

EXCELLENCE INNOVATION LEADERSHIP

RESEARCH AT THE
UNIVERSITY OF TORONTO

REPORT TO GOVERNING COUNCIL
MARCH, 2009



A MESSAGE FROM THE VICE-PRESIDENT, RESEARCH

I am pleased to present the Annual Report of the Office of the Vice-President, Research (OVP-R) at the University of Toronto.

Changing and challenging times call for innovation. To this end, the OVP-R has taken a number of significant measures over the past year to enable us to carry out our mission:

To enhance the University of Toronto's impact in research through enabling new strategic initiatives that promote fundamental scholarship, discovery and multidisciplinary cultural, social and technological innovation.

One of these initiatives has been a major reorganization of the OVP-R portfolio. The new structure of the portfolio is founded on three administrative pillars that will enhance service to researchers and partners while minimizing risk and maximizing compliance:

- Research Services Office (RSO)
- The Innovations Group (TIG)
- Research Oversight and Compliance Office (ROCO)

In this report, you will read about other important initiatives. We have based our reporting on the progress we have made—and will continue to make—in five broad areas:

- Research Services
- Awards and Honours
- Accountability
- Innovation
- Celebration & Promotion

The global economic crisis will continue to have a profound impact on our research enterprise. In collaboration with the U of T community, our university, college, hospital, government and business partners, I know we will be well-equipped to handle the challenges we will face. Thank you for your continued support.

I look forward to working with you to continue to strengthen and celebrate research at U of T.



Professor R. Paul Young, PhD, FRSC
Vice-President, Research

SUPPORTING OUR FACULTY

Over the past year, we have reorganized our service structure to better serve the needs of the University of Toronto research community. Our key goal is to more effectively aid investigators in maximizing their success in research and innovation.

To this end, the new Research Services Office is an amalgamation and streamlining of the functions of the former Government Research Infrastructure Programs (GRIP) office and the Research Grants office, drawing on experience and best practices from both.

Under the leadership of Executive Director Judith Chadwick there are two areas of operation:

- **Institutional Initiatives**, led by Director MayLiza Baak, which assists faculty in competing for and managing funding through the Ontario Ministry of Research and Innovation, the Canada Foundation for Innovation, the Canada Research Chairs, the Canada Excellence Research Chairs and Genome Canada.
- **Agency and Foundation Funding**, led by Director Drew Gyorke, which assists faculty in finding and managing funding from the federal granting councils and a broad range of other agencies and foundations in Canada and internationally.

Gopal Sreenivasan is the Canada Research Chair in Justice and Health—one of U of T's exceptional emerging researchers.



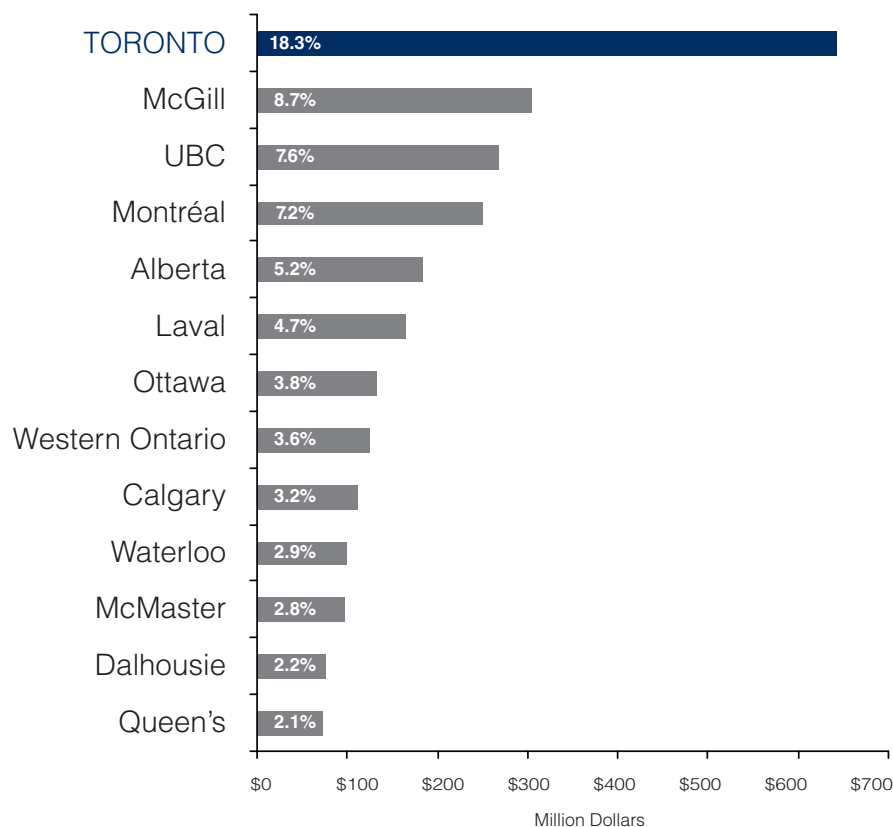
HIGHLIGHTS

Canada Foundation for Innovation (CFI)—Leading Edge Fund/New Initiatives Fund

- Initiated a new, excellence-driven internal process to maximize the competitiveness of U of T's submissions.
- 100 referees from outside Canada were recruited to review pre-proposals.
- U of T submitted proposals requesting \$96 million from CFI, along with hospital-based proposals requesting \$72 million.
- We worked closely with partner hospitals and sister institutions to eliminate duplication in the infrastructure requested.
- CFI has completed the expert review phase and outcomes will be known in June 2009.

Canada Foundation for Innovation

Canadian G13 universities - from inception (1998) to November 2008



Data source: CFI website at 17 November 2008; national projects excluded; affiliates counted with their university.

Province of Ontario

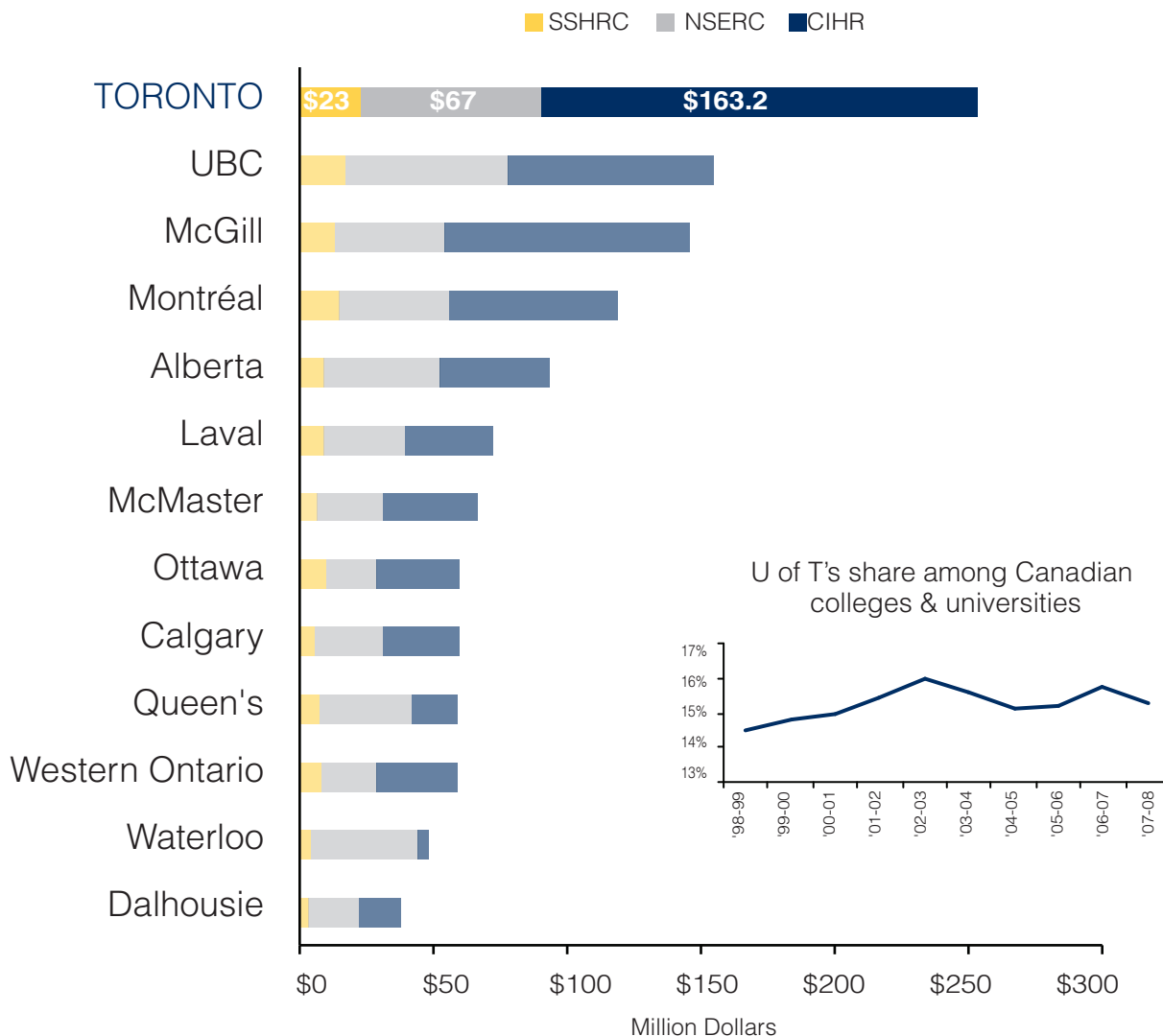
The Ministry of Research and Innovation (MRI) has co-funded all research infrastructure projects on a dollar-to-dollar basis with CFI. In addition, MRI provides major research operating support through the Research Excellence program.

Tri-Council Investment and Canada Research Chairs (CRC)

- As in past years, U of T continued to lead all Canadian universities in investment by the federal granting councils — the Canadian Institutes of Health Research (CIHR), the Social Sciences and Humanities Research Council (SSHRC) and the Natural Sciences and Engineering Research Council (NSERC). In total, U of T received more than 15 per cent of all funding.
- We also continued to lead the nation in our numbers of Canada Research Chairs (256).
- While overall levels of Tri-Council funding at U of T and partner hospitals have increased over the past several years, the university must maintain and strengthen its focus on Tri-Council funding. Increased participation and success will allow us to maintain and even increase our allocations of CRCs and federal indirect cost funding.

Federal Research Councils

Canadian G13 universities 2007-08



Figures include funding for affiliated and partner institutions. Figures exclude funding for the Networks of Centres of Excellence, the Canada Research Chairs program, and the Indirect Costs program.

Data sources: Councils' statistical tables.

Canada Excellence Research Chairs (CERC)

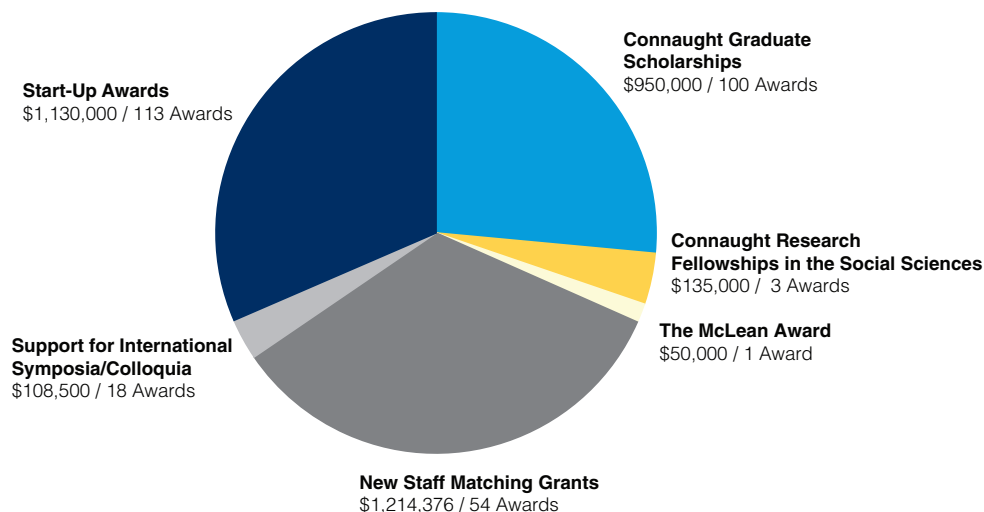
- U of T was presented with the opportunity to submit 14 Phase 1 applications to the new Canada Excellence Research Chairs program.
- CERC was created to attract international research stars to Canada. It offers eligible institutions the opportunity to establish high profile research chairs at their institutions in areas that are of strategic importance to Canada.
- CERCs are valued at \$10 million each over seven years. Only 20 will be awarded nationwide.
- Invitations to Phase 2 of the competition will be issued in April 2009.
- Final decisions on CERCs will be announced in 2010.

Connaught Fund

The Connaught Fund originated from the sale of U of T's Connaught Laboratories in 1972 for approximately \$29 million. Since then, the University has grown the fund to become the largest of its kind in Canada. Using Connaught funds, we have invested more than \$113 million in U of T scholars through:

- Connaught Graduate Scholarships to support top international students
- Start-Up grants which help defray the cost of initiating research for new tenure-stream or tenured faculty
- New Staff Matching grants of up to \$30,000 to assist new assistant professors
- The International Symposia/Colloquia program to advance knowledge in matters of public interest
- Research Fellowships in the social sciences to enable scholars to work full-time on their research
- The McLean Award which provides \$100,000 annually to one faculty member in the basic physical sciences or engineering to attract and support graduate students and post-doctoral fellows

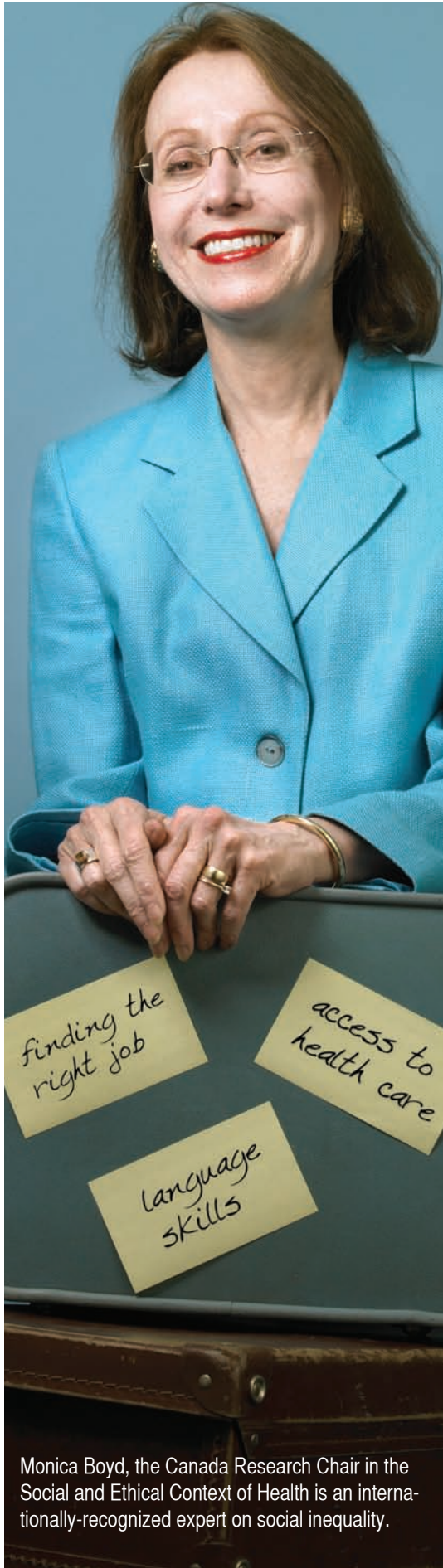
The Connaught Committee also oversees the Mary Gertrude l'Anson Fund, which is dedicated to research in the medical sciences. As of April 30, 2008 it was valued at \$3 million.



1. In addition to the Social Science Fellowships 6 Jackman Humanities Institute Research Fellowships were supported by a combination of the Jackman and Connaught funds
2. The 100 Connaught Graduate Scholarships comprise 22 new and 78 continuing awards
3. \$50,000 matching funding is contributed from the McLean Endowment to enable an award of \$100,000

Catalogues of Research and Innovation at the University of Toronto

- In 2007 and 2008 the federal and provincial governments released science and technology strategies, outlining specific priority areas of research where government funds would be targeted. Priorities included: environmental sciences and technologies, natural resources and energy, health and related life sciences and technologies, and information and communications technologies.
- Researchers at the University of Toronto have a long and strong track record of research and innovation in these priority areas, but no comprehensive tool existed to showcase those strengths. In 2008, the Office of the Vice-President, Research, embarked on an initiative to develop framework documents for each of the priority areas. These catalogues are meant to: provide a tool to understand the scope of research across every relevant discipline and all three campuses; help faculty identify areas of synergy and potential collaborators; and enable us to make prompt, targeted responses to government calls for proposals in their priority areas.
- Starting with Digital Media in 2008, we have developed a catalogue of projects across all disciplines and formed a working group to explore the depth and breadth of research and innovation in this field. This initiative led to the formation of a partnership between U of T, Waterloo and Ryerson and a symposium of experts on the future of digital media which was held in December 2008.
- In November 2008, Elissa Strome joined the portfolio as the Research and Special Projects Officer. In addition to coordinating other OVP-R strategic initiatives, Elissa will continue compiling catalogues of research and innovation in each of the priority areas. Catalogues of research and innovation in Energy and the Environment and Health and Related Life Sciences and Technologies will be circulated in the spring of 2009.



Monica Boyd, the Canada Research Chair in the Social and Ethical Context of Health is an internationally-recognized expert on social inequality.


Fostering Partnerships Program

- The Fostering Partnerships Program is a new initiative designed to connect U of T's researchers with potential external collaborators from industry, government, other academic institutions and the non-profit sector.
- The program is meant to provide a mechanism for coordinating collaborations at an institutional level and to give our faculty access to organizations or groups that they may not otherwise be able to connect with to explore the potential for collaboration.
- Initial events are planned with partners from the private sector, the Canadian Space Agency and Industry Canada. This program will continue to grow over the coming months.

Web-based Services for Researchers

A major initiative is underway to reorganize the internal component of the research website to better serve researchers and administrators. New content is being created and existing content streamlined in order to present a more intuitive, helpful resource. The new website will offer:

- a searchable database of all funding opportunities and research prizes administered by the OVP-R
- help with administering budgets
- streamlined access to forms and policies
- information about the commercialization and knowledge transfer process and a guide to working with The Innovations Group
- a guide to the process of ethics review
- a variety of RSS feeds, including information on funding opportunities, prizes, ethics news, and policy updates

A photograph of Dick Peltier, an older man with glasses, wearing a white lab coat and blue nitrile gloves. He is holding a petri dish with a blue liquid inside. The background is a teal color with a white, cloud-like pattern.

Award-winning climate modeler Dick Peltier's leadership secured major funding from the Canada Foundation for Innovation and the Province of Ontario for high performance computing.

RECOGNIZING FACULTY EXCELLENCE

A key priority over the past year was the initiation of a more focused centralized mechanism to prioritize award nominations for our faculty members in order to recognize their excellence.

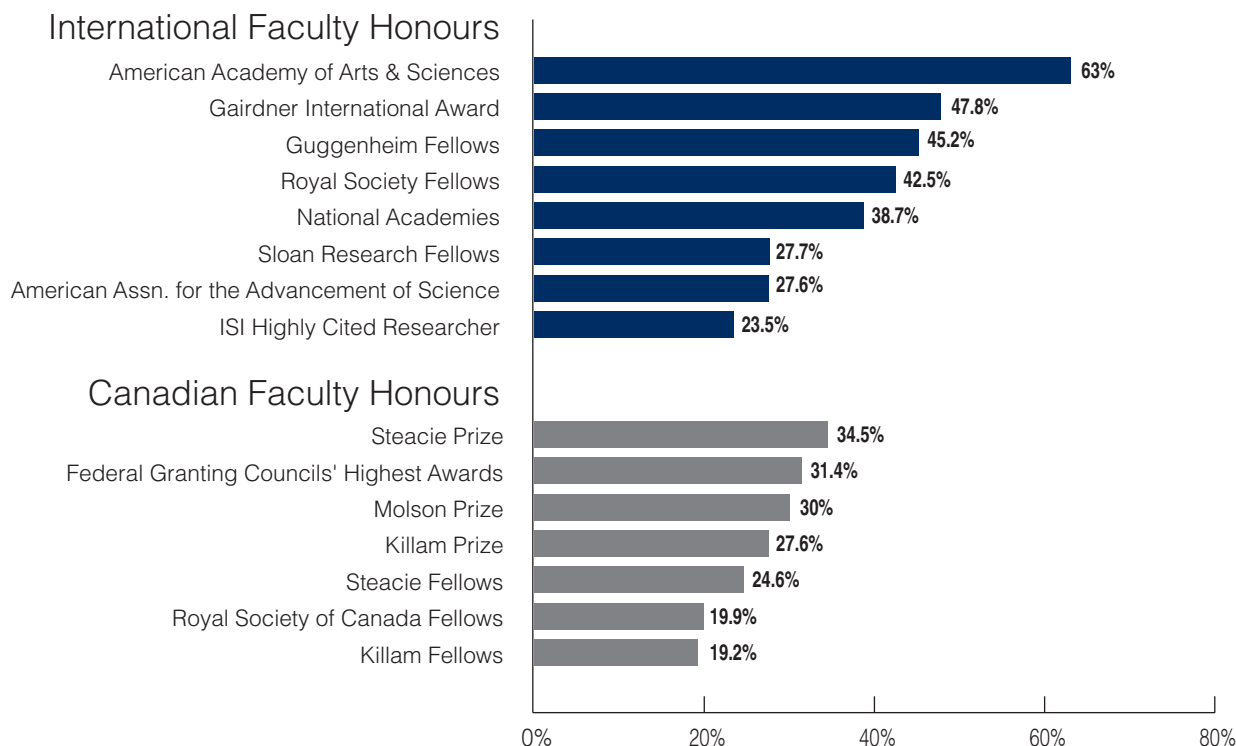
Highlights of this initiative include:

- Georgette Zinaty was hired as Director, University Awards and Honours
- The mandate of this office is to work across the university to identify more opportunities for accolades, coach and assist faculty and staff on application processes and, ultimately, generate more positive outcomes. The office is partnering with larger faculties to develop best practices, key services and to develop systems to track and benchmark U of T's success.
- The director is also working with communications staff to increase profile for winners on the **Experience Research** website.

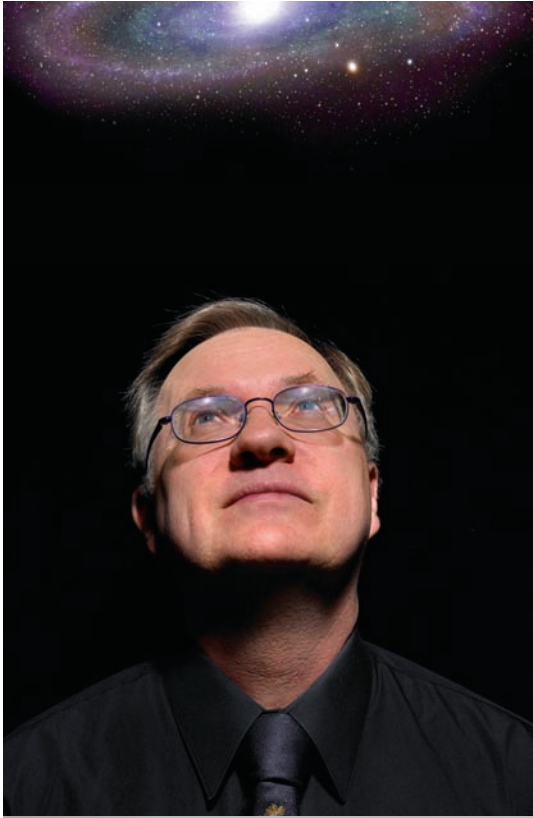
Faculty Honours by Award, 1980-2008

University of Toronto compared to awards held at other universities

U of T researchers consistently win more awards from prestigious international bodies than any other Canadian university. The more competitive the award – nationally or internationally – the better our researchers do.



The chart above indicates international Canadian faculty honours held by UofT as a percentage of the total amount of these awards in Canada over a 28-year period



Photos: Top to Bottom: Richard Bond, Tony Pawson, John Polanyi

The focused approach is already having an impact, with a number of positive outcomes, including:

- U of T was awarded seven of the Top 40 under 40 prizes: alumnus **Brendan Caldwell**; staff member **James Fraser** (Centre for International Health); alumnus **Atul Humar** (medicine); Professor **Mihnea Moldoveanu** of the Rotman School of Management; **Paul Salvini** (adjunct professor, civil engineering); Professor **Reza Satchu** (economics); and Professor **Peter Zandstra** (Institute of Biomaterials and Biomedical Engineering).
- **Atom Egoyan** of the Faculty of Arts and Science was awarded the \$1 million (U.S.) Dan David Prize—an international accolade which recognizes innovative and interdisciplinary research.
- **Ted Sargent** of the Faculty of Applied Science and Engineering was one of the 12 scholars worldwide to be awarded the inaugural KAUST Investigator Grant from King Abdullah University of Science and Technology in Saudi Arabia. The award is worth \$10 million.
- Two of our distinguished researchers won prestigious prizes, often referred to as “pre-Nobel”—**Richard Bond** (Gruber Cosmology Prize, worth \$500,000 U.S.) and **Tony Pawson** (Kyoto Prize, worth \$470,000).
- **Ian Hacking** was awarded the SSHRC Gold Medal, one of the world’s most prestigious prizes in the social sciences and humanities. The award is worth \$100,000.
- University Professor and Nobel Laureate **John Polanyi** won the 2008 Gerhard Herzberg Canada Gold Medal for Science & Engineering. The award is worth \$1 million.
- **Stephen Scherer** and **Frances Shepard** were awarded the Premier’s Summit Award (\$5 million) and **Lewis Kay** was awarded the Premier’s Discovery Award (\$500,000).

STRENGTHENING ACCOUNTABILITY & COMPLIANCE

Accountability is essential to our institutional reputation and research operation. To this end, accountability units within the OVP-R—Research Accounting, Research Ethics, and Legal Counsel—are being consolidated as the Research Oversight and Compliance Office (ROCO).

The office will ensure compliance with respect to:

- Research accounting and audit
- Ethics review processes
- Animal care and laboratory matters
- All regulations and policies that apply to research activities
- Monitoring and responding to regulatory initiatives

The Executive Director will support the directors of these units in the management of their various responsibilities and will work with colleagues across the university and outside agencies (regulatory and funding, for example) to anticipate and develop new standards, reporting requirements and evolving accountability measures.

ROCO will help us engage in best practices in research management. This is particularly necessary in the area of research ethics, which is essential to the conduct of any research that takes place at U of T. It is an area that relies on the commitment of volunteers who serve on U of T Research Ethics Boards and the Research Ethics Policy and Advisory Committee.

Research Ethics Review Activity

U of T's Research Ethics Boards are comprised of faculty and community volunteers who work with staff in the Office of Research Ethics in reviewing submissions representing over 2000 research studies each year.

Total submissions by type

Research Ethics Board	New Protocol	Administrative Review	Amendment	Annual Renewal	Study Completion	Total
Health Sciences	464	89	150	309	22	1034
Education	221	10	41	201	5	478
Social Sciences & Humanities	410	8	86	296	15	815
Total	1095	107	277	806	42	2327

CHANGING THE INNOVATION LANDSCAPE

Innovation, commercialization and tech transfer at the University of Toronto received a major boost this year with the establishment of MaRS Innovation (MI), a commercialization collaboration comprised of U of T, the 10 partner hospitals affiliated with the university, Ryerson University, the Ontario College of Art & Design, BioDiscovery Toronto, the Ontario Institute for Cancer Research and MaRS. This was facilitated by an award of close to \$15 million from the Government of Canada through its Centres of Excellence for Commercialization and Research (CECR) program. With matching funding from partners, this amounts to \$25 million over five years for MaRS Innovation.

MaRS Innovation brings key advantages to U of T's innovation activities:

- strong international representation and a powerful mandate to work with member institutions
- a sharp business focus to U of T's innovation work, identifying high potential commercialization opportunities
- strong connections with business, industry and venture capital communities
- the ability to link across institutions on bundles of intellectual property

Our partnership with MaRS Innovation allows The Innovations Group (TIG) to:

- become more involved in commercialization deal-making
- focus more time and energy with researchers, finding effective ways of disclosing discoveries, managing the early stages of discovery and protecting intellectual property

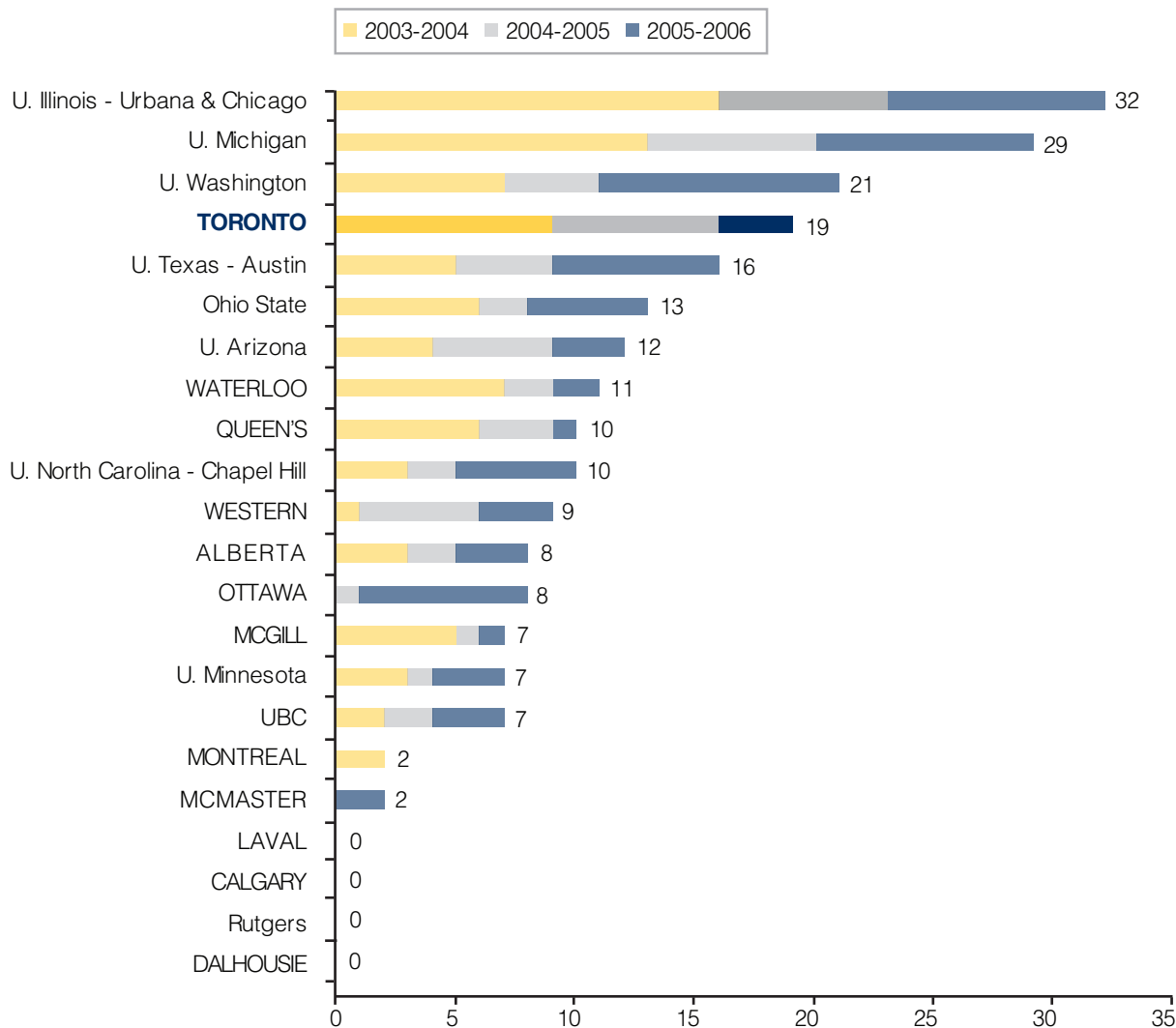
The new structure will provide industry relations and innovation support related to:

- sponsored research negotiations and review of funding agreements
- intellectual property management and ownership assignment
- knowledge translation support
- commercialization support
- strategic innovation partnerships
- material transfer agreements
- disclosure registration, processing and management
- commercialization—licensing and spin-offs
- partnerships with MaRS and MaRS Innovation

MaRS Innovation will also allow us to focus on long-term strategic partnerships and opportunities in key areas of economic development that will support the province and the country. Examples of some of these themes are clean technology, clean energy, digital media and interactive communications technology, as well as biomedical research.

New Spin-Off Companies, Canadian and AAU Peer Institutions

U of T has spun-off 114 active companies employing more than 4,000 people and generating nearly \$1 billion in annual revenues.



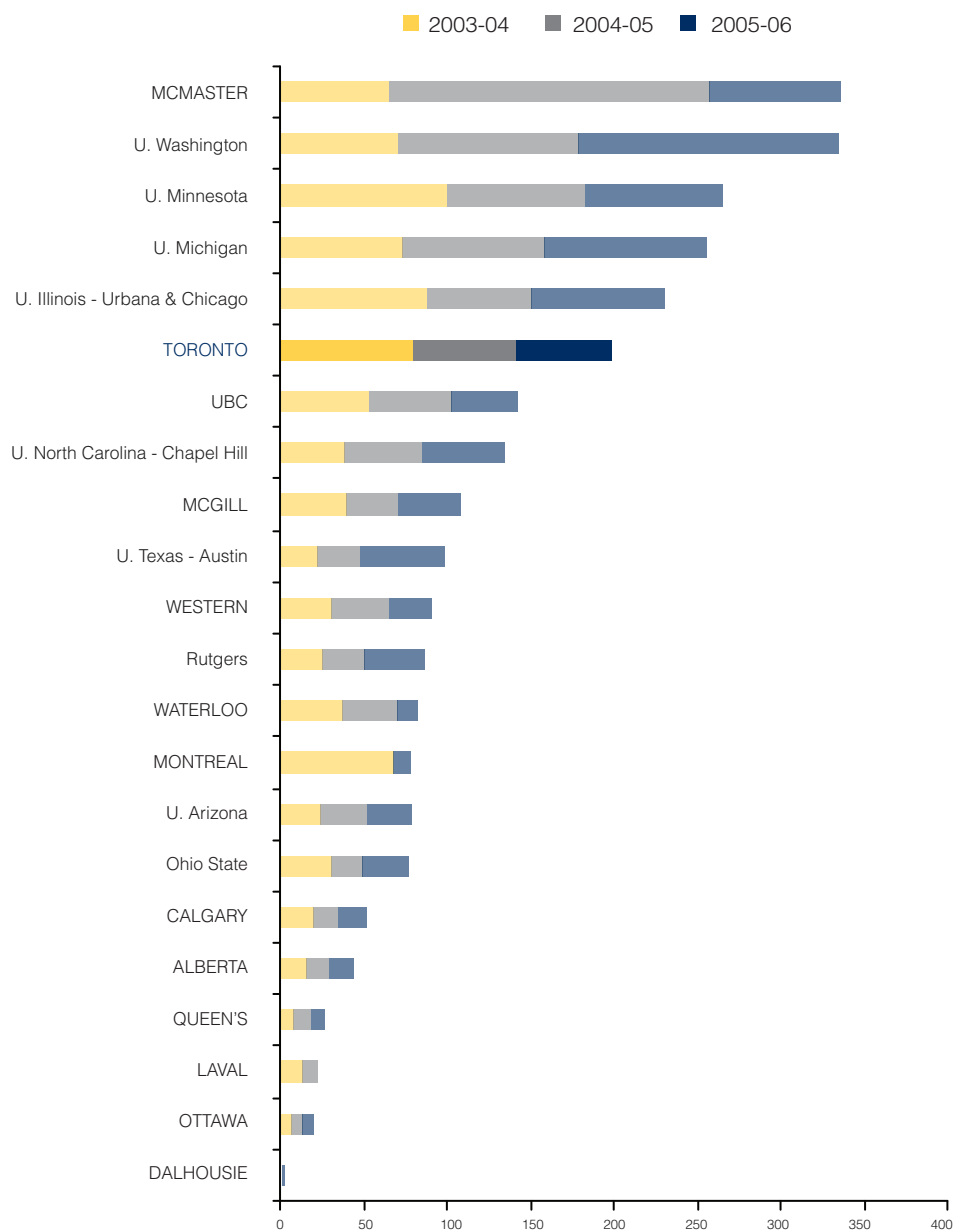
The chart above provides the three-year sum of new spin-off companies for Canadian and AAU peer institutions from 2003-04 to 2005-06. Note: G13 institutions are shown in capital letters.

Data Sources: Published AUTM Survey FY2004, 2005 and 2006. University of Toronto includes partner hospitals with available information: Bloorview Kids Rehab, Centre for Addiction and Mental Health, Hospital for Sick Children, Sunnybrook Health Sciences Centre, and University Health Network. Calgary includes UTI Inc. in all years. McMaster includes Hamilton Health Science and St. Joseph's Healthcare Hamilton in 2005-06 and 2004-05. Washington includes Washington Research Foundation in all years. Western includes Lawson in 2005-06, 2004-05 and 2003-04; and includes Robarts in 2005-06 and 2004-05.

Data for graphs in this section is the most current available at time of publication.

New Licenses

Canadian G13 universities and selected AAU peers



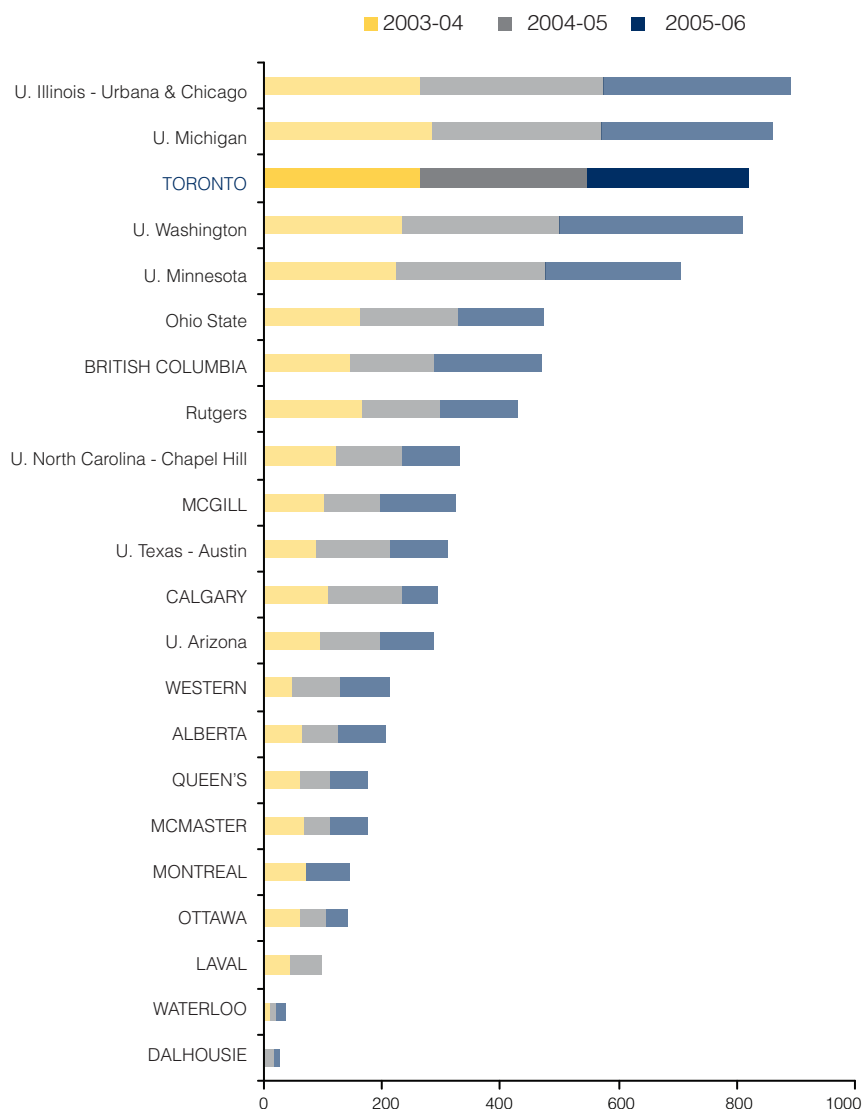
Data sources: Published AUTM Survey FY 2006, 2005, and 2004.

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Where available, University of Toronto includes affiliate hospitals: Bloorview Kids Rehab, Centre for Addiction and Mental Health, Hospital for Sick Children, Sunnybrook Health Sciences Centre, and University Health Network. Calgary includes UTI Inc. in all years. McMaster includes Hamilton Health Science and St. Joseph's Healthcare Hamilton in 2005-06 and 2004-05. Washington includes Washington Research Foundation in all years. Western includes Lawson in 2005-06, 2004-05 and 2003-04; and includes Robarts in 2005-06 and 2004-05.

New Disclosures

Canadian G13 universities and selected AAU peers



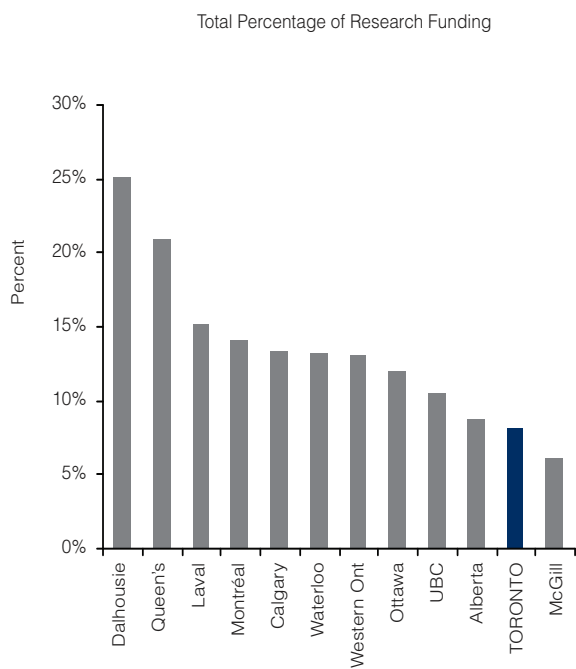
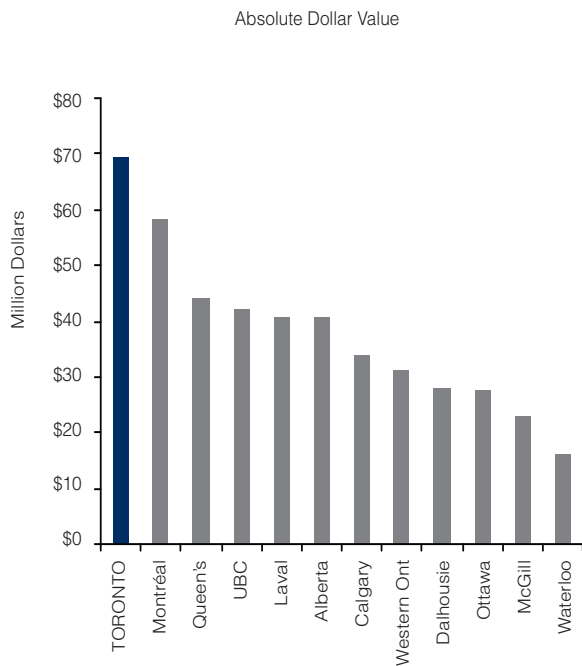
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Research Funding From Industrial Sources 2006-07

Canadian G13 universities



Data Sources: CAUBO 2006-07, research income from business enterprises; U of T corrected for 1-year lag in reporting for partner hospitals. McMaster not shown due to comparability issues.

Photos: Top: Tim McTiernan, Assistant Vice-President, Research and TIG Executive Director, MaRS CEO Ilse Treurnicht, and Vice-President, Research Paul Young. Bottom: Pharmacy professors Christine Allen and Micheline Piquette-Miller have licensed PoLi, an implantable cancer drug.



CELEBRATION AND PROMOTION

The OVP-R took a number of key steps to heighten the strategic impact of its research communications program.

- Publication of the report, ***Excellence, Innovation, Leadership: Research at the University of Toronto***. The report was produced in two parts – one section devoted to profiles of leading U of T faculty members across the disciplines and the other section offering key statistical information on U of T's leadership in areas such as citations, publication of research and honours and awards. Given the popularity of the publication, it will be produced every two years, with a smaller more internally-focused annual report to U of T governance to be produced every other year. The 2010 edition will focus on the social impact of U of T research and answers to significant questions facing humanity in the 21st century.
- ***Edge Magazine*** was re-envisioned and now focuses each issue on strategic initiatives and topics that have been identified as a priority by the federal and/or provincial governments. To this end, issues devoted to Commercialization and New Media have been published to great acclaim.
- The ***Experience Research*** website was launched in September 2008 and has enjoyed increasing popularity for its electronic presentation of U of T research across the disciplines. A full-time web developer ensures that with the contributions of the OVP-R Research Communications team, the site remains current. All sections of the site are changed at least weekly and some sections daily.

Our communications tools were all honoured with major awards in the Council for the Advancement and Support of Education's District II 2009 Accolades Awards program. CASE is the professional organization for communications, fundraising, marketing and alumni relations. District II represents the Northeast U.S. and Ontario and includes over 600 institutions, such as Princeton University, the University of Pennsylvania and Carnegie Mellon University.

- ***Excellence, Innovation, Leadership***: Gold Prize, Visual Design and Print; Silver Prize, Annual or Institutional Reports
- ***Edge Magazine***: Silver Prize, Newsletters (Four Colour); Bronze Prize, Staff Writing
- ***Experience Research***: Silver Prize, Websites (Publication/ Special Purpose)



SPECIAL ISSUE
NEW MEDIA





UNIVERSITY OF
TORONTO

Office of the Vice-President, Research
Simcoe Hall
27 King's College Circle
Toronto, Ontario
Canada M5S 1A1

Tel: 416-978-4984
Fax: 416-971-2647
vp.research@utoronto.ca
www.research.utoronto.ca