

# University Health Network:

The Research Hospital

Research Report 2008

# Research Report

University Health Network: The Research Hospital

*Inspire. Innovate. Impact.*

*Transforming health care for our patients, our community and the world.*

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University Health Network: The Research Hospital 2008.

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# Welcome

## The Research Hospital: The Hospital Transformed

Transformation is a current theme at UHN: we're transforming our physical space through major projects including the Toronto Medical Discovery Tower and the Krembil Discovery Centre; we're collaborating in the transformation of health care delivery in Ontario through the creation of the Local Health Integration Networks; and we're leading the province in initiatives in patient-centred care, patient safety and infection control, and information management.

Transformation is especially evident in Research at UHN: from the astonishing breakthroughs of our stem cell program to the launch of state-of-the-art facilities in regenerative medicine and comprehensive imaging platforms to the creation of our new nanotechnology/medicinal chemistry cluster to the stellar success of our neuroscience program in treating depression using deep brain stimulation—UHN is pioneering the “hospital of the future” through its research today.

The recent announcement of \$119.9M in funding from the Canada Foundation for Innovation's Research Hospital Fund—the largest award in UHN's history—is a testament to UHN's national leadership position and represents a significant contribution to our future capacity for innovation.

This type of transformation is only made possible through the excellence of our researchers, the commitment and expertise of our staff and the support of our partners in the government, community, private sector and the Toronto Academic Health Sciences Network. In this report we salute them all—



Robert S. Bell, MDCM, MSc, FRCSC, FACS  
President and Chief Executive Officer  
University Health Network



Christopher J. Paige, PhD  
Vice President, Research  
University Health Network

# Inspire

Research is Integral to UHN

*Patient care is the direct inspiration for much of our research. Improving care and outcomes is our ultimate goal. UHN breakthroughs in basic, translational and clinical research affect the lives of people around the world.*

<b>UHN: Size and Scope</b>	
<b>Staff and Students</b>	
Senior Scientists	158
Scientists	42
Affiliate Scientists	66
CSRC/CRU Members	264
<b>Total Researchers</b>	<b>530</b>
Fellows	508
Graduate Students	453
<b>Total Trainees</b>	<b>961</b>
<b>Total Staff</b>	<b>1327</b>
Research Space	735,000 sq ft
Publications	1646
<b>Total Funding</b>	<b>\$242,000,000</b>



*UHN Research is a leading-edge biomedical and healthcare research organization with international stature and a partner of the University of Toronto. Our research institutes are home to 530 scientists and clinician scientists and nearly 2300 staff and trainees.*

# Innovate

## UHN's Institutes Foster Innovation

*At UHN, research takes place in labs, clinics and offices throughout our three-hospital campus.*

### Princess Margaret

To conquer cancer is the goal of the Princess Margaret Hospital. In its research arm, the Ontario Cancer Institute (OCI) including the Campbell Family Cancer Research Institute, researchers use cutting-edge tools in genomics, proteomics, structural biology, molecular biology, biophysics and the behavioral sciences to assess and develop new methods of diagnosis and therapy.

### Toronto General

Through its research, the Toronto General Research Institute (TGRI) fuels the excellent clinical care given at the Toronto General Hospital. TGRI's wide-ranging programs span fields such as cardiology, transplantation, immunology and autoimmunity, infectious diseases, tissue injury and diabetes.

### Toronto Western

The innovative research programs at the Toronto Western Research Institute (TWRI) centre on the neural and vision sciences, musculoskeletal disease and urban and community health. Therapies for illnesses such as vascular malformations, Parkinson's disease, glaucoma, retinal degeneration and arthritis are assessed and applied at the Toronto Western Hospital.



*In addition to research programs on-site, UHN has launched a preferred partnership strategy to leverage research expertise from around the world.*

*The first success of this program is the new Shanghai-Toronto Institute for Health Research, created jointly by UHN China and the Shanghai Institute for Health Sciences and the Shanghai Institute of Organic Chemistry (both of the Chinese Academy of Sciences). STIHR promotes collaborative programs in drug development and biomarker discovery.*

# Impact

## Multidisciplinary Approaches to Success

*Collaboration is an important component of our success. UHN's programs and centres bring a range of expertise and disciplines to bear on some of our most challenging health problems.*

Centres are arrayed by cluster in areas of strategic importance identified by the institute:

### **Stem Cells/Regenerative Medicine**

Krembil Neuroscience Centre  
McEwen Centre for Regenerative Medicine  
Philip S. Orsino Cell Therapy Facility  
Research Program in Immune Tolerance and Transplantation  
Cancer Stem Cell Centre  
Temmy Latner Thoracic Surgery Research Laboratories  
Gerry and Nancy Pencer Brain Tumor Centre  
Wharton Head and Neck Centre

### **Biomarkers/Systems Biology/Convergence Research**

Arthritis and Autoimmunity Research Centre  
IBM Life Sciences Discovery Centre  
T. Robert Beamish Family Convergence Centre of Medical Discovery  
Centre for Global eHealth Innovation  
Arthritis Centre of Excellence  
Arthritis Community Research and Evaluation Unit  
Canadian Network for Improved Outcomes in Systemic Lupus Erythematosus  
The Centre for Prognosis Studies in Rheumatic Diseases  
Al & Malka Green Artists Health Centre

### **Drug Development/Molecular Medicine**

Robert & Maggie Bras and Family New Drug Development Program  
McLaughlin-Rotman Centre for Global Health  
McLaughlin Centre for Molecular Medicine  
Shanghai-Toronto Institute for Health Research  
Centre for Molecular Design and Preformulations

### **Imaging**

Spatio-Temporal Targeting and Amplification of Radiation Response (STTARR) Innovation Centre  
Peter Munk Cardiac Centre (including the Imaging, Intervention and Innovation, or I3, Centre)  
Biophotonics and Laser Biophysics Group  
Joey & Toby Tanenbaum Family Gamma Knife Centre  
Wright Cell Imaging Facility



*The McEwen Centre for Regenerative Medicine at UHN includes fifteen scientists at five Toronto hospitals and the University of Toronto, working to accelerate the development of more effective treatments for conditions such as heart disease, diabetes, blood cell diseases, respiratory disease and spinal cord injury. In 2008 Centre director Dr. Gordon Keller announced a new R&D alliance with the private sector to develop a broad range of next generation stem cell technologies for the pharmaceutical industry—a partnership that significantly expands the impact of UHN's research.*

# Transform

## Partners are Key

*Improving health care requires resources and intellectual capital. UHN's relationships help us to maximize the impact of our work and achieve our ambitious goals for change.*

### University of Toronto and the TAHSN Hospitals

Through the Toronto Academic Health Sciences Network, UHN is fully affiliated with the University of Toronto and other Toronto academic hospitals who collectively undertake a broad range of scientific collaboration, advocacy and policy development.

### UHN Foundations

Our three foundations – the Princess Margaret Hospital Foundation, the Toronto General & Western Hospital Foundation, and the Arthritis & Autoimmunity Research Centre Foundation – are valued partners in our research enterprise. Through active fundraising programs they contributed \$20M towards the Research core budget in 2007/08.

### Private Sector Partnerships

UHN seeks and welcomes partnerships with the private sector which advance our research into clinical applications to enhance patient care. UHN currently undertakes research, contract research and clinical trials with more than 230 organizations.

We have extensive infrastructure supporting clinical studies in-house, including ethics, biostatistics, contract negotiation and clinical education. Through the Technology Development & Commercialization office, UHN has deployed intellectual property protection and marketing expertise to take new discoveries down the development pathway.



*With part of its campus centred on University Avenue, UHN is at the heart of Toronto's "Discovery District" and in close proximity to partners in the Toronto Academic Health Sciences Network as well as the province's government seat in Queen's Park.*

# Review

## The Year in Review at UHN Research

August 2007

### **New Partnership Accelerates Diabetes Research**

UHN announced the formation of a partnership with the University of Toronto's Banting & Best Diabetes Centre (BBDC) that will be housed at Toronto General Hospital. The partnership will enhance diabetes education, research and patient care, and expand the search for a cure. The major research focus will be islet cell biology and stem cell research.

October 2007

### **Research STTARR Shines**

UHN researchers and staff gathered for the official opening of the new Spatio-Temporal Targeting and Amplification of Radiation Response (STTARR) Innovation Centre. The Princess Margaret Hospital facility is home to multidisciplinary radiotherapy research supporting cellular, preclinical, and clinical research.



October 2007

### **TWRI Director Named to Prestigious Academy**

Dr. Peter St George-Hyslop, Director of the Toronto Western Research Institute, was elected a member of the Institute of Medicine of the (US) National Academy of Science. The Institute of Medicine is a non-profit organization responsible for providing science-based advice in 17 topic areas including matters of biomedical science, medicine and health. Membership is kept to 1,600.

October 2007

### **OCI Researcher Honoured**

Dr. Richard Hill won one of Canada's top cancer research awards, the National Cancer Institute of Canada's 2007 Robert L. Noble Prize sponsored by the Canadian Cancer Society, recognizing outstanding achievements in cancer research.

October 2007

### **Research Day A Science Booster**

On October 29, 2007 UHN Research Day attracted nearly 400 participants to a full schedule of events. The day included oral sessions, networking with industry partners and a poster session. The keynote was given by Dr. Allen Cowley Jr. (Professor and Chairman, Department of Physiology, Medical College of Wisconsin) on genetic architecture of cardiovascular systems functions and hypertension.

At Research Day, UHN announced its trainees of the year: Christina Loh (lab of Dr. Joan Wither) and Ryan Doherty (lab of Dr. Cheryl Arrowsmith). The 2007 Inventor of the Year was also honoured: Dr. David Jaffray, Senior Scientist, Division of Biophysics and Bioimaging, Ontario Cancer Institute, was presented with this award for his creativity in bringing cutting-edge physics and engineering to the practice of imaging in the clinic.

November 2007

### **Stem Cell Pioneers Win New Jubilee Award**

Stem cell pioneers and UHN researchers Drs. James Till, Ernest McCulloch and John Dick were honoured with National Cancer Institute of Canada's new Diamond Jubilee award for their landmark contributions in the history of understanding cancer.

November 2007

### **New Cancer Research Partnership**

The Terry Fox Foundation announced the creation of the Terry Fox Research Institute—a virtual Canadian research institute dedicated to translational cancer research with nodes in British Columbia, Alberta, Ontario and Quebec. The new institute will launch national collaborative projects that will have near-term impact on patient care. Ontario Cancer Institute's Dr. Robert Rottapel will lead the Ontario node of TFRI while Dr. Christopher Paige is a founding Board member.



November 2007

### **UHN Researcher Recognized Internationally**

UHN congratulates Toronto Western Research Institute Senior Scientist Dr. Andres Lozano for receiving The Order of Spain. Dr. Lozano—who was born in Spain—was recognized for his significant contributions to Parkinson's disease and depression research.

December 2007

### **TGRI Researcher Takes Top CIHR Prize**

Dr. Peter Singer was the recipient of this year's CIHR Michael Smith Prize in Health Research—Canada's Health Researcher of the Year in the category of Health Services and Systems and Population Health Research.

January 2008

### **Royal College Recognizes OCI Scientist**

UHN congratulates Dr. Shereen Ezzat who was recently awarded the 2008 Royal College CSCI Distinguished Scientist Award. The award acknowledges Dr. Ezzat's significant research contributions in endocrinology.

February 2008

### **New Program Tests Anti-Cancer Drugs**

Princess Margaret Hospital has been awarded a \$3M U.S. National Cancer Institute Phase I grant headed by Senior Scientist Dr. Lillian Siu, co-Director of the Robert and Maggie Bras and Family Drug Development Program. This grant—of which only two new applications were funded in this cycle—was awarded to expedite access to and evaluation of novel anti-cancer agents for patients; to optimize clinical trial design for new treatments; and to characterize the effects of new drugs on their targets.

February 2008

### **Director Lauded with MERIT**

Ontario Cancer Institute Director and Senior Scientist Dr. Benjamin Neel received a renewal of his MERIT award from the National Institutes of Health. The MERIT award is presented to experienced researchers who have demonstrated a long-term commitment to and success in research. Dr. Neel is the only researcher in Canada to hold this honour, and one of only 4 outside the US.

March 2008

### **UHN Researcher Wins for Basic Cancer Research**

Dr. John Dick has been awarded the American Association for Cancer Research's GHA Clowes Memorial Award—one of the most prestigious awards within the international cancer research community—for his innovative contributions to uncovering the biological origins and development of human leukemia.

April 2008

### Prestigious Award to OCI Researcher

UHN congratulates Dr. Frances Shepherd as she received a prestigious Premier's Summit Award in Medical Research. Dr. Shepherd was recognized for her substantial and distinguished ongoing contributions to the field of lung cancer. It follows her earlier Scientific Award from the International Association for the Study of Lung Cancer (IASLC) for her role in bringing together basic and clinical researchers to build one of the world's foremost groups of translational researchers in lung cancer.

May 2008

### Killam Prize Awarded to UHN Researcher

Dr. Peter St George-Hyslop received the prestigious Killam Prize—governed by the Canada Council for the Arts—for his seminal research into the causes and mechanisms of neurodegenerative diseases which have radically improved the understanding of the molecular mechanisms of Alzheimer's disease.

June 2008

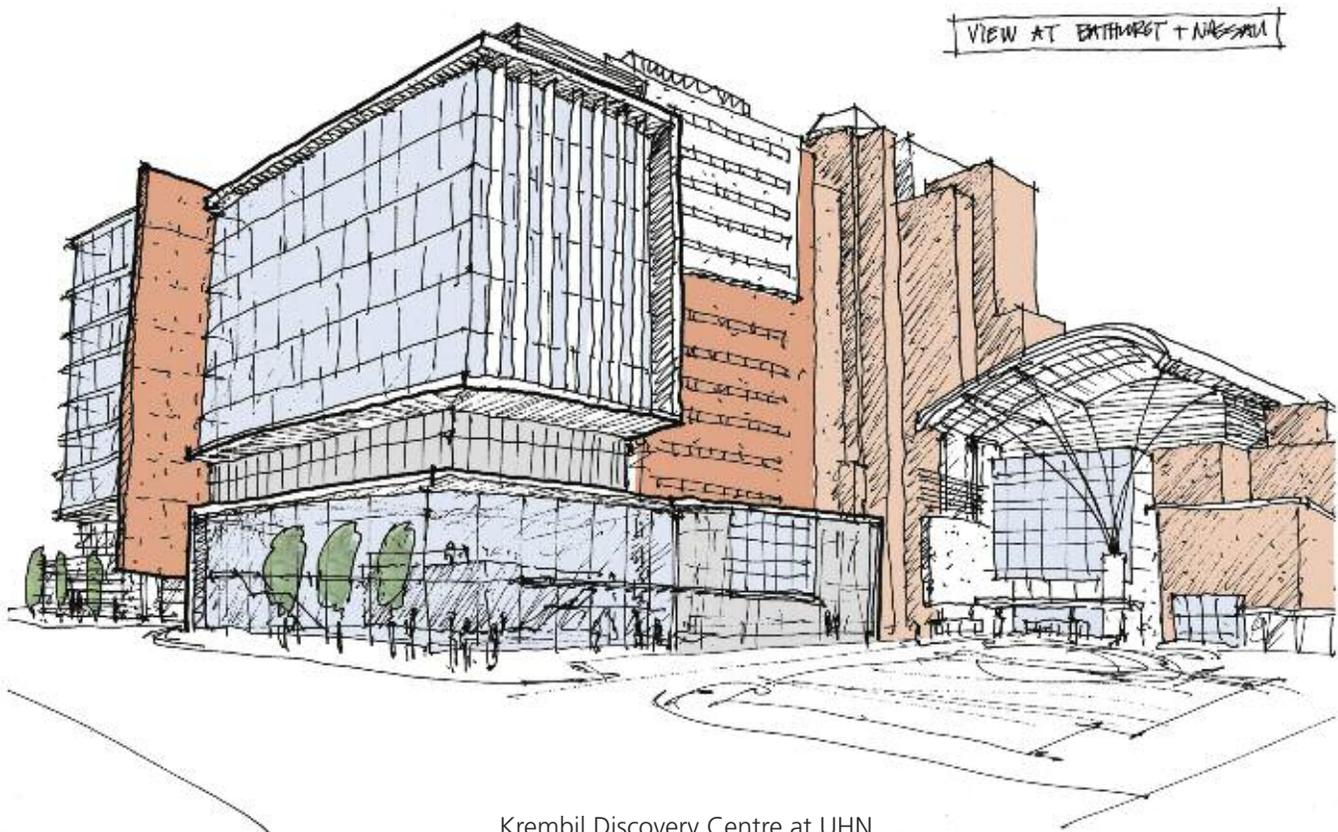
### \$120M Investment in UHN Research Platforms

A historic funding announcement provided a \$119.9M boost for UHN Research when the Canada Foundation for Innovation announced new funding for UHN's Advanced Therapeutics Research Platform.

The award—the largest research award in UHN's history—includes \$92M in new funding towards construction projects at all three UHN institutes. It will fund sophisticated new equipment across seven research clusters including signaling, clinical studies, stem cells, medical imaging, immunity, biomarkers and drug discovery programs. A significant proportion of the funding will be used to establish research programs at the new Krembil Discovery Centre at TWH.

Dr. Christopher Paige led the project; Drs. Ben Neel, Claire Bombardier, Gordon Keller, David Jaffray, Pam Ohashi, Eleanor Fish and Emil Pai were theme leads.

The remaining funding constituted a contribution of nearly \$28M in institutional operating funding related to the award.



Krembil Discovery Centre at UHN

# Advisory Board

**UHN Research—International Research Advisory Board**

**Philip Branton (Chair), PhD, FRSC / MSRC**

Scientific Director

CIHR Institute of Cancer Research

**Victor Dzau, MD**

President & CEO, Duke University Health System

The Chancellor for Health Affairs

Duke University Medical Center

**Ralph Steinman, MD**

Henry G. Kunkel Professor and Senior Physician

Rockefeller University

**Hans Wigzell, MD, PhD**

Professor, Microbiology and Tumor Biology Center

Karolinska Institute

# OCI

## Ontario Cancer Institute at a Glance

<b>Staff and Students</b>	
Senior Scientists	52
Scientists	20
Affiliate Scientists	7
CRU Members	150
<b>Total Researchers</b>	<b>229</b>
Fellows	213
Graduate Students	207
<b>Total Trainees</b>	<b>420</b>
<b>Total Staff</b>	<b>595</b>
Research Space	386,000 sq ft
Publications	726
<b>Total External Funding</b>	<b>\$ 92,000,000</b>

### Research Council in Oncology

Director, OCI:  
Benjamin Neel (Chair)

#### *Clinical Representatives*

Sylvia Asa  
Mary Gospodarowicz  
Jonathan Irish  
Malcolm Moore

#### *Division Heads*

Applied Molecular Oncology:  
Fei-Fei Liu

Biophysics & Bioimaging:  
Brian Wilson

Cancer Genomics &  
Proteomics: Linda Penn

Psychosocial Oncology &  
Palliative Care: Gary Rodin

Signaling Biology: Mitsu Ikura  
Stem Cells & Developmental  
Biology: Robert Rottapel

Clinical Research Unit: Padraig  
Warde (Medical Site Director)

Centre for Research Education  
and Training: David Rose  
Site Lead: Sarah Downey  
Research Operations: Lisa Alcia  
Vice President, Research:  
Christopher Paige

### Applied Molecular Oncology

#### Senior Scientists

Asa, Sylvia  
Bristow, Robert  
Ezzat, Shereen  
Gallie, Brenda  
Hedley, David  
Hill, Richard  
Liu, Fei-Fei  
Moore, Malcolm  
Squire, Jeremy  
Tannock, Ian  
Tsao, Ming-Sound

#### Scientists

Done, Susan  
Kamel-Reid, Suzanne  
Liu, Geoffrey

Trudel, Suzanne

#### Affiliate Scientists

Johnston, Michael  
Martin, Lisa  
Reedijk, Michael

### Biophysics & Bioimaging

#### Senior Scientists

Chakrabartty, Avijit  
Hunt, John  
Jaffray, David  
Sherar, Michael  
Siewerdsen, Jeff  
Vitkin, Alex  
Wilson, Brian  
Zheng, Gang  
**Scientist**  
Lilge, Lothar

### Cancer Genomics and Proteomics

#### Senior Scientists

Arrowsmith, Cheryl  
Gariépy, Jean  
Pai, Emil  
Penn, Linda  
Privé, Gilbert  
Rose, David

#### Scientists

Kislinger, Thomas  
Raught, Brian  
Schimmer, Aaron  
Tillier, Elizabeth

#### Affiliate Scientists

Bradley, Grace  
Gauthier, Mona

### Prevention

#### Senior Scientists

Boyd, Norman  
Minkin, Salomon  
Trichler, David  
Till, James  
Affiliate Scientist  
Ritvo, Paul

### Psychosocial Oncology and Palliative Care

#### Senior Scientists

Devins, Gerry  
Gagliese, Lucia  
Rodin, Gary

#### Scientists

Edelstein, Kim

Howell, Doris  
Zimmermann, Camilla

#### **Affiliate Scientists**

Esplen, Mary Jane  
Stewart, Donna

#### **Signaling Biology**

##### **Senior Scientists**

Hakem, Razqallah  
Ikura, Mitsuhiro  
Jurisica, Igor  
Khokha, Rama  
Manoukian, Armen  
Ohashi, Pam  
Wouters, Bradly

##### **Scientists**

Cheung, Peter  
Koch, Anne  
Okada, Hitoshi  
Stambolic, Vuk  
Vaziri, Homayoun

#### **Stem Cell and Developmental Biology**

##### **Senior Scientists**

Barber, Dwayne  
Dick, John  
Iscove, Norman  
Keller, Gordon  
Mak, Tak  
Medin, Jeffrey  
Messner, Hans  
Minden, Mark  
Neel, Benjamin  
Paige, Christopher  
Rottapel, Robert  
Schuh, Andre  
McCulloch, Ernest

##### **Scientists**

Moghal, Nadeem  
Ailles, Laurie

#### **Clinical Research Unit**

##### **Members**

Amato, Dominic  
Baker, Michael  
Barth, David

Bayley, Andrew  
Bell, Robert  
Bernstein, Lori  
Bezjak, Andrea  
Blackstein, Martin  
Boerner, Scott  
Bordeleau, Louise  
Brade, Anthony  
Brandwein, Joseph  
Brien, William  
Brierley, James  
Brown, Dale  
Burkes, Ronald  
Catton, Charles  
Catton, Pamela  
Chang, Hong  
Chen, Christine  
Chen, Xueyu  
Chetty, Runjan  
Cho, John  
Chung, Peter  
Cil, Tulin  
Clarke, Blaise  
Cleary, Sean  
Clemons, Mark  
Crook, Juanita  
Croul, Sidney  
Crump, R Michael  
Cummings, Bernard  
D'Agostino, Norma  
Darling, Gail  
Dawson, Laura  
de Perrot, Marc  
Deheshi, Ben  
Dinniwell, Robert  
Dodge, Jason  
Easson, Alexandra  
Elliott, Mary  
Escallon, Jaime  
Evans, Andrew  
Feld, Ronald  
Ferguson, Peter  
Ferguson, Sarah  
Finelli, Antonio  
Fleshner, Neil  
Freeman, Jeremy  
Fyles, Anthony  
Gallinger, Steven  
Geddie, William

Ghazarian, Danny  
Gilbert, Ralph  
Gladdy, Rebecca  
Goldstein, David  
Goodwin, Pamela  
Gospodarowicz, Mary  
Grant, David  
Greig, Paul  
Gryfe, Robert  
Guha, Ab  
Gullane, Pat  
Gupta, Abha  
Gupta, Vikas  
Hodgson, David  
Hofer, Stefan  
Hogg, David  
Hope, Andrew  
Irish, Jonathan  
Jewett, Michael  
Keating, Armand  
Kennedy, Erin  
Keshavjee, Shaf  
Kiehl, Tim-Rasmus  
Kim, John  
Knox, Jennifer  
Krzyzanowska, Monika  
Kukreti, Vishal  
Kuruvilla, John  
Laframboise, Stefan  
Laperriere, Normand  
Leighl, Natasha  
Leong, Wey  
Levin, Wildred  
Lipton, Jeffrey  
Mackay, Helen  
Manchul, Lee  
Mason, Warren  
Matthew, Andrew  
McCart, Andrea  
McCready, David  
McGilvray, Ian  
McLean, Linda  
McLean, Michael  
McLeod, Anne  
McLeod, Robin  
Menard, Cynthia  
Millar, Barbara-Ann  
Miller, Naomi  
Milosevic, Michael

Moulton, Carol-Anne  
Murphy, Joan  
O'Brien, Catherine  
O'Sullivan, Brian  
Oza, Amit  
Paul, Narinder  
Payne, David  
Pendergrast, Jacob  
Perez-Ordóñez, Bayardo  
Pierre, Andrew  
Quirt, Ian  
Rasty, Golnar  
Reece, Donna  
Reznick, Richard  
Ringash, Jolie  
Rosen, Barry  
Rouzbahman, Marjan  
Santos, Gilda  
Shaw, Patricia  
Shepherd, Frances  
Simpson, Rand  
Siu, Lillian  
Sridhar, Srikala  
Sun, Alexander  
Sutherland, Robert  
Swallow, Carol  
Sweet, Joan  
Taylor, Bryce  
Tkachuk, Douglas  
Trachtenberg, John  
Tsang, Richard  
Van Der Kwast, Theodorus  
Waddell, Thomas  
Waldron, John  
Wang, Jean  
Warde, Pdraig  
Warr, David  
Wei, Alice  
Weinreb, Ilan  
Wells, Woodrow  
Witterick, Ian  
Wong, Rebecca  
Wood, Bob  
Wunder, Jay  
Yasufuku, Kazuhiro  
Yee, Karen  
Yeo, Erik  
Youngson, Bruce  
Zlotta, Alexandre

*Where researchers have more than one affiliation within each institute, only one is shown. See [www.uhnresearch.ca](http://www.uhnresearch.ca) for a full listing of affiliations.*

# TGRI

## Toronto General Research Institute at a Glance

<b>Staff and Students</b>	
Senior Scientists	64
Scientists	17
Affiliate Scientists	44
CSRC Members	63
<b>Total Researchers</b>	<b>188</b>
Fellows	185
Graduate Students	119
<b>Total Trainees</b>	<b>304</b>
<b>Total Staff</b>	<b>366</b>
Research Space	244,000 sq ft
Publications	659
<b>Total External Funding</b>	<b>\$67,000,000</b>

### Research Council

Director, TGRI:  
Richard Weisel (Chair)

Site Lead: Marnie Escaf  
Research Operations: Lisa Alcia  
Vice President, Research:  
Christopher Paige

### Division Heads

Behavioral Sciences & Health:

Gary Rodin

Cell & Molecular Biology:

Eleanor Fish

Clinical Decision-Making &

Health Care: Claire Bombardier

Experimental Therapeutics:

John Parker

Genomic Medicine:

Katherine Siminovitch

Standing Guests

Medical Technology

Innovation: Vivek Rao

Regenerative Medicine:

Thomas Waddell

TGRI Space Committee:

Ren-Ke Li

TGRI Appointments

Committee: Shaf Keshavjee

Centre for Research Education

and Training: Mingyao Liu

MBRC Facilities Management:

Reginald Gorczyński

Flow Cytometry: Li Zhang

Microscopy: Lowell Langille

Diabetes Program:

George Fantus

### Clinical Program Heads

Shaf Keshavjee

Gary Levy/Ian McGilvray

Conrad Liles

John Parker

Valérie Sales (CSRC)

### Behavioural Sciences & Health

#### Senior Scientists

Flint, Alastair  
Kaplan, Allan  
Katz, Joel  
Olmsted, Marion  
Regehr, Glenn  
Rodin, Gary  
Stewart, Donna

#### Scientists

Carter, Jacqueline  
Espen, Mary Jane  
Grace, Sherry  
Jones, Jennifer

#### Affiliate Scientists

Baker, Brian  
Colton, Patricia  
Davis, Caroline  
Gucciardi, Enza  
Hall, Peter  
Heslegrave, Ron  
Hodges, Brian  
Irvine, Jane  
McVey, Gail  
Nolan, Robert  
Reid, Graham  
Robinson, Gail  
Woodside, Blake

### Cellular & Molecular Biology

#### Senior Scientists

Backx, Peter  
Berger, Stuart  
Cardella, Carl  
Cattral, Mark  
Cybulsky, Myron  
Dick, John  
Elsholtz, Harry  
Fantus, George  
Fish, Eleanor  
Gorczyński, Reginald  
Gotlieb, Avrum  
Grant, David

Husain, Mansoor

Johnston, Wayne

Langille, Lowell

Levy, Gary

Liles, Conrad

Liu, Mingyao

Phillips, James

Rubin, Barry

Waddell, Thomas

Zacksenhaus, Eldad

Zhang, Li

#### Scientists

Irwin, David

Jin, Tianru

Kotra, Lakshmi

Lam, Tony  
Volchuk, Allen

#### **Affiliate Scientists**

Belsham, Denise  
Branch, Donald  
Clark, David  
Cole, Edward  
Drucker, Daniel  
Gramolini, Anthony  
Lee, Douglas  
Lee, Ping  
Rocheleau, Jonathan  
Wen, Xiao-Yan

#### **Clinical Decision-Making & Health Care**

##### **Senior Scientists**

Bombardier, Claire  
Daar, Abdallah  
Eysenbach, Gunther  
Jadad, Alex  
Krahn, Murray  
Naglie, Gary  
Singer, Peter

##### **Scientists**

Alibhai, Shabbir  
Cheung, Angela  
Urbach, David

##### **Affiliate Scientists**

Lok, Charmaine  
Tomlinson, George

##### **CSRC Members**

Daly, Paul  
Jewett, Michael  
Kapral, Moira  
Singer, Lianne

#### **Clinical Investigation & Human Physiology**

##### **Senior Scientists**

Allard, Johane  
Bradley, Douglas  
Cattran, Daniel  
Floras, John

Kucharczyk, Walter  
Lewis, Gary  
Miller, Judith  
Olivieri, Nancy  
Steiner, George  
Walmsley, Sharon

##### **Scientist**

Wong, Florence

##### **Affiliate Scientists**

Downar, Eugene  
Easty, Anthony  
Gianfelice, David  
Herzenberg, Andrew

Logan, Alexander

Perkins, Bruce

Raboud, Janet

Reilly, Raymond

Sawka, Anna

##### **CSRC Members**

Bril, Vera  
Cameron, Douglas  
Chan, Charles  
Chan, Christopher  
Chauhan, Vijay  
Cooper, Richard  
Djaiani, George  
Fedorko, Ludwik  
Harris, Louise  
Herridge, Margaret  
Ing, Douglas  
Jassal, Vanita  
Karkouti, Keyvan  
Karski, Jacek  
McCluskey, Stuart  
McRae, Karen  
Parker, John  
Ross, Heather  
Salit, Irving  
Schwartz, Len  
Seidelin, Peter  
Sherman, Morris  
Siu, Samuel  
Slinger, Peter

#### **Experimental Therapeutics**

##### **Senior Scientists**

Keating, Armand  
Kelvin, David  
Keshavjee, Shaf  
Li, Ren-Ke  
Lindsay, Thomas  
Liu, Peter  
Medin, Jeffrey  
Rao, Vivek  
von Harsdorf, Rüdiger  
Weisel, Richard

##### **Scientists**

de Perrot, Marc  
Nanthakumar, Kumaraswamy  
Yau, Terrence

##### **Affiliate Scientists**

Fremes, Stephen  
Hwang, David  
McCart, Andrea  
McGilvray, Ian  
Radisic, Milica  
Sefton, Michael

#### **Genomic Medicine**

##### **Senior Scientists**

Cole, David  
Hogg, David  
Kain, Kevin  
MacDonald, Kelly  
Pei, York  
Siminovitch, Katherine  
Sole, Michael

##### **Scientist**

Kaul, Rupert

##### **Affiliate Scientists**

Boright, Andrew  
Denomme, Gregory  
Downey, Gregory  
Osborne, Lucy

#### **Clinical Studies Resource Centre**

##### **Members**

Ali, Mohamed  
Bargman, Joanne  
Beattie, Scott  
Brister, Stephanie  
Colman, Jack  
David, Tirone  
Dzavik, Vladimir  
Fenton, Stanley  
Gardam, Michael  
Girgrah, Nigel  
Gold, Wayne  
Goldszmidt, Eric  
Granton, John  
Grigoriadis, Sophie  
Kachura, John  
Kennedy, Sidney  
Keystone, Edward  
Lapinsky, Stephen  
Lilly, Leslie  
Loke, Julian  
Manktelow, Ralph  
Neary, Mary Ann  
O'Malley, Martin  
Rajan, Dheeraj  
Rakowski, Harry  
Ralph-Edwards, Anthony  
Reznick, Richard  
Richardson, Robert  
Roberts, Heidi  
Ross, John  
Straus, Sharon  
Sutton, David  
Sweet, Joan  
Wolman, Stephen  
Yeo, Erik

# TWRI

## Toronto Western Research Institute at a Glance

<b>Staff and Students</b>	
Senior Scientists	45
Scientists	8
Affiliate Scientists	17
CSRC Members	66
<b>Total Researchers</b>	<b>136</b>
Fellows	78
Graduate Students	98
<b>Total Trainees</b>	<b>176</b>
<b>Total Staff</b>	<b>199</b>
Research Space	105,000 sq ft
Publications	459
<b>Total External Funding</b>	<b>\$28,000,000</b>

### Research Council

Director, TWRI:  
Peter St George-Hyslop (Chair)

#### Division Heads

Brain Imaging & Behaviour –  
Systems Neuroscience:  
Karen Davis

Genetics & Development:  
Rod Bremner

Fundamental Neurobiology:  
Peter Carlen

Health Care & Outcomes  
Research: Elizabeth Badley

Patient-Based Clinical Research:  
Jenny Heathcote

Visual Science: Martin Steinbach

#### Clinical Representatives

Michael Fehlings

Nizar Mohamed

Robert Inman

Centre for Research Education  
and Training: Frances Skinner

Site Lead: Kathy Sabo

Vice President, Research:  
Christopher Paige

### Brain, Imaging & Behaviour – Systems Neuroscience

#### Senior Scientists

Brotchie, Jonathon  
Chen, Robert  
Davis, Karen  
Hutchison, Bill  
Lozano, Andres  
McAndrews, Mary Pat  
Mikulis, David  
Sandor, Paul  
Strafella, Antonio

#### Scientist

Kucharczyk, Walter

#### Affiliate Scientists

De Nil, Luc  
Dostrovsky, Jonathan  
Saint-Cyr, Jean

#### Fundamental Neurobiology

**Senior Scientists**  
Broussard, Dianne  
Carlen, Peter  
Skinner, Frances  
Tymianski, Michael  
Wan, Qi

#### Scientist

Sugita, Shuzo

#### Affiliate Scientists

El-Beheiry, Hossam  
Gaisano, Herbert  
Zhang, Liang

#### Genetics & Development

**Senior Scientists**  
Barr, Cathy  
Bremner, Rod  
Cardella, Carl  
Eubanks, James  
Fehlings, Michael  
Inman, Robert  
Jongstra, Jan

Mills, Linda  
Schlichter, Lyanne  
Stanley, Elise  
Tsui, Florence  
Wither, Joan  
Tator, Charles

**Scientist**  
Monnier, Philippe

### Health Care & Outcomes Research

**Senior Scientists**  
Badley, Elizabeth  
Carette, Simon  
Cassidy, David

Davis, Aileen  
Fortin, Paul  
Gignac, Monique  
Gladman, Dafna  
Mahomed, Nizar  
Mailis, Angela  
Urowitz, Murray

#### **Affiliate Scientists**

Côté, Pierre  
Cott, Cheryl  
Lineker, Sydney  
Martino, Rosemary

#### **Patient-Based Clinical Research**

##### **Senior Scientists**

Heathcote, Jenny  
Lang, Anthony  
Shapiro, Colin  
Sharpe, James  
Diamant, Nicholas

##### **Scientists**

Bernstein, Mark  
Ferguson, Niall  
Tarlo, Susan

##### **Affiliate Scientist**

Stephens, Robyn

#### **Visual Science**

##### **Senior Scientists**

Flanagan, John  
Steinbach, Martin  
Trobe, Graham

#### **Scientists**

Hudson, Chris  
Wong, Agnes

#### **Affiliate Scientists**

Eizenman, Moshe  
Ethier, C. Ross  
Gallie, Brenda  
Gonzalez, Esther  
Irving, Elizabeth  
Wilkinson, Frances

#### **Clinical Studies Resource Centre**

##### **Members**

Anastakis, Dimitrios  
Bookman, Arthur  
Buys, Yvonne  
Chan, Vincent  
Chapman, Kenneth  
Chung, Frances  
Davey, Roderick  
del Campo, Jose Martin  
Devenyi, Robert  
Epstein, Trina  
Escallon, Jaime  
Etlin, David  
Evans, Michael  
Farb, Richard  
Fung, Ken  
Gentili, Fred  
Graham, Brent  
Hawa, Raed  
Iwanochko, Mark  
Lam, Wai-Ching

Lam, Robert  
Manninen, Pirjo  
Massicotte, Eric  
McCartney, Colin  
McGuire, Glenn  
McIntyre, Roger  
Melvin, Kenneth  
Miyasaki, Janis  
Montanera, Walter  
Moro, Elena  
Nasmith, James  
Oandasan, Ivy  
Ogilvie, Richard  
Ogilvie-Harris, Darrell  
Panisko, Daniel  
Parikh, Sagar  
Peng, Philip  
Radomski, Sidney  
Rampersaud, Yoga Raja  
Rootman, David  
Rosen, Cheryl  
Saltzman-Benaiah, Jennifer  
Seyone, Chanth  
Shannon, Patrick  
Shaw, James  
Silver, Frank  
Simons, Martin  
Singer, Shaun  
Slomovic, Allan  
St George-Hyslop, Peter  
Stanbrook, Matthew  
Stubbs, Barbara  
Syed, Khalid  
Terbrugge, Karel

Tu, Karen  
Tumber, Paul  
von Schroeder, Herbert  
Voon, Valerie  
Wherrett, John  
Willinsky, Robert  
Wong, Jean  
Wong, David  
Yogendran, Suntheralingam  
Yu, Eric

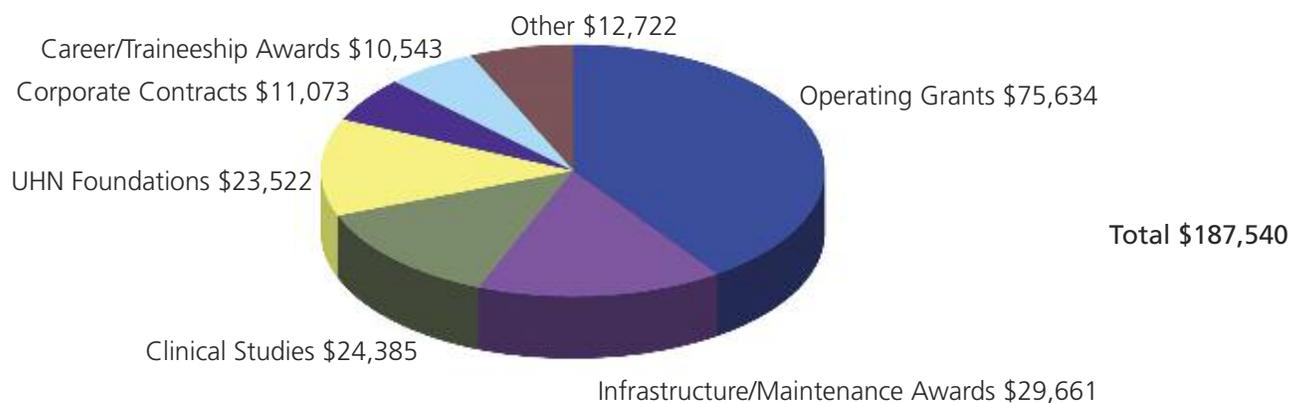
# Funding

## Research Funding

UHN Research Core/TMDT Operating Funding (000s)	
Princess Margaret Hospital Foundation	\$16,376
Recoveries	\$10,876
Ministry of Health and Long-Term Care	\$2,816
Investment income	\$2,585
<i>Includes funding from the Toronto General &amp; Western Hospital Foundation</i>	
Toronto General & Western Hospital Foundation	\$2,584
Arthritis & Autoimmunity Research Centre Foundation	\$1,000
Other	\$18,253
<b>TOTAL</b>	<b>\$54,490</b>

Top Sources of External Funding (000s)	
Canadian Institutes of Health Research	\$38,817
Canada Foundation for Innovation/Ontario Innovation Trust/Ontario Research Fund	\$24,614
Ontario Institute for Cancer Research	\$8,102
National Cancer Institute of Canada	\$6,694
National Institutes of Health (US)	\$5,111
Heart and Stroke Foundations	\$3,767
Canada Research Chairs Program	\$3,577
Ontario Genomics Institute	\$2,441

### Total Project Funding Awarded by Type (000s)



All figures represent fiscal year 2007/08 and include Ontario Cancer Institute (Princess Margaret Hospital); Toronto General Research Institute (Toronto General Hospital); and Toronto Western Research Institute (Toronto Western Hospital). Figures may not sum due to rounding.

These figures have been provided by UHN Research Financial Services and Research Grant and Contract Services. These figures have not been audited. However, they have been included in the overall UHN statements and, as a result, have been subjected to audit procedures deemed appropriate by auditors in order to determine their overall reasonableness.

# Funding

## External Agencies Funding UHN Research

Abbott Laboratories	Canadian Society for Clinical Nutrition	Keryx Biopharmaceuticals	Ontario Research and Development
Actelion Pharmaceuticals	Canadian Stroke Network	Kidney Foundation of Canada	Challenge Fund
Adjuvant Informatics	Canadian Urologic Oncology Group	KuDOS Pharmaceuticals	Ontario Thoracic Society
Advanced Cardiovascular Systems	Cancer Care Ontario	Kyowa Pharmaceutical	Ortho Biotech
Advanced Neuromodulation Systems	Cancer Research Institute	Kyphon	Osiris Therapeutics
Aegera Therapeutics Inc.	Cancer Research Society	Lentigen	PAREXEL
Alcon Canada	Celgene	Leukemia & Lymphoma Society	Parkinson Society Canada
Allon Therapeutics	Cell Genesys	Li Ka Shing Foundation	PDL BioPharma
American Association for Hand Surgery	Centre for Addiction and Mental Health	Lundbeck	Pediatric Oncology Group of Ontario
American Association of Neurosurgical Surgeons	Cephalon	Lupus Ontario	Pfizer Canada
American Association of Physicists in Medicine	Chlorion Pharma	Mayo Clinic	Philips Electronics North America
American Urological Association Foundation	Christopher Reeve Paralysis Foundation	McMaster University	Physicians' Services Inc. Foundation
Amgen Canada	Centre Hospitalier de l'Université de Montréal	Med Enclosure	Princess Margaret Hospital Foundation
Amorfix Life Sciences	Craig H. Nielsen Foundation	Medical Council of Canada	Procter & Gamble Pharmaceuticals
Amyotrophic Lateral Sclerosis Society of Canada	Cyclomedica Australia	Medicare	Prostate Cancer Research Foundation of Canada
Annidis Health Systems	Debiopharm	Medtronic	Proteolix
Anthera Pharmaceuticals	Dendreon	Merck Frosst	Quanser
AOSpine North America	Dompé	Mesothelioma Applied Research Foundation	Quintiles
Argonne National Laboratory	Dystonia Medical Research Foundation	MethylGene	RaySearch Medical
Arius Research	Eastman Kodak	MGI Pharma	Reata Pharmaceuticals
Arthritis Research Centre of Canada	Edwards Lifesciences	Michael J. Fox Foundation for Parkinson's Research	ResMed Foundation
Arthritis Society	Eisai	MicroVenton	Respironics Sleep and Respiratory Research Foundation
Association of Faculties of Medicine of Canada	Eisai Medical Research	Micrus Endovascular	Rett Syndrome Research Foundation
Astellas Pharma Canada	Elekta Instrument	Millennium Pharmaceuticals	Rheuminations
AstraZeneca Canada	Elekta Oncology Systems	Miikana Therapeutics	Rick Hansen Foundation
Aventis Pasteur	Eli Lilly Canada	Ministry of Health & Long Term Care	Robarts Research Institute
Aviva Canada	European Hematology Association	Ministry of Research and Innovation	Royal College of Physicians and Surgeons of Canada
Banting and Best Diabetes Centre	Exelixis	Multiple Myeloma Research Foundation	Royal Victoria Hospital Foundation
Baycrest	Expression Diagnostics	Multiple Sclerosis Society of Canada	SAIC Frederick
Bayer	Fight for Sight	Muscular Dystrophy Association of Canada	Sangamo Biosciences
Beckman Coulter	Foundation Fighting Blindness Canada	NARSAD	Sanofi -Synthelabo Canada
Bill & Melinda Gates Foundation	Foundation of the International Society of Blood Transfusion	National Cancer Institute of Canada	Sanofi-aventis Canada
BIO Ventures for Global Health	Fragile X Research Foundation of Canada	National Institutes of Health	Schering Canada
BioDiscovery Toronto	Gambro BCT	National Parkinson Foundation	Servier Canada
Biogen Idec	Gemin X Biotechnologies	National Patient Safety Foundation	Shire Canada
BioMimetic Pharmaceuticals	Genentech	Natural Sciences and Engineering Research Council of Canada	Signal Pharmaceuticals
Biosite	Genome Canada	NCE: Canadian Arthritis Network	Spiration
BioTheryx	Gentium	NCE: Canadian Stroke Network	Stanley Medical Research Institute
Boehringer Ingelheim	Genzyme	NCE: Stem Cell Network	Strauss Foundation
Brain Tumour Foundation of Canada	Gilead Sciences	Neurosurgery Research and Education Foundation	Susan G. Komen Breast Cancer Foundation
Bristol-Myers Squibb Pharmaceutical Research Institute	Glaucoma Research Society of Canada	NMT Medical	Synthes Spine Company
Canada Foundation for Innovation	GlaxoSmithKline	Novacea	Taro Pharmaceuticals Inc.
Canada Research Chairs Program	Government of Ontario	Novalung	Teva Neuroscience
Canadian Anesthesiologists' Society	Heart and Stroke Foundation of Canada	Novartis	Theralase
Canadian Arthritis Network	Heart and Stroke Foundation of Ontario	Novo Nordisk Canada	Thoratec
Canadian Association of Gastroenterology	Heart Failure Society of America	NPS Allelix	Toronto Ovarian Cancer Research Network
Canadian Association of Radiation Oncologists	Hoffman-La Roche	NPS Pharmaceuticals	U.S. Army Department of Defense
Canadian Breast Cancer Foundation	Hospital for Sick Children	Octapharma	U.S. Army Medical Research Acquisition Activity
Canadian Breast Cancer Research Alliance	Howard Hughes Medical Institute	Ontario Cancer Biomarker Network	University of British Columbia
Canadian Coordinating Office for Health Technology Assessment	Health Technology Exchange	OCE: Centre of Excellence for Photonics	University of Rochester
Canadian Cystic Fibrosis Foundation	Human Genome Sciences	Ontario Consortium for Image Guided Therapy and Surgery	University of Toronto
Canadian Diabetes Association	Idenix Pharmaceuticals	Ontario Genomics Institute	Varian Medical Systems
Canadian HIV Trials Network	International Institute for Research in Paraplegia	Ontario HIV Treatment Network	Vertex Pharmaceuticals
Canadian Institutes of Health Research	International Society for Heart & Lung Transplantation	Ontario Institute for Cancer Research	Vion Pharmaceuticals
Canadian Liver Foundation	J.P. Bickell Foundation	Ontario Mental Health Foundation	ViroPharma
Canadian Lung Transplant Study Group	James S. McDonnell Foundation	Ontario Neurotrauma Foundation	VistaGen Therapeutics
Canadian National Institute for the Blind	Janssen-Ortho	Ontario Problem Gambling Research Centre	Workplace Safety and Insurance Board
	Johnson and Johnson		YM Biosciences
	Juvenile Diabetes Research Foundation International		ZIOPHARM Oncology

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Toronto General Hospital | Toronto Western Hospital | Princess Margaret Hospital