



UNIVERSITY OF TORONTO  
FACULTY OF MEDICINE

## Dean's Report

# Health Starts *Here*



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# Message from the Dean

## Mission

We prepare future leaders, contribute to our communities and improve the health of individuals and populations through the discovery, application and communication of knowledge.

## Values

Integrity in all of our endeavours

Commitment to innovation and excellence

Life-long learning and critical inquiry

Promotion of social justice, equity, diversity and professionalism

Effective partnerships with all our stakeholders

Multi-professional and interdisciplinary collaboration

Supportive and respectful relationships

Accountability and transparency within our academic communities and with the public

Responsiveness to our local, national and international health care needs



As I enter my fourth year as Dean of one of the most outstanding Faculties of Medicine anywhere in the world, I am humbled by our collective academic achievements. The theme of this report, *Health Starts Here*, recognizes that our teachers, students, staff and their ideas, creativity, innovation and energy have a profound impact on health and biomedical science that is transforming health care.

In these pages, we document how the Faculty of Medicine makes a difference in Toronto, across Canada and globally. We highlight recent achievements that help realize our Vision – international leadership in health research and education – and our Mission.

This report focuses on quantitative and qualitative metrics that measure our academic activities, as demonstrated by our strategic plan. As a Faculty, we can only manage what we can measure, and central to the implementation of our plan is to benchmark academic activities against the best peer institutions. In research, our grant holdings, publications and citations are a measure of our national leadership and international competitiveness. According to the Thomson ISI rankings, health sciences at the University of Toronto ranks first in peer-reviewed health science publications and citations among Canadian and U.S. public universities combined. In the same category, we rank second among all U.S. private universities.

To realize the full potential of our scientific research that includes the application of discovery into practice, we are starting to measure the disclosure rate, licensing and commercialization of intellectual property. The launch of MaRS Innovation<sup>1</sup>, a new Centre of Excellence in Commercialization and Research created by partnership among the University of Toronto and its 10 fully affiliated hospitals, Ryerson University, the Ontario College of Art and Design, and the Ontario Institute for Cancer Research, will facilitate improved productivity and impact.

Where benchmarks do not exist, we will create them. I was recently asked how we will measure success in fulfilling our social responsibility. One benchmark we are using is the impact of our summer mentorship program. Over the past 15 years, inner city and Aboriginal senior high school youth have spent several weeks each summer on campus and in our affiliated hospitals, learning about health professions. Following this transformative

<sup>1</sup> MaRS Discovery District in downtown Toronto is a non-profit innovation centre connecting science, technology, and social entrepreneurs with business skills, networks and capital to stimulate innovation and accelerate the creation and growth of successful Canadian enterprises.



experience, a growing number enter post-secondary education. Last year, five former summer mentorship students graduated from our medical school: a tribute to the impact of this program on their lives and on our society as a whole.

A major priority is fundraising with commitment to provide significantly improved financial aid for our students. In partnership with our Medical Alumni Association, we have launched the Access to Excellence campaign to raise bursary funds for medical students to reduce their burden of debt.

The creation of the Dalla Lana School of Public Health in 2008 was made possible by an extraordinary \$24 million gift from Paul and Alessandra Dalla Lana: the largest private donation ever to public health in Canada. The leadership of these generous donors is a model example of philanthropy and academic excellence uniting to create a vital, new vision focused on improving the health of individuals and populations.

Our partnerships with hospitals, other health science faculties and the rest of the University have created novel, interdisciplinary University centres focused on innovative research and the translation of knowledge into clinical practice. This year alone we established the University of Toronto Transplantation Institute, the Centre for Forensic Science and Medicine, and the Centre for Patient Safety.

Finally, I wish to commend our outstanding academic and administrative leaders whose contributions to our Faculty and the University of Toronto deserve our highest praise and gratitude. We are proud to say: Health Starts *Here*.

**Catharine Whiteside, MD, PhD, FRCPC**  
*Dean, Faculty of Medicine*  
*Vice-Provost, Relations with Health Care Institutions*



# I. Learning Starts Here

*“Our medical school attracts the most remarkable, highly motivated young adults from across Canada – students who demonstrate outstanding leadership skills, civic engagement and social responsibility, and who take full advantage of all our offerings, including our tremendous variety of clinical and related research experiences. We are also very proud of the vast cadre of teaching faculty and staff who educate, mentor and support our students who, by all indicators, are extremely satisfied with their program.”*

**Professor Jay Rosenfield**

*Vice-Dean, Undergraduate Medical Education*

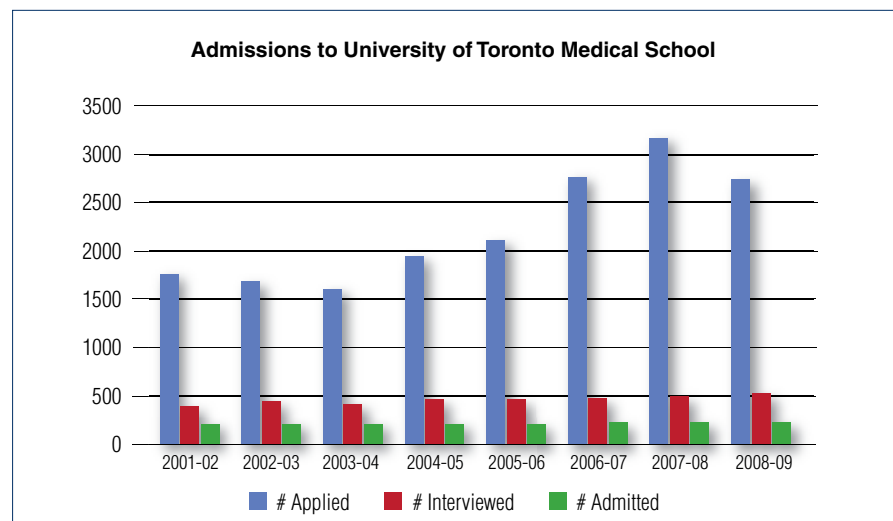
**G**reat health professionals and researchers begin their career development in the classroom, where we bring together the best students and teachers to generate excitement about learning. The Faculty of Medicine provides undergraduate programs in medicine, basic biomedical sciences, and – through our partnership with The Michener Institute for Applied Health Sciences – medical radiation sciences. A new physician assistant program is in the development stages. We also offer graduate education in basic biomedical and health sciences, rehabilitation sciences, public health sciences, as well as innovative collaborative programs in fields such as addiction studies, aging, bioethics, biomedical engineering, cardiovascular sciences, developmental biology, environment and health, neuroscience, proteomics and bioinformatics, and biomedical toxicology.

We have the largest training programs for clinician scientists in the country. These remarkable MDs dedicate a large portion of their careers to research and to translating new knowledge into innovative practice.

Our students are the best. They represent Canada’s cultural and socio-economic diversity. They are destined to have an immense impact on the quality and availability of care in Toronto, Ontario, Canada and the world.

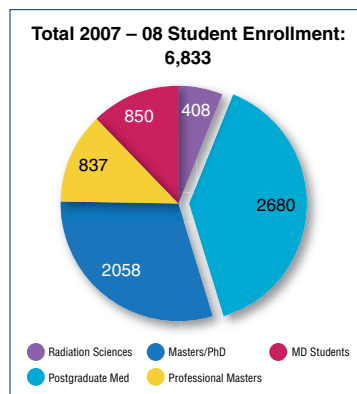
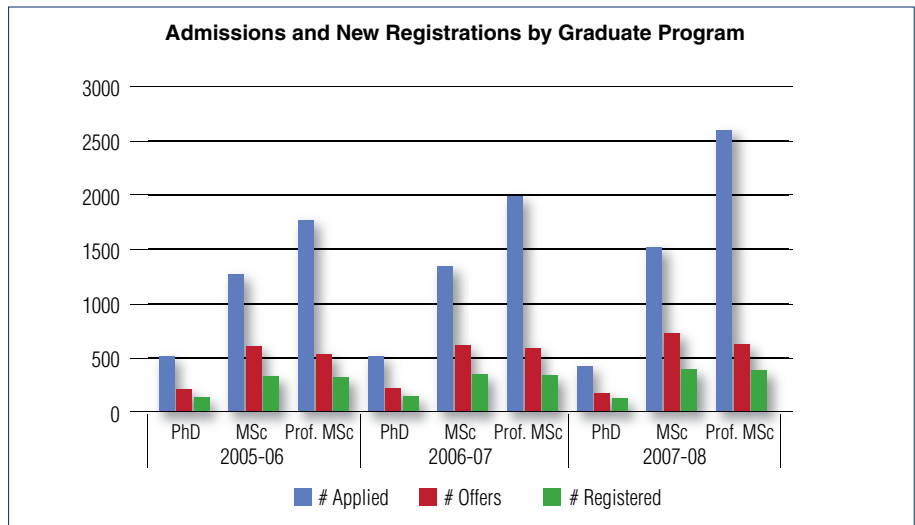
## Destination of Choice for Learning

For students, we are the destination of choice. Positions in our undergraduate programs are highly sought. The application-to-acceptance ratio in our undergraduate medicine program is the highest in Canada: more than 12 applications for each position.



*“The Faculty of Medicine’s superb MSc and PhD programs provide an essential link between the two key mandates of the University: research and education. Over 2000 graduate students are engaged in research with internationally recognized faculty on campus and in our 10 fully affiliated hospitals and research institutes. Their work captures the exquisite breadth and diversity of the biomedical and health fields today, from cells to society. The Faculty of Medicine is also heavily invested in graduate training of health professionals in eight professional master’s programs with over 700 students. We are attracting the very best students and providing them with the platform from which to excel nationally and internationally.”*

**Professor Andrea Sass-Kortsak**  
Vice-Dean, Graduate Education



Our Faculty is home to the largest postgraduate MD residency program in the country. More than one of every 10 physicians educated in Canada (12%) begins his/her residency training at our Faculty of Medicine. We attract high quality candidates and have the best “match rate” of all 17 Canadian medical schools. In 2009, we were the only medical school to fill all our positions in the first iteration of the annual CaRMS (Canadian Resident Matching Service) match.

Our graduate programs offer some of the most challenging and rewarding research opportunities available in North America. We produce high calibre doctoral and professional health graduates in community health, basic sciences, rehabilitation medicine, and clinical sciences.



## Tomorrow's Leaders

To be accepted into Faculty of Medicine programs, applicants must demonstrate both ability and commitment. Even before they graduate, our students are improving health and changing the world.



Inspired by a summer research experience in the Banting and Best Diabetes Centre, **Neil Goldenberg**, MD PhD candidate, is now studying the protein expression profiles in individuals with diabetes, looking to understand why the disease affects one person differently than another. His findings could lead to more targeted, effective care. Neil is a rising star in the field of molecular medicine. Early in his training, he was part of a team that developed a new method for splicing DNA.



After working in the Department of Biochemistry as a summer student, **Edén Fussner** “fell in love not only with research but with this dynamic, collaborative department.” It was during her master’s program, when studying a region in many human proteins associated with human cancers, that she “discovered” the applications of high resolution electron microscope. Now in the PhD program, she is examining what happens when differentiated, well-ordered adult cells are reprogrammed and turned back into undifferentiated, pluripotent stem cells with the potential to become any part of the human body.



**Pearl Yang**, a PhD student in the Graduate Department of Rehabilitation Science (GDRS), was drawn to the program because of the close collaboration between the faculty and the Toronto Rehabilitation Institute (TRI), which has the largest outpatient cardiac rehabilitation program in North America. Her research is focused on diabetes. Pearl is identifying the optimal exercise program to help people with diabetes manage their blood glucose levels and reduce their risk of developing cardiovascular disease and other complications. She credits her success to the opportunities she has had at the University of Toronto to learn from some of the absolute best researchers and minds, and to the faculty’s dedication to training future scientists.



**Adelaide Yiu**, now a PhD student at the Institute of Medical Science and the Collaborative Program in Neuroscience, had her first journal paper published when she was in the Bachelor of Science program at the University of Toronto. Based in the Neuroscience and Mental Health lab at the Hospital for Sick Children, she is investigating the neurobiology of memory. Adelaide is part of a team examining the role of a particular protein – CREB (cAMP/Ca2+) responsive element binding protein – in memory deficits in mice that model Alzheimer’s disease. The researchers have shown that increasing CREB can improve memory in mice. Their findings, which have been published in the prestigious journals, *Learning & Memory* and *Science*, may lead to treatments to reverse or delay early memory loss in Alzheimer’s disease.



**Fahreen Ladak** holds an Ontario Graduate Scholarship and is enrolled in the MSc in Physical Therapy professional program. As a member of the Physical Therapy Graduate Students Council, she is active in interprofessional activities on and off campus.

As part of her training, Fahreen completed an internship at the Centre for the Rehabilitation of the Paralyzed in Bangladesh. She also volunteered in Pakistan and Tanzania. She has played a key role in the progress of IMAGINE (Interdisciplinary Medical and Allied Groups for Improving Neighbourhood Environments) an interprofessional, student-run clinic whose development was initiated in collaboration with the Office of Health Professions Student Affairs, by medical students in coordination with the community partner St. Christopher House. IMAGINE works with a dedicated group of students from the disciplines of dentistry, medicine, nursing, pharmacy, physical therapy and speech-language pathology. The clinic aims to provide a unique opportunity for students to apply academic knowledge, clinical skills and work as part of a multidisciplinary team with marginalized populations.



**Stefan Baral** – who has a master's in public health and business administration as well as his MD – was attracted to the Faculty of Medicine because it has the largest public health and international development program in Canada. A community medicine resident at the University of Toronto and a post-doctoral fellow at Johns Hopkins University, Stefan is fully engaged in research as well as clinical care. He is currently evaluating the HIV epidemic among men who have sex with men, in lower income settings. Working collaboratively with local lesbian, gay, bisexual and transsexual rights groups, he has designed and coordinated studies of HIV prevalence, determinants of infection and human rights in four sites across southern Africa. His goal is to reduce the risk for HIV among sexual minorities by providing more effective programs, reducing stigma and decriminalizing same-sex practices. In 2008, Stefan received the Department of Family and Community Medicine's Patient Advocacy Award.



Drawn to the University of Toronto for its multidisciplinary programs and extensive research opportunities, **Kadia Petricca** was one of eight HIV/AIDS research interns in the Department of Anthropology's Namibia Program during her undergraduate degree studies. In 2004, she co-founded *Juxtaposition*, the first global health magazine at the University. Now a PhD student in the Department of Health Policy, Management and Evaluation in the Faculty of Medicine, she continues to think globally, working to strengthen health systems in low-income countries. She is currently collaborating with decision makers in Ethiopia to examine the legitimacy and fairness of priority setting for health services at the national and district level. Kadia is also working alongside Professor Clare Pain (Department of Psychiatry) and the team of physicians and researchers affiliated with the Toronto Addis Ababa Academic Collaboration (TAAAC) to co-develop evaluation strategies for the project. One of TAAAC's objectives is to strengthen medical specialty training and increase the number and skills of physicians and researchers in Ethiopia.



## Student Diversity Reflects Our Society

Toronto is one of the most culturally diverse cities in the world. According to the Toronto Central Local Health Integration Network, every country of the world is reflected here. Over 160 languages are spoken and 32% of Toronto's citizens are members of visible minority groups. Chinese, South Asian and African/Caribbean populations each make up 6% of the population. About 2% of our population is Aboriginal, and over 10% is gay, lesbian, bisexual, transgendered or transsexual.

Our students are as diverse as our city, and we are committed to preparing a health workforce that has the skills to meet the health needs of culturally diverse communities.

Some health professionals who have immigrated to Canada need further education or residency training to qualify for licensure to practice and we are pleased to offer these opportunities. Over the past 13 years, we have steadily increased the number of postgraduate MD training positions for international medical graduates (IMGs) – in both family medicine and specialties. The University of Toronto now educates 37% of the IMGs in Ontario. They bring to our educational environment the richness of their professional training and life experience, as well as a unique perspective. Several will join our Faculty as valued teachers.

**Professor Savithiri Ratnapalan** received her medical training in Colombo, Sri Lanka and completed Royal College of Paediatrics and Child Health examinations in London, U.K., before moving to Canada. She completed residency training in paediatrics and a fellowship in clinical pharmacology and toxicology at the Hospital for Sick Children, and obtained her master's in education at the University of Toronto. Her research interests are in paediatric emergency care, pain management pharmacology and toxicology, and medical education. According to Prof. Ratnapalan, "Mentoring trainees and faculty to challenge the status quo and to embark on research has been one of the most important contributions I have made to medical research." She consults nationally and internationally on developing and implementing paediatric sedation programs. In an opinion piece in the *Canadian Medical Association Journal*, she described the qualities of a professional as "someone with a defined set of knowledge and skills – a good communicator who exhibits honour and integrity, altruism, leadership, compassion, responsibility, and accountability" and added that "we need to be good human beings in addition to being good doctors."



*Most of our postgraduate MD trainees (62%) are born in Canada yet they come from a multitude of ethnic backgrounds. Just over one in three is comfortable speaking to patients in two or more languages.*



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*Interprofessional care is a solution to address the health human resource shortage faced in this country, as it has the potential to improve patient outcomes. Since our health care system demands that clinicians work collaboratively in a team environment, it is imperative that their education and training prepare them to practise interprofessional care.*

## Interprofessional Education to Transform Health Care

One of the goals of Ontario's health care system is to promote collaborative, patient- and family-centred care by encouraging health care professionals to work in interprofessional teams. Professionals are more likely to work well together and respect each other's practice when they are educated together.

The Office of Interprofessional Education, launched in 2006 at the University of Toronto, is opening the door to better collaboration. By 2009, all students in our health professional programs – dentistry, medicine, nursing, medical radiation sciences, occupational therapy, pharmacy, physical education and health, physical therapy, social work, speech-language pathology – will graduate with the competencies to work as part of collaborative interprofessional teams. They will understand and respect one another's roles and skills, be able to communicate with other members of a team, and be willing to collaborate. Interprofessional practice is now part of the curriculum for students just starting their professional careers and this learning is enabled by the commitment of our clinical partners in the Toronto Academic Health Sciences Network of affiliated hospitals that provide interprofessional care. The curriculum includes complementary learning activities, simulations, and a four-week clinical placement, where students have the opportunity to apply the concepts of collaboration in practice settings. Our Office of Interprofessional Education has attracted over \$4 million in funding to create a foundation for collaborative teaching and learning among all the health professions.

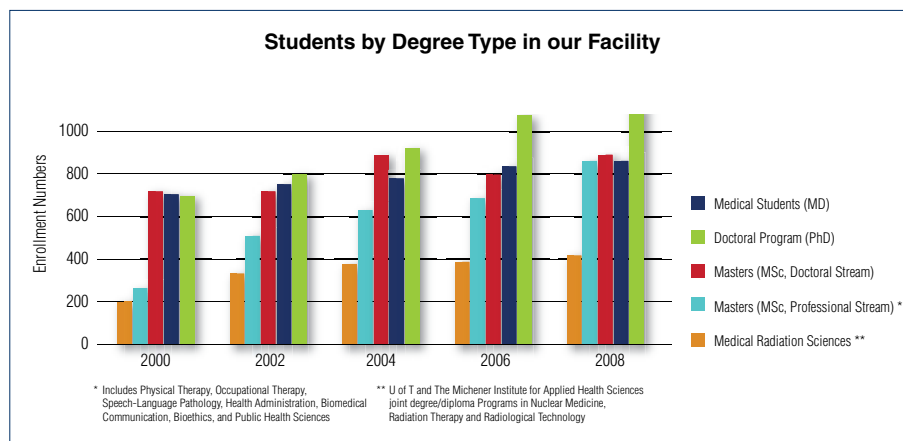


## Preparing Tomorrow's Health Workforce

The demand for health professionals and scientists – in Ontario, Canada and the world – is growing, as is the need for people to work in underserved areas and with underserved populations.

### Increasing Enrollments

The Faculty of Medicine at the University of Toronto has responded by expanding its programs and increasing enrollments, while still ensuring the quality and academic integrity of its education programs. Since 2000, the number of students in our master's level professional stream programs – the physical therapists, occupational therapists, speech-language pathologists and public health practitioners of tomorrow – has almost tripled.



To help address the physician shortage in Ontario and Canada, we've increased the number of first-year positions in undergraduate medicine from 198 to 224, over the last eight years.

In May 2009, the Government of Ontario announced 100 more positions for medical students for the province, 35 of which will be based at the University of Toronto. Over the next six years, we will continue to increase the number of residency positions to help train the family physicians, cancer specialists, geriatricians, geneticists and other specialists required to provide care in Toronto, Ontario and other parts of Canada.

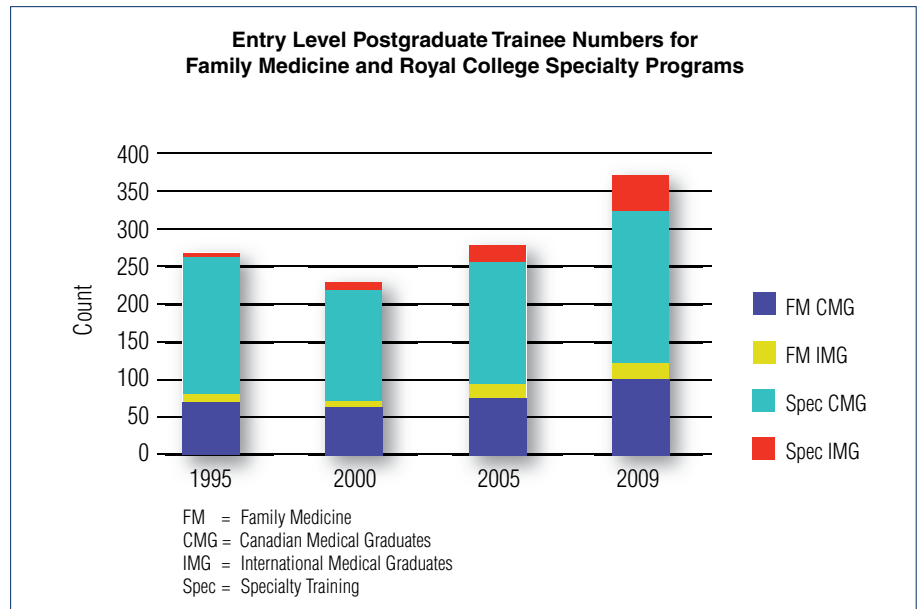
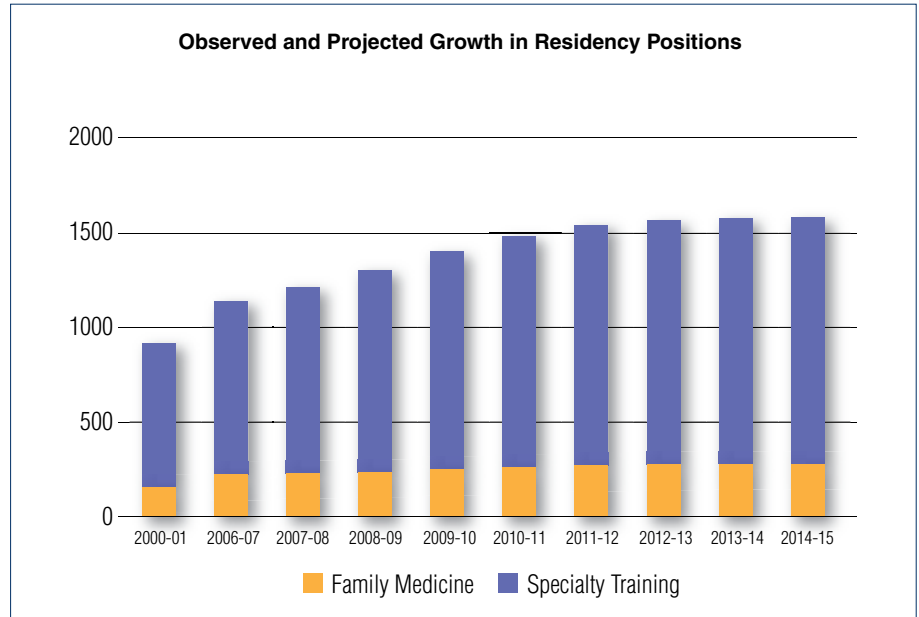
### Our MD Graduates Serve Locally, Provincially, Nationally and Globally

Ontario looks to the University of Toronto to provide a significant proportion of its health professionals. According to the Canadian Postgraduate (MD) Education Registry (CAPER), the University of Toronto has a definite, measureable impact on the Ontario and Canadian health workforces every year.

*“More medical school graduates require more MD residency positions. As part of our commitment to meet the health needs of Canadians, we have also made the largest increase in postgraduate MD residency positions in the province. Over the past seven years, we’ve seen a 27% increase in MD residency trainees, a 25% increase in family medicine trainees, and, in response to directives from the Ministry of Health and Long-Term Care, an almost 200% increase in international medical graduates in our programs.”*

**Professor Sarita Verma**

*Vice-Dean, Postgraduate Medical Education*



For example, we educated almost half the doctors who graduated from Ontario medical schools in 2005 and who entered practice in Ontario in 2007. Compared to other medical schools in the province, a higher proportion of our postgraduate MDs (almost eight out of 10) and undergraduate MDs (eight out of 10) stay in Ontario to practise.

## **Meeting the Need for Family Physicians**

Because Toronto is a large tertiary care centre, the University has a reputation for producing specialists and subspecialists. However, one-quarter of our postgraduate medical residents are studying family medicine. Statistics Canada estimates that 4.1 million Canadians do not have a family physician.<sup>2</sup> As part of our commitment to meeting our communities' health needs, we have increased positions in family medicine over the past eight years.

Our two-year, comprehensive family medicine residency is one of the largest and most sought-after programs in North America. Residents can also choose to take a third year of residency concentrating on one of 17 areas of practice within family medicine, such as emergency medicine, anesthesia, care of the elderly, individuals with HIV and palliative care.

## **Preparing MDs for Rural Practice**

Ontario needs more doctors to work in small communities and rural parts of the province. With the 2008 agreement between the Faculty of Medicine and the Rural Ontario Medical Program (ROMP), undergraduate and postgraduate students now have more opportunities to train with physicians practising in smaller communities across the province. Placements are available in core specialties, including family medicine, anesthesia, community medicine, diagnostic radiology, emergency medicine, internal medicine, general surgery, orthopaedic surgery and paediatrics.

**Dr. Somaiah Ahmed** is a second-year family medicine resident in the Toronto East General Hospital Rural Residency Program. She is also one of the presidents of the Family Medicine Residents' Association of Toronto, where she is a strong advocate for residents. Somaiah chose the Rural Family Medicine Program at University of Toronto because it offered her "the best of both worlds – one year in Toronto and one year in a rural community." She spent her "rural" year in Orangeville, where she now plans to practise – proving that the program achieves its goal of attracting new physicians to rural practice. Somaiah hopes to become a teacher in the program and stay connected to the Faculty of Medicine.



**Dr. Somaiah Ahmed** is a second-year family medicine resident in the Toronto East General Hospital Rural Program.



<sup>2</sup> "In 2007, 15% of Canadians aged 12 or older, about 4.1 million people, reported that they did not have a regular medical doctor, either because they were unable to find one, or because they had not looked. This proportion was up three percentage points since the 1996/1997 National Population Health Survey (NPHS)." Link: <http://www.statcan.gc.ca/daily-quotidien/080618/dq080618a-eng.htm>



### **Preparing Specialists for the Country**

We have the highest intake to medical subspecialty training (R4 match) of all Canadian medical schools. We train the largest proportion of highly specialized and emerging subspecialty trainees in areas such as geriatrics, rheumatology, and medical oncology (43% of Canadian trainees).

The University of Toronto produces most of the high priority specialists in Ontario:

- 83% of community medicine specialists
- 50% of geriatricians
- 67% of neurosurgeons
- 45% of radiation oncologists.

Although our graduates train in Toronto, their impact is provincial and national. Our MD trainees are working in every part of the province.

We prepare up to 33% of the specialists and up to 21% of family physicians working in northern Ontario. Our graduates also make up to 83% of physicians in the high growth regions around Toronto.

### **Educating the Global Workforce**

The impact of our investments in research and education is felt far beyond our campus, our teaching sites, our communities, and our province. Our work influences health policy and care nationally and internationally.

We play a key role educating physicians for other countries around the world. In 2008 – 09, 122 postgraduate medical residents and 809 clinical fellows studied in our Faculty under employment visas. They came from 88 different countries to develop the skills they need to provide world class care at home. In addition, 196 (7.3%) of those enrolled in master's and PhD programs were international students.

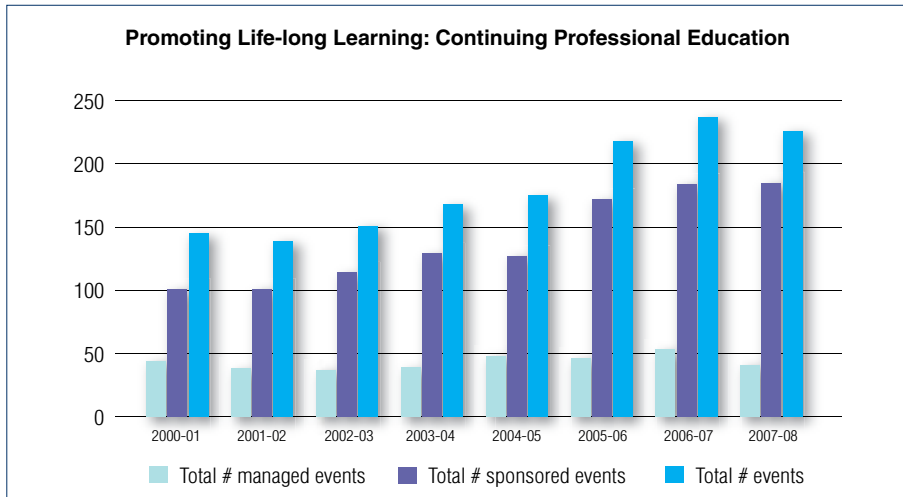
### **Promoting Life-long Learning: Continuing Professional Education**

Nowhere is continuing education and life-long learning more important than in health services. All health care professionals are required by their regulatory bodies to participate in continuing education programs to maintain their skills and competencies.

The Faculty of Medicine actively promotes and supports life-long learning by providing continuing education programs, and by studying the best ways to educate health care professionals.

The Office of Continuing Education and Professional Development (CEPD) in the Faculty of Medicine, accredits approximately one-third of all specialty medical continuing education in Canada. In 2008, almost 21,000 practising health professionals participated in the 226 continuing education courses offered by the University of Toronto. Interprofessional education (IPE) is an integral part of CEPD. With funding from HealthForceOntario, the goal of the IPE program

is to train professionals to develop interprofessional education within their organization or the broader community.



Just as clinicians must continue to learn to maintain and refine their skills, teachers always have more to learn. The Centre for Faculty Development, a unique partnership between St. Michael’s Hospital and the Faculty of Medicine, supports our academic mission by enhancing the teaching and education skills of our faculty, supporting education programs for department and course directors, promoting interprofessional collaboration and teaching, and assisting with career and leadership development. A total of 511 faculty participated in workshops offered by the centre in 2007 – 08, up from 422 the previous year.

In 2009, the Association of Faculties of Medicine in Canada presented **Professor Ivan Silver**, Vice-Dean, Continuing Education and Professional Development, with its Award for Exemplary Contributions to Faculty Development in Canada. Prof. Silver, who is a member of the Department of Psychiatry, was recognized for the breadth and impact of the University’s Centre for Faculty Development.

**The Public Goes to Medical School**

Each year, approximately 1000 members of the public “graduate” from Mini-Med School at the University, a popular program of health science designed for a general audience. Dynamic members of the faculty give presentations on topics of particular interest to the public concerned about health. The course is designed to help people become more informed, take better care of their own health, be aware of the information and resources available to them, and critically assess health information in the news or on the Internet. Mini-Med School is another way faculty fulfill their social responsibility, by helping people navigate the sea of health-related information that has flooded television, the Internet and print media.



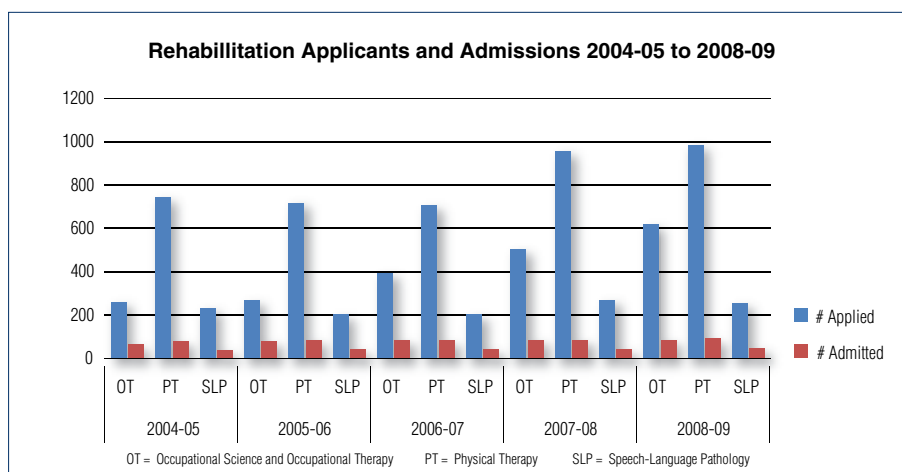
*“Building a strong partnership with our clinical colleagues in the community, and with our partners at the fully affiliated and community affiliated hospitals, is central to what we do, and we are very proud of our many clinical partners. There are limitless possibilities to advance knowledge, advance practice and improve outcomes. With passion, our faculty question what is known, and explore what can be changed to make a difference in the lives of patients and the community.”*

**Professor Katherine Berg**

*Executive Chair, Rehabilitation Sciences Sector;  
Chair, Department of Physical Therapy*

## Preparing Rehabilitation Sciences Health Professionals

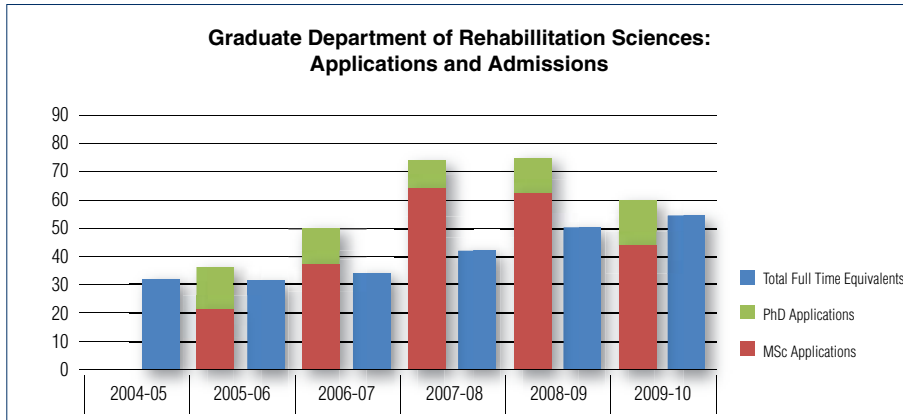
The demand for rehabilitation sciences health professionals has been increasing, and our programs have been growing to meet that need. The Faculty of Medicine educates more than one-quarter of the occupational therapists, physical therapists, and speech-language pathologists trained in Ontario each year, 90% of whom remain in the province to practise. The Graduate Department of Rehabilitation Science (GDRS), Speech-Language Pathology (SLP), Physical Therapy (PT) and Occupational Science and Occupational Therapy (OSOT) are experiencing significant growth in numbers of faculty and students. Currently, there are over 475 graduate students and nearly 700 faculty across the departments.



Aside from being one of the top educators of specialists in rehabilitation sciences, our faculty members are expanding the field with innovative research. Faculty members with primary appointments in the rehabilitation sciences hold grants as principal investigators annually of more than \$6 million, and over the past several years have collaborated on grants as co-investigators of over \$35 million. They have published more than 500 peer-reviewed publications in the past two years. Research in rehabilitation is diverse and includes work at the cell level, with individuals and families, clinical groups and communities, as well as in the fields of health services and policy. Much of our research is aimed at innovations in assessment and treatment of people with disabilities across the lifespan and settings including the hospital, home, schools, workplace and community.

These achievements have been acknowledged and lauded by external reviewers. In 2006, CAPTE, the American accreditation agency, awarded a 10-year accreditation to the University of Toronto Department of Physical Therapy, only one of three foreign universities accredited by the U.S. The department is also accredited by the Accreditation Council for Canadian Physiotherapy Academic Programs. Since 1996, the department has received the highest ranking for our academic and scholarly programming from the Academic Credentialing Council of the Canadian Association of Occupational Therapists. In 2008, the Department of Speech-Language Pathology received a seven-year accreditation for its professional program, the highest accreditation rating possible.





## Preparing Medical Radiation Sciences Health Professionals

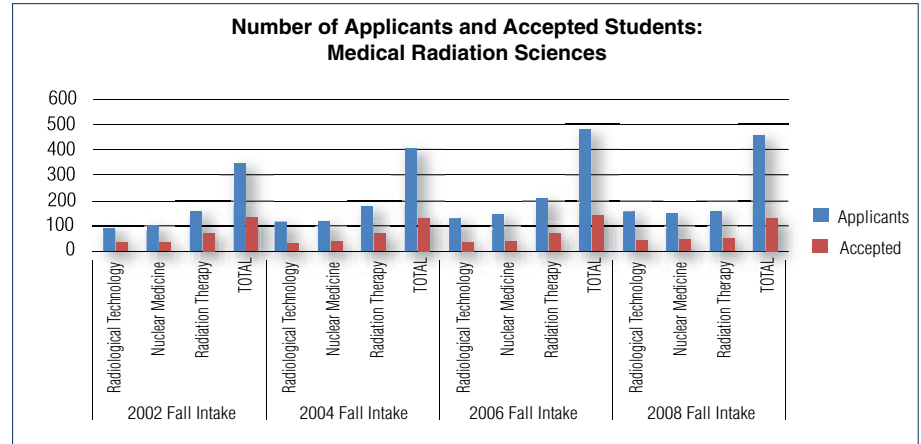
The undergraduate Medical Radiation Sciences (MRS) program prepares our students for tomorrow's professional practice, for future leadership roles and for graduates to pursue advanced degrees. The MRS program produces highly skilled health care professionals. The employment rate for Medical Radiation Sciences program students is over 95%, six months after graduation. Our clinical site affiliations are throughout the province, ensuring that Ontario's health human resource needs are being met in this area. The MRS program is a strong collaboration between the Faculty of Medicine and The Michener Institute for Applied Health Sciences. This special partnership offers both a BSc and an Advanced Diploma in Health Sciences in one of three medical radiation science disciplines: nuclear medicine technology, radiation therapy and radiological technology. September 2009 will see the eleventh cohort of students entering the program. Enrollment in the MRS program, in particular the radiation therapy discipline, is the highest amongst any accredited baccalaureate degree programs in Canada and the United States. The MRS program is continuously improving and provides an innovative curriculum, and for this reason, as well as due to the substantial number of students who enroll, it remains unique in North America. In September 2007, we implemented a major curriculum redesign, including several interprofessional courses and a simulated clinical semester.

The Master of Health Science in Medical Radiation Sciences (MHScMRS), offered jointly through the Institute of Medical Science and the Department of Radiation Oncology, is designed specifically to develop the kind of advanced academic clinician who is in demand in contemporary radiation medicine practice. Graduates of the program will fill the cancer care system's need for advanced, expert, and academic radiation therapists – a breed of professionals who continue to challenge the boundaries of practice, contribute to accelerating the pace of radiotherapy innovation and take clinical and academic endeavours to new levels. The two current, fully affiliated teaching sites, Princess Margaret Hospital (PMH) and the Odette Cancer Centre (OCC), together represent the largest concentration of radiation medicine expertise, advanced technology, innovative education and clinical research in North America.

*“The Medical Radiation Sciences program offers high quality, innovative education programs leading to a BSc degree and professional certification. The partnership between the University of Toronto and The Michener Institute exposes students to a combined highly academic and also highly practical education program. We are very proud to offer the best exposure to the most innovative technologies, diverse clinical situations, and prospects for ongoing academic career paths. Modern imaging-based technologies are extremely important to high quality health care systems, and our program opens the doors to exciting professional careers.”*

**Professor Mary Gospodarowicz**

*Chair, Department of Radiation Oncology*



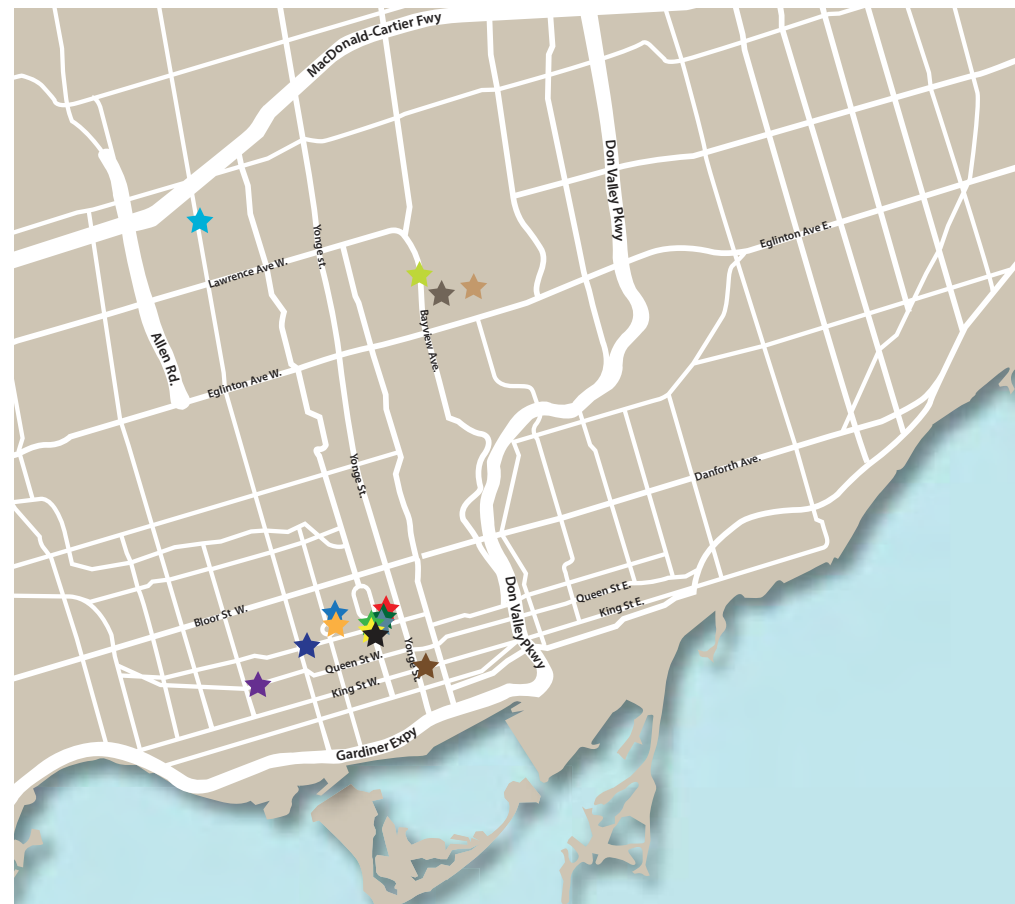
### Our Hospital Partners in Learning

The largest urban centre in Canada, Toronto is a truly remarkable place to learn about clinical care. It offers unparalleled diversity of learning experiences – clinically, culturally and socially.

#### Fully Affiliated Hospitals

- ★ Baycrest Centre for Geriatric Care  
3560 Bathurst Street
- ★ Sunnybrook Health Sciences Centre  
2075 Bayview Avenue
- ★ Bloorview Kids Rehab  
150 Kilgour Road
- ★ Centre for Addiction and Mental Health  
175 Brentcliffe Road
- ★ Centre for Addiction and Mental Health  
33 Russell Street
- ★ Centre for Addiction and Mental Health  
250 College Street
- ★ Women's College Hospital  
76 Grenville Street
- ★ UHN-Toronto General Hospital  
200 Elizabeth Street
- ★ Mount Sinai Hospital  
600 University Avenue
- ★ UHN-Princess Margaret Hospital  
610 University Avenue
- ★ The Hospital for Sick Children  
555 University Avenue
- ★ Toronto Rehabilitation Institute  
550 University Avenue
- ★ St. Michael's Hospital  
30 Bond Street
- ★ UHN-Toronto Western Hospital  
399 Bathurst Street
- ★ Centre for Addiction and Mental Health  
1001 Queen Street West

#### Fully Affiliated Hospitals



Working very closely with our fully affiliated hospital partners in downtown Toronto, the Faculty of Medicine has also developed very collaborative partnerships with community affiliates and educational sites beyond the core areas. As testament to our responsiveness to the growing community needs, we are committed to developing a broader network of clinical training sites and providing more distributed medical education throughout the greater Toronto area and beyond. In 2008, we continued to expand our network and reach outside the downtown core, creating partnerships with six more community hospitals: Credit Valley Hospital, Trillium Health Centre, Royal Victoria Hospital, Bridgepoint Health, Southlake Regional Health Centre and Lakeridge Health Network. We now have agreements with 10 fully affiliated hospitals and 17 community affiliates. Through our hospital partners, students receive valuable clinical experience in a variety of settings. Residents can choose from a range of urban, suburban and rural practice settings. Hospitals receive skilled and valuable trainees, and the Ontarians served by our partner hospitals receive improved access to high quality care.

*Community Affiliated Hospitals and Sites*

- ★ Royal Victoria Hospital  
Barrie, Ontario
- ★ Southlake Regional Health Centre  
Newmarket, Ontario
- ★ Lakeridge Health Network  
Port Perry, Ontario
- ★ Lakeridge Health Network  
Bowmanville, Ontario
- ★ Lakeridge Health Network  
Oshawa, Ontario
- ★ Lakeridge Health Network  
Whitby, Ontario
- ★ The Scarborough Hospital (General Campus) Scarborough, Ontario
- ★ St. John's Rehabilitation Hospital  
Toronto, Ontario
- ★ The Scarborough Hospital (Grace Campus) Scarborough, Ontario
- ★ North York General Hospital  
Toronto, Ontario
- ★ Providence Healthcare  
Toronto, Ontario
- ★ Toronto East General Hospital  
Toronto, Ontario
- ★ Hincks-Dellcrest Centre (Jarvis Site) Toronto, Ontario
- ★ Bridgepoint Health  
Toronto, Ontario
- ★ Surrey Place Centre  
Toronto, Ontario
- ★ Humber River Regional Hospital (Keele St. Site) Toronto, Ontario
- ★ St. Joseph's Health Centre  
Toronto, Ontario
- ★ Hincks-Dellcrest Centre (Sheppard Ave. Site) Toronto, Ontario
- ★ Humber River Regional Hospital (Finch St. Site) Toronto, Ontario
- ★ Humber River Regional Hospital (Church St. Site) Toronto, Ontario
- ★ West Park Healthcare Centre  
Toronto, Ontario
- ★ George Hull Centre for Children and Families, Toronto, Ontario
- ★ Trillium Health Centre  
Toronto, Ontario
- ★ Trillium Health Centre  
Mississauga, Ontario
- ★ Credit Valley Hospital  
Mississauga, Ontario
- ★ Markham-Stouffville Hospital  
Markham, Ontario

*Community Affiliated Hospitals and Sites*



## II. Today's Leaders Are Here

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*The knowledge and reputation of our professoriate are ranked highly by students and trainees. The Faculty of Medicine now surveys residents in their final year about the quality of teaching and supervision they receive. Over the three years the exit survey has been in place, more than seven of 10 of our MD residents are very satisfied with the performance of their program directors and with their educational experience.*

**O**ur students study in a rigorous environment that integrates education and research, scholarship and discovery. They learn from award-winning teachers and researchers whose achievements are recognized locally, nationally and internationally.



**Professor Martin Schreiber**, an MD graduate of the University of Toronto (8T7), is having a major impact on teaching in the Faculty of Medicine and at the University of Toronto. In 2008, he received the prestigious E. Mary Hollington Award for Excellence in Clinical Teaching. Prof. Schreiber, also based at St. Michael's Hospital, has also been honoured with the Dean A.L. Chute Award eight times in the past nine years. In 2004, he won the W.T. Aikins Award for course development and design for his work on the Foundations of Medical Practice course. In 2009, he received the University of Toronto President's Teaching Award – one of only three awarded across the entire University – and became a member of the University's prestigious Teaching Academy.



**Professor Fiona Miller**, in the Department of Health Policy, Management and Evaluation, holds a New Investigator Award from the CIHR Institute of Health Services and Policy Research. Her research is focused on health technology policy, particularly in the area of genetic screening and ethics. Her work is helping to shape Ontario's policy on newborn and childhood screening.



One of the top cited scientists in his field and Distinguished Scientist at the Samuel Lunenfeld Research Institute at Mount Sinai Hospital, **Professor Tony Pawson**, Department of Molecular Genetics, studies how cells grow and communicate with each other. He discovered how proteins inside human cells interact with one another, and thereby convey signals from receptors at the cell surface to their targets within the cell, which in turn elicit changes in cell proliferation. His basic research has been important for understanding the formation of cancer cells, and the development of new drugs for some types of cancers. In the 23 years he has been part of the Faculty of Medicine, Prof. Pawson has supervised and mentored numerous graduate students and postdoctoral research fellows, many of whom are now part of our faculty, or are developing new knowledge in other universities and in industry. In 2009, Prof. Pawson was one of two Canadians to ever receive the \$500,000 Kyoto Prize for lifetime achievement. To support scientific excellence, the Government of Ontario matched the Kyoto Prize. He holds the University of Toronto's highest rank as University Professor.



When the human brain is injured by an accident, a stroke or some other disorder, the results can be devastating – loss of speech, memory and a host of other mental and physical problems. Over the last 15 years, **Professor Angela Colantonio**, Department of Occupational Sciences and Occupational Therapy; Toronto Rehabilitation Institute, has studied the effects of aging and injury on the human brain. Her research has focused on the effects of stroke, dementia and, most recently, traumatic brain injury (TBI). Prof. Colantonio has identified new predictors of stroke incidence and recovery in older adults and investigated the support needs of people caring for family members who have dementia. She currently leads a major research program advancing knowledge of the occurrence and long-term consequences of TBI, particularly among vulnerable populations.



**Professor Vicki LeBlanc**, Associate Director of the Wilson Centre, was recently appointed Director of the Network of Excellence in Simulation for Clinical Teaching and Learning – a joint venture among the University of Toronto health science faculties, Mount Sinai Hospital and The Michener Institute for Applied Health Sciences. With simulators, health science students are able to practise their clinical skills on “simulated” patients and reach a level of skill and proficiency before they try those same skills on actual patients. Simulated clinical learning, a critical component of teaching, can reduce length of training and promote patient safety. It also translates into more “practice-ready” graduates, more effective and efficient patient care, and better health outcomes. The network's goal is to advance the use of simulation in clinical learning and be a catalyst in developing a world-class simulation infrastructure in Ontario. In her research, Prof. LeBlanc has been using simulation programs to assess how stress affects performance in demanding workplace situations, such as the emergency department. Her team is now working on ways to integrate stress-coping strategies into training and developing tools that will reduce the risk of bad decisions made under stress, such as charts or programs that calculate drug dosages.

## Leadership Starts with Strategic Faculty Recruitment

At the Faculty of Medicine, we are not content with the status quo. Faculty appointments at the University of Toronto are highly sought after and prized, and we continue to actively recruit new faculty who share our commitment to rigour, integrity, and social responsibility.

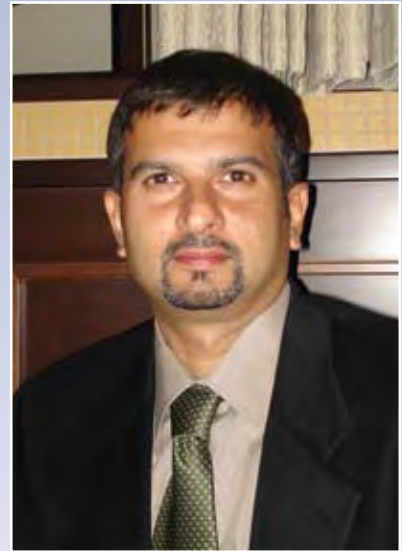
We keenly seek individuals who bring new perspectives and expertise.

Here are two of our recruits who are prominent international leaders in their fields.



**Professor Shoo Lee**, world-renowned neonatologist, grew up in Singapore and came to the University of Toronto by way of the University of Singapore (MD), Children's Hospital Boston (paediatric training), Harvard University (PhD, Health Policy), the University of British Columbia and the University of Alberta. Recruited to Toronto in 2008, Prof. Lee, Department of Paediatrics; Mount Sinai Hospital, is the founding Director of the Canadian Neonatal Network, a national database to study outcomes in neonatal intensive care units. Prof. Lee has dedicated his life to helping newborns overcome struggles to survive in the world. He has significantly enhanced our capacity to advance discovery and knowledge translation in neonatology.

**Professor Aleixo Muise**, Department of Paediatrics; Hospital for Sick Children, earned his PhD in biochemistry at Dalhousie University, where he earned a number of prestigious awards including the Patrick Prize in Biochemistry, the President's Teaching Award, and the medical Research Foundation Award. He then completed his MD at the University of Toronto and his paediatric postgraduate training at the Hospital for Sick Children. During his post-doctoral fellowship in the lab of Dr. Daniela Rotin, Prof. Muise and collaborators identified a susceptibility gene for ulcerative



colitis. Over the past two years, he's collected an impressive list of young researcher awards, including the prestigious Starr Medal postgraduate research award, the Thrasher Research Fund New Investigators Grant, the Canadian Society for Clinical Investigators (CSCI)/Canadian Institutes for Health Research (CIHR) Award for Excellence in resident research and the Canadian Research Award for Specialty Residents from the Royal College of Physicians and Surgeons of Canada. Prof. Muise plans to continue working on the functional role of proteins identified from genetic studies in the pathogenesis of inflammatory bowel diseases.

## Building a Department of Leaders

When asked the secret to creating a world-renowned clinical department, **Professor Patrick Gullane** says “to be successful one has to surround oneself with people that are better than you are, empower them and let them provide the leadership.”

Under Prof. Gullane’s leadership as departmental chair, the Department of Otolaryngology – Head and Neck Surgery has transformed into one of the foremost of its kind internationally. Since 2002, Prof. Gullane (Otolaryngologist-in-Chief, University Health Network) has recruited 20 academic faculty to the department, including individuals with advanced training in head and neck oncology and microvascular surgery, paediatric otolaryngology, otology-neurotology, rhinology, laryngology, facial plastic and reconstructive surgery, as well as research investigators within each of these domains. The department also benefits from four endowed chairs and \$11 million in philanthropic support.

Prof. Gullane, himself recruited to the Faculty of Medicine in 1983 from the University of Western Ontario, has augmented the learning environment by attracting the best and brightest medical students and residents to his department and developing a dedicated faculty. Enhancement of fellowship programs has attracted international graduates and visiting professors from across the globe, and those fellowship graduates have added significantly to the academic output and research productivity of the department.

His team’s efforts to educate surgeons throughout the world have raised the bar in the management of head and neck cancer and resulted in the improvement of the quality of life of patients worldwide, while enhancing the international profile of his department.



### Order of Canada: National Recognition of Our Faculty Members

**Professor Michael Baker** of the Department of Medicine and former Physician-in-Chief at the University Health Network, and **Professor Paul Garfinkel**, President and Chief Executive Officer of the Centre for Addiction and Mental Health and member of the Department of Psychiatry, have been appointed to the Order of Canada. The Order of Canada is this country’s highest civilian honour, distinguishing people in all sectors of our society who have enriched the lives of others and made a difference to Canada. Prof. Baker’s original research over a 25-year period has produced an important body of work that has improved our understanding of human leukemias and other cancers. His approach has been to combine fundamental observations in the laboratory with clinical studies to help explain some of the unique features of these malignant diseases. Prof. Garfinkel is recognized for his contributions to the field of mental health, and is a nationally and internationally renowned psychiatrist, researcher, academic leader, hospital administrator, humanitarian and advocate. He was President and Psychiatrist-in-Chief of the Clarke Institute for Psychiatry and Chair of the Faculty’s Department of Psychiatry from 1990 to 2000. As a researcher, most of his more than 150 peer-reviewed papers related to eating disorders; his work in the 1970s and 1980s made Toronto one of the world leaders in this field.

## III. Discoveries Start Here

*“In 2008 we had our best year yet for total research funding – almost \$600 million in total external funding for on-campus and in the 10 fully affiliated hospitals and research institutes. Significant advances were made in most areas of research, particularly in cancer, cardiovascular medicine, diabetes, genetics, global health, imaging, neurosciences, regenerative medicine, rehabilitation sciences, systems and structural biology.*

*We’re on a roll!”*

**Professor Peter Lewis**

*Vice-Dean, Research and International Relations*

**M**ost discoveries that save lives and advance clinical care begin in investigator-initiated, curiosity-driven research. The great story of stem cell research starts in 1961 with a discovery by Professors James Till and Ernest McCullough who were working at the Ontario Cancer Institute at Princess Margaret Hospital. Toronto is now known as a world-leader in stem cell biology and its applications in cancer and regenerative medicine. Stem cell research is conducted by a network of scientists located in the hospital-based research institutes and on campus.

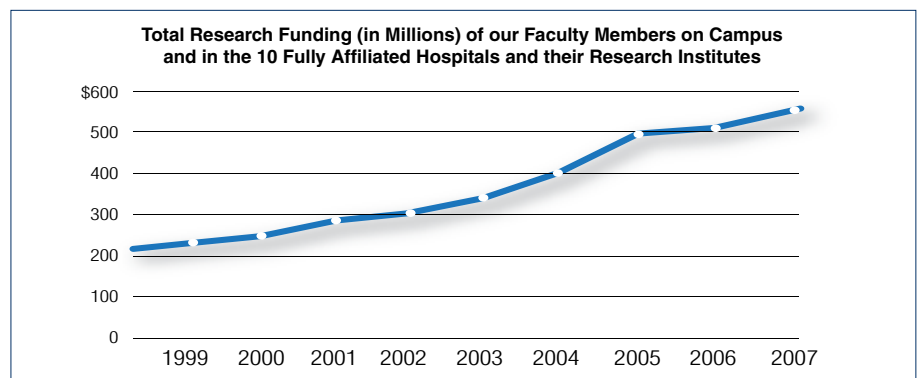
The strength of our health and biomedical research endeavours is the increasing integration of efforts of faculty and students on campus and in the research institutes of our 10 fully affiliated hospitals. Working collaboratively and collectively, our impact and discoveries are greater than the sum of our individual departments, research centres and institutes.

### A Thriving Research Enterprise

The Faculty of Medicine continues to build its strengths and garner momentum in research. In 2008, the number of researchers and students involved in research, the number of projects and grants, and the amount of funding continued to increase – a tribute to the outstanding quality of our scientists and their research programs.

The Faculty of Medicine, with its affiliated hospitals, has 160 Canada Research Chairs. This alone demonstrates our ability to attract and retain stars: the best health and biomedical scientists in Canada. Twelve new Canada Research Chairs were appointed in 2008 alone, highlighting our leadership in genetics and microbiology, medicine, biomedical engineering, biophysics, biochemistry, paediatrics and physiology.

The concentration of investigative minds, hospitals, and research institutes creates a unique environment that puts us among the front-runners in research in the world. Here, the best people are tackling key health issues, and their work will have impact and payback for society in terms of new knowledge, new products to market, outstanding health policy and improved evidence-based care, and consequently a healthier population.





## Interdisciplinary Research Centres Foster Innovation



*Professor Kaveh Shojania*

Medical errors and other adverse events in health care are profoundly costly to Ontarians and Canadians in terms of their health and sometimes their lives. To improve the safety of patient care, Sunnybrook Health Sciences Centre and the Hospital for Sick Children have partnered with the Faculty of Medicine to launch the University of Toronto Centre for Patient Safety. Under the leadership of Professor Kaveh Shojania, Canada Research Chair in Patient Safety and Quality Improvement and the inaugural Director of this novel centre, investigators from a wide range of disciplines and professions will collaborate to advance research and education in patient safety.

The new **Centre for Forensic Science and Medicine** is helping to reduce the worldwide shortage of forensic pathologists and develop the first training program for forensic pathologists in Canada. Led by **Professor Michael Pollanen**, the founding Chair for the Forensic Pathology Section of the Canadian Association of Pathologists and the founding Program Director for the forensic pathology residency at the University of Toronto, the centre will unify the forensic community, bringing together the disciplines of forensic science, forensic pathology, paediatric forensic pathology, forensic psychiatry and psychology, forensic anthropology, forensic odontology, and forensic paediatrics. Through the centre, researchers, faculty and students in all these disciplines will be able to coordinate knowledge-based initiatives and create an environment that fosters interdisciplinary research. The centre will develop forensic educational programs across the entire training spectrum and through interprofessional education in allied faculties. The first two home-grown forensic pathologists will graduate from the new program in 2009.

The University of Toronto can trace its research legacy to the discovery of insulin by the team of Banting, Best, Collip and MacLeod. Almost 90 years later, the **Banting and Best Diabetes Centre** is still breaking new ground. Under the leadership of **Professor Dan Drucker**, researchers are exploring the potential to generate stem cells that make insulin, identify early markers for type 2 diabetes, and find new drug treatments. Their work is also leading to changes in the way care is delivered. They are developing a “one-stop shopping” clinic for diabetes treatment for people with low incomes, as well as rehabilitation programs that can help people with diabetes reduce the risk of developing cardiovascular disease. The lead hospital partner is the University Health Network. By promoting collaboration across the Toronto Academic Health Science Network, the centre will lead to new discoveries and advances.



*Professor Dan Drucker*

The **Centre for Research in Neurodegenerative Diseases** is working to find answers that will help prevent diseases that are caused by profound changes in the brain – such as Alzheimer’s disease, Parkinson’s disease, and amyotrophic lateral sclerosis (ALS). Under the leadership of **Professor Peter St George-Hyslop**, the team is systematically uncovering each step in the development of dementia. In 1995, Prof. St George-Hyslop and his team discovered that presenilin genes were the site of mutations which cause Alzheimer’s disease. In 2000, they revealed a key protein which causes nerve cell degeneration. In 2007, Prof. St George-Hyslop added to his list of international prizes when he was named one of the inaugural recipients of the Government of Ontario’s Premier’s Summit Award for medical research.



*Professor Peter St George-Hyslop*



*Professor Peter Singer*



*Professor Abdallah Daar*

**Professor Peter Singer**, Department of Medicine, and **Professor Abdallah Daar**, Dalla Lana School of Public Health and Department of Surgery, head the Program on Life Sciences, Ethics and Policy in the **McLaughlin-Rotman Centre for Global Health** at the University Health Network. Created in 2001, the program works at the nexus of life sciences, the developing world and entrepreneurship, using scholarly research to help move health technologies from “lab to the village.” In 2004, Prof. Daar, a renowned medical educator, transplant surgeon, global health expert and bioethicist, was awarded the 2005 UNESCO Avicenna Prize for Ethics of Science. He works in various advisory or consulting capacities with the UN, the World Health Organization and UNESCO. He was a member of the African Union High-level Panel on Modern Biotechnology, and is a member of UNESCO’s International Bioethics Committee. He was the lead investigator in a major international study that identified the Grand Challenges in Chronic Non-communicable Diseases, published in *Nature* in November 2007. His current research interests are in ways of avoiding knowledge divides and in the exploration of how life sciences can be used effectively to ameliorate global health inequities.

In 2008, Prof. Singer received one of the highest honours in health and medicine. He was one of five foreign associates – and the only Canadian – to be elected that year to the U.S.-based Institute of Medicine of the National Academy of Sciences. Prof. Singer is a member of the scientific advisory board of the Bill & Melinda Gates Foundation Grand Challenges in Global Health. He is Foreign Secretary of the Canadian Academy of Health Sciences. In 2007, he was recognized by the Canadian Institutes of Health Research as Canada’s Health Researcher of the Year in Health Services and Systems and Population Health Research for his work in bioethics and global health and his efforts to move life science technologies from “lab to village” in the developing world.

## Award-winning Places to Work

For students and faculty both, it is inspiring to work in a place with a long history and tradition of great science and medicine: to walk the same ground as Banting, Best and other giants of medicine and biomedical research. It's also exciting to work in state-of-the-art research labs.



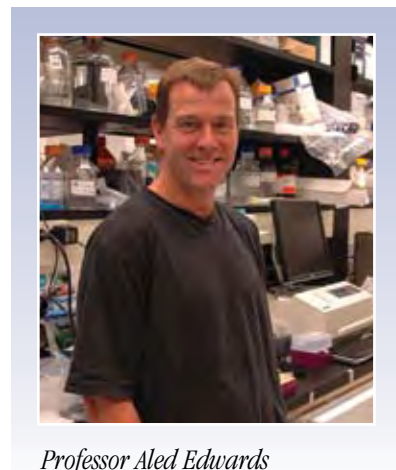
### *Terrence Donnelly Centre for Cellular and Biomolecular Research*

The Faculty of Medicine enjoys the best of both worlds.

The **Terrence Donnelly Centre for Cellular and Biomolecular Research** won the 2008 Governor General's Medal in Architecture. It features a flexible design that allows research teams to expand and contract. The new building brings together investigators from the Faculties of Medicine, Pharmacy, and Applied Science and Engineering to find new, unconventional ways of approaching biological problems. Directed by **Professor Brenda Andrews**, an internationally renowned scientist in yeast genetics, the centre focuses on three programs of research – bioengineering and functional imaging, integrative biology, and models of disease – and its premise is that each program will thrive best if it uses biological, physical, computer and engineering expertise to shape and define the “new biology,” and to catalyze new approaches and novel discoveries.

### **Leading a Global Consortium to Speed Drug Development**

According to **Aled Edwards**, Banbury Professor at the Banting and Best Department of Medical Research, the current competitive approach to creating new drugs isn't working: it's too expensive, it takes too long, and too few new drugs are coming to market each year. In its place, he's leading the **Structural Genomics Consortium**, a global, not-for-profit organization run out of the University of Toronto, Oxford in the U.K. and Stockholm's Karolinska Institute. The



*Professor Aled Edwards*



*Professor Steven Narod*



*Professor Mario Ostrowski*

consortium, an academic-industry, public-private partnership in basic research, brings together some 250 scientists, more than 100 laboratories, and three pharmaceutical companies to study the three-dimensional structure of human proteins, to understand the molecular causes of disease and find treatments.

Prof. Edwards believes this type of collaboration will save time and resources, and lead to more drug treatments. “It’s the best way to design and develop new medicines for our children.” In just five years, the consortium has become a world leader in structural biology. Its scientists publish about 70 significant scientific papers a year, and all its findings are available free of charge, in open source, to any scientist in the world.

## **New Findings, New Hope, Better Health Care**

Across the Faculty, individual researchers make breakthrough discoveries every year, and their work has the potential to lead to new treatments, cures and better health and health care.

Longitudinal studies of women from families with and without genetic mutations related to breast cancer are showing great advances. Results of research by the most cited scientist in the world in the field of breast cancer, **Professor Steven Narod** of the Dalla Lana School of Public Health and Canada Research Chair in Breast Cancer at Women’s College Hospital, may help doctors detect breast cancer earlier in high-risk women and lead to more and earlier preventive treatments. Prof. Narod’s work on identifying the link between mutations in the genes BRCA1 and BRCA2 and hereditary breast cancer opened the door for additional research. His new program of work is directed at translating our emerging knowledge about hereditary cancer into more effective strategies for the prevention and management of breast and ovarian cancer. He is also interested in delineating the gene/environment interactions that underlie hereditary breast cancer. This work may eventually be used to identify potential modifiers of cancer risk in high-risk groups.

The work of **Professors Mario Ostrowski**, of the Faculty of Medicine’s Divisions of Infectious Diseases, Immunology and Clinical Sciences, and **Douglas Nixon**, of the Division of Experimental Medicine at the University of California, San Francisco offer new hope for treating HIV. The team has discovered that blocking the activity of a molecule called Tim-3 can improve cell function. Their findings, which show that cells exhausted from fighting HIV infection can be revitalized, have the potential to enhance health and well-being and prolong life for people with HIV.

We are what we eat. Nutrition is one of the most important factors that affect our risk of chronic diseases such as diabetes and cardiovascular disease. Common genetic variations could explain why some individuals respond differently from others to the same foods. Nutrigenomics is an emerging branch of nutritional sciences that applies information on the human genome to study the link between diet and disease. The goal of research in nutrigenomics is to help understand how genetic factors modify our response to diet and how dietary factors alter the expres-

sion of genes that are relevant to the cause or origin of a disease. There is also growing interest in understanding how genetic variations affect food preferences by influencing our sensitivity to certain tastes. **Professor Ahmed El-Soheemy's** goal is to identify molecular targets of nutrient action and elucidate the genetic basis for the variability in nutrient response and food preferences. For example, he has discovered that individuals with a specific genetic variation consistently consume more sugary foods. These findings may help explain some of the individual variations in people's preference for sugary foods, and are especially important given the soaring rates of obesity and diabetes throughout much of the world. He also uncovered a genetic variation that explains why coffee could either increase or decrease your risk of a heart attack. He is currently exploring how genetic differences influence the rate that we metabolize certain nutrients and how that could affect our individual nutrient requirements.

### **Benchmarks for Hospital Services and Patient Safety**

Health policies drive health services and the health care system. Research at the Faculty of Medicine is changing the way health systems looks at services. Eight years ago, **Professor Ross Baker**, Department of Health Policy, Management and Evaluation, co-developed hospital report cards and indicators that continue to be used provincially – and now nationally – to set benchmarks and assess the efficiency and effectiveness of hospital services. Most recently, he has also made major contributions in the area of Patient Safety.

### **Improving Drug Prescribing**

**Professor Paul Kurdyak**, a graduate of our medical school and a PhD candidate in clinical epidemiology in the Department of Health Policy, Management and Evaluation, received the Rising Star Award from the CIHR's Institute of Health Services and Policy Research (IHSPR) for his work on the effect of antidepressant warnings on prescribing trends in Ontario. He found that warnings in the U.K. issued by regulatory agencies about the risks of suicide had an immediate and sustained effect on new paroxetine prescriptions (a type of antidepressant drug) for individuals less than 19 years of age, while warnings in the U.S. and Canada had no effect on any age or antidepressant category. Prof. Kurdyak suspects that the U.K. warning was more effective because it was targeted and specific (i.e., a particular drug for a defined group of patients, compared to the Canada and U.S. warning, which was general and left physicians without any antidepressant treatment options and caused them to simply disregard the warning altogether). His findings highlight both strengths and weaknesses of regulatory agency warnings as a tool for knowledge translation. The IHSPR award recognizes excellence in Canadian research and/or knowledge translation carried out by graduate students and post-doctoral fellows in all fields and disciplines related to health services and policy research.

### **Testing Health Care Innovations for Women**

The Collaborative Graduate Program in Women's Health prepares researchers and clinicians to improve care for women and their families. The 101 researchers in the Women's College



*Professor Ahmed El-Soheemy,  
Canada Research Chair in  
Nutrigenomics, Department of  
Nutritional Sciences*



*Professor Paul Kurdyak*

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*“Leadership is a critical element for the sustainability of a high quality health care system. In using evidence-informed decision-making approaches, Health Policy, Management and Evaluation prepares future health care leaders who are able to address the growing complexities and challenges of the system.”*

**Professor Louise Lemieux-Charles**

*Chair, Department of Health Policy, Management and Evaluation*

Research Institute (WCRI), which supports the Collaborative Graduate Program, work across disciplines in five priority areas – cancers common to women, HIV and women, mental health and healthy relationships, musculoskeletal health, and reproductive and sexual health – and find relevant and holistic solutions to women’s health concerns. WCRI is the only Canadian facility offering researchers the opportunity to test women’s health care innovations within a research-driven, ambulatory care community.

## Inspiring Research Careers



Our research leaders are an inspiration for students. They nurture young investigators and support them as they develop their own programs of research. Almost 3000 students in the Faculty of Medicine are actively engaged in research.

We engage our students in research early in their training. The Com-

prehensive Research for Medical Students (CREMS) program, launched in 2007, allows students to gain research experience without interrupting their medical studies.

Students can choose from extracurricular research programs during the year, and/or a shorter summer research program, and receive formal recognition upon completing. We expect this program to produce the clinician-researchers of the future, and to help build a physician workforce that understands the link between research and care, and makes research part of their work and life-long learning. Early indications are that CREMS is achieving its goals.

In 2008, **Jiang Liu**, a PhD graduate of the Institute of Medical Science, won an Innovation Challenge Award, which honours students who have demonstrated an entrepreneurial spirit by thinking of ways to transform their thesis results into products and processes that can benefit Canadians. He won the \$5,000 Challenge Award – as well as an American Association for Cancer Research-Aflac Award – for developing a new drug delivery system that could prevent the body’s lymphatic system from spreading cancer. When cancer metastasizes, it often spreads through the lymphatic system early on. Anticancer drugs, however, are usually injected into the blood stream and have difficulty reaching the lymphatic system. Liu’s system targets lymph nodes using drug-containing particles specially designed to reach the lymphatic system. Having proved the concept in several cancers in animal models, Liu is currently leading the technology development for testing on humans. The award, which was developed by the Natural Sciences and Engineering Research Council of Canada and GrowthWorks, a leading venture capital fund manager, reinforces the importance of moving discoveries from the lab into practice.

## Artificial Intelligence for People with Dementia



*Professor Alex Mihailidis*

Many of the technologies that will help all of us live independently start at the Faculty of Medicine at the University of Toronto. **Professor Alex Mihailidis**, Department of Occupational Science and Occupational Therapy and Scientist at the Toronto Rehabilitation Institute, has developed a “smart washroom” as an aid for people with Alzheimer’s disease and other dementias. How does it work? A camera in the bathroom feeds information into a computer that can detect a break in a person’s pattern – such as forgetting to wash his or her hands. The computer will then remind the person to perform the task. It can even play a brief video to demonstrate the action. Prof. Mihailidis is now using the same technology to create other systems that can improve people’s quality of life, such as detecting if someone who is elderly or disabled has fallen. His work is helping the frail, elderly and people with disabilities maintain their independence.



*The Faculty of Medicine, with its affiliated hospitals, has 160 Canada Research Chairs. This alone demonstrates our ability to attract and retain stars.*

## Measuring Research Impact

Thomson ISI, the organization that rates the quality of academic programs in Canadian and U.S. universities, ranked the University of Toronto first in Canada in virtually every aspect of medicine and health sciences. We also rank within the top five universities in North America in most specialties.

### University of Toronto is Top Ranked in Publications and Citations

	AAU public*	AAU public	AAU all	AAU all
	# publications	# citations	# publications	# citations
Rheumatology	1**	1	1	1
Respiratory System	1	1	2	2
Oncology	1	1	2	3
Paediatrics	1	1	2	3
Obstetrics & Gynecology	1	1	4	2
Cardiac & Cardiovascular	1	1	3	3
Clinical Neurology	1	1	3	3
Developmental Biology	1	1	3	5
Radiation, Nuclear Medicine & Medical Imaging	1	1	2	6
Pharmacology & Pharmacy	1	2	2	3
Endocrinology & Metabolism	1	2	2	3
Surgery	1	2	2	3
Peripheral Vascular Disease	1	2	3	4
Pathology	1	2	3	6
Cell Biology	1	2	4	8

\* Association of American Universities public and private (all)

\*\* Thomson University Science Indicators 2007

## IV. Public Health Partnership Starts Here



*Professor Jack Mandel*



*Professor Hwang (Department of Medicine) is an investigator at the Centre for Research in Inner City Health, St. Michael's Hospital.*

### A New School of Public Health

In 2008, the Faculty of Medicine launched the Dalla Lana School of Public Health, reaffirming its century of commitment to public health and setting a new standard for public health education, practice and research. An interdisciplinary school, it focuses on solving some of the most challenging health care issues our society faces. The world class Dalla Lana School teams with other departments and faculties, health care settings, government and public health agencies to conduct research and offer graduate programs in biostatistics, epidemiology, environmental and occupational health sciences, social and behavioural health sciences, public health administration and global health.

**Professor Jack Mandel**, the first Director of the Dalla Lana School of Public Health, is an internationally recognized epidemiologist. Born in Canada but trained in both Canada and the United States, he comes to the Faculty from Emory University in Atlanta where he was head of the Department of Epidemiology in the Rollins School of Public Health. Prof. Mandel has been involved in many large-scale, collaborative studies related to cancer, evaluating the impact of risk and lifestyle factors as well as the efficacy of preventive treatments. He says of his new position: "The time is now right in Toronto to harness the outstanding local resources, people and commitment and to create one of the top locations worldwide for public health research and education."

### Understanding the Link Between Housing, Neighbourhoods and Health

**Professor Stephen Hwang's** work focuses on deepening our understanding of the relationship between homelessness, housing, and health through epidemiologic studies and health services research. His current research projects include a study of predictors of health care utilization in a representative sample of 1,200 homeless men, women, and families in Toronto; a longitudinal cohort study of homeless and vulnerably housed individuals in Toronto, Ottawa, and Vancouver; a study of the barriers to the chronic pain management among homeless people; and a randomized controlled trial of a housing and case management intervention for homeless people with severe mental illness. His work has helped shape housing policies and programs in the City of Toronto.

Through his research with **Professor Gillian Booth** (Department of Medicine; St. Michael's Hospital), **Professor Rick Glazier** has shown that where you live affects your health. His three-year study of 140 Toronto neighbourhoods found poverty and immigration to be key factors in high rates of diabetes in many parts of the city. The study also found that where people live can greatly influence daily activity and access to resources for health. The relationship



between the local environment and diabetes was most striking for neighbourhoods with low incomes and a large proportion of immigrants.

## Helping to Meet Global Health Needs

When it comes to making a difference in the developing world, our faculty members know no borders. Faculty educators, known for their teaching skills in Toronto, have developed innovative programs to build medical infrastructure in developing countries. Through the Toronto Addis Ababa Psychiatry Program, University of Toronto faculty more than tripled the number of psychiatrists in Ethiopia and contributed to a thriving, self-sustained residency program. The Toronto Addis Ababa Academic Collaboration, led by **Professor Brian Hodges**, Department of Psychiatry, and **Professor Clare Pain**, Department of Psychiatry, is an extension of this project. It has engaged 14 medical specialties in efforts to revolutionize the practice of medicine in Ethiopia and is a model for effective capacity building in the provision of health care.

The Department of Family and Community Medicine has multiple initiatives in primary health care and family health capacity, particularly in Brazil, and has similar relationships in Chile and Colombia. The Department of Surgery has made remarkable contributions in developing countries and is now also involved in our program in Ethiopia.

The Department of Obstetrics and Gynecology at the University of Toronto entered into a partnership with the Department of Reproductive Health at Moi University in Eldoret, Kenya. This partnership, now known as the ASANTE Reproductive Health Initiative, is in collaboration with the University of Toronto's Centre for International Health. It is being facilitated through the ASANTE Consortium, a longstanding partnership between Moi University and other North American academic institutions, led by the University of Indiana (IU-Kenya Partnership). To date, the ASANTE Consortium has been an extremely successful partnership involving Moi's departments of general medicine, paediatrics and HIV/AIDS (including the Academic Model for the Prevention and Treatment of HIV/AIDS). It is anticipated that the involvement of the University of Toronto's Department of Obstetrics and Gynecology will enhance the partnership expansion through Moi's major departments of clinical activity, teaching and research.

The International Centre for Disability and Rehabilitation was established in 2004 as a response to the need for sustainable assistance to people with disabilities in developing countries; the need to expand the training of students and practitioners in order to respond to global needs; and in response to the University of Toronto's commitment to reaching beyond its traditional borders. Under the Direction of **Professor Stephanie Nixon** of the Department of Physical Therapy, the International Centre for Disability and Rehabilitation is working on a range of projects that contribute to the international development of both institution-based rehabilitation and community-based rehabilitation approaches and services, appropriate to local circumstances. Persons with disabilities are full, active partners in these initiatives.



*Professor Rick Glazier (Department of Family and Community Medicine, cross-appointed to the Dalla Lana School of Public Health) also practises at St. Michael's Hospital and is a Senior Scientist at its Centre for Research in Inner City Health.*



*Professor Clare Pain*



*“Each year an estimated 234 million operations are performed worldwide. The Department of Surgery and Toronto General Hospital (University Health Network) teamed up with the World Health Organization and hospitals in Jordan, India, Tanzania, the Philippines, Seattle, London and Auckland to develop a Safe Surgery Checklist which will have a major impact on patient safety and care globally.”*

**Professor Richard K. Reznick**

*R.S. McLaughlin Professor and Chair, Department of Surgery; Vice President Education, University Health Network*



*Speech-language pathology student Liana Levinson on a placement at Comprehensive Community Based Rehabilitation in Tanzania, summer 2008.*

**Sharing our Expertise**

The University of Toronto actively encourages its students and faculty to use their expertise beyond our national borders. Our Faculty has one of the highest concentrations of academic global health activity in North America, with dozens of leading researchers working abroad and hundreds of projects active in the developing world.

Fulfilling our social responsibility mandate through global health activities is an integral part our medical trainees’ experiences. A recent survey of postgraduate trainees found that more than 10% had done an international elective during residency training. Most residents feel that these experiences significantly contributed to their ability to communicate, understand and heal their patients in their daily practice. Postgraduate trainees also have access to programs such as the International Emergency Medicine Fellowship, the Family Medicine PGY3 in Global Health, and will soon have a Global Health Stream for Family Medicine and an International Fellowship in Paediatrics.

For residents who are not able to commit to a full fellowship, the Global Health Education Initiative, run through the Centre for International Health at the Dalla Lana School of Public Health, will allow residents to augment their skills and knowledge in global health through a two-year certificate program beginning in 2009. The program will be expanded to community physicians and allied health care professionals by 2010.

Numerous undergraduates, residents and graduate learners have taken part in international electives, health research observerships, or practical work through our Faculty. Students have been in Namibia, Kenya, Cambodia, Ethiopia, Guyana, and Zambia, to name just a few. Students involved in global health have life-changing experiences and encounter a depth and diversity of health care challenges, explore new cultures, and return to their programs enriched with compassion and a heightened sense of humanity. Providing students with these experiences is yet another way the Faculty of Medicine at the University of Toronto fulfills its commitment to social responsibility.



*“The past year has seen a remarkable coming together of the Faculty leadership in a process of renewal – a renewal of the Faculty’s strategic plan; a renewal of our commitment to our vision, mission, and values; and a renewal of our dedication to measure and demonstrate how we make a difference. Through two successful strategic plan implementation retreats, our leadership has given advice and input that has proved invaluable in clarifying the Faculty’s priorities, for generating common solutions to some of the issues we face, and particularly on how best to engage the broader faculty, staff, and students in acting on our shared objectives. With an uncompromising focus on excellence and innovation, and with leadership, partnership, and accountability, we believe that our academic responsibility is our social responsibility.”*

**Professor Sarita Verma**  
Deputy Dean

## V. The Future of Health Starts Here



The Faculty of Medicine is making a difference here, across Canada and around the world. We are preparing future leaders in health research and education. Through our research, we are also contributing to new knowledge and discoveries, and improving the health of individuals, communities and nations.

This report is the beginning of an ongoing commitment to measure and monitor our impact. Our approach to developing metrics and benchmarks is consistent with the proposed framework for measuring returns on investment in health research developed by the Canadian Academy of Health Sciences in January 2009.<sup>3</sup> That framework reinforces what we already know: that our investment in health education and research must be measured not simply in terms of our activities (e.g., number of publications), but by the impact those activities have on:

- the decisions made by health care systems, health and other industries, governments and the public
- the effectiveness, appropriateness and safety of health care services
- our capacity to prevent, diagnose and treat diseases
- the health and well-being of the populations we serve
- our overall economic and social prosperity.

The governments, research institutes and foundations, industry partners, private donors, and students and parents who fund our work rightly expect value for money. Are we using our resources well to prepare the next generation of leaders? Are we contributing to the ongoing search for better health care? Are there better ways to provide care? Does our work improve health at a cost that our health care systems can afford? A recent report from the Health Council of Canada<sup>4</sup> reminds us that when we talk about value-for-money in health care, we must look beyond technical outcomes – such as new discoveries, better drugs and treatments, and new products and technologies – to other values that are not as easy to define or quantify, such as fairness and compassion.

We will continue to find effective, meaningful ways to measure the impact of our teaching, care and research, and report on the return on investments in the Faculty of Medicine. For almost 200 years, we have been leaders in health education and research. We have and will continue to attract and maintain the critical mass of students, faculty, and staff – people, knowledge and discoveries – to ensure that Health Starts *Here*.

<sup>3</sup> Panel on Return on Investments in Health Research. (2009). *Making an Impact: A Preferred Framework and Indicators to Measure Returns on Investment in Health Research*. Canadian Academy of Health Sciences. Ottawa, ON, Canada

<sup>4</sup> Health Council of Canada. (2009). *Value for Money: Making Canadian Health Care Stronger*. Toronto, ON, Canada.

## Thank You

The **University of Toronto Faculty of Medicine** is a unique place filled with individuals who daily make remarkable contributions to science, education, health care and to their communities. Within these pages, we've highlighted some of them and their work, but we know it is impossible to do justice in this report to the full scope of the incredible work undertaken here. The breadth and diversity of our faculty, staff, and students, and their contributions to health education and research could fill volumes.

Thanks to all who contributed to this report and to our inspiring students, staff and faculty, to whom this report is humbly and gratefully dedicated.

## Faculty Leadership

### *Decanal Team*

**Professor Catharine Whiteside**, Dean, Faculty of Medicine and Vice-Provost, Relations with Health Care Institutions

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