University of Toronto

OFFICE OF THE VICE-PRESIDENT - RESEARCH AND INTERNATIONAL RELATIONS

Memo to: Members of the Committee on Academic Policy and Programs

Sponsor: Professor Carolyn Tuohy,
Interim Vice President, Research and International Relations

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Date: October 16th for October 23rd meeting

Agenda item: 5

Item identification:
Research and International Relations 2001-2002 Annual Report and 2002-2003 Plans.

Jurisdictional Information:
The Committee has general responsibility for policy on, and for monitoring, the quality of education and the research activities of the University.

Highlights:

This report provides an overview of the 2001-2002 Research Performance at the University of Toronto. Committee members may wish to pay particular attention to the sections on selected accomplishments over the course of 2001-2002, and priority plans for 2002-2003 which will be the focus of the presentation at the meeting.

As you will note, the priority plans include a strong component of continued advocacy in support of the research enterprise with both the federal and provincial governments. This advocacy will continue to be of crucial importance as both the federal and provincial governments formulate their upcoming budgets, and review allocations to their research funding programs over the coming months.

Recommendation:

For information

Research
& International Relations

2001-2002 Report

2002-2003 Plans

University of Toronto

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APPENDIX A: ORGANIZATIONAL CHART

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The mandate of Research and International Relations is to support the strategic development and efficient, accountable administration of research and international resources, activities, and partnerships to serve the University of Toronto's mission to be among the leading public research universities in the world.

Dear Colleagues and Friends,

I am pleased to report that in the past year the University of Toronto strengthened its position as Canada's leading research-intensive university.

In 2001-2002, the University remained the leader in awards from the Canadian Institutes of Health Research, the Natural Sciences and Engineering Research Council, and the Social Sciences and Humanities Research Council; in major honours and prizes for our faculty; and in awards secured from the Canada Research Chairs, the Canada Foundation for Innovation, the Ontario Research & Development Challenge Fund, the Ontario Innovation Trust and the Premier's Research Excellence Awards.

These achievements were realized as a result of the talent and dedication of our faculty. Our primary goal for the coming year is to continue to provide them with the tools they need to conduct the kind of cutting-edge research that defines an internationally competitive public research university. To this end, the University made important progress in attracting new research investment. Overall, U of T and the affiliated hospitals secured $478 million in external research funding, compared to $424 million the year before.

Another significant milestone this year was the Government of Canada's one-time $200 million payment to address the indirect costs of federally-sponsored research. The University and the affiliated institutions received $22.2 million. While the one-time payment was welcome, the government's official recognition of the urgent need for financial support for the full costs of research was equally important.

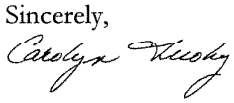
Now the goal is to convince the federal government to make indirect cost funding permanent. Recently, the University of Toronto submitted a formal response to the federal government's Innovation Strategy, and central to that response were the issues of permanent indirect cost funding and increased budgets for the three federal granting councils. These key objectives, if met, would significantly strengthen the environment for Canadian researchers, enabling them to enhance their competitiveness on the international scene.

Meeting these objectives would also assist the University in addressing the increasing needs of the current generation of researchers and the more than 1,000 new faculty U of T will be recruiting over the next 10 years.

Former RIR Vice-President Heather Munroe-Blum laid much of the groundwork on this front during her eight-year tenure in this role. We thank Professor Munroe-Blum for her outstanding service to the University of Toronto – and, in many ways, to all Canadian universities – and we wish her all the very best as she prepares to assume the role of Principal and Vice-Chancellor of McGill University in January 2003.

I am honoured to act as Interim Vice-President until a permanent VP is chosen. In the meantime, I look forward to playing a role in further advancing our key objectives in support of enhancing the research environment both across Canada and here at the University of Toronto.

Sincerely,



Carolyn Tuohy
Vice-President, Research & International Relations

RESEARCH PERFORMANCE AT THE UNIVERSITY OF TORONTO

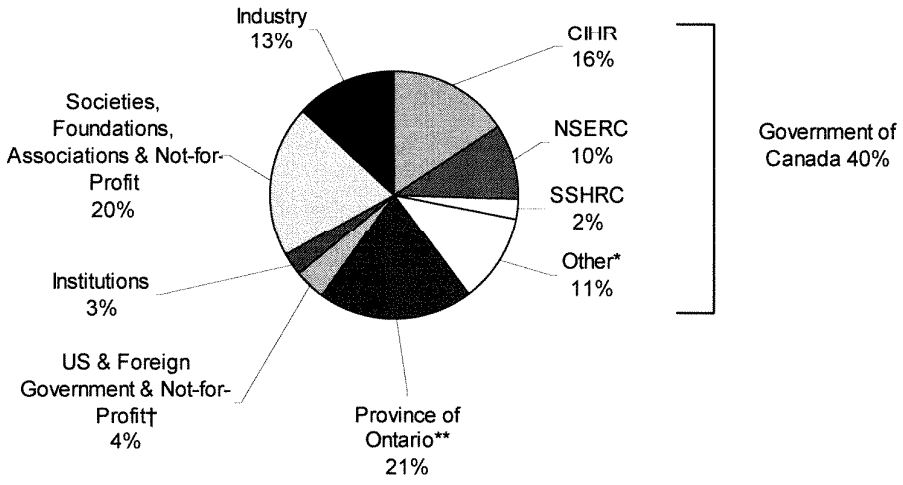
Overall Performance

Research funds awarded to the University of Toronto and the affiliated hospitals for use in 2000-2001 totalled $478 million. This represents a $54 million increase over 1999-2000.

Funding from the government research programs – the Canada Foundation for Innovation, the Ontario Research and Development Challenge Fund, the Ontario Innovation Trust, and the Premier's Research Excellence Awards – for use in 2000-01 totalled $76 million.

Research Funds Awarded

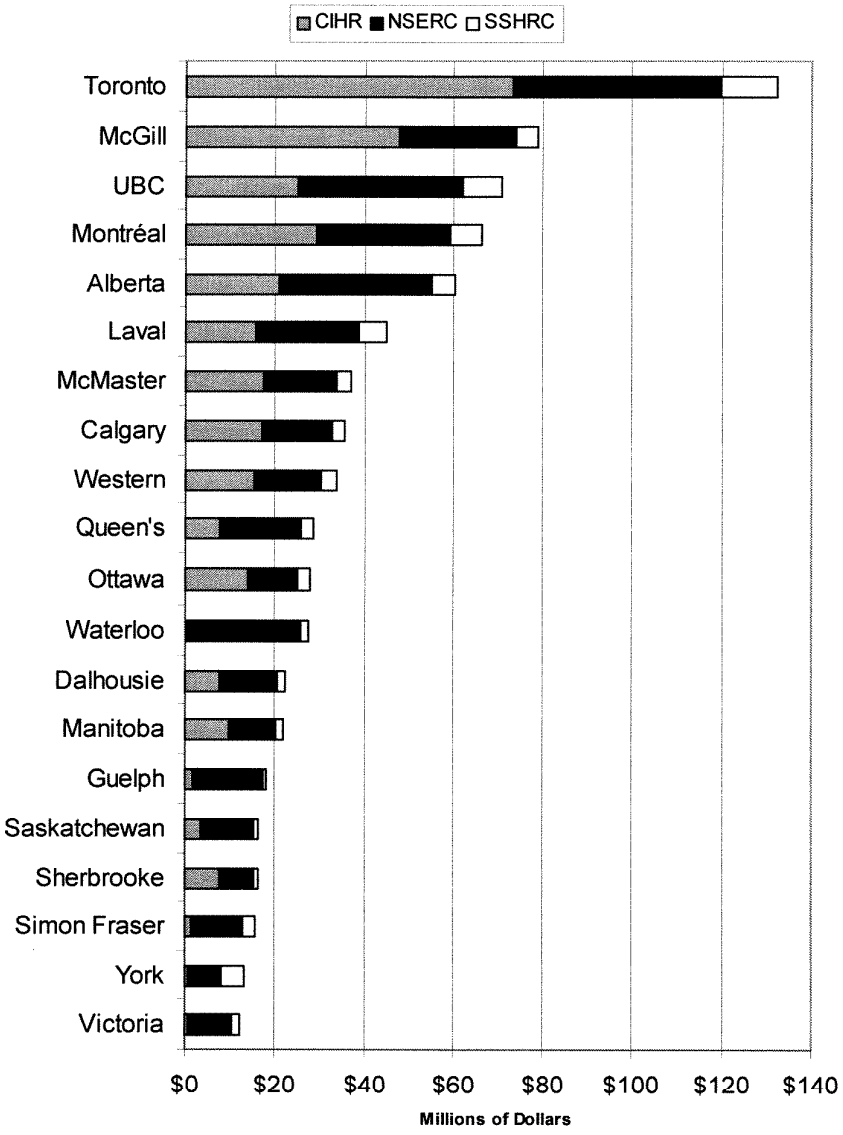
U of T and Affiliated Hospitals
April 2000-March 2001



*Includes Health Canada, Public Works & Government Services Canada, Canada Foundation for Innovation and Networks of Centres of Excellence
** Includes Ministry of Health & Long-Term Care, Ontario Centres of Excellence Ontario Research and Development Challenge Fund, Ontario Innovation Trust, Premier's Research Excellence Awards and Research Performance Fund
†Includes the National Institutes of Health

U of T continued to perform well in the major competitions of the three federal granting councils. The University maintained its #1 ranking in overall funding from all three councils and from each individual council for the eighth consecutive year.

Federal Research Council Payments
Top Twenty* Canadian Universities, 2000-01



*Top twenty universities determined by total funding from the three councils in 2000-01 (NSERC: Natural Sciences and Engineering Research Council; CIHR: Canadian Institutes of Health Research; SSHRC: Social Sciences and Humanities Research Council). Payments to affiliated institutions were counted with the relevant lead university. Figures exclude funding for the federal Networks of Centres of Excellence and the Canada Research Chairs.
Source: Councils' annual reports.

Government Research & Infrastructure Programs

The University of Toronto continued to excel in the Canada Foundation for Innovation (CFI), Canada Research Chairs (CRC), Ontario Innovation Trust (OIT), Ontario Research and Development Challenge Fund (ORDCF) and Premier's Research Excellence Awards (PREA) programs. In addition, a new program – the Ontario Genomics Initiative (OGI) – has been established with funds provided from Genome Canada. All of these programs provide research funding for both established and newer faculty and their graduate students.

CFI, CRC, OGI, OIT and PREA awards
May 1, 2001 – April 30, 2002*
in millions

CRC	$27.70[1]
CFI	$26.08[2]
OGI	$22.90
ORDCF	--
OIT	$25.03[3]
PREA	$3.80
TOTAL Awards	**$105.51**
Private Sector Matching Funds Leveraged	$12.90*
TOTAL External Funding	**$118.41**

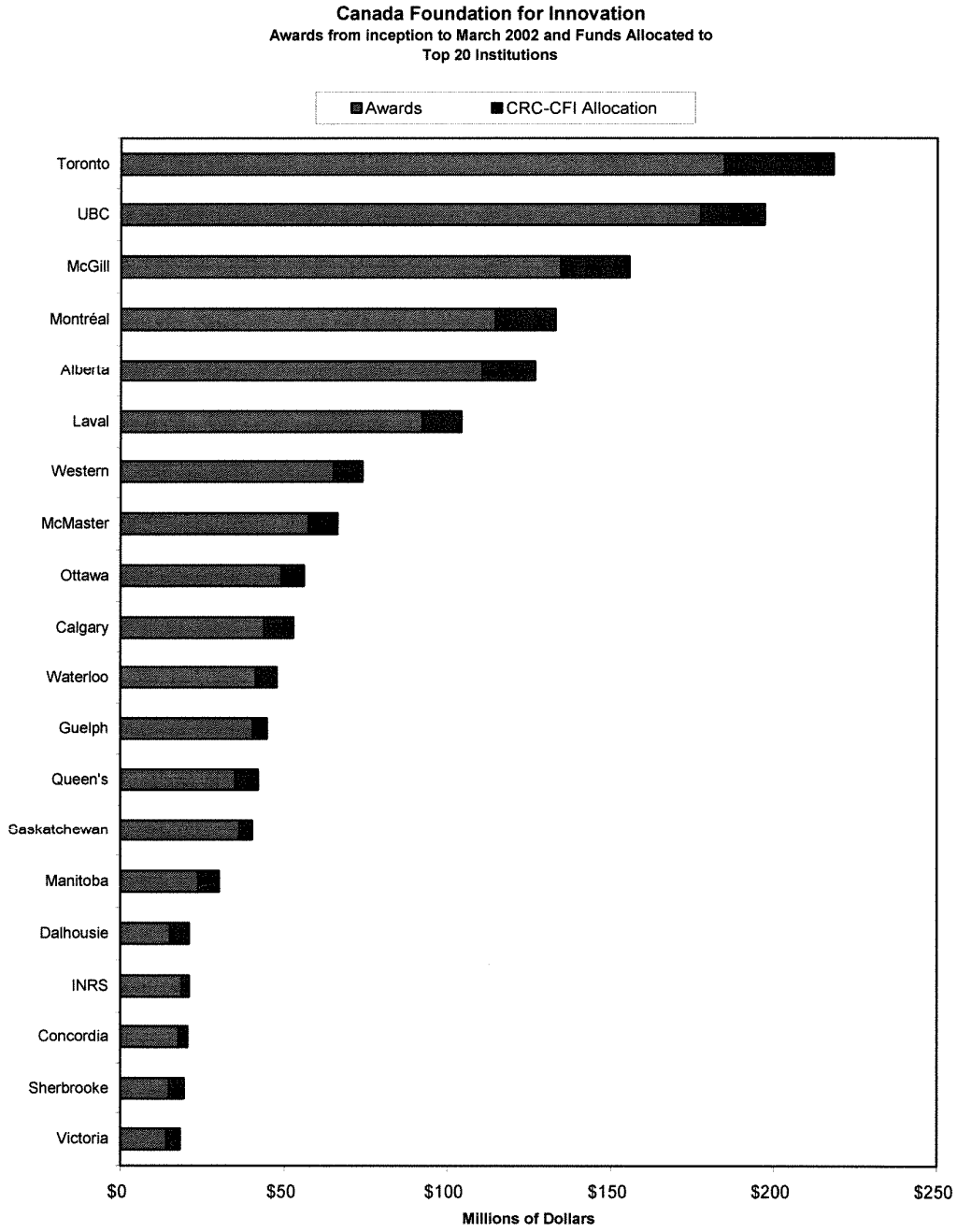
[1] Awards from June, September and December 2001 submission dates. Assumes $200K/year for seven years for Tier I and $100K/year for five years for Tier II awards. To date, 87 awards have been granted out of the allocation of approximately 267, based on University of Toronto granting council performance.

[2]Includes New Opportunities awards ($1.88M) and infrastructure awards to CRC holders from June, September and December 2001 submission dates ($2.72M) and Innovation Fund awards from May 2001 competition ($21.48M).

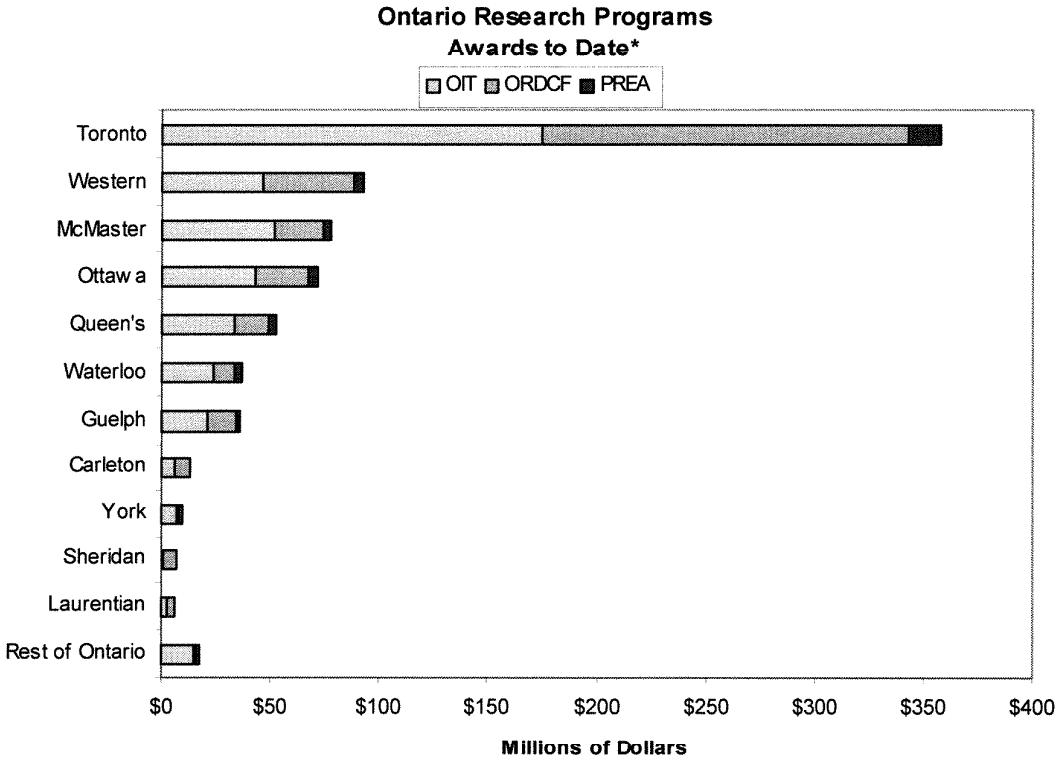
[3]Includes CFI matching awards for New Opportunities and Innovation Fund ($22.41M), and Ontario Distinguished Researcher Awards from June, September and December 2001 competitions ($2.62M).

*Excludes the private sector matching funds component in awards to affiliated hospitals. Includes contributions from hospital foundations for U of T led projects.

U of T's GRIP SUCCESS IN PERSPECTIVE

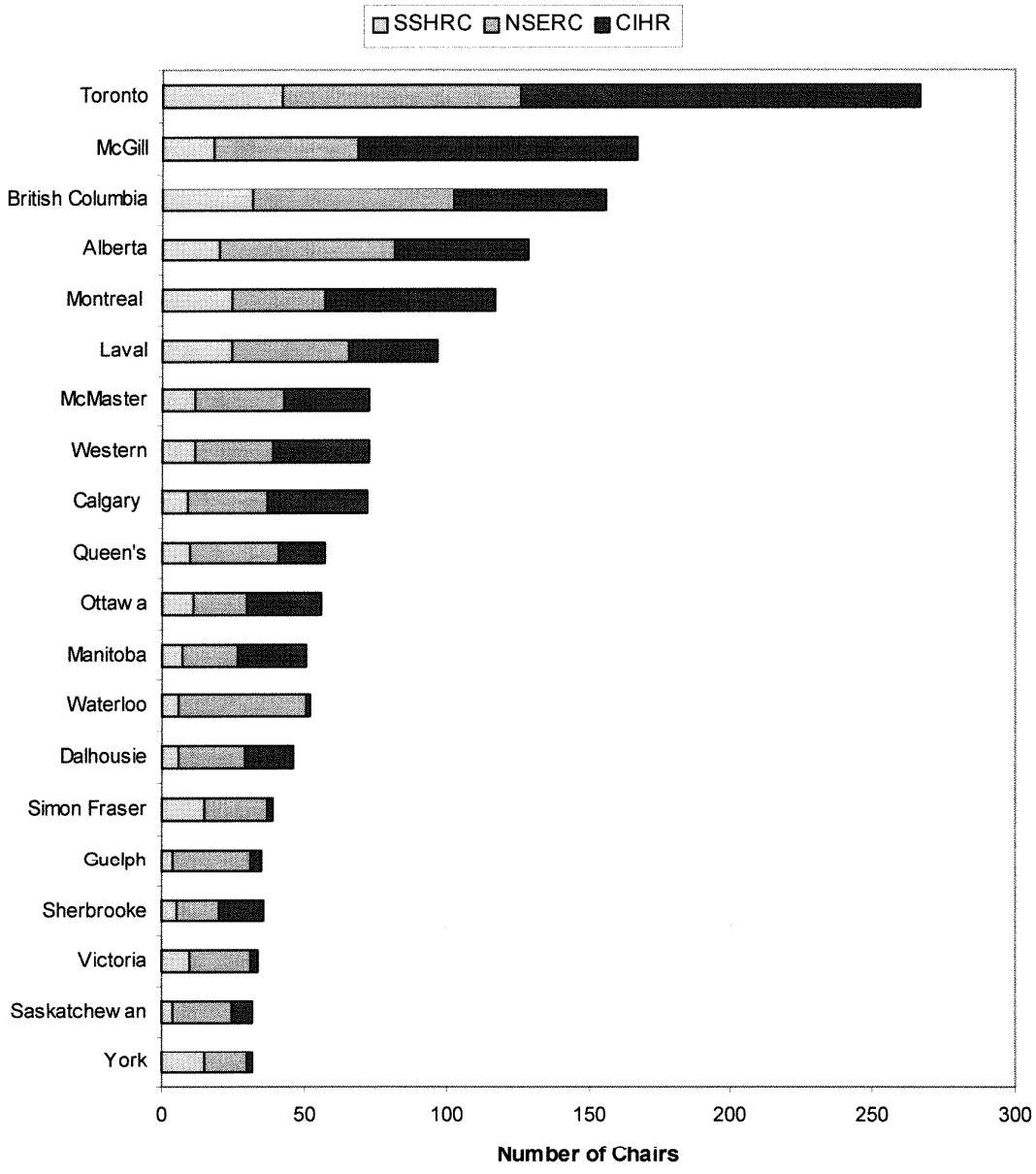


Source: CFI Web site
Excludes National Strategy Awards
Affiliates counted with parent institutions



Source: OIT, ORDCF, PREA Web sites, ORDCF Annual Report 1998, 1999, 2000 (www.oit.on.ca; www.ontariochallengefund.com; www.est.gov.on.ca/english/st/st_preas.html)
*PREA Round 1-6, Estimate awards of $100,000 each; ORDCF awards since inception to December 31, 2000; OIT awards since inception to March 2002.

Canada Research Chairs
Allocations to Top 20 Universities
Year 1 to 5 (2000 - 2005)*



Source: CRC Web site (www.chairs.gc.ca)
*The Chair allocations indicated in this table are firm for Year 1, 2 & 3 and are projections for Years 4 & 5. Actual allocations after Years 4 & 5 depend on the granting agency awards received by the institution in the three previous years.

AWARDEES BY PROGRAM

Canada Foundation for Innovation (CFI)

CFI's mandate is to increase the capability of Canadian universities, colleges, hospitals and other not-for-profit institutions to conduct leading scientific research and technology development. Established by the federal government in 1997, CFI has a current budget of $3.15 billion to fund research infrastructure projects through a competitive process.

New Opportunities – January 2002 Competition

Infrastructure for the Study of Photonic, Microwave & High Speed Electronic Interactions
J. Stewart Aitchison - The Edwards S. Rogers Sr. Department of Electrical and Computer Engineering

Enzymatic Modification of Endotoxins
Russell Bishop - Laboratory Medicine and Pathobiology

Perception in the Control Loop
Mireille Broucke - The Edwards S. Rogers Sr. Department of Electrical and Computer Engineering

Advanced Gene Expression and Microscopy Facilities for Congenital Heart Disease Research
Benoit Bruneau - Medical Genetics and Microbiology

The Neurobiology of Relapse to Cocaine Seeking in Rats
Suzanne Erb - Psychology (University of Toronto at Scarborogh)

Biophysical Studies on Chaperone Function
Walid Houry - Biochemistry

Computing Platform for Middleware Systems & Architecture Research
Hans-Arno Jacobsen - The Edwards S. Rogers Sr. Department of Electrical and Computer Engineering

Mobile Communications Laboratory for the Testing of Advanced Signal Transmission and Reception Concepts
Teng Joon Lim - The Edwards S. Rogers Sr. Department of Electrical and Computer Engineering

Molecular Mechanisms of Netrophil Defensins in Lung Inflammation and Injury
Haibo Zhang - Anaesthesia; St. Michael's Hospital

New Opportunities – March 2002 Competition

Establishing a Bone Health and Osteoporosis Prevention Program Laboratory for Girls and Women
Mary Jane De Souza - Physical Education and Health

High-Pressure Combustion Facility for Soot Research
Omer Gulder - Institute for Aerospace Studies

Facility for the Multi-Level Analysis of a Complex Morphogenetic Process, Vertebrate Gastrulation
Rudolph Winklbauer - Zoology

Innovation Fund – May 2001 Competition

A Laboratory Network for Innovation & Technology in Education
Carl Bereiter - OISE/UT

Genetic Arrays: Mapping Cellular Networks and Pathways
Charles Boone - Banting and Best Department of Medical Research

HIV/AIDS and TB Research Facility
Jun Liu - Molecular Genetics & Microbiology

Near Net-Shape Manufacturing of Components by Vacuum Plasma Spray Forming (VPSF) Technology
Javad Mostaghimi - Mechanical and Industrial Engineering

PSciNet II Vector and Cluster Computing Upgrade in Support of Research in Environmental Physics, Mechanical and Aerospace Engineering, High Energy Physics and Quantum Optics
Richard Peltier - Physics

Aerospace Flight Facility
Lloyd Reid - Institute for Aerospace Studies

Centre for the Study of Biological Communication Systems
Bruce Schneider - Psychology (University of Toronto at Mississauga)

Critical Infrastructure for a Multi-disciplinary Centre for Research in Neurodegenerative Diseases
Peter St. George-Hyslop - Centre for Research in Neurodegenerative Diseases

Centre for Nanostructured Polymeric and Inorganic Materials
Mitchell Winnik - Chemistry

Canada Research Chair CFI awards

CFI has also established a $90 million envelope of funding to support the infrastructure requirements of Canada Research Chair holders.

June 2001 Competition

A Biological Chemistry Laboratory: Studies of Metal Homeostasis
Deborah Zamble - Chemistry

Integrated System for the Measurement of Human Cognitive, Executive, and Behavioural Function at Multiple Levels of Analysis
Philip Zelazo - Psychology

September 2001 Competition

Robust Sound Localization and Recognition Using Microphone Arrays
Parham Aarabi - The Edwards S. Rogers Sr. Department of Electrical and Computer Engineering

Structural Basis of Transcriptional Regulation
David Bazett-Jones - Medicine; Hospital for Sick Children

96-Channel Oligonucleotide Synthesizer
Timothy Hughes - Banting and Best Department of Medical Research

Infrastructure to Support Translational Research in HIV Immunovirology and Vaccinology
Rupert Kaul - Medicine

Infrastructure for Developmental Biology Research
Howard Lipshitz - Medical Genetics and Microbiology; Hospital for Sick Children

The Restorative Motor Control Laboratory
William McIlroy - Physical Therapy

Femtosecond Science Laboratories: Electron Diffractometer and Multi-time Correlation Spectrometer
Dwayne Miller - Physics & Chemistry

Functional Analysis of von Hippel-Lindau Tumour Suppressor Protein and Oxygen-regulated Gene Expression
Michael Ohh - Laboratory Medicine and Pathobiology

Macromolecular X-ray Diffraction Laboratory
Emil Pai - Biochemistry

A Molecular Neuroscience Laboratory to Investigate the Stucture/Function Relationship of Neurotransmitter Release
Shuzo Sugita - Medicine; University Hospital Network

Molecular Mechanism of Microtuble Spindle Assembly
Andrew Rhys Wilde - Medical Genetics and Microbiology

December 2001 Competition

Compute-Server and Equipped Laboratory for Research in Machine Learning
Geoffrey E. Hinton - Computer Science

Dynamical Systems and Computational Laboratory
Mikhail Lyubich - Mathematics

Stem Cell Bioengineering and Functional Genomics
William Stanford - Institute for Biomaterials & Biomedical Engineering

Ontario Innovation Trust (OIT)

Established in March 1999, OIT is an arm's-length research body funded by the Ontario government. Its purpose is to assist in the development of important research infrastructure projects in Ontario by providing matching funding for successful submissions to CFI. More recently, OIT has demonstrated an interest in considering infrastructure requests independent of CFI applications. OIT's current budget is $750 million.

All of the above CFI awards were made possible, in part, by the matching funding provided through OIT in the amount of $22.41M.

Premier's Research Excellence Awards (PREA)

PREA was introduced by the Ontario government in 1998 to help Ontario's world-class researchers attract talented people to their research teams. Over a 10-year period, the province will contribute $85 million. Research institutions and the private sector are expected to match this contribution by providing an additional $42.5 million, for a total of $127.5 million.

May 2001 Competition (Round #6)

Neural basis of auditory scene analysis
Claude Alain - Psychology; Baycrest Centre for Geriatric Care

Multi-level analysis of mating system evolution in cannabalistic black widow spiders
Maydianne Andrade - Zoology (University of Toronto at Scarborough)

Elucidation of the SAR signalling pathway for the creation of disease resistant crops
Robin Cameron - Botany

Genetic and structural analysis of SH3 domain function
Alan Richard Davidson - Medical Genetics and Microbiology

Disruptive millimetre-wave technologies for wireless applications
George Eleftheriades - The Edwards S. Rogers Sr. Department of Electrical and Computer Engineering

Treatment strategies for Alzheimer's disease
Paul Fraser - Centre for Research in Neurodegenerative Diseases

Evolutionary genomics of virulence
David S. Guttman - Botany

Regulation of intergrin signal transduction
Gregory E. Hannigan - Laboratory Medicine & Pathobiology; Hospital for Sick Children

Improving health care delivery to individuals with arthitis with a specific focus on provision of total joint arthroplasty
Gillian Hawker - Medicine

Large-scale functional discovery using DNA microarrays
Timothy Hughes - Banting and Best Department of Medical Research

Predictive modelling of fish biodiversity due to species extinction and colonization
Donald Jackson - Zoology

A cognitive approach to dementia of the Alzheimer's type
Steve Joordens - Psychology (University of Toronto at Scarborough)

Carbon dioxide in the critically ill
Brian Kavanagh - Anaesthesia; Hospital for Sick Children

Cell transplantation to improve heart functions
Ren-Ke Li - Surgery

Databases on the web: design, semantics and query processing
Leonid Libkin - Computer Science

The role of quality control of membrane transporterin genetic diseases
Gergely Lukacs - Surgery

Novel approaches to HIV vaccine design
Kelly Macdonald - Medicine; Mt. Sinai Hospital

Multiple memory systems in the mammalian braincombined genetic and behavioural approaches
Robert Mcdonald - Psychology

Use of enhanced synthetic nerve grafts to improve nerve regeneration
Rajiv Midha - Surgery; Sunnybrook and Women's College Health Sciences Centre

The molecular identity and function of tonic $GABA_A$ receptors: a novel target for anaesthetics, anxiolytics and anticonvulsant drugs
Beverley Orser - Anaesthesia

Understanding disease-associated genetic instability
Christopher Pearson - Medical Genetics and Microbiology; Hospital for Sick Children

String theory as quantum gravity PDF
Amanda W. Peet - Physics

Computational cosmology
Ue-Li Pen - Canadian Institute for Theoretical Astrophysics

Computational complexity and proof complexity
Toniann Pitassi - Computer Science

Forest management impacts on canopy structure and carbon exchange processes
Sean Thomas - Forestry

Cosmic gamma-ray flashes and magnetars
Christopher Thompson - Canadian Institute for Theoretical Astrophysics

Expression and regulation of cardiac Trp channels
Robert Tsushima - Medicine

Transgenic approaches to neurodegenerative diseases
David Westaway - Centre for Research in Neurodegenerative Diseases

The role of RAN in the regulation of microtubule assembly
Andrew Rhys Wilde - Medical Genetics and Microbiology

Renormalization on one-dimensional dynamics
Michael Yampolsky - Mathematics (University of Toronto at Mississauga)

October 2001 Competition (Round #7)

The origin and evloution of galaxies
Roberto Abraham - Astronomy

Generic object recognition
Sven Josef Dickinson - Computer Science

Quantifying the impacts of changes in landscape heterogeneity on forest bird spatial distribution
Marie-Josee Fortin - Zoology

Structure and function of membrane proteins
Gil Prive - Medical Biophysics; University Health Network

Pattern recognition and signal processing
Sam Roweis - Computer Science

Music cognition in normally and abnormally developing children and adults
Glenn E.G. Schellenberg - Psychology (University of Toronto at Mississauga)

Statistical and computational methods for the analysis of survey and survival data with applications to the health sciences
James Stafford - Public Health Sciences

How cells handle nickel
Deborah Zamble - Chemistry

Canada Research Chairs Program (CRC)

The CRC program was established by the federal government in 2000 to enable Canadian universities and affiliated research institutes and hospitals to become world-class research centres by retaining and attracting exceptional research faculty in the full range of disciplines. The program, with a $900 million budget, will establish 2000 Canada Research Chairs across the country by 2005, with 267 at the University of Toronto. Recruitment is taking place from both within and outside Canada.

June 2001 Competition

Canada Research Chair in architecture
Detlef Mertins - Architecture

Canada Research Chair in metalobiochemistry
Deborah Zamble - Chemistry

Canada Research Chair in developmental neuroscience
Philip Zelazo - Psychology

September 2001 Competition

Canada Research Chair in communication algorithms
Parham Aarabi - The Edwards S. Rogers Sr. Department of Electrical and Computer Engineering

Canada Research Chair in molecular and cellular imaging
David P. Bazett-Jones - Biochemistry; Hospital for Sick Children

Canada Research Chair in knowledge transfer for musulo-skeletal care
Claire Bombardier - Medicine; University Health Network

Canada Research Chair in childhood arthitis
Brian M. Feldman - Pediatrics; Hospital for Sick Children

Canada Research Chair in functional genomics
Timothy R. Hughes - Banting and Best Department of Medical Research

Canada Research Chair in eHealth innovation
Alejandro R. Jadad - Anaesthesia; University Health Network

Canada Research Chair in Canadian initiative for health and development (CIHD)
Prabhat Jha - Public Health Sciences; St. Michael's Hospital

Canada Research Chair in molecular parasitology
Kevin C. Kain - Medicine; University Health Network

Canada Research Chair in HIV
Rupert Kaul - Medicine

Canada Research Chair in theoretical condensed matter physics
Hae Young Kee - Physics

Canada Research Chair in theoretical condensed matter physics
Yong Baek Kim - Physics

Canada Research Chair in literature, arts and culture
Thomas Lahusen - History

Canada Research Chair in developmental biology
Howard D. Lipshitz - Medical Genetics and Microbiology; Hospital for Sick Children

Canada Research Chair in neurorehabilitation
William McIlroy - Physical Therapy

Canada Research Chair in femtosecond science
R. Dwayne Miller - Physics & Chemistry

Canada Research Chair in advanced coating technology
Javad Mostaghimi - Mechanical and Industrial Engineering

Canada Research Chair in neoplastic disease mechanisms
Micheal Ohh - Laboratory Medicine and Pathobiology

Canada Research Chair in structural biology
Emil Pai - Biochemistry

Canada Research Chair in polymer processing technologies
Chul Park - Mechanical and Industrial Engineering

Canada Research Chair in neuro-imaging research
Timothy P.L. Roberts - Medical Imaging

Canada Research Chair in justice and health care
Gopal Radu de Reineck Sreenivasan - Philosophy

Canada Research Chair in intercellular communication
Shuzo Sugita - Physiology; University Health Network

Canada Research Chair in retroviruses and gene therapy
Chetankumar S. Tailor - Molecular Medicine; Hospital for Sick Children

Canada Research Chair in molecular medicine and cell biology
Andrew Wilde - Medical Genetics and Microbiology

December 2001 Competition

Canada Research Chair in machine learning
Geoff Hinton - Computer Science

Canada Research Chair in advanced polymer materials
Eugenia Kumacheva - Chemistry

Canada Research Chair in mathematics
Mikhail Lyubich - Mathematics

Canada Research Chair in stem cell bioengineering and functional genomics
William Stanford - Institute for Biomaterials and Biomedical Engineering

Canada Research Chair in observational cosmology
Howard Yee - Astronomy

Selected Scholarly Awards, Prizes & Honours

Alfred P. Sloan Research Fellowship

These U.S.-based awards are intended to enhance the careers of the very best young faculty members in specified fields of science.

Amanda Peet, Physics

CIAR Young Explorers

The Canadian Institute for Advanced Research (CIAR) celebrated its 20th anniversary by selecting 20 individuals for its Young Explorers Prize in science and engineering. U of T researchers took eight of the 20 prizes.

Shitij Kapur, Psychiatry; Centre for Addiction and Mental Health
Daniel Lidar, Chemistry
Ian Manners, Chemistry
Jerry Mitrovica, Physics
Josef Penninger, Medical Biophysics; Ontario Cancer Institute at University Health Network
Ted Sargent, Electrical & Computer Engineering
Steve Scherer, Medical Genetics & Microbiology; Hospital for Sick Children
Molly Shoichet, Chemistry; Chemical Engineering & Applied Chemistry; Institute of Biomaterials & Biomedical Engineering

Flavelle Medal

This Royal Society of Canada award celebrates outstanding contributions to biological science.

Lewis Kay, Biochemistry; Medical Genetics & Microbiology

Friedrich Wilhelm Bessel Research Award

These awards are granted annually by the Germany-based Alexander von Humboldt Foundation to honour young, top-flight, foreign scientists and scholars who are already recognized as outstanding researchers in their fields.

James Retallack, History; German

Jason A. Hannah Medal

This Royal Society of Canada award recognizes an important Canadian publication in the history of medicine.

Michael Bliss, History of Medicine

H.J. Heinz Humanitarian Award

This newly established award is presented to individuals and organizations that distinguish themselves by their creativity, originality and insight in providing products or services that improve the quality of life for humankind.

Stanley Zlotkin, Paediatrics; Hospital for Sick Children

Humboldt Research Award

The Alexander von Humboldt Foundation, based in Germany, grants these annual awards to celebrate internationally recognized foreign scientists and scholars.

Andreas Mandelis, Mechanical & Industrial Engineering

Governor General's Literary Awards

These awards, given annually by the Canada Council for the Arts, recognize extraordinary literary accomplishments in the areas of fiction, poetry, drama, non-fiction, children's literature (text and illustration) and translation.

George Elliot Clarke, English (Poetry category)
Thomas Homer-Dixon, Political Science (Non-fiction category)

Guggenheim Fellowship

The U.S.-based John Simon Guggenheim Memorial Foundation provides fellowships for advanced professionals across disciplines who have demonstrated exceptional accomplishments in their fields.

Peter Abrams, Zoology
Alan Bewell, English

Killam Memorial Prize

Awarded by the Canada Council for the Arts, these prizes honour eminent Canadian scholars in engineering, health sciences and natural sciences.

Ian Hacking, Philosophy
Lap-Chee Tsui, Medical Genetics & Microbiology; Hospital for Sick Children

Killam Research Fellowship

Awarded by the Canada Council for the Arts, these fellowships recognize and support distinguished Canadian scholars, normally full professors at Canadian universities and research institutes, who have established outstanding reputations in their areas of research.

Edward Chamberlin, English
Victor Ivrii, Mathematics
Thomas Pangle, Political Science

McLaughlin Medal

This Royal Society of Canada award honours important research of sustained excellence in medical science.

Sergio Grinstein, Biochemistry; Hospital for Sick Children

NSERC Doctoral Prize

This prize, four of which are awarded annually, recognizes high quality research conducted by researchers completing their doctoral degrees in science and engineering at Canadian universities.

Aleksander Czekanski, Mechanical & Industrial Engineering

NSERC Synergy Award For Innovation

These awards are given annually to recognize outstanding, long-lasting university-industry research and development partnerships.

Mohini Sain of Forestry led a team of researchers from U of T, Université du Québec à Trois-Rivières, and Solutia Canada Inc. in developing a technology that boosts the lustre of paper while cutting down on chemical use in processing.

Premier's Platinum Medals

Established last year by the Ontario government, these annual $1 million prizes are awarded to two outstanding Ontario researchers in the middle stages of their careers.

Sajeev John, Physics
Tony Pawson, Medical Genetics & Microbiology; Samuel Lunenfeld Research Institute at Mount Sinai Hospital

Robert Boyle Medal

Given every two years by the Royal Society of Chemistry, this honour recognizes outstanding contributions to all aspects of analytical chemistry (including research, practice and teaching). The recipient must be a British analytical scientist residing outside the UK and part of the work cited must be done outside the UK.

Michael Thompson, Chemistry

Royal Society of Canada

The Society's "Fellows" are Canadian women and men selected by their peers for outstanding contributions to the arts and the sciences.

New Fellows 2002

Robert J. Birgeneau, Physics
Janice Boddy, Anthropology
David Cameron, Political Science
Mitchell Halperin, Medicine; St. Michael's Hospital
Sajeev John, Physics
Brian Merrilees, French (Victoria College)
Morris Moscovitch, Psychology
Heather Munroe-Blum, Vice-President – Research & International Relations
Kent Roach, Law
Ben-Zion Shek, French
Peter St. George-Hyslop, Centre for Neurodegenerative Diseases; University Health Network
Michael Tyers, Medical Genetics & Microbiology; Samuel Lunenfeld Research Institute at Mount Sinai Hospital
Cecil Yip, Medicine

Rutherford Memorial Medal in Physics

This Royal Society of Canada award celebrates outstanding research in any branch of physics.

Christopher Thompson, Canadian Institute for Theoretical Astrophysics

Steacie Memorial Fellowship

Awarded by the Natural Sciences & Engineering Research Council of Canada, this fellowship is given annually to university researchers who are capturing international attention for outstanding scientific or engineering achievement.

Jerry Mitrovica, Physics

Steacie Prize

Administered by the E.W.R. Steacie Memorial Fund, this prize is Canada's most prestigious research award for young scientists and engineers.

Jerry Mitrovica, Physics

Top 40 Under 40

This annual honour is bestowed by Report on Business *magazine upon 40 young Canadian innovators in a variety of fields in the private and public sectors. U of T recipients were:*

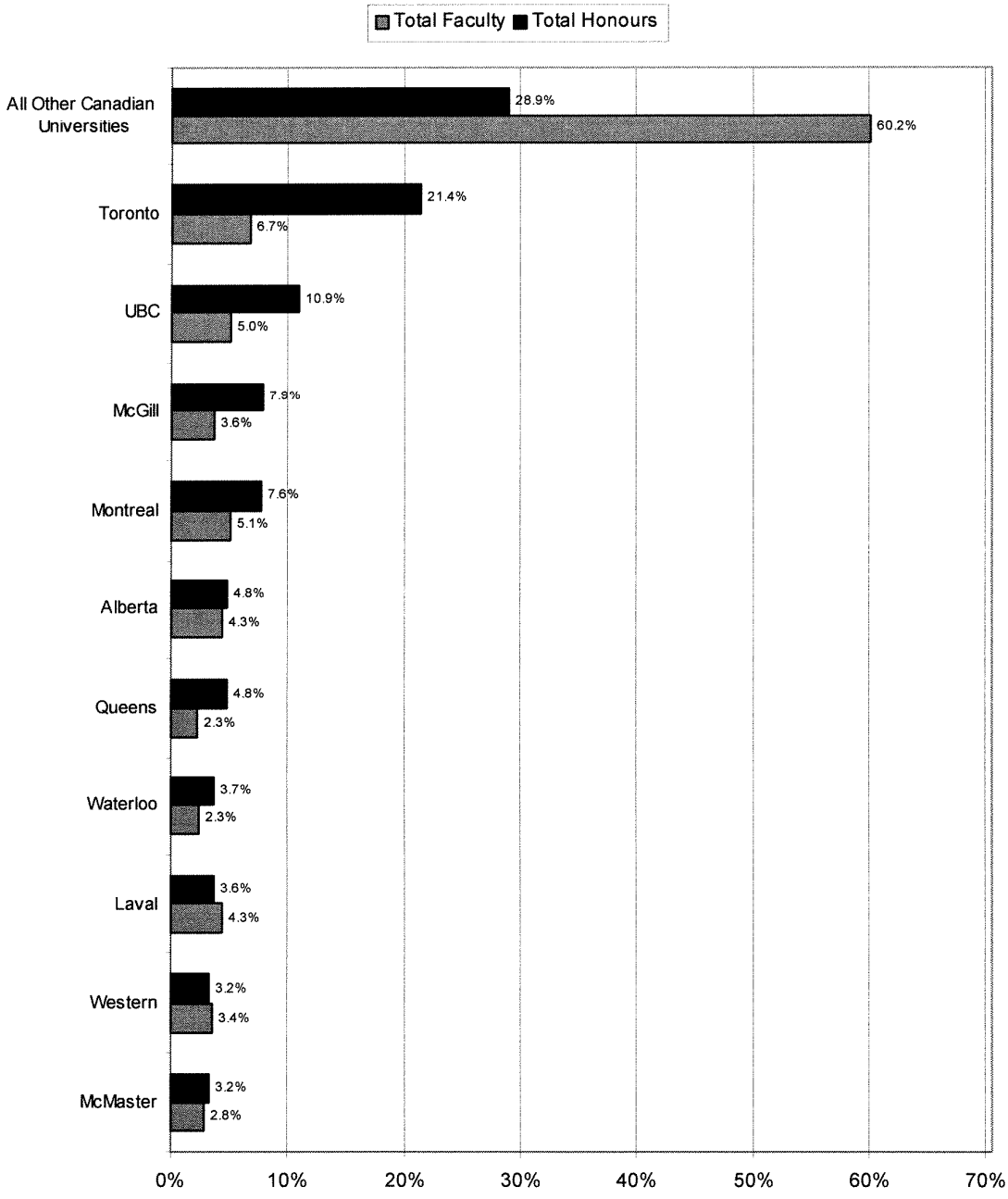
Aled Edwards, Banting & Best Department of Medical Research; Medical Biophysics; Ontario Cancer Institute at University Health Network

Christopher Hogue, Biochemistry; Samuel Lunenfeld Research Institute at Mount Sinai Hospital

Michael Sherar, Medical Biophysics; Radiation Oncology; Ontario Cancer Institute at University Health Network

Molly Shoichet, Chemistry; Chemical Engineering & Applied Chemistry; Institute of Biomaterials & Biomedical Engineering

Faculty Honours, 1980-2002
Institutional Share Compared to Faculty Size
G10 and All Other Canadian Universities



Sources: Total awards from award announcements from Steacie, Killam, Royal Society, Sloan, Gerhard Herzberg Canada Gold Medal, and Guggenheim, 1980 to 2002. Note that 2002 Steacie Prize and 2002 Gerhard Herzberg Canada Gold Medal were not yet announced at printing time.
Total faculty data from Statistics Canada, 2000-01. In cases where these were unavailable at printing time, 1999-00 data were used.
Honours to faculty appointed to affiliated/federated institutions were counted with each relevant university.

University of Toronto Technology Transfer

(All figures in $ millions)

Industrial Contracts & Grants (April '00 – March '01)*

Contracts	38.40
Grants	26.07
Total industrial research funding	**$64.47**

Government Funding Leveraged By Industrial Collaboration*†

Networks of Centres of Excellence (April '00 – March '01) *U of T participated in 17 of 18*	12.28
Ontario Centres of Excellence (April '00 – March '01) *U of T participated in 4 of 4*	8.40
NSERC ('01 – '02) *University/Industry programs* **	3.11
CIHR ('01 –'02) *University/Industry programs* **	2.83
ORDCF (April '00 – March '01)	25.18
Total government funding leveraged by industrial collaboration	**$51.80**

Commercialization

Licensing Revenue	1.89
Spin-Off Company Revenue (as of April 2001) †† *94 active spin-off companies and 4,264 employees were reported*	640.00
Cumulative Venture/Seed Capital Investment in U of T Research (January 1998 - August 2002)	44.10

*Includes affiliated teaching hospitals
**Excludes NCEs
† SSHRC: no funding in university/industry programs received by the University in 2001-2002
††Excludes affiliated teaching hospitals

SELECTED ACCOMPLISHMENTS

1. Advocacy

- Achieved first step in convincing federal government to fund full costs of university research through one-time indirect cost contribution and commitment to develop a permanent program
- Successfully supported renewal of Ontario Centres of Excellence
- Participated in successful advocacy for significant provincial re-investment in the Ontario Research and Development Challenge Fund and the Ontario Innovation Trust

2. Research Support and Investment

- Maintained first place standing in earning federal granting council awards for the eighth consecutive year
- Received the first two $1 million Premier's Platinum Medals for Research Excellence from the Province of Ontario
- Secured funding for a record number of new international projects totalling $6,041,056 in the fields of nutrition (Nigeria and Vietnam), employment policy (Paraguay), climate change (Cuba), education leadership (Estonia), global networks (Germany), and HIV/AIDS (Nigeria)
- Obtained $1.3 million renewal grant from the Tri-Council Intellectual Property Management program, the largest grant awarded
- Awarded one of the first $1 million Ontario Women's Health Council endowed chairs
- Secured 149 awards across the range of GRIP programs for an approximate value of $106.56 million, and maintained a first place position in all GRIP programs on a cumulative basis
- From the Connaught Fund, provided $4.24 million in support of 268 awards to U of T faculty and graduate students (91 graduate scholarships, 98 Automatic Start-up Grants, 55 New Staff Matching Grants, 8 Research Fellowships, 15 International Symposia Grants and The McLean Award), and held a special $1 million Connaught competition to seed emerging research clusters

3. Services to the University

- Moved from pilot to campus-wide implementation of *My Research Online,* which provides information for individual researchers such as status of grant applications and ethical protocols, terms and conditions, and financial reporting and history

- In collaboration with the Provost's Office and the Faculty Relocation Office, created and launched faculty recruitment brochure

- Began implementation of strategy to increase funding for the humanities and social sciences from U.S. foundations

- Held special workshops tailored to the needs of faculty and staff at OISE/UT to increase knowledge of and participation in GRIP programs, proposals to foundations and social sciences and humanities research funding programs

- Introduced a monthly newsletter to update the University community on changes to and opportunities in GRIP programs

- Created "GRIP Tips" for new program areas to provide detailed advice to faculty members on the development of competitive proposals

- In consultation with the Provost's Office, created a master record to track the details of the University's Canada Research Chair allocations, and developed an improved process for divisions to obtain approval to proceed with CRC nominations

- Under the leadership of the GRIP Executive, mounted a competition to assign the University's remaining unallocated CRC to seed the development of revolutionary research areas

- Revised the Connaught Graduate Scholarship program to better integrate this scholarship with the guaranteed funding packages now in place for PhD-stream students

4. Academic Health Science Centre

- Assisted in the advancement of the MARS Discovery District, including contribution of $5 million from the University and $20 million from the Province of Ontario

5. Intellectual Property Management and Technology Transfer

- Through the Task Force on Intellectual Property Relating to Instructional Media, developed and obtained approval for a new Copyright Policy
- Secured protection for research data and research tools under the Inventions Policy
- Assisted the Innovations Foundation in developing its new strategic plan and obtaining an additional $8.5 million line of credit
- Opened the Exceler@tor, an incubator for spin-off companies focussed on the information technology sector

6. Internationalization of the University

- Provided leadership, direction and support to the Task Force on Internationalization and Strategic International Partnerships in order to create recommendations and strategy for the next phase of the University's internationalization process
- Co-hosted a workshop with the Office of Student Affairs and the International Student Exchange Office on safety and risk in study and research abroad, resulting in the creation of a safety abroad project officer position for the University

7. Research and International Profile

- In partnership with the Canada Foundation for Innovation, hosted a celebratory banquet for CFI Board members, provincial and federal government representatives, industry partners and selected U of T researchers and administrators
- Supported and co-hosted Congress of the Social Sciences and Humanities, which brought over 7,000 scholars to U of T
- Earned second Gold Award for *Edge* Magazine from the Canadian Council for the Advancement of Education (CCAE)
- Completed *Realizing Results*, a report for CIDA on five selected projects to showcase the University of Toronto's ability to deliver CIDA results-based objectives
- Prepared a report on *Research and Scholarship in Mexico and Central America* for the Donner Canadian Foundation showcasing the University of Toronto's work in Latin America

- Created and produced three issues of the new International Programs Development newsletter (including on-line version on RIR Web site) profiling ongoing and new international projects at the University

- Produced U of T's first major technology transfer brochure – *Creating Knowledge, Delivering Results*

- In collaboration with UTech Services and the Innovations Foundation, created and launched *The Better Mousetrap*, U of T's first newsletter for faculty about technology transfer issues

- Through sponsorship of BIO 2002 and the annual meeting of the National Business Incubators Association, increased research and technology transfer profile of the University in North America

PRIORITY PLANS

1. Advocacy

- Work with the President to ensure that recovery of indirect costs of research from the federal government is made permanent and increased from 20% to 40%

- Continue to showcase the benefits of full research cost recovery to both external audiences and the University community

- Continue to advocate for increased funding to the federal granting councils

- Further strengthen relations with the federal and provincial governments in support of research investment and effective public policies to enhance research, graduate student support and internationalization, in particular:

  - Creation of an Ontario Health Research Council
  - Establish strong working relationships with the new Ministry of Enterprise, Opportunity and Innovation
  - Preservation and enhancement of the Research Performance Fund and the Research Overhead Infrastructure Envelope
  - Support for technology transfer and commercialization
  - Growth of the PREA programs
  - Increased support for international student mobility programs
  - Increased support for the participation of Canadian researchers in international research networks
  - Support for attracting top foreign students

- Work with the Provost and the Vice-Provost, Students to advocate for increased support from both federal and provincial levels of government for graduate student research training, concentrated in research-intensive universities

- Work with the Provost and the Vice-President, Government Relations to ensure that provincial privacy legislation is drafted and implemented in such a way that it is compatible with the University's processes, including assessments of students and faculty and the ethical conduct of research involving human subjects

2. Research Support and Investment

- Through continued support and service to faculty, seek to increase the University of Toronto's level of funding from the granting councils on a per capita as well as an absolute basis

- Building on successes to date, work with the federal and provincial governments to further enhance the maturation, effectiveness and stability of planning and administration of the CFI, Genome Canada, CRC, ORDCF, OIT, PREA and OCE competitions and awards

- In the CFI Innovation Fund competition, renew our previous level of success through an increased number of proposals, with special emphasis on new research areas, such as: Nanophotonics, Neurosciences, Bioinformatics, Environment, and Complex Systems, and novel applications in the Humanities and Social Sciences that require advanced Information Technology infrastructure

- Work to achieve even higher levels of U of T success in the ORDCF, OIT and PREA programs

- Work to enhance research funding for faculty in the social sciences and humanities, specifically by:

  - Encouraging successful participation in the federal and provincial research infrastructure funding programs through specialized advocacy on behalf of and service delivery to this constituency (e.g., special "GRIP Tips", identification and elimination/mediation of particular barriers to participation, consultation/ negotiation with GRIP and other research sponsors and agencies)
  - Increasing awareness of the funding opportunities available through the various foundations

- Develop a strategy to optimize interdivisional collaborations within the University

3. Services to the University

- Re-design grants administration processes and information systems tools to better integrate with sponsoring agency e-business initiatives

- Develop grants workshops that introduce faculty members to the range of funding opportunities beyond the federal granting council operating grants

- Launch Foundation Strategy Web site to better inform research faculty about funding programs and opportunities

- Introduce guide for graduate student research funding on the RIR Web site for the fall 2002 semester

- Introduce guide for graduate students on the use of human subjects in research for fall 2002 semester

- Introduce *Guide to International Development Grants* to faculty members
- Build additional services to be included in *My Research Online* and promote it as a portal for one-stop shopping for information and services
- Complete renewal of Human Subjects Review Committee
- Streamline ethics review procedures and implement information systems to support efficient and effective administrative processes
- Implement web-based courses on the use of human subjects
- Advance benchmarking of U of T research and internationalization performance against that of top U.S. and other international public research-intensive universities
- Between IPD, UTRS and DUA, strengthen approach to the Foundation Strategy with a particular focus on increasing the number and quality of proposals submitted to foundations
- Complete in-depth analysis of all GRIP programs and procedures in order to enhance service delivery to the U of T research community
- Review the relationship between the GRIP office and other areas of the portfolio to ensure that the resources are in place to provide effective and timely service
- Improve U of T/GRIP performance analysis and benchmarking by updating the database of GRIP awards and awardees, strengthening capacity for timely compilation and analysis of accurate data
- Continue to re-design and expand U of T community Web site to provide one-stop shopping for information tools and web services for academic administrators, researchers, staff and students

4. Academic Health Science Centre

- Work with the President and with the Vice-Provost, Relations with Health Care Institutions, to continue to strengthen and improve university-hospital relations in research and research-related successes and to harmonize planning activities between the University and the affiliated teaching hospitals to achieve maximum national and international research success and impact

- Support the effective implementation of the MARS Discovery District, consistent with the best interests of the University

- Working with the Centre for Addiction and Mental Health, pilot a web-based ethics course on the use of human subjects

5. Intellectual Property Management and Technology Transfer

- Work with the Innovations Foundation, MARS and the biotechnology incubator to coordinate and expand technology transfer activities at the hospitals

- Obtain renewal of Bell University Labs agreement

- Advance proposal for a joint U of T-NRC project in Toronto

- Assist in the establishment of a small business incubator near UTM

6. Internationalization of the University

- Play a leadership role in effectively responding to the recommendations arising out of the Task Force on Internationalization and Strategic International Partnerships

- Increase levels of funding support for new international projects from both traditional and non-traditional sources

- Continue to work collaboratively with the International Student Exchange Office, the International Student Recruitment Office and the Alumni Affairs Office (International) in order to advance the University's internationalization goals

7. Research and International Profile

- Raise University profile through the international symposium, *Creating Knowledge, Strengthening Nations: The Changing Role of Higher Education*, and through the Canada-Japan Vice-President's Roundtable for research-intensive universities

- Create additional communication vehicles (brochure and Web site based) to increase the visibility and awareness of the University internationally

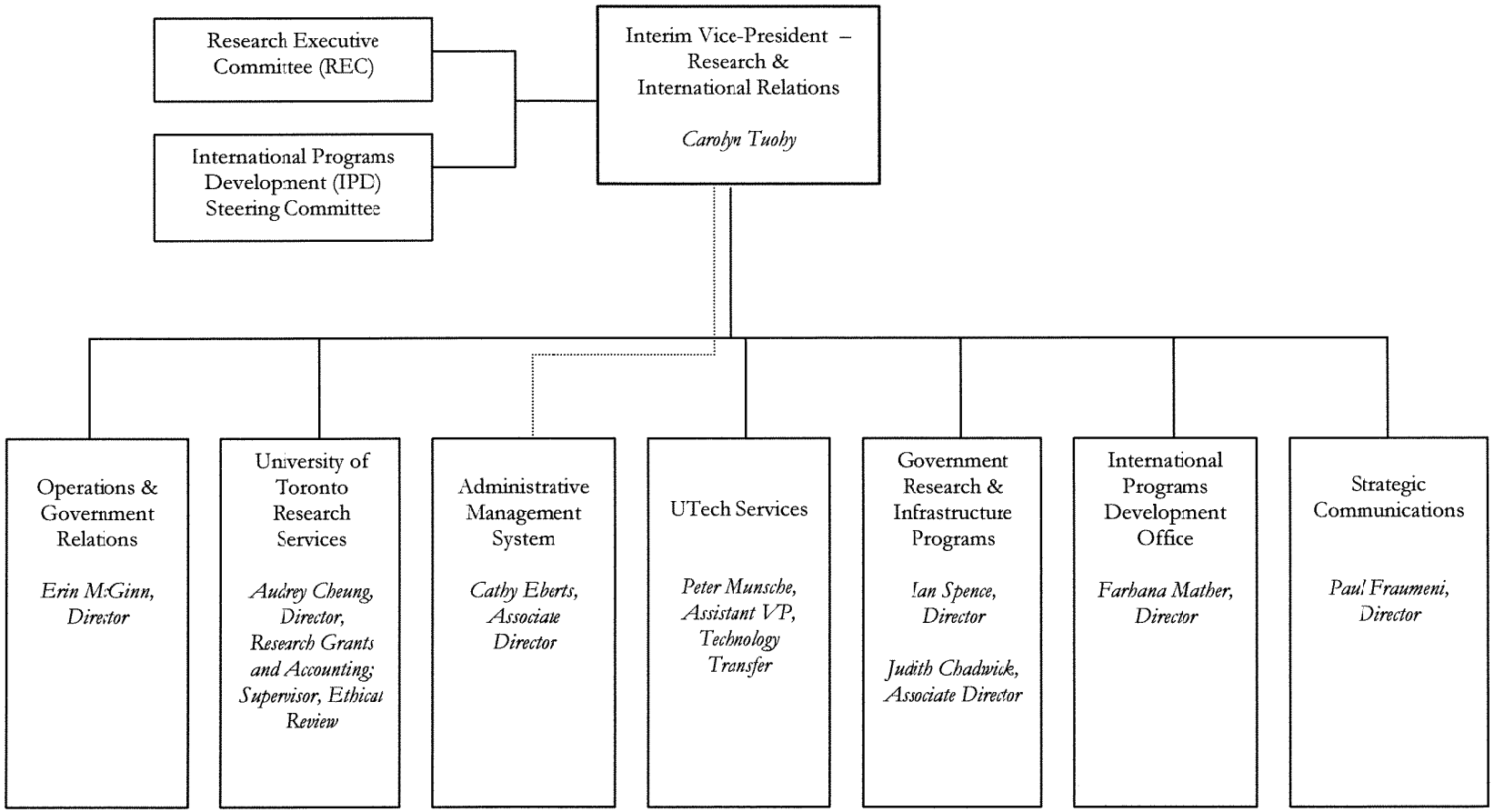
- With key divisions, pursue initiatives and opportunities identified through participation in the Team Canada trade mission to India

- Develop brochure and Web site on U of T intellectual property policies
- Strengthen prize monitoring system, with special emphasis on international prizes
- Host at least one special event at each of the federal and provincial levels to celebrate research support and reinforce the need for continued investment
- Increase awareness of U of T research to European partner universities, with a view to creating opportunities for U of T researchers to collaborate with European Union Sixth Framework research networks

8. Academic Planning

- Work with the Provost to support the academic planning process and to ensure that RIR perspectives and activities are fully integrated with and informed by the academic planning process
- Work with the Planning Office to develop international benchmarks for research performance

APPENDIX A
Office of the Vice-President – Research & International Relations
September 2002



APPENDIX B
RIR Service Units

RESEARCH SERVICES & RESEARCH ACCOUNTING

University of Toronto Research Services (UTRS) provides faculty members with information about funding sources; processes applications for support; assists in the negotiation of research and intellectual property agreements; establishes successful awards on Administrative Management Systems (AMS); administers the review and approval of research involving human and animal subjects; supports high standards of ethical conduct and financial accountability in research; and provides financial reports to sponsors. UTRS also administers a number of internal sources of support, notably the Connaught Fund.

UTECH SERVICES

UTech Services provides faculty with an integrated storefront of services relating to research partnerships with companies, technology transfer and commercialization. The office includes specialists in contracts, agreements and negotiation, a team of Business Development Officers, and the staff of the Innovations Foundation, which specializes in licensing technology and fostering new spin-off companies. This office also supports the University in nominating faculty for major scholarly prizes.

INTERNATIONAL PROGRAMS DEVELOPMENT OFFICE (IPD)

The IPD Office seeks to develop a broader international presence and profile for the University. This is achieved through promoting and supporting international program and project development; enhancing strategic international relations and agreements in support of divisional goals; and combining practical project activities with active identification of research and other academic resource opportunities.

GOVERNMENT RESEARCH AND INFRASTRUCTURE PROGRAMS (GRIP)

The GRIP office promotes, coordinates and facilitates all University of Toronto proposals directed towards the Canada Foundation for Innovation (CFI), the Canada Research Chairs (CRC), the Ontario Research & Development Challenge Fund (ORDCF), the Ontario Innovation Trust (OIT), the Premier's Research Excellence Awards (PREA), and the Premier's Platinum Award.

STRATEGIC COMMUNICATIONS

RIR's Strategic Communications team promotes the University's research and international talent, strengths, and opportunities. The team works closely with all RIR service units to develop and implement communications and marketing strategies, and works closely with various offices throughout the University, including U of T's central Public Affairs office. Ongoing priority projects include support to GRIP applications, editorial management of *Edge* magazine and the RIR Web site.

RESEARCH INFORMATION SYSTEM (RIS)

RIS automates all major business functions associated with processing research grants and contracts, and integrates research application information with award information located within U of T's financial system (FIS). Through this system, the University can efficiently monitor and report this information and identify performance indicators.

APPENDIX C
Glossary of Abbreviations

CCAE	Canadian Council for the Advancement of Education
CIDA	Canadian International Development Agency
CIHR	Canadian Institutes for Health Research
CFI	Canada Foundation for Innovation
CRC	Canada Research Chairs
DUA	Division of University Advancement
GRIP	Government Research Infrastructure Programs
IPD	International Programs Development Office
MARS	Medical and Related Science Discovery District
NCE	Networks of Centres of Excellence
NRC	National Research Council
NSERC	Natural Sciences Research Council of Canada
OGI	Ontario Genomics Institute
OCE	Ontario Centres of Excellence
OISE/UT	Ontario Institute for Studies in Education at the University of Toronto
OIT	Ontario Innovation Trust
ORDCF	Ontario Research & Development Challenge Fund
PREA	Premier's Research Excellence Awards
RIR	Research & International Relations
SSHRC	Social Sciences & Humanities Research Council of Canada
UTM	University of Toronto at Mississauga
UTRS	University of Toronto Research Services