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**BRIGHTER  
WORLD**



**Fact Book:**  
Goals and Priorities  
2016 | 2017





# McMaster Goals and Priorities

McMaster University was founded in 1887 and is governed by the McMaster University Act, 1976. As a research-focused student-centred university, we serve our community and society by nurturing and supporting the fulfillment of human potential: inspiring creativity and critical thinking, promoting an enduring love of learning and the habit of inquiry, and undertaking innovative research that extends the boundaries and enhances the efficacy of knowledge. McMaster is one of Canada’s most research-intensive universities; one of only two institutions in the province to be ranked among the top 100 universities in the world and one of only four in Canada.

## VISION STATEMENT

To achieve international distinction for creativity, innovation and excellence.

## MISSION STATEMENT

At McMaster, our purpose is the discovery, communication, and preservation of knowledge. In our teaching, research, and scholarship, we are committed to creativity, innovation, and excellence. We value integrity, quality, inclusiveness, and teamwork in everything we do. We inspire critical thinking, personal growth and a passion for lifelong learning. We serve the social, cultural, and economic needs of our community and our society.

## STRATEGIC PRIORITIES

McMaster’s vision, mission and mandate statements provide the foundation for our strategic planning and President Patrick Deane’s letter, *Forward with Integrity*, outlines our priorities. At McMaster, we strive to foster the creative and intellectual potential of our students, while at the same time preparing our graduates to build successful careers. McMaster has a deeply integrated teaching, learning and research mandate. We develop innovative and entrepreneurial graduates, undertake cutting-edge research on a range of pressing issues, and serve our community by leading and partnering on a variety

of locally-focused initiatives. McMaster also has a strong track record of working with industry, successfully outpacing our peers over the last five years in industry sponsored research. Such industrial collaborations act as magnets, attracting businesses to our region, allowing for the incubation of new companies and creating jobs for Canada’s next generation of leaders – our students.

# Strategic Goals

## GOAL ONE: DEVELOPING A DISTINCTIVE, PERSONALIZED, ENGAGING AND SUSTAINABLE STUDENT EXPERIENCE

# 1

McMaster has transformed post-secondary teaching and learning over many decades. Our signature pedagogies, such as inquiry and problem based learning, have been incorporated into multiple programs at McMaster, and are recognized and adopted worldwide. Our goal is to build on the success of our most creative and innovative programs to provide an enriching and transformative learning experience for all students, which includes opportunities for experiential, work-integrated and self-directed learning, and allows for the consideration of multidisciplinary perspectives. Alongside this, McMaster has long committed to integrating our world-class research enterprise into teaching and learning, and connecting the learning experience to our local, national and international communities.

### KEY INITIATIVES

- The Paul R. MacPherson Institute for Leadership, Innovation and Excellence in Teaching continues to launch new initiatives and to provide strong pedagogical and research expertise to enable program enhancement and technology integration. Through the Student Partners Program, students have contributed to the design and development of new courses, helped create resources for faculty and students, and collaborated with staff and faculty partners on research projects related to teaching and learning.
- The multipurpose Peter George Centre for Living and Learning is now under construction. Other projects to address student need and enhance student life are underway, including plans to build a new residence with 800 beds and expand the existing recreational and fitness facilities, in partnership with the student body. Enhancements to the educational environment have also been made over the last year with the opening of state-of-the-art active-learning classrooms in L.R. Wilson Hall that will facilitate problem-based learning, inquiry, simulations, case-studies and collaborative research.
- Across the University, students continue to be offered opportunities to engage in transformative experiential learning experiences and work-integrated learning, both within Canada and overseas. Recent initiatives include:
  - The Honours BA in Indigenous Studies offered to both Indigenous and non-Indigenous students provides opportunities to explore the intellectual traditions of many Indigenous peoples, with an emphasis on the Haudenosaunee and Anishinaabe of Southern Ontario.
  - The McMaster Manufacturing Research Institute (MMRI), one of Canada's most advanced and best-equipped research laboratories in this field, undertakes high-profile applied research in cooperation with industrial partners. It provides education and training for both graduate and undergraduate students and showcases students' skills to the companies that work with MMRI.
  - Students may enrol in a new technical elective, ENGINEER 4EX3: Experiential Engineering Design, to earn recognition for design-based experiential learning conducted through a technically oriented McMaster Engineering club or team.
  - As part of the Global Health Program, students can experience a for-credit Interdisciplinary Global Health Field Course on Maternal and Infant Health in Morocco. Students learn Arabic while living with Moroccan families, visit a group that supports unwed mothers to prevent child abandonment, and travel to the medieval Islamic city of Fez to learn about Islamic healing, broadening their awareness and experience of different healthcare systems and cultures.
- McMaster is a member of the Ontario Universities International (OUI) Consortium and maintains vibrant region-to-region partnerships with networks of universities in China, France, Germany, and India. These partnerships enable students to participate in a variety of programs at partner institutions and expand their learning experiences.
- To meet societal and labour market needs and student demand, McMaster continues to develop innovative inter-disciplinary and multi-disciplinary programs. Recent initiatives include:
  - The Health Leadership Academy, jointly managed by the Faculties of Business and Health Sciences, is focused on developing healthcare leaders who are able to identify and support innovative new ways of delivering healthcare, and offers certificate and diploma programs, and a pathway to an accelerated MBA, for healthcare students and professionals.
  - The Integrated Business and Humanities (IBH) program jointly developed by the Faculties of Business and Humanities, will encourage community engagement



McMaster is ranked among the TOP 100 UNIVERSITIES in the world.

and sustainable business practices, with a great deal of emphasis placed on responsible leadership and management tactics in a changing global economy.

- An Interdisciplinary Minor in Community Engagement was launched in 2016-2017. This program teaches students theory and principles, and also provides hands-on experience of working with the community.
- The Faculty of Social Sciences has developed four new minors, approved during 2016-2017, to offer students greater opportunities to tailor their educational pathways to their unique interests. The new Minors are in Muslim Studies, Social Justice and Inclusive Communities, Social Studies of Mental Health and Addiction, and Public Leadership.
- The new Integrated Biomedical Engineering and Health Sciences (iBioMed) Program is the first program in Canada to offer a five-year degree integrating engineering and health sciences. The iBioMed program will offer multiple pathways to careers in health, engineering and entrepreneurship.
- McMaster supports a variety of initiatives intended to equip our students with the leadership skills needed to be engaged and successful global citizens, and to transition successfully from the academy to the

workplace. Recent initiatives include:

- The McMaster Digital Transformation Research Centre (M-DTRC), based at McMaster's Ron Joyce Centre in Burlington, is poised to become a world-leading research centre with a focus on the leadership and management of digital transformation and its impacts on individuals, organizations, and society.
- The School of Social Work offers a Graduate Diploma in Critical Leadership in Social Services and Communities, which was first offered in Fall 2016. The diploma aims to enhance progressive leadership in the community and social service sectors.
- The Wilson Leadership Scholar Award, hosted by McMaster University, selects three Wilson Leaders in their final two years of undergraduate study each year. Each Wilson Leader receives a \$50,000 award along with admission to an elite leadership development program that enables them to graduate from McMaster with the skills needed to become Canada's next generation of leaders in a variety of fields.
- The DeGroote School of Business Internship Program is the largest undergraduate business internship program in Ontario, providing students with 12 to 16 months of work integrated learning.

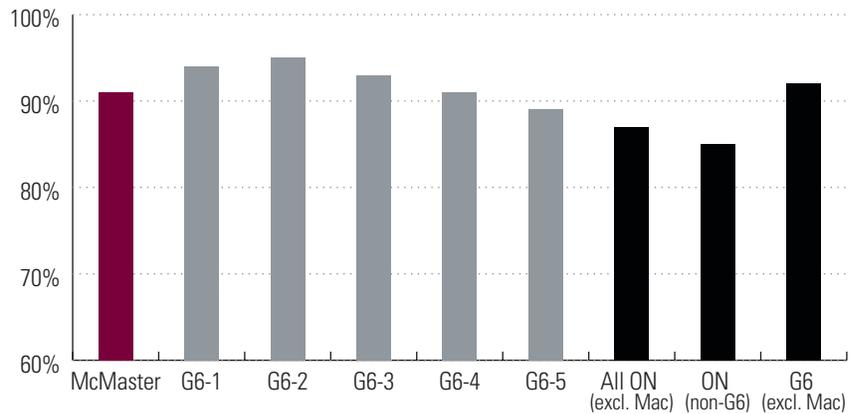
## KEY OUTCOMES

- Since 2013, the MacPherson Institute has engaged more than 200 undergraduate and graduate students in their Student Partners Program and has been instrumental in the redesign of more than 30 online and blended courses, e-Modules, and more recently, Massive Open Online Courses (MOOCs).
- In the 2015 National Survey of Student Engagement (NSSE) 86 per cent of respondents rated their entire McMaster educational experience as good, or excellent.
- McMaster has continued to make innovations in online and blended learning:
  - The new Master's in Child Life and Pediatric Psychosocial Care graduate program is now delivered with a creative web-based online learning format, complemented by two residency periods – a mode of delivery unique in child life education.
  - McMaster's Bachelor of Technology program is placing its Information and Communication Technology degree program completely online in both lecture and lab contexts.
  - McMaster has developed an innovative blended format for high-enrolment foundational courses, in subjects such

as introduction to macroeconomics, biology, chemistry, physics, psychology, and environmental science, with more to come.

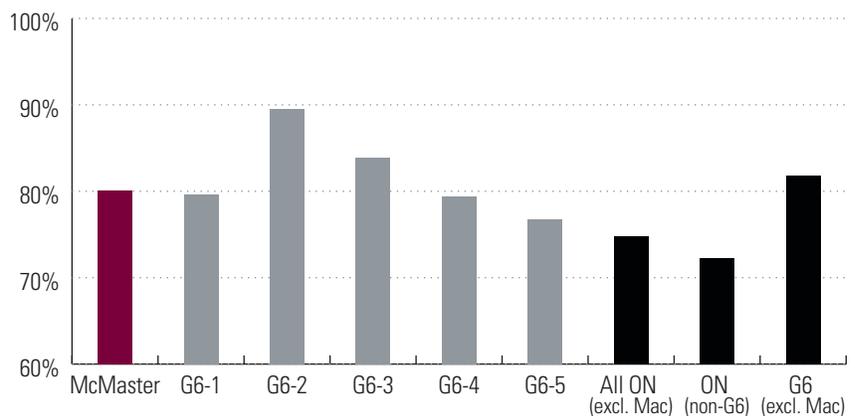
- McMaster’s efforts to provide global engagement opportunities have yielded more than 85 exchange agreements developed from research collaborations, which provide opportunities for 1-2 semesters of study overseas, as well as many successful collaborations and research internships through the Mitacs Globalink and Rise programs.
- In partnership with Mohawk College, the Faculty of Science launched two new Honours Bachelor of Applied Science specialization programs in Fall 2016. Students undertaking Honours Human Behaviour (Autism and Behavioural Science Specialization) or Honours Human Behaviour (Early Childhood Education Specialization) pursue two qualifications simultaneously, with graduates receiving an Ontario College Graduate Certificate from Mohawk, as well as the McMaster Honours Bachelor of Applied Science degree. McMaster also offers an overarching Honours Human Behaviour program, leading to an Honours Bachelor of Applied Science Degree.
- In 2016-2017, McMaster enrolled 1,884 credit transfer students (an increase of 68% compared to 2015-2016) from 20 Ontario universities and 20 Ontario colleges.
- McMaster continues to encourage and support student entrepreneurs. Since its establishment nearly three years ago, The Forge has incubated more than 60 companies and is currently housing 43. Three companies have moved out of The Forge as self-sustaining and profitable ventures and another 34 companies are either earning revenue, have received investment, government funding, or competition award money. In the past year, more than 1,800 students have participated in Forge@Mac events, with over 550 students having participated in on-campus entrepreneurial competitions, ranging from the “Stand Up and Pitch!”

### Undergraduate First Year to Second Year Retention Rates – Fall 2016



Note 1: Retention rates are based on first-time, full-time undergraduate students who commenced their studies in the previous year and have continued to study at the same institution in the reporting year.  
 Note 2: G6-1 to G6-5 represent McMaster’s Ontario peers who are members of the U15 (Canada’s 15 research-intensive universities).  
 Source: CSRDE (Consortium for Student Retention Data Exchange) 2017

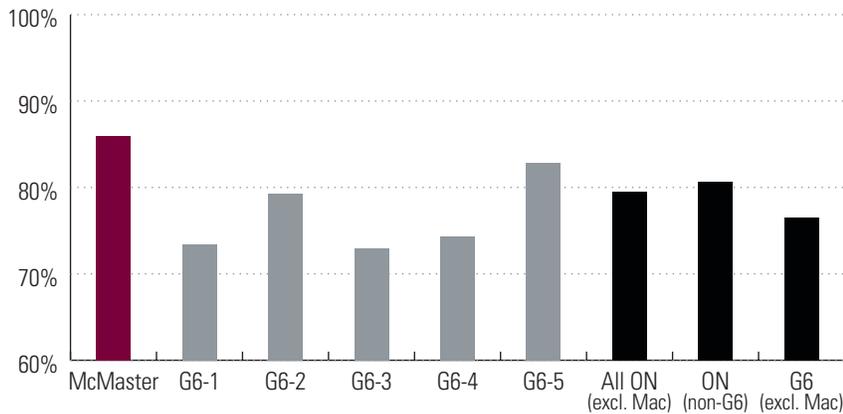
### Undergraduate Eight Year Graduation Rate – 2015



Note 1: The university graduation rate is calculated through the selection of all first year, new to the institution, undergraduate students from the Fall enrolment file 8 years prior, who received a bachelor or first professional degree.  
 Note 2: G6-1 to G6-5 represent McMaster’s Ontario peers who are members of the U15 (Canada’s 15 research-intensive universities).  
 Source: Key Performance Indicators 2017

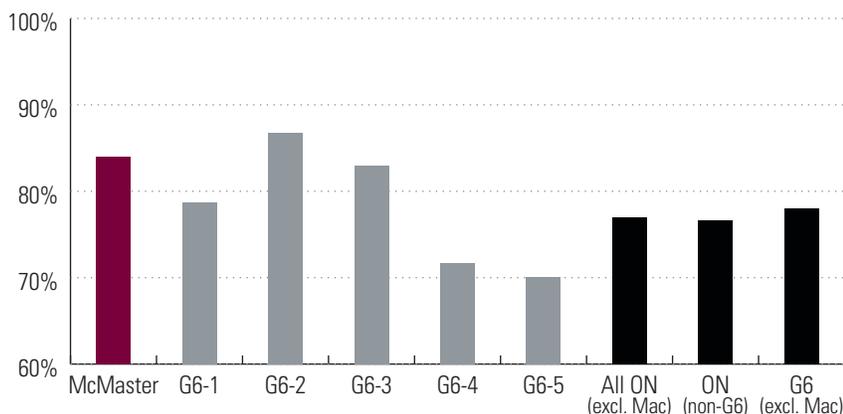
**McMaster  
frequently RANKS  
HIGHER than the  
Ontario average  
in NSSE  
BENCHMARKS.**

**NSSE – Entire Educational Experience Rated as Excellent or Good – 2014**



Note 1: Ontario universities administer the NSSE survey every 3 years and 2014 is the last available data.  
 Note 2: G6-1 to G6-5 represent McMaster's Ontario peers who are members of the U15 (Canada's 15 research-intensive universities).  
 Source: National Survey of Student Engagement (NSSE) 2014.

**NSSE – Would you start over at the same institution Rated as Definitely Yes, or Probably Yes – 2014**



Note 1: Ontario universities administer the NSSE survey every 3 years and 2014 is the last available data.  
 Note 2: G6-1 to G6-5 represent McMaster's Ontario peers who are members of the U15 (Canada's 15 research-intensive universities).  
 Source: National Survey of Student Engagement (NSSE) 2014.

team competition for potential start-ups to Delta Hacks III, focused on finding solutions to real world problems.

- McMaster programs provide high-quality preparation for future careers. In the 2016 Ontario University Graduate Survey of McMaster's 2014 undergraduate degree recipients, 91.4 per cent of respondents indicated that they were in full-time employment that was closely related or somewhat related to the skills they studied at university two years post-graduation, as against the Ontario average of 88.8 per cent. To support students in finding jobs and connecting them with local employers the University also presents Connect to Careers, Hamilton's largest job fair, in partnership with Mohawk College, Redeemer University College and the City of Hamilton. In total, 1586 job seekers and more than 145 exhibiting employers attended the 2017 event.
- The DeGroote School of Business actively promotes bridging the classroom and the commercial world and supports students in developing the skills needed to succeed in the workplace: the Canada's Next Top Ad Exec (CNTAE) competition encourages undergraduate and MBA students to facilitate a transfer of dialogue and expertise, while the Executive MBA in Digital Transformation, which welcomed its inaugural cohort of students in September 2016, enables students to learn from faculty instructors in the classroom, as well as from industry experts on-site in Silicon Valley, California. The success of DeGroote's approach can be demonstrated by the fact that 92 per cent of students in the 2016 MBA co-op program have already secured employment with an average starting salary of \$71,930.

# Strategic Goals

**GOAL TWO:** ENHANCING THE CONNECTIONS BETWEEN MCMASTER AND THE COMMUNITIES WE SERVE, LOCALLY, PROVINCIALLY, NATIONALLY AND AROUND THE GLOBE.

# 2

McMaster remains committed to public service, with a focus on fostering ongoing collaboration between the University and community partners. This work enables us to better understand and consider the issues identified as priorities by local and global communities, and to integrate them fully and meaningfully into the work of the academy. In addition to this societally-focused research, teaching and service, McMaster also supports the broader community through our work to foster a diverse campus community and create enhanced pathways and improved supports for underrepresented groups, including Indigenous students, Crown Wards and First Generation students.

## KEY INITIATIVES

- McMaster continues to build on its connections to the Indigenous community and to develop responses to the Truth and Reconciliation Commission's report:
  - Established in 2016, the McMaster Indigenous Research Institute (MIRI) – one of Canada's first university-wide Indigenous Research Institutes – supports and sustains Indigenous research and knowledge across all disciplines and within the communities with whom our researchers and students interact.
  - The Indigenous Undergraduate Summer Research Scholars program (IUSRS) run by MIRI, invited Indigenous undergraduate students from universities across Canada to apply to an eight week opportunity for hands-on experience in a graduate research environment.
  - A longstanding partner with Six Nations Polytechnic (SNP), McMaster works with SNP to assist their students in transitioning to university. McMaster also provides scholarly and financial support to the SNP Indigenous Knowledge Centre, which brings together ancestral Indigenous knowledge and modern academic knowledge to advance the well-being of all peoples.
  - McMaster opened an Indigenous Circle, an outdoor space for classes, ceremonies, performances and other activities. It was designed to affirm the importance of Indigenous knowledge to the McMaster community.
- The Office of Community Engagement, created in June 2016, is developing a Teaching and Learning Toolkit that will support faculty, staff and students in integrating McMaster's Principles of Community Engagement into educational programming. During 2016-2017 the Office also launched Community Connector 101, which highlights relevant community engagement information for both community and campus partners, and Pathways to Collaboration, which helps community organizations navigate and explore both research and education partnership opportunities with McMaster.
- McMaster engages in a range of initiatives to build connections with the local community and provide pathways and support to students who may not otherwise have the opportunity to attend University:
  - The McMaster Discovery Program (MDP) is a free, university-level, non-credit course offered to adults living in Hamilton who experience barriers to accessing higher learning opportunities. The Program will welcome its seventh cohort in Fall 2017, and has now graduated approximately 140 students. During 2016-2017, MDP also expanded its offerings by holding a series of discussion groups for its alumni.
  - The Venture Outreach program celebrated its 25th anniversary in 2016. Events included welcoming more than 40 Indigenous students for two free weeks of camp, providing hands-on engineering workshops for more than 6,500 students from Six Nations of the Grand River and New Credit First Nations, and hosting the annual STEM Conference, offered free for 180 Indigenous youth in Grades 5-8, intended to inspire them to pursue a future in STEM fields.
  - After six years of on-campus programming, the McMaster Children and Youth University (MICYU) has reached more than 3,000 youth and their families, with lecture topics spanning all Faculties, and this year will graduate approximately 100 youth. In addition, the MICYU in the City program engaged 55 undergraduate and graduate students in developing 52 inquiry-based workshops and delivered them in partnership with 12 community organizations (including schools and libraries) throughout the greater Hamilton area.
- McMaster seeks to build a strong network of international partnerships supported within our world-class learning and



McMaster remains a significant source of employment within our community, and in 2016 was named one of Hamilton-Niagara's Top Employers.

research environment, which encompass an extensive network of research partnerships, internships and exchanges with institutions around the globe. McMaster's International Initiatives Micro-Fund (IIMF) has been highly successful in providing seed funding for such initiatives.

- McMaster continues to lead and actively engage in a range of initiatives within the City of Hamilton, including:
  - In November 2016, CityLAB Hamilton was approved for a 3-year pilot. CityLAB Hamilton is a partnership between McMaster, Mohawk College, Redeemer University College and the City of Hamilton and will benefit students and the community through innovative projects intended to advance the strategic priorities of the City. The pilot program will engage our talented students in community improvement initiatives, more purposefully connect them to Hamilton, and allow them to earn credits towards their degree.
  - The Faculty of Social Sciences Scholar in Community program is entering its second year. A current project involving McMaster, The Food Centre and the City of Hamilton is looking at ways to assess and improve programs designed to help those struggling with food insecurity, poverty and marginalization in Hamilton.
  - The MAC H2OPE Clinic (Helping

Hamiltonians through Occupational and Physiotherapy Engagement) is a joint initiative between McMaster's School of Rehabilitation Science and the YMCA of Hamilton/Burlington/Brantford. The program provides occupational therapy and physiotherapy to individuals who do not have access to these services through public or extended health funding. Under the supervision of registered therapists, students assess and treat individuals for a wide range of different conditions.

- The Synapse Life Science Consortium – a collaborative effort involving McMaster, Hamilton Health Sciences, St. Joseph's Hospital, Mohawk College and the City of Hamilton – is helping to grow the life sciences industry in the Hamilton region, offering a platform for life science development that is unique in Canada.

## KEY OUTCOMES

- In 2016-2017, McMaster welcomed 4,360 fulltime first-generation students (representing about 15 per cent of McMaster students), over 450 (1.5 per cent) Indigenous learners (First Nations, Métis, and Inuit) and 1,547 (5 per cent) students with disabilities. McMaster continually strives to improve access

to underrepresented groups through innovative pathway programs and initiatives.

- A direct outcome of the March 2016 Change Camp Hamilton hosted by the Office of Community Engagement, Hack the City is a student-led extra-curricular initiative that provides McMaster students with the opportunity to tackle real-world challenges brought to them by community and industry partners. In its first year, Hack the City engaged with 100 McMaster students who were presented with challenges around themes of energy, healthcare, and transportation. Winning teams in each of three categories are currently working with City and industry partners to pursue their proposals.
- McMaster's Faculty of Engineering supports two key youth program initiatives: Venture and L.E.A.P., which work to engage students from Kindergarten to Grade 12 in engineering and science. Combined, these programs reached more than 18,500 students in 2017 through camps run on campus and travelling workshops throughout Ontario. The Faculty also participates in CodeMakers, a national program to empower youth with critical computer science skills. Since launching in 2015, the program has grown to offer introductory and advanced programming

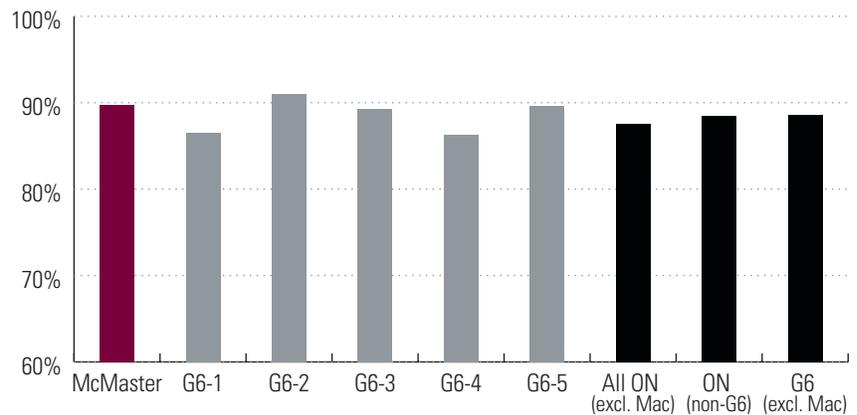


L. R. Wilson Hall for Studies in Humanities and Social Sciences Opened in 2016/17, L.R. Wilson Hall for Studies in Humanities and Social Sciences is a \$55 million dollar facility that includes our Active Learning Classrooms, lecture halls, research space, our Black Box Theatre, and our Concert Hall.

for a total of 16 weeks of camp, as well as school year programs in 2017.

- McMaster students gained valuable experience and connected with our local and broader communities through a variety of learning and research-based initiatives:
  - Upper-year students in the Faculty of Social Sciences undertake a student-driven experiential capstone course “Social Sciences in Action”, which has them engaged in community-based research.
  - In summer 2016, students in the Faculty of Humanities travelled to the Canadian Museum for Human Rights for an intensive experiential workshop, as part of the “Human Rights in History” course. Another offering will take place in summer 2017.
  - Students in the School of Nursing hone their skills through simulation-based learning on campus, which is followed by clinical placements throughout the Hamilton, Halton, Peel, Niagara, and Brant regions.

### Graduate Employment Rate, 6 Months post-graduation – 2016



Note 1: Graduate Employment Rate is the number of graduates of bachelors or first professional degree programs expressed as a percentage of the labour force after graduation.

Note 2: The table above displays the results of the Ministry of Training, Colleges and Universities' Ontario University Graduate Survey on the employment outcomes of undergraduate students who graduated 2 years before the year displayed.

Note 3: G6-1 to G6-5 represent McMaster's Ontario peers who are members of the U15 (Canada's 15 research-intensive universities).

Source: Ontario University Graduate Survey (OUGS) 2016

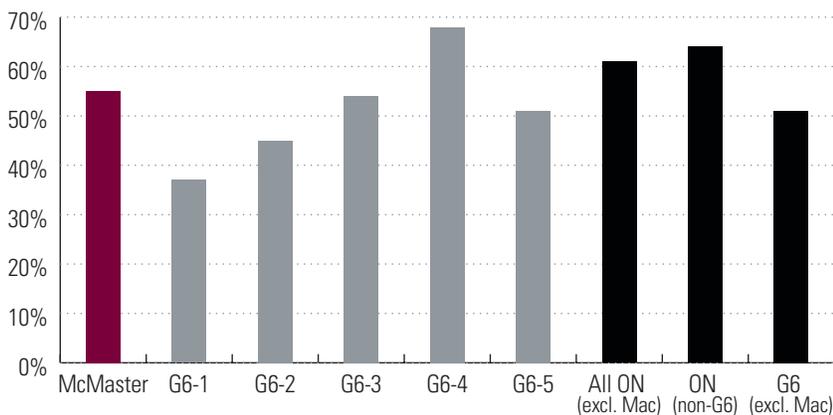


McMaster's students have been successful in finding employment, both within the local economy and further afield.

- The McMaster Research Shop, developed by the Faculty of Social Sciences, is a knowledge exchange service, which connects student learning with community research needs. Since its inception in 2015, the McMaster Research Shop has completed 11 projects, which engaged 13 different organizations and more than 40 students from all six Faculties.
- McMaster's students have been successful in finding employment, both within the local economy and further afield; of those students graduating with a bachelor or first professional degree in 2014, 90% had found employment within 6 months and 94% within 2 years (source: Ministry of Training, Colleges and Universities' 2016 Ontario University Graduate Survey).

- For the second year in a row, McMaster was named one of Hamilton-Niagara's Top Employers, a designation that recognizes those employers that offer exceptional places to work. With approximately 15,900 faculty and staff, McMaster is one of the largest employers in the greater Hamilton area.

**Students Receiving OSAP as a Percentage of Total Enrolment 2015-2016**



Note 1: Total full-time OSAP awards at institution based on academic year-end data (OSAP academic year starts August 1, with academic year end data available at end of August in the following year)/Total Fall operating grant eligible headcount enrolment enrolled at institution (based on November 1st reporting).  
 Note 2: G6-1 to G6-5 represent McMaster's Ontario peers who are members of the U15 (Canada's 15 research-intensive universities).  
 Source: OSAP and Official government enrolment data.

- The McMaster English Language Development (MELD) diploma program run by the Faculty of Humanities was designed to enable international students to improve their English Language skills prior to attending their first year at university. Enrolment in the program has grown from 36 students in 2014-2015 (inaugural year) to 160 students in 2016-2017.
- A total of 45 proposals have received IIMF funding over the past two years, with sixteen projects, totalling \$80,000, being funded in the last funding round. This program provides seed funding to support international research partnerships and joint international activities with leading universities and institutes around the globe, with the most recent funding being used to advance projects as diverse as understanding the impact of climate change on glaciers in Peru; altering vehicle design to protect soldiers in combat environments; and developing a new framework to help Syrian newcomers integrate and find work.

# Strategic Goals

**GOAL THREE:** STRENGTHENING THE EXCELLENCE OF OUR RESEARCH AND OUR GRADUATE EDUCATION AND TRAINING, WHILE SEEKING OPPORTUNITIES TO INTEGRATE RESEARCH MORE PURPOSEFULLY INTO OUR ACADEMIC MISSION.

# 3

McMaster is a world renowned research-intensive University that excels at interdisciplinary and collaborative research, working with industry, government and community partners, as well as other academic institutions around the globe. Our research reflects current and emerging issues of relevance to our local and global communities, and has impact across a wide range of disciplines and issues. We intend to build on our track record in technology transfer and entrepreneurship to provide opportunities for commercialization to our faculty and students and bridge the gap between research and commercial application. Committed to engaging students at all levels in research activities, we strive to integrate research and teaching across our programming in creative ways. Our graduate training is central to

sustaining our research intensity and we are committed to equipping graduate students in all programs with the practical skills and experiential knowledge that will enable them to translate their academic achievements into success after graduation.

## KEY INITIATIVES

- McMaster is a powerhouse in advanced manufacturing and materials research. Building on these strengths, the Biomedical Engineering and Advanced Manufacturing Fraunhofer Project Centre (BEAM), brings together researchers from science, health sciences and engineering. With some 35 industry partners, researchers will develop novel technologies for eye care, point-of-care diagnostics and cancer treatments. The \$33 million state-of-the-art facility, located at McMaster Innovation Park, will be open for business early in 2018, and is expected to create more than 75 highly qualified jobs.
- The Government of Ontario has committed \$35M towards a unique Consortium involving McMaster and two other top research-intensive and industrially collaborative universities. The Advanced Manufacturing Consortium is intended to lead Ontario in emerging sectors such as next-generation additive manufacturing, and digital components and devices, with the goal of creating impact on a global scale.
- The McMaster Automotive Resource Centre (MARC), one of the world's leading academic research centres focused on transportation electrification, engages more than 475 graduate students, undergraduates, and postdoctoral fellows. Through partnerships with companies such as Chrysler, Ford, GM, and ArcelorMittal Dofasco, in addition to numerous SME's, students work on experiential learning projects in support of industry needs, while studying and working at MARC.
- McMaster is well-known as a centre for microbial research, reflected in two of its major institutes: the Michael G. DeGroot Institute for Infectious Disease Research is recognized globally as a centre of innovation excellence for its work on addressing the global epidemic of drug resistant infections, and the Farncombe Family Digestive Health Research Institute, which performs cutting edge research on the microbiome.
- McMaster has a particular expertise in longitudinal studies, currently housing four unique studies: the Canadian Longitudinal Study on Aging (CLSA), a 20-year study of more than 50,000 men and women; the Prospective Urban Rural Epidemiology (PURE) cohort study of 190,000 subjects in 25 countries; the Canadian Healthy Infant Longitudinal Development (CHILD) cohort study of 3,500 Canadian children and their families from pre-birth to school age and beyond; and the Aboriginal Birth Cohort (ABC) study of mothers and infants from the Six Nations Reserve.
- The McMaster Nuclear Reactor (MNR) supports research across a range of disciplines, from biological and medical research and the production of medical isotopes to material composition and neutron and gamma scattering. Already the most powerful research reactor at a Canadian university, its research capacity continues to grow, thanks to major investments from CFI, MRIS and other partners. With the impending closure of the National Research Universal (NRU) reactor at Chalk River Laboratories, MNR will be the sole nuclear research facility above low thermal power in the country:
  - One of only four such facilities in the world, the McMaster Intense Positron Beam Facility supports environmentally



The Fraunhofer Project Centre for Biomedical Engineering and Advanced Manufacturing (BEAM) research facility, will be home to several of McMaster’s leading researchers operating from a state-of-the art facility to be constructed at the McMaster Innovation Park. The \$33 million facility, to be open for business early in 2018, is expected to create more than 75 highly qualified jobs.

sustainable methods of material production and benefits the automotive, steel, and nuclear reactor sectors.

- The Centre for Advanced Nuclear Systems, which includes a unique hot cell facility, will advance the study of materials, safety and medical applications of nuclear technology.
- The Small Angle Neutron Scattering facility is the only one of its kind in Canada and will allow researchers to understand the structure and function of relationships across a range of new materials, from new plastics to superconductors and magnetic materials, to biomaterials and new steels.
- The reactor is also an international point of reference for numismatic research. Researchers from McMaster’s Department of Classics are able to work in collaboration with nuclear scientists on McMaster’s ancient coin collection to advance knowledge of the economies and societies of ancient civilizations, enhance the recovery and preservation

of valuable artefacts, and improve scientific methods for analyzing diverse materials.

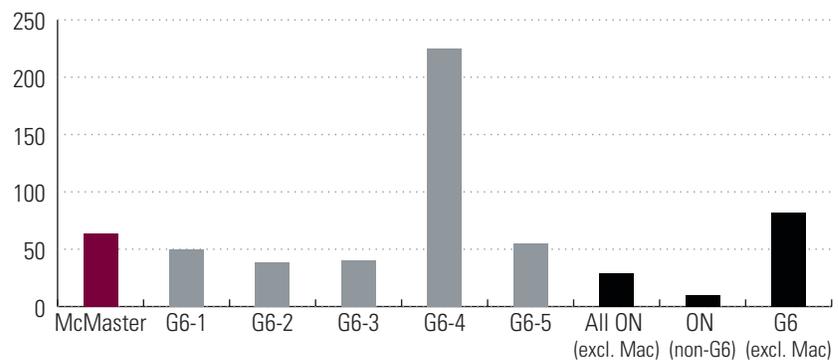
- McMaster researchers are playing a leading role in working to address the most significant global issues. Recent initiatives include:
  - Developing water security monitoring systems and predictive modelling tools, to deliver innovative risk management solutions to better manage global water futures. In partnership with Indigenous communities, McMaster researchers are developing appropriate water quality tools, and are working with Canadian boreal communities to develop a novel social-ecological systems decision support tool.
  - Funded by the Canada First Research Excellence Fund and other partners, the \$143-million Global Water Futures project will see senior McMaster researchers collaborating with their peers from the University of

- Saskatchewan, University of Waterloo and Wilfrid Laurier University to transform the way in which we study, manage and steward water. The project draws on McMaster expertise in the areas of hydrology, climate change, the Great Lakes, flood forecasting, groundwater pollution, environmental contamination and public policy.
- Researchers from the Department of Economics are leading a team of experts from the academic, private and public sectors in a six-year project in search of an answer to Canada’s productivity challenges. The findings will inform public policy debate and standard practices within businesses, governments and labour organizations.
- Researchers in the Labarge Centre for Mobility in Aging, housed in the McMaster Institute for Research on Aging, are taking an interdisciplinary approach to examine the biological, behavioural, technological and environmental factors affecting how

people age. Their work, which engages researchers from every Faculty, as well as clinicians, will lead to a better understanding of issues associated with mobility in aging; optimize the well-being of Canadians; and reduce health and social costs.

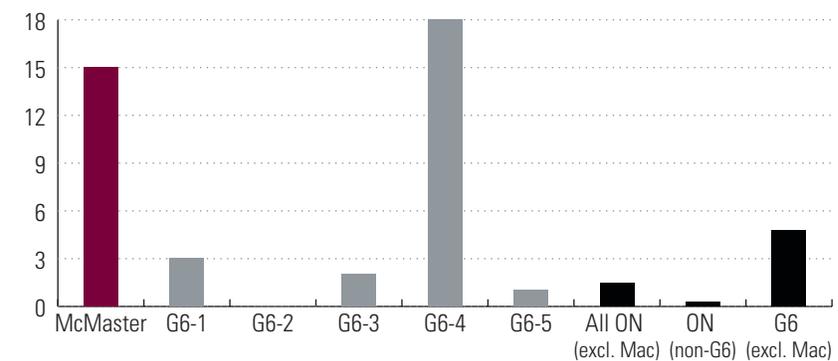
- McMaster is creating and fostering links with global researchers ranging from joint PhD programs, international research partnerships involving research institutes such as BIMR, CCEM, MARC, BigData, Population Health and the McMaster Nuclear Reactor, and engagement with our EU partners in the Erasmus+ program.
- The Government of Canada and Province of Ontario have announced a \$43 million investment in science and engineering teaching and research labs at McMaster, the single largest government investment in laboratories and research capacity in the University's history. The investment from the Strategic Innovation Fund includes lab upgrades, and retrofitted and improved infrastructure in the Arthur Bourns Building, as well as an energy Co-Generation project.
- The University Library is collaborating with the Research & High Performance Computing Support unit to implement VIVO, an open-source platform that makes McMaster researchers and their work more prominent on the web. The Library also has a lead role in developing research data management infrastructure and promoting a culture of data stewardship at McMaster.
- McMaster is focused on supporting the commercialization of the cutting-edge work undertaken by our researchers, enabling them to successfully bridge the gap from research to commercial application:
  - The McMaster Industry Liaison Office (MILO) receives 80 to 100 invention disclosures per year and supports five to six projects at any given time in its small incubator set-up, MILO PreINC.

### Canada Research Chairs, as of March 2017



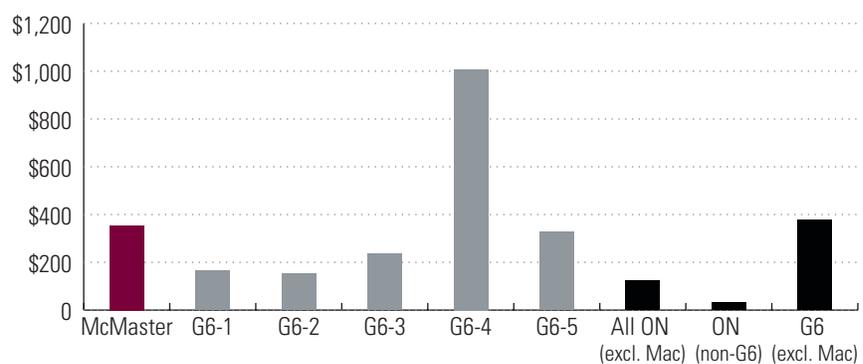
Note: G6-1 to G6-5 represent McMaster's Ontario peers who are members of the U15 (Canada's 15 research-intensive universities).  
Source: Canada Research Chairs, March, 2017

### Highly Cited Researchers 2016



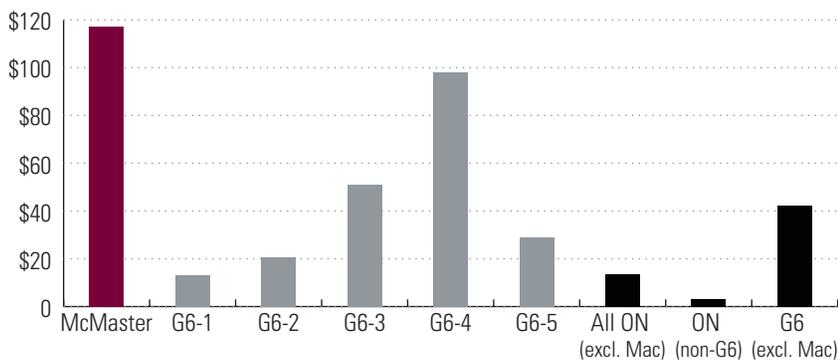
Note 1: Highly Cited Researchers is a list of leading researchers in sciences and social sciences from around the world. The 2016 list focuses on highly cited papers in science and social sciences journals indexed in the Web of Science Core Collection during the 11-year period 2004-2014.  
Note 2: G6-1 to G6-5 represent McMaster's Ontario peers who are members of the U15 (Canada's 15 research-intensive universities).  
Source: Thomson Reuters Highly Cited Researchers 2016

### Total Sponsored Research Income (\$000) 2015-2016



Note 1: 2015-2016 is the latest comparable data available.  
Note 2: G6-1 to G6-5 represent McMaster's Ontario peers who are members of the U15 (Canada's 15 research-intensive universities).  
Source: Financial Information of Universities and Colleges (FIUC) 2017

## Research Funding from Industrial Sources (\$000,000) 2015-2016



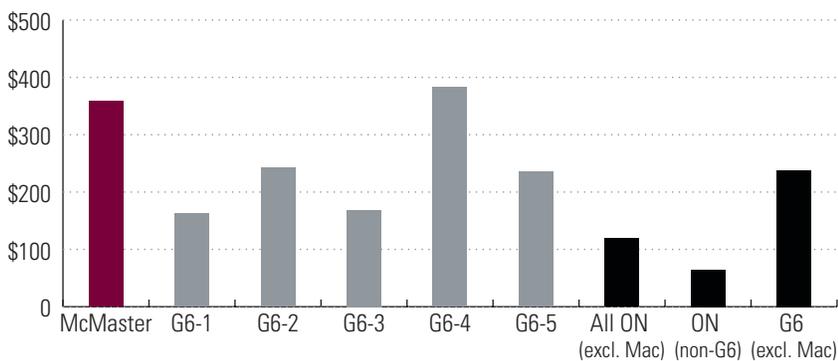
Note 1: 2015-2016 is the latest comparable data available.

Note 2: Research Funding from Industrial Sources includes sponsored research from business enterprises, as defined by the Canadian Association of University Business Officers (CAUBO).

Note 3: G6-1 to G6-5 represent McMaster's Ontario peers who are members of the U15 (Canada's 15 research-intensive universities).

Source: Canadian Association of University Business Officers (CAUBO) 2017

## Research Intensity Ratio (\$000) 2015-2016



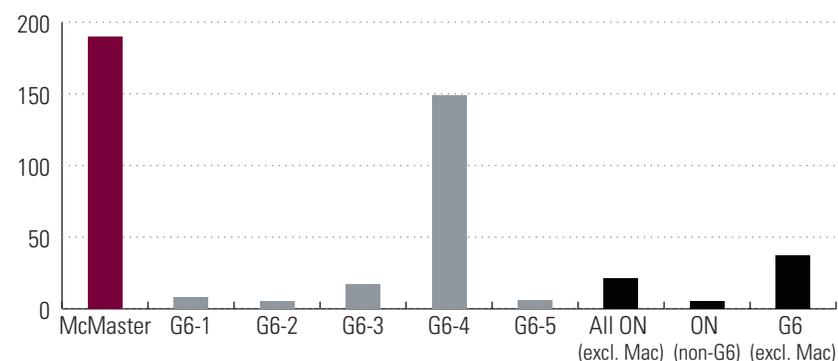
Note 1: Data includes only institutions that are part of the top 50 Canadian research universities.

Note 2: G6-1 to G6-5 represent McMaster's Ontario peers who are members of the U15 (Canada's 15 research-intensive universities).

Note 3: 2015-2016 is the latest comparable data available.

Source: Research InfoSource 2016

## New Licenses 2015



Note: G6-1 to G6-5 represent McMaster's Ontario peers who are members of the U15

(Canada's 15 research-intensive universities).

Source: Association of University Technology Managers (AUTM), Canadian Licensing Activity Survey 2016.

- McMaster Innovation Park (MIP) provides a range of office, lab and specialized facilities to more than 55 companies with over 700 people working onsite. The incubation space supports 13 companies, with two companies supported by the Biotech incubator, and a further two companies housed in the Don Pether Incubation Centre.
- The Innovation Factory, established in 2014, has worked with 700 different individuals, groups and start-up companies since inception.

- McMaster continues to focus on increasing graduate enrolment and is introducing new graduate programs to meet Ontario's higher education and training needs. Some examples include:

- The PhD program in Communication, New Media and Cultural Studies brings together three interdisciplinary fields using tools from the arts, humanities, and social sciences.
- The Executive MBA in Digital Transformation is designed to expose students to the core topics covered in traditional EMBA programs, together with the more technical content associated with master-level courses in fields such as data science and business analytics.
- Those who have gone on to a career in industry can now earn an engineering doctoral degree while continuing to work. The new flexible Industrial PhD option, which launched in 2016, allows students to conduct their research at labs in their workplaces.
- The Master of Science in Speech & Language Pathology (beginning in September 2017) will prepare students to deal with the management of communication and swallowing disorders.

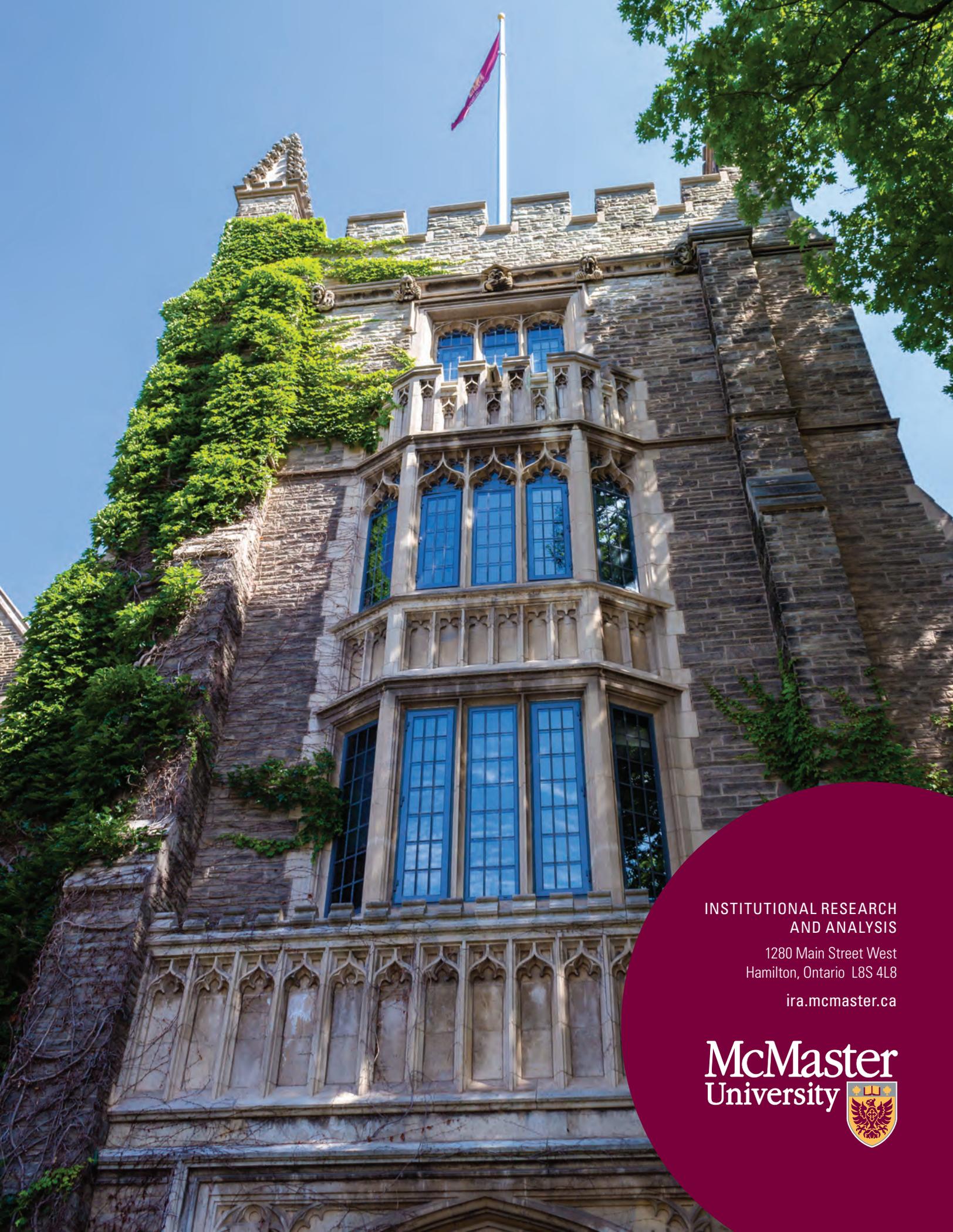
Over the last five years, from 2012 to 2016, McMaster researchers generated over \$1.6 billion in external research funding.



## KEY OUTCOMES

- In 2016, McMaster ranked second in the province and second in the country for research intensity, averaging \$358,300 per faculty member, a 5.5% increase from the previous year, and more than double the national average, and eighth overall in total research income, bringing in some \$324.6 million (source: ReSearch Infosource). We are one of only two Ontario universities consistently ranked among the top 100 universities in the world and one of only five in the country.
- McMaster's Centre for Probe Development and Commercialization (CPDC) secured \$33 million in venture capital financing to launch a new company in Hamilton. This company, Fusion Pharmaceuticals, will develop treatments using medical isotopes to identify, attack, and eradicate cancer cells.
- Over the last five years, from 2012 to 2016, McMaster researchers generated over \$1.6 billion in external research funding.
- Over the last 15 years, McMaster has secured some \$4.6 billion in research funding and researchers have published 36,469 papers in peer-reviewed scientific international journals. This places McMaster sixth in Canada and rivals universities nearly double its size.
- The strength of McMaster's research is seen in the 2016 listing of the world's most highly cited researchers from Clarivate Analytics. The listing included 15 McMaster researchers, which was the second highest among the U15 institutions.
- McMaster is home to 70 Canada Research Chairs (CRCs), 109 endowed chairs, 12 endowed professorships, two Canadian Institutes of Health Research Chairs, one Canada Excellence Research Chair (CERC) and six Natural Sciences and Engineering Research Council (NSERC) industrial research chairs. The University also has more than 70 research centres and institutes.
- McMaster has the highest average total Tri-Council funding allocation per principal investigator (\$77,834 in 2014-2015, most recent data available) of Ontario's research-intensive universities.
- Since the winter of 2015, 270 graduate students and postdoctoral fellows from various disciplines across campus have completed one or more of the five available courses for Teaching & Learning Certificates offered by the MacPherson Institute, which promote and support the integration of pedagogical research into teaching practices. Around 400 students attended the annual Teaching and Learning Forum to gain a deeper understanding of good practices in post-secondary teaching.
- The number of graduate student applications from funding-eligible students more than doubled (from about 2,850 to 5,940) between 2007-2008 and 2016-2017, in part because of our international reputation for excellence.
- In 2016, 10 McMaster graduate students were recipients of prestigious scholarships and fellowships. Six McMaster graduate students were named Vanier scholars, placing the University third among its research-intensive peers in Ontario. Three McMaster post-doctoral fellows were named Banting Fellows. One McMaster student was named a Rhodes Scholar, one of only two in Ontario and 11 in Canada.





INSTITUTIONAL RESEARCH  
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1280 Main Street West  
Hamilton, Ontario L8S 4L8

[ira.mcmaster.ca](http://ira.mcmaster.ca)

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