Office of the Vice-President, Research & Associate Provost

2002-2003 Report
2003-2004 Plans

University of Toronto

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The mandate of Office of the Vice-President, Research and Associate Provost is to create a research environment that is supportive of the highest quality research stature by maximizing opportunities for funding, recruiting the highest calibre faculty and trainees, and providing an infrastructure and environment conducive to outstanding individual and interdisciplinary investigation and to opportunities for broad application.

Dear Colleagues and Friends,

My predecessor, Heather Munroe-Blum, told me that the role of Vice-President, Research was one of the most exciting positions at the University of Toronto. Her words could not have been more true. I have been amazed at the investigative talent throughout the university. I am committed to developing mechanisms that will help colleagues reach new boundaries and frontiers.

Our research success is attributable to our investigators and their trainees. I must also acknowledge the efforts of Professor Munroe-Blum and interim Vice-President Carolyn Tuohy. Through their contributions, the university is well-positioned to maximize opportunities arising from a richness of government programs and private sector partnerships.

The name of the portfolio has changed from Vice-President, Research and International Relations to Vice-President Research and Associate Provost. The new title does not diminish the importance we place on international collaborations and partnerships. In fact, the name change is derived from the fact that international linkages permeate *all* the Vice-Presidential portfolios and the full range of our scholarship. The title of Associate Provost emphasizes the importance of linking teaching more closely with research. I will be ecstatic if we can offer research experiences for 15 per cent of our first-year students. We will explore ways of achieving this objective.

While the university leads the country in share of funding from the three federal research councils, we must increase that share. Our allocation of Canada Research Chairs and the indirect costs we receive from the federal government are proportional to the monies awarded by the federal councils. Maintaining this funding will be challenging, as senior faculty, some with large research grants, retire. We have, however, been able to recruit extraordinary new scholars to the university. Our office will work with them to help realize their research goals.

We are developing a new Strategic Plan for Research that will follow three themes: differentiation, facilitation and leadership. Our total research funding for 2001-2002 is about $500 million. More than half of those monies are raised by associated institutions, particularly our affiliated hospitals. This level of activity emphasizes our position as Canada's leading research intensive university. Our office will facilitate partnerships between investigators through new interdisciplinary programs. There are great opportunities for advancing the overall research agenda by creating multitalented research teams to address common problems.

The university will provide leadership by working with other institutions to advise government on appropriate and desirable ways of funding research. An essential aspect of this is communications. While promoting our successes, we must also explain the challenges that face the research enterprise – and the opportunities for Canada that can be realized by meeting these challenges.

I am honoured to be the University of Toronto's Vice-President, Research and Associate Provost. I look forward to working with colleagues and stakeholders to strengthen even further our research and scholarship.

With best wishes,

John R. G. Challis, DSc, FRSC

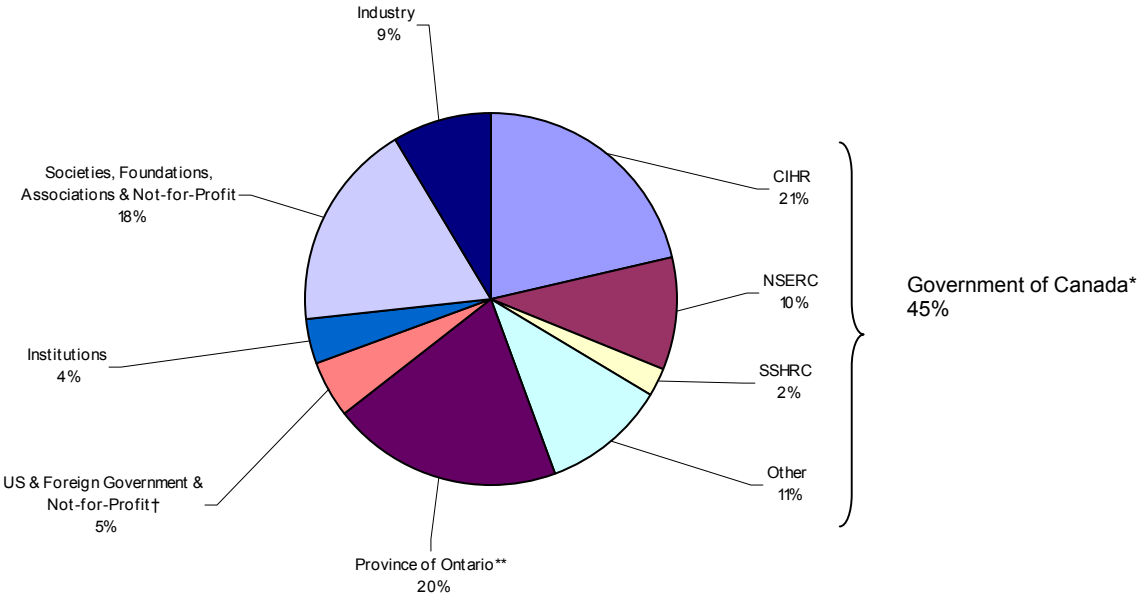
RESEARCH PERFORMANCE AT THE UNIVERSITY OF TORONTO

Overall Performance

Research funds awarded to the University of Toronto and affiliated hospitals for use in 2001-02 totalled $517 million, of which $269.6 million was awarded to the affiliated hospitals and $247.7 million was awarded to U of T. This represents a $39 million increase over 2000-01.

Funding from the government research programs – the Canada Foundation for Innovation, the Canada Research Chairs, the Ontario Research and Development Challenge Fund, the Ontario Innovation Trust, and the Premier's Research Excellence Awards – for use in 2001-02 totalled $97 million.

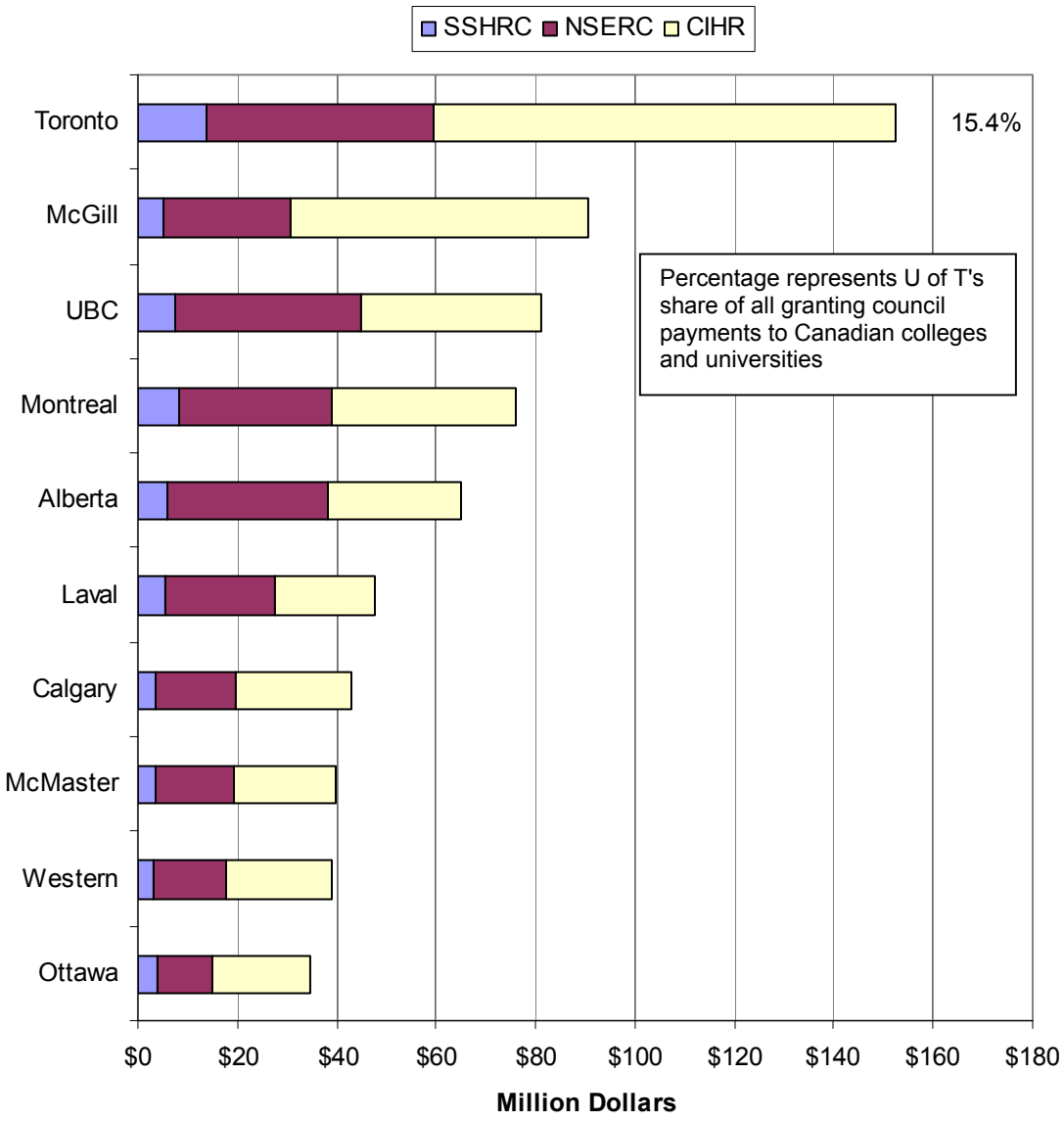
Research Funding by Source
U of T and Affiliated Hospitals
April 2001 to March 2002



*Canada Research Chairs are represented in the CIHR, SSHRC and NSERC percentages; "Other" 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 ninth consecutive year.

Federal Research Council Payments
Top Ten Canadian Universities, 2001-2002



University of Toronto's share of council payments to Canadian universities and colleges by council: SSHRC **12.9%**; NSERC **10.1%**; CIHR **21.7%**

Top ten universities determined by total funding from the three councils in 2001-2002 (NSERC: Natural Sciences and Engineering Research Council; CIHR: Canadian Institutes of Health Research; SSHRC: Social Sciences and Humanities Research Council of Canada). Figures include funding for affiliated and federated institutions. Figures exclude funding for the federal Networks of Centres of Excellence, the Canada Research Chairs program, and the federal indirect costs program.
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), Genome Canada/Ontario Genomics Institute (GC/OGI), Ontario Innovation Trust (OIT), Ontario Research and Development Challenge Fund (ORDCF) and Premier's Research Excellence Awards (PREA) programs. These programs provide research funding for both established and newer faculty and their graduate students.

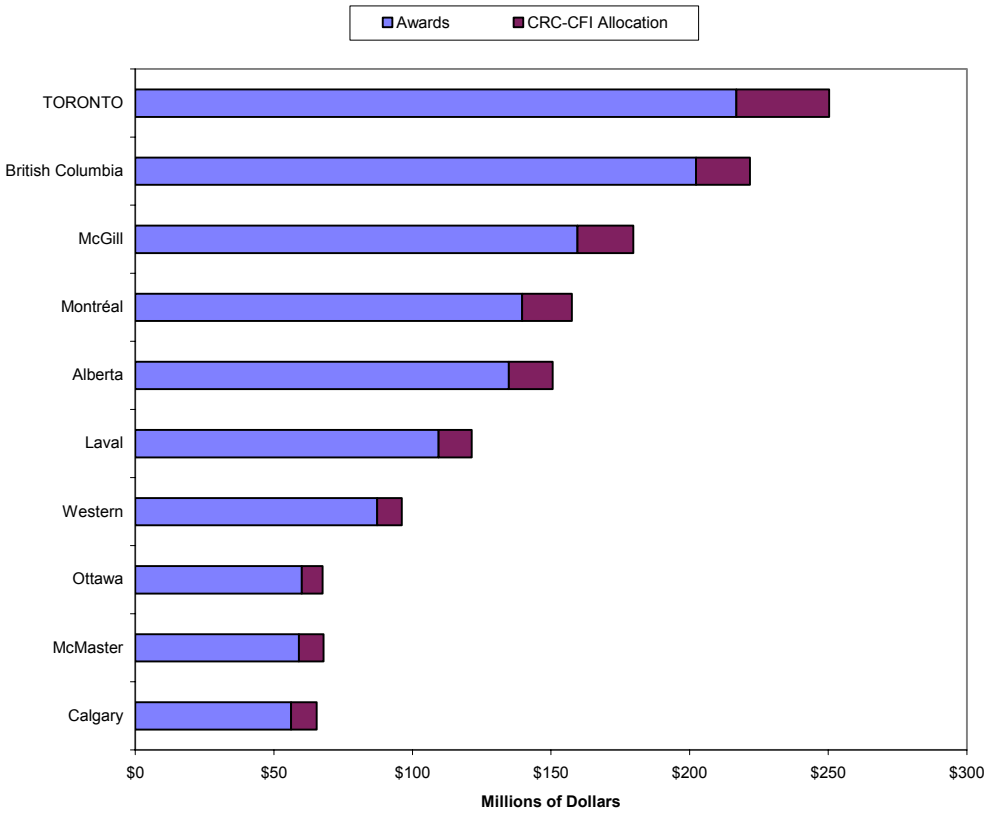
CFI, CRC, GC/OGI, OIT and PREA awards
May 1, 2002 – April 30, 2003
in millions

CRC	$	36.40	M[1]
CFI	$	11.96	M[2]
GC/OGI	$	15.00	M[3]
ORDCF	$	15.00	M[3]
OIT	$	16.83	M[3,4]
PREA	$	3.80	M[5]
TOTAL Funding	**$**	**98.99**	M

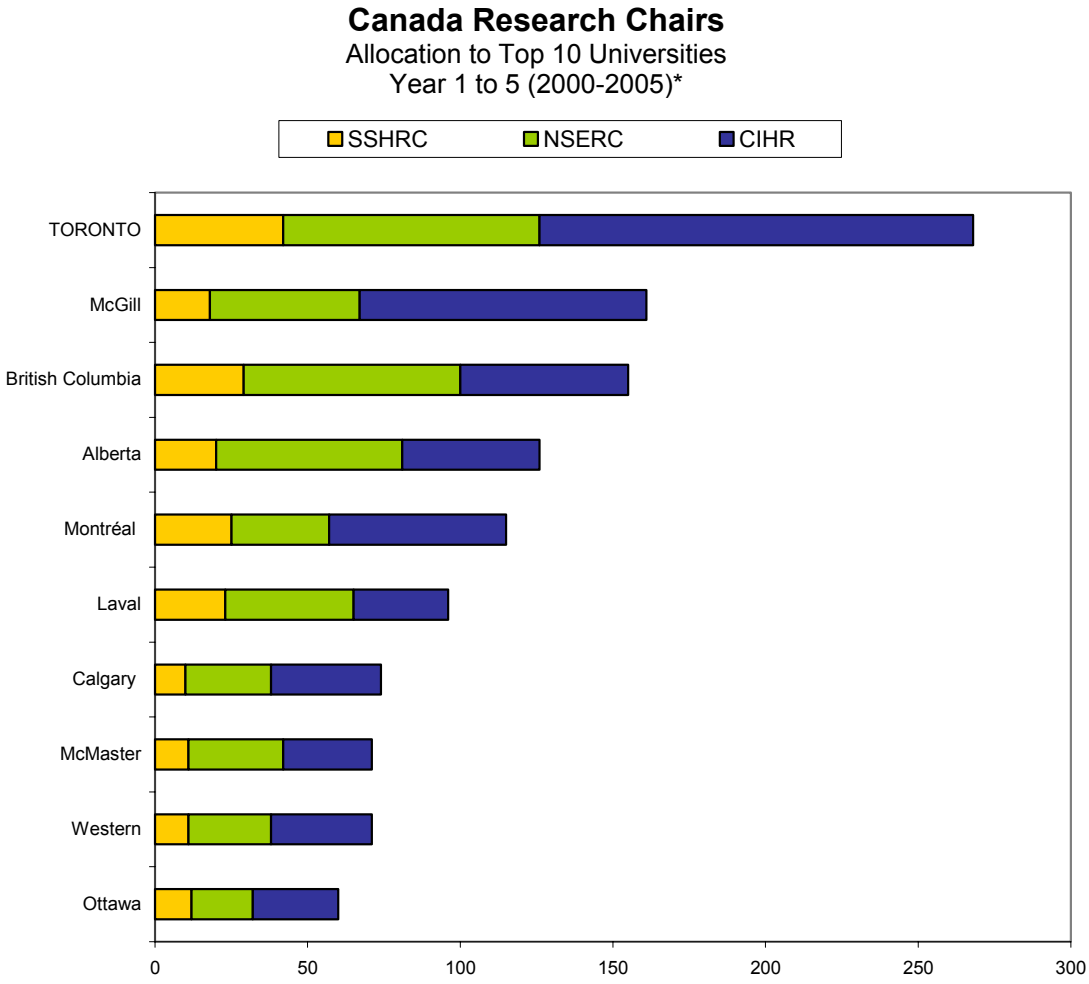
1 Awards from April, September, December 2002 submission dates. Assumes $200K/year for seven years for Tier 1 and $100K/year for five years for Tier II awards. Does not include expected renewals of these awards. To date 130 awards have been granted out of the allocation of approximately 268, based on University of Toronto granting council performance.
2 Includes New Opportunities awards ($6.73M) from June, September, December 2002, Februrary 2003 submission dates and infrastructure awards to CRC holders ($5.22M) from April, September and December 2002 submission dates.
3 Funding listed above includes awards for the newly established Structural Genomics Consortium as follows: GC/OGI $15M, ORDCF $15M, OIT $7.2M
4 Includes CFI matching awards for New Opportunities ($5.11M) from June, September & December 2002, and Ontario Distinguished Researcher Awards from April & September 2002 competitions ($4.51M).
5 Includes awards from Round 8 (Oct 2002) and Round 9 (May 2003).

Canada Foundation for Innovation

Awards from Inception (1998) to March 2003
Top 10 Institutions



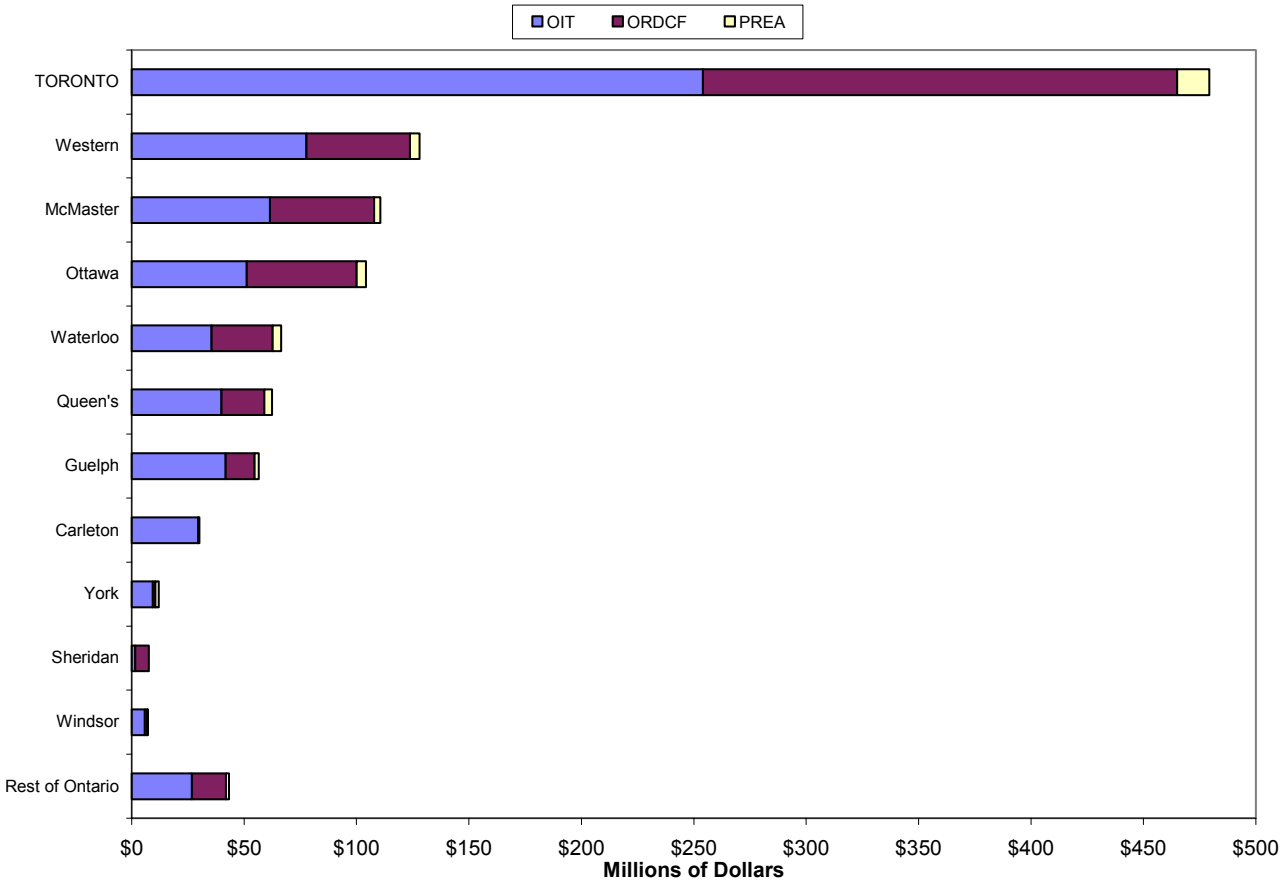
Source: CFI web site (awards to March 17, 2003) and CRC web site
Affiliates counted with parent institutions



*The Chair allocations indicated in this table are firm for Years 1-4 and projected for Year 5. Actual allocations for Year 5 depend on the granting agency awards received by the institution in the three previous years.

Ontario Government Programs

Awards to Date*



*Source: OIT and PREA web sites, ORDCF Annual Reports 1998, 1999, 2000, 2001
PREA Rounds 1-6, estimated awards of $100,000 each
ORDCF awards from inception to December 31, 2001
OIT awards from inception to April 2003

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 important world-class scientific research and technology development. Established by the federal government in 1997, CFI has a current budget of $3.15B to fund research infrastructure projects that meet key research needs through a competitive process.

New Opportunities – June 2002 Competition

Transcriptional Regulation of Angiogenesis and Vascular Remodeling in the Hypoxic Retina
Shelley Boyd – Ophthalmology and Vision Sciences; St. Michael's Hospital

Establishment of a cellular microbiology laboratory for research into host-pathogen interactions
John Brumell – Medical Genetics and Microbiology; The Hospital for Sick Children

New Facilities for Structural and Functional Proteomics Studies of Arabidopsis thaliana
Dinesh Christendat – Botany

Rehabilitation Engineering Laboratory
Milos Popovic – Institute of Biomaterials & Biomedical Engineering

Intra-islet Hormonal Regulation and Islet Hormone Secretion
Qinghua Wang – Physiology; St. Michael's Hospital

New Opportunities – September 2002 Competition

Facility for the Design and Development of Novel Polymer Materials and technologies for the delivery of anti-cancer agents
Christine Allen – Pharmacy

Laboratory for Human-Computer Interaction and Computer Graphics
Ravin Balakrishnan – Computer Science

Centre for Advanced Construction and Infrastructure Information Systems
Tamer El-Diraby – Civil Engineering

Cognitive Neuroscience of Attention and Memory
Suzanne Ferber – Psychology

Mechanistic Studies of Living-radical Polymerizations
Michael Georges – Chemistry (University of Toronto at Mississauga)

Facility for Imaging and Functional Analysis of Murine Models of Human Motor Neuropathy
Jeff Henderson – Pharmacy

Stratospheric Telescope Integration Facility
Marten van Kerkwijk – Astronomy & Astrophysics

Understanding Molecular Mechanisms
Morris Manolson – Dentistry

Nuclear Magnetic Resonance Spectrometer
Myrna Simpson – Environmental Science (University of Toronto at Scarborough)

Molecular Genetic Studies of Autism
John Vincent – Psychiatry; Centre for Addiction and Mental Health

New Opportunities – December 2002 Competition

Non-linear Laser-scanning Microscope for Dynamic Functional Imaging of Biological Specimens
Virginijus Barzda – Physics (University of Toronto at Mississauga)

Forest Canopy Dynamics: Infrastructure for Experimental Studies and Simulation
John Casperson – Forestry

Integrative Nanotechnology/Biomedical Sciences Laboratory (INBS)
Warren Chan – Institute of Biomaterials and Biomedical Engineering

Arrhythmia Vulnerability in Humans
Vijay Chauhan – Medicine; Mount Sinai Hospital

Cellular and Molecular Mechanisms Underlying Presynaptic Specialization During Synaps Formation
Zhong-Ping Feng – Physiology

Facility for Thin Film Amorphous and Nanaocrystalline Silicon and Carbon
Nazir Kerhani – The Edward S. Rogers Sr. Department of Electrical and Computer Engineering

High Performance Parallel Computing Infrastructure for Robust and Real-time Optimization
Roy Kwon – Mechanical and Industrial Engineering

DNA Sequencing Facility for the Genomic Exploration of Fungal Diversity
Jean-Marc Moncalvo – Botany

Novel Mechanisms of Platelet Aggregation Independent of von Willebrand Factor and Fibrinogen, and Their Effect on Thromobosis and Homeostasis
Heyu Ni – Laboratory Medicine and Pathobiology; St. Michael's Hospital

Infrastructure for Adaptive Optical Link
Lacra Pavel – The Edward S. Rogers Sr. Department of Electrical and Computer Engineering

Central Control of Breathing in Vertebrates: Episodic Breathing and Ventilatory Acclimatization to Chronic Hypoxia
Stephen Reid – Life Sciences (University of Toronto at Scarborough)

Deep Submicron Si CMOS and SiGe BiCMOS Device and Circuit Modelling and Characterization
Sorin Voinigescu – The Edward S. Rogers Sr. Department of Electrical and Computer Engineering

Infrastructure for Compiler-supported Software Optimization Research
Michael Voss – The Edward S. Rogers Sr. Department of Electrical and Computer Engineering

Elucidating Mechanisims of Islet Apoptosis
Minna Woo – Medicine; St. Michael's Hospital

New Opportunities – February 2003 Competition

Hybrid Design and Research Facility for Extreme Urban Environments
Pierre Bélanger – Architecture, Landscape and Design

Comparative Cognitive Neuroscience of Memory
Eve DeRosa – Psychology

Understanding the Molecular Mechanisms Involved in Neutrophil Function and the Development of Novel Clinical Assays to Improve Monitoring and Management of Patients with Neutrophil Related Disorders
Michael Glogauer – Dentistry

Process Control Simulator for the Development and Evaluation of Advanced Operations Applications
Greg Jamieson – Mechanical and Industrial Engineering

Molecular Anthropology Laboratory for Human Evolutionary Studies
Esteban Parra – Anthropology (University of Toronto at Mississauga)

Minimalist Proteins: Possible Gene Regulation by Drugs
Jumi Shin – Chemistry (University of Toronto at Mississauga)

Laboratory for Wireless and Internet Working Research
Shahrokh Valaee – The Edward S. Rogers Sr. Department of Electrical and Computer Engineering

A Stable Isotope Mass Specrophotometer Facility for Geobiology Research
Ulrich Wortmann – Geology

Canada Research Chairs/CFI - April 2002 Competition

Integrated Systems Laboratory Supporting Mixed-Signal Design and Test for Communication Applications
Anthony Chan-Carusone – The Edward S. Rogers Sr. Department of Electrical and Computer Engineering

Chemical Modulation of Activity and Expression of ABC Transporters to Treat Human Diseases
David Clarke – Medicine

Creation of a Stem Cell Biology Laboratory
John Dick – Medical Genetics and Microbiology; University Health Network

The Neuroscience-Cancer Research Program at the Hospital for Sick Children
David Kaplan – Medical Genetics and Microbiology; The Hospital for Sick Children

Centre for the Study of Global Governance and Comparative Educational Change
Karen Mundy – Ontario Institute for Studies in Education

Equipment for SNP Detection and Recording/Imaging Facility at the Samuel Lunenfeld Research Institute
John Roder – Immunology; Mount Sinai Hospital

Comparative Pain Genomics Laboratory
Ze'ev Seltzer – Dentistry

Integrated Laboratory for Molecular, Genetic and Physiological Studies of Synaptic Transmission in Drosophila
Bryan Stewart – Zoology (University of Toronto at Scarborough)

Determinants of Cellular Lfe Span
Homayoun Vaziri – Medical Biophysics; University Health Network

The Other Canadians Database: Culture Re-making the Nation
Rinaldo Walcott – Ontario Institute for Studies in Education at U of T

Canada Research Chairs/CFI - September 2002 Competition

Comparative Population Genomics Methodologies for Understanding Mechanism of Genome Evolution and the Functional Significance of Genome Variation
Peter Andolfatto – Zoology

Reconstruction of Ancestral Visual Pigments: Bioinformatics and Protein Expression
Belinda Chang – Zoology

Program in Nutrigenomics
Ahmed El-Sohemy – Nutritional Sciences

Statistical Methodology Laboratory for Healthcare Evaluation and Improvement
Wen-Yi Wendy Lou – Public Health Sciences

Parallel Computing Facility for High-Fidelity Multidisciplinary Optimization
Joaquim Martins – Institute for Aerospace Studies

Characterization of the Mechanisms of Anthrax Toxin Action
Jeremy Mogridge – Laboratory Medicine and Pathobiology

Infrastructure for C. Elegans Neurobiology and Functional Genomics
Peter Roy – Medical Genetics and Microbiology

Mesoscopic Ensembles of Neutral, Degenerative Fermi and Bose Gases
Joseph Thywissen – Mathematics

A Molecular Cell Biology Laboratory to Investigate the Mechanism of Insulin Secretion in Normal and Diabetic Pancreatic Beta-Cells
Allen Volchuk – Biochemistry; University Health Network

Broadband Communications Laboratory
Wei Yu – The Edward S. Rogers Sr. Department of Electrical and Computer Engineering

Genome Canada/Ontario Genomics Institute (GC/OGI)
Genome Canada is dedicated to developing and implementing a national strategy in genomics and proteomics research for the benefit of all Canadians. It has established five Genome Centres across the country, including the Ontario Genomics Institute. Together with its five Genome Centres and their partners, Genome Canada invests and manages large-scale research projects in key areas such as agriculture, environment, fisheries, forestry, health and new technology development.

GC/OGI has provided an award in the amount of $15M to the newly established Structural Genomics Consortium. Professor Aled Edwards of the Banting and Best Department of Medical Research in the Faculty of Medicine is the Project Leader.

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. OIT provides matching funding for successful submissions to CFI as well as awards independent of CFI applications. OIT's current budget is $1.05 billion.

All of the above CFI awards were made possible, in part, by the matching funding provided through OIT in the amount of $9.63M. In addition, OIT has provided an award of $7.2M to Professor Aled Edwards for the Structural Genomics Consortium initiative.

Ontario Research & Development Challenge Fund (ORDCF)
ORDCF is designed to promote research excellence in the province by increasing the R&D capacity of Ontario universities and other research institutions through private and public sector partnerships. The ORDCF is supported by four provincial ministries (Enterprise, Opportunity and Innovation; Training, Colleges and Universities; Finance; and Agriculture and Food). Decisions are pending on eight University of Toronto submissions in the March 2003 competition.

ORDCF has provided an award of $15M to Professor Aled Edwards for the Structural Genomics Consortium initiative.

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 $85M. Research institutions and the private sector are expected to match this contribution by providing an additional $42.5M, for a total of $127.5M.

October 2002 Competition (Round #8)

Developmental Signaling Pathways in Musculoskeletal Neoplasia
Benjamin Alman – Surgery; The Hospital for Sick Children

User Interfaces for Volumetric Displays
Ravin Balakrishnan – Computer Science

Dissecting the Transcriptional Basis of Congenital Heart Defects
Benoit Bruneau – Medical Genetics and Microbiology; The Hospital for Sick Children

Structure and Neurotoxicity of Amyloid-Beta in Alzheimer's Disease
Avijit Chakrabartty – Medical Biophysics; University Health Network

In Search of Genetic Risk Factors for Behavioral Disorders Such as Depression and Schizophrenia
Sabine Cordes – Medical Genetics and Microbiology; Mount Sinai Hospital

Hormones and Neurogenesis
Liisa Galea – Psychology (University of Toronto at Mississauga)

Therapeutic Immunosuppression: Lessons from a Bacterial Pathogen
Scott Gray-Owen – Medical Genetics and Microbiology

Molecular Regulation of Vascular Smooth Muscle Cell Proliferation
Mansoor Husain – Medicine; University Health Network

Mulit-Modality Contrast Agents for Image Guided Radiation Therapy
David Jaffray – Radiation Oncology; University Health Network

The Role of Cortactin in Cell Migration and Tumor Invasiveness
Andras Kapus – Surgery; University Health Network

Theory and Applications of Three-Dimensional Photography
Kyros Kutulakos – Computer Science

Probing the Universe
C. Barth Netterfield – Physics

Genetic Studies of Type 1 Diabetes in Newfoundland
Andrew Paterson – Public Health Sciences; The Hospital for Sick Children

Research in Physics Beyond the Standard Model
Erich Poppitz – Physics

Membrane Protein Topology, Protein Interactions, Drug Screening and Protein Folding – Paramagnetic Probing by Oxygen for the Proteomics Era
Scott Prosser – Chemistry (University of Toronto at Mississauga)

Building the Kidney Filter
Susan Quaggin – Medicine; St. Michael's Hospital

Design of New Proteins that Target Specific DNA Sites
Jumi Shin – Chemistry

Improving the Fundamental Understanding of Soil Contamination Processes with Nuclear Magnetic Resonance (NMR) Spectroscopy
Myrna Simpson – Environmental Science (University of Toronto at Scarborough)

Molecular Mechanisms of Neural Communication
Bryan Stewart – Zoology (University of Toronto at Scarborough)

Innovations in Knowledge Translation: Evidence at the Point of Care
Sharon Straus – Medicine

Imaging Microstructure and Microvascular below the Surface of Intact Tissues via Optical Coherence Tomography
Alex Vitkin – Medical Biophysics

Fatty Acids and Beta Cell Function
Michael Wheeler - Physiology

May 2003 Competition (Round #9)

Investigations of Bacterial Biofilm Formation and Development of Anti-Biofilm Strategies
Lori Burrows – Surgery; The Hospital for Sick Children

Rehabilitation Outcomes: The Right Measures at the Right Time
Aileen Davis – Physical Therapy; University Health Network

Improving the Usability of Virtual Archives
Wendy Duff – Information Studies

Localization and Modulation of the Presynaptic Calcium Channels During Synapse Formation
Zhong-Ping Feng – Physiology

Quantitative Health Policy Evaluation
Paul Grootendorst – Pharmacy

Airway Gene Regulation and Gene Therapy
Jim Hu – Paediatrics; The Hospital for Sick Children

Role of p53 Family Genes, p73 and p63 in Cancer and Chemosensitivity
Meredith Irwin – Paediatrics; The Hospital for Sick Children

Nonlinear Analysis and Dynamics of Defects
Robert Jerrard – Mathematics

Regulation of Spine Properties and Synaptic Function by LIMK
Zheng-Ping Jia – Physiology; The Hospital for Sick Children

Quantum Information and Secrecy
Hoi-Kwong Lo – The Edward S. Rogers Sr. Department of Electrical and Computer Engineering

Determining the Effectiveness of Nurse Staffing Models on Patient Outcomes
Linda McGillis-Hall – Nursing

Molecular Characterization of the VHL Tumour Suppressor Complex
Michael Ohh – Laboratory Medicine and Pathobiology

A Mouse Model for Williams-Beuren Syndrome
Lucy Osborne – Medicine

Transient Gain Control in Erbium-doped Fibre Amplifiers
Li Qian – The Edward S. Rogers Sr. Department of Electrical and Computer Engineering

Relevance of Etracellular Matrix in Cellular Signaling
Wolfgang Vogel – Laboratory Medicine and Pathobiology

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 $900M budget, will establish 2000 Canada Research Chairs across the country by 2005, with 268 at the University of Toronto. Recruitment is taking place from both within and outside Canada.

April 2002 Competition

Chair in Schizophrenia and Genetics
Anne Bassett – Psychiatry; Centre for Addiction and Mental Health

Chair in International Health
Anne-Emanuelle Birn – Social Sciences (University of Toronto at Scarborough)

Chair in Developmental Cardiology
Benoit Bruneau – Medical Genetics and Microbiology; The Hospital for Sick Children

Chair in Integrated Systems
Anthony Chan-Carusone – The Edward S. Rogers Sr. Department of Electrical and Computer Engineering

Chair in Membrane Biology
David Clarke – Medicine

Chair in Stem Cell Biology
John Dick – Medical Genetics and Microbiology; University Health Network

Chair in Molecular Neuroscience
Susan George – Medicine; Centre for Addiction and Mental Health

Chair in Medieval Music and Liturgy
John Haines – Music

Chair in Cancer and Neuroscience
David Kaplan – Medical Genetics and Microbiology; The Hospital for Sick Children

Chair in Global Governance and Comparative Educational Change
Karen Mundy – Ontario Institute for Studies in Education at U of T

Chair in Renaissance Art and Culture
Alexander Nagel – Fine Art

Chair in Genetics of Complex Diseases
Andrew Paterson – Clinical Biochemistry; The Hospital for Sick Children

Chair in Governance and Globalization
Lou Pauly – Political Science

Chair in Learning and Memory
John Roder – Immunology; Mount Sinai Hospital

Chair in Comparative Pain Genetics
Ze'ev Seltzer – Dentistry

Chair in Economics, Finance and Competitiveness
Shouyong Shi – Economics

Chair in Applied Cognitive Science
Keith Stanovich – Ontario Institute for Studies in Education at U of T

Chair in Molecular Genetics of Neural Communication
Bryan Stewart – Zoology (University of Toronto at Scarborough)

Chair in Determinants of Cellular Lifespan
Homayoun Vaziri – Medical Biophysics; University Health Network

Chair in Social Justice and Cultural Studies
Rinaldo Walcott – Ontario Institute for Studies in Education

Chair in Developmental Neurobiology
Lu-Yang Wang – Physiology; The Hospital for Sick Children

September 2002 Competition

Chair in Evolutionary Genetics
Peter Andolfatto – Zoology

Chair in Classical Philosophy
Rachael Barney – Classics

Chair in Comparative and Evolutionary Neurobiology
Belinda Chang – Zoology

Chair in Nutrigenomics
Ahmed El-Sohemy – Nutritional Sciences

Chair in Cancer Biology
Meredith Irwin – Paediatrics; The Hospital for Sick Children

Chair in Statistical Methods for Health Care
Wen-Yi Wendy Lou – Public Health Sciences

Chair in Multidisciplinary Optimization
Joaquim Martins – Institute for Aerospace Studies

Chair in Stellar and Interstellar Astrophysics
Christopher Matzner – Astronomy

Chair in Plant Molecular Genetics
Peter McCourt – Botany

Chair in Bacterial Pathogenesis
Jeremy Mogridge – Laboratory Medicine and Microbiology

Chair in Breast Cancer Genetics
Steven Narod – Public Health Sciences; Sunnybrook & Women's College Health Sciences Centre

Chair in Statistics and Machine Learning
Radford Neal – Statistics

Chair in Medical Decision Sciences
Donald Redelmeier – Medicine; Sunnybrook & Women's College Health Sciences Centre

Chair in Linguistics and Aboriginal Studies
Keren Rice – Linguistics

Chair in Molecular Neurobiology
Peter Roy – Medical Genetics and Microbiology

Chair in Quantum Gases
Joseph Thywissen – Mathematics

Chair in Diabetes
Allen Volchuk – Biochemistry; University Health Network

Chair in Digital Communications
Wei Yu – The Edward S. Rogers Sr. Department of Electrical and Computer Engineering

December 2002 Competition

Chair in Cognitive Neuroscience
Adam Anderson – Psychology

Chair in Cardiovascular Physiology
Scott Heximer – Physiology

Chair in Quantum Cryptography
Hoi-Kwong Lo – The Edward S. Rogers Sr. Department of Electrical and Computer Engineering

Chair in Social Cognitive Development
Christopher Moore – Ontario Institute for Studies in Education at U of T

Chair in Cellular Signalling
Vuk Stambolic – Medical Biophysics; University Health Network

Selected Scholarly Awards, Prizes & Honours

American Association for the Advancement of Science

Election as a Fellow of AAAS is an honour bestowed upon members by their peers. Fellows are recognized for meritorious efforts to advance science or its applications.

Nancy Reid – Statistics

American Academy of Arts & Sciences

Membership in the American Academy – which counts more than 150 Nobel laureates and 50 Pulitzer Prize winners as members – recognizes outstanding intellectual achievement, leadership and creativity in all fields. The following U of T faculty members are 2003 foreign honorary members:

James Arthur – Mathematics
Richard Bond – Astronomy
Geoffrey Hinton – Computer Science
Linda Hutcheon – English; Comparative Literature
Janet Rossant – Medical Genetics & Microbiology; Mount Sinai Hospital

Alexander von Humboldt Research Award

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

Dwayne Miller – Physics

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.

Peter Andolfatto – Molecular Biology
James Colliander – Mathematics
Kentaro Hori – Physics
Hae-Young Kee – Physics
Daniel Lidar – Chemistry

CIHR Distinguished Investigator Award

Co-sponsored by the Canadian Institutes of Health Research and the Canada Foundation for Innovation, this award acknowledges the outstanding work of Canada's health researchers who are international leaders in their fields.

Janet Rossant – Medical Genetics and Microbiology; Mount Sinai Hospital

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.

Lynne Viola – History (University College)

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

Edward Davison – Electrical and Computer Engineering
Tak Mak – Medical Biophysics; Ontario Cancer Institute

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.

John Friedlander – Mathematics
Barbara Sherwood Lollar – Geology
Lynne Viola – History (University College)

Konrad Adenauer Research Award
Granted by the Alexander von Humboldt Foundation and administered in cooperation with the Royal Society of Canada, these awards are intended to promote academic relations between Canada and Germany, and are presented to honour lifetime academic achievement.

Detlef Mertens – Architecture, Landscape and Design

Michael Smith Prize in Health Research
Created by the Canadian Institutes of Health Research, this prize is given annually to an outstanding Canadian researcher who has demonstrated a high degree of innovation, creativity, leadership and dedication in health research.

Anthony Pawson – Medical Genetics and Microbiology; Samuel Lunenfeld Research Institute at Mount Sinai Hospital

Molson Prize in the Social Sciences & Humanities
Given by the Canada Council for the Arts, this prize recognizes an outstanding lifetime contribution to the cultural and intellectual life of Canada.

Janice Stein – Political Science; Munk Centre for International Studies

Prix Galien Canada Research Award
This annual award, considered the Nobel Prize of the pharmaceutical industry, is given to recognize and promote pharmaceutical research and innovation.

Anthony Pawson – Medical Genetics and Microbiology; Samuel Lunenfeld Research Institute at Mount Sinai Hospital

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 2003
Ian Blake – Electrical and Computer Engineering
Meric Gertler – Geography
Allan Griffin – Physics
David Jenkins – Nutritional Sciences
Roland Le Huenen – Comparative Literature
Jill Levenson – English (Trinity College)
Patrick Macklem – Law
Yoshio Masui – Zoology
Adel Sedra – Electrical and Computer Engineering (now at the University of Waterloo)
Carolyn Tuohy – Political Science; Vice-President, Policy Development and Associate Provost
Gordon West – Physics

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

Molly Shoichet – Chemistry; Chemical Engineering and Applied Chemistry; Institute for Biomaterials and Biomedical Engineering
Kim Vicente – Mechanical and Industrial Engineering

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.*

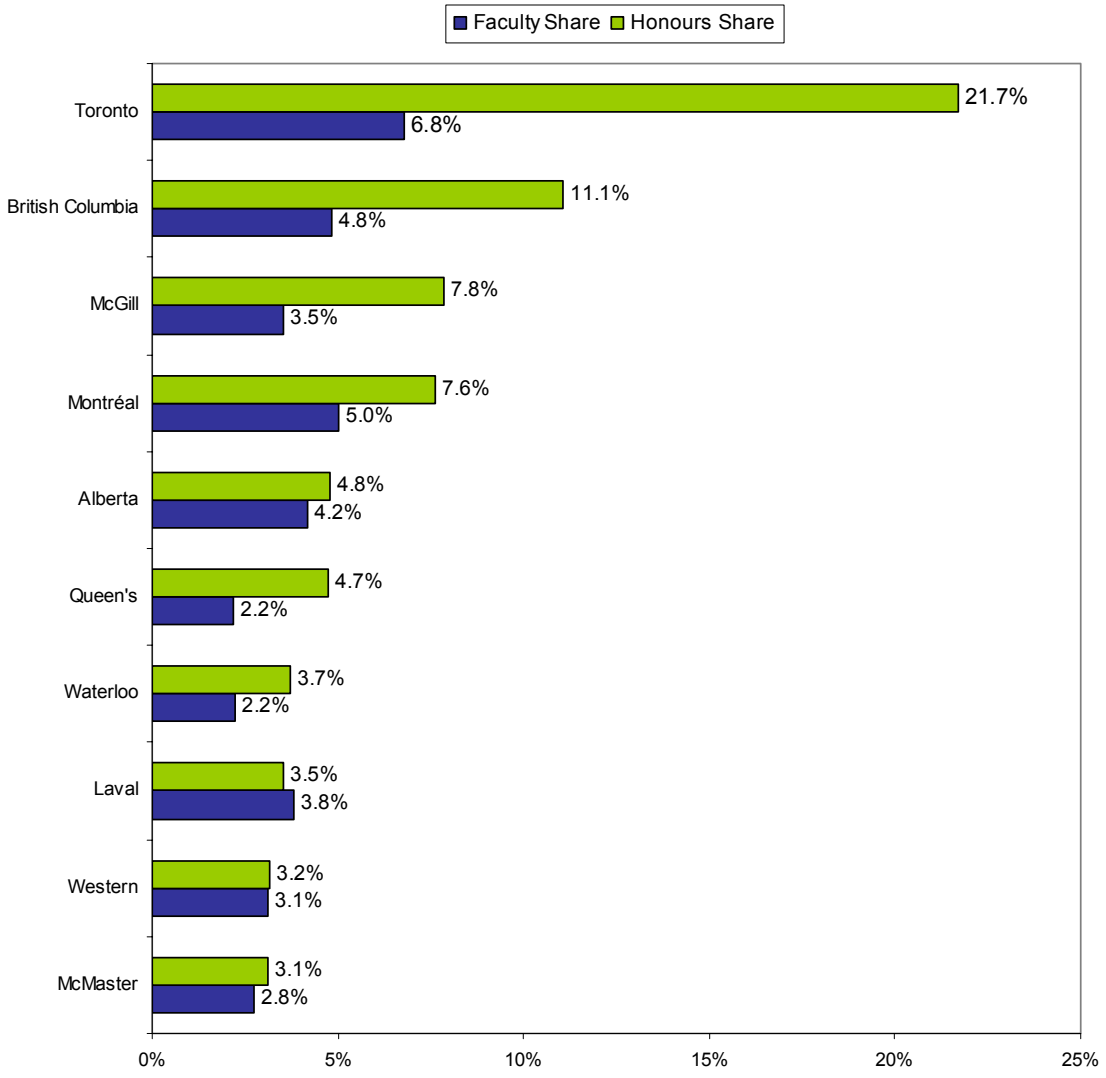
Adalsteinn Brown – Health Policy, Management and Evaluation

Trudeau Foundation Fellowship
These three-year fellowships recognize innovative approaches to public policy issues. Two of the four inaugural Fellows are from U of T.

Janice Stein – Political Science; Munk Centre for International Studies
James Tully – Philosophy

Faculty Honours, 1980-2003

G10 Institutional Share Compared to Faculty Size



Notes: All other Canadian universities and colleges represent 61.6% of faculty and earned 37.6% of awards. Affiliated/federated institutions are included with each relevant university.

Sources: Total awards from award announcements from Steacie, Killam, Royal Society, Sloan, Gerhard Herzberg Canada Gold Medal, and Guggenheim, 1980 to 2003. Note that 2003 Steacie Prize and 2003 Gerhard Herzberg Canada Gold Medal were not yet announced at printing time.
Total faculty data from Statistics Canada UCASS 2001 for G10, and 2000 for total of Canadian universities and colleges.

Technology Transfer

(All figures in $ millions)

Industrial Contracts & Grants (April '01 – March '02)

Contracts	28.93
Grants	15.96
Total industrial research funding	**$44.89**

Government Funding Leveraged By Industrial Collaboration*†

Networks of Centres of Excellence (April '01 – March '02) *U of T participated in 17 of 19*	9.86
Ontario Centres of Excellence (April '01 – March '02) *U of T participated in 4 of 4*	8.89
NSERC ('02 – '03) *University/Industry programs* **	3.50
CIHR ('02 –'03) *University/Industry programs* **	2.84
ORDCF (April '01 – March '02)	15.32
Total government funding leveraged by industrial collaboration	**$40.41**

Commercialization

Licensing Revenue	2.96
Spin-Off Company Revenue (as of April 2003) †† *96 active spin-off companies and 3,638 employees were reported*	821.00
Cumulative Venture/Seed Capital Investment in U of T Research (January 1998 - August 2003)	4.96

*Includes affiliated teaching hospitals
**Excludes NCEs
† SSHRC: no funding in university/industry programs received by the university in 2001-2002
††Represents gross revenue generated by U of T spin-off companies. Excludes affiliated teaching hospitals.

SELECTED ACCOMPLISHMENTS

1. Advocacy

- Played a key role in the development of and response to the Government of Canada's Innovation and Learning Strategy (U of T paper submitted, participation in National Summit and GTA Summit steering committee)

- Contributed to the development of AUCC Agreement of Principles to double research and triple commercialization output over the next decade

- Participated in Ontario's Innovation Challenge conference hosted by the Government of Ontario's Ministry of Enterprise, Opportunity and Innovation

- As a result of dialogue with federal government, realized:

  - establishment of permanent program for recovery of indirect costs (2003 federal budget) at a level of 20% of direct costs

  - increase to granting council budgets (2003 federal budget)

  - increased support to graduate students through the creation of Canadian Graduate Student Scholarships (2003 federal budget)

- Played the lead role in producing a multi-university administrative task force report on proposed improvements to the Ontario Research and Development Challenge Fund program. This report was adopted by the Ontario Council on University Research.

- Presented to the International Review Committee assembled to assess the effectiveness of the Ontario Research and Development Challenge Fund

- Successfully intervened with the Canada Foundation for Innovation for more flexible eligibility guidelines for the new Research Hospital Fund

2. Research Support and Investment

- Maintained first place standing in competitions for federal granting council awards (CIHR, NSERC, SSHRC) for the ninth consecutive year

- Through the International Programs Development (IPD) office, facilitated the development of five grants/contribution agreements totalling $4.1 M

- Secured 162 awards across the range of GRIP programs for an approximate value of $58.6 million and, with the affiliated hospitals, maintained a first place position in all GRIP programs in terms of funding to date

- Doubled the number of U of T submissions to the CFI Innovation Fund competition, while significantly strengthening the U of T application development process

- Increased the university's success rate in Premier's Research Excellence Awards from an average of 27% across competition rounds 1 through 7, to 51% in round 8 (as compared to a provincial round 8 success rate of 32%)

- From the Connaught Fund, awarded $6.25 million in support of 328 awards to U of T faculty and graduate students (77 graduate scholarships, 167 New Faculty Start-up Grants, 59 New Staff Matching Grants, seven Research Fellowships, 11 International Symposia Grants, the McLean Award and seven special seed funding awards for new research clusters)

3. Services to the University

- Held first U of T-National Institutes of Health workshop to assist faculty in developing more competitive NIH grants

- Launched grantsmanship workshops to address needs of specific disciplines at U of T at Scarborough and OISE/UT

- Launched web site to assist social sciences and humanities researchers in accessing funding from foundations

- Launched two publications to assist graduate students in accessing research funding and conducting research – *Guide to Graduate Student Research* and *Graduate Student Guide to Research Ethics*

- Pilot-tested inaugural version of research ethics web course

- Completed campus-wide implementation of *My Research Online*

- Organized a roundtable discussion with the leadership of the Canada Foundation for Innovation and U of T principals and deans to share views on support of research infrastructure

- Organized a special Canada Foundation for Innovation/Innovation Fund workshop for U of T and information session for eligible GTA institutions

- Strengthened support services to participants in the CFI Innovation Fund program, including the introduction of a simulated Multidisciplinary Assessment Committee process to obtain feedback from reviewers on draft proposals

- Strengthened working relationship with the affiliated hospitals through such initiatives as regular participation in the Hospital-University Research Coordinating Committee, interaction with the Vice-Dean, Faculty of Medicine, and coordination of Ontario Innovation Trust grants to the McLaughlin Centre

4. Intellectual Property Management and Technology Transfer

The university's technology transfer office played a central role in realizing the following achievements:

- The federal government signed a $1.6 million license for on-line publication of the *Dictionary of Canadian Biography*, the largest known licensing agreement involving the humanities in Canada

- BIOX, a U of T spin-off company, purchased the patents for its base technology from the inventor for a significant sum

- The Intellectual Property Management group, headed by U of T, expanded from six to 10 universities, and NSERC agreed to increase its grant by $50,000 to cover additional travel costs

- Bell Canada renewed support for the Bell University Labs for an additional three years

- In the 2001 competitions for CIHR's Proof of Principle program, U of T researchers received 36.2% of the grants awarded; in the first 2002 competition, the success rate rose to 48.7%

- Despite a bleak market, several U of T spin-offs – including MatRegen, Axella Biosensors and Interface Biologics – obtained initial or follow-on financing

- The Innovations Foundation reached an agreement with MaRS, under which it and the Exceler@tor will become tenants in the centre; the Toronto biotechnology incubator has also agreed to locate in MaRS, thus strengthening MaRS' position as a commercialization hub

- With financial support from UTM and the City of Mississauga, the Innovations Foundation agreed to set up a business incubator in Sheridan Park; the new incubator will be associated with MaRS

- The Innovations Foundation held its fourth annual business plan competition, with sponsorship from industry and the venture capital community

5. Internationalization of the University

- Held major symposium, entitled *Creating Knowledge, Strengthening Nations: The Changing Role of Higher Education*, in celebration of U of T's 175th Anniversary; sponsored by the Connaught Fund, the event included speakers and participants from all levels of government, Canadian universities, and universities abroad

- The Task Force on Internationalization and Strategic International Partnerships completed its work and submitted its report to the President

- Organized and participated in a U of T mission to Germany, which included meetings with the President of the German Research Foundation and a roundtable with the DAAD German Foundations

- Participated in Team Canada Trade Mission to India, and established links with Indian Institutes for Technology (Bombay, Delhi, Karaghpour) and the Indian Institute of Science

- Established the University Advisory Committee on Safety and Risk for Students Abroad

6. Research and International Profile

- Strengthened the portfolio's Research Prizes Monitoring System, which helps U of T researchers receive international recognition for their outstanding work; this year's winners include: Tak Mak and Ted Davison (Killam Prize), Janice Stein (Molson Prize), and five new foreign honorary members of the American Academy of Arts & Science

- Hosted numerous events to celebrate and showcase the impact of investments in research, including:

  - Official opening of the Molecular Design and Information Technology Centre (OIT investment)

  - Launch of the online version of the Intelligent Transportation Systems Centre and Testbed (CFI, federal Ministry of Transport, OIT, ORDCF)

  - Official opening of the Nortel Institute for Telecommunications in the new Bahen Centre for Information Technology (CFI, OIT, ORDCF)

  - Formal announcement of regional SSHRC "Initiatives in the New Economy" (INE) grants

- Roundtable session with Finance Minister John Manley to showcase U of T's research excellence and discuss challenges to the Canadian research environment

- Recognition event for CFI New Opportunities awardees

- Formal announcement of the Structural Genomics Consortium (CIHR, Genome Canada, OIT, ORDCF)

- *Edge* magazine earned Silver Award from The Canadian Council for the Advancement of Education and an Award of Merit from the International Association of Business Communicators (Toronto Chapter)

PRIORITY PLANS

1. Advocacy

- Work with the President to advocate for effective implementation of accountability mechanisms for permanent indirect costs program, and to work towards increasing the program's coverage of indirect costs from 20% to 40%

- Urge the federal government to bring Canada Foundation for Innovation, Canada Research Chairs and Genome Canada funding under the federal indirect cost program umbrella

- With the federal and provincial funding agencies, advocate for comprehensive and cohesive funding programs

- Strategize with the federal government and the Canada Foundation for Innovation regarding the future of CFI and the focusing of infrastructure support on research areas of existing and emerging importance

- Urge federal government to index the value of Canada Research Chair awards

- Strengthen linkages with the new provincial ministry responsible for research and innovation investment and:

  - the Ontario Research and Development Challenge Fund leadership to set out a plan for the future application of ORDCF funds and to significantly improve program delivery, including a return to a 1/3-1/3-1/3 funding formula

  - the Ontario Innovation Trust leadership to ensure the continued availability of funding through OIT, thereby preventing barriers to Ontario's active participation in CFI programs, and to create opportunities for non-CFI-matching research initiatives that demonstrate particular benefit to Ontario

  - the Premier's Excellence Research Awards program leadership to obtain top-up funding for the continuance of the program

- Further strengthen relations with both federal and provincial levels of government in support of investments in research and creation of effective public policy to increase research, graduate student support and internationalization

- Monitor and provide input into review of the Ontario Research and Development Challenge Fund

- Develop and strengthen relations with new leadership at federal and provincial levels

- With the City of Toronto, U of T and the National Research Council, explore the establishment of an NRC facility in Toronto

- Work with the Faculty of Medicine and other Ontario universities in ensuring the establishment of the Cancer Research Institute of Ontario and work towards its localization in Toronto

2. Research Support and Investment

- Work to ensure best possible preparation for second stage review (face-to-face meetings) of the university's largest CFI Innovation Fund submissions

- Increase awareness on campus of the impact of increasing granting council funding on a per capita and on an absolute basis, in order to increase funding allocations through key programs such as the Canada Research Chairs and CFI New Opportunities

- Place more emphasis on participation and success in ORDCF competitions, to enhance U of T's success rate and share of provincial funding

- Devote increased attention to supporting funding opportunities for expanding research activities at UTM and UTSC

- Devote increased attention to assisting emerging programs of research support across faculties and in faculties where GRIP participation has traditionally been less intense (e.g., Nursing and Social Work)

- In partnership with DUA, generate resources in support of the research enterprise to offset the shortfall in Connaught funding

3. Services to the University

- Establish a new Research Advisory Board

- Develop mechanisms to ensure accurate and timely information flow concerning research funding opportunities from federal funding agencies

- Significantly increase capacity to collect, analyze and present information on the outcomes and impact of GRIP awards, and to benchmark U of T research against other leading institutions in Ontario and Canada

- Further strengthen GRIP application development tools (particularly for CFI, based on experience in the current Innovation Fund competition), including GRIP Tips, communiqués, workshops, one-on-one meetings, and web-based tutorials

- Improve and enhance GRIP communications, including reinstatement of regular electronic newsletter, reorganization of the web site, and regular divisional roundtables

- Refine and improve post-award administration in GRIP programs, including development and implementation of improved AMS-based procedures, to better assist project leaders and business officers

- Review internal allocations of the Canada Research Chairs to ensure cluster development within the context of the academic plan and to achieve gender equity

- Continue to work closely with the Vice-Presidents, Research at the affiliated teaching hospitals to facilitate relationships of their investigators with the university and to seek their participation in interdisciplinary research programs

- Plan and launch strategies to increase interdisciplinary research throughout the university

- Assist the Purchasing Office in developing procedures acceptable to federal granting councils in the web-based purchasing of goods needed for research grants

- Provide helpdesk support and training to assist grant applicants with NSERC's new web-based application form

- Implement the permanent federal government indirect cost program (including accounting and audit)

- Continue to take a leadership role, with the Provost's Office, in organizing workshops for new faculty

4. Intellectual Property Management and Technology Transfer

- Review the structure of the Innovations Foundation and its relationship to the university

- Enhance coherence between the Technology Transfer office and the Innovations Foundation

- Strengthen cooperation between the Innovations Foundation and MaRS

- Ensure that Tech Transfer/Innovations Foundation opportunities are well understood by all faculty to realize the maximum level of uptake and participation

- Revise tech transfer and intellectual property information on the web site

- In collaboration with private-sector partners, establish a nanotech IP coop (wherein inventors receive royalties on all inventions supported by the company, based on the equity they hold)

- In concert with the Provost's office, draft revisions to conflict of interest and publication policies

5. Research and International Profile

- Create the new U of T International Office, through the merger of the International Programs Development Office and the Office of International Student Exchange

- With the Division of University Advancement, strengthen U of T approaches to foundations with a focus on increasing the number of proposals developed for the targeted foundations

- Build and strengthen transdisciplinary research for the development of international consortiums

- Review and categorize current Memoranda of Understanding with other international universities and build stronger ties with peer institutions

- Plan events to celebrate 25th anniversaries of NSERC and SSHRC, and continue to host events that recognize and celebrate the impact of research investment at U of T

- Host Canada Research Chairs celebratory event

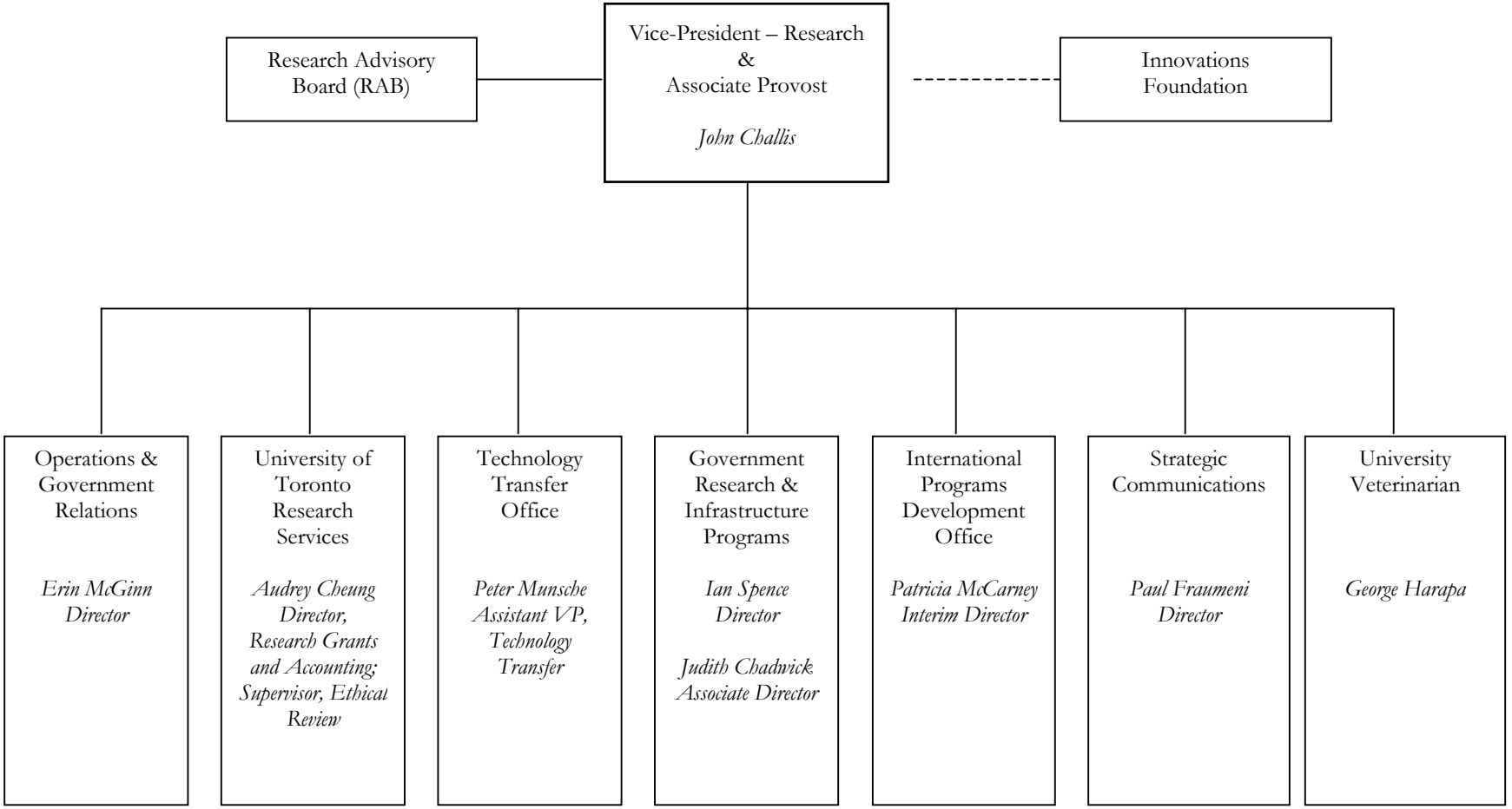
- Create communication strategies, publications and activities promoting U of T's capacity and expertise

  - Redevelop the RAP web site, which will entail a graphic redesign, a revised architecture to allow for easier navigation, and the addition of features including up-to-the-minute news items about research at U of T

  - Conduct an *Edge* magazine readership survey to ensure the magazine is reaching – and sending the right messages to – preferred readers in government, business and industry, the university and the media

  - Create an integrated package of descriptive and promotional materials about research and scholarship at U of T

APPENDIX A
Office of the Vice-President, Research & Associate Provost
September 2003



APPENDIX B
RAP 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; 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.

OFFICE OF TECHNOLOGY TRANSFER

This office 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 provides access to 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 U of T proposals directed towards the Canada Foundation for Innovation (CFI), the Canada Research Chairs (CRC), Genome Canada/Ontario Genomics Institute (GC/OGI), 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 programs.

STRATEGIC COMMUNICATIONS

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

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

AUCC	Association of Universities and Colleges of Canada
CIDA	Canadian International Development Agency
CIHR	Canadian Institutes of Health Research
CFI	Canada Foundation for Innovation
CRC	Canada Research Chairs
DAAD	Deutscher Akademischer Austausch Dienst/German Academic Exchange Service
DFAIT	Department of Foreign Affairs and International Trade
DUA	Division of University Advancement
GC	Genome Canada
GRIP	Government Research Infrastructure Programs
IPD	International Programs Development Office
MaRS	Medical and Related Sciences Discovery District
NCE	Networks of Centres of Excellence
NRC	National Research Council
NSERC	Natural Sciences and Engineering 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
RAP	Office of the Vice-President, Research & Associate Provost
SSHRC	Social Sciences & Humanities Research Council of Canada
UTM	University of Toronto at Mississauga
UTRS	University of Toronto Research Services
UTSC	University of Toronto at Scarborough