UNIVERSITY OF TORONTO

COMMUNITY IMPACT REPORT

BOUNDLESSENGAGEMENT

THE TELEGRAPH (UK) NAMED THE UNIVERSITY OF TORONTO ONE OF THE WORLD'S "BEAUTIFUL UNIVERSITIES."

SCARBOROUGH

ST. GEORGE
(Downtown Toronto)

MISSISSAUGA

COMMUNITY IMPACT REPORT

- INDEX -

BOUNDLESS ENGAGEMENT

The energy, creativity and knowledge of the University of Toronto is boundless. And it seeks outlets, all over the globe and beyond the stars, where challenges can be confronted and solutions offered. It is born from a desire for new opportunities to apply our research and gain new insights on the world around us.

The activities of the University of Toronto cover every aspect of human endeavour. Be it creating new businesses, advancing learning in urban schools, finding new treatments to fight cancer, providing new hygiene solutions for the developing world, or achieving glory at the 2012 Summer Olympics, U of T's people are there at the forefront.

The U of T community — students, faculty, staff and alumni — want not only to contribute, but to lead. Groups close to home and around the world look to our leaders for guidance and assistance. More than 15,000 patients were seen by the Faculty of Dentistry's clinic in 2012; over a quarter of Ontario's doctors were educated by U of T; and more than 100,000 people across the planet are learning from our faculty through the online learning platform Coursera. And, as an internationally recognized research university in the top tier of public institutions in the world, our efforts encourage others to act and our actions lend credibility to important and weighty issues.

For an institution with as broad a scope and as deep an impact as U of T, there are not enough pages available to tell the complete story. Instead, what follows here is a representation of the many ways U of T's people utilize their skills and knowledge to make a positive and tangible impact. Individually, these stories are inspiring. Together, they speak to the high level of commitment, the drive for success and the shared focus on achieving a healthy and sustainable future that defines this university.

This report captures a moment in time, but the impact of the University of Toronto is a story always in progress. You can read about our latest contributions by visiting www.impact.utoronto.ca.

April 2013

Cover: U of T student guides are frequently the first point of contact for visitors and prospective students. The enthusiastic guides welcome guests from around the world and provide an overview of the student experience at U of T.

Left to right: Chelsea Misquith, Human Biology/Psychology, 3rd year; Lili Nkunzinmana, African Studies, 4th year; Michelle Legasto, MSc Physical Therapy, 1st year; Sophia Alifirova, MA European, Russian, Eurasian Studies, 1st year.

U OF T & THE WORLD

From our location in southern Ontario, the University of Toronto welcomes and engages the world. At the heart of one of the world's most multicultural regions, we are inspired and informed by a global disposition derived from our inherent intellectual curiosity and the more than 10,000 international students from 150 different nations studying on our campuses. These students are drawn by our strong international reputation: time and again, many of the top rankings of international universities recognize U of T as the top university in Canada and among the finest in the world.

U of T is active in developing international partnerships and collaborations. In any given week, you can find U of T professors in every corner of the world presenting at conferences, conducting research or engaging with colleagues. Of the academic papers written by U of T researchers, 43% include at least one foreign co-author. More than 1,000 students participated in U of T's international summer abroad program in 2012, with many others taking part in foreign internships or research opportunities. And there are almost 45,000 of our best ambassadors — U of T's alumni — living outside of Canada.

And now U of T is making some of its knowledge and its finest instructors available to the world through Coursera, where we join with other well-known schools, including Princeton, Johns Hopkins, and Stanford. U of T's first not-for-credit course, launched in fall 2012, had an enrolment of more than 100,000. U of T is also joining another leader in the online education world, edX, founded by Harvard and M.I.T, to deliver online courses beginning in fall of 2013. The Bill & Melinda Gates Foundation recognized U of T's emerging leadership in the field, awarding the university a $100,000 grant in December 2012, to be used to develop two additional online courses that will be delivered by award-winning U of T professors.

These activities are further advanced by an integrated international strategy that fosters links with key global partners to promote collaborations and partnerships.

Ayodele Odutayo, a fourth-year medical student at the Faculty of Medicine, is a 2013 Rhodes Scholar. Having spent the first 12 years of his life between Nigeria and the British Virgin Islands, Odutayo developed a keen interest in improving health care internationally. As a nephrology research trainee at Sunnybrook Health Sciences Centre and former intern with the World Health Organization (WHO), his goals include improving management of kidney diseases beyond Canada's borders. He is pictured in Geneva, Switzerland.

INTERNATIONAL INSTITUTION RANKINGS

Trying to articulate a university's standing in the world is inevitably a subjective exercise. International rankings provide one independent measure of how U of T compares to other universities. As these rankings make clear, we stand among the best public universities in the world and recognized as Canada's top university.

International Peer Universities	National Taiwan University 2012	QS World University Rankings 2012	Times Higher Education 2012	Shanghai Jiao Tong 2012
Harvard University	1	3	4	1
Johns Hopkins University	2	16	16	17
Stanford University	3	15	2	2
University of Washington	4	59	24	16
University of California, Los Angeles	5	31	13	12
University of Michigan	6	17	20	22
University of Toronto	7	19	21	27
University of California, Berkeley	8	22	9	4
University of Oxford	9	5	2	10
Massachusetts Institute of Technology	10	1	5	3

Canadian Peer Universities	National Taiwan University 2012	QS World University Rankings 2012	Times Higher Education 2012	Shanghai Jiao Tong 2012
University of Toronto	7	19	21	27
University of British Columbia	28	45	30	39
McGill University	33	18	34	63
McMaster University	98	152	88	92
University of Alberta	78	108	121	101-150

"U OF T RANKS 1ST IN CANADA IN 5 OF ITS BROAD SUBJECT-SPECIFIC RANKINGS AND IS ONE OF ONLY 9 INSTITUTIONS THAT RANK IN THE TOP 25 WORLDWIDE IN ALL FIVE DISCIPLINE AREAS.

ALONG WITH CAMBRIDGE, OXFORD, HARVARD, STANFORD, UC BERKLEY, UCLA, UNIVERSITY OF TOKYO AND THE NATIONAL UNIVERSITY OF SINGAPORE.

- QS WORLD UNIVERSITY RANKINGS 2012

AN EXAMPLE: DEFENDING DEMOCRACY, ONE VOTE AT A TIME

A fair electoral system is the hallmark of democracy and the hope for every person who casts a ballot. It is something taken for granted in Canada, but in many other countries, this sense of confidence is missing. That's where Neil Nevitte's expertise comes in.

Nevitte, Professor of Political Science, is on the front lines of democracy, working on elections in more than 40 nations around the world, including Haiti, Peru, Kenya and Indonesia. Nevitte advises both international and domestic non-governmental organizations on the prevention and detection of electoral fraud, as well as the conditions for running free and fair elections.

"We provide organizations with technical tools and logistics so that they can analyze election data. The key thing to look for is fraud," explains Nevitte. "We've developed software for managing incoming data and fraud in vote counts."

Nevitte explains that the ultimate goal is to pass on this knowledge so that non-governmental organizations can learn and work together, ensuring countries can become autonomous and monitor their own elections, as has happened with Peru and the Dominican Republic.

Nevitte teaches classes in election behaviour and public opinion and brings his field experience into the classroom. "U of T has been very supportive as I look for ways to road test what I teach and study in the real world," he says. "It's most inspiring to watch young people in other countries try and improve corrupt environments, and to see how much energy and determination people have to get their countries to be more democratic."

TOP: Professor Neil Nevitte, Political Science
RIGHT: Voters at the polls in the Ukraine.

U of T Professors Mark Kortschot (second from left) and Yu-Ling Chen (far left), with Bill Gates (far right) and other dignitaries.

AN EXAMPLE: RESPONDING TO THE TOILET CHALLENGE

Inspiration can come from the most unexpected places. For a U of T team of global engineers that participated in the Bill and Melinda Gates Foundation's Reinvent the Toilet Challenge in 2012, it was kitty litter. The challenge may sound inconsequential, but there was a lot at stake. An estimated 1.5 million children die each year due to diarrhea caused by poor sanitation. The team had to design a toilet that was safe, hygienic, would work for five cents per person a day, and operate off the electrical grid and without connection to a sewer.

"Sanitation is a significant problem in the developing world and our entire team was very dedicated," says team lead and Engineering Professor Yu-Ling Cheng, who is also Director of the Centre for Global Engineering. "It was fulfilling to work on a project in which we could see a definite impact on people's lives." The team was one of only eight around the world invited to take part in the challenge and it ended up earning third place and US$40,000 for its idea and a subsequent $2.2 million to develop the idea into a fully functioning prototype.

Cheng says they came up with the idea of using sand as a filtration membrane after considering how kitty litter works. The team then researched and designed a prototype that uses a sand filter and UV-ray disinfecting chamber to process liquid waste, and a chamber similar to a charcoal barbeque to incinerate solid waste. "We decided that everything had to be sourced locally in terms of consumable supplies to make it affordable," she adds. Working with local partners in Bangladesh, Cheng and her team of graduate students and researchers hope to have an operational prototype by December of 2013, one that uses readily available materials and equipment that can be maintained locally. The experience of participating in the challenge, says Cheng, was immensely rewarding and demonstrates U of T's commitment to the world. "I received a lot of support from the rest of the [Engineering] faculty and the university and that speaks to the kind of motivating environment that we have here," she says.

AN ESTIMATED 1.5 MILLION CHILDREN DIE EACH YEAR DUE TO DIARRHEA CAUSED BY POOR SANITATION.

Left to right: Jose Torero (University of Queensland), Yu-Ling Cheng*, Jason Gerhard (Western University), Rory Hadden (Western University), Mark Kortschot*, Sammy Melamed*, Zach Fishman*, Tiffany Jung* (*of U of T).

U of T Law student Sofia Ijaz was interviewed by Rogers TV about her work at U of T's International Human Rights Clinic.

AN EXAMPLE: CRAFTING GLOBAL JURISPRUDENCE

The clients of U of T's International Human Rights Clinic include well-known non-government organizations; immigrant groups, such as Roma, who have been persecuted in their native countries; and one man who was wrongly accused of being a terrorist. These clients can depend on the passion and dedication of students in the Faculty of Law who research and advocate for their rights.

"The students are the most inspiring aspect of the work at the clinic," says Renu Mandhane, Director of Law's International Human Rights Program. "It's easy to become jaded in the field of international human rights because change is elusive. But you can see idealism in our students and it reminds me why I do what I do."

The International Human Rights Clinic, which opened in 2002, was the first of its kind in Canada and remains the only one at an English-speaking university in Canada. "It is funded by [U of T's] law school and that shows the extraordinary commitment and global outlook of the university," says Mandhane, who once had a private practice as a human rights lawyer. While working in the clinic, students have the opportunity to research and write reports that often have a significant impact on legal outcomes.

For example, the clinic worked with PEN International (an organization that represents authors and journalists) to co-author a report on extreme violence against journalists in Mexico, which was acted upon by the Mexican government earlier this year. Another report that students wrote for the Elizabeth Fry Society, which helps female inmates, was submitted to the United Nations. "Many of the students go on to have successful careers in Canadian and international human rights law," says Mandhane. "It's very fulfilling to see."

Preeti Saran, India's Consul General to Canada, addressed the audience during the launch of U of T's new India Innovation Institute.

AN EXAMPLE: UNDERSTANDING INDIAN INNOVATION

Today, India is a leading global innovator. And by 2050 it is expected to be the fifth-largest economy in the world, with average household income matching that of the United States and the U.K. Its projected population of two billion will make it the largest country in the world.

Understanding innovation on such a grand scale is the focus of the India Innovation Institute at the University of Toronto — a joint venture of the Munk School of Global Affairs and the Rotman School of Management.

"The India Innovation Institute is the hub for researchers across the university and around the world," says Professor Janice Stein, Director of the Munk School, which houses the institute. "It brings together faculty and students who are looking at problems of innovation in which India is engaged — and that's innovation across the spectrum: innovation in technology, innovation in service, innovation in process and social innovation."

In addition to the Munk and Rotman Schools, the institute is also engaging with researchers in the Faculty of Applied Science and Engineering, the Faculty of Medicine and the Faculty of Law. "What we've learned as we've built teams that go into the field is that we each bring a different piece of the picture, but when we create these integrated teams we understand the dynamics of innovation in a way that no single perspective would bring," says Stein.

"The India Innovation Institute is trying to provide a platform for research on similar sorts of innovation through several case studies, CEO summits and lecture series," says Professor Dilip Soman, the institute's Director. Soman is also the Corus Chair in Communications Strategy and a professor of marketing at Rotman. "It is the only institute of its kind anywhere in the world," he adds.

AN EXAMPLE: OLYMPIC TRADITION

While they competed in their respective summer Olympic Games decades apart — in 1964 and 2012, respectively — Bruce Kidd and Rosie MacLennan have another strong connection: they are both graduates of the University of Toronto.

For MacLennan, 2012 proved to be a banner year both athletically and academically. Not only did she win Canada's only gold medal in the 2012 Olympic Games in London, but shortly after the Games she began a master's degree in exercise sciences (she previously completed her Bachelor of Physical Education and Health at U of T). "There's a lot of information in the program that I can use for training," says MacLennan.

MacLennan notes that the university's support of athletes makes it possible to stay on top of academics and not withdraw from competing. "Our Faculty (Kinesiology and Physical Education) is really strong and a leader in its field. It's used to working with athletes," she says. "For example, they didn't have classes on Fridays because they knew varsity athletes travelled a lot and this way they wouldn't miss as many classes. If you're competing at the national level or above, you're able to defer exams."

In 1964, Kidd was a distance runner at the Tokyo summer Olympic Games. Today, he is the Warden of Hart House. The former Dean of the Faculty of Kinesiology and Physical Education, Kidd has also served on the National Advisory Council of Fitness and Amateur Sport, the Secretary of State's Advisory Committee on Canadian Sport Policy, the International Olympic Committee, and as the chair of the Commonwealth Advisory Body on Sport, just to name a few. These links have helped to foster close connections between U of T and international sports organizations. "All of this positions the university as a place where people who contribute to public policy development come," he says. "And it gives me access to the workings of the various institutions that we teach about."

2012 Olympic Gold medal winner, Rosie MacLennan

U OF T & LOCAL COMMUNITIES

As a public university situated in the heart of Canada's largest urban centre, we bring our knowledge and expertise into the communities that surround the University of Toronto. It is an effort energized by our students: as the National Survey of Student Engagement tells us, three-quarters of first-year undergraduate students have participated or intend to participate in community service or volunteer work before they graduate. These activities take shape through creative partnerships between our students, faculty, staff and alumni, often in collaboration with community organizations. U of T's Centre for Community Partnerships has developed connections with more than 110 community organizations and schools.

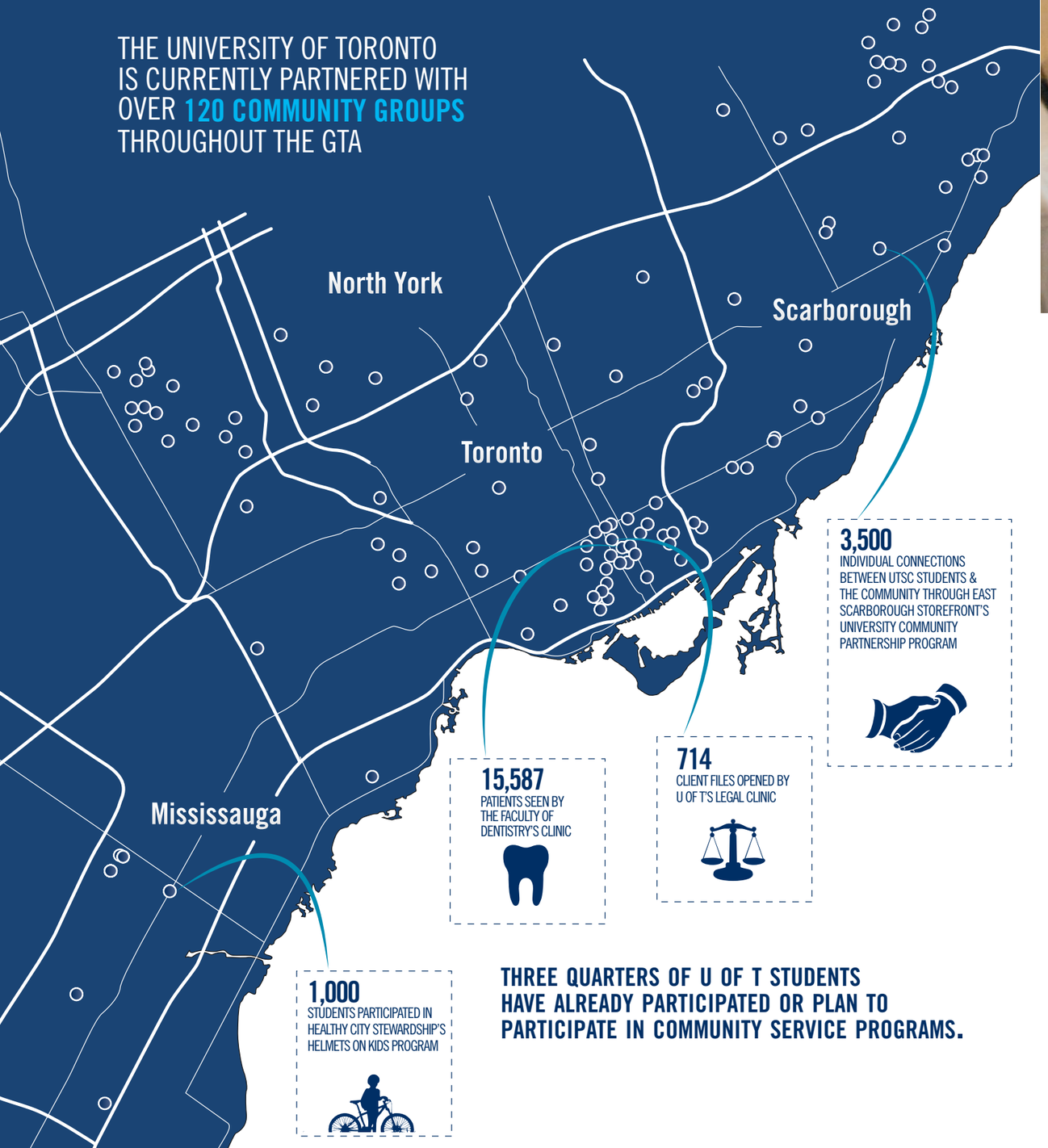
At the same time, our local community turns to U of T for support. In 2011-12, more than 15,500 patients were seen by the Faculty of Dentistry's dental clinic and 1,600 people contacted U of T's Downtown Legal Services. First-year engineering students tackled almost 100 community-based projects through courses such as Engineering Strategies & Practices and Praxis. At the University of Toronto Mississauga, 60 community agencies partnered with the Mississauga Academy of Medicine, while more than 1,000 Peel District School Board students participated in the Helmets on Kids program in 2011, which aims to prevent brain injuries through education and free helmets. In 2012 U of T Scarborough faculty and staff had 3,500 connections with the community through the East Scarborough Storefront University Community Partnership Program, while 140 students contributed to their community through six service learning courses offered at UTSC.

Throughout the Greater Toronto Area, U of T is present in our local communities, providing our students with enriched learning experiences and our neighbours with much-needed support.

Law student Sameer Nurmohamed volunteers at Harbord Collegiate as part of the Law in Action Within Schools (LAWS) program, an education program aimed at supporting, guiding and motivating high school students. Launched in 2005 as a partnership between the Faculty of Law and the Toronto District School Board (TDSB), the program has been expanded with the support of the Law Foundation of Ontario and Citizenship and Immigration Canada, and now includes Osgoode Hall Law School and seven TDSB high schools.

U OF T COMMUNITY INVOLVEMENT
IN THE GREATER TORONTO AREA

THE UNIVERSITY OF TORONTO IS CURRENTLY PARTNERED WITH OVER **120 COMMUNITY GROUPS** THROUGHOUT THE GTA



3,500
INDIVIDUAL CONNECTIONS BETWEEN UTSC STUDENTS & THE COMMUNITY THROUGH EAST SCARBOROUGH STOREFRONT'S UNIVERSITY COMMUNITY PARTNERSHIP PROGRAM

15,587
PATIENTS SEEN BY THE FACULTY OF DENTISTRY'S CLINIC

714
CLIENT FILES OPENED BY U OF T'S LEGAL CLINIC

1,000
STUDENTS PARTICIPATED IN HEALTHY CITY STEWARDSHIP'S HELMETS ON KIDS PROGRAM

THREE QUARTERS OF U OF T STUDENTS HAVE ALREADY PARTICIPATED OR PLAN TO PARTICIPATE IN COMMUNITY SERVICE PROGRAMS.

University of Toronto health care students volunteer at the IMAGINE clinic in downtown Toronto.

AN EXAMPLE: IMAGINING A BETTER HEALTH CLINIC

On Saturdays, the IMAGINE clinic in the Central Toronto Community Health Centre is buzzing with professionals, students and, most importantly, patients who would have a hard time receiving care anywhere else in the city.

"It's inspiring to see people from different professions working together as a team to provide the best client outcomes," says (Yick) Kan Cheung, Co-Director of the Interprofessional Medical and Allied Groups for Improving Neighbourhood Environments (IMAGINE) clinic. Cheung, who is also a graduate of the Faculty of Social Work, summarizes the contribution of IMAGINE: "We are helping people who would have trouble getting care outside the clinic because they are marginalized, don't have any identification or provincial health cards, or they are homeless or new to Canada."

The idea for this multi-discipline clinic was conceived in 2008 by two University of Toronto medical students who wanted to practice 'interprofessional' health care and give back to the community. They launched an outreach program to introduce people in the Toronto community to the service. Today, the entire program — from volunteers to clinicians to managers and administrators — is run by medical, nursing, social work, pharmacy and physical therapy students, who are supervised by professionals. The plan is to add dental care in the future, says Cheung, who has been working with IMAGINE for two years. He adds that no one is paid for their time or skills, and the team also goes out into the city to do health promotion work.

"Social accountability was incorporated into the very fabric of this clinic," says Cheung. "Students are also learning to work with marginalized people and taking that knowledge away with them to use in the future."

AN EXAMPLE: LEARNING FROM URBAN SCHOOLS

The University of Toronto's Centre for Urban Schooling provides a unique connection between the Ontario Institute for Studies in Education (OISE) and urban schools. Researchers can both learn from and contribute to these communities through education, research, policy and advocacy.

"The idea was to help the most socioeconomically disadvantaged schools and communities," says Jeff Kugler, the centre's Executive Director. "It was focused around urban educational issues and that's important because we have a lot of information and research coming from the U.S. and their urban context, but we have very little that's written about the urban context in Canada."

Established in 2005, the centre is made up of educators, researchers and engaged community members focused on developing teacher and graduate education programs; initiating and participating in critical collaborative research; analyzing and advocating for policies that affect urban schools and communities; and participating in school district educational change initiatives.

The centre has been working with teachers and administrators on a culturally responsive and relevant pedagogy. "It's really helping teachers," says Kugler. "There's more and more data from the Toronto District School Board, for instance, showing that certain demographics of students are not really well served by the system. We're working with administrators to change things in the classroom and the school so they connect more to the lives of students who — up to this point — haven't really been connected to the curriculum in that classroom."

"When we started, the idea really was that this was a way for the university to give back. It wasn't just using schools to do research," Kugler says. "It was a way of giving to the schools … who had the greatest needs. That was a responsibility of the university."

Students in the Toronto District School Board, like those pictured here, benefit from U of T's Centre for Urban Schooling.

AN EXAMPLE: SHARING THE TRANSIT OF VENUS

On June 5, 2012, the planet Venus passed across the face of the Sun. This phenomenon, called a 'transit of Venus,' had not happened since 2004 and won't happen again until 2117. For most of us, it was our last chance to see this spectacular celestial event. It was an occasion not only to be shared, but explained, and both were made possible for thousands of people thanks to U of T.

A special transit-viewing event was held at Varsity Stadium, which provided members of the public with every possible way of viewing and learning about this spectacle. Visitors watched the celestial passing using free transit-viewing glasses and through a variety of solar telescopes that were set up on site — including a 200-year-old instrument from the U of T's Scientific Instruments Collection. Live video feeds of the transit from a variety of locations around the world were also shown. Planetarium shows were offered in Varsity Arena, a free astronomy public lecture was conducted, and Canadian playwright Maureen Hunter's *Transit of Venus* was performed.

On hand to answer questions were U of T astronomers, including postdoctoral fellow Nicholas Law, who is based at the Dunlap Institute for Astronomy & Astrophysics. "Beyond their public appeal, transits are also important scientifically because they relate to one of the most exciting fields of investigation in astronomy today: the search for planets around other stars," says Law.

The public flocked to the University of Toronto to utilize the telescopes and live feed set up at the free Transit of Venus event on June 5, 2012.

"One way astronomers find these so-called exoplanets is by detecting transits of distant stars. When an exoplanet crosses the face of a star, astronomers detect the slight, periodic dip in the brightness of the star, revealing the presence of the distant planet."

The event was organized by the Dunlap Institute for Astronomy & Astrophysics, in collaboration with the Department of Astronomy & Astrophysics, the Department of Alumni Relations, the Institute for the History & Philosophy of Science & Technology, and the Centre for Drama, Theatre and Performance Studies, with sponsorship from *SkyNews* magazine.

More than 5,000 people were on hand for this once-in-a-lifetime event, and U of T was uniquely able to assemble a broad team to contextualize and celebrate the occasion for our local community.

AN EXAMPLE: UNDERSTANDING THE LOCAL IMMIGRANT EXPERIENCE

Kathi Wilson, Associate Professor of Geography at the University of Toronto Mississauga (UTM), calls herself a "community-based social health geographer," and she is passionate about studying the health experiences of new immigrants.

While most research work on newcomers has focused on large urban centres (such as Toronto, Montreal, and Vancouver), Wilson is among the first to look at the immigrant experience in the burgeoning suburbs outside these cities. Her research focuses on geographic inequalities in access to health, as well as the experience of living in and accessing health services in a particular community.

For the past seven years, Wilson has worked closely with the Dixie Bloor Neighbourhood Centre in Mississauga. The centre helps a variety of community members, including a broad range of immigrant groups, and offers programs such as settlement and language services.

Wilson is looking at the challenges immigrants face in accessing public health care services, such as finding a family doctor who is accepting new patients. Her research is also providing new insights into existing knowledge.

For example, a lot of data shows new immigrants face declining health in Canada over time, says Wilson, but few studies have looked at the cause, especially in suburban areas. "One source of this decline is the impact of underemployment and unemployment on newcomers' mental health. It's a huge stress," says Wilson.

Wilson's research is having a real and meaningful impact in the community. Her findings help the Bloor Dixie Neighbourhood Centre get an understanding of the need for, and value of their services. "My research is inspirational to me on many levels," says Wilson.

"Mostly, I am continually inspired by the resilience of new immigrants and their willingness to share their stories."

Kathi Wilson, Associate Professor of Geography at the University of Toronto Mississauga (UTM)

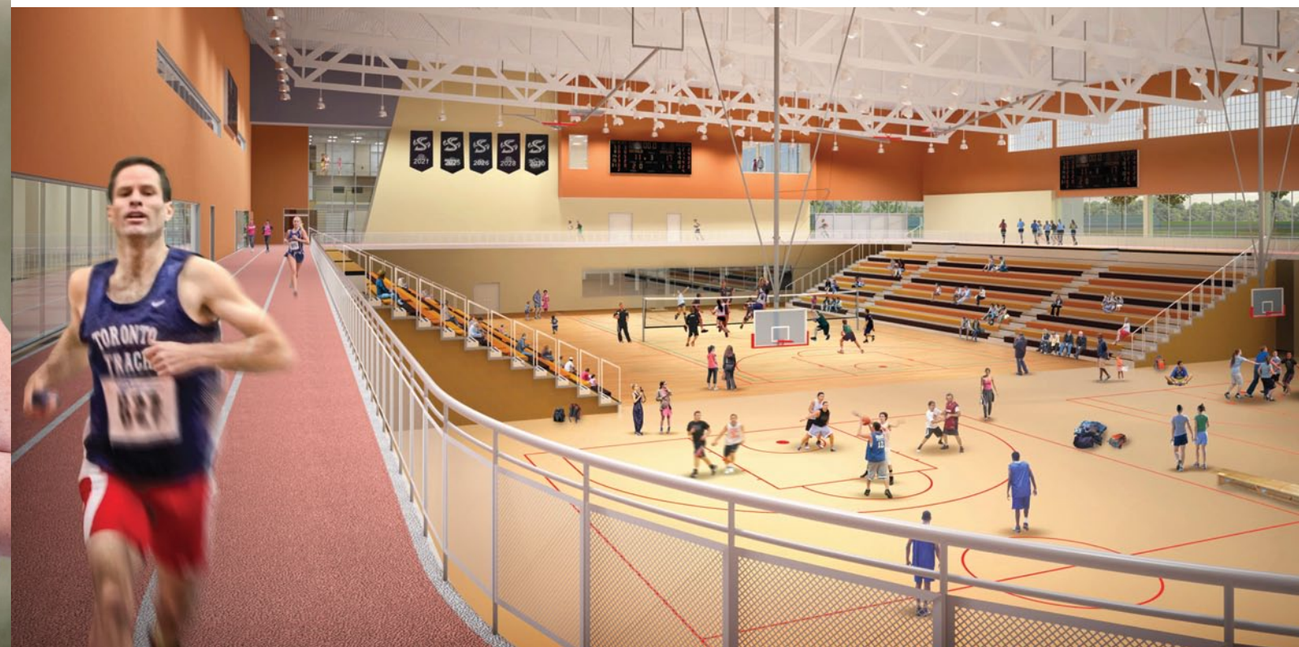
AN EXAMPLE: THE HEART OF TORONTO'S 2015 PAN AM AND PARAPAN AM GAMES

With the 2015 Pan Am and Parapan Am Games approaching quickly, U of T is at the centre of plans and developments for this international sporting event. The university's involvement in the games is multi-pronged. "We're involved in two capital projects, the Scarborough Pan Am Aquatics Centre and Field House and the Back Campus Field House for the field hockey venue," says Anita Comella, Assistant Dean, Physical Activity and Sport in the Faculty of Kinesiology and Physical Education. Independently, the University of Toronto is also building the Goldring Centre for High Performance Sport, which will be used during the games.

These new projects will not just raise the university's profile and serve generations of students, but they are providing the Toronto region with world-class high-performance athletic facilities. "One of the lasting legacies of Toronto's Pan Am and Parapan Am Games will be the new facilities that will make our region a truly international centre for amateur sports training and competitions," said Ian Troop, Chief Executive Officer of the Toronto 2015 Pan Am/Parapan Am Games Organizing Committee (TO2015). "The University of Toronto is a critical partner in realizing that vision."

The new facilities will allow students to learn outside the classroom and benefit all manner of sports at U of T — from varsity teams to impromptu soccer games — Comella explains. It's also a partnership that further entrenches the university's leadership in sport science, says Andrew Arifuzzaman, Chief Administrative Officer for U of T Scarborough. "This project has been described as the largest single sports investment in amateur sport in Canada's history," Arifuzzaman says. "It achieves a broad vision. It really allows a young person who's never swum before to learn how to swim, yet also creates a platform to learn how Canada's most elite athletes achieve personal bests and become more competitive on the world stage."

Artist's rendering of the new track and field house at UTSC



AN EXAMPLE: DEFENDING A CULTURE BY PROTECTING ITS LANGUAGE

Professor Keren Rice, Canada Research Chair in Linguistics and Aboriginal Studies

As Canada Research Chair in Linguistics and Aboriginal Studies, it's no surprise that Keren Rice chooses her words carefully to describe her work with the Deline First Nation in the Northwest Territories.

Rice is working to help save the Deline language and other native languages of Canada's north by writing a comparative grammar of Athabaskan languages with the community's leaders and elders. "Many Aboriginal communities have very little of their language left," she explains. "But [here] there are still many elders who are reasonably close to modeling the language." Saving the language is also imperative to the survival of the Deline culture, Rice notes.

Working with the support of a grant from the Social Sciences and Humanities Research Council of Canada, Rice's methods include transcribing dated recordings of native speakers, recording the stories of the land and place names as well as transcribing storytelling found in music. "The work starts with the elders. It's a very cross-disciplinary project," says Rice. "The focus on the growth of a community language is an interesting one. Such a project has not been undertaken in very many places to my knowledge."

The goal of the research is to produce materials that communities can use. For example, radio shows done in the past could be transcribed into books that would then be used in schools. "It's work that's helping build things in the community," says Rice. At the same time, the work is carrying language and history forward to a new generation.

The Deline may not be the only group to benefit from the record of their history and language. Rice believes the project can inspire similar efforts elsewhere. "Many times when things happen in one place and people from another place see it, then they begin to think 'oh, we could do that, too,'" she says.

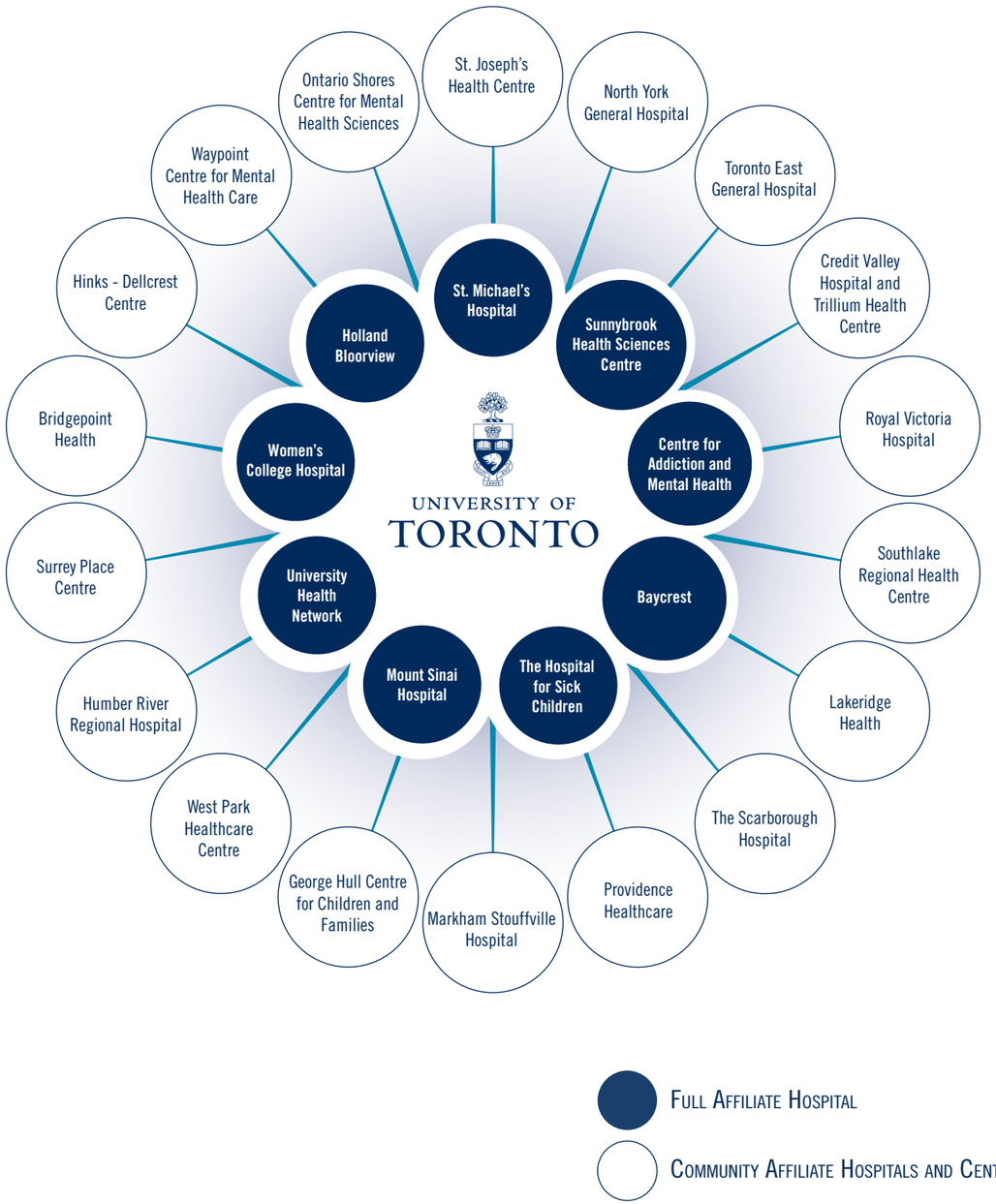
The University of Toronto stands at the centre of one of the world's largest health care networks. We have nine fully affiliated teaching hospitals and an additional 18 community-affiliated hospitals and centres that provide critical care to our broader community. This wide network allows us to train many of Ontario's health care providers. Chances are that if you seek health care treatment in Ontario, you will meet a professional trained at U of T. In 2009, we awarded over one-quarter of all medical degrees, 58% of dentistry degrees, and 73% of pharmacy degrees in the province.

In addition to training practictioners, we also generate the knowledge that enables new treatments and therapies that extend and improve human health. U of T's long legacy of medical firsts includes the discovery of insulin in 1921 by Fredrick Banting, Charles Best, J.J.R. Macleod and James Collip; the identification of stem cells by James Till and Ernest McCulloch in 1963; as well as the bioengineering innovations of today, such as the development of a "printer" that can create human tissue, developed in the laboratories of Milica Radisic and Axel Guenther. Our leadership in medical research is recognized by many, including the Canadian Institutes of Health Research, which awards the largest share of its grants to U of T-based researchers (more than 21%).

Be it as health care providers or as researchers, U of T's students, faculty, staff and alumni continue to push the frontiers of medicine to advance human health for Canadians and people around the world.

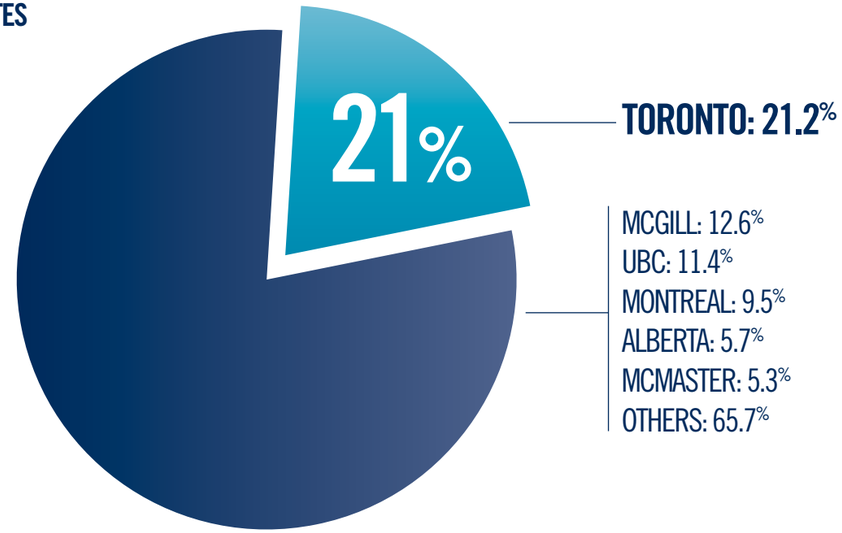
BETTER HEALTH CARE FOR ONTARIO

U OF T IS AT THE CENTRE OF A BROAD HEALTH CARE NETWORK

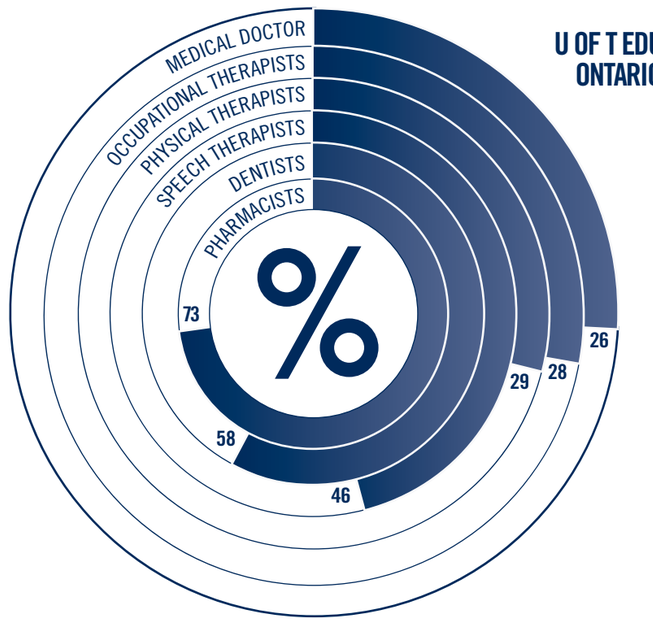


THROUGH RESEARCH AND TRAINING

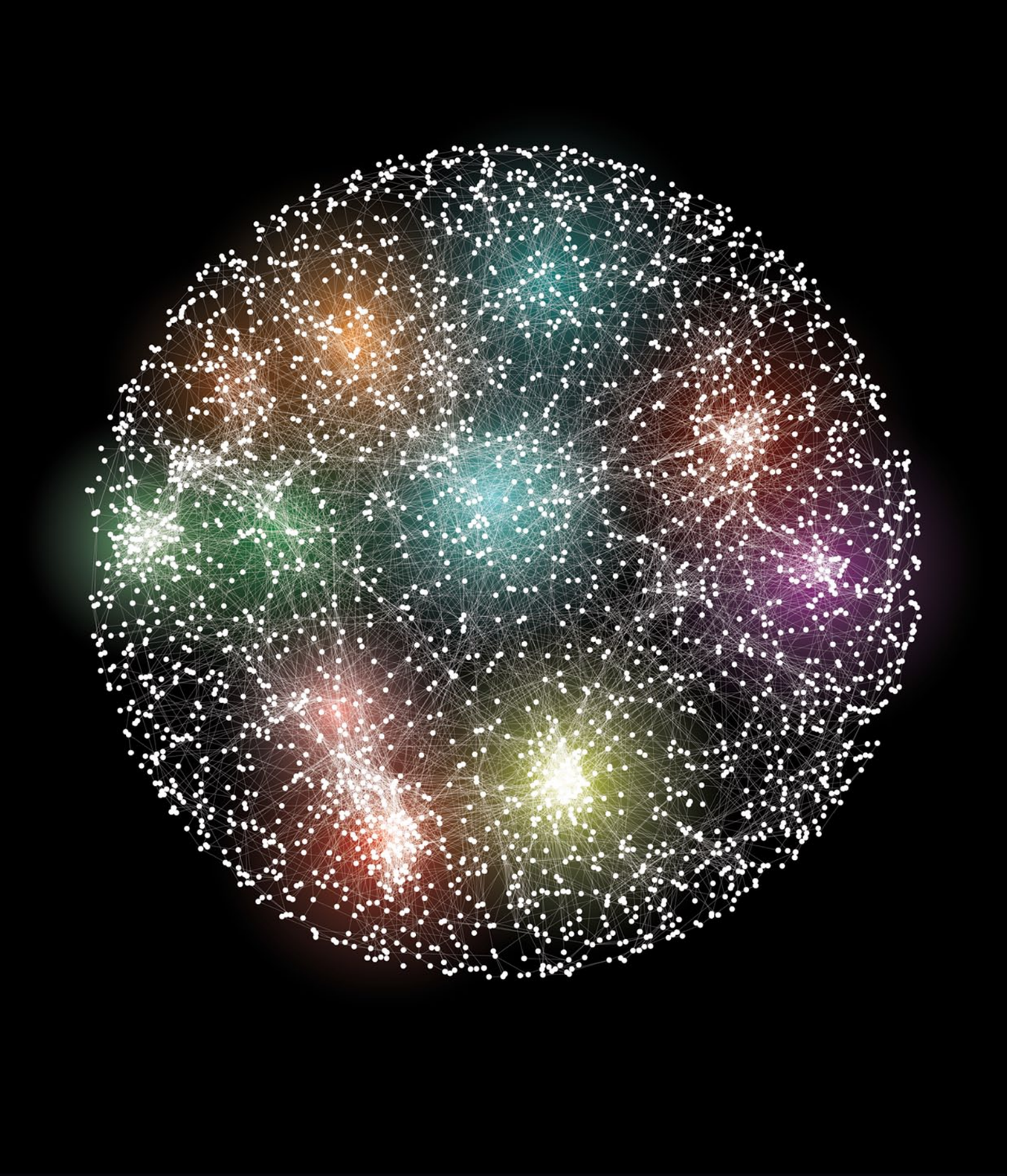
PERCENTAGE SHARE OF FUNDING FROM CANADIAN INSTITUTES OF HEALTH RESEARCH: 2006 – 2011



PERCENTAGE SHARE OF ONTARIO MEDICAL PRACTITIONERS WHO HAVE GRADUATED FROM U OF T: 2009



U OF T EDUCATES MANY OF ONTARIO'S HEALTH CARE PROFESSIONALS



AN EXAMPLE: PIONEERING STEM CELLS

In 1963, Professors Ernest McCulloch (1926-2011) and James Till discovered stem cells while studying the effects of radiation on the bone marrow of mice. Stem cells have the unique ability to generate into any type of cell and they hold tremendous promise for establishing new possibilities in medical science.

Half a century later, Professor John Dick of the Department of Molecular Genetics and the Ontario Cancer Institute (OCI) is building on McCulloch and Till's revolutionary discovery. Dick — whom Till calls his "academic grandchild" — was the first person to identify human cancer stem cells in leukemia.

While his work today focuses on how stem cells can be manipulated, in the 1980s, Dick did his post-doctoral work on blood stem cells. This ground-breaking research included finding ways to detect human stem cells among blood cells, which wasn't an easy task. "One in a million blood cells is a stem cell," explains Dick. "It is literally like trying to find a needle in a haystack."

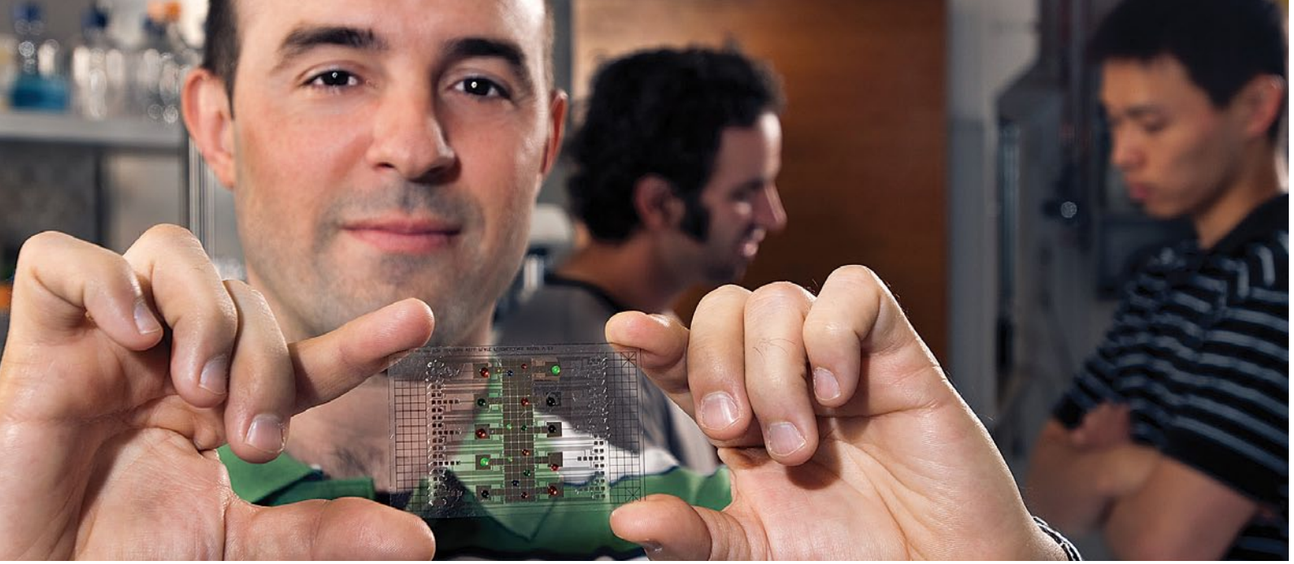
Dick's research has also involved identifying regenerative leukemia cells, which are the most potent and can lead to a recurrence of cancer after treatment. "We are looking at the genetics of these cells as they can predict how a patient will do in treatment," says Dick. The results will form the basis of a clinical test that will help determine treatment and patient outcomes.

"The whole way through, I was guided by the research principles of McCulloch and Till," says Dick. Carrying on the legacy of stem cell work is a remarkable privilege, he says. "Today, we are on the cusp of an important discovery that could be very important in treating cancer. It is incredibly satisfying."

Right: Professor John Dick of the Department of Molecular Genetics and the Ontario Cancer Institute

Left: This graphic illustrates the genetic interaction network of a yeast called Saccharomyces cerevisiae and was developed by the laboratory of Professor Charlie Boone of the Banting and Best Department of Medical Research and Terrence Donnelly Centre for Cellular and Biomolecular Research. It won the Art & Science competition at the 2010 International Society for Computational Biology conference.

Each node represents a gene. Genes are connected to each other if they share a similar pattern of genetic interactions, which commonly occurs between functionally related genes. This is directly relevant to human health because, similarly to S. cerevisiae, individual genetic variants in a human genome might have little effect on disease risk, but combined may have a significant impact. It was created by Anastasia Baryshnikova, based on research by Boone, Michael Costanzo, Chad L. Myers, and Brenda J. Andrews.



Aaron Wheeler, Associate Professor of Chemistry

AN EXAMPLE: A LAB THAT FITS IN YOUR POCKET

It's smaller. It's less invasive. And it can lead to more rapid, life-saving results.

It's a "lab-on-a-chip," a concept that Aaron Wheeler, an Associate Professor of Chemistry, is using to deliver faster results in areas such as breast cancer screening and newborn genetic testing.

"There has been a movement in the last 10 to 15 years to try to miniaturize the instruments and processes in a lab into a tiny handheld device," says Wheeler. For example, rather than using the conventional screening methods for breast cancer, such as biopsies, the lab-on-a-chip produces the same results through a much less invasive needle prick. This can then be analyzed by the small chip, which fits in the palm of your hand. "We are building methods that are much faster and much more efficient. They're also able to work with much smaller samples than are typically needed for a regular lab report," he explains.

Wheeler notes that the university has one of the largest concentrations of scientists in the world focusing on this type of chip research. "It really puts the university on the map in terms of having a big group of people from engineering, from basic science, from medical science and all across the board working together."

While the work is satisfying on several fronts for Wheeler — the possibilities of speeding diagnosis and treatment and assisting with health research — the project's main goal is not to be missed.

"Our primary mission is to educate the next generation of scientists. My group has 20 people in it including graduate students, post-graduates and undergraduates, and I believe our biggest contribution is educating the next generation of scientists and innovators for Canada," adds Wheeler. "We are doing fundamental research, which may change the way we deliver health care to make it more efficient."

AN EXAMPLE: ENSURING A HEALTHY CITY THROUGH LOCAL PARTNERSHIPS

Among the initiatives of the Healthy City Stewardship Centre was a bike safety clinic that saw 1,000 Peel Region school children equipped with bike helmets and safety lessons.

The mandate was straightforward: create an organization that would meet regularly to share information about how participants could support each other's work to build a healthier community. In this case, the community was the City of Mississauga — and together with U of T Mississauga and additional civic and corporate partners, the Healthy City Stewardship Centre (HCSC) was formed.

It's an organization that owes its existence to UTM. "This was something we proposed to the city government, and then it was embraced by the mayor as part of her strategic vision in serving the community's citizens," says Ulrich Krull, Professor of Analytical Chemistry and Chair of the HCSC.

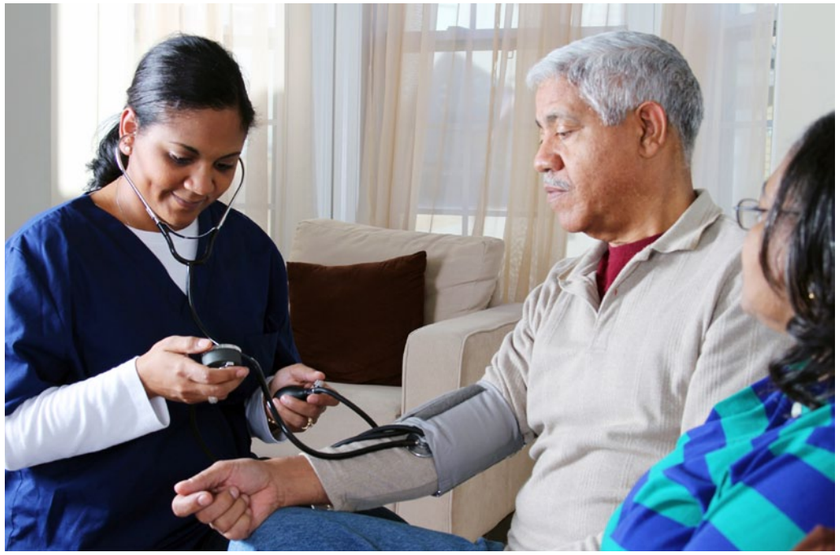
HCSC has garnered international acclaim as a model of health collaboration and won the 2006 World Leadership Award. The award, which celebrates the best of modern city leadership, is presented by The World Leadership Forum, a not-for-profit organization.

"We have the wherewithal to deal with developing best practices through the university's research and also the connection to various levels of government," says Krull.

Together, the group compares and collaborates on a variety of health-related issues — everything from childhood obesity to creating sustainable environments. For instance, UTM students and researchers measured the access to care for residents across the city by plotting the location of doctor's offices and assessing which physicians were accepting new patients.

"In many ways, the University of Toronto Mississauga is a research arm for the city and the Peel region," Krull says.

AN EXAMPLE: TRANSFORMING HEALTHCARE, TRAINING LEADERS



Above: Professor Brian R. Golden, Executive Director of the Centre for Health Sector Strategy at the Rotman School of Management.

Health care currently represents 46% of the Ontario government's annual spending and according to Don Drummond, former chief economist of Toronto-Dominion Bank and a recent adviser to the provincial government, that share could grow to 80% by 2030. The need for smart management of our health care has never been more urgent. Enter the Centre for Health Sector Strategy at the Rotman School of Management, which is training a new generation of health care managers — and helping to shape one of the largest sectors in the economy.

"For years, the best and the brightest managers have gone into the private sector," says Professor Brian R. Golden, Executive Director of the centre. "We wanted to send them to the public sector, to health care, as well." The centre was the first program of its kind in Canada, and remains the largest in Canada devoted to both public and private health care. The centre does a variety of leading-edge work, which includes helping to train senior managers in health care, partnering with government agencies on health research and policy work, and providing health consulting services. For example, the centre has worked on reducing emergency wait times and is one year into a pilot project with the government on integrated homecare. "Home care is a very fragmented area: we advised bundled funding for clients (patients) rather than disjointed activities," says Golden. Overall, Golden sums up the centre's work as "providing value for money and better care."

The centre's work is transforming healthcare — and the attitudes of top students, says Golden. "I hear students say, 'I never had any interest in working in health care before. I wanted to work on Bay Street. Now, I want to do something bigger and meaningful and work in health care.' Now that's inspiring."

Sustainability is not only a closely held value of the University of Toronto, it is part of our history. A century ago, well before notions of sustainability and energy efficiency took on the importance they have today, U of T opened a central steam plant to heat and provide hot water to buildings across the St. George campus. In the years since, U of T has continued to be a leader in sustainability. Since 1973, U of T's efforts have resulted in the avoidance of more than 1 million tonnes of greenhouse gas, saved 60 billion litres of water and more than $200 million in utility expenses. For our efforts, we have been awarded an A- by the Sustainable Endowments Institute in 2011, tying with UBC and the University of Calgary for top marks in Canada.

While we set a good example in our practices, U of T researchers are also seeking new solutions that will provide environmental and economic sustainability. Across our campuses, faculty and students are creating new materials that can convert light into energy and formulating new processes that can transform waste into power. Students are also benefiting from new courses and learning experiences that prepare them to be sustainability leaders in their chosen industries. They are ready to revolutionize the green economy and sustain our environment.

Graduate students Leanne Rasmussen (left) and Anda Petro demonstrate the new water fountain installed in the Sidney Smith Hall cafeteria. In 2011, the University of Toronto began to phase out sales of bottled water across its three campuses. In doing so, U of T joined over a dozen other campuses that have pledged to go bottled water-free. The ban comes after a campaign spearheaded by enthusiastic U of T students who raised awareness on campus of the environmental and social impact of the commodification of water.

U OF T & SUSTAINABILITY

For over 40 years, the University of Toronto has:

AVOIDED CO_2
1 MILLION TONNES

x 10
Avoided the release of more than **one million tonnes** *of greenhouse gas*
Enough to fill London's Royal Albert Hall over 10 times!

SAVED OVER
60 BILLION LITRES

x 38
Saved over **60 billion litres** *of water*
Enough to fill Toronto's Rogers Centre over 38 times!

SAVED OVER
250,000 TREES

x 10
More than ten times the number of trees in New York's Central Park!

DIVERTED
47,000 TONNES OF WASTE

x 2
47,000 tonnes *of waste diverted*
Enough to fill Toronto's Roy Thompson Hall twice!

WASTE DIVERSION
RATE OF 71.4%
One of the highest of any institution in North America.

$200,000,000
IN UTILITY COST AVOIDANCE

Rouge River National Urban Park

AN EXAMPLE: A VAST LIVING LABORATORY

Canada's national parks evoke an image of pristine, preserved and protected pieces of land, where visitors endeavour to "leave no trace behind." But what do you do with a park that has a major Canadian highway running through it, is bordered by cities and sits within driving distance of 20% of Canada's population?

When Parks Canada decided to transform the Rouge Valley into Canada's first national urban park, it asked U of T Scarborough to be its primary research and education partner on the project.

"In Eastern Canada, the Rouge is one of the most pristine watersheds we have," says Malcolm Campbell, a biological sciences professor and UTSC's Vice-Principal of Research, "and the amazing thing about the Rouge is that it's embedded in Canada's largest urban centre." The partnership is researching how best to conserve the land, examining the organisms in the park and their survival, and determining how the environment surrounding the park impinges on the watershed — the runoff from Highway 401 being only one example. "Then students actually visit the Rouge as part of biodiversity and conservation biology programs and we have student volunteers going there in their interpretive and education work," says Campbell.

He notes that connecting the community to this project is critical and something UTSC can uniquely faciliate. "The vast majority of [our students] reside within the surrounding communities. That's important because it's a natural conduit for Parks (Canada) and other organizations to work together with us on city building. We're directly connected to it through our programming and student body," says Campbell.

AN EXAMPLE: A CENTURY OF SUSTAINABLY GENERATING HEAT

It was a concept that was ahead of its time. In 1912, the University of Toronto opened a steam plant to supply multiple buildings with heating and cooling services on the St. George campus. Today, 100 years after opening the plant, the university's district energy systems provide these services to some 75 buildings on the downtown campus.

Besides saving real estate and avoiding housing a boiler in each building, the district energy system allows for global improvements to the university's energy provision. "We can make efficiency improvements all at once, in one place, instead of at many different places," says Bruce Dodds, Director of Utilities and Building Operations. "You have more reliability through redundancy of equipment. And we can also buy gas and electricity in bulk." Energy-saving projects continued. For example, in the 1990s the university was the first in Ontario to put in a multitasking gas turbine generation facility. "When you put gas in a turbine to make electricity, most of the energy is heated and we don't waste that," Dodds says. "The co-generation process takes waste heat, puts it through a waste heat boiler and sends it into our heating system, so we get very high efficiencies." "U of T was ahead of its time," says Bruce Ander, President and CEO of Markham District Energy and the Canadian representative to the International District Energy Association. "District energy systems are becoming increasingly common in Canada and are very common in Europe. But 100 years ago, there were few places in Canada like U of T that had the foresight to build a district energy system." Today there are 120 district energy systems across Canada.

While the benefit to the university in efficiencies and cost savings are clear, there's also a direct benefit to the neighbours surrounding this downtown university. "The local community doesn't have to put up with seeing plumes of gas that come out of every single building — we just have one," says Dodds. "We try to get higher and higher efficiencies all the time so that's a good thing for the environment."

Engineer Boon Tak Lee explains the operations of the university's steam plant.

AN EXAMPLE: CREATING A BRIGHT FUTURE FOR SUSTAINABLE ENERGY

They're developing and producing the next generation of solar cell technologies that will cost less and be more efficient. They're studying biology and how it can be used in energy applications. They're developing new technologies that range from reactors that convert algae into energy to photovoltaic cells that convert sunlight into power.

Sustainable energy researcher, Professor Ted Sargent

These projects are just a few of those underway at the University of Toronto's Centre for Sustainable Energy (CSE). The organization, founded in 2010, consists of a team of more than 50 researchers, educators, students and partners all working towards one goal: improving Canada's energy efficiency and better managing its carbon emissions.

"More than anything, the CSE is a collection of researchers with common interests," says David Sinton, an Associate Professor of Mechanical Engineering and the centre's Director. Sinton is working on the algae technology as well as studying how fluids, such as carbon monoxide, move underground. "Collectively, the group is addressing sustainable energy challenges from just about every direction. Energy technology is a central issue everywhere and it's certainly a huge challenge." The CSE involves multiple disciplines — mechanical engineering, chemical engineering, applied chemistry, civil engineering, materials science and engineering. But Sinton believes its strength is not in its numbers, but in its brain power. "The centre is a means by which we can connect researchers and secure resources to present a unified vision for sustainable energy at the University of Toronto. But our power is really the strength of all of our researchers. That's what's special about the centre — the research that our people are doing."

Among the group's many achievements is the ground-breaking research of Professor Ted Sargent, who is pioneering the development of solar cell films that can be created quickly and at low cost, similar to paint or ink. This research paves the way for solar cells that can be fabricated on flexible substrates in the same way newspapers are rapidly printed in mass quantities.

"Our world urgently needs innovative, cost-effective ways to convert the sun's abundant energy into usable electricity," says Sargent. "This work shows that the abundant materials interfaces inside colloidal quantum dots can be mastered in a robust manner, proving that low-cost and steadily improving efficiencies can be combined."

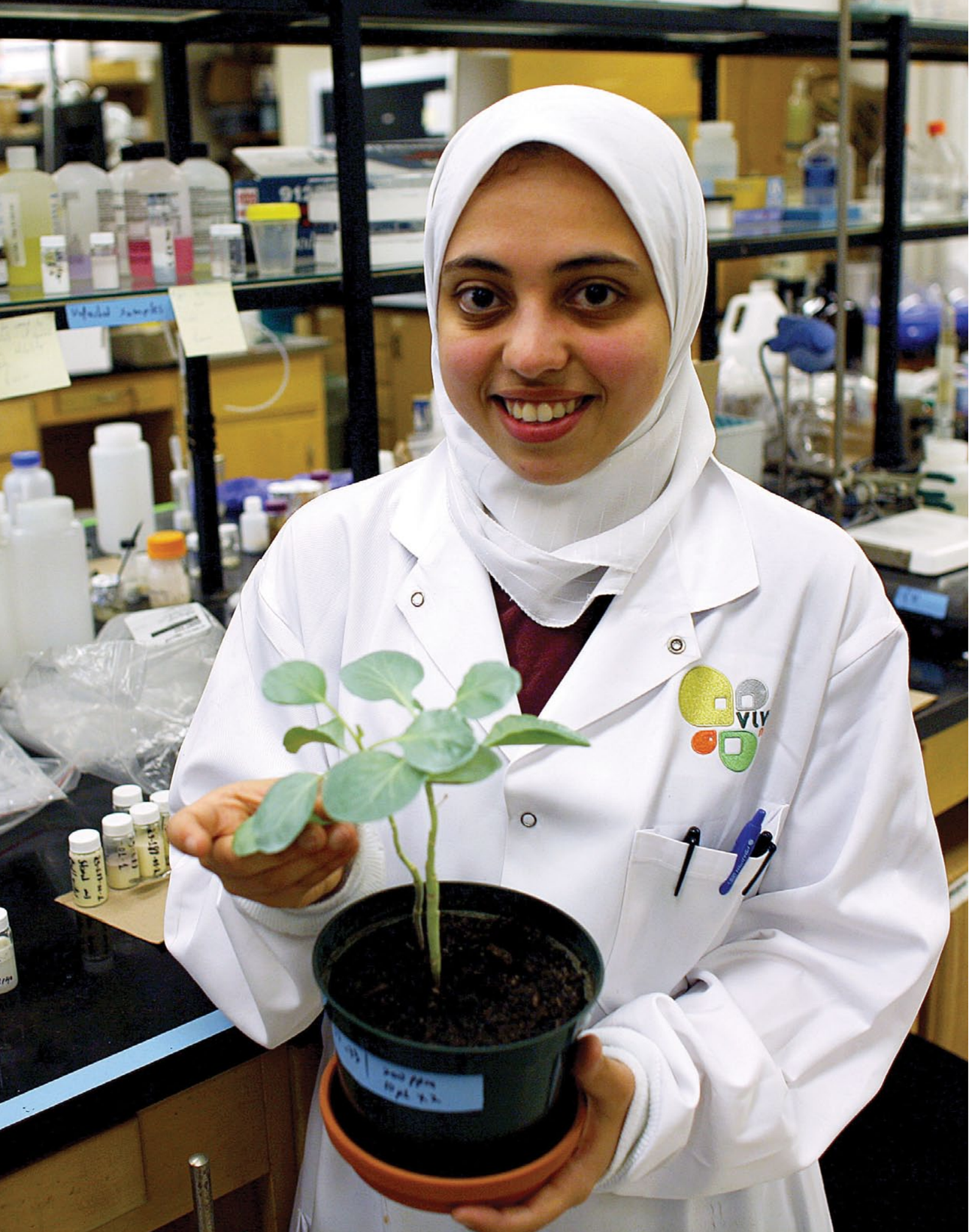
AN EXAMPLE: ENSURING A SUSTAINABLE WORKPLACE

The statistics are inspiring. Over the last decade, U of T has avoided more than a million tonnes of greenhouse gases. It's saved more than 60 billion litres of water and over $200 million in utility expenses. And its recycling program has one of the highest diversion rates of any university in North America at 71.4%. With those kinds of numbers, it's no surprise the university was named one of Canada's 2012 Greenest Employers — recognition for its commitment to creating a sustainable environment across all three campuses.

"The university has a multi-pronged approach towards sustainability," says Christina Sass-Kortsak, Assistant Vice-President of Human Resources. That's inherently important, she says, and it's a draw for potential employees. "We do know that employees want to work for organizations that align with their values."

Many initiatives led to the Greenest Employer designation, including a 2011 ban on water bottles on campus, a steam plant district energy system, setting up sustainability offices on all three university campuses and the Green Ambassadors project. This project, in particular, allows employees committed to sustainability to get support from a sustainability office so they can incorporate eco-friendly changes in their departments.

A green roof Initiative at UTSC



Transforming ideas into commerce is the promise of the knowledge economy. The University of Toronto is turning this promise into reality. With almost 1,000 invention disclosures filed between 2007 and 2010, we are far ahead of any Canadian institution and third among public universities in North America. Between 2009 and 2011, 53 companies were established based on U of T-related research, the third most of any university in North America. We are now positioned to go even further. U of T is encouraging our entrepreneurs through new programs and opportunities.

From student groups like the U of T Entrepreneurial Society, to U of T Engineering's The Entrepreneurship Hatchery as well as the ongoing efforts of our Innovations and Partnerships Office, we stand ready to capitalize on our spirit of discovery. And now, with the establishment of the Banting and Best Centre for Innovation and Entrepreneurship, we can provide a home for our students and faculty to build new industries and develop new innovations that will spur economic growth.

U of T's contributions to the Ontario economy are vast. We employ more than 23,000 people and have created over 3,400 construction jobs through our current capital projects, (2012-2015) This is approximately the number of people currently employed in Canada by General Motors, Chrysler and Ford combined. The direct impact on the local economy through spending by the university, our students, faculty and staff stands at more than $1.75 billion annually. And when you include the impact of the incremental earnings of alumni, the indirect impact of spending, and the growth spurred by our research, U of T contributes well over $15 billion to Ontario's economy each year. We also supply a highly educated workforce, with over 90% of our graduates employed within two years of graduation.

With the business we generate, the jobs we provide, the spending we do and the workforce we educate, U of T is creating new economic opportunities.

Hanin Issa is a recent graduate of the University of Toronto and is currently working at Vive Crop Protection, a new tenant in the Banting and Best Centre for Innovation and Entrepreneurship. Issa's position at Vive was facilitated through the Graduate Enterprise Internship program.

U OF T & ECONOMIC OPPORTUNITIES

Contributions of Spending and Expenditures	Direct Impact (M)	Indirect Impact (M)
Students' Spending	$637.7	$956.5
Faculty and Staff Spending (from salaries)	$649.2	$973.8
U of T Expenditures (non-salary)	$469.2	$703.9
Local Sub-Total	**$1,756.1**	**$2,634.2**
Increased Alumni Earnings in the GTA	$2,633.8	$3,950.8
Increased Alumni Earnings in rest of Ontario	$1,857.0	$2,785.4
Impact of U of T Research on Ontario economy	$5,705.5	$5,705.5
Total	**$11,952.4**	**$15,075.9**

U OF T IS 3RD AMONG U.S. & CANADIAN PEERS IN SPIN-OFF COMPANY CREATION

New companies created, period 2009 through 2011.

NUMBER OF SPINOFFS CREATED

PEER UNIVERSITIES:

60	MASSACHUSETTS INSTITUTE OF TECHNOLOGY
56	UNIVERSITY OF UTAH
53	UNIVERSITY OF TORONTO
40	COLUMBIA UNIVERSITY
38	CALIFORNIA INSTITUTE OF TECHNOLOGY
37	UNIVERSITY OF ILLINOIS
32	JOHNS HOPKINS UNIVERSITY

DID YOU KNOW ?

THE UNIVERSITY CREATES ALMOST AS MANY **JOBS FOR CANADIANS** AS THE BIG THREE CAR COMPANIES, **COMBINED.**

Top 3 Canadian Auto Employers		The University of Toronto*	
		Faculty:	11,221
Chrysler:	9,400	Teaching Assistants:	4,198
General Motors:	8,000	Administrative Staff:	5,958
Ford:	7,800	Student Work-Study:	2,000
Total:	**25,200**	**Total:**	**23,377**

*** Includes clinicians paid by partner hospitals**

AN EXAMPLE: TRANSFORMING INNOVATION INTO ENTREPRENEURSHIP

BioAspect · 1degreeBIO · SCIENCESCAPE Charting Discovery · bionym · SYLLETA · vive

A few of the companies currently located in the Banting & Best Centre for Innovation and Entrepreneurship

The Banting and Best Centre for Innovation and Entrepreneurship (BBCIE) provides a home for student and faculty-spun companies commercializing research discovered through the university. The centre repurposes a space that for many years was an important focus of academic medical research. When that research activity moved to newer facilities, the university saw an opportunity to foster a set of early stage start-ups. "This repurposing of space and using it to do different things that are important to the mission of the university is key," says Scott Mabury, Professor and Vice-President of University Operations. The longer-term plan, he adds, is to replace the buildings and expand this developmental space.

In addition to lab and office space of over 50,000 square feet, the BBCIE gives aspiring student entrepreneurs education, mentorship and resources to support their companies. Strategically located across the street from the MaRS Discovery District, a powerful resource and already home to many U of T start-ups, tenants in the centre will benefit from the connections they can make with colleagues in MaRS, the university and other entrepreneurs at Banting and Best.

"We believe the ecosystem of discovery here is important for those initial steps of building and translating the discovery into the technology," notes Mabury. "If you're within the same domain and ecosystem with all the support structures for that discovery, they can also facilitate those first steps into the marketplace. That's one thing that's particularly innovative about the Centre."

Among the new tenants is Vive Crop Protection Inc., which is conducting its research and development at the centre. As Vive's President and CEO Keith Thomas explains, the centre's location and facilities were big draws. "It's very easy to find highly qualified minds that actually want to work in a downtown core as opposed to other areas. So the ability to have a home that is in this area is very valuable for recruiting talent for knowledge-based industries," says Thomas. He also notes that the centre — especially its wet labs — helps to fill a deficit of suitable research space in the region. The centre is becoming a source of employment for many U of T graduates. As of September 2012, when the centre opened, the BBCIE's private-sector companies had some 63 employees. Employers include Syletta Inc., a company that is developing cost-effective, eco-friendly coatings for ships, and BioAspect Inc., a firm that conducts preclinical drug discovery research. "The majority of the companies in the BBCIE are viable and still growing," says Mabury, "which tells us that this may be a more successful and efficient way of transitioning and translating discoveries into commercial activity."

AN EXAMPLE: U OF T INSIGHTS DRIVE BUSINESS GROWTH FOR 40 YEARS

Transforming U of T research into successful companies is nothing new. The foundations of Eco-Tec Ltd. — a thriving Canadian company with global reach — were laid in the 1960s in the Department of Chemical Engineering and Applied Chemistry. The president and CEO of the environmental and sustainable manufacturing company, Dr. Phillip "Rocky" Simmons, earned three degrees (BASc, MASc and PhD) in the department. And the innovative research in the field of chemical recovery and water purifying technology that Simmons worked on as a student underpins the very existence of his company today.

"The research was in the embryo stages but I thought it could be revolutionary," says Simmons. Back then, he had recently left an automotive filter manufacturer and introduced the executives of that company to the professors leading the research. A few years later in 1970, Eco-Tec was born. "It was an ideal situation of university and industry collaborating and doing good work in the world," says Simmons, who is also the chair of the department's Board of Advisors. "U of T was really thinking outside the box," he adds.

Eco-Tec specializes in chemical recycling and recovery, purifying water in industrial settings and purifying biogas so it can be used as fuel. To date, the company has supplied over 2,000 systems in 60 countries and has offices around the world. Simmons is quick to point out that Eco-Tec still manufactures everything in Pickering, Ontario. What's more, the company funds a scholarship in chemical engineering, and many of its executives and employees are graduates of the program. "It's in our blood to come up with and develop new ideas," says Simmons of his organization's entrepreneurial spirit. "We were able to take research from U of T and create a successful international Canadian company that is a leader in its field around the world. That continues to inspire me." The research that began in a U of T lab has enabled Eco-Tec to be a thriving part of the Canadian economy and a sustainability success story for 40 years. Today, U of T is incubating small companies with similar potential to create new jobs and new solutions.

Dr. Phillip "Rocky" Simmons, President and CEO of Eco-Tec Ltd.

AN EXAMPLE: RAISING OPPORTUNITIES, OVERCOMING ADVERSITY

People living with mental illness and addiction can frequently find themselves unable to find employment due to their health issues. But an innovative program based at the Rotman School of Management is helping to improve their economic opportunities. Rise Asset Development offers mentorship, small loans and lines of credit of up to $25,000 to people with mental illness or addiction who want to start small businesses.

"The group that we are targeting with this program is unique for a business school," says Narinder Dhami, Rise's Executive Director. "We are filling an important gap for people who otherwise would not be able to get financing. It's very important because work is a significant social determinant of good health and this program allows people to take a passion and turn it into an income." In turn, she says, Rise's clients "feel like members of society again."

In addition, Rise is helping 20 youth who have mental illnesses or addictions create business plans that they can then submit to receive a loan. The average loan is $3,000 to $5,000 and clients pay back the money in full, which Dhami says encourages a sense of responsibility and independence among participants.

The program is a partnership between two leaders in their respective fields: Rotman and the Centre for Addiction and Mental Health in Toronto. It began in 2009 with a $1-million gift from Sandra Rotman. Since then, Rise has received funding from CITI Bank and Foundation, RBC and the Ontario Ministry of Children and Youth Services. "The objective was always to have a public-private financing model," says Dhami. To date, 22 people have received financing through Rise. "We see people transformed," says Dhami. "They feel believed in again and trusted, and because of that we see their confidence come back."

RISE ASSET DEVELOPMENT OFFERS MENTORSHIP, SMALL LOANS AND LINES OF CREDIT OF UP TO $25,000 TO PEOPLE WITH MENTAL ILLNESS OR ADDICTION WHO WANT TO START SMALL BUSINESSES.

Narinder Dhami (Executive Director, Rise), Dr. Brian Golden (Chair, Rise & Professor of Strategic Management, Sandra Rotman Chair in Health Sector Strategy), Sandra Rotman (Rise Donor, Board Member), Kenesha Lewis (Rise Entrepreneur & Dr. Paul Garfinkel Award Recipient), Mathew Calce (Rise Entrepreneur & Dr. Paul Garfinkel Award Recipient), Susan Pigott (VP, CAMH & Advisor to Rise), Dr. Paul E. Garfinkel (founding CEO, CAMH)

AN EXAMPLE: GIVING GRADS EXPERIENCE, GIVING INDUSTRY TALENT

The Graduate Enterprise Internship (GEI) program is a win for graduates, industry and government. The initiative, which launched in early 2012, is a six-month paid internship for recent graduates at any level as well as those who are currently enrolled in graduate studies — all in the fields of science, technology, engineering and mathematics (STEM).

Dai Tri Man Le, Intern at Altera Canada Co.

"The program connects industry partners with graduates who will inject their academic skills and knowledge into the business environment to spur creativity, innovation and new ideas in businesses," says Chioma Ekpo, Assistant Director of the GEI Program. "In turn, the businesses provide a mentoring environment for the graduates to understand how businesses operate, how they tackle challenges and remain competitive in the market."

Graduates get a great head start in their careers, while start-ups and small- to medium-size businesses in the southern Ontario STEM sector get salary subsidies, and the economy gets a boost. The program is funded by the Federal Economic Development Agency for Southern Ontario (FedDev). "The program is uniquely designed to respond to the needs of the southern Ontario economy," says Ekpo. "It is an exciting initiative and it has been rewarding to prepare our graduates as they transition into the beginnings of a successful career."

The seeds for university and industry partnerships are often sown by recruiters, when businesses look for undergraduates and graduates for internships and full-time jobs. "We take great care to foster those relationships," says Ekpo. "We recognize that our industry partners play a critical role in the career development of our graduates and, in turn, those graduates come back as hiring managers seeking talent."

MP Ted Opitz (left) and Fed Dev Ontario Minister Gary Goodyear (centre) join Graduate Studies Dean Brian Corman, Engineering Dean Cristina Amon and recent graduate Alfred Inacio at the announcement of federal funding for U of T's GEI Program.

AN EXAMPLE: SPEAK FLUENT MANDARIN, NO LESSONS REQUIRED

Picture yourself on your first trip to China. You don't speak Mandarin, but thanks to a handy piece of technology, you are able to enjoy full conversations with locals using your own voice. Thanks to ground-breaking speech recognition software developed with researchers from the University of Toronto's Department of Computer Science, that vision is now a reality. This new experience was demonstrated at a conference in November 2012. Microsoft's Chief Research Officer demonstrated an almost instantaneous translation of spoken English to Chinese speech — with software that maintained the sound of the speaker's voice. It was the latest in a series of breakthroughs in the field involving U of T faculty and students. "A few years ago, researchers at Microsoft Research and the University of Toronto came together to develop another breakthrough in the field of speech recognition," Rick Rashid told the crowd. "The idea that they had was to use a technology in a way patterned after the way the human brain works — it's called deep neural networks. That one change, that particular breakthrough increased recognition rates by approximately thirty percent. That's a big deal."

U of T's computer science research in speech recognition is conducted by Professors Geoffrey E. Hinton (Machine Learning) and Gerald Penn (Computational Linguistics), with this latest breakthrough drawing on Hinton's deep neural networks research and supported by graduate students Abdel-rahman Mohamed and George Dahl. The two students began collaborating in 2009, applying deep neural networks to speech recognition. (Artificial neural networks are simplified mathematical models of neural circuits in the human brain.) That caught the attention of Microsoft, which invited both students to undertake internships where they successfully applied their methods to larger speech tasks, involving much larger vocabularies. Fellow computer science graduate student Navdeep Jaitly also became involved in the research, and worked with Google to implement it in their system. Google now uses a deep neural network for voice search in the Android 4.1 operating system, their answer to the iPhone's Siri conversational agent.

The U of T researchers say the new business opportunities they've helped create are just the beginning. Hinton's lab has already applied deep neural networks to several other pattern recognition problems. And Penn's speech lab is in the process of digitizing the last 23 years of CBC NewsWorld video to develop search algorithms for large collections of speech.

Speech recognition software developed by the University of Toronto's Department of Computer Science is powering new technology developed by Microsoft and Google.

10 NOBEL LAUREATES

2 GOVERNORS GENERAL OF CANADA

157 COMPANIONS
512 MEMBERS
446 OFFICERS
ORDER OF CANADA

LIEUTENANTS GOVERNOR OF ONTARIO 9

4 PRIME MINISTERS OF CANADA

214 OFFICERS ORDER OF ONTARIO

OLYMPIC ATHLETES 226

12 ONTARIO PREMIERS

14 JUSTICES OF THE SUPREME COURT OF CANADA

82 RHODES SCHOLARS

JOANNE CAVE '13
AYODELE ODUTAYO '13
CONNOR EMDIN '13

UNIVERSITY OF TORONTO

University Relations
University of Toronto • Simcoe Hall, Room 216 • 27 King's College Circle • Toronto, ON M5S 1A1
Tel: (416) 978-5401 • Fax: (416) 978-4431 • university.relations@utoronto.ca