funded research projects

14
new regenerative medicine faculty recruited to U of T and its partner hospitals

10
new startup companies created in Toronto's regenerative medicine ecosystem (2019–2020)

Award-Winning Research & Innovation

The sheer number of accolades U of T researchers receive highlights their calibre and raises their profile.

Although U of T accounts for only 6% of Canada's professorial faculty, the University amasses a dominant share of prestigious Canadian and international honours among all Canadian faculty. The deep expertise of our faculty members is also reflected in the frequency with which they are appointed to national advisory bodies for scholarly and scientific matters in Canada and internationally.

130
international and major national awards and honours won in 2020

10 consecutive years
leading Canada in new elections to the Fellowship of the Royal Society of Canada (FRSC)

41%
of Canada's members of international academies (2011–2020)

The Gerhard Herzberg Canada Gold Medal for Science and Engineering

U of T faculty have won Canada's most prestigious science and engineering prize three years running.

Molly Shoichet
(2020)
Department of Chemical Engineering & Applied Chemistry

Barbara Sherwood Lollar
(2019)
Department of Earth Sciences

Lewis Kay
(2018)
Department of Molecular Genetics

Guggenheim Fellowships

In 2020, three U of T faculty won highly competitive and prestigious Guggenheim Fellowships from the John Simon Guggenheim Memorial Foundation, reflecting our excellence across the humanities, social sciences and natural sciences.

Anna Shternshis
Department of Germanic Languages & Literatures

David Dyzenhaus
Faculty of Law

Doug Stephan
Department of Chemistry

Recognizing Impact

The **President's Impact Award (PIA)** celebrates and honours faculty members whose research has led to significant impacts beyond academia. Since its inception in 2017, the PIA has recognized the research impacts of **22** U of T researchers representing an impressive range of fields, including assistive technologies, child welfare, environmental policy, health policy, Holocaust memorialization, homelessness policy, infectious disease tracking, internet security, and migration and citizenship law.

2021 President's Impact Award Winners

Akwasi Owusu-Bempah

Assistant Professor, Department of Sociology, University of Toronto Mississauga

For contributions to the study of inequality and criminal justice that have impacted society beyond academia in the areas of law, public policy and public discourse.

Chelsea Rochman

Assistant Professor, Department of Ecology and Evolutionary Biology, Faculty of Arts & Science

For plastic pollution research that informs policies at all government levels, inspires youth to take action, builds research capacity and advances this critically important science. *Prof. Rochman is also the recipient of the 2021 Carolyn Tuohy Impact on Public Policy Award.*

Michael Carter

Professor, Department of Mechanical and Industrial Engineering, Faculty of Applied Science & Engineering

For pioneering contributions to the field of healthcare engineering, applying industrial engineering principles to improve the healthcare system in Canada and beyond.

Shelley Stagg Peterson

Professor, Department of Curriculum, Teaching and Learning, Ontario Institute for Studies in Education

For ground-breaking impacts on children's literacy learning in remote Northern Indigenous and non-Indigenous communities through innovative partnerships and collaborative action research with educators, families and communities.

Sidney Kennedy

Professor, Department of Psychiatry, Faculty of Medicine St. Michael's Hospital; University Health Network

For contributions to the treatment of people with major mood disorders and enhancement of societal standards for care provision in Canada and around the world.

Research Partnerships and Collaborations

Research partnerships with industry, not-for-profits and community organizations expand our researchers' collaborative networks and contribute essential funding for research and training opportunities.

Industry Partnerships

U of T attracts industry partners from across Canada and around the world. During the past decade, U of T has worked with over **600** different industry partners of all sizes.

In 2020, the **City Logistics for the Urban Economy**, or CLUE initiative was established to partner with industry to better understand how goods are delivered across the Greater Toronto and Hamilton Area, and to optimize processes. The CLUE initiative includes **24** separate research projects on a wide range of topics, from driver training and supply-chain resilience to automated delivery of goods and the impact of local bylaws.

Mitacs is a federally funded, not-for-profit organization that supports research trainees undertaking partnership projects with industry partners in all fields. With over **800** research internships and **$14 million** in committed funding in 2019–2020, Mitacs funding to U of T has increased rapidly.

U of T established more than 1,740 research collaborations that each resulted in 25 or more publications between 2016 and 2018.

Congolese asylum-seekers line up to undergo security and health screening in Zombo, near the border between Uganda and the Democratic Republic of the Congo (photo by Rocco Nuri/UNHCR).

Community Partnerships

U of T plays an important role in addressing significant societal issues by engaging with communities as equal partners to advance solutions that serve their needs. Projects funded through the **Connaught Community Partnership Research Program** and the **Social Sciences and Humanities Research Council (SSHRC) Partnership Program** engage dozens of partners across multiple sectors to address issues of critical importance to our communities.

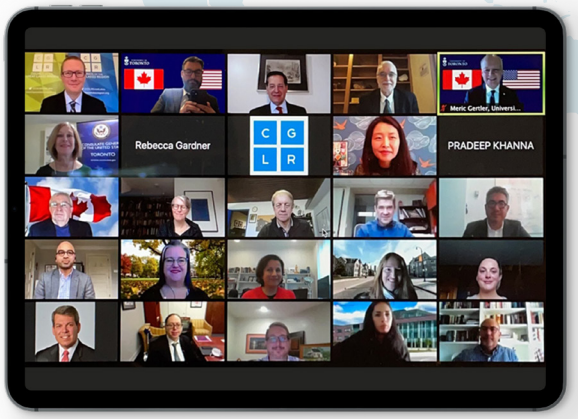
In 2020, **Professor Carmen Logie** (Factor-Inwentash Faculty of Social Work) was one of six U of T researchers to be awarded a SSHRC Partnership Engage Grant—COVID-19 Special Initiative. This will support her research on arts-based approaches to building resilience and preparedness among adolescents in South Africa amid the pandemic. Logie's research also studies how social media can help young refugees in Uganda's capital, Kampala, receive information about preventing COVID-19 and express their feelings and concerns.

International Research Partnerships

The VPRI works closely with U of T's Office of the Vice-President, International on key international partnerships that are instrumental to accelerating discovery, fostering learning and leveraging complementary research strengths.

In 2020, internationally focused research and innovation initiatives included the cross-divisionally funded launch of the binational **Great Lakes Higher Education Consortium** between the University of Toronto and the University of Illinois (with confirmed members McGill University, Queen's University and the University of Michigan).

Administered by the Council of the Great Lakes Region, the Great Lakes Higher Education Consortium will focus on regionally significant socioeconomic and environmental issues in a bid to help secure the region's long-term competitiveness, development and sustainability.



Serving the U of T Research Community

Facilitating the Research Life Cycle

One of the most important roles of the VPRI is liaising with sponsor organizations to monitor and advocate on behalf of U of T researchers. More than half of U of T's research funding comes from government sources. The largest share of federal funding is secured from the Tri-Agencies. The VPRI works with faculty, staff, our partner hospitals and academic administrators in the academic divisions to maximize U of T participation and success in these and many other governmental, private-sector, not-for-profit, foundation-based and research funding programs and opportunities, both domestically and internationally.

Canada Research Continuity Emergency Fund (CRCEF)

CRCEF provided **$450 million** in funding to help Canada's academic research community during the COVID-19 pandemic. This investment supported universities, health research institutes, and individual researchers in order to maintain essential research-related activities during the crisis. The VPRI staff worked with our partner hospitals to maximize the funding opportunity to support the continuation of critical research operations, bringing over **$100 million** to U of T and the Toronto Academic Health Science Network (TAHSN).

Oversight and Compliance

The VPRI ensures that U of T fulfills its ethical, legal and financial reporting obligations associated with research. We manage research risks for the University so that researchers and students can conduct research in a safe environment. As part of managing this risk, the VPRI oversees human and animal ethics and manages matters related to environmental health and safety, including biosafety, radiation protection, laser and lab safety, and chemical safety.

With the assistance of dedicated faculty, staff and community volunteers, all the VPRI units work together to manage the complex sponsor and regulatory requirements that accompany academic research, including participation on research review committees, research ethics boards and animal care committees.

Environmental Health and Safety (EHS)

EHS collaborates closely with the University community to establish and maintain rigorous health and safety systems that ensure environmentally responsible, safe and healthy work, research and study environments at U of T.

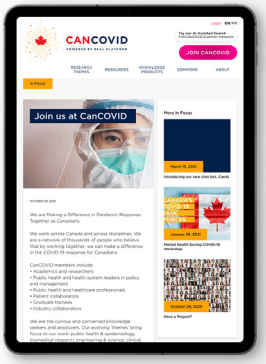
Responding to COVID-19

U of T's early responses to the demand for research into COVID-19 were supported by **$42 million** in research funding in 2019–2020 and in early 2020–2021. This includes **$10 million+** from the Toronto COVID-19 Action Fund, **$1 million+** from the Ontario Together Fund, almost **$2.5 million** from the Canada Foundation for Innovation COVID-19 Exceptional Opportunities Fund and **$4.5 million+** from the federal/provincial COVID-19 Rapid Research Response programs. U of T produced over **1,000** COVID-19-related publications, placing it in the top three universities globally and first among its U15 peers.

(Data does not include funding from partner hospitals.)

CanCOVID

U of T continues to serve as a crucial partner to the Canadian and Ontario governments' response to COVID-19. U of T provided leadership in the launch of the CanCOVID platform that connects an expert network of Canadian COVID-19 researchers, clinical collaborators, and healthcare stakeholders, expediting communication and collaboration between the scientific, healthcare and policy communities.

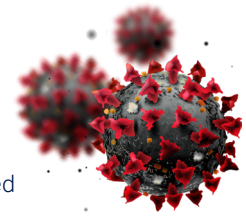


The Research Restart Steering Committee

Formed in response to the shutdown of research due to COVID-19, the VPRI is heavily involved in this committee, tasked with developing University-wide implementation principles and guidance documents in collaboration with the academic divisions. The Committee engages in regular communication and coordination within the University, as well as with affiliated institutions, and ensures the appropriate balance of oversight with decentralized decision-making.

In 2020, as many U of T scientists focused their research around COVID-19, the VPRI responded to an increased demand for secure facilities to research emerging infectious diseases. The VPRI staff developed protocols to meet the new capacity demands for the Temerty Faculty of Medicine secure facility. The facility enables work with relevant biological agents that resulted in significant contributions to the fight against COVID-19.

VPRI Website



Between March and December 2020, multiple COVID-19-related pages were created on the VPRI website, helping to inform our research community. The pages received more than **45,000** unique views.

Toronto COVID-19 Action Fund

We launched the Toronto COVID-19 Action Fund and expedited the investment of **$10.35 million** into **40** COVID-19-related research projects across the campuses, partner hospitals and a broad range of disciplines to identify actionable outcomes. **338** applications were received in April and peer reviewed in less than 30 days.

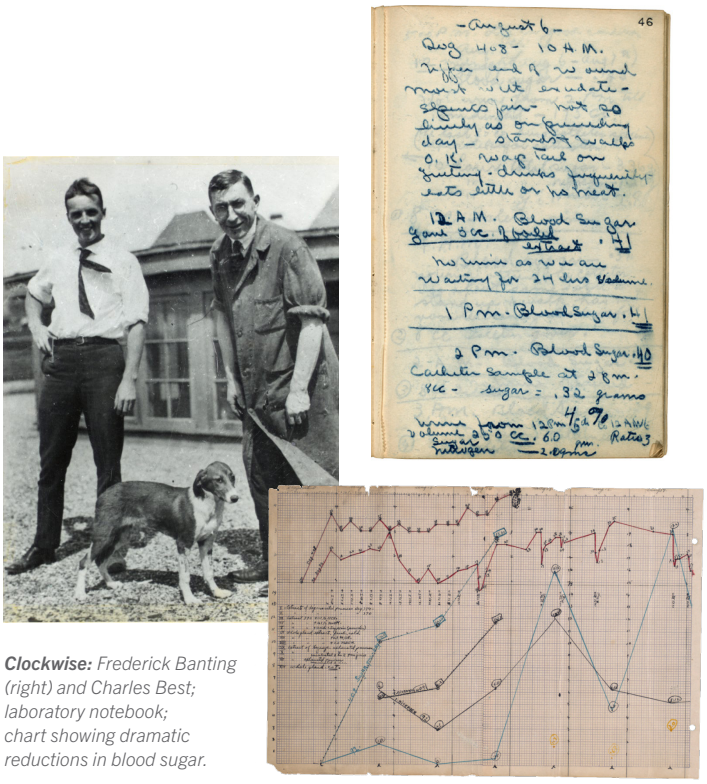
INSULIN 100

2021 marks the 100th anniversary of the discovery of insulin, highlighting the collaborative effort that U of T and its partner hospitals and industry partners took to develop, advance and distribute this life-saving treatment to millions worldwide.

In 1921, U of T researchers Banting, Best, McLeod and Collip developed and purified a pancreatic extract safe for human trials. U of T's Connaught Antitoxin Laboratories began ramping up insulin production and soon Eli Lilly & Co. began large-scale production—bringing insulin from bench to bedside with revolutionary results. Insulin has saved and improved the lives of millions of people with diabetes—here in Canada and across the globe.

In November 2020, we launched our celebration of insulin's discovery by hosting the Royal Society of Canada's annual Celebration of Excellence and Engagement and leading an interdisciplinary symposium, "The Legacy of Insulin Discovery: Origins, Access, and Translation."

Additional events are planned throughout 2021.



Clockwise: *Frederick Banting (right) and Charles Best; laboratory notebook; chart showing dramatic reductions in blood sugar.*

A bottle of insulin filled on November 1, 1923 at the Connaught Laboratories.

The Connaught Fund

The **Connaught Labs** played an instrumental role in the discovery of insulin. Today, that legacy provides a model for The Connaught Fund that continues to support innovative scholarship addressing questions of importance to society. The Connaught Fund is the largest internal university research funding program in Canada, with programs specifically designed for graduate students, early-career researchers, interdisciplinary teams and innovators — all with an emphasis on meeting the challenges facing our global society. The University serves as the steward of the fund and has awarded more than **$169.3 million** to U of T researchers.

Connaught Innovation Award

In 2019–2020, this program awarded 10 U of T researchers up to **$50,000** each to develop promising technologies and to promote the commercialization and/or knowledge transfer of innovations emerging from U of T. The award provides one-time seed funding to develop inventions that have been disclosed to the University. Successful projects have strong socioeconomic and/or commercial potential and strive to have a positive impact on society. Since their inception in 2010, the Innovation Awards have spurred the development of over **100** promising technologies and sparked over **$30 million** in follow-on funding to the University and associated startups, which is more than **14 times** the original investment.

The Connaught Community Partnerships Research Program

In 2020, five U of T researchers received **$450,000** in funding from the Connaught Community Partnerships Research Program — General Stream. Among them, **Professor Farzaneh Hemmasi** (Faculty of Music), whose project will seek to better understand the interplay of value, (un)affordability and culture in Kensington Market. Collaborating with resident-led activist organization Friends of Kensington Market (FOKM), the Kensington Market Business Improvement Area (KMBIA), and U of T ethnomusicologists and anthropologists, Prof. Hemmasi's work will build on U of T's Ethnography Lab's Kensington Market Research Project and her SSHRC-funded research on music, sound and noise in Kensington Market.

An **Indigenous Research Stream** of the Program launched in 2020 with the goal of helping to ensure Indigenous research being conducted at U of T is community-driven and has a positive impact on Indigenous peoples and communities in Canada. Indigenous communities, organizations and leaders across the country were invited to participate in this new funding stream, which funded **$450,000** in projects in its first year.

The structure of this stream supports working with Indigenous communities, organizations, industries, businesses and service providers, regardless of their current level of partnership with U of T researchers. This entailed a consultative process to create research projects led by community interests and needs, rather than creating a Western-style academic competitive funding process. It has allowed for joint development of research agendas and funding among scholars and communities for solutions at local, regional and national levels.

The Centre for Research & Innovation Support (CRIS)

CRIS provides a gateway to help faculty access the University's rich array of resources. Since its inception in 2019, CRIS has grown to provide a series of communication tools, including a searchable resource hub that supports the conduct and administration of research. CRIS continues to be an important portal for professional development opportunities, hosting over **500** training and information session events listings and supporting the delivery of **100**+ events to **5,000** researchers in 2020.

Strengthening Administration of Research (STAR) Program

The VPRI continues to expand its outreach efforts to staff through the Strengthening Administration of Research (STAR) Program. We connected with over **400** staff digitally, sharing best practices and tips for managing research and innovation funds, and we hosted approximately **350** staff in CFI-focused workshops and the STAR conference.

Toronto Region Statistics Canada Research Data Centre (RDC)

The Toronto RDC is a partnership between Statistics Canada, the Canadian Research Data Centre Network (CRDCN), the University of Toronto, Ryerson University, York University and Nipissing University, which offers secure access to detailed microdata from Statistics Canada's surveys—such as the Canadian census—as well as administrative datasets. Toronto RDC provides services to approximately **270** researchers and is currently working on **184** active projects. Students continue to be major users of the Toronto RDC, with close to **100** doctoral, masters and undergraduate students working on their theses and/or other projects. The datasets made available to them at the RDC would be otherwise inaccessible outside of Ottawa.

The Canada Foundation for Innovation (CFI)

The CFI makes financial contributions to Canada's universities, colleges, research hospitals and non-profit research organizations to increase their capability to carry out high-quality research. By investing in state-of-the-art facilities and equipment, the CFI helps to attract and retain the world's top talent, train the next generation of researchers and support world-class research that strengthens the economy and improves the quality of life for all Canadians.

In 2020, four projects led by U of T campus-based researchers were awarded over **$24.6 million** through CFI's Innovation Fund (IF) that provides continued investments in infrastructure, across the full spectrum of research, to enable global leadership. The neuroimmunology project headed by U of T **Professors Jennifer Gommerman** and **Kullervo Hynynen** includes 30 scientists and clinicians at six Toronto hospitals: Sunnybrook Health Sciences Centre, University Health Network, the Hospital for Sick Children, Unity Health Toronto, Baycrest and CAMH. The research is enabled by highly sought-after technology: imaging mass cytometry and a first-in-Toronto 7-Tesla MRI that can visualize protein markers in tissue with microscopic detail. In total, projects led by U of T and partner hospitals attracted over **$60 million** from CFI, representing approximately **40%** of total spending on new research infrastructure and facilities of over **$150 million**.

Smart Computing for Innovation (SOSCIP)

SOSCIP is Canada's leading research and development (R&D) consortium harnessing Advanced Research Computing to drive industry innovation.

SOSCIP's mission is to bring together industrial partners and academic researchers and provide them with sophisticated advanced computing technologies and expertise to solve social, technical, and business challenges across sectors, and drive economic growth. In the past year, SOSCIP trained **184** highly qualified personnel and led **62** collaborative industry-academic research projects, with total investments of **$12.1 million** in R&D, including **$4.4 million** of industry contributions.

Cyclica

Cyclica is a Toronto-based startup accessing the SOSCIP Cloud analytics platform to develop a technology that will offer insight into how different people respond to therapeutic drugs at a genetic level. This is a daunting task, considering a small-molecule drug could potentially interact with hundreds of the 20,000 known human genes, causing adverse and unexpected side effects. The SOSCIP Cloud will enable Cyclica to develop technology that supports personalized medicine, a ground-breaking change to traditional methods.

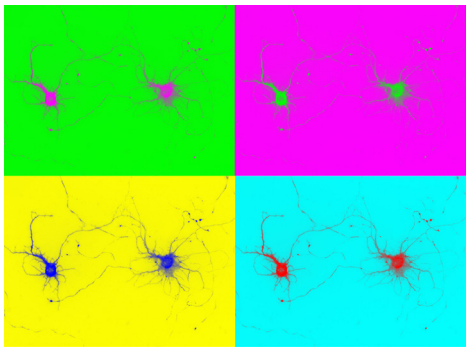
SciNet

SciNet is the supercomputer centre at U of T, hosting Niagara, the fastest supercomputer in Canada, plus a range of other systems. SciNet provides Canadian researchers with the computational resources and expertise necessary to perform their research on a scale not previously possible in Canada. In 2019–2020, through an investment by the federal government and U of T, SciNet implemented a **$17 million** expansion of the Niagara system, enabling a **25%** increase in computing capacity for researchers across all disciplines by acquiring almost **16,000** CPUs, GPUs, additional storage, as well as enhanced staff capacity to ensure effective cybersecurity.

In 2020, U of T teamed up with processor giant AMD to create **SciNet4Health**: a supercomputing platform that will power the University's health research — including into global threats such as COVID-19. The initiative will allow researchers and clinician scientists at U of T and its partner hospitals to access and analyze massive databases of patient health information in a secure way that protects patients' privacy by using technologies such as machine learning. SciNet4Health is made possible by AMD's donation of one petaflop of dedicated processing power, capable of a quadrillion calculations per second.

Research Revealed

In 2020, the Research Revealed exhibition launched as a gallery of online images showcasing research from U of T undergraduate students, graduate students and postdoctoral fellows. Research Revealed seeks to transform the way we experience research by offering a unique opportunity to engage with academic research through a creative lens.



No physical distance when you are making memories

Gilda Stefanelli (postdoctoral fellow), Department of Psychology, UTM, Faculty of Arts & Science

Pandemic Dreams: Heightened Worry

Noor Abbas (graduate student), Anthropology (Evolutionary Anthropology Stream), UTM, Faculty of Arts & Science

"Berlin Comes Bursting In"

English literature graduate student Georgia Maxwell's collage was inspired by her undergraduate thesis that explored how Christopher Isherwood's novels could be read as experiments in ethnographic fiction. She explains, "In my image, it is unclear where Berlin ends and Isherwood's text begins. This represents not only the ethnographic content contained within Isherwood's text, but also how Isherwood often turned to fiction, paradoxically obscuring his experiences with gay Berlin, yet preserving them in the face of censorship."

U of T Research by the Numbers

Rankings & Awards

U of T Rankings in the Most Prominent World Rankings Systems

■ World Rankings

■ Canadian Rankings

Ranking	2016–2017		2017–2018		2018–2019		2019–2020		2020–2021	
1. National Taiwan University Ranking (NTU)	4	1	4	1	4	1	4	1	3	1
2. U.S. News & World Report Best Global Universities	21	1	20	1	20	1	18	1	17	1
3. Times Higher Education World University Rankings (THE)	22	1	22	1	21	1	18	1	18	1
4. Academic Ranking of World Universities (ARWU)	27	1	23	1	23	1	24	1	23	1
5. QS World University Rankings (QS)	32	2	31	1	28	1	29	1	25	1

Each ranking system has its own provenance and methodology, including different metrics and how they are weighted:

1. National Taiwan University Ranking (NTU) based on Web of Science™ bibliometric measures including publication and citation counts, average citations per publication, h-index, highly cited publications and articles in high-impact journals [Methodology].

2. U.S. News & World Report Best Global Universities began in 2014. Based on a series of Web of Science™ bibliometric measures, reputational surveys and counts of PhDs awarded [Methodology].

3. Times Higher Education World University Rankings (THE) based on reputational surveys, internationalization measures, average class size and metrics normalized over faculty count: PhDs awarded, publications, citations, overall institutional income and research income from all sources and industry. Bibliometric measures were from Web of Science™ until 2014 and are now from Scopus™ [Methodology].

"The performance indicators are grouped into five areas: (30%) Teaching (the learning environment); (30%) Research (volume, income and reputation); (30%) Citations (research influence); (7.5%) International outlook (staff, students and research); and (2.5%) Industry income (knowledge transfer)."

4. Academic Ranking of World Universities (ARWU) conducted by researchers at the Center for World-Class Universities of Shanghai Jiao Tong University; based on faculty and alumni who are Nobel Prize and Fields Medal winners, researchers named to Clarivate Analytics' Highly Cited Researchers list and Web of Science™ bibliometric measures including articles counts and additional weight given to articles in Science and Nature [Methodology].

"ARWU considers every university that has any Nobel Laureates, Fields Medalists, Highly Cited Researchers, or papers published in Nature or Science. In addition, universities with significant amount of papers indexed by Science Citation Index-Expanded (SCIE) and Social Science Citation Index (SSCI) are also included. In total, more than 2000 universities are actually ranked and the best 1,000 are published."

5. QS World University Ranking (QS) based on citations normalized by faculty count, reputational surveys, average class size and internationalization. A significant methodological change was implemented with the 2015 QS overall ranking in that the citations per faculty score was segmented according to the rankings' five major fields as a way to equalize the influence of each [Methodology].

Rankings & Awards

U of T Major Field Ranking Results

QS 2020	World	Canada
Life Sciences & Medicine	13	1
Natural Sciences	18	1
Arts & Humanities	18	1
Social Sciences & Management	18	1
Engineering & Technology	22	1

NTU 2020	World	Canada
Medicine	3	1
Social Sciences	4	1
Life Sciences	11	1
Natural Sciences	27	1
Agriculture	48	3
Engineering	78	2

THE 2021	World	Canada
Law	14	1
Clinical, Pre-clinical & Health	6	1
Education	15	1
Arts & Humanities	15	1
Computer Science	23	1
Psychology	21	2
Life Sciences	25	1
Social Sciences	27	1
Physical Sciences	33	1
Business & Economics	24	1
Engineering & Technology	28	1

Data sources: *Each ranking organization's website: NTU, THE and QS.*
Shanghai (ARWU) did not release field rankings in 2020–2021.
U.S. News & World Report did not release field rankings in 2020–2021.

Rankings & Awards

U of T Subject Ranking Results

NTU 2020	World	Canada
Clinical Medicine	3	1
Neuroscience & Behaviour	5	1
Pharmacology & Toxicology	5	1
Psychiatry/Psychology	5	1
Social Sciences, General	5	1
Molecular Biology & Genetics	10	1
Biology & Biochemistry	13	1
Economics & Business	19	1
Immunology	24	1
Space Science	27	1
Microbiology	31	1
Mathematics	41	1
Environment/Ecology	42	3
Electrical Engineering	45	2
Chemistry	55	1

THE 2021	World	Canada
Medicine & Dentistry	6	1
Other Health	6	1
Archaelogy	15	1
Architecture	15	1
Art, Performing Arts & Design	15	1
History, Philosophy & Theology	15	1
Languages, Literature & Linguistics	15	1
Accounting & Finance	24	1
Business & Management	24	1
Economics & Econometrics	24	1
Agriculture & Forestry	25	1
Biological Sciences	25	1
Sports Science	25	1
Communication & Media Studies	27	1
Geography	27	1

U.S. News & World Report 2021	World	Canada
Oncology	4	1
Surgery	4	1
Clinical Medicine	5	1
Endocrinology and Metabolism	5	1
Cardiac & Cardiovascular Systems	6	1
Arts & Humanities	8	1
Psychiatry/Psychology	8	1
Gastroenterology and Hepatology	9	1
Radiology, Nuclear Medicine and Medical Imaging	9	1
Biology & Biochemistry	10	1
Cell Biology	10	1
Social Sciences & Public Health	10	1
Molecular Biology & Genetics	11	1
Public, Environmental and Occupational Health	12	1
Space Science	12	1

Rankings & Awards

U of T Subject Ranking Results (cont'd)

ARWU (Shanghai) 2020	World	Canada
Automation & Control	4	1
Medical Technology	4	1
Psychology	8	1
Computer Science & Engineering	9	1
Statistics	10	1
Sociology	11	1
Management	12	1
Public Health	12	1
Pharmacy & Pharmaceutical Sciences	13	1
Clinical Medicine	15	1
Education	16	1
Finance	18	1
Biotechnology	19	1
Ecology	19	2
Mining & Mineral Engineering	20	2

QS 2021	World	Canada
Library & Information Management	3	2
Pharmacy & Pharmacology	4	1
Education	5	1
Sports-related Subjects	5	2
Nursing	8	1
Anatomy & Physiology	10	1
Computer Science & Information Systems	10	1
English Language & Literature	10	1
Anthropology	11	1
Geography	11	2
Philosophy	11	1
Linguistics	13	1
Medicine	13	1
Biological Sciences	15	1
History	15	1

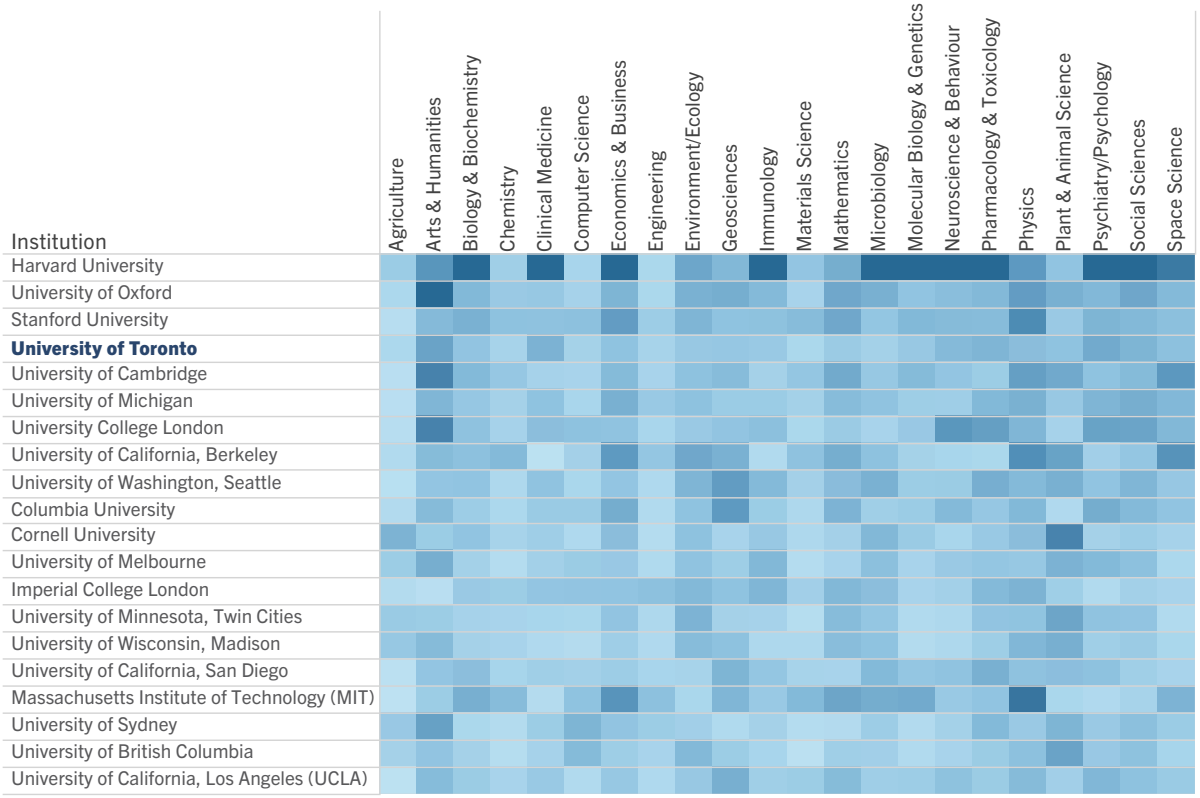
Data sources: *Each ranking organization's website: NTU, U.S. News & World Report, THE, ARWU (Shanghai) and QS.*

Each list is limited to 15 subjects where U of T ranked highest in the world.

Rankings & Awards

Heat Matrix of Publication Rank in the Top 10% Most Highly Cited (2015–2019) Top 20 Universities Worldwide

The heat scale shading represents publications in the top 10% cited (darker blue means a higher percentage) relative to all other universities (column). All ranked universities must have met a threshold of 200 top 10% cited publications over all fields.



Data source: *Queried from InCites (InCites dataset) updated 03 Jan 2020 with Web of Science™ content indexed through 29 Nov 2019. Analysis by the University of Toronto.*

Vertical sorting is based on the sum of the ranks across the 22 fields (where the lowest sum represents the top institution). Universities with zero publications (any citation) in a given field tie for the lowest rank for that field.

Twenty-one of the fields are from the Essential Science Indicators schema; Arts & Humanities is from the GIPP schema.

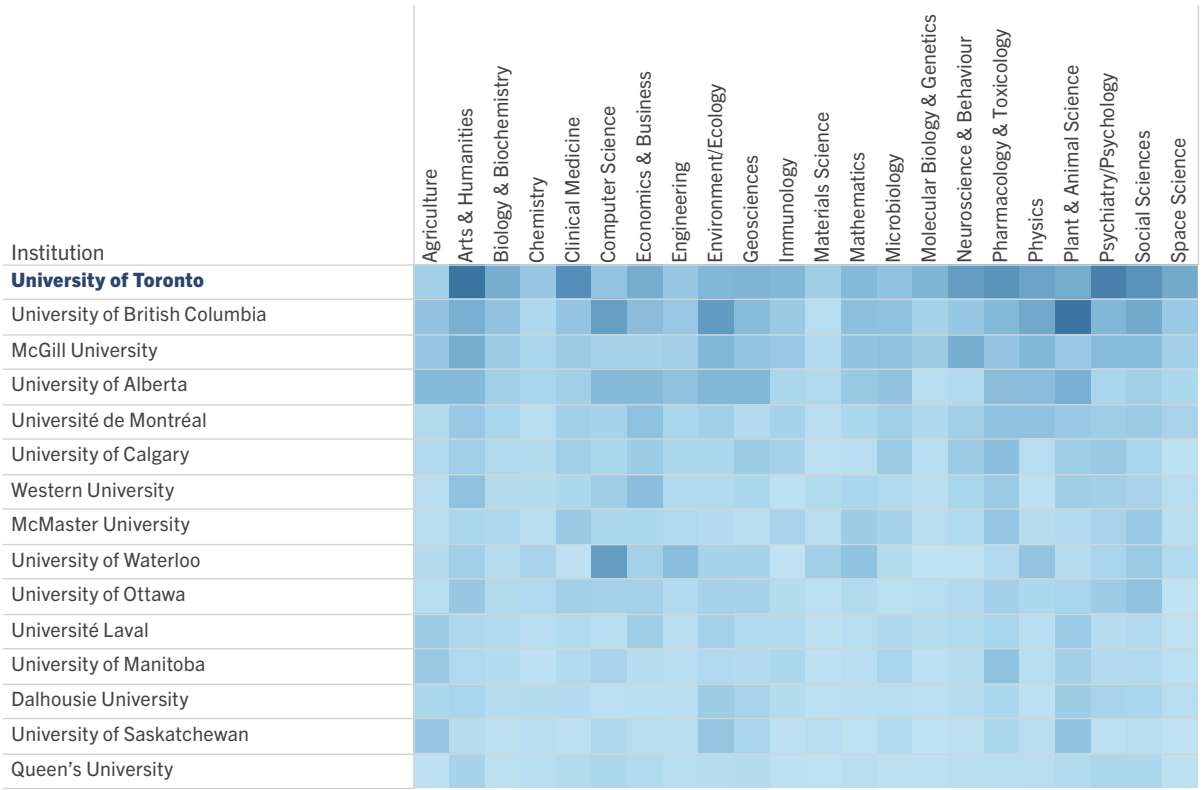
Document type limited to articles, review articles and book chapters with at least one author affiliated with a university.

Universities not in top 20 that placed 1st in the following fields – Agriculture: China Agricultural University; Chemistry: Tsinghua University; Computer Science: Tsinghua University; Engineering: Tsinghua University; Environment/Ecology: Wageningen University & Research; Geosciences: California Institute of Technology; Materials Science: Tsinghua University; Mathematics: King Abdulaziz University; Plant and Animal Science: Wageningen University & Research; Space Science: California Institute of Technology.

Rankings & Awards

Heat Matrix of Publication Rank in the Top 10% Most Highly Cited (2015–2019) U15 Universities

The heat scale shading represents publications in the top 10% cited (darker blue means a higher percentage) relative to all other universities (column). All ranked universities must have met a threshold of 200 top 10% cited publications over all fields.



Data source: *Queried from InCites (InCites dataset) updated 03 Jan 2020 with Web of Science™ content indexed through 29 Nov 2019. Analysis by the University of Toronto.*

Vertical sorting is based on the sum of the ranks across the 22 fields (where the lowest sum represents the top institution). Universities with zero publications (any citation) in a given field tie for the lowest rank for that field.

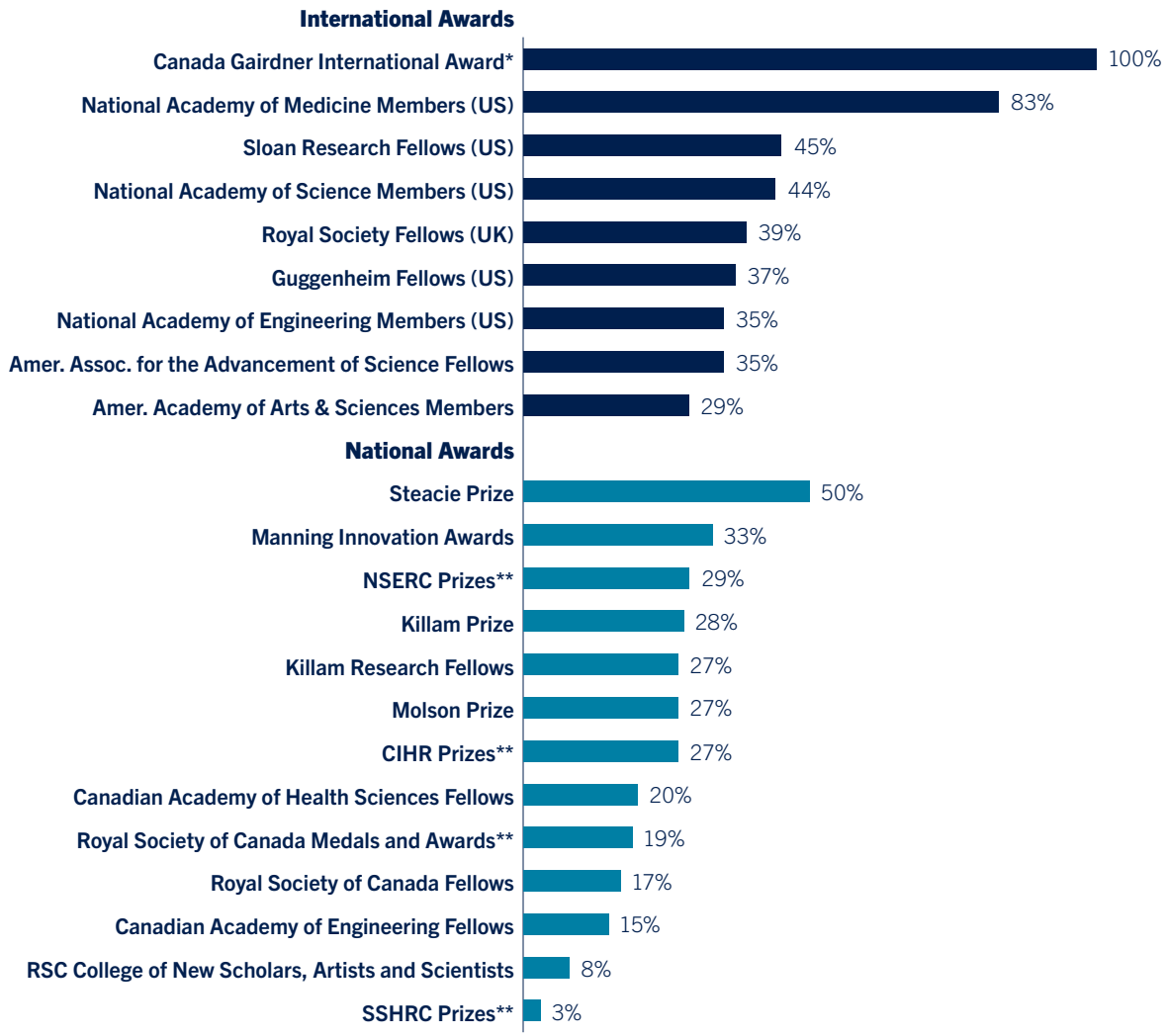
Twenty-one of the fields are from the Essential Science Indicators schema; Arts & Humanities is from the GIPP schema.

Document type limited to articles, review articles and book chapters with at least one author affiliated with a university.

Universities not in top 20 that placed 1st in the following fields – Agriculture: China Agricultural University; Chemistry: Tsinghua University; Computer Science: Tsinghua University; Engineering: Tsinghua University; Environment/Ecology: Wageningen University & Research; Geosciences: California Institute of Technology; Materials Science: Tsinghua University; Mathematics: King Abdulaziz University; Plant and Animal Science: Wageningen University & Research; Space Science: California Institute of Technology.

Rankings & Awards

Major Awards & Honours — U of T Market Share Among Canadian Universities (2011–2020)



Data source: *VPRI*

**One Gairdner International Award was awarded to a Canadian in this period. U of T holds this single award (as such, 100% of the awards).*

***Awards included in specified award suites: CIHR Prizes include the Michael Smith Prize in Health Research (renamed in 2011), the CIHR Health Researcher of the Year Prize (discontinued in 2014) and the CIHR Gold Leaf Prizes (first awarded in 2017).*

NSERC Prizes include the Gerhard Herzberg Canada Gold Medal for Science and Engineering, the NSERC John C. Polanyi Award, the Brockhouse Canada Prize for Interdisciplinary Research in Science and Engineering and the E.W.R. Steacie Memorial Fellowships.

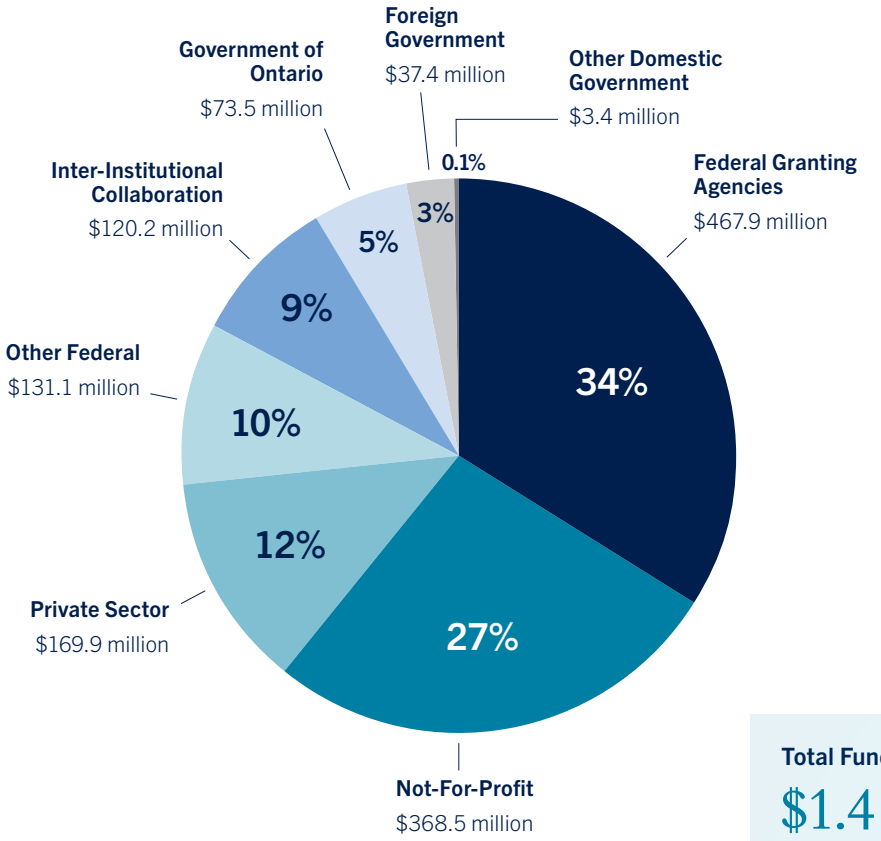
Royal Society of Canada Medals and Awards include all but the RSC's awards to postdoctoral researchers (Alice Wilson Awards).

SSHRC Prizes include the SSHRC Gold Medal, SSHRC Insight Award, SSHRC Connection Award and SSHRC Partnership Award.

Funding

Research Funds Awarded to U of T and Partner Hospitals by Sector (2019–2020)

Total Research Funding Awarded by Sector



Total Funding
$1.4 billion

Data source: *VPRI*

Includes University of Toronto and partner hospitals.

Represents funds awarded for use in year, based on government fiscal year, April to March.

The federal granting agencies include the Social Sciences and Humanities Research Council (SSHRC), the Natural Sciences and Engineering Research Council (NSERC), the Canadian Institutes for Health Research (CIHR) and related programs: Canada Research Chairs (CRC), Canada Excellence Research Chairs program (CERC), Canada 150 Chairs (C-150), Canada First Research Excellence Fund (CFREF), Research Support Fund (RSF), Incremental Project Grant (IPG) and New Frontiers in Research Fund (NFRF).

Other Federal includes the Canada Foundation for Innovation (CFI).

Other Domestic Government includes municipal governments and provincial governments other than Ontario.

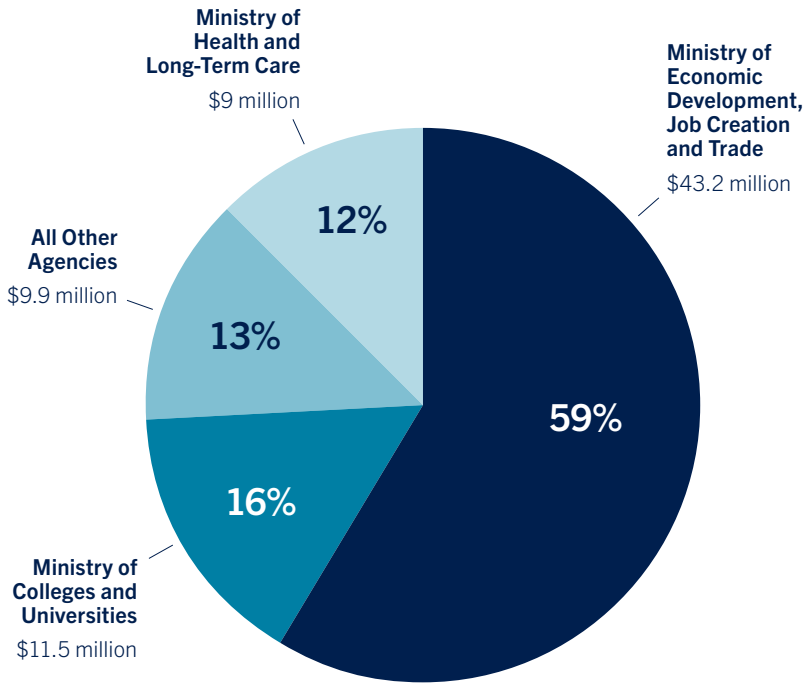
All indirect costs are included.

Funding for Research Support Fund subgranted from the University.

Funding

Research Funds Awarded to U of T and Partner Hospitals by Sector (2019–2020) (cont'd)

Research Funding Awarded by Sector, Government of Ontario



Total Funding
$73.5 million

Data source: *VPRI*

Includes University of Toronto and partner hospitals.
Some partner hospital data was not received at the time of publication.

Represents funds awarded for use in year, based on government fiscal year, April to March.

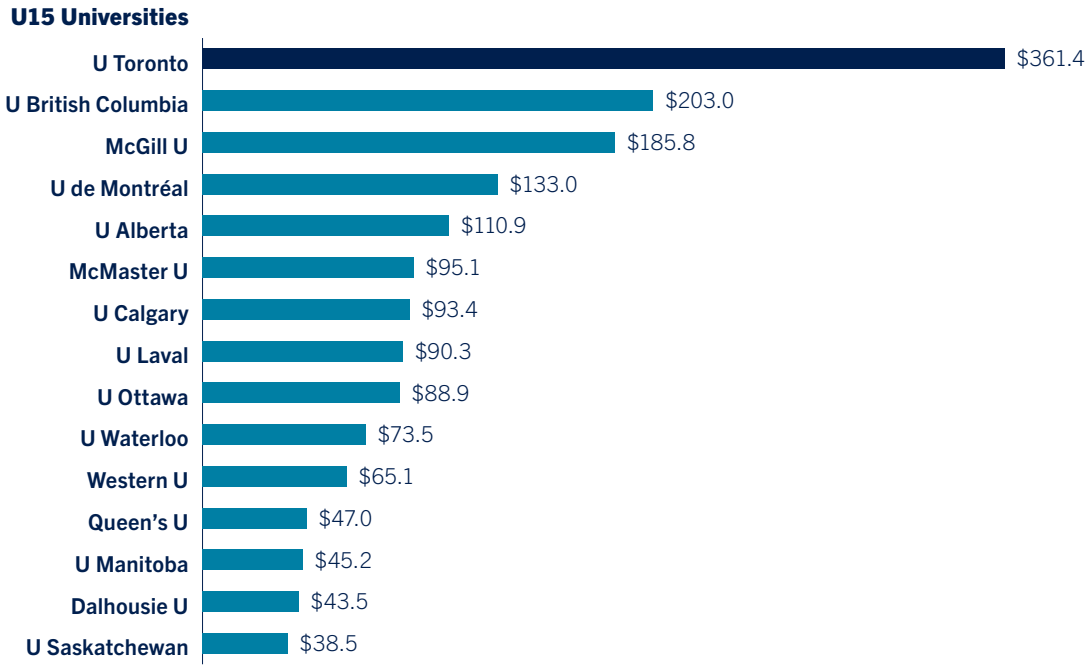
All indirect costs are included.

Funding for Research Support Fund subgranted from the University.

Funding

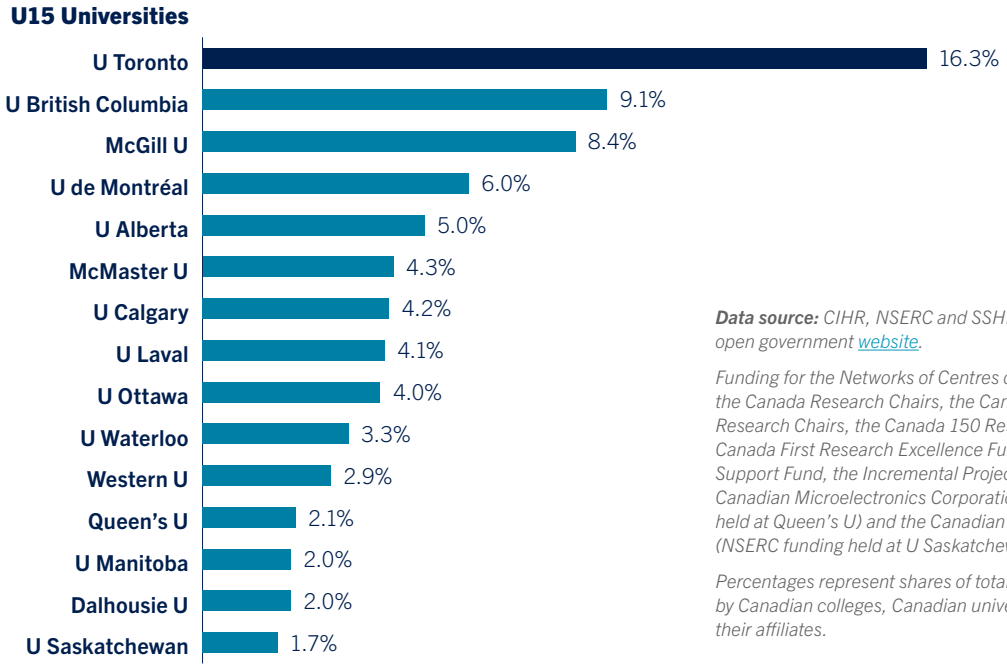
U of T Tri-Agency funding has steadily increased annually from **$284 million** in 2015–2016 to **$361.4 million** in 2019–2020.

Tri-Agency Funding to U15 Universities (2019–2020) ($ Millions)



Our Tri-Agency national marketshare has increased from **15.5%** in 2015–2016 to **16.3%** in 2019–2020.

Market Share of Tri-Agency Funding to U15 Universities (2019–2020) (Percentages)



Data source: *CIHR, NSERC and SSHRC data from open government website.*

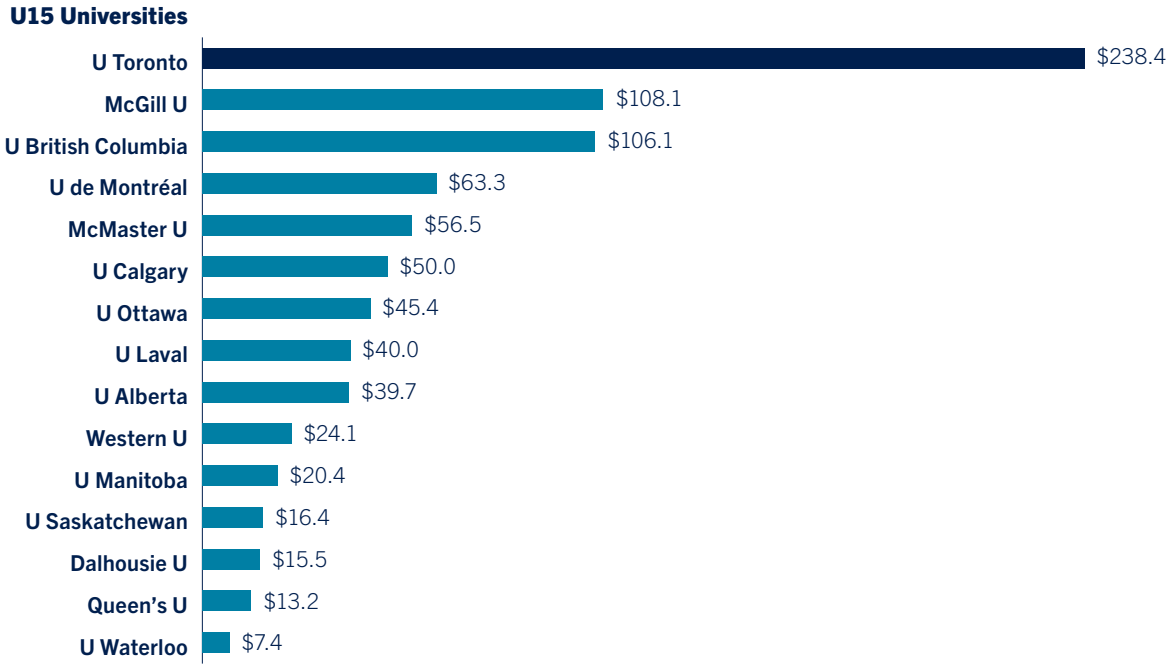
Funding for the Networks of Centres of Excellence nodes, the Canada Research Chairs, the Canada Excellence Research Chairs, the Canada 150 Research Chairs, the Canada First Research Excellence Fund, the Research Support Fund, the Incremental Project Grant, the Canadian Microelectronics Corporation (NSERC funding held at Queen's U) and the Canadian Light Source (NSERC funding held at U Saskatchewan) are excluded.

Percentages represent shares of total funding held by Canadian colleges, Canadian universities and their affiliates.

Funding

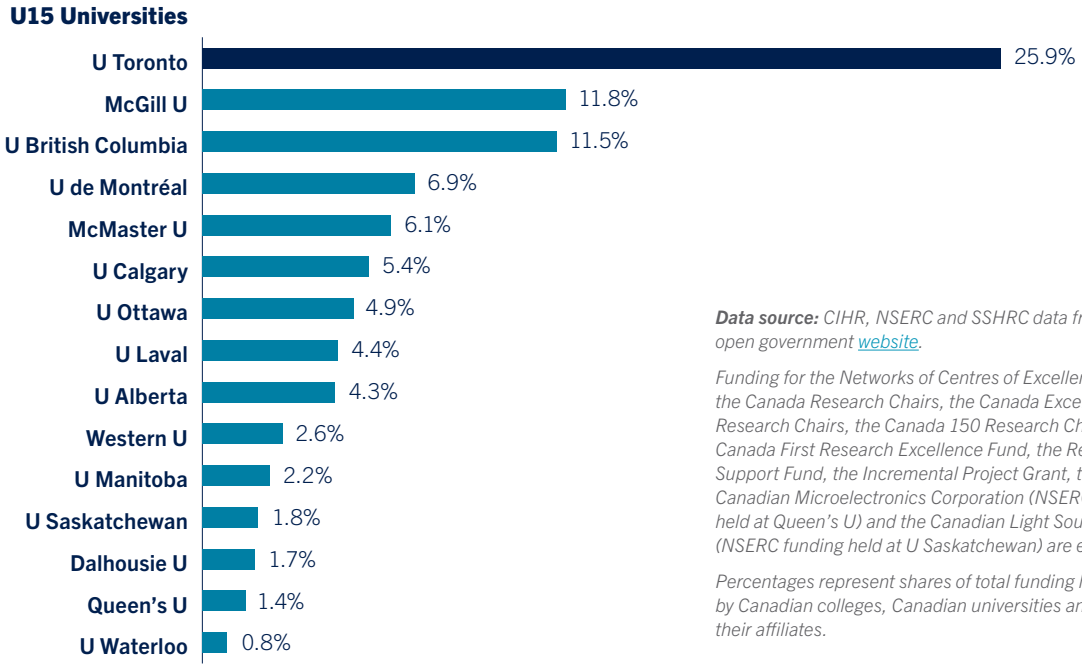
U of T's CIHR funding has steadily increased annually. It has risen **$63.3 million** since 2015–2016.

Canadian Institutes of Health Research (CIHR) Funding (2019–2020) ($ Millions)



Our national market share has increased from **22.8%** in 2015–2016 to **25.9%** in 2019–2020.

Market Share of Canadian Institutes of Health Research (CIHR) Funding (2019–2020) (Percentages)



Data source: *CIHR, NSERC and SSHRC data from open government website.*

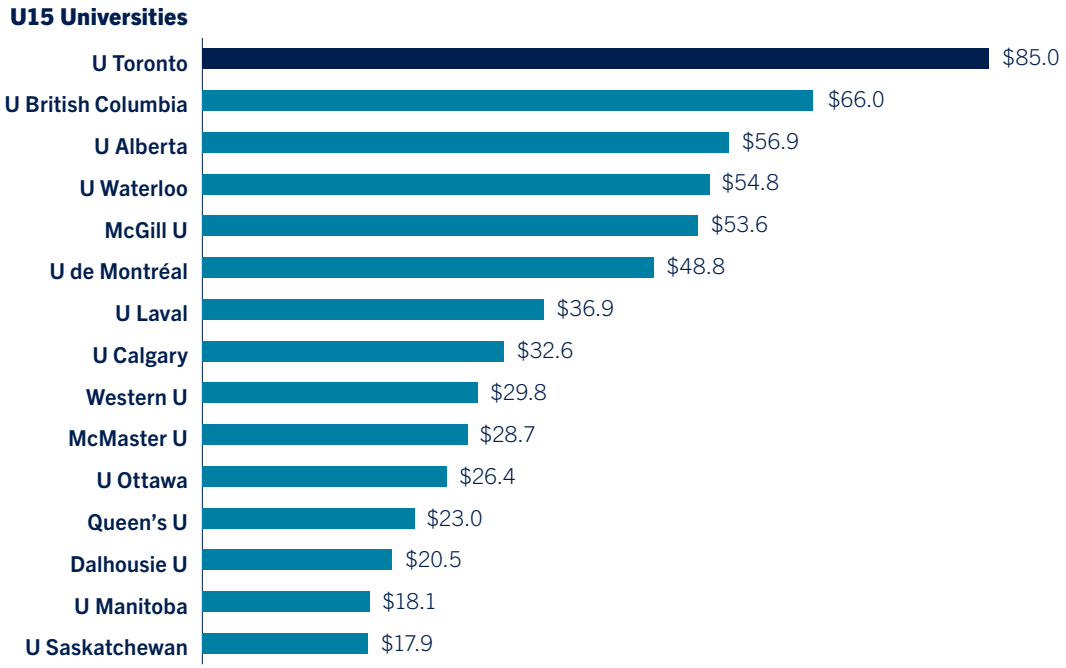
Funding for the Networks of Centres of Excellence nodes, the Canada Research Chairs, the Canada Excellence Research Chairs, the Canada 150 Research Chairs, the Canada First Research Excellence Fund, the Research Support Fund, the Incremental Project Grant, the Canadian Microelectronics Corporation (NSERC funding held at Queen's U) and the Canadian Light Source (NSERC funding held at U Saskatchewan) are excluded.

Percentages represent shares of total funding held by Canadian colleges, Canadian universities and their affiliates.

Funding

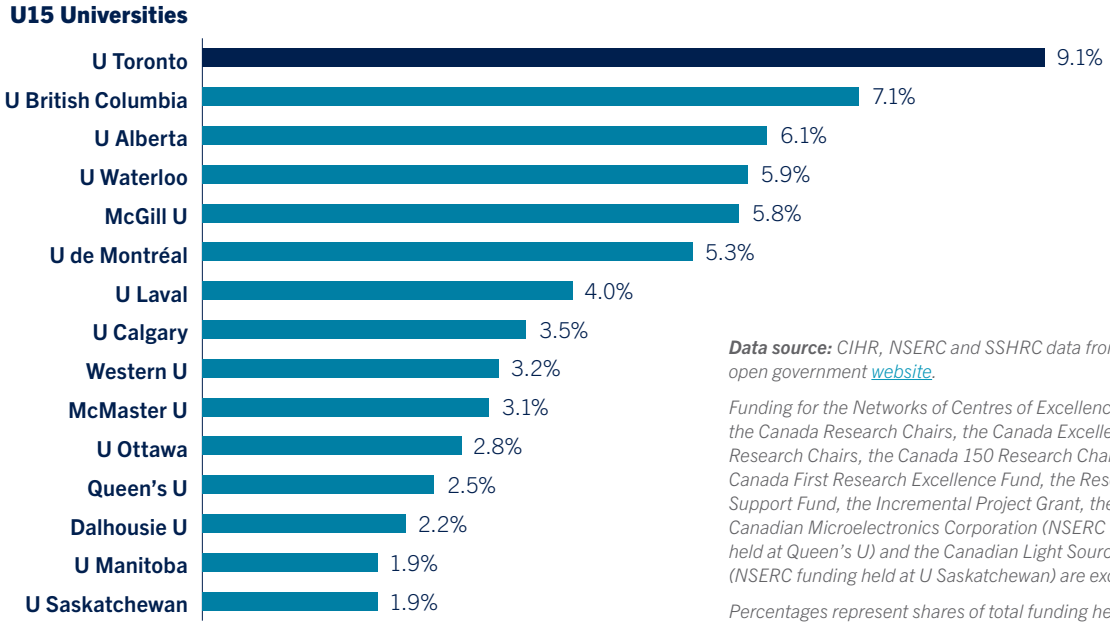
U of T's NSERC funding has increased by **$6.6 million** since 2015–2016.

Natural Sciences and Engineering Research Council (NSERC) Funding (2019–2020) ($ Millions)



Our national market share has decreased slightly from **9.8%** in 2015–2016 to **9.1%** in 2019–2020.

Market Share of Natural Sciences and Engineering Research Council of Canada (NSERC) Funding (2019–2020) (Percentages)



Data source: *CIHR, NSERC and SSHRC data from open government website.*

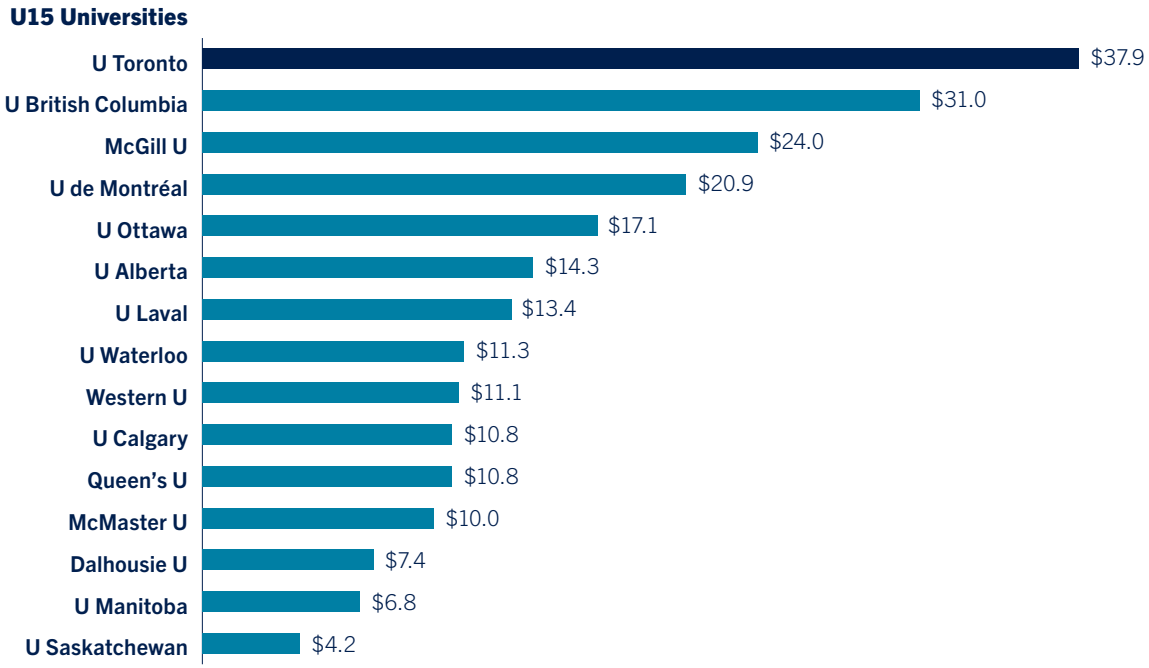
Funding for the Networks of Centres of Excellence nodes, the Canada Research Chairs, the Canada Excellence Research Chairs, the Canada 150 Research Chairs, the Canada First Research Excellence Fund, the Research Support Fund, the Incremental Project Grant, the Canadian Microelectronics Corporation (NSERC funding held at Queen's U) and the Canadian Light Source (NSERC funding held at U Saskatchewan) are excluded.

Percentages represent shares of total funding held by Canadian colleges, Canadian universities and their affiliates.

Funding

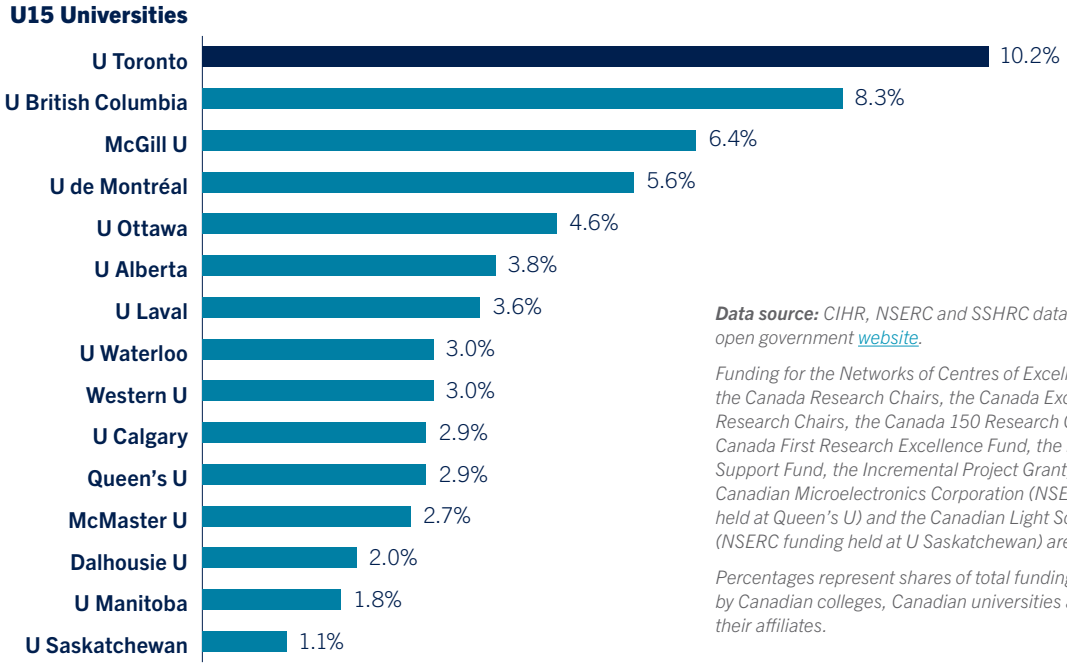
U of T's SSHRC funding has increased by **$9.3 million** since 2015–2016.

Social Sciences and Humanities Research Council (SSHRC) Funding (2019–2020) ($ Millions)



Our national market share has decreased slightly from **10.9%** in 2015–2016 to **10.2%** in 2019–2020.

Market Share of Social Sciences and Humanities Research Council (SSHRC) Funding (2019–2020) (Percentages)



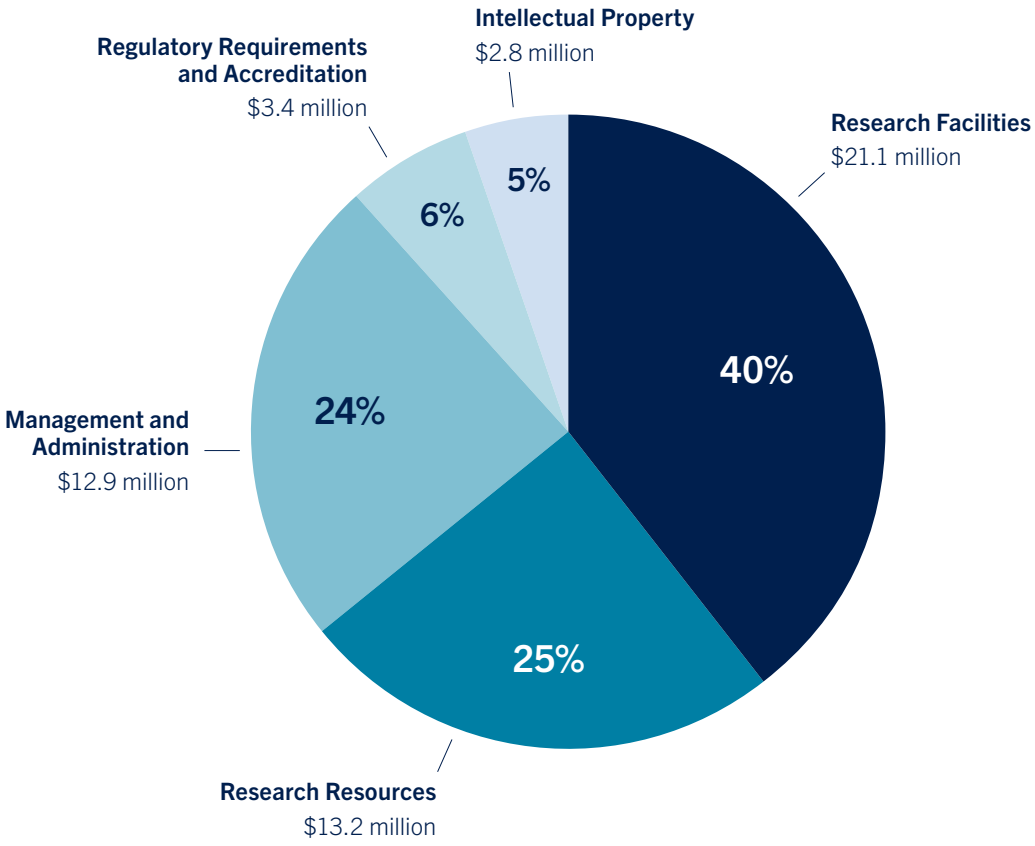
Data source: *CIHR, NSERC and SSHRC data from open government website.*

Funding for the Networks of Centres of Excellence nodes, the Canada Research Chairs, the Canada Excellence Research Chairs, the Canada 150 Research Chairs, the Canada First Research Excellence Fund, the Research Support Fund, the Incremental Project Grant, the Canadian Microelectronics Corporation (NSERC funding held at Queen's U) and the Canadian Light Source (NSERC funding held at U Saskatchewan) are excluded.

Percentages represent shares of total funding held by Canadian colleges, Canadian universities and their affiliates.

Funding

Research Support Fund Expenditures by Eligible Categories (2019–2020)



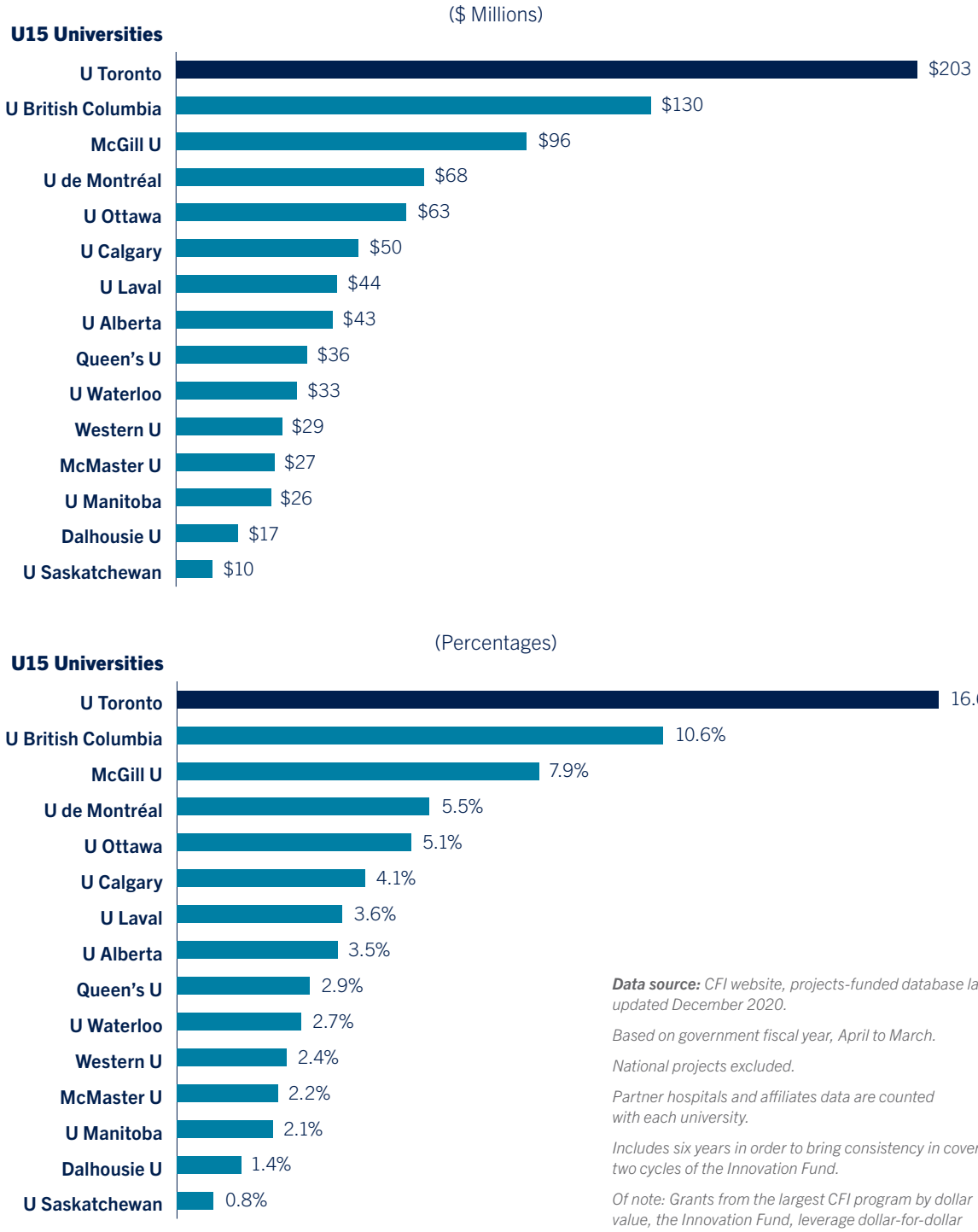
Total Funding
$53.5 million

Data source: *VPRI*

Based on government fiscal year, April to March.

Funding

Canada Foundation for Innovation (CFI) Funding to U15 Universities (2014–2015 to 2019–2020)



Data source: *CFI website, projects-funded database last updated December 2020.*

Based on government fiscal year, April to March.

National projects excluded.

Partner hospitals and affiliates data are counted with each university.

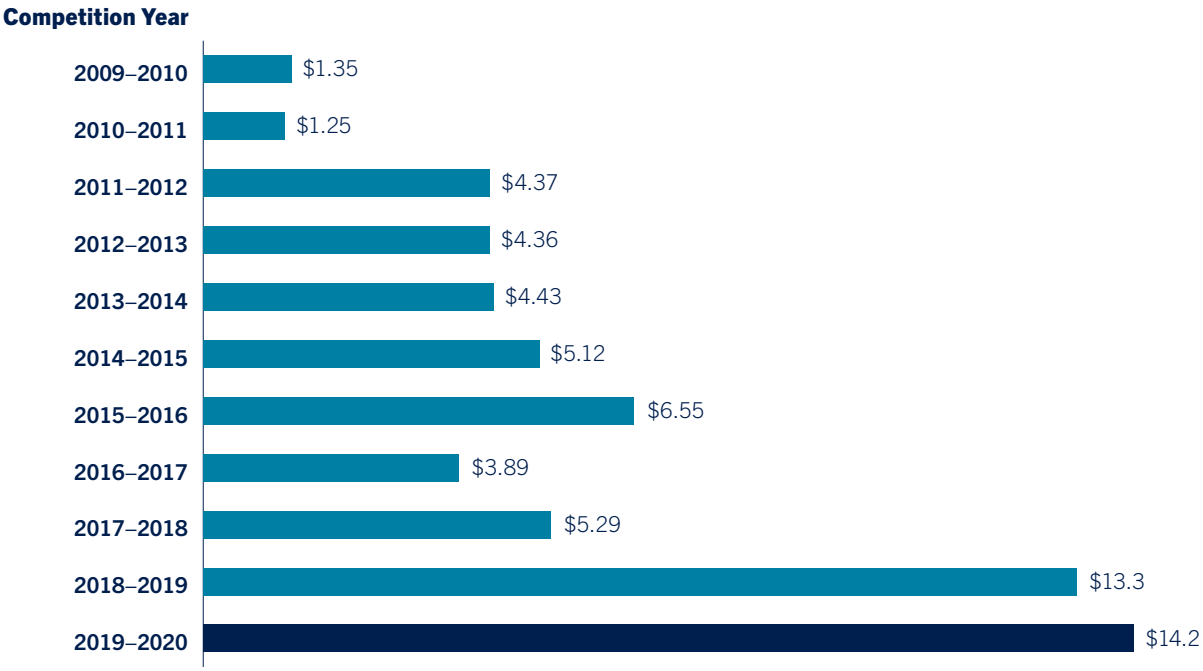
Includes six years in order to bring consistency in covering two cycles of the Innovation Fund.

Of note: Grants from the largest CFI program by dollar value, the Innovation Fund, leverage dollar-for-dollar matches from the Ontario Research Fund's Research Infrastructure program.

Funding

Mitacs Funding Awarded to U of T

($ Millions)



Data source: *Mitacs Annual Activity Reports for the University of Toronto*

For competition years 2009–2010 to 2019–2020, April to March.

Connaught Fund Amounts Awarded (2019–2020)

Program	Amount Awarded	# of Awards
Global Challenge Award	$1,035,289	4 awards + 1 partial
New Researcher Award	$999,272	56 awards
Innovation Award	$499,880	10 awards
Toronto COVID-19 Action Fund *	$1,700,000	40 awards
McLean Award **	$62,500	1 award
Graduate Scholarship	$1,176,513	119 awards
Total * **	**$5,473,454**	

The capital value of the Connaught Fund is currently over $144 million.
The income earned by the Fund in 2019–2020 was $4,167,558.

** A special pandemic-related initiative; the Connaught allocation was supplemented by other sources, including $800,000 from the I'Anson Fund, for a total award amount of $10,350,401.*

*** Required match to the McLean Fund investment*

**** The Connaught Committee also approves allocations to the I'Anson, McLean, and Inventions Revenue Funds.*

Funding

Medicine by Design Awards (2019–2020)

A project funded by the Canada First Research Excellence Fund

Program	Amount Awarded **	Funded PIs
Engineering–Medicine/Hospital (EMHSeed)	$33,333	2
MbD Operations & Outreach	$2,279,943	–
MbD Team Project (Cycle 2)	$9,154,543	70
New Hire Faculty Support	$1,761,103	4
New Ideas	$1,578,489	24
Postdoctoral Fellowship	$879,296	14
	$15,686,706	**114**

Data source: *VPRI*

*** Represents awards made from April 2019 to March 2020 by Medicine by Design, a U of T and partner hospitals project funded by the Canada First Research Excellence Fund.*

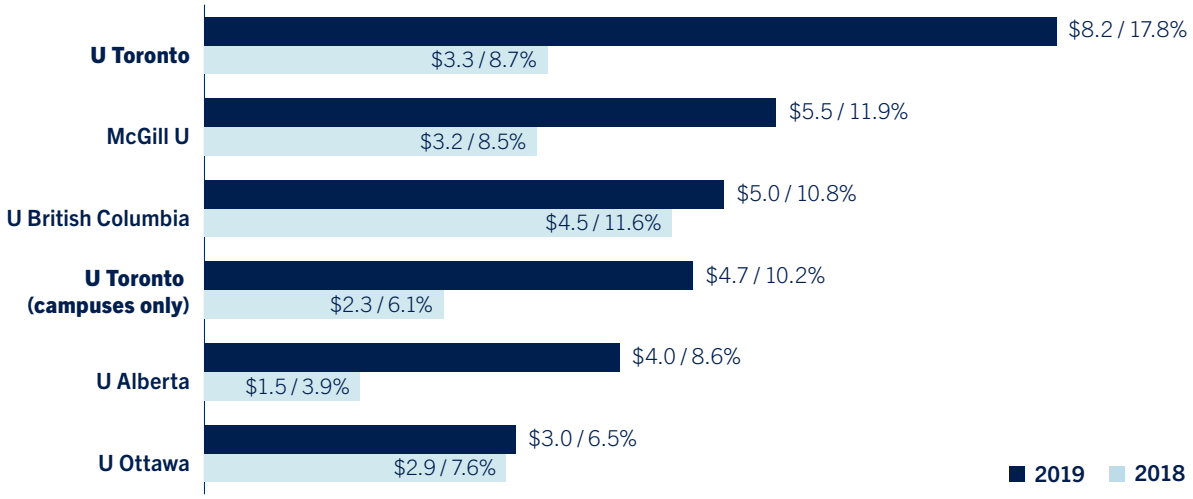
*** Includes indirect costs.*

New Frontiers in Research Fund (NFRF) Exploration Stream — Funding Awarded by Institution (2018–2019)

($ Millions and Percentages)

All peers are shown inclusive of their partner hospitals.

The New Frontiers in Research Fund (NFRF), an initiative of the Tri-Agencies launched in 2018, is investing **$275 million** over five years, and **$65 million** annually on an ongoing basis to support international, interdisciplinary, fast-breaking and high-risk research. Targeted at early career researchers, two competitions of the NFRF Exploration stream have been held and a third is underway.



Data source: *SSHRC*

Funding

COVID-19-Related Funding

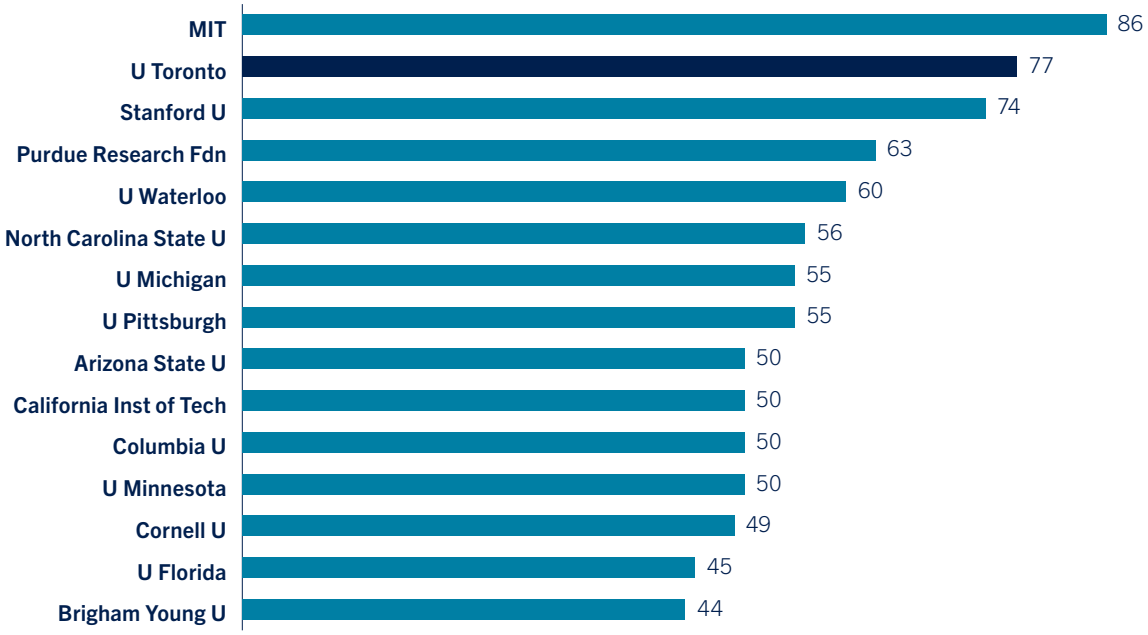
COVID-19 Research Funding	FY19–20	FY20–21 to date	Total
COVID-19-specific Programs	**$9,417,661**	**$24,954,678**	**$18,549,538**
U of T-led Toronto COVID-19 Action Fund	–	$10,350,421	$10,350,421
Ontario Rapid Research Fund (Ontario Together Fund)	$1,122,000	–	$1,122,000
Canada Foundation for Innovation COVID-19 Exceptional Opportunities Fund	$2,450,000	–	$2,450,000
Federal and Provincial COVID-19 Rapid Research Response	$2,198,200	$2,428,917	$4,627,117
Other COVID-19-related Research	**$5,327,117**	**$2,617,117**	**$7,944,234**
All Funded Research Related to COVID-19	**$14,744,778**	**$27,571,795**	**$42,316,573**

Data Source: *Source OVPRI Research DataMart, extracted February 2021; CFI funding extracted from CFI website in February 2021.*

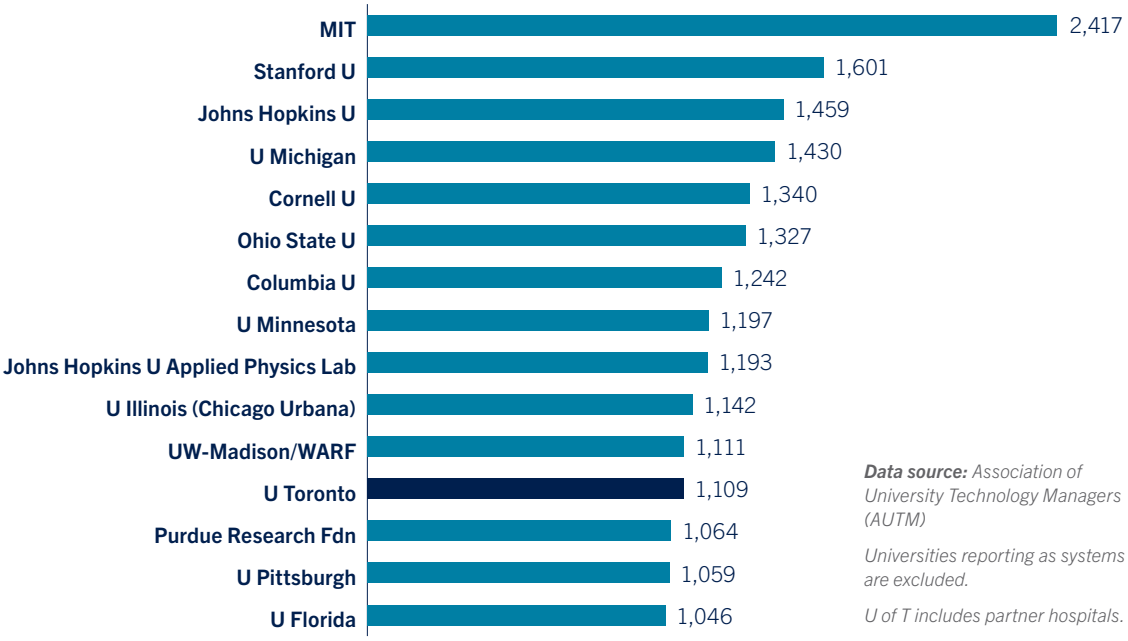
Other COVID-19-related Research was identified by a keyword seach of titles and programs.

Innovation & Entrepreneurship

New Startup Companies at US and Canadian Universities (2016–2017 to 2018–2019)



New Invention Disclosures at US and Canadian Universities (2016–2017 to 2018–2019)



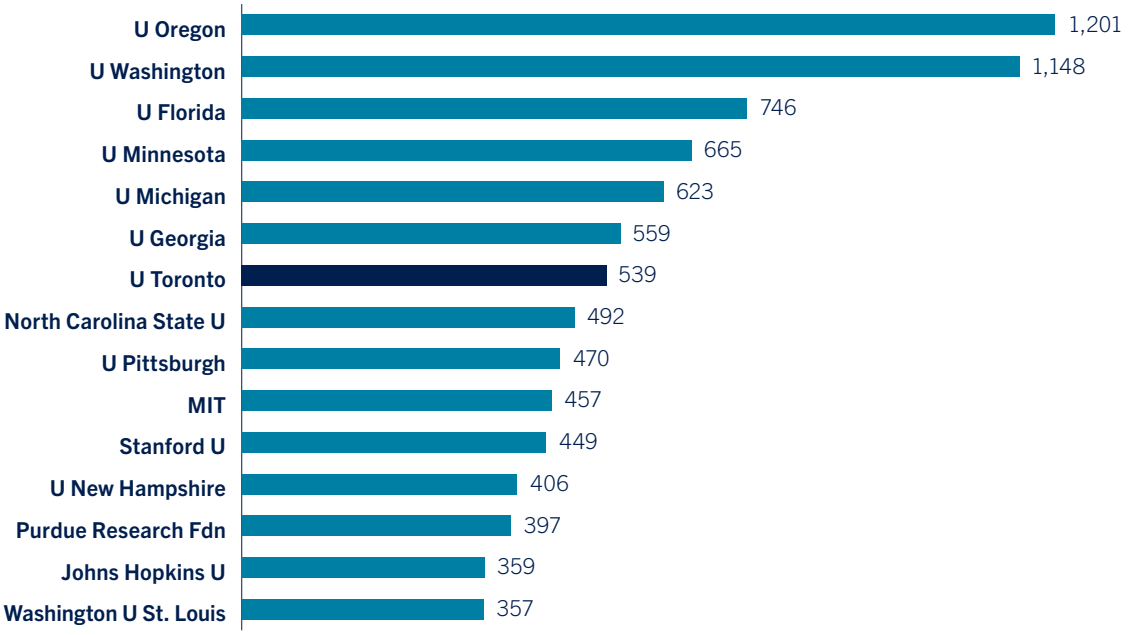
Data source: *Association of University Technology Managers (AUTM)*

Universities reporting as systems are excluded.

U of T includes partner hospitals.

Innovation & Entrepreneurship

New Licenses and Options at US and Canadian Universities (2016–2017 to 2018–2019)



Data source: *Association of University Technology Managers (AUTM)*

Universities reporting as systems are excluded.

U of T includes partner hospitals.

Serving the U of T Community

Each year the VPRI manages, negotiates and supports a large research and innovation enterprise at U of T.

In 2020, through the Centre for Research & Innovation Support (CRIS), the VPRI supported **100+** workshops and info sessions for over **5,000** registrants.

Research Funding

2,700 principal investigators

4,100 new funding applications

$525M in funding awarded

9,200 research funds

1,000 sponsors

360 private sector partners

1,600 funding programs

Innovation & Entrepreneurship

190 invention disclosures

75 priority patent applications

40+ licensing and option agreements

270 commercialization projects

300+ student-led startup teams/companies

$150M annual startup investment

Oversight & Compliance

30+ external audits

8,400 financial reports and related oversight

1,600 human ethics protocols

1,300 animal ethics protocols

45+ post-approval reviews

80 lab assessments for animals

12,600 personnel trained in EH&S programs

1,200+ lab safety inspections

1,200 worksite assessments

2,300 occupational health assessments

Data source: VPRI

research.utoronto.ca

UNIVERSITY OF
TORONTO