



# Memorandum

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**TO:** Senate  
**FROM:** Dr. Rosie Goldstein, Vice-Principal (Research and International Relations)  
**SUBJECT:** Annual Report on Research Performance and Innovation 2013-2014  
**DATE:** January 21, 2015  
**DOCUMENT #:** D14-31  
**ACTION REQUIRED:**  INFORMATION     APPROVAL/DECISION

**ISSUE:** The annual report of the Vice-Principal (Research and International Relations) to Senate presents key indicators of McGill’s recent research funding performance as well as an update on areas of innovation related to both the commercialization of research and moving knowledge from the University into society.

**BACKGROUND & RATIONALE:** The Report on Research and Innovation is an annual review of McGill’s success in major funding programs, its progress in areas related to all forms of innovation, and the major achievements of University researchers.

The objective of the report is to provide Senate with a high-level portrait of McGill’s competitiveness in major funding programs, as well as the University’s effectiveness in moving discoveries and inventions from our campuses to the community and/or commercial market. The report identifies current trends in research funding and shares the VP-RIR’s vision for how we can build on our strengths in order to excel in today’s highly competitive research funding environment.

This year, as in the past, the report will focus on McGill’s performance in Tri-Agency and Trois Fonds programs, including how we compare to G5 and U15 peers in terms of market share and research intensity over the last five years. In addition, it will also review recently established programs aimed at diversifying the University’s funding sources, such as the Quartier de l’Innovation and the McGill University Business Engagement Centre.

The goal of the report is to inform Senators of significant trends in research funding while outlining how the University’s research enterprise is becoming better suited to compete in the future.

**MOTION OR RESOLUTION FOR APPROVAL:** N/A

**PRIOR CONSULTATION:** Internal review by Research and International Relations

**NEXT STEPS:** The report will be presented to the Board of Governors on February 2, 2015.

**APPENDICES:** Appendix A: Report on Research and Innovation 2014





Report on Research and  
Innovation

2014

Dr. Rosie Goldstein, Vice-Principal  
(Research and International Relations)



# Table of Contents

Introduction..... 3  
Changing Approaches to Research Services..... 5  
Research Funding Performance ..... 6  
Innovation Performance..... 17  
Research Priority Projects for 2015..... 22  
Major Achievements in Research 2014..... 25  
Acknowledgements ..... 32

# Introduction

The Report on Research and Innovation is the Vice-Principal (Research and International Relations)'s annual review on McGill's success in major funding programs, our progress in areas related to all forms of innovation, and the major achievements of University researchers. The objective of the report is to provide Senate and the Board of Governors with a high-level portrait of McGill's competitiveness in major funding programs, as well as the University's effectiveness in moving discoveries and inventions from our campuses to the community and/or commercial market. In order to present a fuller portrait of McGill's ongoing emphasis on engaging community partners, the 2014 Report on Research and Innovation is presented at the same time as the annual progress report for the Quartier de l'Innovation. Finally, the Report on Research and Innovation identifies current trends in research funding and shares the VP-RIR's vision for how we can build on our strengths in order to excel in today's highly competitive research funding environment.

McGill's overall performance in research funding and innovation is extremely important. Performance in federal Tri-Agency funding has an impact on McGill's access to Canada Research Chairs, Canada Excellence Research Chairs, Canada Foundation for Innovation awards, Banting and Vanier Fellowships (generally the most prestigious graduate awards), and federal funds for indirect costs of research. The University rankings are another area where research and academic reputation are intertwined. For instance, the Times Higher Education Rankings has "Research: Volume, Income, Reputation" as a major component, with the category making up 30% of their assessment criteria. Therefore, it is imperative that McGill reaches its full potential in the research sector – not only because of the revenue it brings in, but also because of the ripple effect it has into other areas of the University's funding and reputation.

The 2014 Report on Research and Innovation covers McGill's overall research revenues, which represents all funding sources (i.e. federal, provincial, non-profits, industry, international, endowment, and miscellaneous programs). Its focus, however, is on McGill's performance in the two most significant funding areas, Tri-Agency programs for 2012-13 and Trois Fonds programs for 2013-14, looking at how we compare to our G5 and U15 peers in terms of market share and research intensity over the last five years. In addition, it also reviews data for FY13 from the Association of University Technology Managers (AUTM) as a means of assessing McGill's performance in areas related to the commercialization of research and entrepreneurship. In each of these cases, the data is the most recent currently available. Finally, the report highlights some of our major research funding achievements from 2014, significant new or strengthened partnerships, and researchers who received major prizes and awards over the past year.

The report's goal is to inform Senators and members of the Board of Governors of significant trends in funding while outlining how the University's research enterprise is becoming better suited to compete in the future. The key messages that emerge are:

- McGill continues its strong performance in federal and provincial funding programs. Over the past five years, we have maintained or increased our market share in terms of funding from most of the major Canadian and Quebec granting agencies.
- McGill remains approximately average in Canada in terms of revenue from innovation and entrepreneurship. However, through the Quartier de l'Innovation (QI) and the McGill University Business Engagement Centre (MUBEC), we are increasing both our collaborations with community and industry groups as well as revenue generated from these interactions.
- Through three Principal's Priority projects, Research and International Relations (RIR) will ensure the continued sustainability and success of McGill's world-class research enterprise.

# Changing Approaches to Research Services

Within Research and International Relations (RIR), our vision for the next few years can be summarized as to: “improve the support to faculty members, allowing them to develop research projects and take on leadership roles, often in partnership with government, other institutions, industry and other stakeholders, while pushing McGill as an institution to set new best practices and standards of world-class research support.”

This vision grew directly out of a number of the trends we see influencing research in Canada, including the following:

- Investment in new and breakthrough ideas – Universities around the world are looking for ways to increase investment in new and breakthrough ideas. There is a gap in research funding programs in that the traditional granting councils have few programs that are willing to support “high risk” research where the chance of failure is greater, but the potential impact is transformative.
- Tailored, comprehensive support for researchers – As requirements for many granting programs become more complex and time-consuming, researchers have begun to require new types of support services. Many universities have moved toward administrative models that both realign services along the traditional disciplines (Biomedical and Health Sciences, Natural Sciences and Engineering, and Social Sciences and Humanities) and move administrative support closer to where the research happens (i.e. in Faculties, departments, research centres, and affiliated hospitals).
- Premium on leadership in large-scale research projects – Again, at a time when granting programs are moving to increasingly complex funding models, often rooted in collaboration and partnership, there is a renewed importance for researchers to not only participate, but lead networks and large-scale projects in research and innovation. High-impact, high-potential projects must therefore be identified and supported earlier and be provided with the necessary human and financial resources at each stage of their development.
- Importance of lowering the barriers to collaboration – Collaboration has become critical to succeeding in today’s research funding landscape. Potential partners in industry, in government, and at other universities rightfully expect a streamlined, flexible response from McGill.
- Renewed focus on major national and international prizes, awards, and scholarly academies – There is a concerted effort, led by the Governor General, to increase the visibility of Canada’s leading researchers through the “Enhancing Global Recognition for Canadian Research Excellence” initiative.

The section, “Research Priority Projects for 2015,” outlines the key projects aimed at addressing these trends that RIR will undertake in 2015.

# Research Funding Performance

## SUMMARY

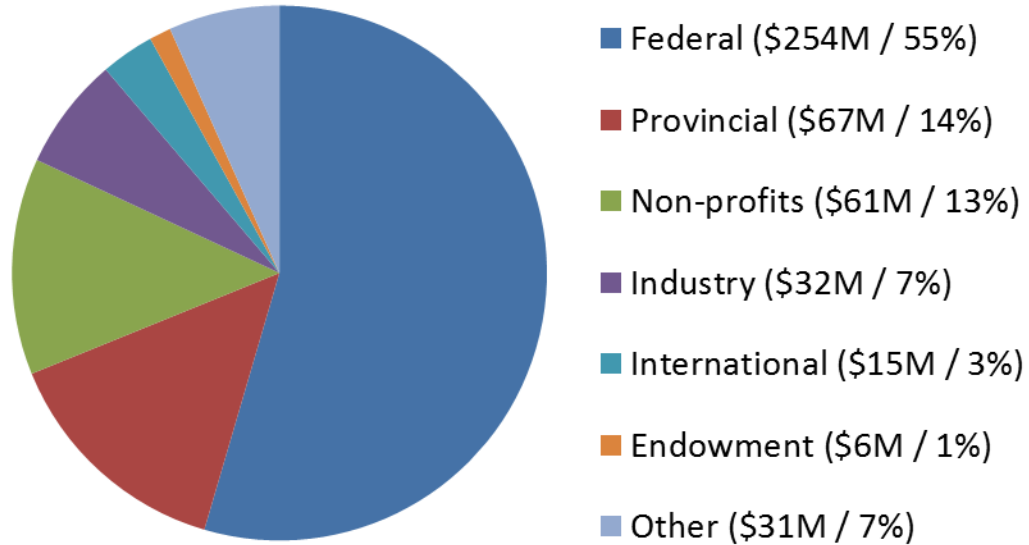
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- McGill remains one of Canada's top research universities by all traditional measurements, and several benchmarks indicate we are strengthening our position. For example:
  - In FY13, McGill solidified its place as the country's second-most research-intensive university, behind only the University of Toronto and distancing itself from the University of Alberta, which was third.
  - McGill's market share increased at all three of the Tri-Agencies in FY13 as well as in all three of the Trois Fonds during FY14.
- McGill's increase in total research funding revenues, which includes its affiliated hospitals and research institutes, has outpaced the growth of the envelopes for many federal and provincial programs:
  - Although the overall Tri-Agency envelope only increased by 0.9% (\$17.7-million) in 2012-13, McGill managed to increase its own Tri-Agency funding by 1.6% (\$2.5-million) in the past year.
  - McGill's five-year increase in Tri-Agency funding was higher than the increase in the total envelope (13% for McGill versus 11% for the Tri-Agency).
  - McGill's five-year growth in NSERC and in SSHRC funding was greater than the growth in the respective envelopes of these funds between 2007-08 and 2012-13.
- Challenges remain in the field of biomedical and health sciences:
  - In CIHR funding, McGill has lost a small percentage of its market share over the past five years (from 12.4% to 12.2%), while others have made strong gains.
  - For example, the University of British Columbia is catching up with McGill in CIHR funding. While the gap between UBC and McGill was about \$13-million in 2007-08, the gap between the two universities dropped to nothing in 2010-11 and is now less than \$4-million. UBC has increased its market share of CIHR dollars by 1.1 percentage point over the past five years.



**BREAKDOWN OF FUNDING SOURCES AND 10-YEAR TREND**

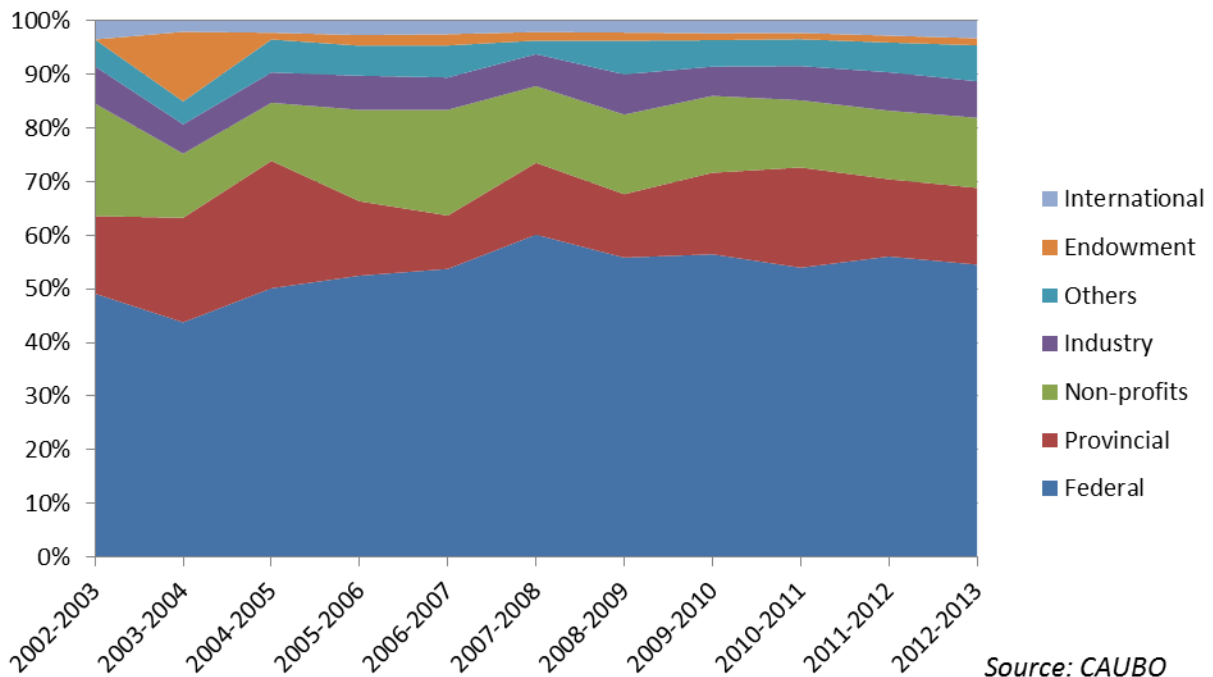
**Figure 1. Percentage of Research Funding by Source 2012-13**



**\$465-million in total research funding**

Source: CAUBO

**Figure 2. Sources of Research Revenue: 10-year Trend**

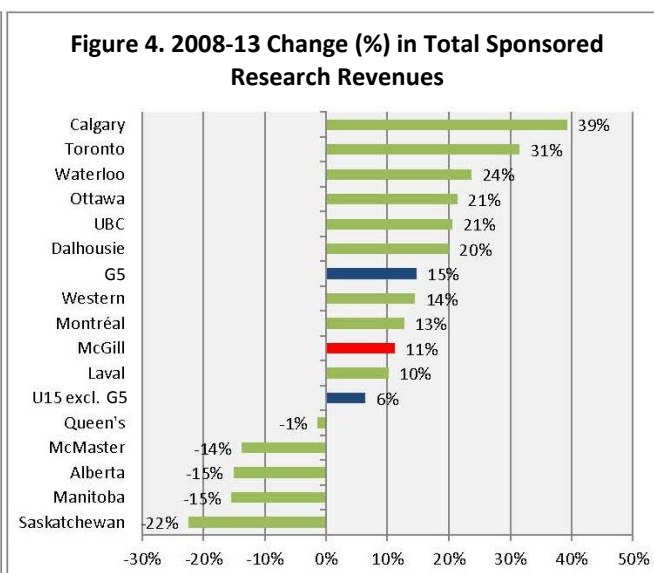
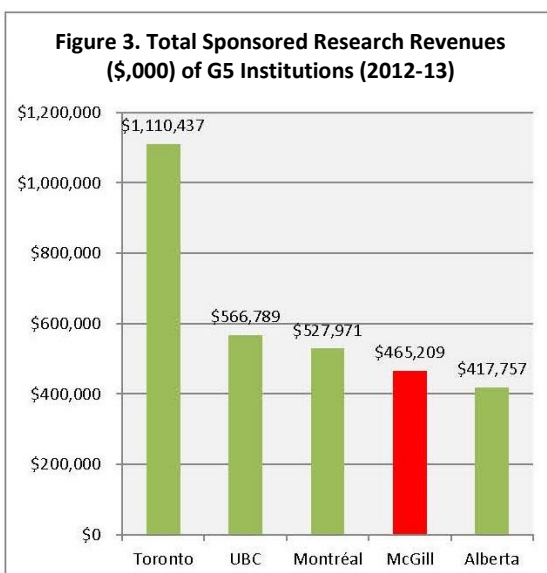


Source: CAUBO

## KEY POINTS

- **McGill’s total sponsored research revenue, including affiliated hospitals and research institutes, for FY13 was \$465-million**, which was down from approximately \$484-million the previous year. This is a natural fluctuation resulting from the cycles of large funding programs, such as the Canada Foundation for Innovation.
- Over the past decade, public funding (federal and provincial) has been the most important sources of research funding for McGill, with federal funding accounting for 50-55% (**55% in 2012-13**) of research revenue and provincial funding ranging between 10-20% (**14% in 2012-13**).
- Non-governmental or “alternative” sources of research funding – non-profits, industry, and international – have also remained relatively stable over the past decade. Collectively, these non-traditional sources generated **\$108-million** in research funding for McGill in FY13: **\$60.9-million from non-profits, \$31.7-million from industry, \$15-million from international funding sources**. Revenues from these sources were down slightly from \$110-million in FY12.

## TOTAL SPONSORED RESEARCH AND RESEARCH INTENSITY



## TOTAL SPONSORED RESEARCH

- In 2012-13, McGill’s \$465-million in total sponsored research funding **ranked 4th** among the G5 universities, behind the University of Toronto, University of British Columbia, and l’Université de Montréal, and ahead of the University of Alberta (Figure 3). As with McGill, these totals include each university’s affiliated hospitals and research institutes.

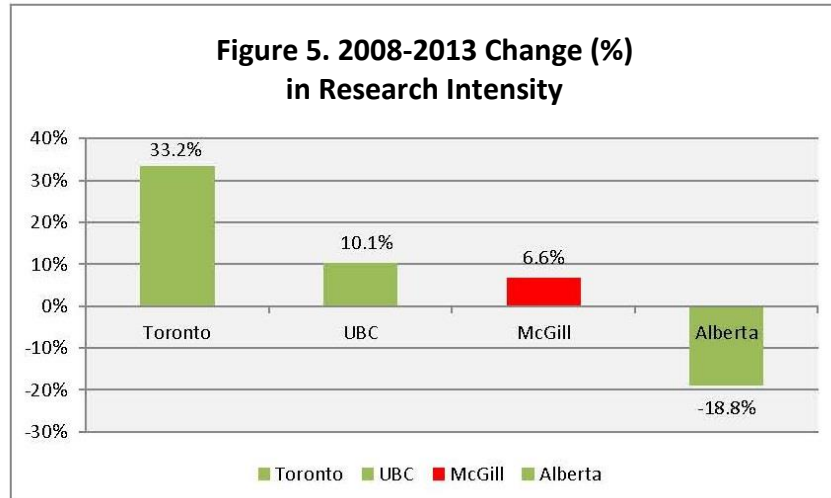
- Over the past five years, McGill’s sponsored research revenue has grown at a slightly slower pace than the average among Canada’s five largest universities (Figure 4). McGill has experienced an 11% increase versus a 15% average increase among the G5.
- Since FY08, McGill has moved from 5th in total sponsored research among the G5 and U15 to 4th in both groupings.

## RESEARCH INTENSITY

Research intensity is defined as the research dollars divided by the “full-time professorial” count at an institution. This measurement is intended to evaluate the amount of research funding at an institution, relative to its size. However, due to inconsistent faculty counts, this metric can be problematic. It can nevertheless be a useful point of comparison, if used with caution.

- In terms of research intensity, **McGill ranked 2nd in both the G5 and U15 for 2012-13**. The University of Toronto ranked first with \$480,501 per full-time professor versus \$281,433 at McGill and \$249,556 at the University of Alberta, which ranked third.
  - It should be noted that research intensity for the University of Toronto is most likely inflated, especially in the area of health sciences, as portrayed by CAUBO, which uses full-time ranked academics in a university to calculate research intensity. Unfortunately, a large number of researchers that obtain federal funds at the University of Toronto do not fit this category. For example, the University of Toronto has a large number of affiliated hospitals and research institutes as the only medical school in a large metropolitan area, versus McGill which is one of two medical schools in a smaller city. The University of Toronto therefore has significant numbers of researchers receiving CIHR funding, but who are not full-time ranked academics at the university. As a result, the University of Toronto’s research dollars are being divided by a much smaller pool of applicants than the number they actually have, thus inflating their overall research intensity.

- Five years ago, McGill ranked 3rd in the G5 and 4th in the U15 in terms of research intensity. It is a noteworthy accomplishment that McGill has strongly solidified its 2nd-place position in FY13.



- Since FY08, McGill’s research intensity has grown at a slower pace than University of Toronto and the University of British Columbia (Figure 5).
- Université de Montréal, the fifth G5 university, no longer provides a count of its full-time professoriate. Therefore, its research intensity cannot be calculated.

*Source: CAUBO, Research Infosource and University and College Academic Staff System (UCASS); compiled by Planning and Institutional Analysis (PIA)*

## FEDERAL PROGRAMS

McGill continues to perform very well in programs offered by the three major federal granting agencies: Canadian Institutes of Health Research (CIHR), Natural Sciences and Engineering Research Council of Canada (NSERC), and Social Sciences and Humanities Research Council (SSHRC), known collectively as the Tri-Agency. As Figure 6 demonstrates, McGill ranks among the top research-intensive universities in Canada – both overall and in each of the individual funding agencies.

In 2012-13, McGill was awarded approximately **\$165-million from the Tri-Agencies**, 3rd behind the University of Toronto (\$269-million) and the University of British Columbia (\$177-million). McGill’s position in Canada has not changed in the past five years. In the most recent year, **McGill had a market share of 8.6%** versus 14.1% for University of Toronto and 9.2% for the University of British Columbia.

**Figure 6. McGill Results by Agency 2012-13**

	<i>Overall Funding</i>	<i>Total Dollars Ranking in U15</i>	<i>Market Share</i>	<i>5-year Trend in Market Share</i>	<i>1-year Trend in Market Share</i>	<i>Research Intensity Ranking in U15</i>
Total Tri-Agency	\$165-million	3rd	8.6%	+0.1	+0.1	2nd
CIHR	\$98-million	2nd	12.2%	-0.2	+0.1	4th
NSERC	\$51-million	3rd	6.0%	+0.5	+0.1	2nd
SSHRC	\$16-million	4th	5.9%	+0.6	+0.2	1st

HIGHLIGHTS FROM TRI-AGENCY RESULTS

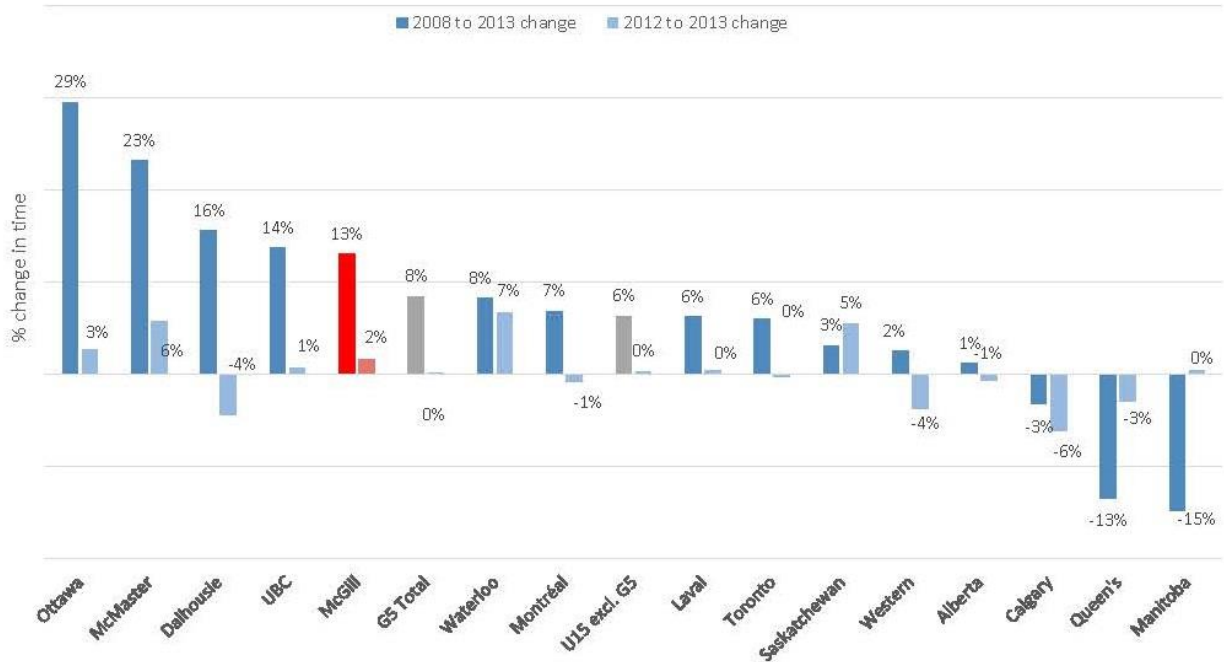
*Overall funding*

- Although the total Tri-Agency envelope increased by only 0.9% (\$17.7-million) in 2012-13, McGill managed to increase its own Tri-Agency funding by 1.6% (\$2.5-million) during the same period.
- McGill's five-year increase in Tri-Agency funding was higher than the increase in the total envelope (13% versus 11%). Notably, McGill's five-year growth in NSERC and SSHRC funding was higher than the growth in the respective envelopes of these funds between 2007-08 and 2012-13.
- Federal Tri-Agency research award dollars increased by 13% at McGill in the past five years and by 1.6% in the past year. Notably, **McGill's market share increased at all three agencies in FY13.**

At the same time, as the overall Tri-Agency envelope decreased by 0.2% in FY13, two-thirds of U15 institutions saw no increase or a decrease in their level of funding (Figure 7).

- The University of British Columbia is the G5 university that has grown the most in terms of overall Tri-Agency funding over the past five years (14%).
- Results include Tri-Agency funding from grants, career awards, and scholarships.

**Figure 7. 5-year and 1-year Change (%) in Tri-Agency Award Dollars of U15 Institutions**



### Market share

- In 2012-13, **McGill ranked 3rd among the U15 in terms of Tri-Agency market share (8.6%)**, behind the University of Toronto (14.0%) and the University of British Columbia (9.2%). McGill's market share was 8.3% in FY11 and 8.5% in FY12, thus indicating steady progress in what has been a constrained funding environment.
- McGill's share of Tri-Agency award dollars went up by only 0.1 percentage point total over the past five years, meaning that McGill has maintained a steady share. A gain of 0.1 percentage point in Tri-Agency market share was equivalent in FY13 to an increase of around \$1.9-million in awards.
- Nine U15 universities have lost market share between 2007-08 and 2012-13.

- **McGill's Tri-Agency research intensity (\$99,589) ranked 2nd across the U15**, behind only the University of Toronto (\$116,485).
- McGill's research intensity has increased by 8.4% in the past five years.
- To become the Tri-Agency's most research-intensive university, McGill would need an extra \$28-million in federal funding.

#### *Canadian Institutes of Health Research (CIHR)*

- In 2012-13, **CIHR awarded McGill and its affiliated hospitals and research institutes, \$98-million**, second behind the University of Toronto (\$171-million).
- CIHR research award dollars increased by 7.3% at McGill in the past five years and decreased by 0.1% in the past year. This five-year change is lower than both the G5 average increase (7.8%) and the rest of the U15 average increase (8.6%).
- **McGill ranked 2nd among the U15 in CIHR market share (8.6%)**, behind the University of Toronto (21.2%). McGill's share of CIHR award dollars went down by 0.2 percentage point over the past five years, from 12.4% in 2007-08 to 12.2% in 2012-13.
- In 2012-13, **McGill's CIHR research intensity (\$167,454) ranked 2nd across the G5**, behind the University of Toronto (\$300,250), and 4th in the U15.
- McGill experienced a significant drop in its CIHR research intensity in FY11, decreasing from \$202,943 per FTE in FY10 to \$176,166 per FTE in FY11. Despite maintaining its high rank in the G5, McGill continued declining in CIHR research intensity in both FY12 (\$172,546) and FY13 (\$167,454).
- To be the most research-intensive university in CIHR, McGill would need an extra \$78-million from the agency.

#### *Natural Sciences and Engineering Research Council of Canada (NSERC)*

- In 2012-13, **McGill was awarded \$51-million from NSERC**, 3rd behind the University of Toronto (\$73-million) and the University of British Columbia (\$65-million).
- **NSERC research award dollars increased by 23.3% at McGill in the past five years and by 4.5% over the previous year**. This five-year change is significantly higher than both the G5 average increase (9.4%) and the rest of the U15 average increase (3.9%).

- In 2012-13, McGill ranked 3rd among the U15 in terms of NSERC market share (6.0%), behind the University of Toronto (8.6%) and the University of British Columbia (7.8%). **McGill's share of NSERC award dollars went up from 5.5% in 2007-08 to 6.0% in 2012-13.**
- In 2012-13, **McGill's NSERC research intensity (\$108,163) ranked 2nd across U15 universities** behind the University of Toronto (\$116,337), up from third in 2011-12.
- To be the most research-intensive university in NSERC, McGill would need an extra \$3.7-million in funding from the agency.

#### *Social Sciences and Humanities Research Council (SSHRC)*

- In 2012-13, **McGill was awarded \$15.8-million from SSHRC**, ranking 4th behind the University of Toronto (\$26-million), the University of British Columbia (\$18-million), and Université de Montréal (\$16.1-million).
- **SSHRC research award dollars increased by 20.8% at McGill over the past five years and by 2.7% in the past year.** This five-year increase is significantly higher than both the G5 average (8.7%) and the rest of the U15 average (7.6%). In addition, this increase occurred while the SSHRC envelope declined by 0.4% in 2012-13.
- In 2012-13, McGill ranked 4th among the U15 in terms of SSHRC market share (5.9%), behind the University of Toronto (9.5%), the University of British Columbia (6.9%), and Université de Montréal (6.0%). However, McGill's share of SSHRC award dollars went up from 5.4% in 2007-08 to 5.9% in 2012-13.
- In 2012-13, **McGill's SSHRC research intensity (\$26,497) continued to rank first among the U15.** McGill's SSHRC research intensity has increased by 20% in the past five years.

*Source: Official Tri-Agency statistics compiled by OST; verified by PIA*

## **PROVINCIAL FUNDING**

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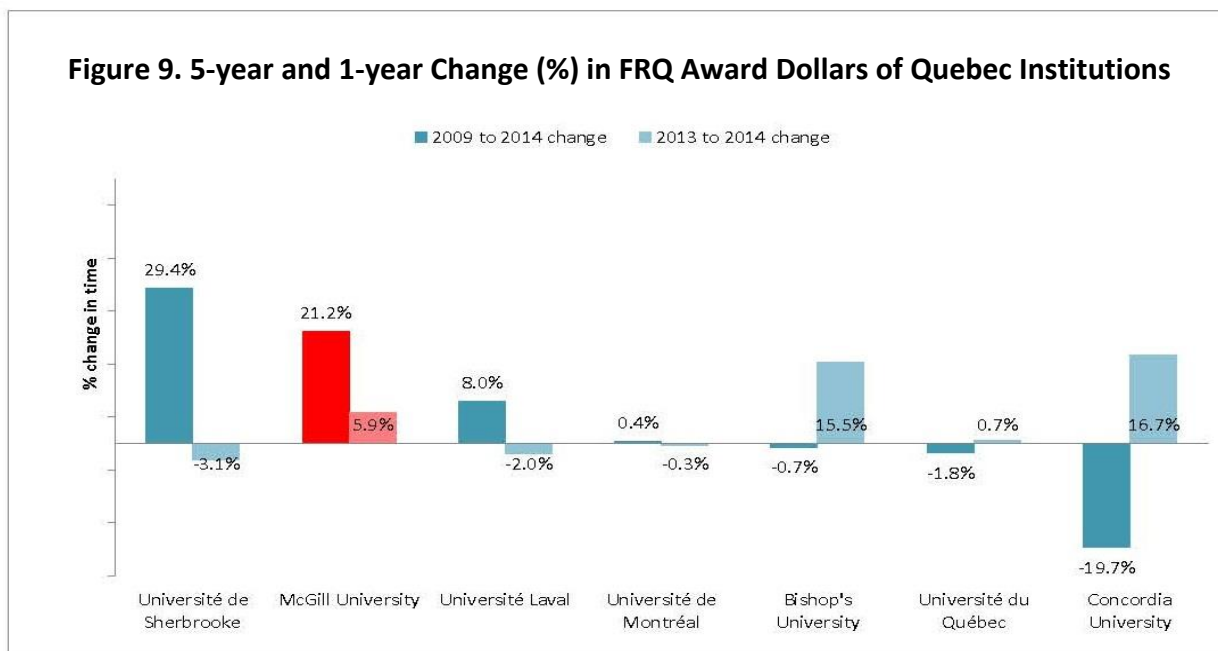
The Fonds de recherche du Québec (FRQ) is the province's primary research funding organization. Its three agencies, known collectively as the "Trois Fonds," are the Fonds de recherche du Québec – Santé (FRQ-S), Fonds de recherche du Québec - Nature et technologies (FRQ-NT), and the Fonds de recherche sur la société et la culture (FRQ-SC).



Unlike the Tri-Agency, FRQ statistics are already available for 2013-14. However, this report does not contain FRQ research intensity, because Université de Montréal and Université Laval have not provided staff data to the U15 since 2011-12.

Last year, **McGill was awarded \$29-million from the FRQ**, behind only Université de Montréal at \$41-million. McGill also ranked 2nd, again behind Université de Montréal, in FRQ market share (19.8% vs. 27.6%). Our University had strong gains in this measurement, while Université de Montréal showed no change from the previous year.

Université de Montréal, McGill University, and Université Laval together receive about 65% of all FRQ funding.



#### HIGHLIGHTS FROM TROIS FONDS RESULTS

- **FRQ award dollars, which excludes scholarships, increased by 21.2% at McGill in the past five years and by 5.9% in the past year** (Figure 9).
- McGill's total FRQ market share as well as our FRQ-NT and FRQ-SC market shares have improved every year since 2010-11.
- Although overall FRQ-S and FRQ-SC funding has decreased in the past two years, McGill received more funding from these two agencies during the same period and increased its market share in both areas.

#### *Fonds de recherche du Québec – Santé (FRQ-S)*

- In 2013-14, **FRQ-S awarded McGill and its affiliated hospitals and research institutes \$19-million**, 2nd behind Université de Montréal (\$24-million).
- FRQ-S award dollars increased by 19.7% at McGill in the past five years and by 2.0% in the past year.
- In 2013-14, McGill ranked 2nd in Quebec in terms of FRQ-S market share (23.7%), behind Université de Montréal (29.8%).

#### *Fonds de recherche du Québec - Nature et technologies (FRQ-NT)*

- In 2013-14, **FRQ-NT awarded McGill \$7-million**, third behind Université de Montréal (\$8.7-million) and Université Laval (\$8.4-million).
- FRQ-NT award dollars increased by 23% at McGill in the past five years and by 17.9% in the past year.
- In 2013-14, McGill ranked third in Quebec in terms of FRQ-NT market share (18.9%), behind Université de Montréal (23.3%) and Université Laval (22.4%).

#### *Fonds de recherche sur la société et la culture (FRQ-SC)*

- In 2013-14, **FRQ-SC awarded McGill \$3.7-million**, 4th behind Université de Montréal (\$8.7-million), Université du Québec à Montréal (\$5.2-million), and Université Laval (\$3.8-million).
- FRQ-SC award dollars increased by 25.7% at McGill in the past five years and by 6.1% in the past year.
- In 2013-14, McGill ranked 4th in Quebec in terms of FRQ-SC market share (11.4%), behind Université de Montréal (27.2%), UQAM (16.4%), and Université Laval (11.9%).

# Innovation Performance

## SUMMARY

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The last three Reports on Research and Innovation have stressed the need for McGill to work differently with its researchers, its community partners (including investors and alumni), and industry to both create new sources of research funding as well as deliver knowledge, ideas, and new technologies that address societal needs. This means more and better collaboration, a more strategic and open approach to our patent portfolio, and a concerted effort to take our research beyond the academy to the market or translate it into new means of engaging and improving our communities.

The following data show that McGill continues our somewhat inconsistent performance in traditional areas related to the commercialization of research, with strength in protecting intellectual property and challenges in moving research into the community and the market. As a means of addressing the latter, McGill launched two key engagement projects in recent years: the Quartier de l'Innovation (QI) and the McGill University Business Engagement Centre (MUBEC). These initiatives are now producing significant results, which are summarized in this section.

McGill is also working to significantly expand our zone of interaction with key players in the local, national, and international innovation ecosystem. In 2014, McGill hosted meetings with numerous venture capital firms, accelerators, incubators, serial entrepreneurs, and funding agencies in an effort to build or strengthen partnerships in this area and develop pathways for McGill innovators to take their inventions and ideas to the next stage.

Finally, throughout 2014, McGill's Innovation Steering Committee delivered a series of recommendations related to enhancing curricular and experiential entrepreneurship training opportunities for students, including a Minor in Entrepreneurship; recognizing innovative and entrepreneurial activity in the academic career path; enhancing McGill's capacity for successful industrial partnerships; and reviewing McGill's Intellectual Property Policy. Proposals on how to implement these recommendations are in development.

## COMMERCIALIZATION OUTCOMES

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Protecting intellectual property has traditionally been McGill's strong suit in areas related to innovation, commercialization, knowledge transfer, and entrepreneurship. In the Association of University Technology Managers (AUTM) Canadian Licensing Activity Survey for FY2013 – the most recent data available – this remained the case.

Of the 34 universities participating in the study, McGill ranked:

- **1st in New Patent Applications (125), tying us with Université de Montréal;**
- 4th in US Patents Issued (19), while the University of Victoria led Canadian universities (27);
- 8th in Invention Disclosures (95), while the University of Guelph was 1st (294);
- 8th in Cumulative Invention Disclosures 2011-13 (274), while the University of Guelph was again 1st (605).

McGill, however, does not perform as well in moving those discoveries to market. The FY2013 AUTM Canadian Survey indicates that McGill ranked:

- 9th in terms of the size of its commercialization team, counting eight full-time employees in licensing, while Université de Montréal led the country (20 FTEs);
- 10th in Licenses and Options Executed (18), while McMaster University and its affiliated hospitals led the country (71);
- 9th in Cumulative Active Licenses 2011-13 (169), while McMaster and its affiliated hospitals were again first in Canada (398);
- Tied for 13th in Startups (1 new company), while the University of Toronto, excluding its hospitals, led the country (12).

McGill's average performance in the area of commercialization translates into average funding returns from our innovation portfolio. In the FY2013 AUTM Canadian Survey, McGill ranked:

- 15th in Adjusted Gross Income, which includes running royalties, cashed-in equity, and miscellaneous sources, minus license income paid out to other institutions (\$832,000), while the University of Saskatchewan led Canadian universities (more than \$10-million);
- 15th in 2011-2013 Cumulative Adjusted Gross Income (\$2.6-million), while Saskatchewan was 1st (over \$25-million);
- 15th in 2013 Gross License Income with \$891,794, while Saskatchewan was 1st (more than \$10 million);
- 15th in 2013 Gross License Income from Running Royalties (\$298,789), while Saskatchewan was 1st (\$9,943,436).

*Source: AUTM Canadian Licensing Activity Survey: FY2013*

## IMPACT OF THE QI AND MUBEC

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Research and International Relations (RIR) is home to two key units dedicated to increasing McGill's engagement with community and industry partners. They are the Quartier de l'Innovation (QI) and the McGill University Business Engagement Centre (MUBEC), both of which began full operations in FY2012-13. Due to the standard delay in reporting, any funding generated by these units will not appear until the 2015 Report on Research and Innovation at the earliest.

Below you find significant achievements from the QI and MUBEC for 2014 as they relate to building new and stronger collaborations between McGill and community, university, and industry partners.

### HIGHLIGHTS FROM THE QI

- **In 2014, the QI greatly expanded its impact and reach both on campus and in the district:**
  - **43 McGill professors from 11 Faculties were actively involved in over 30 innovative projects associated with the QI. Of these projects, 13 were new initiatives in 2014.**
  - **A total of 58 McGill students were engaged in the QI, actively contributing to the QI Student Working Group (SWG), research projects, and internships.**
  - **With outreach activities, classroom presentations, and experiential learning opportunities combined, over 600 McGill students learned about the QI this year.**
- In November 2014, the second McGill Innovation Week was a success, reaching over 1,500 individuals with its 14 events and activities.
- The fourth annual Montreal Summit on Innovation (MSI), also taking place in November, welcomed 475 participants, including 57 McGill students, staff, and researchers.
- Established QI partners like BioFuelNet Canada, Centech, and McGill HPC now work alongside new players, such as échoFab, Ecofuel, and GriffinCamp, furthering a culture of collaboration and entrepreneurship in the district.
- The launch of the second Social Economy Initiative (SEI) Impact Internship Program, which matches students with local social enterprises, saw another cohort of interns contribute to the development of social innovation in the QI.
- A second collaboration with the Social Equity and Diversity Education Office (SEDE) for its annual Community Engagement Day (CED) brought over 70 participants to the district.

- QI-associated groups and projects collaborated on various grant proposals, notably through Social Sciences and Humanities Research Council (SSHRC), Industry Canada, and programs offered by private donors.
- New projects such as Science Futures – championed by the Faculty of Education and aiming to enrich science education in schools in the southwest of Montreal – were presented at Je Vois Montréal.
- On November 10, the Government of Canada announced a funding contribution of up to \$6.2-million over the next five years to support the creation and development of small and medium-sized enterprises at the Centre d’entreprises et d’innovation de Montréal (CEIM), in the heart of the QI. (See the “Major Achievements in Research 2014” section for more details.)
- This year, the QI Student Working Group launched its first major initiative, the Quartier de l’innovation Projects Fund (QIPF) crowdfunding campaign, in collaboration with University Advancement.
- In December 2014, Concordia University joined the QI as an academic member.

*Please refer to the 2014 Quartier de l’Innovation Progress Report, which is also on the agenda for the January 21, 2015 meeting of Senate, for additional information.*

#### HIGHLIGHTS FROM MUBEC

- In 2014, the McGill University Business Engagement Centre (MUBEC) completed the second year of full operations and had its funding renewed through the end of FY15.
- **According to tracking by Planning and Institutional Analysis (PIA), MUBEC has achieved 133% of its objectives during its first two years. By the end of FY15, MUBEC will have generated approximately \$10.4-million in new funding (sponsored research contracts, technology licensing, fees, and strategic gifts), for McGill since July 2012, while operating with a total budget allocation of \$1.3-million and a team of 2.7 FTEs on average.**
- MUBEC anticipates generating approximately \$3.5-million in strategic gifts and new sponsored research contracts as well as their associated overhead for McGill in FY15, an increase of \$600,000 over the \$2.9-million generated during FY14.
- Since its official launch in July 2012, MUBEC has also generated:
  - Master Research Agreements with four well-known companies;

- 140+ cross-campus referrals to other McGill units, such as University Advancement, School of Continuing Studies, and Career Planning Service;
- 85+ on-campus visits by industry partners;
- 230 interactions and engagements with corporations;
- Significant advancements in our relationships with local SMEs, such as Biogen and Greybox.

*Please visit [www.mcgill.ca/MUBEC](http://www.mcgill.ca/MUBEC) to learn more about the services MUBEC provides to the McGill community and our industry partners.*

# Research Priority Projects for 2015

In March 2014, Prof. Suzanne Fortier, Principal and Vice-Chancellor, outlined her strategic vision for McGill during several high-profile talks, both on- and off-campus. In these speeches, Prof. Fortier identified student life and learning, research, and community engagement as the areas where McGill will pursue transformative projects in the coming years. These initiatives have become known around the University as the “Principal’s Priorities.”

Research and International Relations (RIR) is leading the research component, called “Unleashing McGill’s Full Research Potential,” and co-leading with University Advancement and Communications and External Relations several components under the umbrella of “Community Engagement.”

RIR-led Principal’s Priorities will be a suite of projects developed and launched over the next several years. The specific initiatives that are already underway and will make substantial progress during 2015 are:

- Moving support closer to the research
- The McGill Seed Fund
- Support for Innovation and Entrepreneurship

The respective goals of these projects will help ensure that McGill sustains and strengthens its research enterprise in the coming years. More information about the projects and their timelines can be found at [www.mcgill.ca/principal/five-priorities](http://www.mcgill.ca/principal/five-priorities).

## **PROJECT #1: “MOVING SUPPORT CLOSER TO RESEARCH”**

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The project “Moving support closer to research” will ensure that McGill researchers are supported by an environment that enables and facilitates their research achievements by putting administrative support closer to where research happens, which is now widely accepted as a best practice in the field of research administration. Key elements being implemented in FY2014-15 include: the realignment of the Office of Sponsored Research into discipline-specific teams, the introduction of Senior Advisors in the Strategic Initiatives unit, as well as the redeployment of Commercialization Officers into the Faculties and the creation of the Office of Innovation and Partnerships.

## **PROJECT #2: MCGILL SEED FUND**

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In order to fill an important gap in the pathway that breakthrough research takes from “bench to society,” McGill must offer concrete support for novel ideas, bold new approaches, “radical innovation,”



high-risk research, and creative scholarship. The McGill Seed Fund will provide resources for early-stage research projects that have high potential for attracting external funding. This initiative builds on a two-year pilot project launched in 2012. The goal is now to expand the mandate of this program with renewed resources.

### **PROJECT #3: SUPPORT FOR INNOVATION AND ENTREPRENEURSHIP**

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At McGill, we view innovation as the idea of putting new ideas, technologies, and inventions that arise at the University to work in the broader community. This encompasses not only technological innovation, but also social innovation and other efforts that can have a positive impact in society.

RIR is leading an effort to bring together and align the comprehensive “constellation” of support, opportunities, and resources available to the McGill community to help stimulate entrepreneurial behaviour and innovative activity at all levels. These include:

- Coaching – We are working to support the Faculties and University Advancement in their efforts to connect qualified alumni to students, researchers, and faculty who are interested in receiving advice, coaching, and mentorship related to taking their new invention, idea for a social venture, or business idea to the next stage.
- Experiential learning – We are working to broaden the opportunities for innovation experiences in the community for McGill students via the Quartier de l’Innovation – which already has the Social Economy Impact Initiative Internships up and running – through collaborations with SMEs, industry, and NGOs.
- Guides – We are developing a guide for faculty inventors to help them navigate the technology transfer process, including dealing with Intellectual Property. We are also developing a guide for student entrepreneurs to help them take full advantage of McGill’s constellation of services and supports.
- Policies – Internally, we are working to adapt McGill’s policy climate to one that is hospitable and supportive of innovative activity. This includes exploring, with the Deans and Provost, how innovative activities can be appropriately recognized in tenure dossiers and merit considerations, updating our IP policy to be more open and flexible, and working on mechanisms that would allow academics to carve out time for entrepreneurial endeavours when desired.
- What we can offer to industry collaborators – We are developing platforms to allow the University to engage more easily with industry in order to share our research assets, such as an inventory of research platforms and an inventory of research areas.

- Web presence – As successful promotion and communications are vital, we hope to consolidate these programs, courses, resources, supports, and activities as well as related initiatives at the Faculty level in one place online, making the information accessible and channeling interested students, faculty, researchers, and industry partners effectively to the points in our “innovation constellation” where they want to engage.
- Funding for innovative projects— Building on the Seed Fund, RIR is collaborating with University Advancement to develop a funding pool, supported by alumni, with the aim of stimulating entrepreneurial activity at McGill, helping to develop student and faculty entrepreneurs and transforming innovative ideas into solutions benefitting the local, national, and global communities.

# Major Achievements in Research 2014

## NOTEWORTHY GRANTS AND FUNDING SUCCESSES

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- World-renowned green chemist Robin Rogers joined McGill as a Canada Excellence in Research chair, focusing on new, green manufacturing technologies. The CERC, a \$10-million award from the federal government, was announced in September, and Prof. Rogers begins his work at McGill in January 2015.
- Four innovative projects led by McGill University researchers were among the 32 selected nationally to receive major grants under the Canada Brain Research Fund, designed to accelerate research that will fundamentally change understanding of nervous system function and dysfunction and their impact on health. The McGill grants total more than \$7.5-million.
- Andrew Piper of the Department of Languages, Literatures, and Cultures is the leader of one of 14 teams of researchers that will receive funding as part of the third round of the Digging into Data Challenge from Institute of Electrical and Electronics Engineers (IEEE). Professor Piper will share a funding pool of approximately \$5.1-million with 13 other projects.
- McGill achieved high success rates for the CIHR operating grant applications. When national success rate was below 16%, McGill saw a 21% success rate on applications.
- McGill and its affiliated hospitals placed second in Canada in results from the October 2013 CIHR Open Operating Grants competition, garnering \$33.3-million in funding.
- McGill was awarded \$1.35-million overall through nine grants from the Ministère de l'Agriculture, des Pêcheries et de l'Alimentation: volet 1 du Programme Innov'Action agroalimentaire (MAPAQ).
- NSERC Strategic Projects 2014 Competition: McGill garnered 10 awarded projects out of its 35 submitted applications (298 were submitted by universities nationally). McGill's 2014 success rate of 28.57% was almost double its rate of success in 2013. The amount awarded to McGill will be \$4.6-million over a three-year period.
- Researchers from McGill, the Research Institute of the McGill University Health Centre (RI-MUHC), and the Montreal Neurological Institute and Hospital (The Neuro) received Innovation Grants from the Canadian Cancer Society (CCS) for their respective research projects. Their projects were among the 46 selected across Canada by the CCS. McGill and its affiliates were awarded 12 grants for a total of nearly \$9-million.

- In the results of the 2013 FRQ-SC Start-up Program for New Research Professors competition, McGill's success rate was 61%, with 14 grants awarded for nearly \$550,000. The provincial success rate was 53%. McGill also achieved an above-average success rate in the FRQ-SC Research Team Support Program, with four of 10 awards accepted for more than \$930,000 in funding.
- Two McGill researchers – Murray Humphries, Department of Natural Resource Sciences, and Stephen Yue, Department of Mining and Materials Engineering – were awarded a total of \$3.3-million in new funding from the NSERC Collaborative Research and Training Experience (CREATE) program.
- Among 14 awarded nationally, three innovative research partnerships at McGill received significant long-term investments from the Social Sciences and Humanities Research Council (SSHRC) Partnership Grants Program, totaling more than \$6.8-million. In this competition, McGill boasted a 75% success rate in its applications. The lead researchers are: Ichiro Fujinaga, Schulich School of Music; Andrew Piper, Department of Languages, Literatures, and Cultures; and Peter G. Brown, Department of Geography. When all matching funds are counted, each grant will be valued at approximately \$5-million.
- Two McGill researchers received International Partnership for Sustainable Societies (IPaSS) grants of four awarded nationally, representing a 100% success rate in applications: Claudia Mitchell, Department of Integrated Studies in Education, and John Galaty, Department of Anthropology, were each awarded a grant of approximately \$1.25-million under IPaSS, an initiative funded by Canada's International Development Research Centre and the Social Sciences and Humanities Research Council.
- Eight projects were funded as a result of the CFI John R. Evans Leaders Fund (CFI-JELF) February 2014 competition, for \$1.3-million in funding from CFI and a total of approximately \$3.2-million in funding including matching funds. Andrew Gonzalez and Graham Bell, Department of Biology, were awarded \$374,000 for a project on the experimental ponds at the Gault Nature Reserve. In addition, two projects linked to 2014 IPaSS were awarded to John Galaty, Department of Anthropology, and Claudia Mitchell, Department of Integrated Studies, in the range of \$50,000 each.
- The Alberta-based Climate Change and Emissions Management Corporation (CCEMC) announced in April that two McGill researchers were among the 24 winners of \$500,000 grants to transform carbon dioxide into useful products. Zetian Mi, Department of Electrical and Computer Engineering, and Yixin Shao, Department of Civil Engineering, received the grants as part of the CCEMC Grand Challenges program. In addition to the funding, they will receive access to a support team who will help them to develop their idea. Finalists of the Grand Challenges program were selected from 344 submissions from 37 countries on six continents. Only four grants were awarded to university projects, and McGill received two.

- McGill researchers Arijit Nandi, Institute for Health and Social Policy, with partner organizations in India, and Shelley Clark, Department of Sociology, were awarded grants of more than \$1-million each through the International Development Research Centre: Growth and Economic Opportunities for Women (GrOW) program.
- NSERC announced that McGill will receive over \$25-million from NSERC Discovery Grants, Supplements, and Scholarships for studies ranging from the genomics of adaptation to environmental change, to defusing volcanic eruptions, to studies on robotic teamwork and collaboration. Through these grants, over 140 McGill research projects will receive significant financial support for discovery research and training for a period of one-to-five years.
- McGill received four CIHR POP Phase 1 grants, out of 14 nationwide, from the February round of the program. Edward Fon from The Neuro, David Thomas from the Department of Biochemistry, Véronique Boboht from The Douglas, and Maryam Tabrizian from the Department of Biomedical Engineering will each receive approximately \$160,000. Overall, 14 grants were awarded nationally, out of 43 applications.
- “Genetics and Genomics Analysis Platform (GenAP),” led by Guillaume Bourque, Department of Human Genetics, and “CBRAIN for High Performance Computing (CHPC),” led by Alan Evans at The Neuro, received major grants through CANARIE, a vital component of Canada’s digital infrastructure supporting research, education and innovation. The McGill projects, along with seven others from across the country, have received a total of \$4-million to create nine cutting-edge software projects.
- The Bill and Melinda Gates Foundation awarded an additional \$1.9-million (US) to an original grant of \$1-million to David Buckeridge, Department of Epidemiology, Biostatistics and Occupational Health, for his project “Scalable Data Integration for Disease Surveillance.” This collaborative project is led by McGill in partnership with the Infection Diseases Research Centre (Uganda), Harvard, Stanford, and the University of Washington (USA).
- Grand Challenges Canada, funded by the Government of Canada, announced a \$1.2-million investment in 11 new global health innovations at the 15th La Francophonie Summit in Dakar, Senegal, in November. Two McGill research projects will benefit from the funding, led respectively by Dan Deckelbaum, Divisions of Trauma and General Surgery at the MUHC, and Scott Bohle, Department of Chemistry.

## **SIGNIFICANT NEW OR STRENGTHENED PARTNERSHIPS**

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- In October, the Quebec Minister of Energy and Natural Resources and Minister Responsible for the Plan Nord, Pierre Arcand, announced that Université Laval, McGill, and Institut national de la recherche scientifique (INRS) will work together to create the Institut nordique du Québec

(INQ), a new research partnership focused on interdisciplinary and inter-institutional innovation in Northern development. The INQ will be formally launched in early 2015.

- The Government of Canada announced funding of up to \$6.2-million over the next five years to support the launch of Centre d'entreprises et d'innovation de Montréal (CEIM)'s Québec Innovation project, a key element of which is an innovative partnership between CEIM and McGill to provide our student and faculty entrepreneurs with access to an array of support, expertise, and resources to incubate and grow their start-ups. This agreement is made possible with financial support to CEIM from the Canada Accelerator and Incubator Program (CAIP). CAIP is delivered by the National Research Council of Canada Industrial Research Assistance Program (NRC-IRAP).
- Montreal will be home to one of five hubs that will make up the Secretariat of Future Earth, a global research platform that brings together existing research programs on global environmental change under one single umbrella. The other hubs will be based in Sweden, France, Japan, and the United States. McGill, along with six other Montreal-based institutions, the FRQ, and Montreal International, formed a consortium to establish and lead the Montreal hub, which is expected to be operational by May 2015.
- McGill became a founding partner of Spark Up, Inc., an online marketplace that offers the full range of innovation support, from early-stage ideas through to patents.
- In spring 2014, the University held the second competition for McGill-RIKEN collaborations in the health sciences. McGill and RIKEN signed a Memorandum of Understanding in 2010 to establish a research partnership in recognition of our mutual interest in developing teaching and research ties. Since that time, 10 joint projects have been funded in nanotechnology and green chemistry as well as four health sciences projects during a previous call in this research area.
- AmorChem, a venture fund, entered into a collaboration with two well-known researchers, David Y. Thomas, Department of Biochemistry, and John W. Hanrahan, Department of Physiology. The new project will develop novel small molecules which could be used in the treatment of cystic fibrosis and chronic obstructive pulmonary disease. Profs. Thomas and Hanrahan are co-founders of Traffick Therapeutics, Inc., a company dedicated to the development of novel molecules able to chaperone defective proteins as they traffic from the endoplasmic reticulum where they are made to the surface of cells where they function, for example, as ion channels.
- McGill and Nestec Ltd. (Nestle Research Centre, based in Lausanne, Switzerland) finalized a research agreement for the project "Using mechanochemistry to generate flavour compounds." This research project is led by Tomislav Friscic, Department of Chemistry, and Varoujan Yaylayan, Department of Food Sciences.

- McGill signed the “Convention générale de coopération Wallonie-Bruxelles, McGill et ÉTS” – an agreement that will bring a scientific liaison officer from the Belgian region to McGill on a part-time basis, starting in January 2015.
- As part of Quebec Premier Philippe Couillard’s mission to China at the end of October, McGill signed five agreements with Chinese research partners: Fudan University (Shanghai); Shanghai Jiao Tong University (Shanghai); Beida Jade Bird Group (Beijing), Beihang University (Beijing), and Qingdao University (Shandong Province).
- McGill signed its first license agreement with Neomed, which aims primarily at helping translate early stage innovations into solid partnership opportunities. The exclusive license agreement is for the development of positive allosteric modulators of P2X4 receptors for cardiovascular indications, in collaboration with Philippe Séguéla at The Neuro.

## MAJOR PRIZES AND AWARDS

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In late 2013, RIR successfully completed a comprehensive redesign of how major national and international awards are handled at McGill. The changes were made in support of the overall goal to increase McGill’s visibility both nationally and internationally.

In 2014, the new structure for prize committees and procedures has helped garner such prestigious awards as the Wolf Prize, Kavli Prize, and the Klaus J. Jacobs Research Prize. We have also made progress in our new strategy to promote McGill nominations to national academies in the U.S. and the U.K. and have established a working group made up of McGill representative from each of the academies and the Royal Society (UK), which is now actively working on these nominations. Moreover, RIR created a new annual Principal’s Prize for Outstanding Emerging Researchers, the first McGill-wide prize in research, with the inaugural recipients being named in 2014. They are: Brett Thombs, Lady Davis Institute and Department of Psychiatry, and Jonathan Davies, Department of Biology.

The renewed emphasis on developing and supporting applications to major international prizes and scholarly societies has resulted in a significant overall increase in applications and successful nominations for McGill researchers. For example, in 2014 McGill submitted 131 nominations for major prizes and awards, which resulted in 29 winners. These statistics represent a significant increase over 2009, when 53 nominations were submitted and 13 awards were won.

Finally, the new approach has allowed McGill to collaborate closely with the Governor General’s “Enhancing International Recognition for Canadian Research Excellence” program, which was launched in 2013. Notably, McGill has accounted for 76% of the first 25 nominations for international awards and prizes that have benefited from review by the program.

## SELECTED PRIZES AND AWARDS IN 2014

- Nahum Sonenberg from the Department of Biochemistry was awarded the internationally renowned Wolf Prize in Medicine for 2014 for his discovery of the proteins that control the protein expression mechanism and their operations. The Wolf Prize is an international award and was granted to Sonenberg in Israel by President Shimon Peres in May. Prof. Sonenberg shared the \$100,000 prize with Victor Ambros of the Harvard Medical School and Gary Ruvkun of the University of Massachusetts Medical School.
- Brenda Milner from The Neuro was one of three researchers awarded the 2014 Dan David Prize in the category of “Present – Combatting Memory Loss,” for her fundamental contributions to the science of memory and the brain. Milner shared in a \$1-million prize.
- Prof. Milner was also awarded the Kavli Prize in Neuroscience, a partnership between the Norwegian Academy of Science and Letters, the Kavli Foundation (United States), and the Norwegian Ministry of Education and Research, for outstanding achievement in advancing our knowledge and understanding of the brain and nervous system. The Kavli Prize is valued at \$1-million.
- Michael Meaney was awarded the Klaus J. Jacobs Research Prize, valued at \$1-million and administered by the Jacobs Foundation in Zurich, in recognition of his groundbreaking achievements in the biology of child development.
- Alan Evans at The Neuro was awarded the Margolese National Brain Disorders Prize by the University of British Columbia, valued at \$50,000. In addition, Architecture professor Vikram Bhatt won the 2014 Margolese National Design for Living Prize from the University of British Columbia School of Architecture and Landscape Architecture, also valued at \$50,000.
- Paul Lasko, Department of Biology, and Michael Meaney, Douglas Mental Health University Institute, were awarded Quebec’s most prestigious prize, the Prix du Québec.
- The Canadian Association of Physicists awarded its 2014 Herzberg Medal to Matt Dobbs, Department of Physics, for new digital telescope technology of unprecedented reach and precision.
- The Royal Society of Canada (RSC) awarded Philippe Gros, Department of Biochemistry, the 2014 McLaughlin Medal, which recognizes “important research of sustained excellence in any branch of medical sciences.”
- The RSC also inducted four McGill researchers and scholars as Fellows: Nigel Roulet, Department of Geography; Peter S. McPherson, Department of Neurology and Neurosurgery and the Department of Anatomy and Cell Biology; Constantin Polychronakos, Department of Pediatrics; and Daniel Wise, Department of Mathematics and Statistics.



- Aashish Clerk, Department of Physics, and Madhukar Pai, Department of Epidemiology, Biostatistics and Occupational Health, were among the inaugural members named to the RSC's College of New Scholars, Artists and Scientists.
- Nico Trocmé was awarded the \$50,000 SSHRC Impact Connection Award for his work on child welfare research and practice in Canada. Five SSHRC Impact Awards are awarded annually in different categories.
- Ehab Abouheif of the Department of Biology and Aashish Clerk of the Department of Physics were named 2014 recipients of E.W.R Steacie Memorial Fellowships.
- Myriam Denov, School of Social Work, was awarded a Trudeau Fellowship for a project that will be conducted in partnership with two NGOs: Canadian-based Children/Youth as Peacebuilders and Watye Ki Gen, a local African organization that works specifically with women who have survived armed captivity.
- Simon Gravel, Department of Human Genetics, was awarded a Sloan Research Fellowship in recognition of his potential to make substantial contributions to the field of human genetics.
- Lionel Smith, Faculty of Law, received a 2014 Killam Fellowship, which will allow him to carry out a two-year full-time research project entitled "Conflicts of Interest and Fiduciary Obligations."
- Graham A.C. Bell, James McGill Professor of Biology, was among 164 influential artists, scientists, scholars, authors, and institutional leaders who were inducted into the American Academy of Arts and Sciences at a ceremony in Cambridge, Massachusetts.
- The Board of Trade of Metropolitan Montreal (BTMM) named Bartha Maria Knoppers, Director of the Centre of Genomics and Policy, one of its "Great Montrealers," key figures who have enriched the city's economic, cultural, scientific, and social scenes through their vision and their involvement in the community. Prof. Knoppers was honoured in the scientific sector.

# Acknowledgements

The Report on Research and Innovation 2014 was produced by the Communications team in Research and International Relations, with input from RIR's Strategic Initiatives, Invention Development and Entrepreneurship Assistance (IDEA), and Grants and Agreements units. In addition, it would not be possible to produce this report without the extensive contributions of Planning and Institutional Analysis (PIA), especially Anne-Marie Durocher.

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