

# Memorandum

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**TO:** Board of Governors  
**FROM:** Professor Martha Crago, Vice-Principal (Research and Innovation)  
**SUBJECT:** Annual Report on Research and Innovation 2020  
**DATE:** April 22, 2021  
**DOCUMENT #:** GD20-57

**ACTION REQUIRED:**  INFORMATION  APPROVAL/DECISION

**ISSUE & EXPECTED OUTCOME** Indicators of McGill's recent research funding performance as well as performance in areas related to innovation and partnership-building between the University and external communities are presented to the Board of Governors for information.

**BACKGROUND & RATIONALE** The Annual Report on Research and Innovation is a review of McGill's performance in major funding programs and progress in areas related to innovation and partnerships in FY2019. It examines how McGill compares to comparable universities and U15 peers in terms of:

- Amount and sources of sponsored research funding
- Sponsored research funding per faculty member
- Tri-Agency funding
- *Fonds de recherche du Québec* funding
- Industry sponsored research funding
- Publications
- Royal Society of Canada Fellows and New College Members

**ALIGNMENT WITH MISSION AND STRATEGIC PRIORITIES** The goal of the report is to inform members of the Board of Governors and the wider McGill community of significant issues related to research funding while outlining how the University's research enterprise is becoming better suited to compete in the future.

The report therefore aims to inform the Board of Governors of McGill's progress in its mission to remain one of Canada's and the world's best research-intensive universities as well as toward its strategic priority of enhancing and strengthening its engagement with the full range of community partners.

**COMPLIANCE WITH UNIVERSITY POLICY** The Annual Report on Research and Innovation is an important means for the Vice-Principal (Research and Innovation) to update the Board of Governors on McGill's research successes, opportunities, and challenges. The presentation aligns with best practices to promote transparency and accountability across a major sector of the University's mandate.

	An internal review was conducted by the Office of the Vice-Principal (Research and Innovation), followed by presentations to the senior administration (April 1, 2021) and Senate (April 20, 2021).
<b>COMPLIANCE WITH LEGISLATION/ EXTERNAL REGULATIONS</b>	There are no legislative requirements associated with the Report.
<b>RISK FACTORS</b>	The University's performance in areas related to research and innovation affects its ability to carry out its missions in research, teaching, and learning and has reputational effects.
<b>SUSTAINABILITY CONSIDERATIONS</b>	Sustainability is inherent in all seven of the Research Excellence Themes outlined in the Strategic Research Plan 2019 – 2024 and has also explicitly been incorporated into one of the Themes: <i>Design and create sustainable materials, technologies, landscapes, and communities</i> . This theme highlights research that responds to the challenges of sustaining the life support systems of the planet, advances renewable materials, energy, agricultural, and transportation systems as well as clean technology, in order to develop sound environmental policy.
<b>IMPACT OF DECISION AND NEXT STEPS</b>	N/A
<b>MOTION OR RESOLUTION FOR APPROVAL</b>	N/A
<b>APPENDICES</b>	Appendix A: Annual Report on Research and Innovation 2020

# R+I

Report on  
Research + Innovation  
2020



McGill

Research and  
Innovation

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Message from  
Dr. Martha Crago, Vice-Principal [Research + Innovation]

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*It is with great pleasure that I present McGill's Annual Report on Research and Innovation.*

This report presents a portrait of McGill's funding awarded in the 2018/2019 fiscal year (FY) as well as prizes and partnerships established in 2020, a year infamous for the development of the novel coronavirus pandemic. When the world was thrust into crisis, researchers at McGill adapted to changing public health protocols and sprang into action to help us navigate this global health disaster.

McGill is generating COVID-19 research across all disciplines and with time we will gain more insight and knowledge about the disease, from its epidemiology to its impact on health, social systems, economies and education systems. The pandemic has also confirmed the importance of national and international scientific cooperation. In this report we are highlighting these partnered efforts, for example the Covid Immunity Task Force (CITF), the Canadian COVID Genomics Network (CanCOGeN), and the Biobanque québécoise de la COVID-19 (BQC-19).

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**“I am immensely proud of all McGill’s researchers and of the research graduate students and postdocs as well as administrators and technicians who support their groundbreaking work.”**

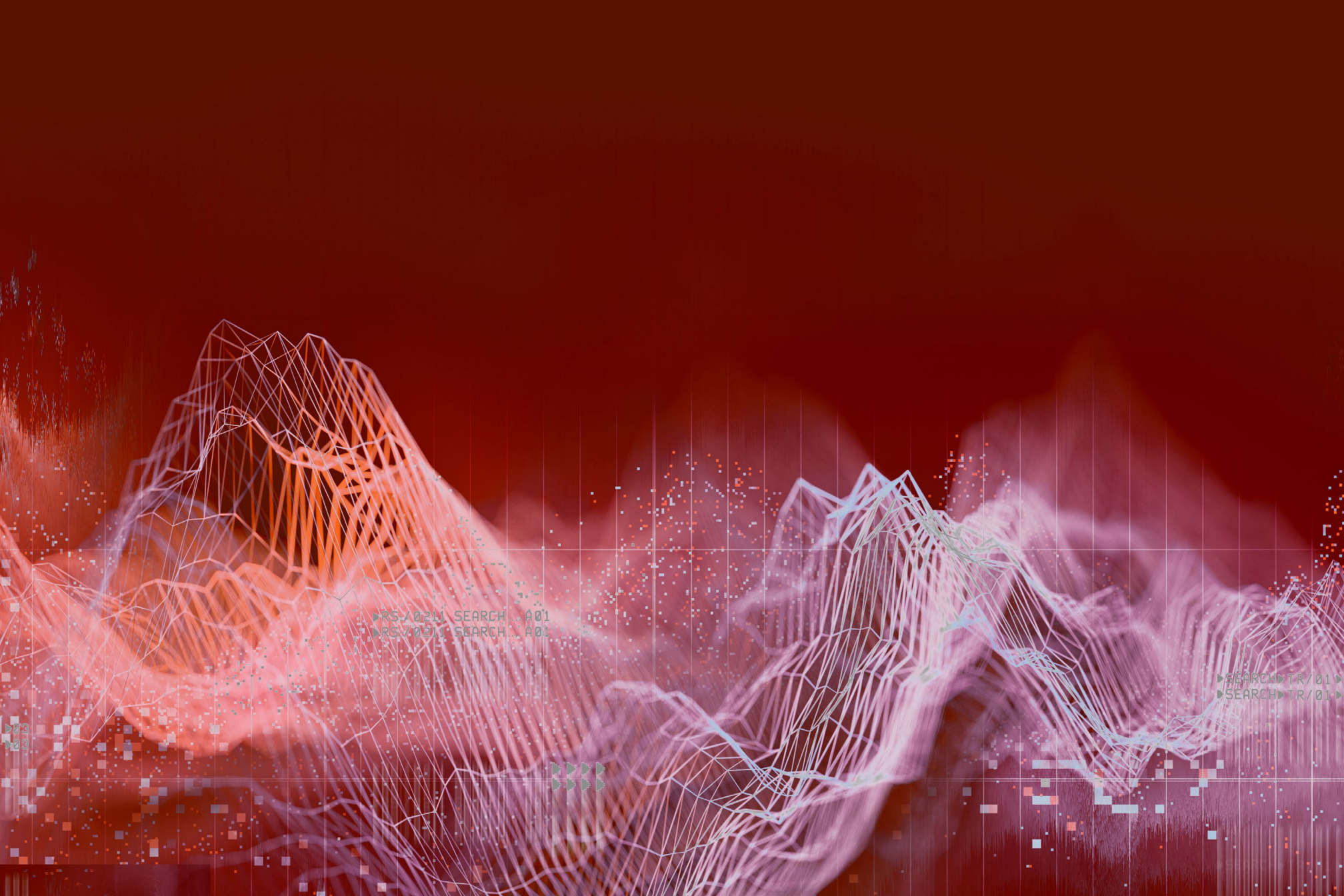
Amid the pandemic, it is important to celebrate research excellence and McGill’s ongoing contributions to learning and discovery. In 2019 and 2020, McGill was again at the top of the pack in Maclean’s Medical/Doctoral rankings. In research funding, McGill placed among the top three most research-intensive universities in Canada, securing the second largest share of Tri-agency research funding. I am also proud that McGill researchers received the second highest number of New Frontiers in Research Fund-Exploration (NFRF-E) grants in the country in the inaugural launch of the competition, and that provincially McGill displays stable performances in FRQ funding competitions.

Among the many winners of research prizes and awards in 2019 and 2020, this report highlights only a handful, including Professor Wayne Pollard, winner of the

2020 Northern Science Award and the Centenary Medal, as well as Dr. Alan Evans, winner of the 2020 Killam Prize, and Professor Erica Moodie, winner of the Centre de recherches mathématiques (CRM) and the Statistical Society of Canada (SSC) Prize in Statistics. It is also noteworthy that the pan-Canadian CHIME radio telescope project, which includes leading astrophysicists from McGill, won a 2020 Governor General’s Innovation Award.

I am immensely proud of all McGill’s researchers and of the research graduate students and postdocs as well as administrators and technicians who support their groundbreaking work.

**Dr. Martha Crago**  
**Vice-Principal [Research + Innovation]**



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## Introduction

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*The Annual Report on Research and Innovation provides a portrait of McGill's research funding performance, competitiveness relative to our peer universities, effectiveness in research output such as published work and collaborative partnerships with both academic and non-academic institutions, in Canada and internationally.*

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This report examines McGill's overall standing in major funding programs and progress in areas related to industry and partnerships in FY2019. This period reflects the most recent and complete data available from various sources including:

- **INFOED GLOBAL**, McGill's internal research administration database;
- **CANADIAN ASSOCIATION OF UNIVERSITY BUSINESS OFFICERS (CAUBO)**, a non-profit organization representing the chief administrative and financial officers of over 100 institutions across Canada;

- **OBSERVATOIRE DES SCIENCES ET DES TECHNOLOGIES (OST)**, an organization dedicated to science, technology, and innovation that maintains a national research funding database for its partners from the Tri-Agency, the three federal research funding agencies;
- **LES FONDS DE RECHERCHE DU QUÉBEC (FRQ)**, the Province's three research funding agencies;
- **SCIVAL**, a bibliometric tool, based on the Scopus database, that offers access to research performance metrics of over 10,000 institutions in 230 regions and countries;
- **STATISTICS CANADA**, Canada's national statistics office; and
- **AUTM**, formerly known as the Association of University Technology Managers, a non-profit organization that supports and advances technology transfer.

Certain metrics within this report are benchmarked in comparison to the U15 Group of Canadian Research Universities, a collective of Canada's most research-intensive universities. For other metrics, we have focused on our standing relative to a smaller number of provincial and national institutions. Nationally, the University of Toronto, the University of British Columbia, l'Université de Montréal, the University of Alberta and McMaster University have been selected as comparator peer institutions as they resemble McGill in size, scope of research and research intensity with a medical/doctoral program. Together with McGill, this group is referred to as the U6 for the purposes of this report.

Provincially, l'Université de Montréal, l'Université Laval, and l'Université de Sherbrooke serve as comparators as they are the only peer institutions with medical schools. Along with McGill, this group is referred to as the QC4 for the purposes of this report.

### COVID-19

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*In response to the COVID-19 pandemic, the University research community mobilized to facilitate, organize and fund COVID-19 related research.*

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The **MCGILL INTERDISCIPLINARY INITIATIVE IN INFECTION AND IMMUNITY (MI4)** initiated two rounds of funding through the MI4 Emergency COVID-19 Research Funding initiative.

As part of the second round, there were twelve research projects jointly funded by MI4 and McGill's Social Science and Humanities Research Council of Canada (SSHRC) Strategic Institutional Grant (SIG). The purpose of this internal call, the **MCGILL COVID-19 RAPID RESPONSE FOR SOCIAL SCIENCES AND HUMANITIES RESEARCH**, was to explore

the social dimension of the pandemic, and to allow social sciences and humanities researchers to provide valuable insights into its impacts on individuals and communities. This call allowed researchers to provide evidence to inform decision-making and contribute to collaborative efforts to address pressing challenges resulting from the rapid spread of COVID-19.

In addition, the University has had a central role in the following provincial and national COVID-19 initiatives:

**COVID-19 IMMUNITY TASK FORCE (CITF):** the Government of Canada provided funding for a task force to coordinate and fund research on COVID-19 immunity among the Canadian population, and to provide regular scientific updates on the state of serologic testing, results from funded studies, and the evolving understanding of immunity related to SARS-CoV-2. The CITF's Secretariat is housed at McGill's School of Population and Global Health and is co-chaired by Dr. Catherine Hankins with Dr. Timothy Evans as Executive Director.

**CANADIAN COVID GENOMICS NETWORK (CANCOGEN):** a \$40-million initiative funded by Innovation, Science and Economic Development Canada and managed by Genome Canada, to establish a coordinated pan-Canadian, cross-agency network for large-scale SARS-CoV-2 and human host sequencing

through two mechanisms, HostSeq and VirusSeq. The McGill Genome Centre, led by Dr. Mark Lathrop, aims to sequence the genomes of 10,000 Canadians affected by COVID-19 as part of the initiative.

**BIOBANQUE QUÉBÉCOISE DE LA COVID-19 (BQC-19):** \$10-million initiative funded by the Public Health Agency of Canada, Fonds de recherche du Québec and Genome Québec to ensure Québec researchers have access to high quality samples and data from control persons and individuals infected with SARS-CoV-2 who have given their consent in order to support research on COVID-19. The directorship is based at McGill and led by Dr. Vincent Mooser, Canada Research Excellence Chair in Genomic Medicine.

## Canada Foundation for Innovation — 2020 Innovation Fund Competition

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*The Innovation Fund provides investments in infrastructure, across the full spectrum of research, from the most fundamental to applied through to technology development.*

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Projects funded through the Innovation Fund will help Canada remain at the forefront of exploration and knowledge generation while making meaningful contributions to generating social, health, environmental and economic benefits and addressing global challenges.

Innovation Fund competitions are held at regular intervals of 2 to 3 years. The CFI provides up to 40 per cent of a project's eligible infrastructure costs. In Quebec, the provincial government matches the CFI investment and remaining funding is provided by vendors of equipment by in-kind contributions.

TABLE 1: CFI 2020 IF-FUNDED PROJECTS FOR U15

Source: Canada Foundation for Innovation

In the 2020 IF competition, McGill was awarded \$41.9 million for nine projects as the lead institution. McGill is partnering on an additional 12 funded projects. Combined, McGill is leading or partnering on 20 per cent of all funded projects. McGill was second to the University of Toronto in the total amount awarded by CFI (Table 1). The U15 accounted for 82 of the 102 awarded projects.

INSTITUTION (inc. affiliated hospitals)	AWARDED (CFI\$)	NATIONAL SHARE	AWARDED PROJECTS (LEAD)
University of Toronto	\$58.8M	14.9%	13
<b>McGill University</b>	<b>\$41.9M</b>	<b>10.7%</b>	<b>9</b>
McMaster University	\$35.1M	8.9%	5
University of British Columbia	\$28.3M	7.2%	9
Université de Montréal (inc. Polytechnique Montréal)	\$26.5M	6.7%	9
University of Ottawa	\$26.2M	6.6%	5
University of Alberta	\$24.1M	6.1%	5
University of Calgary	\$18.2M	4.6%	5
University of Waterloo	\$17.3M	4.4%	6
Université Laval	\$16.9M	4.3%	4
Dalhousie University	\$13.3M	3.4%	5
University of Saskatchewan	\$10.0M	2.5%	2
Queen's University	\$9.7M	2.5%	2
University of Manitoba	\$4.8M	1.2%	2
Western University	\$2.0M	0.5%	1
<b>U15 Total</b>	<b>\$333.7M</b>	<b>84.6%</b>	<b>82</b>

## Rankings

*University rankings are increasingly used for strategic planning, policy making and as a useful benchmark for both national and international comparison to peer institutions.*

INSTITUTION	MACLEAN'S MEDICAL/ DOCTORAL Canadian University Rankings 2021 (2020)	TIMES HIGHER EDUCATION (THE) World University Rankings 2021 (2020)	QUACQUARELLI SYMONDS (QS) World University Rankings 2021 (2020)
<b>McGill University</b>	<b>1 (1)</b>	<b>40 (42)</b>	<b>31* (35)</b>
University of Toronto	2 (2)	18 (18)	25* (29*)
University of British Columbia	3 (3)	34 (34)	45 (51)
McMaster University	4 (4)	69 (72)	144 (140)
University of Alberta	6 (5*)	131* (136*)	119 (113)
Université de Montréal	11* (10)	73* (85)	118 (137)

TABLE 2: U6 UNIVERSITY RANKINGS IN 2021 (2020)

Source: Maclean's, THE, QS.

Maclean's \*: University of Alberta tied for 5<sup>th</sup> with Queen's in 2020; Université de Montréal tied with Laval for 11<sup>th</sup>.

THE \*: Université de Montréal tied with University of Zurich, University of Alberta tied with University of Colorado Boulder (2021) and University of Cape Town (2020).

QS \*: McGill tied with The Australian National University and King's College London, University of Toronto tied with John Hopkins University (2020/1).

Nationally, McGill has consistently placed at the top of the Maclean's Best Medical Doctoral university rankings. The Maclean's ranking includes 14 Canadian universities with a medical/doctoral program.

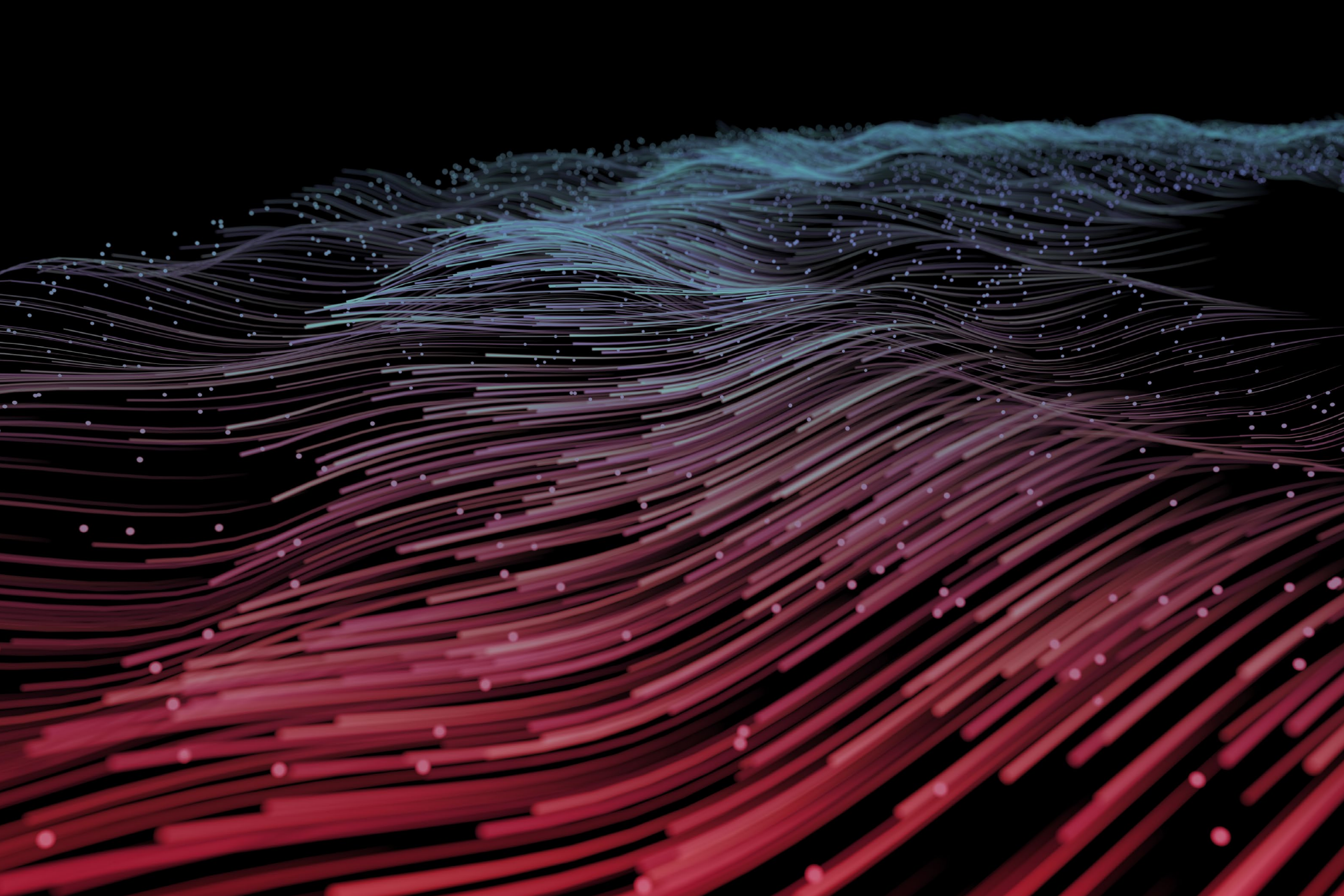
Internationally, despite differing ranking methodologies, McGill's rank improved on both the THE and the QS for 2021 in comparison to 2020.

A brief overview of each ranking provider's methodology is presented in Appendix 1.



### Top 100 Academic Institutions In Artificial Intelligence

McGill ranked 31st in a Nature Index supplement published in December 2020. The ranking was based on McGill's share of total AI articles published (2015 – 2019) in journals tracked by the Nature Index.



## Research Funding Performance

*In FY2019, McGill's total research funding was \$606.5M.*

The key categories of funding are presented in Figure 1.

Federal funding is the largest source of research funding for McGill followed by funding from the provincial government and individuals/not-for-profits. Federal funding includes the Tri-Agencies, Health Canada, the Canada Foundation for Innovation, Canada Research Chairs and the Research Support Fund, among others types of funding. The "Other" funding category includes municipal and other provinces.

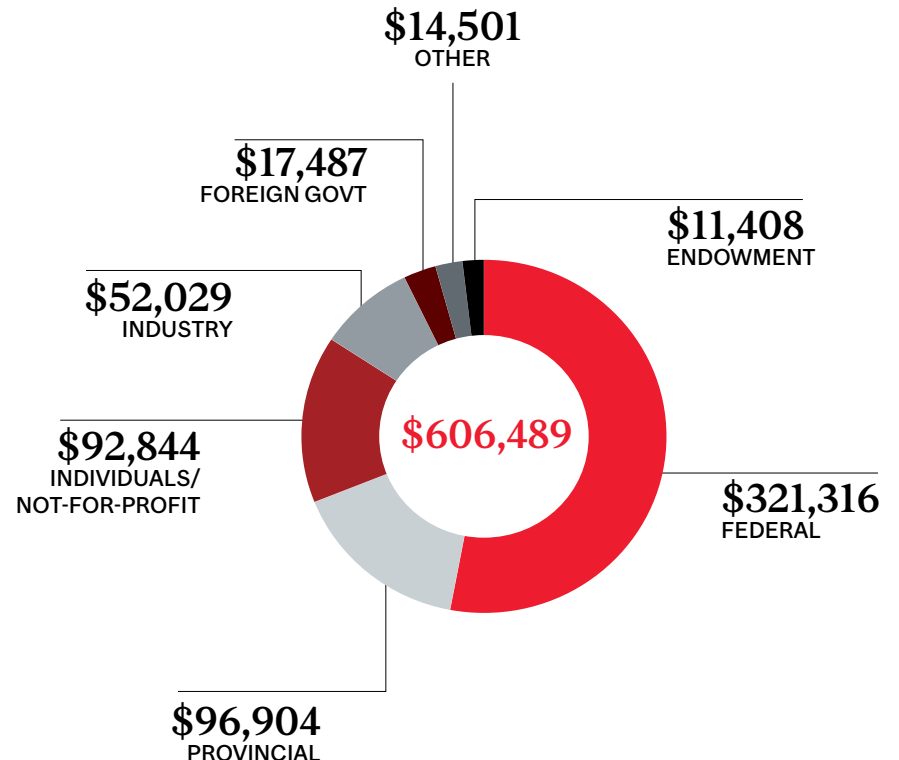
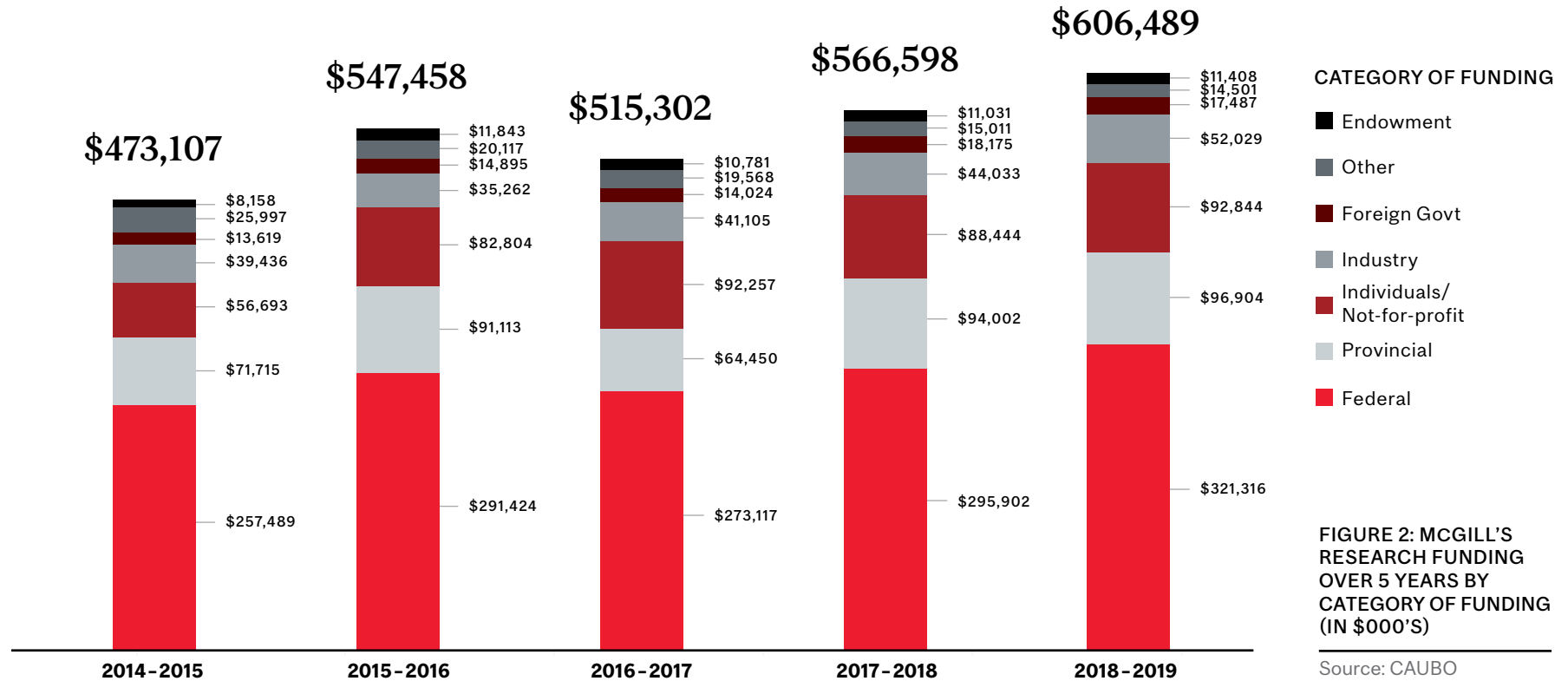


FIGURE 1: CATEGORIES OF RESEARCH FUNDING AND AMOUNT (\$000'S)

Source: CAUBO

While the most obvious increases in funding over the last five years come from federal sources, funding in the other three top categories (provincial, individuals/not-for-profits, industry), have also shown an increasing trend since FY2015 (Figure 2). For example, funding from individuals/not-for-profits has

shown a particularly large percentage increase in funding since FY2015, at almost 64 per cent. Industry funding has also grown substantially, with an almost 50 per cent increase since FY2016. More information on industry funding is provided in a later section of this report.



INSTITUTION	TOTAL RESEARCH FUNDING (IN 1000'S)	FACULTY COUNT*
University of Toronto	\$1,089,089	2,241
Univ. of British Columbia	\$624,465	2,286
<b>McGill University</b>	<b>\$606,489</b>	<b>1,770</b>
Université de Montréal	\$597,168	1,875
University of Alberta	\$506,299	1,608
University of Calgary	\$487,805	1,515
Université Laval	\$401,441	1,353
McMaster University	\$371,599	777
University of Ottawa	\$346,406	1,185
Western University	\$245,539	1,152
Univ. of Saskatchewan	\$243,531	924
University of Waterloo	\$240,726	1,059
Queen's University	\$235,231	777
University of Manitoba	\$160,197	1,110
Dalhousie University	\$151,214	945

**TABLE 3: U15 TOTAL RESEARCH FUNDING AND FACULTY COUNT, FY2019**

\* Faculty counts include full time, tenure / tenure track academic staff.

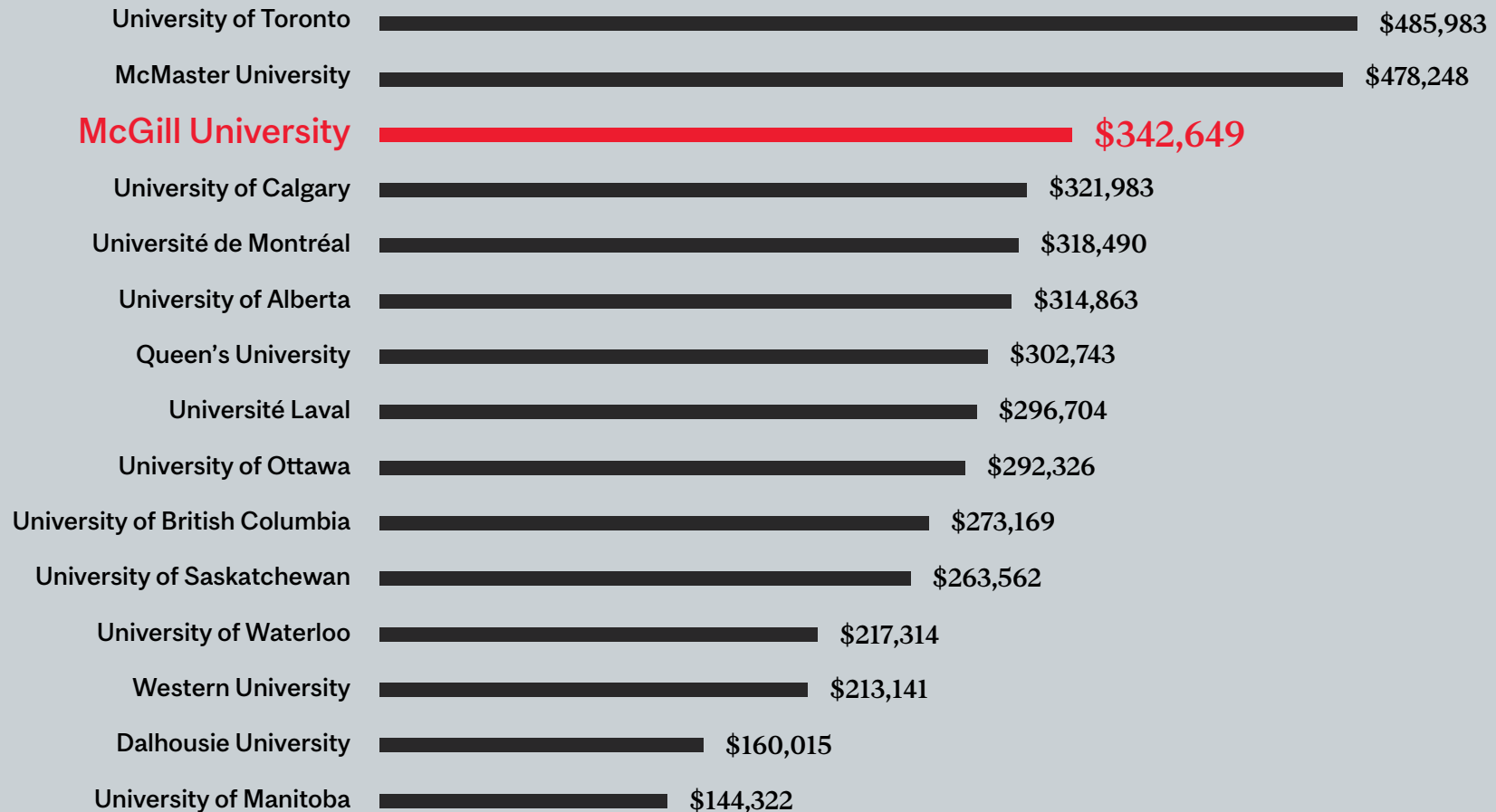
Source: CAUBO (Totals) and Statistics Canada (Faculty Counts)

Table 3 provides an overview of the total researching funding for all U15 universities in FY2019 along with each institution's faculty counts. The total research funding, divided by the faculty count provides a measure of research intensity for an institution.

McGill has historically been among the top three most research intensive universities in Canada as measured by the total amount of research funding per faculty member; FY2019 was no exception, as shown in Figure 3 (on following page).

FIGURE 3: U15 RESEARCH FUNDING PER FACULTY MEMBER, FY2019

Source: CAUBO (totals) and Statistics Canada (faculty counts)



## Tri-Agency Funding

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*The Tri-Agencies, composed of the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council (NSERC), and the Social Sciences and Humanities Research Council (SSHRC), are the largest source of federal research funding for McGill.*

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In FY2019, McGill received a total of \$177M from the Tri-Agencies, representing 55 per cent of McGill's total federal research funding. The table and three charts presented in this section, taken together, present a complete picture of McGill's Tri-Agency

funding. In addition to the total funding amounts within the U15 (Table 4) and U6 (Figure 4), as well as share of U15 funding (Figure 5), the data is also presented in relation to McGill's faculty count through the Funding Efficiency Index (FEI; Figure 6).

INSTITUTION	TOTAL FUNDING	Share of U15
University of Toronto	\$316,775,556	20.0%
<b>McGill University</b>	<b>\$177,005,660</b>	<b>11.2%</b>
University of British Columbia	\$170,848,164	10.8%
Université de Montréal	\$138,975,485	8.8%
University of Alberta	\$103,030,845	6.5%
Université Laval	\$91,753,622	5.8%
University of Calgary	\$87,616,275	5.5%
McMaster University	\$84,390,085	5.3%
University of Ottawa	\$71,751,975	4.5%
University of Waterloo	\$71,521,575	4.5%
Western University	\$68,999,623	4.4%
University of Saskatchewan	\$58,100,956	3.7%
Queen's University	\$53,994,824	3.4%
Dalhousie University	\$51,469,953	3.2%
University of Manitoba	\$37,775,856	2.4%
<b>Total</b>	<b>\$1,584,010,454</b>	<b>100.0%</b>

TABLE 4: TOTAL AMOUNT OF TRI-AGENCY FUNDING AND PERCENT SHARE OF FUNDING FOR U15 IN FY2019

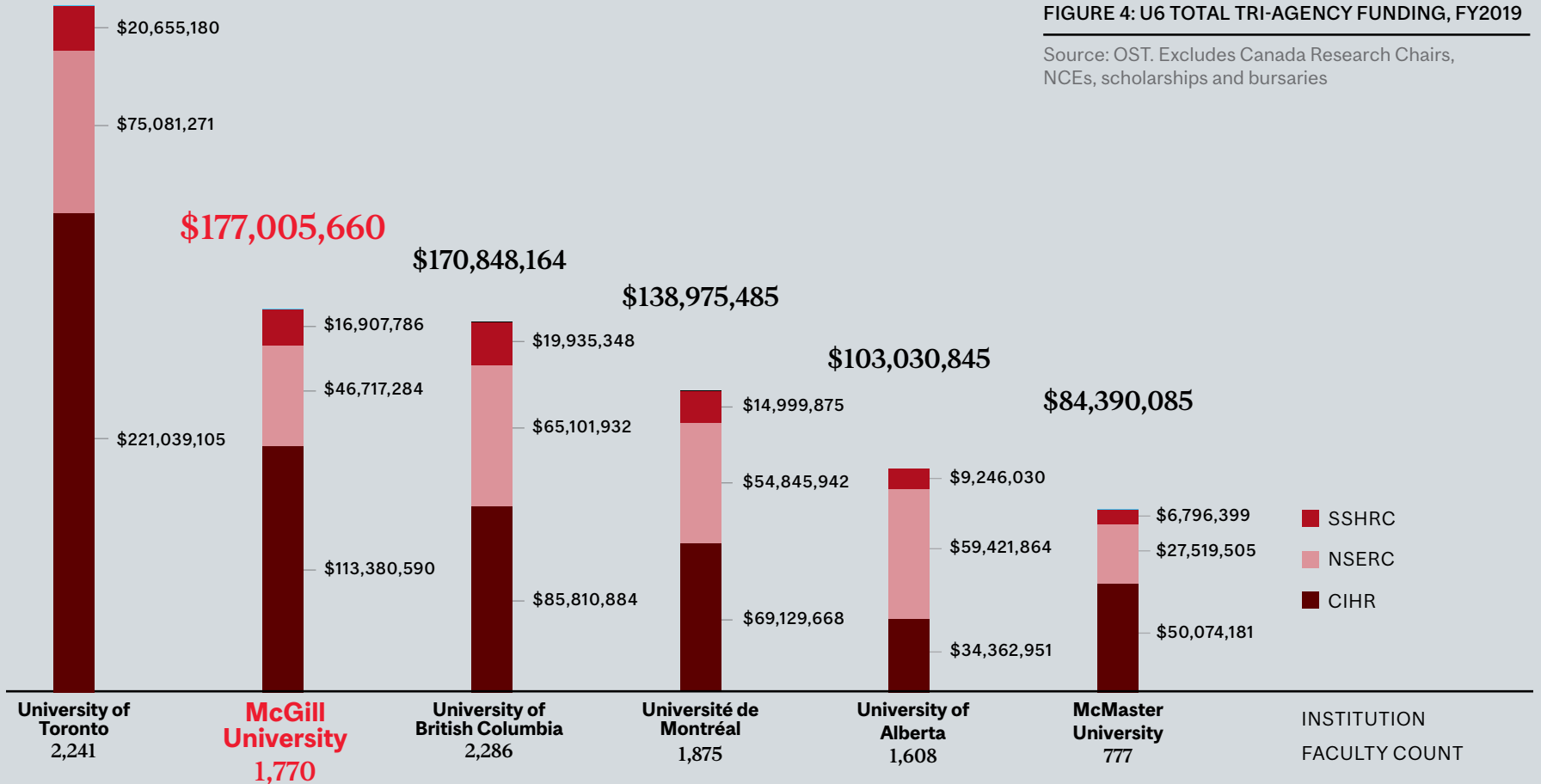
Source: OST

Of note, the University of Toronto, McGill and the University of British Columbia received slightly over 42 per cent of all tri-agency funding allotted to the U15 (Table 4). McGill's Tri-Agency funding in FY2019 was second to the University of Toronto. McGill's position as second in the U15 is due in large part due to CIHR funding (\$113M), which accounts for almost two-thirds of the total amount received from the Tri-Agencies (Figure 4 on the following page).

\$316,775,556

FIGURE 4: U6 TOTAL TRI-AGENCY FUNDING, FY2019

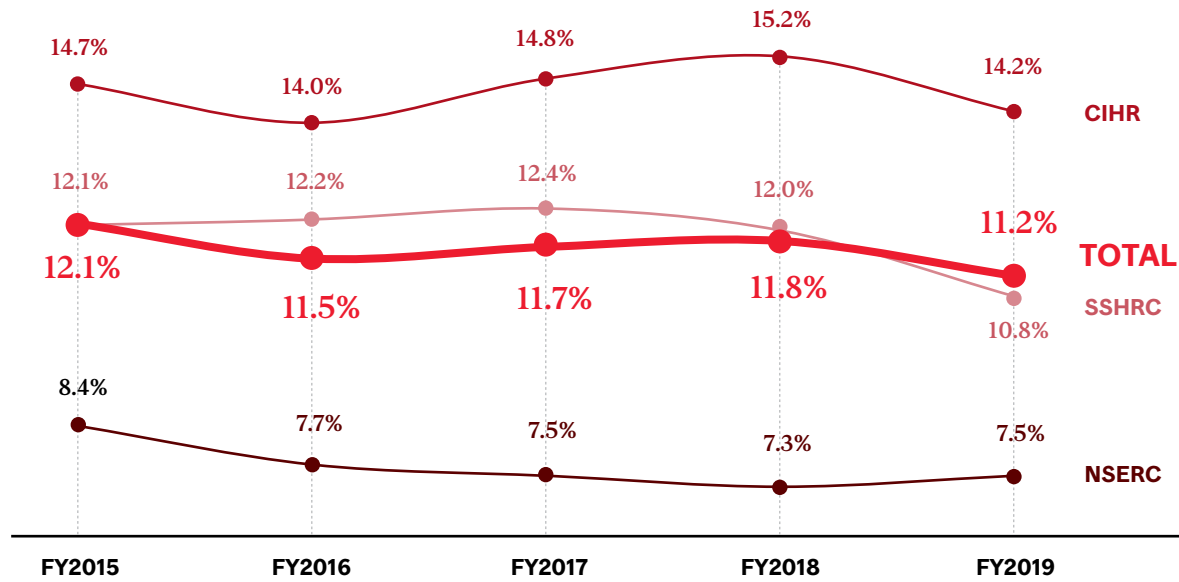
Source: OST. Excludes Canada Research Chairs, NCEs, scholarships and bursaries

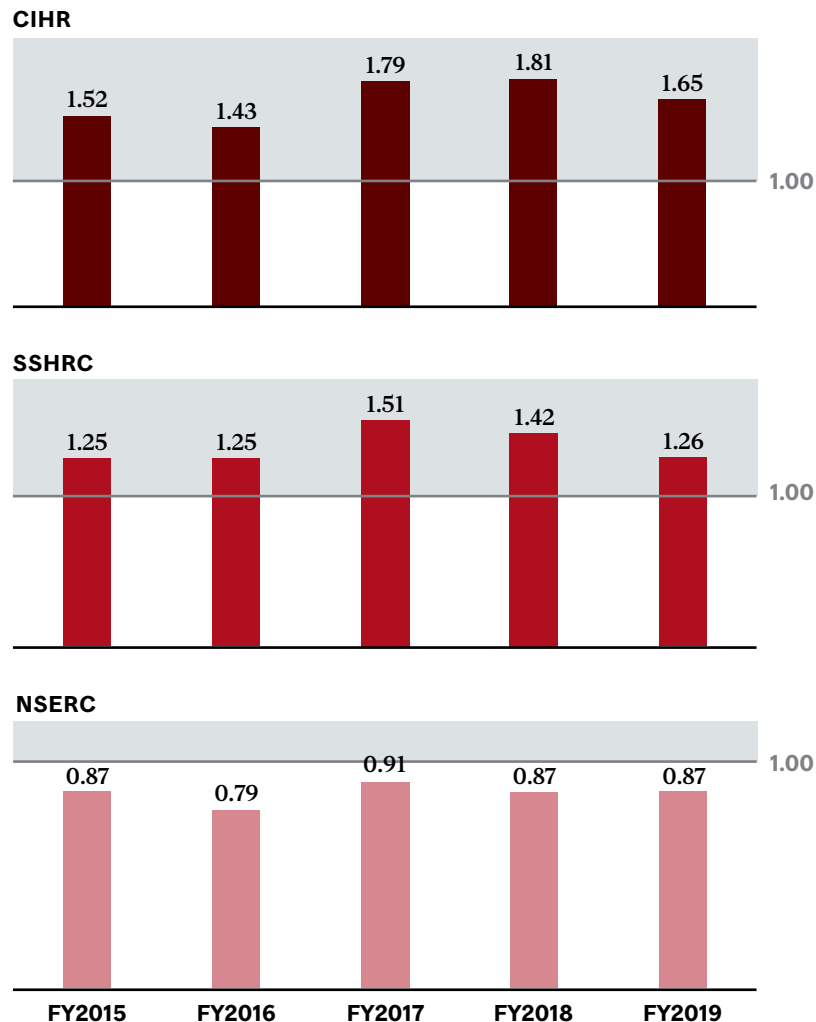


Tri-Agency funding is often reported by institutions as the percent share of the total funding provided to the U15 (Figure 5).

FIGURE 5: MCGILL'S SHARE OF U15 TRI-AGENCY FUNDING, FY2015 TO FY2019

Source: OST





**FIGURE 6: MCGILL'S TRI-AGENCY FUNDING EFFICIENCY INDEX (FEI), FY2015 TO FY2019**

Source: OST and Statistics Canada

While McGill's share of CIHR and SSHRC funding in the U15 decreased from FY2018, the share of NSERC funding increased. It is important to note that while the share of SSHRC funding decreased, the total amount of SSHRC funding increased from FY2018. It is also important to note that McGill secured a larger than expected amount of CIHR funding in FY2019 relative to its faculty size. This is illustrated in Figure 6 by the Funding Efficiency Index (FEI).

An FEI of 1.0, depicted by the gray line, reflects a situation where the share of U15 Tri-Agency funding is proportionate to the share of the U15 faculty count. Figure 6 shows that for CIHR and SSHRC funding, McGill has an index of 1.65 and 1.26 respectively in FY2019, above the gray line. For NSERC, McGill had an index of 0.87 in FY2019 and is below the line, which indicates that McGill is receiving a smaller share of NSERC funding relative to its faculty count.

## Fonds de recherche du Québec Funding

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*In Québec, Tri-Agency funding is mirrored by the Fonds de Recherche du Québec (FRQ), as funding from FRQ represents three funding agencies, Nature et technologies (FRQNT), Société et culture (FRQSC), and Santé (FRQS).*

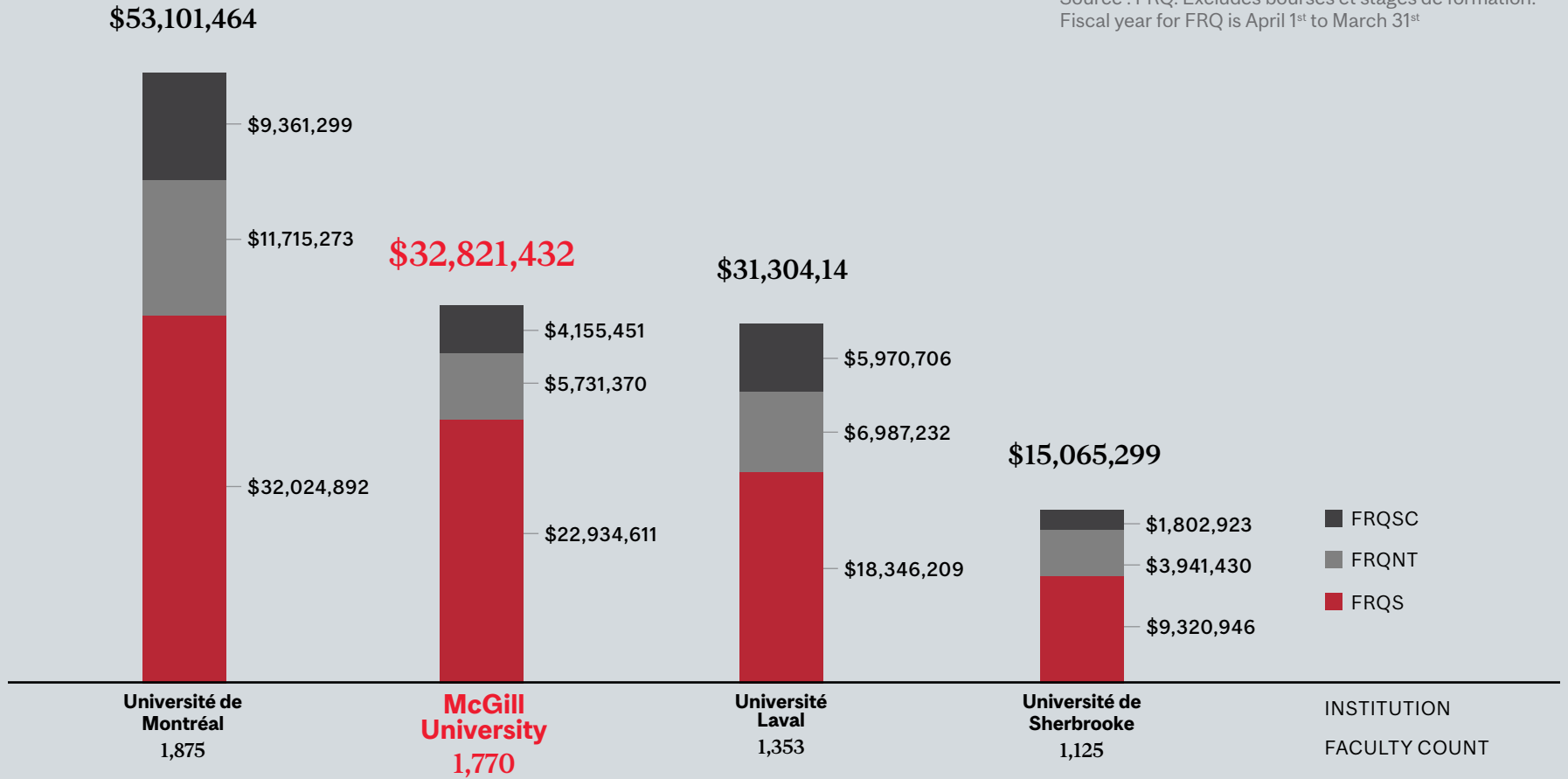
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FRQ has historically been the largest source of provincial research funding for McGill. This tradition continued in FY2019, where McGill received the second largest total amount of FRQ research funding in the province. The distribution of FRQ funding across

the three agencies tends to mirror the University's Tri-Agency funding; FRQS composes the majority of FRQ funding, as CIHR comprises the majority of Tri-Agency funding. A comparison between FRQ funding for the QC4 is presented in Figure 7.

FIGURE 7: QC4 TOTAL FRQ FUNDING, FY2019

Source : FRQ. Excludes bourses et stages de formation.  
Fiscal year for FRQ is April 1<sup>st</sup> to March 31<sup>st</sup>



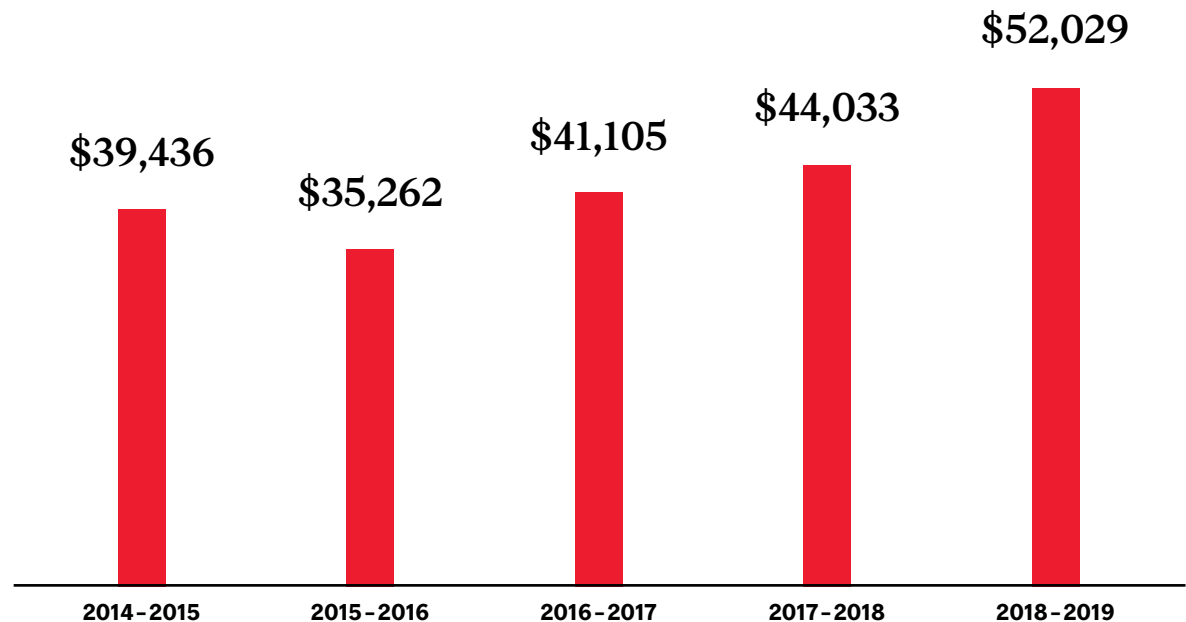
## Industry-sponsored Research Funding

*In FY2019, industry sponsors awarded a total of \$52M to McGill in grants, contracts, and clinical trial funding.*

This represents a roughly 18 per cent increase from the previous fiscal year and the highest increase in the U6. There has been a steady increase over the last five years in industry sponsored research funding (Figure 8), an upward trend that demonstrates McGill's commitment to strengthening its innovation and partnership agenda, one of the key objectives in the University's Strategic Research Plan.

FIGURE 8: MCGILL'S INDUSTRY-SPONSORED RESEARCH FUNDING OVER FIVE YEARS (\$000'S), FY2019

Source: CAUBO, includes industry sponsored donations and grants and contracts.



<sup>1</sup>Excludes industry contributions in-kind to CFI awards.

INSTITUTION	TOTAL INDUSTRY-SPONSORED RESEARCH FUNDING (\$000'S)	FACULTY COUNT*
University of Toronto	\$125,592	2,241
McMaster University	\$123,694	777
Univ. of British Columbia	\$81,879	2,286
Université de Montréal	\$73,863	1,875
University of Alberta	\$54,535	1,608
<b>McGill University</b>	<b>\$52,029</b>	<b>1,770</b>

TABLE 5: TOTAL INDUSTRY-SPONSORED RESEARCH FUNDING

Source: CAUBO (Totals) and Statistics Canada (Faculty Counts)

\* Faculty counts include full time, tenure/tenure track academic staff.

The U6's total industry-sponsored research funding for FY2019 and faculty counts are included in Table 5. Similar to research intensity, dividing industry sponsored research funding by faculty count, provides a measure of "industry intensity", a standardized metric to gauge performance across institutions, notwithstanding the differences in how institutions count their faculty.

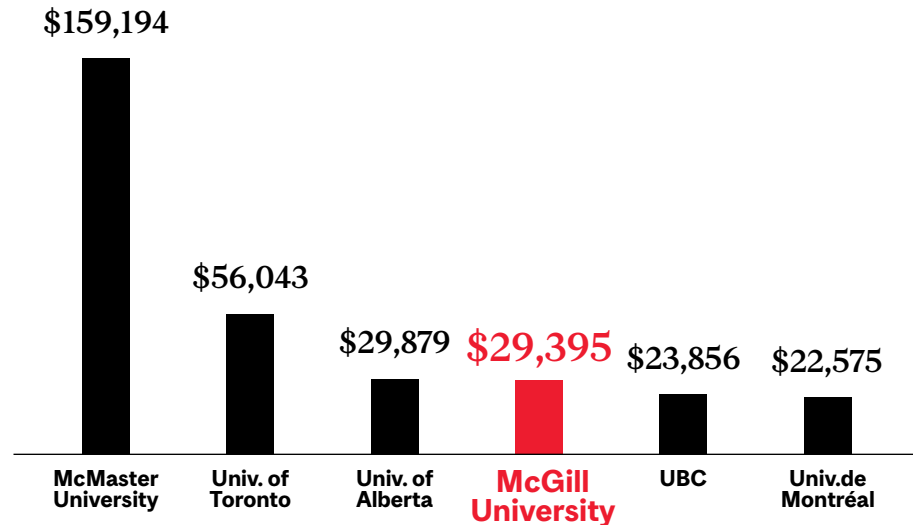
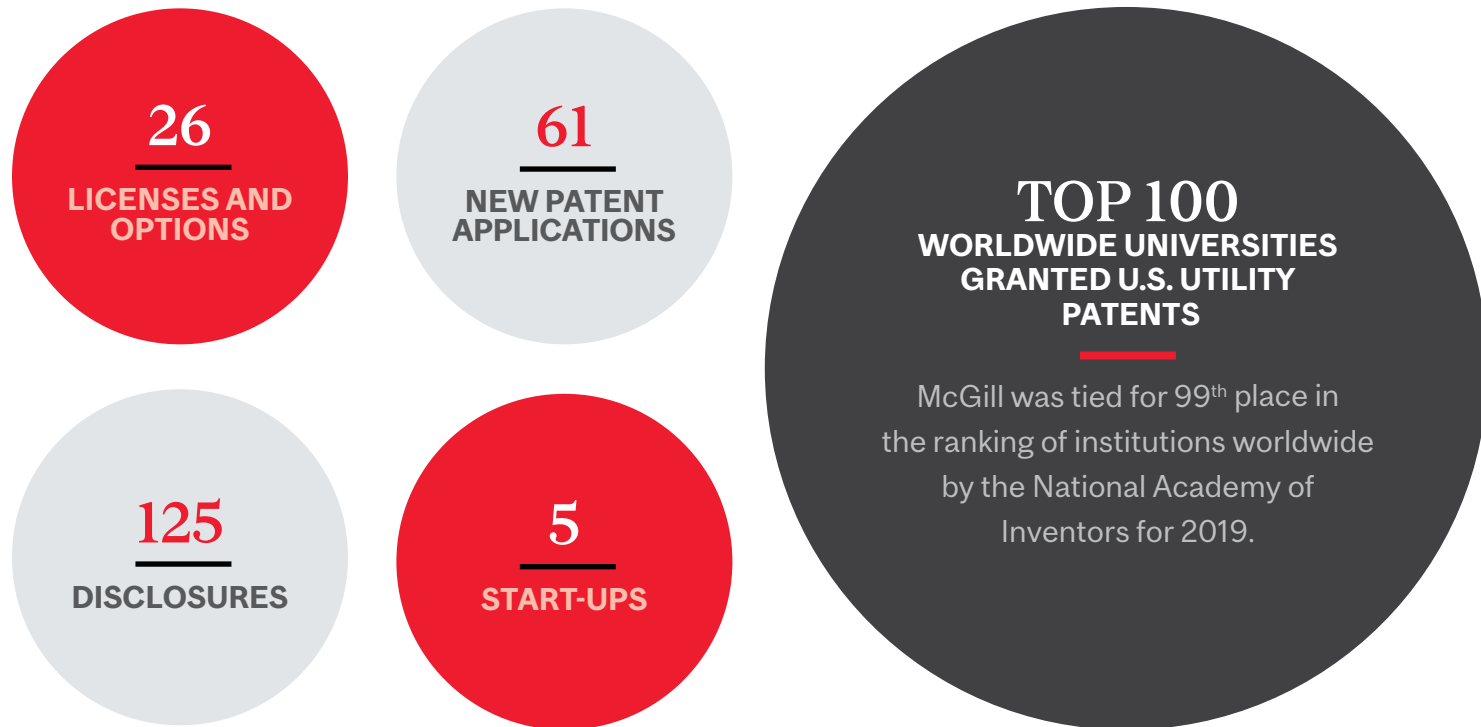


FIGURE 9: U6 INDUSTRY FUNDING PER FACULTY, FY2019

Source: CAUBO, includes industry sponsored donations and grants and contracts.

While McGill is sixth in the U6 for total industry-sponsored research funding, it is fourth in the U6 for total amount of industry research funding per faculty member or industry intensity (Figure 9).

In addition to industry research funding, other measures of industry and partnership activity are reported through AUTM, which conducts an annual survey on Canadian technology licensing and related activity. In the 2019 calendar year, McGill received **\$3.2M** in license revenue. Other key metrics include:





## Publications and Bibliometrics

*The use of bibliometrics in measuring research output is becoming increasingly widespread in evaluating research performance.*

### The United Nations Sustainable Development Goals

In the last few years, additional bibliometrics related to the United Nations Sustainable Development Goals (SDGs) have become more commonly reported. The UN SDGs are a set of 17 goals designed to challenge the global community to build a better world, intended to be achieved by the year 2030. SciVal contains bibliometric data for 16 of the 17 goals, based on search queries built by SciVal (Elsevier). This SDG bibliometric data is used as part of the Times Higher Education (THE) Impact Rankings.

McGill is among the top 50 institutions worldwide in scholarly output, for the SDGs listed in Table 6.

TABLE 6: SELECTED SDGS AND BIBLIOMETRICS FOR MCGILL, 2015 TO 2019 (TOP 50 WORLDWIDE)

SUSTAINABLE DEVELOPMENT GOAL (SDG)	SCHOLARLY OUTPUT	FIELD-WEIGHTED CITATION IMPACT
SDG 1: No Poverty	47	1.69
SDG 5: Gender Equality	161	3.73
SDG 10: Reduced Inequality	219	1.69
SDG 16: Peace, Justice and Strong Institutions	573	1.37

Source: SciVal. Data as of January 22, 2021

## General Bibliometrics

Table 7 provides an overview of McGill’s scholarly output and research impact over the last 10 years. Since 2010, McGill has shown a consistent yearly increase in scholarly output (number of publications). Field-Weighted Citation Impact (FWCI) has also increased, with slight decreases in the last couple of years for which citation data is not yet complete. This metric reflects

how the number of citations received by McGill publications compares with the average number of citations received by similar publications. A FWCI of 1.00 indicates that publications have been cited as would be expected based on the global average for similar publications. McGill’s FWCI has consistently been well over 1.00.

TABLE 7: KEY BIBLIOMETRICS FOR MCGILL, 2010 TO 2019

METRIC	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
SCHOLARLY OUTPUT	6,453	7,002	7,674	8,062	8,256	8,430	8,392	8,740	8,841	8,923
FIELD-WEIGHTED CITATION IMPACT	1.54	1.49	1.61	1.54	1.58	1.73	1.76	1.65	1.64	1.59
PUBLICATIONS IN TOP 10% JOURNAL PERCENTILES	43.4%	41.4%	41.6%	44.6%	41.6%	44.9%	45.7%	46.3%	41.9%	42.9%

Source: SciVal. Data as of January 22, 2021

TABLE 8: KEY BIBLIOMETRICS FOR U6, 2015 TO 2019

INSTITUTION	SCHOLARLY OUTPUT	FIELD-WEIGHTED CITATION IMPACT	PUBLICATIONS IN TOP 10% JOURNAL PERCENTILES
University of Toronto	90,533	1.82	43.9%
Univ. of British Columbia	52,760	1.77	43.0%
<b>McGill University</b>	<b>43,326</b>	<b>1.67</b>	<b>44.3%</b>
University of Alberta	38,507	1.45	40.2%
Université de Montréal	33,971	1.70	40.2%
McMaster University	25,879	1.88	39.8%

Among the U6, McGill is third in scholarly output, but has the highest percentage of publications in the top 10 per cent journal percentiles (Table 8).

Table 9 lists key bibliometrics in relation to the authorship type for McGill publications. The FWCI is higher with international collaborations. This boost to FWCI is not unique to McGill and reflects the benefit of international collaborations on this metric.

Source: SciVal. Data as of January 22, 2021

TABLE 9: METRICS BY COLLABORATION FOR MCGILL, 2010 TO 2019

AUTHORSHIP TYPE	% OF PUBLICATIONS	SCHOLARLY OUTPUT	CITATIONS	CITATIONS PER PUBLICATION	FIELD-WEIGHTED CITATION IMPACT
International collaboration	51.4%	41,482	1,393,168	33.6	2.40
National collaboration	21.3%	17,221	319,064	18.5	1.38
McGill collaboration	19.2%	15,476	256,899	16.6	1.22
Single McGill authorship (no collaboration)	8.2%	6,595	52,607	8.0	1.06

Source: SciVal. Data as of January 22, 2021

Table 10 provides a list of the institutions with which McGill has had the greatest number of co-authored publications over the last five years. At the top of this list is Harvard University, with over 2000 co-authored publications.

TABLE 10: TOP 10 INTERNATIONAL INSTITUTIONS COLLABORATING WITH MCGILL BY NUMBER OF CO-AUTHORED PUBLICATIONS, 2015 TO 2019

INSTITUTION	CO-AUTHORED PUBLICATIONS
1 Harvard University (USA)	2,272
2 Centre national de la recherche scientifique (France)	1,605
3 Stanford University (USA)	1,340
4 University of Michigan, Ann Arbor (USA)	1,269
5 Université de Paris (France)	1,228
6 University of Pennsylvania (USA)	1,200
7 University College London (United Kingdom)	1,199
8 University of Oxford (United Kingdom)	1,159
9 University of Washington (USA)	1,152
10 Columbia University (USA)	1,139

Source: SciVal. Data as of January 22, 2021

**TABLE 11: COUNTRIES OF THE TOP 100 COLLABORATING INSTITUTIONS.**

Source: SciVal. Data as of January 22, 2021

The top 10 institutions collaborating with McGill come from three countries: the United States, France and the United Kingdom. Table 11 expands this list to the countries representing the top 100 institutions that collaborate with McGill.

The top 100 institutions that collaborate with McGill come from 17 countries. Two of these countries are Germany and Japan. In 2020 McGill established and strengthened partnerships with institutions in these two countries. The next section presents two key collaborations from 2020.

	COUNTRY	SCHOLARLY OUTPUT
1	United States	29,235
2	United Kingdom	9,696
3	France	9,023
4	Italy	3,560
5	Spain	2,890
6	Australia	2,682
7	Germany	2,429
8	Netherlands	1,730
9	Switzerland	1,554
10	Norway	1,547
11	China	1,510
12	Sweden	1,472
13	Denmark	961
14	Brazil	807
15	Israel	781
16	Japan	694
17	South Africa	693

## International Partnerships

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*Research is truly a global effort, as highlighted by the recent pandemic.*

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The University's Strategic Research Plan has identified the key objective of stewarding research trajectories towards collaborative, large-scale initiatives and international partnerships to further

capitalize on our strengths for innovative research. Several strategic collaborations with international partners in 2020 are highlighted below.

### Helmholtz International BigBrain Analytics Learning Laboratory (HIBALL)

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Launched in 2020 and co-led by Katrin Amunts ([Forschungszentrum Jülich](#); Germany) and [Alan Evans](#) (Department of Neurology and Neurosurgery; Montreal Neurological Institute-Hospital), this initiative focuses on the interaction between neuroscience and artificial intelligence, particularly deep learning, while using high-performance computing technologies to build highly detailed 3D models of the brain at the cellular level.

The lab especially targets the application of future brain models for neuroimaging, brain-inspired AI research, and multi-scale brain simulation. HIBALL is jointly funded for five years by the Helmholtz Association of German Research Centres and McGill. The project touches upon many key aspects of McGill's [Healthy Brains, Healthy Lives'](#) mission, with multidisciplinary collaboration playing an important role.

## McGill-RIKEN

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### *Collaboration agreement*

McGill and the RIKEN Center for Integrative Medical Sciences (IMS), Japan, have renewed their formal partnership by signing a five-year collaboration agreement in 2020. With more than \$1.5 million CAD in combined support from RIKEN IMS and the Fonds de recherche du Québec (FRQ), McGill and RIKEN will expand and reinforce research activities and training in

areas of mutual interest, including genetics, immunology, and bioinformatics. This collaboration agreement [formalizes the joint declaration of intent and commitments made by McGill, RIKEN and the FRQ in fall 2018](#). At McGill, this initiative is led by Dr. Mark Lathrop, Scientific Director of the McGill Genome Centre.

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### *Research project*

A novel research project, funded by jointly by the Japan Agency for Medical Research and Development (AMED) and the Canadian Institutes of Health Research (CIHR), builds upon the collaboration between McGill and RIKEN that uses genomics and immunology

to address major questions in biomedical research. A McGill team, led by David Langlais (Department of Human Genetics), will be pursuing the concept of trained immunity in collaboration with Japanese researchers at RIKEN.

## Royal Society of Canada Fellows and College of New Scholars, Artists And Scientists

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*Royal Society of Canada (RSC) Fellows are elected to one of the Society's three Academies – the Academy of Arts and Humanities, the Academy of Social Sciences, and the Academy of Science.*

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As a complement to the Academies, the RSC established the College of New Scholars, Artists and Scientists in 2014. The College recognizes individuals who have begun demonstrating leading scholarly, research or artistic excellence within 15 years of having completed their post-doctoral program or its equivalent. Members of the College are elected for a period of seven years. Election to the RSC as either a Fellow or as a College member is a top honour for researchers in Canada. There are currently over 2,000 Fellows and over 200 College Members.

McGill faculty newly elected over the last five years as Fellows or College Members as well as the number of awards/medals is shown in Figure 10 (following page). In 2020, 14 McGill faculty become fellows, Members of the College or received an award/medal.

The small number of newly elected members makes it difficult to determine if there is an increase or decrease for McGill over time. In this case, benchmarking against other institutions can provide additional information on McGill's performance.

- Fellow
- College
- Awards / Medals

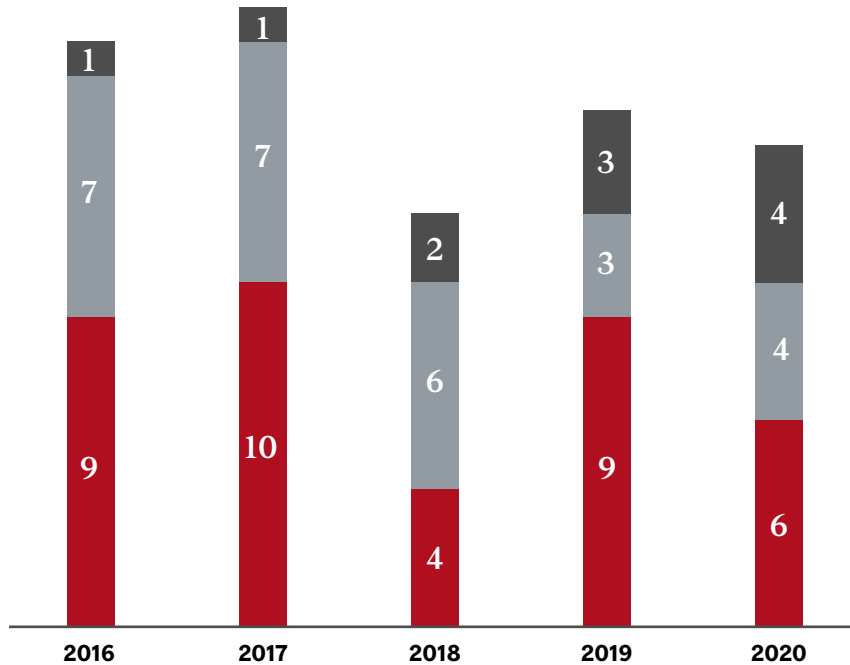


FIGURE 10: NUMBER OF MEDALS/AWARDS, NEW FELLOWS AND COLLEGE MEMBERS ELECTED FOR MCGILL, 2016 TO 2020

Source: Royal Society of Canada

Over the last five years, McGill has averaged the second highest number of Fellows and Members in the U6 (Figure 11).

In addition to the Royal Society of Canada, McGill faculty have been successful in obtaining many other awards and honours in the 2020 calendar year, as highlighted in the next section.

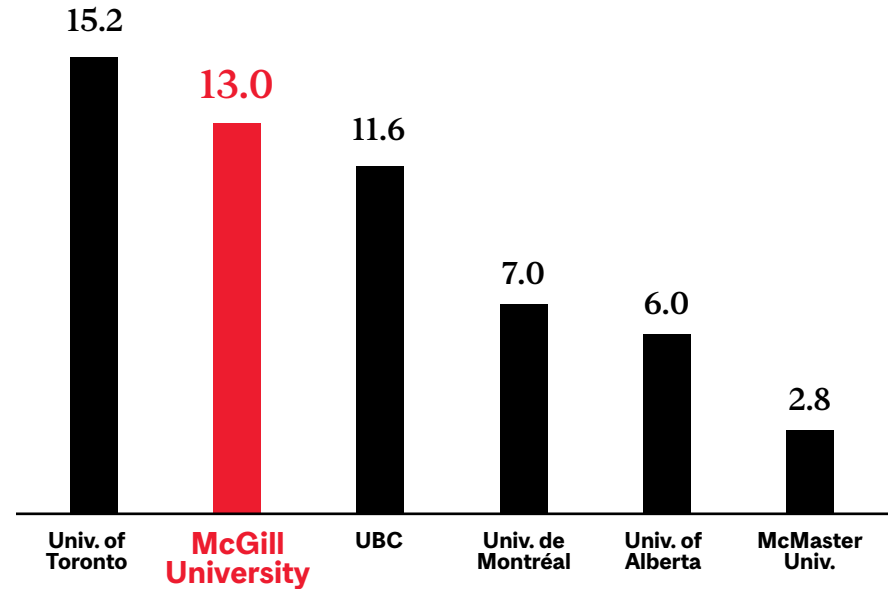


FIGURE 11: AVERAGE NUMBER OF FELLOWS/SCHOLAR FOR U6 (2016-2020)

Source: Royal Society of Canada

## Awards and Prizes in 2020

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*In 2020, researchers at McGill received numerous awards and prizes. A few of these are highlighted below.*

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### MARCH 2020

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#### **CANADA GAIRDNER WIGHTMAN AWARD**

GUY ROULEAU (Department of Neurology and Neurosurgery) was recognized for his contribution to health science with this award, given annually for over 60 years. [\[More»\]](#)

### MAY 2020

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#### **KILLAM PRIZE**

ALAN EVANS (Department of Neurology and Neurosurgery) was awarded the Killam Prize, one of Canada's highest

honours, for his numerous contributions to the understanding of the human brain. [\[More»\]](#)

#### **KILLAM RESEARCH FELLOWSHIP**

MYRIAM DENOVO (School of Social Work) and NATHALIE TUFENKJI (Department of Chemical Engineering) each received a Killam Research Fellowship. Notably, Myriam Denov is the first social work researcher ever to receive a Killam Research Fellowship in the award's over 50-year history. [\[More»\]](#)

#### **CRM-SSC PRIZE IN STATISTICS**

This prize was awarded to ERICA MOODIE (Department of Epidemiology, Biostatistics and Occupational Health). Awarded by the Centre de recherches mathématiques (CRM) and the Statistical Society of Canada (SSC) in recognition of outstanding research carried out primarily in Canada by a statistician during the first fifteen years after completing a doctorate. [\[More»\]](#)

## JUNE 2020

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### **C.L. DE CARVALHO-HEINEKEN PRIZE IN COGNITIVE SCIENCES (Netherlands Academy of Arts and Sciences)**

Described as “one of the pioneers in the field of music cognition,” by the prize committee, ROBERT ZATORRE (Department of Psychology) was awarded this international award. [\[More »\]](#)

## JULY 2020

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### **2020 GOVERNOR GENERAL'S INNOVATION AWARDS**

The pan-Canadian CHIME radio telescope project, which includes leading astrophysicists from McGill University, won a 2020 Governor General's Innovation Award. VICKI KASPI (Department of Physics), one of McGill's leads, was also one of Nature's 10 (10 people who mattered in science in 2019) as named by Nature Magazine. [\[More »\]](#)

### **WORCESTER REED WARNER MEDAL (AMERICAN SOCIETY OF MECHANICAL ENGINEERS)**

This medal, established in 1930, celebrates outstanding contributions to the permanent literature of engineering and was awarded to MARCO AMABILI (Department of Mechanical Engineering).

[\[More »\]](#)

## SEPTEMBER 2020

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### **ORDER OF CANADA**

A total of 13 members of the past and present McGill community have been appointed to the Order of Canada, including BRIAN CHERNEY (Department of Music Research) [\[More »\]](#)

## DECEMBER 2020

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### **NORTHERN SCIENCE AWARD AND THE CENTENARY MEDAL**

Overseen by Polar Knowledge Canada, a federal government agency, the award is presented annually to an individual or a group who has made a significant contribution to meritorious knowledge and understanding of the Canadian North. WAYNE POLLARD (Department of Geography) was Impact Insight Award (SSHRC) [\[More »\]](#)

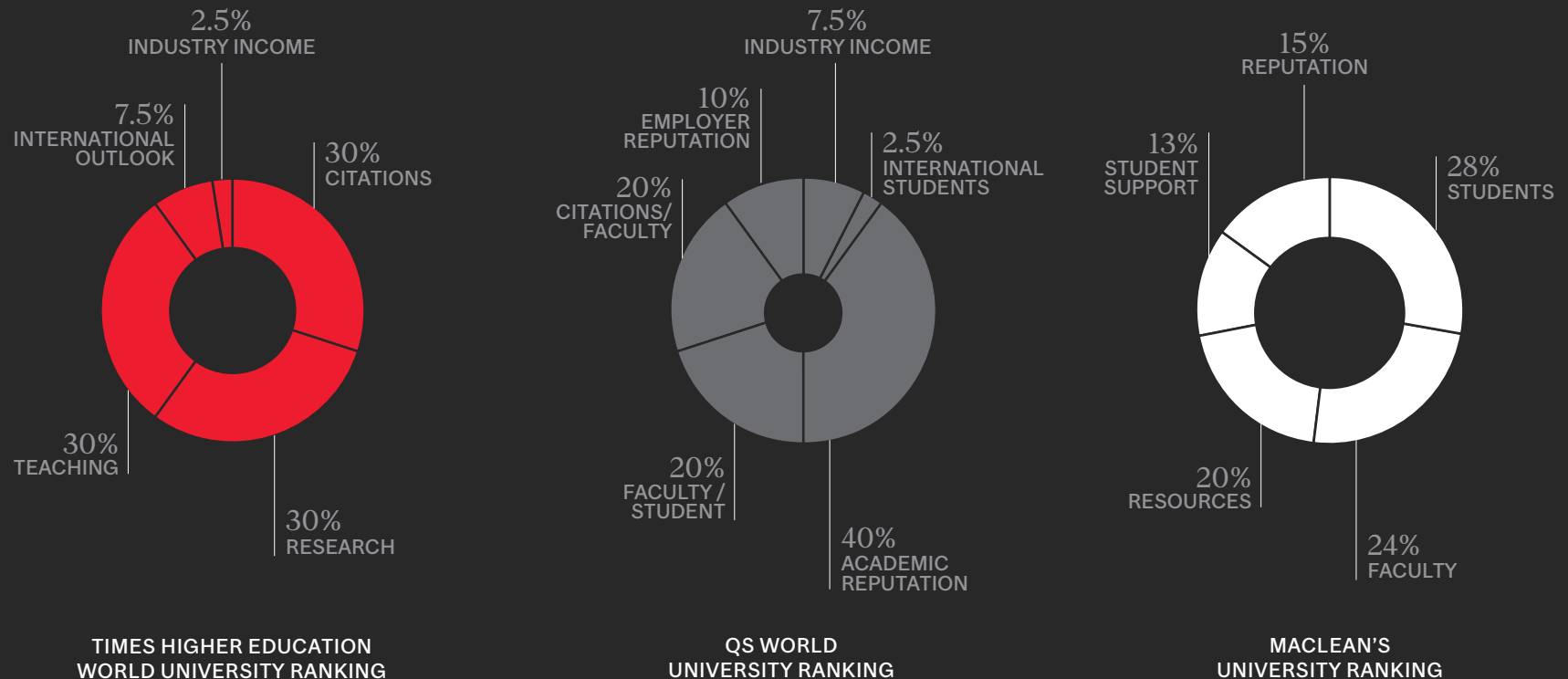
### **IMPACT INSIGHT AWARD (SSHRC)**

This award is given annually to an individual or team whose project has made significant contributions to knowledge and understanding about people, societies and the world. MYRIAM DENOV (School of Social Work) was the 2020 recipient. [\[More »\]](#)



## Appendix I

Ranking providers and rank components as a percentage of total ranking score.  
Link to methodology and description of rank components included in title.



*“Amid the pandemic, it remains important to celebrate research excellence and McGill’s ongoing contributions to learning and discovery.”*

Dr. Martha Crago, Vice-Principal [Research + Innovation]



McGill

Research and  
Innovation

[www.mcgill.ca/research](http://www.mcgill.ca/research)