



of

UNIVERSITY OF TORONTO MAGAZINE

A DOCTOR IN KIGALI

James Orbinski's
humanitarian journey

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Be the Change

Hopeful news on a few fronts

MORE THAN A QUARTER-MILLION NORTH AMERICANS HAVE SUFFERED SPINAL cord injuries. Some are unable to walk or move their arms; others can't live without a respirator to help them breathe. But according to Dr. Michael Fehlings, a neurosurgeon with Toronto Western Hospital and a University of Toronto professor in the department of surgery, we are entering a "golden era" of spinal cord research that may ultimately see patients walking away from their injuries. In "Unbroken Dreams" (p. 24) writer Marcia Kaye speaks with Fehlings about new surgical techniques and experimental drugs designed to minimize spinal cord damage immediately following injury. "There is real hope and there has been real progress," says Fehlings, who expects to see some important results within three to five years. Kaye also spoke with Professor Molly Shoichet, the Canada Research Chair in Tissue Engineering. Shoichet is looking for ways to regenerate nerve cells, a technique that offers hope to people who have been paralyzed for years. If Shoichet and her team can find a way to stimulate new nerve cells, they may be able to restore some function in paralyzed patients. Although full mobility is the Holy Grail of spinal cord research, many patients would choose bladder control and sexual function over walking again, says Shoichet.

As incredible as this research is, even basic medical care remains woefully out of reach for many people in the developing world. Malawi, in southeastern Africa, for example, has only 100 doctors to serve a population the size of Ontario's. James Orbinski, the co-founder of Doctors without Borders Canada, travelled to Malawi in 2004 and treated patients at the Zomba Central Hospital, where 90 per cent of the sick were HIV-positive. He also worked in Rwanda during the 1994 genocide. As managing editor Stacey Gibson writes in "A Doctor in Kigali" (p. 18), Orbinski's experiences in Africa transformed him, but also inspired him – to establish Dignitas International, a humanitarian group that trains mostly nurses, lab technicians and other health-care workers in developing countries. Orbinski's innovative idea provides people who have some high school education with the skills they need to deliver relatively straightforward but essential medical treatment. Just a few years old, Dignitas is already having a big impact in Malawi. Reading about Orbinski, one is reminded of Mahatma Gandhi's exhortation to "be the change you want to see in the world." For Orbinski, doing nothing is an unacceptable response to injustice.

On the other hand, doing nothing has been Canada's *only* response so far to the threat of global warming. In "Smoke and Mirrors" (p. 30), writer John Lorinc interviews U of T professors in economics and law who argue that it's time for Ottawa's policy of inaction to change. They weigh the pros and cons of carbon taxes and other strategies for reducing greenhouse gases, and conclude that Canada ought to impose a national carbon tax, consider road tolls and "congestion pricing" to make it more expensive to drive, and invest more in public transit, particularly buses. The European experience suggests that a low-carbon diet does not wreak economic havoc. Canada should give the diet a try.

SCOTT ANDERSON



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The Topography of Innovation

Are Canadians ready to compete in the new knowledge economy?

THESE ARE SUNNY DAYS IN CANADA. OUR DOLLAR IS AT PARITY with the American greenback, our economy is strong and our inclusive society draws talented immigrants from around the world. But clouds are appearing on the horizon. Recently, the Conference Board of Canada ranked Canada's performance in innovation a lowly 14th out of 17 comparator countries in the Organisation for Economic Co-operation and Development (OECD). Our rate of private-sector investment in research and development has been declining since 2001. The latest data show that Canada files patents at just 58 per cent of the OECD average rate.

We also fare poorly on comparisons of how we prepare our citizens for the global knowledge economy. Although Canadians are more likely than citizens of other OECD countries to attend community college, we are strikingly less likely to attend graduate school. Twenty years ago, Canadian universities received \$2,000 per student more from governments than their American peers. Today, they receive, on average, \$5,000 less. In publications per professor, one measure of research productivity, Canada ranks fourth in the OECD, ahead of the U.S. and Japan. But among individual North American institutions, Harvard University still leads the way by a big margin; California's public universities – UCLA, UC Berkeley – also fare very well.

How do the Californians do it? By deliberately and strategically concentrating graduate education at the 10 University of California campuses. Professors at these institutions have won 50 Nobel prizes – 18 since 1995. Canada, in contrast, exports many potential Nobel Prize winners and sometimes imports winners from elsewhere, but rarely grows and keeps its own Nobel laureates. The last three were U of T's John Polanyi in 1986, UBC's Michael Smith in 1993 and, in 1994, Bertram Brockhouse – a scientist affiliated with McMaster University.

There are no quick fixes for our current malaise, but five policy shifts might boost our innovation capacity. First, governments should fund basic research more generously. From lasers to Teflon, countless economically important advances have piggybacked on basic research. And in regions where Nobel Prize winners congregate in great universities, knowledge-based industries flourish in a wonderfully synergistic relationship.

Second, governments need to simplify the mandates of research agencies. Today's research agencies – especially our three national granting councils – are too often asked to promote commercialization or oversee networks with industry.

These expansive mandates dilute scarce resources and distract top talent.

Third, Canadians are efficient at turning dollars into research but inefficient at turning research into dollars. Commercialization is not the enemy of fundamental research; nor is the converse true. However, it is wrong-headed to insist that granting councils and research agencies constantly look downstream to the marketplace when their sights are justifiably set upstream on knowledge generation. Instead, we need dedicated commercialization agencies and infrastructure.

Fourth, Canada's research universities actually lose money with most grants their professors receive. With each grant, the institution takes on new costs for maintaining labs, heating and lighting buildings and providing support services to researchers. That's why the British government pays an extra 48 cents per dollar of grant payment, while American coverage averages 60 cents on the dollar. In Canada, federal grants cover these critical costs at a rate that is inversely proportional to the total research activity at an institution. Think of it as Orwell without the irony.

Finally, we urgently need more master's and PhD graduates to spur growth in our knowledge-based industries. But we can't achieve the necessary expansion in graduate education without a serious rethinking of how we organize and fund our institutions of higher education. Canada needs graduate-intensive universities with the research resources to compete internationally. At the same time we need well-funded undergraduate-intensive universities educating a talented global citizenry. Other jurisdictions such as California have long since recognized that distinct institutions perform these roles best.

Everyone knows that India and China are rising fast. But Europeans, too, are forging new economic and educational alliances with each other. And our giant neighbour to the south will almost certainly reinvent itself to remain a global force. Canada cannot simply do more – or less – of the same in this changing context. We must embrace the spiky topography of excellence and innovation if future generations of Canadians are to thrive.



Sincerely,
DAVID NAYLOR

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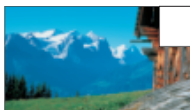
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Raising Hopes

Are Aricept and other Alzheimer's drugs being oversold?

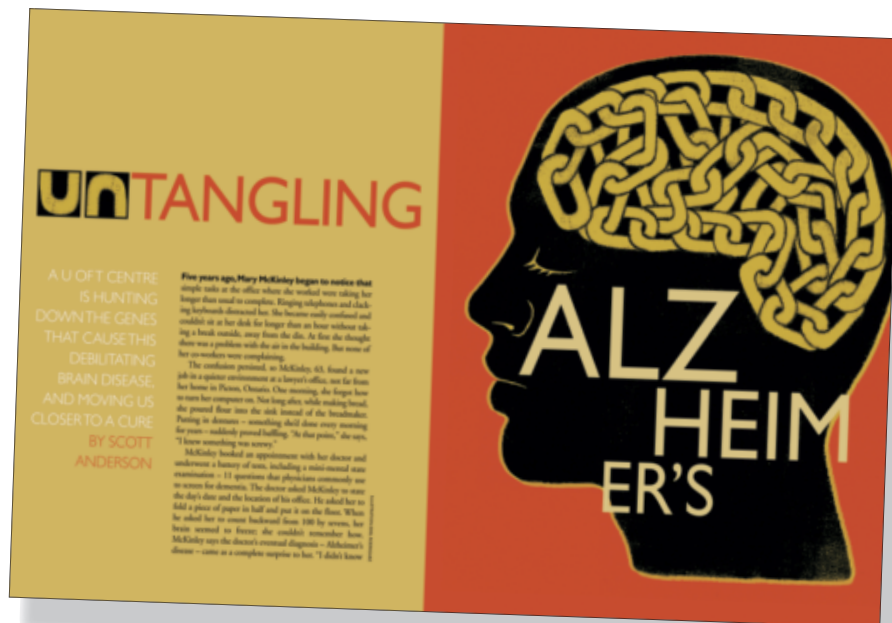
My spouse, a U of T alumnus, is afflicted with Alzheimer's and, until recently, resisted taking the drug Aricept. So I was interested to read in "Untangling Alzheimer's" (Winter 2008) that Aricept reduces the symptoms of Alzheimer's but does not halt or slow its progression. I deplore the fact that doctors encourage patients to take this drug, thus giving them false hope. I have worked in the health-care field for 30 years and have witnessed the dreadful effects drugs can have on patients. I understand the purpose of research in the health-care field and applaud its progress in controlling the ill effects of so many diseases. What bothers me is that drug research is funded mostly by multinational pharmaceutical companies. Although I don't believe this affects the outcome of the research, I do think it taints the information that's released to the population at large, including medical practitioners.

Gisele Brett
Saint-Sauveur, Quebec

FUTURE RISK TO LOCAL ACCESS

President David Naylor states in his column in the winter issue ("GTA Overload?") that students from the GTA account for almost 75 per cent of U of T's undergraduate enrolment, and that demand for a university education in Ontario is expected to rise dramatically. I was appalled to read that U of T is considering an enrolment strategy that will favour students who can afford to live on campus.

Even middle-income families struggle to meet rising tuition costs. My children will not be able to afford to live on campus. U of T's policy should focus on increasing capacity to support commut-



ing students, which is a way of life in the GTA. If accessibility to education declines, U of T will not remain a top university. Please reconsider U of T's future undergraduate enrolment policy.

Deborah Ellen Wildish (née Boyko)
MA 1995
Mississauga, Ontario

WHERE ARE THE WOMEN?

The winter issue included articles on Richard Florida, the new director of the Lloyd and Delphine Martin Prosperity Institute, and David Palmer, the university's new chief advancement officer.

While the magazine is not responsible for these appointments, it is a lens through which alumni view U of T. And what a vision we behold: the consistent appointment of men to leadership positions, which your magazine has highlighted in this issue and others.

The University of Toronto's 2006 employment equity report, available online at www.hrandequity.utoronto.ca, shows that the university is making a concerted effort to hire more female

professors across all faculties. However, it is clear from *U of T Magazine* articles and the employment equity report that women are not reflected equitably in leadership positions. In 2006, women held 32 per cent of academic leadership positions at the university, compared with 25 per cent a year earlier. Though the university is certainly heading in the right direction, it has a long way to go. Perhaps the next time the magazine covers leadership appointments, it will tackle the absence of women head-on.

Tamara Massey
BEd 2000
Toronto

A MODEL GRAD

Thank you for your recent feature on Dr. Samantha Nutt's life and work ("Witness to War," Autumn 2007). She is the kind of role model women of my generation rarely see in the media but so desperately need.

Andrea Nussey
BA 1998
Toronto

NOT JUST HIGGS

In “God’s Laboratory” (Winter 2008), Dan Falk repeats an error that has circulated since the discovery of the BEH (Brout, Englert, Higgs) mechanism in 1964. It is sometimes referred to as the Higgs mechanism, but recently the BEH terminology has gained in use among the cognoscenti.

An article by François Englert and I, published in *Physical Review Letters* in 1964, preceded Higgs’ contribution by three months. These two founding papers are complementary in their theoretical formulations and both should be read by people who are interested in the subject. The only substantial difference is that our work was more general, both in its applicability and in the presentation of an alternative mechanism called dynamical breakdown of symmetry, as well as the more frequently cited scalar field mechanism.

It is unfortunate that mistaken histor-

ical references still appear in popular articles on the subject. A review for a scientific, but not expert, readership is contained in a chapter of *Facts and Mysteries in Elementary Particle Physics* (World Scientific Publishers, 2002), by Martinus Veltman. In that book, portraits of the three authors of the BEH mechanism are printed side by side. In 2004, we were awarded the Wolf Prize in Physics.

Robert Brout
Visiting Professor, Perimeter Institute,
University of Waterloo
Waterloo, Ontario

HEROES

I was intrigued to see the letters concerning Kenneth Macalister and Frank Pickersgill in response to the article “Behind Enemy Lines” (Autumn 2007). Readers will be interested to know that I am publishing *A Glorious Mission: The Secret Wars of Ken Macal-*

ister and Frank Pickersgill in fall 2008 under my imprint at HarperCollins Canada. Their remarkable story is told in full for the first time by the award-winning historian Jonathan Vance and will add to our appreciation of these two young heroes. Every time I pass the Soldiers’ Tower I think of them.

Phyllis Bruce
MA 1967
Toronto

FLATTERY, OR KINDNESS?

In Conrad McCallum’s item on the emergence of flattery in children (Leading Edge, Winter 2008), two reasons – both self-serving – are cited for why a child flatters an artist. Could there be a third reason: the child is being kind and does not want to hurt the artist’s feelings?

Nina Truscott (née Elensky)
BA 1964 UC
Burlington, Ontario



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Meditate Your Troubles Away

Mindfulness alters brain activity and improves mood, researchers find

Feeling stressed or depressed? You may one day be prescribed meditation rather than medication, following a University of Toronto study that helps explain why meditation improves one's mood.

A research team that included Professor Adam Anderson of psychology, Norman Farb, a psychology PhD candidate, and Professor Zindel Segal of psychiatry used functional magnetic resonance imaging to map changes in brain activity among people trained in mindfulness meditation.

The researchers scanned the brains of study participants as they completed two tasks. Participants were first asked to judge whether word prompts described their personalities, a task designed to trigger rumination (or what the authors call "narrative" thought patterns). In another task, participants were instructed to monitor their reac-

tions to the words without judgment in an attempt to coax them to be "in the moment."

People with no meditation training showed very little change in brain activity from task to task. They engaged the middle areas of the brain responsible for personality expression and social behaviour. However, participants who had practised meditation used more primitive areas of the brain on the second task.

"This ability to alter brain activity may explain why so many studies show that mood improves with meditation. Taking a break from the middle regions of the brain, which we tend to overuse, might be just what's needed to help you feel better," Anderson says.

The study results were published in the December 2007 issue of *Social Cognitive and Affective Neuroscience*.

— Jenny Lass



Toxins Could Reduce Fertility in Offspring

Mothers who are exposed to certain toxic environmental compounds prior to pregnancy could limit their offspring's fertility, according to a new study by researchers at U of T and Mount Sinai Hospital's Samuel Lunenfeld Research Institute.

The study, published in *The Journal of Clinical Investigation*, provides evidence that when females are exposed to polycyclic aromatic hydrocarbons, the number of eggs in their offspring's ovaries is reduced by two-thirds. These hydrocarbons are

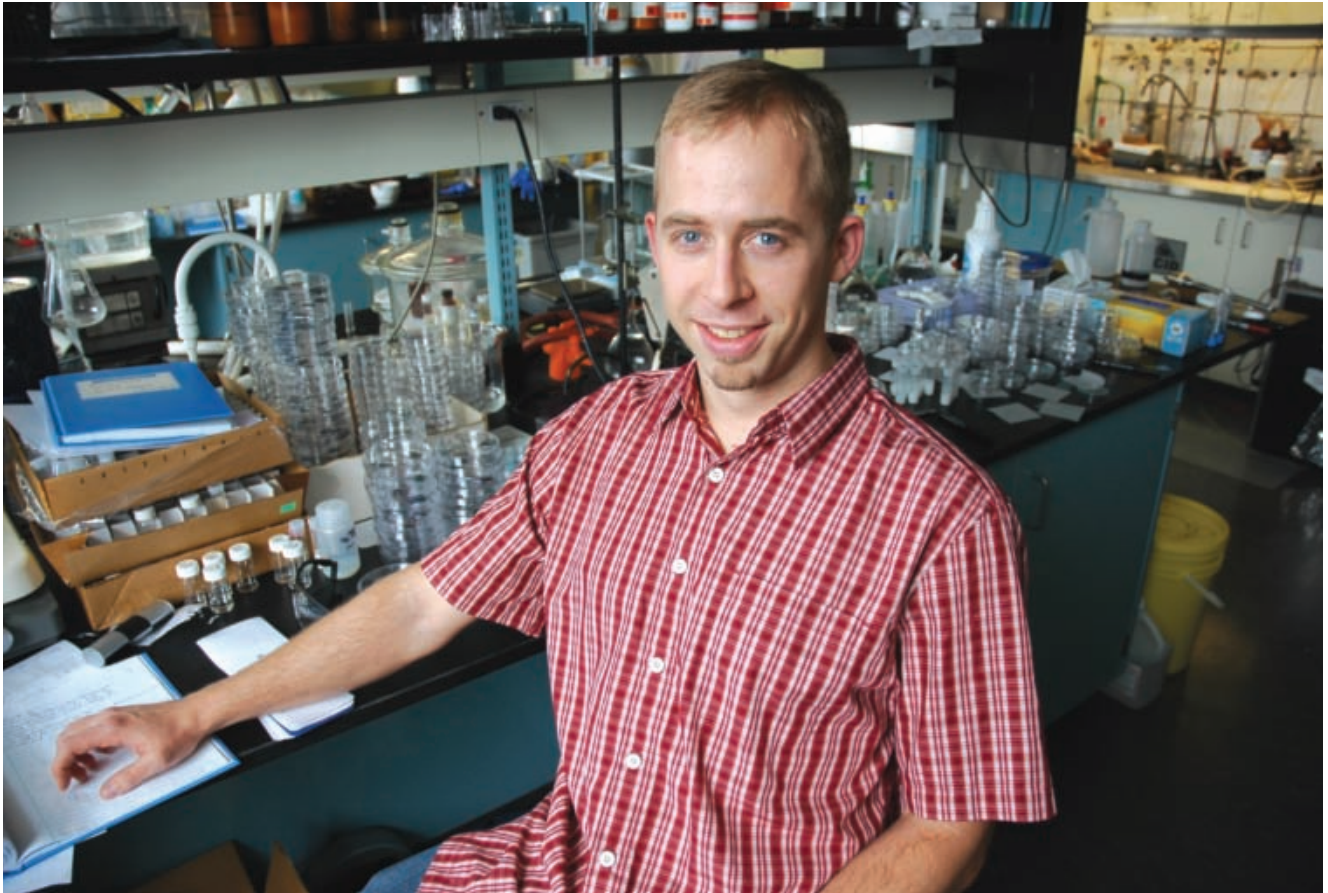
known carcinogens and one of the most widespread organic pollutants. They are found in cigarette smoke, car exhaust, fumes from wood stoves and in charred and smoked foods. The chemicals accumulate in the body's breast and fatty tissues before pregnancy and are later released into the blood during pregnancy, affecting the fetus.

"While young girls and women may not have thought about their reproductive future, exposure to these toxins now may reduce the

fertility of their children," says Professor Andrea Jurisicova of obstetrics and gynecology, lead author of the study (which is based on an animal model) and the Canada Research Chair in Molecular and Reproductive Medicine at the Lunenfeld Institute.

The reduction of eggs in a woman's ovaries can lead to premature menopause, which not only limits reproduction but is also associated with osteoporosis, heart disease, stroke and depression.

— Noemie Wiggett



Rock Star

Chemist André Arsenault finds an intriguing use for artificial opals

For André Arsenault, opals could turn out to be very precious gems indeed. Arsenault, a recent PhD graduate of the University of Toronto's department of chemistry, is the founder of Opalux – a company he started to commercialize his doctoral research into these “photonic crystals,” as chemists know them.

Although artificial opals are similar to the naturally occurring gems, Arsenault found that it is possible to stimulate the artificial kind electrically to change their colour. By integrating them into a layer of millions of tiny silica spheres, Arsenault was able to manipulate them to produce the entire light spectrum, including ultraviolet and infrared. Once you can do that, says Arsenault, it's possi-

ble to arrange artificial opals into a display similar to the liquid-crystal screens found in millions of laptops and televisions. “It wouldn't be too different, in terms of construction,” he says.

Unlike LCD screens, which require a bright backlight and a series of tinted filters to produce colour, artificial opals are inherently coloured. This means that the display would only require power when the image is changed. The rest of the time, it would be stable – just like ink on paper. The applications for such an invention run the spectrum from novel anti-counterfeiting technologies, to high-resolution digital paper, to billboard advertisements that could change their message in less than a second.

Arsenault says such products are

still years away, although Opalux is likely to have a basic version of the technology on the market in the next year or so. At the moment, photonic crystal displays don't react quickly enough to display full motion video, limiting their use to static displays such as posters and signs. But the research continues, and these limitations will likely be solved in the future.

Arsenault is not the only one who believes he's on to something big; last fall, he won first place in the Innovation Challenge Awards, a prize given out by the Natural Sciences and Engineering Council of Canada for identifying commercial applications for graduate research. Opal appears to be one rock that's on a roll. – *Graham F. Scott*

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The Lives of Otters

High levels of mercury and lead in fish may not be good for them – or us



Otters are well known for their playful nature, but new research suggests the amphibious mammals may bear grim news about widespread pollution. U of T surgery and physiology professor Carin Wittnich and Michael Belanger, a staff member in the department of surgery and president of the Oceanographic Environmental Research Society, are investigating the level of toxic pollutants in otters – after earlier studies showed alarming levels of mercury and lead in fish populations. Otters, which survive on a diet of fish, may provide important clues about the spread of these pollutants, and how they might affect humans. “Our data has shown that, instead of getting better, the levels of heavy metals and other contaminants are actually going up,” says Wittnich. “There’s obviously cause for concern.” The last major study of this type was done in 1979. — *Graham F. Scott*

Magic Touch

A computer you can really grab on to

When Apple introduced the iPhone last year, the product’s new touch-screen technology was heralded as a major innovation. Unlike other hand-held devices, the iPhone has no tiny keys to type or meddlesome screens to scroll through. Users simply tap, pinch or swipe a finger on the phone’s touch-sensitive screen.

To Daniel Wigdor, a PhD student involved in the computer science department’s Dynamics Graphics Project, however, the iPhone’s technology isn’t all that new. Wigdor and others have been researching touch-screen computer interfaces for years. Now, he and his collaborators have helped develop a semi-transparent, two-sided device that allows users to type on a virtual keyboard with all 10 fingers instead of just one, crop and resize photos and perform other tasks. Because the unit is partially transparent, it avoids what Wigdor calls the “fat-finger problem,” which affects touch-

screen gadgets such as the iPhone. In these devices, the on-screen item being touched disappears behind the user’s finger. Wigdor’s unit allows users to view their fingers in shadow, as if seeing them through an opaque screen. Small dots, called touch cursors, hover over the fingers to indicate the point on the screen that the user is about to select.

Wigdor and his collaborators at Mitsubishi Electric Research Labs and Microsoft Research have created a usable prototype, but the technology – which they dubbed LucidTouch – is not yet ready for public consumption. The device relies on an attached webcam to relay images from the other side, and Wigdor hopes to fix this problem by embedding sensors in the unit. He’s not sure when the invention will become widely available. “The question is whether there’s a company interested in bringing it to market,” he says.

— *Tim Johnson*

A Fad Worth Revisiting



Adding Salba, a variant of the grain that sprouts from the popular Chia Pet, to a healthy diet may reduce the risk of heart disease in people with Type 2 diabetes. A new long-term study by Vladimir Vuksan, a professor in the department of medicine and nutritional sciences, has shown that Salba can lower elevated blood pressure and reduce blood-clot formation in people with well-controlled Type 2 diabetes. Growing scientific evidence suggests that whole grains such as Salba, a rich source of dietary fibre and omega-3 fatty acids, helps prevent diabetes and heart disease.

PHOTOGRAPHY: CHIA PET® IMAGE USED COURTESY JOSEPH ENTERPRISES, INC.

The Sustainable Chef

Jaco Lokker brings local flavour to student menus

SO, not all experiments work out. For a local foods theme night at 89 Chestnut Residence cafeteria, Chef Jaco Lokker tried to feature Ontario beef or canned tomatoes in every course. Alas, his attempt at tomato basil ice cream for dessert didn't make the menu. "You really need fresh tomatoes for that," he admits.

That the good chef even tried to make ice cream from scratch – and such an exotic one at that – says much about the delicious developments at U of T since it has committed to buying some local foods. On this chilly January evening, Lokker's dining room is a tasty slice of Tuscany – or is that Ontario? – with students indulging in rich tomato bisque, pasta and homemade pizza, all using canned tomatoes from Kerr Farms in nearby Chatham. For the meat eaters, there are hearty beef burgers and a succulent braised pot roast – and a farmer on hand to explain that the beef was raised humanely on small farms and without growth hormones or antibiotics.

Previous theme nights have featured organic dairy and Ontario apples – the apple flambé over ice cream was a huge hit. And Lokker, a towering man resplendent in chef's whites, practically gets giddy about the summer, when he can buy local fresh produce to can and make vinaigrettes and sauces for the upcoming school year.

For Lokker, serving local food has become a passion, if not a mission. In September 2006, the University of Toronto partnered with Local Food Plus (LFP), a network of certified Ontario-based farmers and processors who



grow and sell food produced according to sustainable methods that are good for the environment and give farmers a fair wage. According to Lokker, the methods, certified by independent inspectors, also result in tastier, more nutritious food. "You start with great

ingredients that are healthier for the students," says Lokker, who points out that LFP farmers growing produce minimize the use of synthetic pesticides. "We know the farmers have done their part in producing food in a way that's safe and humane and contributes

to the environment. These are responsible farmers and we're doing the responsible thing by supporting them."

But U of T's first year of partnership with local farms was a struggle. With too few LFP farmers providing too little produce, students were hard pressed to see a difference in campus cafeterias. With U of T's commitment, along with several Toronto restaurants and a few retailers, some 40 to 50 farmers have joined LFP and the program can now offer a greater variety of fresh produce, dairy and meats. Lokker estimates that about 15 to 20 per cent of the food in his kitchen is LFP-certified and he hopes to push that to 40 per cent in the coming years.

Recently, the chef also became director of food services for the St. George campus. The role involves championing improvements at the cafeterias, and Lokker's major project has been promoting LFP and healthy eating options. "It's taken off like wild fire," he says. Now 10 of 12 cafeterias are serving LFP foods in some format – whether in a fresh-fruit fridge or salad bar or at catered events.

Students are a finicky lot when it comes to food, but at tonight's theme night, there aren't the usual complaints. As students navigate trays between build-your-own salad, pasta and stir-fry stations, they take note of displays about the local foods being served.

Some stop to chat to Stefan Oellinger of Kerr Farms. He answers questions about farming, shows pictures on his laptop of ripe tomato fields and cattle grazing on lush pasture land. His last stop was Morrison Hall at University College. "Students are really interested in agriculture," he says. "This is an opportunity to talk to a farmer right in the city."

While students are concerned with reducing their carbon footprint and supporting local farmers, they care about the taste and quality of the food first, according to Chris Melnick-MacDonald, a third-year student and residence-council representative. "Students are talking about this. The quality is exceptional. The food is really clean-tasting and flavourful."

Lokker stands by the information table, beaming. "This is the best job I've had in my life," he says. "I'm working in an environment where people want to do the responsible thing. I'm working with youth. They're at a point when they get to decide what they'll eat, how they will live their life. If we can influence them to eat well, to eat responsibly, we're able to touch students for the rest of their lives."

Margaret Webb (BA 1985 UC) is the author of Apples to Oysters: A Food Lover's Tour of Canadian Farms (Penguin) to be released on April 12.

U of T's Local Food Network

Cheapest wholesome bite on campus:

The \$5 local, seasonal and usually organic hot vegan lunch at Hot Yam café in the International Student Centre on Thursdays, 12-2 p.m.

How to meet a farmer:

Watch for the U of T farmers' market during the spring and summer at U of T's food and beverage website www.food-beverage.utoronto.ca.

Where to taste local flavours:

89 Chestnut Residence; New College; University College; Hart House catering; Robarts Library; Medical Sciences Building; Sidney Smith Hall; Sandford Fleming Building; OISE and Gerstein Science Information Centre.

A talk series with bite:

Food for Talk, a monthly series about food issues, www.utoronto.ca/cuhi/seminars/foodfortalk.html. — M.W.

Awarding outstanding native students

Candace Brunette and **Alexandra Smith** recently won the President's Award for outstanding native students of the year. The award is based on academic achievement and contributions to the native community. Brunette (BA 2007 WOODS), this year's undergraduate winner, is now pursuing an MA in education at OISE. She is also an emerging playwright and poet, and has presented her play *Old Truck* at Native Earth's Weesageechak Festival in Toronto. Smith, a third-year medical student, is this year's graduate recipient. She is creator and co-director of the Indigenous Peoples' Health Initiative, and has been co-chair of the U of T student group Diversity in Medicine.

Professor Emeritus **Joseph Schatzker** of surgery has been named to the Order of Canada, this country's highest honour for lifetime achievement. Schatzker, who has been named a member, is an expert in trauma and fracture management. Six professors have been named Order of Ontario recipients: **Richard Bond**, a University Professor in astronomy and astrophysics; **Tak Mak**, a University Professor in biomedical physics and immunology; **Janice Gross Stein**, a University Professor in political science and director of the Munk Centre for International Studies; **Roderick McInnes** of molecular genetics; **Frances Shepherd** of medicine; and **Paul Walfish**, a professor emeritus of medicine.

Two U of T scientists have received Killam Research Fellowships, Canada's most distinguished research award. Professors **Elizabeth Edwards** and **Molly Shoichet**, both in the department of chemical engineering and applied chemistry, were two of 10 researchers chosen for the award. Edwards' research has looked at how microbes break down solvents such as dry-cleaning and degreasing agents. Shoichet is breaking new ground in tissue engineering research.

Checkmate!

The Hart House Chess Club makes some strategic moves at the Pan American tournament



Walter Chan (left) and Stuart Brammall in Hart House

N the Hart House Reading Room one blustery January afternoon, Stuart Brammall and Walter Chan are making plans for war. The secretary and treasurer, respectively, of the Hart House Chess Club sit at a worn card table ordering their plastic troops across a dog-eared paper chessboard that reads “Scarborough Chess Club 1960.” Chan moves his chess pieces with a flourish, slapping them on the board without caring whether they’re centred; Brammall’s moves are slower and more deliberate. “This is one of the oldest clubs at U of T,” says Chan, who’s in his final year of chemistry, “and it’s definitely the highest profile chess club at a Canadian university.”

It is also one of the most successful: one Hart House team (which included Chan) took the top international spot at the Pan American Intercollegiate Chess Tournament in Miami in December; the club’s second team (which included Brammall) came in third.

Meeting from 4 to 10 p.m. every

Friday, the club attracts around 20 players a week. But on tournament nights, like this one, more show up to compete for prizes and, more importantly, bragging rights. Though chess clubs have a longstanding reputation as being home to the obnoxiously brainy, the socially awkward or the eerily silent (sometimes all three), only braininess is in evidence today. Players talk animatedly, distract each other with trash talk (“chess players love trash-talking!” exclaims Chan) and cluster around other tables, watching.

“It’s like mental war for a lot of people,” says Chan.

“Yeah, it’s kind of good to get your aggression out,” says Brammall, who’s in his second year of an English degree.

“It’s war, but in a non-violent manner,” says Chan.

“We’re all passive-aggressive, I guess,” says Brammall.

The chess club’s golden age at U of T was in the 1980s; since then some players have drifted to the Internet, where they can play online against opponents

from around the world. And Hart House is less able to vie internationally since a few American universities started offering chess scholarships in the 1990s. “We can’t really compete with them anymore,” says Chan. “They’ll get random grandmasters from Poland or Costa Rica – just recruit them to play and compete for them.”

Still, the club offers more than just the opportunity to play once a week. For a \$15 annual fee (available to U of T students and Hart House senior members, and one of the cheapest places to play in Toronto), members can hear lectures by returning alumni and get the chance to travel to tournaments. But the camaraderie is what keeps people coming back. “You can’t really talk about world-class players and competitions and stuff like that anywhere else,” says Brammall. He laughs. “You’ll be ostracized very quickly if you start talking about top-level chess – anywhere but the chess club.”

– Graham F. Scott

Master of the Miniature

Postdoctoral fellow Naomi Matsuura won the 2007 Polanyi Prize

Who she is

Naomi Matsuura is a scientist who is developing new technologies on the nanometre scale (one nanometre is equal to one millionth of a millimetre). Her work is poised to transform cancer research with its new approaches to detecting, tracking and possibly treating the disease on a cellular level. For example, Matsuura has developed an infinitesimal complex coating that can allow nanostructures to first be attached to cancer cells, then activated to behave as a beacon for diagnostic imaging (such as computed tomography and magnetic resonance imaging). The coating can also be used to locally deliver a drug that leaks out of the coating's tiny pores.

Why she's in the news

A UofT postdoctoral fellow in imaging research at Sunnybrook Research Institute, Matsuura (PhD 2003) was recently recognized with the Ontario Council on Graduate Studies John Charles Polanyi Prize, a \$20,000 grant awarded to outstanding researchers in the early stages of their careers.

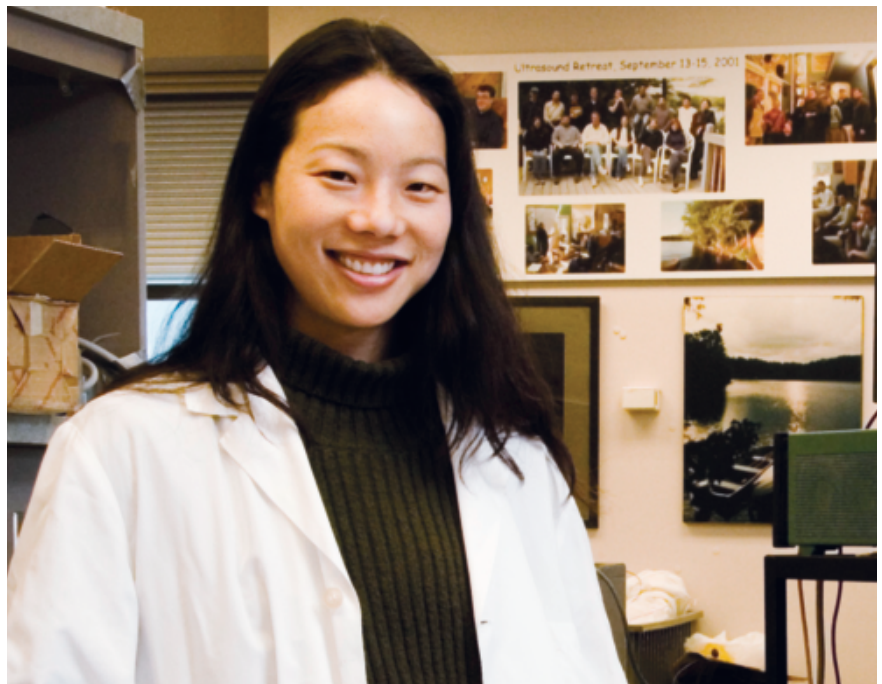
What her research is about

Nanotechnology is based on the concept

that materials behave in unusual, counterintuitive ways when their physical dimensions are dramatically miniaturized. After all, the properties of materials – such as how magnetic they are, how well they conduct electricity, how strong they are and at what temperature they melt – change at the nano-scale. At this tiny size, materials can be designed to behave differently

than when they exist as larger units. Recent advances in creating nanometre-scale structures with standard laboratory tools, combined with growing public curiosity in nanotechnology, have resulted in a flurry of academic and commercial interest in nanostructures, in fields as diverse as optics and medicine.

– Laura Pratt



Appointments and Departures

Professor **David Mock** has been reappointed dean of the Faculty of Dentistry for a four-year term beginning July 1. Mock was originally named dean in 2001, and played a key role in establishing UofT's Centre for the Study of Pain and Mount Sinai Hospital's Wasser Pain Management Centre.

Professor **Jill Matus** of English has been appointed vice-provost, students, for a five-year term beginning July 1. She will be re-

sponsible for policies affecting students and student organizations across the three campuses. Matus has been vice-principal at University College since 2005.

Professor **Meric Gertler** of geography is serving as the Faculty of Arts and Science's interim dean. Gertler, who is vice-dean (graduate education and research) in the faculty, will act as interim dean until June 30, 2009, or until a new dean is appointed.

Professor **Vivek Goel** is stepping down from his post as vice-president and provost of U of T, a role he has served in since 2004. Goel has been named the founding president and CEO of the Ontario Agency for Health Protection and Promotion. Philosophy professor **Cheryl Misak** has been appointed interim vice-president and provost. She has been serving as deputy provost since July.



A DOCTOR IN KIGALI

Dr. James Orbinski served as head of mission for Doctors Without Borders during the Rwandan Genocide.

What he saw there transformed him **BY STACEY GIBSON**

It was July 3, 1994, one of the final days of the Rwandan Genocide. In the bullet-scarred King Faycal Hospital in Kigali, Rwanda, Dr. James Orbinski was amputating the leg of a 14-year-old land mine victim. The boy's foot was hanging precariously from his calf, held together by threads of flesh laced with bone and a piece of shoe. Orbinski, the 33-year-old co-founder of Doctors Without Borders Canada, had performed many amputations during his six weeks in Rwanda – treating hundreds of victims inflicted with machete wounds, or injured by grenades and land mines – but this was his first time unaccompanied by another physician. Orbinski was afraid he might cut an artery, and kill the child. Medical instruments were scarce, and all the hospital's surgical blades were broken. The only tool at his disposal was a hacksaw. In half-an-hour, Orbinski sawed off the boy's leg above the knee; he then shaped and stitched the tissue. The nurse placed the severed limb in a bucket on the floor. The boy's mother rushed through the operating doors and toward her son, screaming, “*Mama-we! Mama-we y' nola.*” (“Mommy is here.”) She held him around the head. He whispered, “*Mama-we, Mama-we.*” The boy's leg was gone, but he was alive. It was, says Orbinski, “an imperfect offering.”

Orbinski's new book, *An Imperfect Offering: Humanitarian Action in the Twenty-First Century*, to be published April 22 by Doubleday Canada, traces the journey of a humanitarian doctor who has served in some of the world's most dangerous conflict zones. Orbinski, 47, was international president of Médecins Sans Frontières (Doctors Without Borders/MSF) from 1998 to 2001, and he accepted the Nobel Peace Prize on the organization's behalf in 1999. Over

the past quarter-century, he has worked in places such as Somalia during the famine and civil war; in the refugee camps in Jalalabad, Afghanistan; and at the Kosovo-Macedonia border during the NATO bombings in 1999. His book explores every facet of his work, from the deeply personal to the broadly political: How does a man persevere – and, furthermore, create meaning and invoke change – after witnessing the most violent, sadistic acts human beings can inflict on one another? What is the role of the humanitarian in the post-Cold War era, in which traditional rules of war have been swapped for anything-goes ethical nihilism? How could MSF confront politics and public apathy during crises so it had the space and resources to heal patients? The notion of imperfection permeates many of Orbinski's answers. “The book's title is inspired by the poem and song *Anthem*, by Leonard Cohen, and there's a beautiful line where he says, ‘Forget your perfect offering. There is a crack in everything,’” says Orbinski, who earned a master's degree in international relations from U of T in 1998. “When I read that poem, it struck me that that's the essence of my experience over the last 20 years as a physician, as a putative humanitarian, as a person who has tried in various ways to influence the political processes that determine who gets what, when. It's very much an imperfect process with equally imperfect outcomes, but it doesn't obviate the absolute necessity of trying. You achieve something, and sometimes just enough to go on.”

“The story in the book of the young boy whose leg I amputated is a very good example of that. The boy survived. His mother obviously loves him and he is alive, and had I not amputated his leg he probably would have died within 24

PHOTOGRAPHY: CHRISTOPHER WAHL



Dr. James Orbinski visits a displaced persons camp in Goma, Democratic Republic of Congo

hours of gangrene or sepsis. On the one hand it is absolutely ideal that he's alive, and on the other hand it's far from ideal that he is without a leg. But here we are."

Orbinski was born in England in 1960, and his Irish-born parents immigrated to Canada with their four young children when Orbinski was seven. The family settled in the Montreal neighbourhood of Notre-Dame-de-Grâce, then home to many English-speaking immigrants and working poor. Orbinski recounts in his book how, at the age of nine, he learned "a different knowing of death" – that humans didn't only die naturally, but at the hands of one another. He saw a television program on the Holocaust, with images of people lying dead at Auschwitz and of a woman with numbers tattooed on her forearm. The next day, Orbinski's mother took him to the Jewish quarter of the city, as she did before the start of every school year, to buy him new shoes. A very kind old man with beautiful eyes helped him, and called him a good boy. He noticed the man had numbers tattooed on his arm. Orbinski woke up crying that night, after having nightmares of himself, family members and the old man taking off their new shoes for the Nazis.

As Orbinski became older, he knew he wanted to help relieve the suffering of others. He earned a psychology degree from Trent University, and was employed for two years as a youth worker at a juvenile detention centre in Calgary. He then entered McMaster University as a medical student and became immediately enthralled with the study of immunology. Orbinski speaks often about the idea of "living your question." In his book, he describes his question as, "How am I to be, how are we to be in relation to the suffering of others?" In his gentle, thoughtful tone, he elaborates on this concept. "To enter into what draws you, what calls you, is to live your question.... I have always been fascinated with science, particularly with the methodology of science, and what this means in terms of action – what you can

do with what you know. My questions have really come out of these loves and I've been drawn to what is classically defined as humanitarian medicine, humanitarian work."

Orbinski's humanitarian journey began in earnest at age 27, when he obtained a fellowship to research pediatric HIV/AIDS in Rwanda. For a year, he worked at hospitals and clinics and witnessed extreme poverty, malnutrition and the prevalence of diseases such as polio, which left many paralyzed and would have been easily contained within the Canadian medical system. He became engrossed with moral questions surrounding the unequal distribution of resources, and the economic and political forces that caused such severe inequities. After returning to McMaster, Orbinski heard that student Richard Heinzl (BSc 1986 UC), was creating a Canadian chapter of Médecins Sans Frontières – an international group that provides medical assistance to victims of war and other catastrophes. The organization practiced strict impartiality while assisting victims, providing aid based solely on need and irrespective of politics, race or religion. However, MSF differed from groups such as the Red Cross in that members spoke out against human rights violations to create public awareness of atrocities. Orbinski became a founding member of MSF Canada, and one of his first missions was to Baidoa, Somalia, in October 1992. Hundreds of thousands had already died in the famine induced by a civil war that had been raging for two years. More than half of the country's eight million people were on the verge of starvation. In the midst of rampant violence, Orbinski and other MSF team members provided medical care at clinics and feeding centres in Baidoa and surrounding villages. They often treated up to 2,000 patients a day, while hundreds more waited outside clinics suffering from starvation and the diseases that accompany it.

But it was the Rwandan Genocide, during which Orbinski served as MSF's head of mission, that he has called

both “my undoing” and “the most transformative moment in my life.” During the 100-day period from April to July 1994, one million men, women and children – including 85 per cent of all Tutsis in Rwanda – were murdered, and another half-million people (including moderate Hutus) were injured, by Hutu extremists. Orbinski entered Rwanda in mid-May, at a time when almost everyone else – from UN agencies, to aid organizations, to the U.S. Marines – had fled. (By early April, only MSF, the Red Cross, the UN peacekeeping force headed by Roméo Dallaire, and two UN humanitarian members remained in Kigali.) Orbinski split his time among the King Faycal Hospital, the UN compound, the Red Cross Hospital and a stadium filled with 12,000 people seeking refuge. When he arrived at the Faycal Hospital, 6,000 people occupied every recess of the building, from the stairwells to the closets. Orbinski and other MSF members worked 16- to 18-hour days while outside, killing squads continued to slaughter men, women and children. The MSF team treated waves of victims with machete wounds, gunshot wounds and shrapnel injuries. They cared for people who had chest injuries from being buried alive; women and girls who had been raped; and those maimed by grenades and land mines. They established an orphanage in Faycal Hospital for children whose parents had been killed. And still, more and more victims arrived.

One day in June, when violence was at an apex, Red Cross and MSF staff treated hundreds of people in the Red Cross hospital, on the grounds and lying along the road. Heavy shelling and mortar fire hailed from everywhere. Snipers, some with rocket-propelled grenades, were pervasive. The blood of the dead and wounded ran in the gutters. Orbinski and his team performed triage work, taping numbers to the patients’ foreheads. A “1” meant treat right away; a “2” meant treat within 24 hours. Those who had “3” were “irretrievable.” They were moved to a small hill, made as comfortable as possible with blankets, water and available morphine. This was where they died.

In his book, Orbinski writes that he “felt beaten by the waves of suffering, of killing, of screams, of silent stares, of terror, and waves of not just political indifference but malfeasance.” He had acted and spoken, while an entire world stood by without helping. He remained while the violence eddied more constrictively around the hospitals – until he was one of the last doctors left in Kigali. He made a choice. His choice was to stay and save what lives he could, to relieve what suffering he could – it was that simple, and that hard. He did not leave until the genocide ended.

Orbinski has returned to Rwanda numerous times since the genocide; his latest journey, in 1997, was captured in

Triage: Dr. James Orbinski’s Humanitarian Dilemma. The documentary, directed by Patrick Reed, screened at the Sundance Film Festival in Utah this January. How did Orbinski cope during his time in Rwanda? How did he carry on? Orbinski speaks about his experiences collectively, about the role of the humanitarian. “There are moments in a particular story [in *An Imperfect Offering*] where I knew that my fear overwhelmed everything else, and there are other moments where the implications of *not* acting or speaking overwhelmed my fear.” Later, he adds, “What I’ve experienced is that I can’t know the future. I can’t know if anything that I do will change what happens tomorrow. I can’t know with certainty, but what I *do* know is if I do nothing, nothing will change.”

In human experience, language can enlighten but it can also entrap. One word can be so gravid with meaning, that it could ignite the outrage of citizens, the deployment of troops, the legal obligation of action. Its absence, on the other hand, could promote the opposite reaction: the absence of deed. In 1994, as hundreds of thousands were slaughtered in Rwanda, the UN Security Council refused to invoke the word “genocide” – pressured largely by the Clinton administration, which did not want to use the word because it would legally obligate them to send troops to the country. (A year earlier, U.S. troops had intervened in Somalia’s civil war. Eighteen American soldiers were killed, and the images of two dead soldiers being dragged through the streets of Mogadishu were televised worldwide; Clinton did not want to become involved in another international peacekeeping operation.) Orbinski and MSF, however, called for the use of the word “genocide” by the United Nations; they called for a UN-mandated

“I don’t know if anything
I do will change tomorrow.
But what I do know
is if I do nothing,
nothing will change”

military intervention to stop the killing; and they spoke out to the media to illuminate the horror of the genocide. “Humanitarianism, at its root, is about the direct relief of suffering in terms of action, but it’s predicated on a basic respect for the dignity of the human being,” says Orbinski. “In practice war is not always waged according to the rules. So when the rules of war are broken – war crimes against humanity, and in the most extreme circumstance, genocide – it’s an obligation of the humanitarian to call into question the actions of those who are breaking those rules, and also to call to accountability the political decisions that are made. In Kigali, Rwanda, during the genocide, it was very clear that there was no humanitarian space. Genocide is the complete obverse of humanitarianism. There is, by definition, no respect for the dignity of others or of the intended victim. There’s no limit on the use of force. The intent is actually to eliminate the very existence of

the other, and so the possibility of humanitarianism simply does not exist in that circumstance.”

“MSF insisted that there be a right political response to the genocide, and the international criminal court was created in response to that debate.... However apparently dispiriting and apparently futile the world may seem, it’s anything but if we assume our responsibilities as citizens and as human beings, if we speak. [Political philosopher] Hannah Arendt said that the first political act is to speak and I think that she was absolutely right.”

IN 2004, Orbinski and James Fraser, another doctor with MSF, travelled to the Zomba Central Hospital in Malawi, Africa. Ninety per cent of the patients were HIV-positive, and hundreds of critically ill men, women and children crowded the building: three to four patients were packed to a bed; others lay suffering on the floor and under the beds; and more still were gathered under trees on the hospital grounds. The medical staff consisted of one nurse. The hospital reflected the reality of the health-care system and the AIDS epidemic across much of Malawi and the developing world. (In Malawi, there are 12 million people – roughly the population of Ontario – but only 100 doctors. Fourteen per cent of the population is HIV-positive. In the Zomba region, 20 per cent are HIV-positive.) “It was just overwhelming. Overwhelming for me, but also, even more obviously, for that nurse,” says Orbinski. “And for both James Fraser and myself, it was just clear we had to do something about this.”

What Orbinski and Fraser did was leave MSF to create Dignitas International, an organization that develops community-based care and treatment programs for people who are HIV-positive and have AIDS. While the group does train doctors, it focuses mainly on training nurses, lab technicians and other health-care workers. “One of the big issues in Malawi and much of the developing world is the level of education in the general population and illiteracy, and so there are not a large number of people who are highly educated. But just because you’re not educated doesn’t mean you’re not smart,” says Orbinski, who doesn’t get paid for his role as co-founder and chair of Dignitas. “If you can develop a set of tools that are scientifically valid and allow for a person with a Grade 8 or Grade 9 education to actually deliver treatment, to do proper assessment and management, then you can empower those people and communities appropriately to actually control and contain an epidemic.”



Dr. James Orbinski and Dr. Tamir examine a patient with a gunshot wound at Baidoa Hospital, Somalia

Dignitas now has about 10,000 HIV-positive people under its medical care, almost 5,000 of whom are receiving AIDS treatment. The organization works with Malawi’s Ministry of Health officials and community groups and, in a few years, has trained hundreds of health-care workers, delivered AIDS education to more than 100,000 people in the Zomba district, built a lab and other medical facilities and provided social support to AIDS orphans and women’s groups. The organization is now establishing a network of research institutions – with the University of Toronto, University of Malawi, the BC Centre for Excellence in HIV/AIDS and others – so they can share their knowledge and let others take up the model. Orbinski focuses, through Dignitas, on community-based care and HIV/AIDS in his role as a research scientist at St. Michael’s Hospital. As a professor of political science at the University of Toronto, Orbinski

is also working with U of T professors at the Department of Public Health Sciences to create a collaborative PhD program in global health. The program is slated to begin in September, and he will be teaching the core course.

Orbinski also has more personal productions underway. He and his wife, Rolie Srivastava – an environmental-sciences researcher whom he met after returning from a journey to Rwanda in 1996 – are expecting their third child in mid-April. The baby will join brothers Rohin, age four, and Taidgh, age three. And this afternoon, a very excited Orbinski is taking a very excited Rohin to his first skating lesson. Orbinski and Srivastava made up a cheer for him last night, and sang it to him again this morning. Orbinski breaks into song. “Rohin Orbinski, faster than a Jet Ski/If he was any taller, you’d think he was Wayne Gretzky.”

Did Orbinski always envision himself doing humanitarian work? He answers thoughtfully. “The question is this idea of fate, and of a kind of a determined future.... I don’t have that experience. I think if anything, one of the core ideas that I am trying to express through this writing and also through the film, is that it’s a choice. Every moment in your life is a choice, and we have a choice as to how we will see the world and how we will see ourselves in it, and therefore what we will do,” he says. He later adds, “What I do know is that I have tried to live my question, to really understand my question and struggled in the answers that emerged – however imperfect they may be.”

Stacey Gibson is managing editor of U of T Magazine.

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CANADA'S ANSWERS TO THE WORLD'S QUESTIONS

UNBROKEN DREAMS

After years of incremental progress, spinal cord repair is edging closer to reality

BY MARCIA KAYE

Bruce Brady doesn't remember slamming headfirst into the cedar rail fence. All he knows is that one minute he was skiing along the bottom of the hill toward the chalet to meet up with his son, and the next minute he was lying on the ground, bleeding from a large gash in his forehead and utterly immobile. "I couldn't feel my feet or hands," recalls the 48-year-old Toronto father of three. "I could only move my eyes and talk."

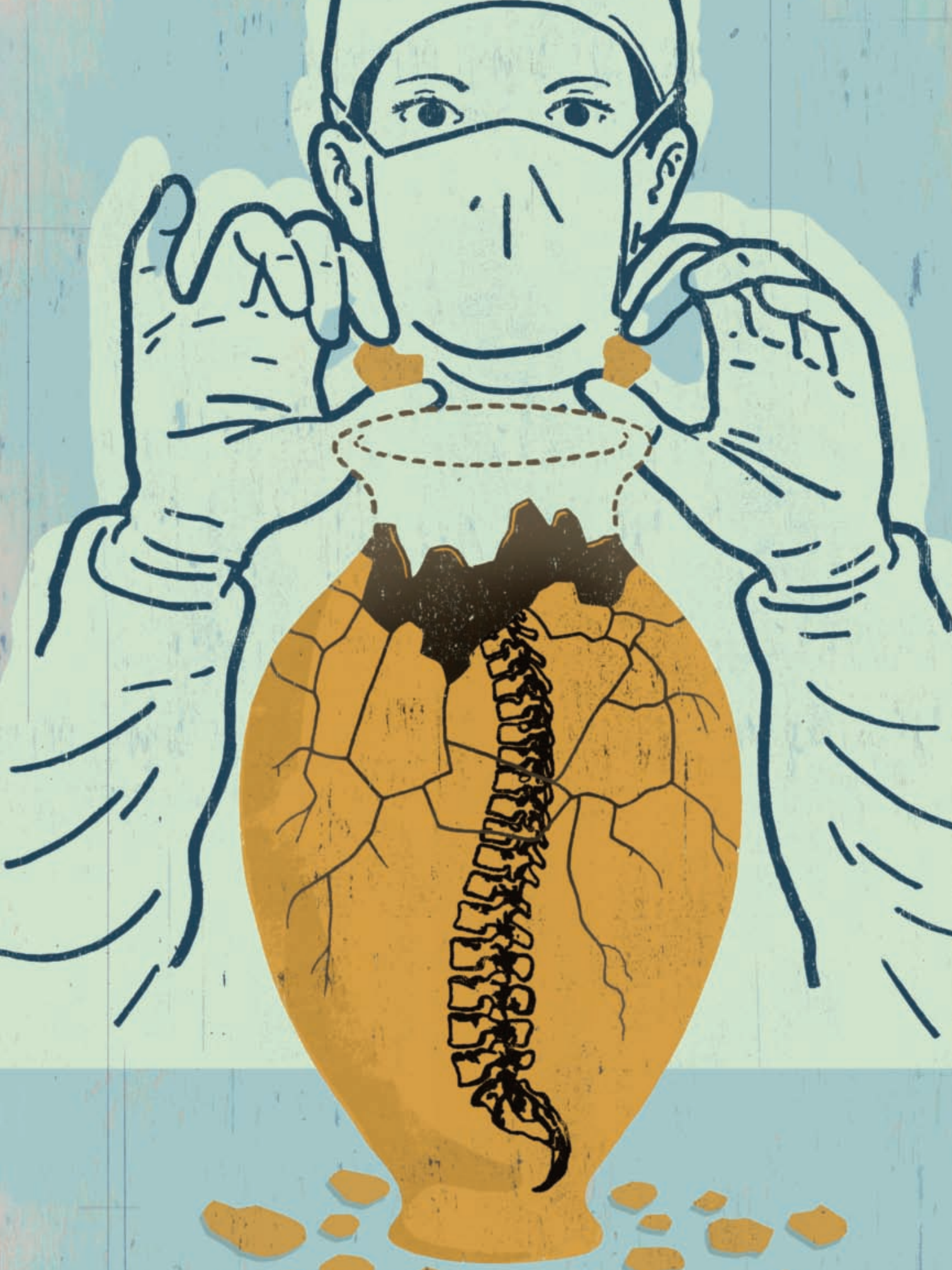
Brady might have spent the rest of his life as a motor quadriplegic – paralyzed from the neck down, with minimal sensation in his legs – if not for the surgery that he underwent at Toronto Western Hospital three days after his injury. The operation relieved pressure on his spinal cord and fused five upper vertebrae together with a steel bar. Within two weeks Brady was able to stand and take a few steps; after three weeks he was walking quite well. Today, a year later, he says with some amazement, "I'm fully mobile." Although Brady still suffers from a stiff neck and pain in his upper arms, in February he returned to his physically demanding job as an industrial sheet-metal worker.

Paralyzed patients walking away from their injuries? It sounds like the stuff of science fiction. But U of T researchers say new surgical techniques, drugs, gene therapies and rehabilitation devices are helping to make significant improvements in the lives of people with spinal cord injuries. "There is real hope, and there has been real progress," says neurosurgeon Michael Fehlings, a U of T professor in the department of surgery and the one who operated on Brady. Fehlings is also the director of the spinal program at Toronto Western's Krembil Neuroscience Centre, the largest neuroscience centre in Canada and a world leader in spinal cord research. As he leads the way through his lab, where graduate and undergraduate students are busily examining tissue sections of a spinal cord under a microscope, characterizing types of neural stem cells,

and performing delicate spinal surgery on a rodent behind closed curtains, he says, "There's work going on all over the world, but much of the seminal work has occurred in Canada, and U of T is right in the thick of things."

Bruce Brady's case is an example of only one exciting strategy being used to repair the spinal cord. Brady is one of 250 people enrolled in a clinical study called STASCIS, which stands for Surgical Treatment for Acute Spinal Cord Injury Study. Fehlings, who is spearheading the multicentre study, says that in the past, patients like Brady wouldn't have received surgery at all – let alone surgery so soon after their injury – because their necks weren't broken but "merely" compressed. In one-third of spinal cord injuries, especially in aging but active baby boomers such as Brady, the spinal cord undergoes a combination of contusion and compression. The cord (actually a long thin bundle of nerves enclosed by the vertebrae) is jolted against bone spurs, which develop as we age, and then jammed into the tight spinal canal.

While compression sounds less serious than a fracture, the results can be just as devastating because after the trauma the nerve cells inside the spinal cord start to die, causing loss of movement, sensation, bladder and bowel control, and sexual function. "Without decompression surgery, it's doubtful that Bruce would have improved from a complete motor quadriplegic after injury to virtually normal," says Fehlings. The STASCIS data are just starting to emerge, but Fehlings hopes they will help determine the optimal time for surgery; so far it's looking as though the earlier, the better. The next step: establishing guidelines about how and when to use the surgery, and spreading knowledge of the technique to certain designated hospitals across Canada. As Fehlings puts it, we're entering a golden era of spinal cord research, reflected at U of T in a special collaboration among the fields of biology, chemistry and engineering.



And Canadian research is attracting worldwide attention. “Twenty years ago, a cure for spinal cord injury seemed impossible,” says Rick Hansen, who at that time had just finished famously wheeling through 34 countries on his Man in Motion World Tour to raise awareness and funds. “Today, it has been proven that the spinal cord can regrow, and we’re seeing an increasing number of people walking away with partial or full recovery.” He adds, “I feel proud to see Canadians leading the way in the global search for a cure.”

The whole field of spinal cord repair has changed dramatically since Hansen’s world tour in 1985, and especially since “Superman” Christopher Reeve’s equestrian accident in 1995. For millennia, spinal cord injury for most people had been a death sentence; unable to control their bladder or bowels, patients died of bladder infections. When antibiotics became available in the 1940s, mortality rates dropped. But even as recently as the 1980s, 40 per cent of patients died within a year of injury to the upper spinal cord. Today’s rate: only about five per cent.

A modern turning point occurred when Fehlings – who has an MD and a PhD – was a graduate student working under Dr. Charles Tator, then chairman of UofT’s division of neurosurgery (and currently a UofT professor of surgery and a recipient of the Order of Canada). Together Tator and Fehlings played a major role in a discovery that shook up the global scientific community when they published their work in 1991. The hypothesis – controversial at the time but now widely accepted as fact – was that spinal cord injury is a two-step process. First there’s the initial mechanical trauma. But following that, there’s a secondary injury: the spinal cord undergoes a kind of stroke. The blood vessels, disrupted by the initial injury, interrupt blood flow to the nerve cells, which die, greatly amplifying the original damage. These secondary injuries occur anywhere from minutes to months afterward. Fehlings says, “So while we couldn’t undo the initial injury, we thought, You know what? We might be able to intervene to prevent the secondary injury from happening.” It’s now a standard of care for patients to receive medicines immediately following injury to bump up their blood pressure and improve blood flow to prevent secondary damage.

PHOTOGRAPHY: KEVIN KELLY



Dr. Michael Fehlings is investigating drug treatments to reduce spinal cord damage following injury

But Fehlings believes there’s much more we can do to protect those vulnerable nerve cells. In work that won the Gold Medal Award in Surgery from the Royal College of Physicians and Surgeons of Canada, his own lab determined that spinal cord injury causes a dangerous shift in the critical balance of the natural salts in the injured cells. Within hours of the injury, sodium enters the cells, followed by water, which causes swelling. This then attracts calcium into the cells, triggering damage far beyond the initial injury. Fehlings is looking for a way to prevent this from happening

One possibility may be a drug called riluzole. Originally developed as an anti-epileptic, it also seems to slow the rate of nerve cell degeneration in people with amyotrophic lateral sclerosis (ALS), or Lou Gehrig’s disease. Could riluzole also have neuroprotective effects in people with spinal cord injury? Fehlings is attempting to find out, and later this year will launch a clinical trial with riluzole. Much of the funding for the study will come from the Christopher and Dana Reeve

Foundation, which has designated nine centres of excellence in North America to take promising therapies and move them into clinical use. Of the nine centres chosen, the Krembil Neuroscience Centre is the only one in Canada.

If riluzole works, it could have important implications all over the world – including among soldiers in Iraq and Afghanistan. “With their body armour, soldiers aren’t dying of torso injuries like they did in Vietnam,” Fehlings explains. “But with these crazy bombs, the vehicle implodes and the soldier’s spine gets crushed. We received a \$3-million grant from the U.S. Department of Defense to do clinical trials on spinal cord injury, and they like riluzole because it can be given as a pill by a medic in the field.” Riluzole, now off patent and very cheap, would be particularly welcome in developing countries, where spinal cord injuries are

prevalent due to the lack of safe roads, safe vehicles, seatbelts and workplace regulations.

But protecting nerve cells from degeneration is only half the story. The other half involves regenerating nerves that have already been damaged. It’s been known for a long time that if you sever a nerve in your arm or leg, it will eventually regenerate on its own. That doesn’t happen in the spinal cord. Why not? In another important Canadian discovery, a group of Montreal researchers found that the culprit was myelin,

the insulating layer around the nerve fibres. The myelin in the spinal cord, which transmits signals from the brain, contains inhibitors that block regeneration.

There are intensive efforts now to find the best way to stop that process and encourage regeneration. One option is Cethrin, a protein drug that can be applied directly onto the spinal cord during surgery. Developed by Montreal neuroscientist Lisa McKerracher, Cethrin recently underwent the first phase of clinical trials in eight centres, one of which is the Krembil. Of the 37 patients, all of whom had no muscle function or feeling below the site of their injury, about one-third showed some recovery, and 15 per cent showed major recovery, such as regaining hand function or leg movement.

One study participant is a 64-year-old Toronto shopkeeper who broke his neck when he fell face first against the door of his shop. Because he immediately went into cardiac arrest, surgeons couldn't operate on him until he stabilized, five days later. Fehlings met him in the intensive care unit. "He was a quadriplegic, with no movement in his shoulders or hands and no control of his bowel or bladder," Fehlings says. Following the surgery and treatment with Cethrin, the man recovered partial use of his hands and can now feed himself. He also regained control of his bowel and bladder, and with assistance he can stand and take a few steps. "I was shocked," says Fehlings. "Shocked! I had never seen that in my career." While spontaneous recovery occurs in seven per cent of cases of spinal cord injury, he says, "The chances that somebody with a complete spinal cord injury at five days would spontaneously recover like that are close to zero." The U.S. Food and Drug Administration has given the green light to move forward with a large randomized Cethrin trial later this year.

Another exciting avenue of research involves replacing damaged nerve cells with neural stem cells. Collaborating with U of T stem cell researchers Cindi Morshead and Derek van der Kooy, Fehlings' lab performed tests on rodents whose spines were crushed. The neural stem cells served to regenerate the original damaged cells, and some of the animals recovered the ability to walk. This strategy is close to clinical trials, and may one day also have major implications for people with multiple sclerosis and for children born without myelin.

While developing the right drug or combination of molecules is crucial, it's equally important to have a way of getting the medicine to where it needs to go. Many of the drugs can't be taken orally or intravenously because of severe side-effects, and if they're injected into the spinal cord they'll simply be washed away along the river of spinal fluid. How to get the drugs to stay put and do their job? Molly Shoichet, Canada Research Chair in Tissue Engineering and a U of T



Professor Molly Shoichet is developing ways to regenerate spinal cord nerve cells

professor in the Department of Chemical Engineering and Applied Chemistry, leads a team that has developed a unique water-based gel made of naturally derived hyaluronan and methylcellulose, both carbohydrates.

Shoichet, happy to demonstrate the remarkable properties of this gel, grabs a syringe from her lab in U of T's Terrence Donnelly Centre for Cellular and Biomolecular Research. "Just push lightly," says Shoichet as she hands over the syringe with its very fine 30-gauge needle. "See the gel coming out? When you apply pressure it thins and flows through the needle, but when it comes out it gels immediately." In animal testing, not only did the gel succeed in delivering the drug on top of the spinal cord in a minimally invasive procedure, but it sealed up the hole made by the needle and minimized inflammation after the injury. "It's very cool and there's nobody else who has done anything quite like this, so we're very excited," Shoichet says. The gel keeps the drug in place for a few days, but the goal now is to extend that time to 30 days of drug therapy with a single injection.

Shoichet's team, in collaboration with Charles Tator's lab, has also developed a tiny tube designed to bridge the gap in a severed spinal cord and encourage nerves to regenerate. Only five millimetres long and made of a degradable sugar-based polymer, the tube looks like a soft, transparent, miniature drinking straw with the consistency of Jell-O. Incorporated into the tube are stem cells and microbeads that can be filled with proteins that stimulate cell growth. When the tube is inserted into the spinal cords of animal models, it acts as a temporary scaffolding to which cells can adhere. "We get tissue regeneration," Shoichet says, although that hasn't yet translated to a significant improvement in the animals' mobility. "Stem cells have a tremendous amount of potential, and we're still learning how to harness that."

PHOTOGRAPH: KENNETH KELLY

Another bioengineering strategy to promote nerve cell regeneration involves gene therapy. There's particular interest in a gene called VEGF, or vascular endothelial growth factor. It's an important gene that makes blood vessels. In animal studies, rodents with a spinal cord injury who received a gene therapy technique to cause cells to express VEGF showed dramatically improved recovery. More work is needed before this therapy can progress to human trials.



“We’re not just doing some nice science here. This is really going to have an impact on people’s health.”

daily over eight weeks for hand grasping, then were tested on how well they could carry out the movements on their own, without the device. “We got dramatic improvements,” Popovic says. All improved their locomotion, with a resulting reduction in the need for assistive devices. One man, barely able to stand since his spinal cord injury 20 years ago, can now walk. Another went from a wheelchair to two canes. A third, who could walk only slowly, doubled his speed. Popovic, who is also the Toronto Rehabilitation Chair in Spinal Cord

Injury Research, is now in the middle of larger-scale trials. The reality is that some of these surgical, drug and rehab methods will prove to work better than others, and it takes time to figure out which ones are the best and the safest. Meanwhile, some Canadians, impatient for a cure, may be tempted to travel to China, Brazil or Portugal to undergo procedures such as cell transplants that are available there for a price. But researchers here warn that these therapies are unproven and unregulated, and there are risks of serious infection such as meningitis. Worse, the surgery could cause scar tissue that would prevent patients from taking advantage of a better procedure in future. “I can totally understand why a family would want to try this, but the concern is they may burn their bridges,” says Fehlings. “In the past, people would have nothing to lose, but it’s a different story now. The potential for evidence-based therapies that really work is looking very feasible.”

So feasible, in fact, that Fehlings believes we’ll see some important results in the next three to five years. “It’s not just that we’re doing some nice science here,” he stresses. “This is really going to have an impact on people’s health.”

Popovic, who used to design airplane systems, has devised a better way to stimulate the muscles. He invented a portable, programmable, wallet-sized device that delivers electrical stimulation through electrodes, forcing the muscles to contract. The device has been tested on more than four dozen people, some of them who had been living with spinal cord injuries for years. They underwent hour-long sessions either three times a week over 12 to 18 weeks for locomotion, or

“It really works,” says electrical engineer Milos Popovic, associate professor in U of T’s Institute of Biomaterials and Biomedical Engineering. “But the problem is it’s very time-consuming and labour-intensive. You need three physiotherapists to do this.”

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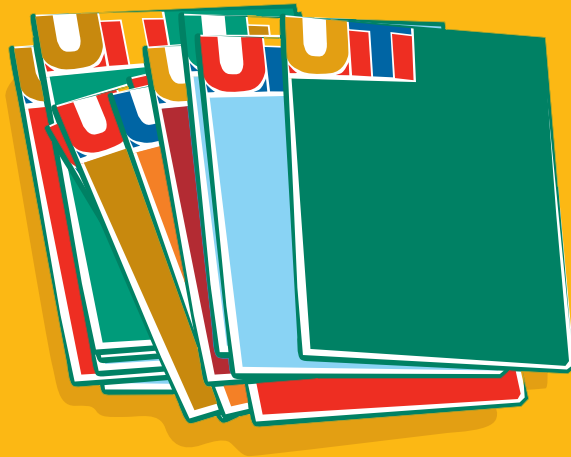
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Marcia Kaye (marciakaye.com) of Aurora, Ontario, is a magazine journalist and best-selling author specializing in health issues.

Spinal Cord Facts

- The spinal cord is like a 40-cm-long fibre optic cable. The network of nerve fibres descends from the brain to the waist and exits between vertebrae to various parts of the body.
- Spinal cord injury involves damage to the nerves, which interrupts communication between the brain and the body.
- Rarely is the spinal cord completely severed. More often it’s compressed, causing the nerve cells to die.
- The body is affected below the site of the injury. So a severe lower-back injury typically causes loss of movement in the lower body (paraplegia), while a severe neck injury would also affect the upper body (quadriplegia).
- The spine has 33 vertebrae – rings of bone that make up the spinal column. The typical injury affects the cervical, or neck, area, causing quadriplegia.
- A complete spinal cord injury results in a total loss of voluntary movement and conscious feeling. In an incomplete, or partial, injury, some residual function remains.
- There are between 250,000 and 400,000 North Americans living with spinal cord injuries, most of them male. Each year in Canada, there are 1,100 new cases.
- The most common causes are motor vehicle collisions, sports injuries, falls, diseases such as cancer and arthritis, and conditions including degenerated, slipped or dislocated vertebrae.
- Health costs for spinal cord injuries cost Canadians three-quarters of a billion dollars every year.

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SMOKE AND MIRRORS

So far, Canada has taken no real action on climate change. It's time to get serious about Kyoto

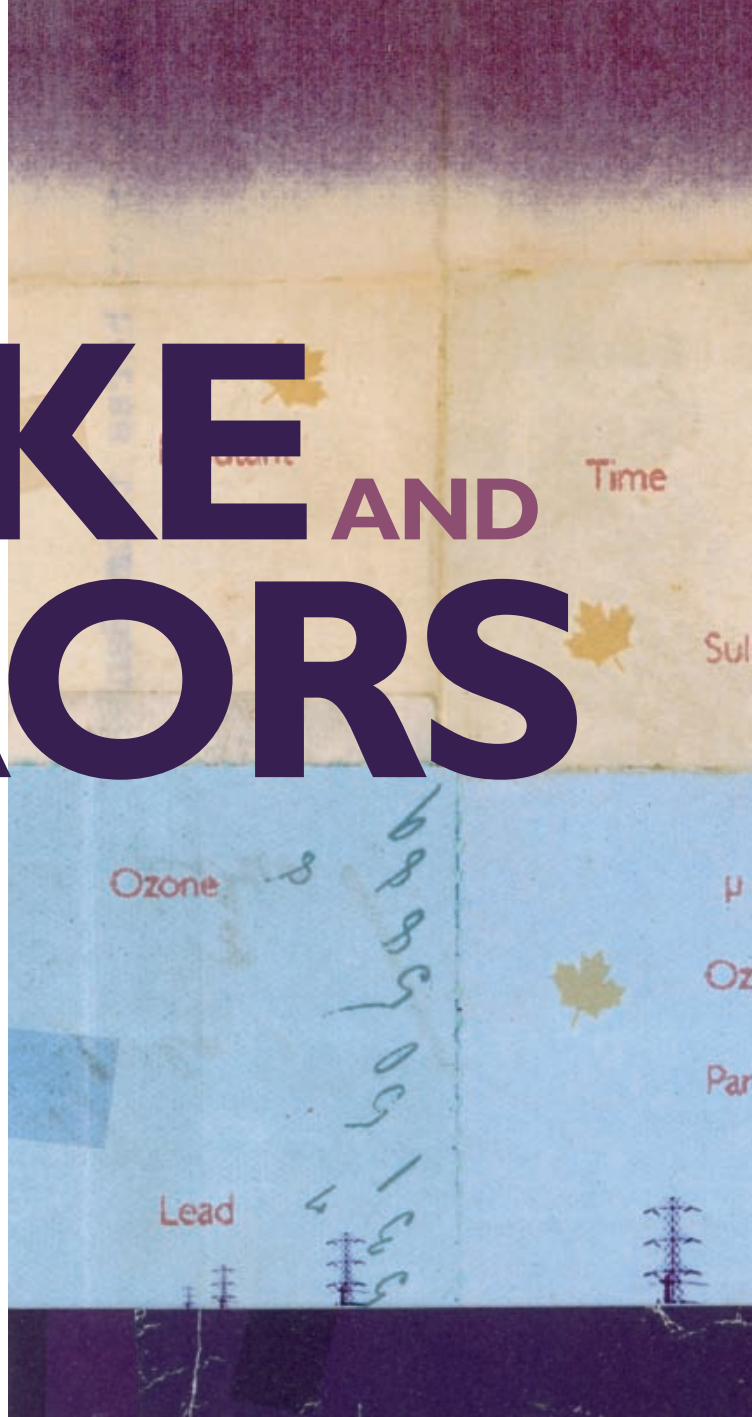
BY JOHN LORINC

IN FOUR SHORT YEARS, the Kyoto Protocol will expire, laying bare the ineffectiveness of Canada's six successive climate-change plans.

The numbers already tell the tale. While Canada committed to reduce greenhouse gas emissions to six per cent below 1990 levels by 2012, the reality is that we're more than 30 per cent *above* that benchmark. And thanks to the oil sands projects in northern Alberta, our emissions continue to rise. During last November's climate change summit in Bali, the European Union signalled it is looking for a successor to Kyoto that would reduce greenhouse gas emissions by as much as 40 per cent (from 1990 levels) by 2020. For Canada, that would mean cutting our current emissions by more than half.

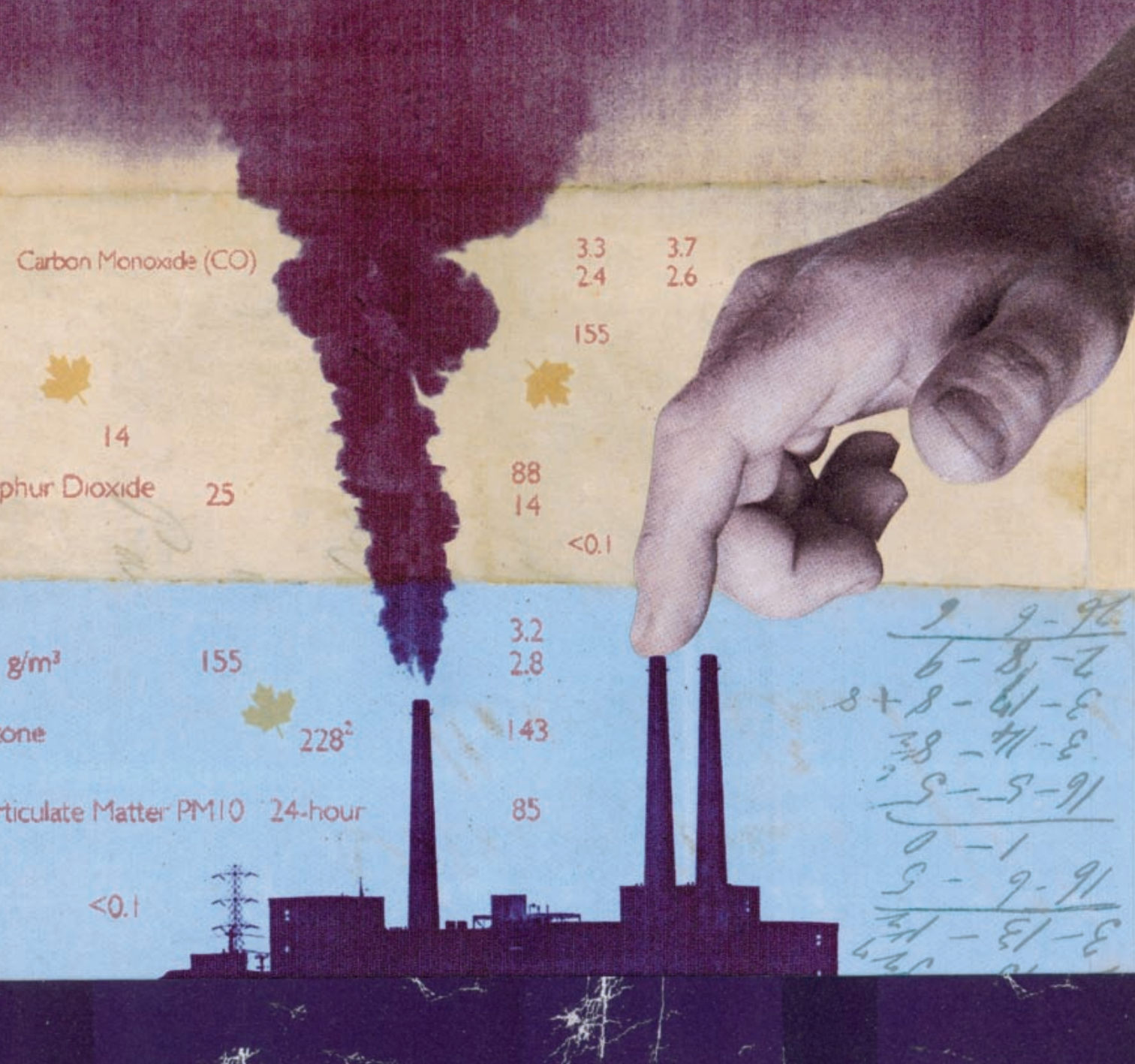
Canada's dismal record illustrates the failure of voluntary programs and clean-energy subsidies. Under both the Liberals and now the Conservatives, Ottawa has sought to reduce emissions using consumer incentives (for fuel efficient cars and home improvements), research grants, and subsidies for transit and renewable energy projects, such as wind farms. Evidently, this strategy has failed to make a dent. "The problem with the current policies is that they're all out in the future," says University of Toronto economics professor Don Dewees. "That's a mistake because we wind up doing nothing."

Pointing to Canada's backsliding, climate change experts increasingly stress the need for a more assertive approach.



Some politicians are taking heed. Earlier this year, British Columbia became the first jurisdiction in North America to impose a genuine carbon tax. Until recently, such moves seemed to lack grassroots support. But Dewees has been taken aback by how quickly public opinion is shifting. A poll conducted in February found that three out of four British Columbians support a carbon tax. "A year ago, I would have said, 'Let's not talk about a carbon tax because it's politically hopeless.' But that's changing," says Dewees.

As Canada heads toward the next round of climate talks, slated for December in Poland, we asked several U of T experts to propose an effective climate change strategy that will get us on track to meet our Kyoto commitments – without hobbling the economy.



ESTABLISH A NATIONAL CARBON TAX

According to Dewees, Canada must move quickly to enact a national \$15/tonne carbon tax rather than continue to put off effective change. “A good plan will impose costs everyone will feel within a year,” he says.

The premise behind the carbon tax comes directly out of Economics 101. The earth’s atmosphere has a limited capacity to absorb carbon dioxide (and the five other major greenhouse gases), so this capacity must be treated as a resource with a tangible economic value. “Putting a price on the atmosphere is critical,” says Mark Jaccard, an economist at Simon Fraser University and co-author, with *Globe and Mail* columnist Jeffrey Simpson, of *Hot Air*. “The abatement of greenhouse gas emissions will not occur without it.”

But what is the right price? B.C.’s new \$10/tonne levy on carbon emissions will add less than three cents to the cost of a litre of gasoline and heating oil, although the tax will rise to \$30/tonne by 2012 – a ramp-up Dewees describes as “aggressive but possible.” Some proponents argue that Ottawa should set a national carbon tax at \$30/tonne of emissions, and raise the rate at regular intervals to \$100 by 2030. Dewees believes a target of \$50 by 2020 is more realistic.

Then there is the question of what the government should do with the extra revenue. Some environmental groups, such as the Pembina Institute, argue that governments should use the carbon tax windfall to fund transit and renewable energy projects. But Dewees disagrees, arguing that the money should be returned to taxpayers either in the

form of a rebate or lower income, corporate or sales taxes. He points to the quid pro quo at the heart of B.C.'s new carbon tax; alongside the new levy, the government said it would give every citizen a \$100 rebate. In other words, the government won't suck additional tax dollars out of the economy. "Without that linkage," says Dewees, "I think this will be a really tough sell [for voters]."

Another critical element of a national carbon tax is its simplicity. While B.C. imposed the tax at the consumer level (you pay when you buy gas, for example), Dewees argues in favour of applying the tax at the point of production: the refinery or the coal mine. "Because there are many small sources of carbon dioxide (gas furnaces, motor vehicles), imposing the tax at the point of emission is much more costly than imposing it upstream at the level of wholesaler or even producer or importer." Ultimately, consumers will feel the impact as producers pass along the extra cost of paying the tax.

The final piece of an effective national carbon tax plan involves public information. Ottawa must inform consumers and businesses about future increases in the levy well in advance, says Dewees. If the long-term schedule of carbon tax hikes is well known and then adhered to, consumers and companies can make long-term decisions that anticipate the rising cost of fossil fuels. In other words, if a car buyer or a homeowner shopping for a new furnace knows that, three years from now, fuel prices will rise due to an increase in the carbon tax, they will be better positioned to calculate the long-term financial benefit of purchasing a more energy-efficient product.

Likewise, when energy companies invest in new equipment, their planning horizon is often 15 to 20 years. "We're caught in the dilemma of industry wanting some certainty about the future," says Dewees. If firms understand how the regulated price of carbon will change over the long run, they will be able to plan their capital expenditures accordingly.

BEWARE OF "CAP-AND-TRADE" LOOPHOLES

Under a "cap-and-trade" system, large emitters of greenhouse gases are granted emissions permits, up to a limit. If they can't meet their target, they have to buy permits from companies that have reduced their emissions below the limit. These permits trade on an exchange. Governments can push industries to improve their overall performance by lowering the limits over time.

In 2005, the European Union established an emissions trading scheme as part of its Kyoto commitment. In Canada, Alberta and the federal government are now developing emis-

sions trading policies for large industrial polluters. Critics predict that these two Canadian trading ventures will fail to make a meaningful dent in emissions, however, because they aim to cut emissions intensity – the proportion of greenhouse gases emitted per unit of production – rather than achieve an absolute reduction, as required by Kyoto.

While he favours the predictability and simplicity of an across-the-board carbon tax, Dewees says the Harper government could press ahead with a "hybrid" climate change plan – one that imposes a carbon tax on small emitters (vehicles, homes, small businesses) and creates an emissions trading system for large industrial companies (cement plants, oil and gas refineries, mines). But economists such as Dewees and Jaccard and many environmentalists warn that cap-and-trade schemes are both administratively complex and vulnerable to compromises that reduce their impact. "A cap-and-trade system involves the very difficult business of deciding who gets what [emission] allowances," says Dewees. "There's a lot of lobbying because the government is giving away the right to pollute."

Cap-and-trade also works better in industries where the emissions-control technology – scrubbers to remove nitrous oxides from smokestacks, for example – is well developed, which is not the case with greenhouse gases. Where there's a well-established technology, a company can plan to invest in emissions-reducing equipment and thus reduce its need to purchase permits. With greenhouse gases, however, technological solutions, such as pumping carbon dioxide underground and into spent gas wells, remain experimental at best. "Without the control technology," says Dewees, "the price of the emission allowances will skyrocket."

CREATE SUSTAINABLE TRADE POLICIES

In a country dependent on trade, a national climate-change policy should be designed to make sure that imports are priced to reflect the true cost of greenhouse gas emissions while our exports aren't rendered uncompetitive by domestic carbon taxes.

On the export side, Dewees says that if the federal government adopts a carbon tax, it must also provide a credit to the exporter that's equal to the value of the carbon tax on goods that leave the country. He cites the example of cement, a commodity that creates heavy greenhouse gas emissions while it is being manufactured. Under a carbon tax system, cement produced in Canada might not be able to compete with cement produced in a country without a carbon tax. An export credit solves the problem: the domestic production of a Canadian cement plant will continue to

Our contribution to reducing global climate change will be meaningless if we continue to bring in goods from countries that ignore Kyoto

be subject to a carbon tax, but the shipments leaving the country will not.

The question of imports is trickier: if Canada is to adopt a tough-minded climate change plan that will deliver real results, part of the equation must involve looking at the carbon footprint of imports. After all, our contribution to reducing global climate change will be meaningless if we continue to bring in goods produced in countries that ignore their Kyoto obligations.

cites the Montreal protocol on ozone-depleting substances, which included bans on the trade of goods that use aerosols and other chemicals that destroy the ozone layer. “There must be some sort of sanctioning mechanism in the next [climate change deal].”

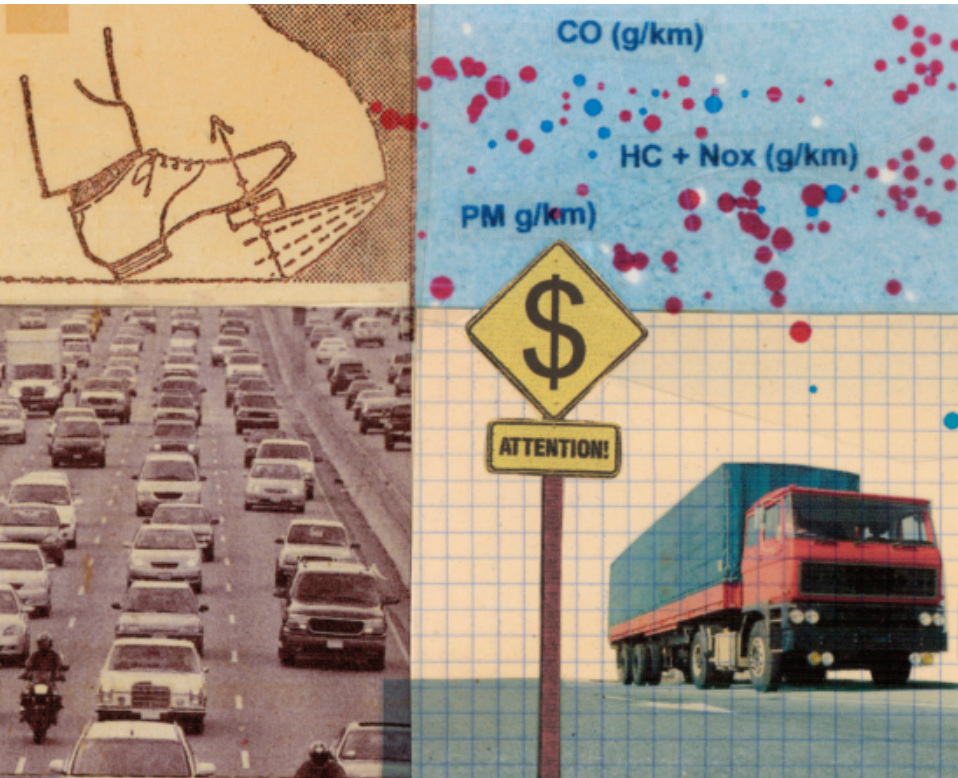
USE ROAD PRICING TO REDUCE DRIVING

Almost half of Canada’s population is concentrated in six large urban regions, all of which rely increasingly on federal funds

for the construction of major transit and transportation projects. If Ottawa wants to meet its climate change goals, it will have to use its clout to persuade the residents of big cities to drive less.

Fossil fuels burned for transportation accounted for 200 megatonnes of greenhouse gas emissions in 2005, or just over a quarter of Canada’s total. Last year, the Harper government announced it would press the auto industry to invest in more energy-efficient vehicles as a means of reducing transportation-related emissions.

Yet this problem isn’t just about the tailpipe and the engine. Most economists believe that when drivers don’t have to pay to use roads and highways, they over-use them, thus increasing emissions. “When I’m driving on a crowded highway, I’m slowing everyone else down but I’m not paying for it,” says Matthew Turner, a U of T professor of economics whose work focuses on urban sprawl and land use. “There’s a case to be made that



Faculty of law professor Andrew Green points to a measure that has gained increasing attention in the past year: so-called “border tax adjustments.” The U.K. is studying such a tariff and France has said it supports this kind of duty on imports. The idea is that products imported from countries that are not Kyoto signatories or fail to comply with their Kyoto obligations will be slapped with a tariff that brings their prices up to the levels of goods produced in countries with carbon taxes. The French have threatened to use the border tax adjustment against American imports. Green says Canada is also “in a difficult spot” because of our dismal performance on reducing greenhouse gases. “France is saying that they’ll put taxes at the border against U.S. [goods] because the U.S. is not part of Kyoto,” he says. “We’re [also] vulnerable.”

As Canada and the rest of the world heads into the next climate change summit, Green argues that Ottawa “should try to get trade measures into the next agreement.” The adjustments, he says, must be tough enough to encourage importers to lower their own carbon footprint, but not so high as to become trade barriers. By way of precedent, he

people drive too much because access to roads doesn’t cost them anything.”

He says road pricing – in the form of highway tolls, congestion fees for driving downtown and higher parking rates – achieves multiple goals: it reduces the sort of congestion that undermines productivity in sprawling urban areas and cuts transportation-related emissions. Turner also believes that road pricing is more effective in altering driver behaviour than carbon taxes, which add only a few cents to the price of a litre of gas. Because both gas guzzlers and hybrid cars will have to pay tolls or congestion charges, such measures will encourage more people to walk, ride bicycles or use transit.

While tolls have existed on U.S. interstates and many European highways for decades, they face considerable political resistance in Canada. But, as with the carbon tax, government tentativeness may be waning. London and Stockholm have congestion charges, while both New York and Greater Toronto are studying them. John Miron, chair of the department of social sciences at U of T Scarborough, points out that the world’s most effective road pricing system can be found in Singapore, which has used a combination of very high

ILLUSTRATION: MARTIN O'NEILL/THREE IN A BOX

vehicle registration fees (over US\$100,000) and tolls to limit driving and encourage transit use. While he admits that Singapore's autocratic form of government and its island status make it a poor model for Canadian cities, the lesson is that moderate road pricing may fail to achieve real change.

As with the carbon tax, the advent of road pricing also raises the question of how the revenues will be used. In London, the congestion charge is earmarked for public transit and bicycle lanes. But Dewees argues against dedicating government revenues to a particular form of spending, such as transit improvements. Miron adds that cities with road pricing must recognize that tolls and congestion charges tend to disadvantage lower-income residents, so some of the revenues should be directed back to them.

Economists such as Turner also note that governments will get the most leverage from their road pricing revenues by investing in cheaper modes of transit, such as buses rather than subways or even light rail. With Canada's big-city mayors calling on the federal government to establish a national transit strategy, Turner's research shows that buses represent the most cost-effective investment in terms of providing transportation alternatives to growing urban regions.

THE BOTTOM LINE

No one wants to pay more taxes, but it's becoming increasingly difficult to ignore the fact that reversing climate change will involve major changes in our fiscal arrangements. Much of the opposition to the carbon tax emanates from fossil-fuel companies, which will experience declining demand for their

products if governments impose such levies. Yet Dewees points out that energy firms will migrate into more sustainable business lines, such as wind and solar, or even nuclear power and clean coal, both of which become more financially viable with an assertive national carbon reduction plan.

What's more, naysayers and lobbyists must contend with the fact that such policies haven't caused economic havoc elsewhere. Congestion charges in London and Singapore didn't produce an exodus of commercial activity. As for a national carbon tax, the experience of many European jurisdictions suggests that economic

growth and tough climate change policies do co-exist.

Jaccard points to the case of Norway, which introduced a carbon tax in 1991, at \$30/tonne. For Canadian policy-makers, there are strong comparisons to Norway, which has experienced a boom in offshore oil drilling. The Scandinavian nation has seen a 40 per cent increase in economic growth per capita since the early 1990s, even though the lion's share of its multibillion-dollar oil and gas revenues end up in a trust fund. Norway's per-capita emissions have remained flat since 1991, while Canada's have risen six per cent. Norway has a carbon tax. We don't. Moral: Growth in the economy isn't necessarily coupled to growth in emissions. As Jaccard notes, "Evidence suggests that [a \$100/tonne carbon tax] will stimulate substantial reduction in greenhouse gases without devastating the economy."

John Lorinc (BSc 1987) is a Toronto journalist. His most recent book is The New City (Penguin Canada).



The experience in Europe suggests that economic growth and tough climate-change policies do co-exist

Is Global Warming Immoral?

Religious groups are seeking to influence the debate over climate change

When U of T religious ethicist Stephen Scharper listens to Al Gore describe the battle to reverse climate change as a moral imperative, he recognizes the influence of Father Thomas Berry, a self-described "geologist" who was an inspiration to the former vice-president and Nobel Peace Prize winner. "When Gore speaks," says Scharper, "I hear the resonance of [Berry's] thought."

Berry, a Catholic priest from North Carolina, observes that Gore's ability to communicate the threat of global warming uses the language of morality. Scharper says this offers a clue to policy-makers seeking

to break the apparent impasse over a new climate-change deal between the developed North and the developing South.

In his view, and those of a growing number of the world's religious leaders, the debate must be broadened well beyond the realm of science and policy. To find commonalities and the possibility of consensus, Scharper says, the societies of the North and the South need to find a way to exchange ideas about mutual values, ethical frameworks and cosmology. "When you speak to people at that level, it is for many a moment of galvanization."

Scharper points out that, increasingly, global religious and spiritual movements have sought to influence the negotiations at important summits such as the Bali conference last November. When the United Nations Development Program began formulating a climate change plan, "they realized they had to enlist the support of the world's religions if they hoped to change the habits of the heart. It's not just about policy, but also traditions and values." And justice: Scharper believes that a globally acceptable climate change agreement must go well beyond the consumption-oriented North imposing environmental constraints on the South. "It's also a question of just economic relationships." —J.L.



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Marcel Desautels

ROTMAN ROARS AHEAD

Key donors provide \$28 million for programs and expansion

Last fall was a banner season for the Joseph L. Rotman School of Management, which received landmark gifts from major donors totalling \$28 million. The Rotman School will use the money to construct a new facility and bolster a range of new and existing programs.

Sandra and Joseph L. Rotman contributed a total of \$18 million, from which \$10 million will help establish the new Lloyd and Delphine Martin Prosperity Institute, a research centre headed by urban theorist Richard Florida. The new institute, named in honour of the parents of Roger Martin, dean of the Rotman School, was created last year with a \$50-million grant from the province of Ontario. Professor Florida, an expert on economic competitiveness, demographic trends, and cultural and technological innovation,

joined the school as a professor of business and creativity.

The remaining \$8 million will support the University of Toronto's undergraduate commerce program (offered jointly by Rotman and the Faculty of Arts and Science); *Rotman*, the school's award-winning magazine; the new building fund; and ongoing academic research. An expansion of the Rotman School is expected to open in 2011, and will house the Martin Prosperity Institute and other research centres and programs. The Rotmans have previously given \$18 million, and in 1997 the school was renamed in Joseph's honour.

The school also received a \$10-million donation from Marcel Desautels, president and CEO of the Canadian Credit Management Foundation, to support the Desautels Centre for Integrative Thinking. The money will enable the

school to hire additional faculty and staff, extend the integrative-thinking curriculum across all teaching programs, and pursue research projects, conferences, and other events based on this new approach to business education. The Desautels Centre for Integrative Thinking will also be housed in the new building. Desautels has previously given \$21 million to establish the Desautels Centre and support student scholarships.

Rotman is training integrative thinkers to build new business models rather than choose between existing ones; consider problems as a whole, rather than breaking them down into smaller parts; and creatively resolve tensions without resorting to costly trade-offs. "The world of business education has been fundamentally changed for the better by the emergence of integrative thinking," says Desautels.

— Ken McGuffin

Stage Presence

Janet Bessey's gift will help preserve Hart House Theatre's role on campus

A UofT staff member whose name was synonymous with Hart House Theatre for more than three decades has donated \$100,000 to help ensure the theatre's long-term survival. Janet Bessey, who started as an assistant stage manager in the 1960s and later managed the theatre until she retired in 2001, says her job was a "work of love" that kept her close to the theatre's most important constituents – its students.

During her career, the theatre mounted dozens of shows and took a democratic approach to casting U of T productions. "The philosophy was that everyone should have the opportunity

to take part," she says. Some students parlayed their experience at Hart House Theatre into careers. Rod Beattie, the star of the Wingfield plays, performed as Hamlet in a 1973 production. Two other Hart House Theatre alumni are also involved in the Wingfield plays: Dan Needles writes them and Douglas Beattie, Rod's brother, directs them.

In 1986, the Graduate Centre for the Study of Drama moved out of Hart House Theatre, leaving a budget shortfall and gaps in the production schedule. To survive, the theatre kept its many student revues, such as the Faculty of Medicine's Daffydil and Engineering's

Skule Nite, but sought new clients among dance studios, local ethnic groups and touring stage productions.

Despite some box office successes, the theatre has always relied on the university to subsidize operations. In 2000, Hart House took over management of the theatre and launched an endowment campaign to raise \$7 million. An additional \$1 million is being sought for capital improvements. Bessey describes her contribution as a kind of thank you. "The theatre has been a part of my life for so many years," she says. "I wanted to give something back for all the enjoyment I've received." – *Scott Anderson*

A Scientist's Legacy

Toronto group creates scholarship in honour of Marie Curie Sklodowska

Inspired by the humanitarian ideals of a Nobel Prize winner, the Marie Curie Sklodowska Association is celebrating 50 years of philanthropy by establishing scholarships for female physics and chemistry students at U of T. "We were always influenced by our patron, Marie Curie – née Maria Sklodowska – whose persistence and devotion enabled her to achieve so much for science and for women," says association vice-president Stella Lachoski.

After graduating from U of T, Lachoski (BA 1952), Adele Simpson (BA 1951) and 25 of their classmates from the Faculty of Arts and Science formed a charitable association to raise money for social, educational and cultural causes in Toronto. The group has since grown to 85 – all Canadian women of Polish descent – and fundraising efforts now include an annual gala to commemorate Curie's birthday, as well as art shows, bake sales and clothing drives. "These scholarships are the epitome of everything we have worked towards," says Lachoski. "Even after we are long gone, there will be an enduring legacy to our association, which, we hope, will inspire future generations of women to pursue a career in the sciences."

The association has donated \$100,000 to the department of physics, endowing two undergraduate scholarships and a graduate fellowship. Starting next year, the awards will be presented annually on the basis of academic merit and financial need. "Marie Curie spoke in her writings about the joy she felt when discovering 'the new sights of nature.' These scholarships will encourage aspiring scientists to share in that joy," says Professor Michael Luke, chair of the physics department. The donation will be matched by the Government of Ontario and the University of Toronto. – *Laura Gass*



Marie Curie Sklodowska

Scholarship Will Support New Canadians

A new scholarship created by a former University of Toronto Scarborough commerce student will support first-generation Canadians in the management co-op program at U of T Scarborough.

Leo van den Thillart was a child when he immigrated to Canada with his parents in the early 1970s. Although he learned English and assimilated easily into Canadian culture, his parents faced language barriers and worked hard to establish a new life here, he says. His \$40,000 donation to create the van den Thillart Family Scholarship in Management recognizes the challenges new immigrants face and the contribution they make to Canadian society. “The success of immigrants is the lifeblood of Canada,” he says.

An informal poll of first-year students in the U of T Scarborough Management Co-op Program (excluding international students) found that seven in 10 were born outside of Canada. “By supporting the academic achievements and leadership of students in the co-op program, many of whom were born outside Canada, this gift is a tangible recognition of the strength of our diversity,” says Franco



Students in U of T Scarborough's Management Co-op Program

Vaccarino, principal, U of T Scarborough and vice president, U of T.

After studying commerce at U of T Scarborough, van den Thillart completed an executive MBA at Harvard University. He is currently the global co-head of the private funds group of Bear Stearns Asset Management in London, England. Van den Thillart credits U of T with providing him with the fundamentals for a successful career, and now hopes to extend that benefit to others. “I am blessed for the

opportunities I have received and I feel that it's important to give back to the community,” he says. “I believe in education and I am proud to be associated with U of T.”

The van den Thillart Family Scholarship in Management, worth about \$1,600, will be awarded to an upper-year student in the management co-op program who was born outside of Canada but is a citizen or permanent resident.

— Scott Anderson

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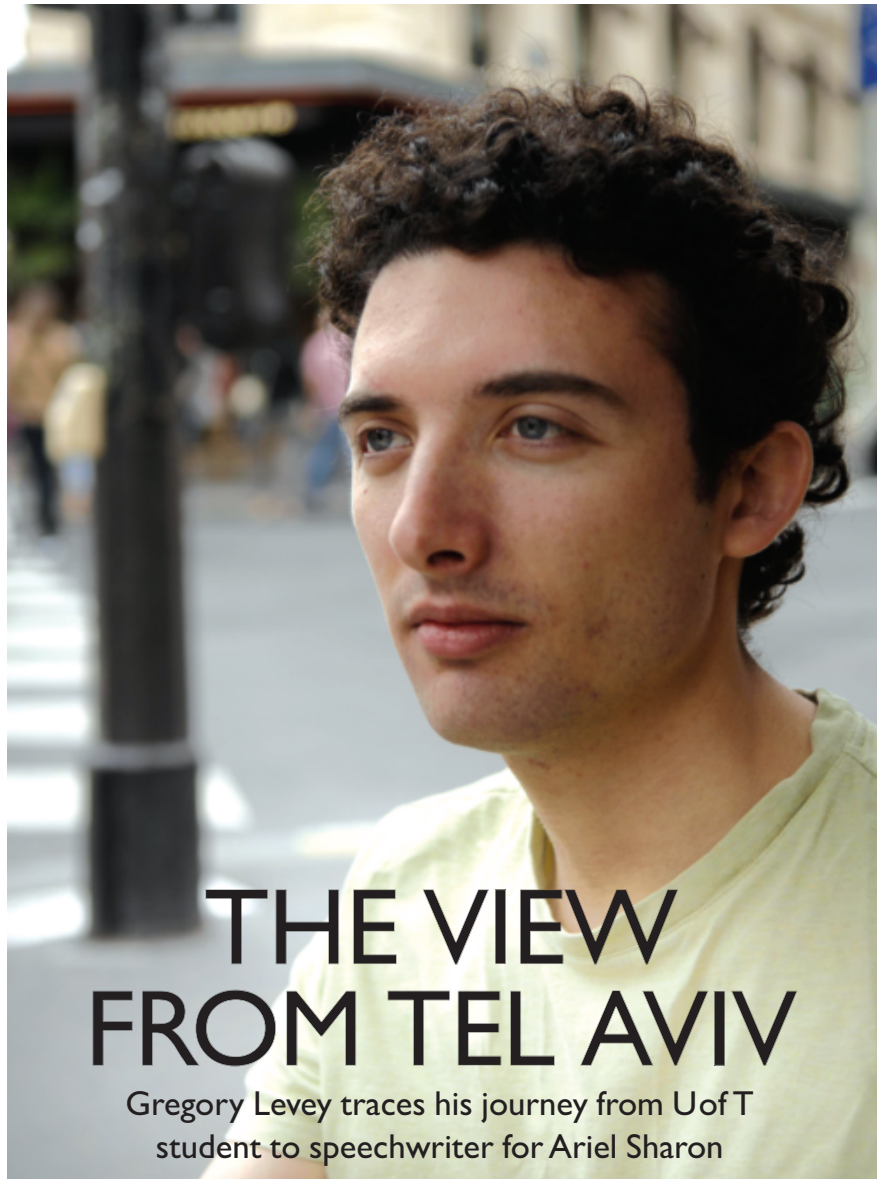
In his new book, *Shut Up, I'm Talking: And Other Diplomacy Lessons I Learned in the Israeli Government*, University of Toronto graduate Gregory Levey describes how, at age 25, he was unexpectedly propelled into the role of speechwriter for the Israeli government. Two years later, he became a speechwriter for Israeli prime ministers Ariel Sharon and Ehud Olmert.

Dissatisfied with law school in New York, Levey went looking for an internship to alleviate his boredom. He ended up at the Israeli Mission to the United Nations, where he was offered a position – not as an intern, but as a speechwriter. Under tight security, Levey wrote speeches for the Security Council, took Hebrew classes with Jewish grandmothers and courses in combat firearms, and attended meetings with an Israeli foreign minister who once showed up in just his underwear.

Government officials were impressed with a speech Levey wrote for Ariel Sharon (then Israeli prime minister) to deliver in New York, and in 2005 recruited him to come to Israel and write speeches for the prime minister's office. Levey took the offer, despite his uneasiness about many aspects of Israeli policy, including the route of the security barrier Israel was constructing to separate itself from the West Bank Palestinians.

"I'm fundamentally supportive of Israel's right to exist, and its safety and security as a Jewish state," he says. "[But] when government policies and actions made me uncomfortable, what I did, and what a lot of people inside the Israeli government did, was temper it down a bit." He says that his contribution was to offer a more moderate perspective; he even slipped the occasional Seinfeld reference into his drafts.

It was not just government work that



challenged Levey, but also life in Tel Aviv. "Every day was some new absurdity," he says. "I didn't speak the language properly, and I didn't understand everything, even beyond the language." He returned to Toronto in the summer of 2006, and was hired to teach speechwriting and intercultural communication at Ryerson University, which he acknowledges is far removed from the excitement and unpredictability of his former life.

Levey finished law school in night classes while working at the Israeli Mission in New York, but has no desire to practice law or work in government in the future. His ambitions include more teaching and possibly writing other books. He has remained engaged in Israeli affairs by filing freelance stories from Toronto about the Middle East, an area in which he "accidentally developed a specialty."

– Sarah Treleaven

In Pursuit of Human Dignity

Marina Nemat, author of *Prisoner of Tehran* (Viking Canada, 2007), was awarded the first Human Dignity Prize in Milan, Italy, in December. The annual €5,000 award was established by Mario Mauro, the vice-president of the European Parliament, and the cultural association Europa 2004 to celebrate those working toward a world free of intolerance and social injustice. Nemat's memoir traces her imprisonment in Tehran's notorious Evin Prison after she was arrested on false charges at the age of 16. She holds a certificate in creative writing from the School of Continuing Studies.

Opera singer **Adrienne Piczonka** (Dip Op Perf 1988) has been named an officer of the Order of Canada for her contributions as an artistic ambassador for Canada. Three alumni have been named members of the Order of Canada: **John Barron** (MusB 1961, MusM 1968) for his contributions to music education for young people;

Michael Clague (TPS MEd 1969 OISE) for his commitment to social planning and action, particularly in Vancouver's Downtown Eastside; and *Late Show with David Letterman* musical director **Paul Shaffer** (BA 1971 UC), who has supported many educational, health care and arts groups in Canada. Five alumni have been named Order of Ontario recipients: **Peter George** (BA 1962 VIC, MA 1963, PhD 1967), president and vice chancellor of McMaster University; **Rebecca Jamieson** (MEd 1978 OISE), a leader and educator in the First Nations community; **William McConkey** (BSc 1987), a University of Windsor professor and a world leader in atomic and molecular physics; **Roy McMurtry** (BA 1954 TRIN), former Chief Justice of Ontario and former Attorney General of Ontario; **Margaret Ogilvie** (BA 1971 TRIN), Chancellor's Professor of Law at Carleton University in Ottawa.

Student Leadership, from the Sudan to the Cosmos

While working toward a science degree at Trinity College, **Anh Nguyen** spends many extracurricular hours on international concerns: she has tutored refugee youth from Afghanistan as co-president of the Learning to Integrate New Cultures Canada (U of T chapter), and founded a program to raise money for scholarships for two refugee high school students. As the director of the Student Refugee Program, she coordinated the sponsorship of a Sudanese refugee to come to the University of Toronto. Nguyen also finds time to publish *Antigone Magazine* (U of T chapter), a periodical about women and politics written by women attending Canadian universities.

For her leadership abilities, Nguyen will receive a Gordon Cressy Student Leadership Award on April 8. The ceremony will be hosted by University of Toronto president David Naylor at the Colony Grand Ballroom at 89 Chestnut Residence. The awards, established by the U of T Alumni Association and the Division of University Advancement, recognize students who have made outstanding extracurricular contributions to the university.

Nguyen is one of 131 students who will receive a Gordon Cressy award. Others include **Leonard Elias**, who has served as an actor, lighting designer and director for University College Drama Program

Continued on page 42



PHOTOGRAPHY: MARK FRIED

Rhodes to Success

When Wojciech Gryc, 21, was in high school, he started the non-profit organization and online magazine *Five Minutes to Midnight* to muster opposition to the Iraq War and generate interest in human rights. Now Gryc, a U of T Scarborough graduate who majored in International Development Studies and math, has been named an Ontario Rhodes Scholar for 2008. Gryc will attend the University of Oxford to pursue a master's degree in mathematical modelling and scientific computing. He says that it's all in the name of providing technical knowledge that can be used to improve lives.

You travelled to Kibera, Kenya – one of Africa's biggest slums – last summer with *Five Minutes to Midnight*. You trained people to use computer software and produce a newspaper. How did this come about?

About two years ago, grassroots organizations abroad started asking *Five Minutes to Midnight* for training and help. That's how we decided to help others publish. Our first project was in Chad in December 2005 with a group called Rafigui. During that time, we heard from an organization called Shining Hope for Community, which is based in Kibera. We decided to go there to run technology and journalism workshops.



Wojciech Gryc

What impact does your work have on a community?

A lot of the groups we work with use newspapers as a way to spread social messages about violence in schools, HIV/AIDS, women's rights and other issues. And the technical skills people gain when they're working on these projects allow them to find jobs.... One

person we worked with in Kenya ended up being really interested in programming, and we spent a lot of time on weekends going over it and now she's working as a network administrator. It's just one person, but then you start building connections and in the long run it could lead to many more opportunities.

There are so many different models for development. How did you decide where to channel your efforts?

This is a question that comes up a lot. Why are you training people to design newspapers when you could raise money for food aid? If you're going to bring food to an area that's experiencing famine, that's really good but it's a short-term solution. Teaching people to farm is a longer-term solution. And that's how I see training people in technology and journalism.

Where did the general imperative to help other people come from?

In October 2002, my sister passed away. I was 16 and it was the first big family tragedy I lived through. Following that, the war in Iraq started and I realized that this happens every day to millions of families. I thought that this would be a good way to give back and come to peace with the experiences I've had.

– Sarah Treleven

Continued from page 41

productions and helped coordinate workshops with acclaimed German director Peter Stein and Japanese actor and director Yoshi Oida. Elias has also acted in *The Rocky Horror Show* and *Reefer Madness* at Hart House, and

co-directed and managed the Innis College Cabaret, which raised more than \$4,000 for the Canadian Breast Cancer Foundation. Award winner **Adam Muzzin** served as both president and treasurer of the U of T

Graduate Astronomy Student Association, and helped make the cosmos seem less complicated through his talks at University of Toronto Day and International Astronomy Day events.



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SPRING REUNION

May 29 to June 1. All alumni are invited to return to U of T during **Spring Reunion 2008**. Those with graduating years ending in 3 and 8 will be honoured. Special events will be held for alumni celebrating their 25th and 50th anniversaries of graduation. Chancellor's Circle Medals will be awarded to those marking their 55th, 60th, 65th, 70th, 75th and 80th anniversaries. Attend the Garden Party at the president's home, "Stress-Free Degree" lectures, and faculty and college events. www.springreunion.utoronto.ca, 1-888-738-8876 or spring.reunion@utoronto.ca

June 1. **U of T Scarborough Spring Reunion**. All alumni are welcome, but those with graduating years ending in 3 and 8 will be honoured. Events include the **Principal's Spring Celebration**, hosted by Professor Franco Vaccarino. 2-5 p.m., Miller Lash House, 130 Old Kingston Road. **Campus tours**, 1-5 p.m. on the hour. 1265 Military Trail. www.utsch.utoronto.ca/~advancement/alumni/ or contact Kim Tull at (416) 287-5631 or alumni@utsc.utoronto.ca

May 29-31. **U of T Mississauga Spring Reunion**. May 29: **Alumni Golf Tournament**. May 31: **Spring Reunion events and 40th-anniversary closing ceremony**. Contact Sue Prior at (905) 828-5454 or sue.prior@utoronto.ca

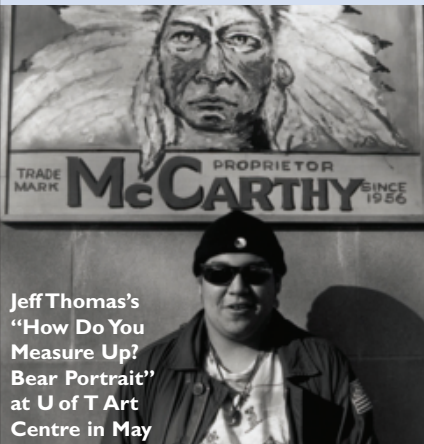
ALUMNI EVENTS

April and May. **Soldiers' Tower Memorial Room** will be open to visitors: April 9-10, 1-3 p.m. May 29-30 (Spring Reunion), 1-3 p.m. May 3, 10 a.m.-3 p.m. May 24-25 (City of Toronto Doors Open), 10 a.m.-5 p.m. 7 Hart House Circle. (416) 978-0544 or soldiers.tower@utoronto.ca

April 6. **Asia-Pacific Graduation Ceremony**. Grand Hyatt Hong Kong, 1 Harbour Rd., Hong Kong. 11 a.m. www.advancement.utoronto.ca/asiagrads. Contact Vincci Ching at (852) 2375-8258 or vincci.ching@utoronto.com.hk. In Toronto, Teo Salgado at teo.salgado@utoronto.ca or (416) 978-2368

April 26. Washington. **32nd Annual All-Canada Alumni Dinner**. Guest speaker: Edward Greenspon, editor-in-chief, *Globe and Mail*. Tickets: Cdn \$70. Contact Carleton University alumni services at cu_proud@carleton.ca or 1-866-287-7683, or teo.salgado@utoronto.ca or (416) 978-2368.

April 30. Oshawa, Ontario. **Alumni reception** hosted by Chancellor David Peterson. Contact teo.salgado@utoronto.ca or (416) 978-2368



Jeff Thomas's "How Do You Measure Up? Bear Portrait" at U of T Art Centre in May

May 3. Dr. Catharine Whiteside, dean of the Faculty of Medicine, invites medical alumni, faculty and friends to a reception at the **Association of Faculties of Medicine of Canada Conference**. 5-7:30 p.m. at the Centre Sheraton Montréal, 1201 Boulevard Rene-Levesque West, Montreal. Contact jennifer.peng@utoronto.ca

May 8. **Senior Alumni Association annual meeting and volunteer recognition ceremony**. Guest speaker: Wendy Cecil. 1:30 p.m. in University College, Room 179, 15 King's College Circle. (416) 978-0544, senior.alumni@utoronto.ca

May 12. Jerusalem, Israel. Alumni reception hosted by President David Naylor. Contact teo.salgado@utoronto.ca or (416) 978-2368

May 1 to 29. **Global SHAKER**. Are you living outside of Toronto and would like to meet other U of T alumni? SHAKER is hosting events in different cities, starting with

SHAKER NY at Via Delle Zoccollette on May 1 and ending at Maro supper club in Toronto on May 29, with dates to be confirmed in Vancouver and Hong Kong. www.advancement.utoronto.ca/SHAKER or sm.chang@utoronto.ca.

LECTURES

April 16 to May 21. **Academy for Lifelong Learning Spring Talks**. Speakers include *Toronto Star* columnist and author Haroon Siddiqui. Fee: \$6. The academy is a continuing education organization for retired persons. Wednesdays, 10:30 a.m.-noon, Innis College Town Hall. www.allto.ca, (416) 946-5185 or info@allto.ca

SPORTS

May 21. **2008 U of T Sports Hall of Fame** honours some of Varsity's greatest athletes, teams and builders. Reception: 6 p.m., Great Hall, Hart House Ceremony, 7:30 p.m., Hart House Theatre. 7 Hart House Circle. Tickets: www.uofttix.ca, \$35 each. (416) 946-3711, marco.vane@utoronto.ca

EXHIBITIONS

U of T Art Centre

May 1 to June 28. **Drive By: A Road Trip with Jeff Thomas**. First Nations artist Jeff Thomas explores the meaning of "Indianness" in contemporary urban Canada. Tuesday to Friday, 12-5 p.m.; Saturday 12-4 p.m. 15 King's College Circle. www.utac.utoronto.ca or (416) 978-1838

Robarts Library

May 22 to June 30. **Faculty of Arts & Science Book Fair Display** includes publications by humanities, social sciences and science authors. Robarts Library, Main floor exhibit area, 130 St. George St. (416) 946-5937 or events@artsci.utoronto.ca

Thomas Fisher Rare Book Library

June 6 to Aug. 29. **Queer CanLit**: Canadian Lesbian, Gay, Bisexual, and Transgender Literature in English. Mon. to Fri., 9 a.m.-5 p.m. 120 St. George St. www.library.utoronto.ca/fisher/exhibitions or (416) 978-5285

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— *Ron, a PhD candidate in mathematics*

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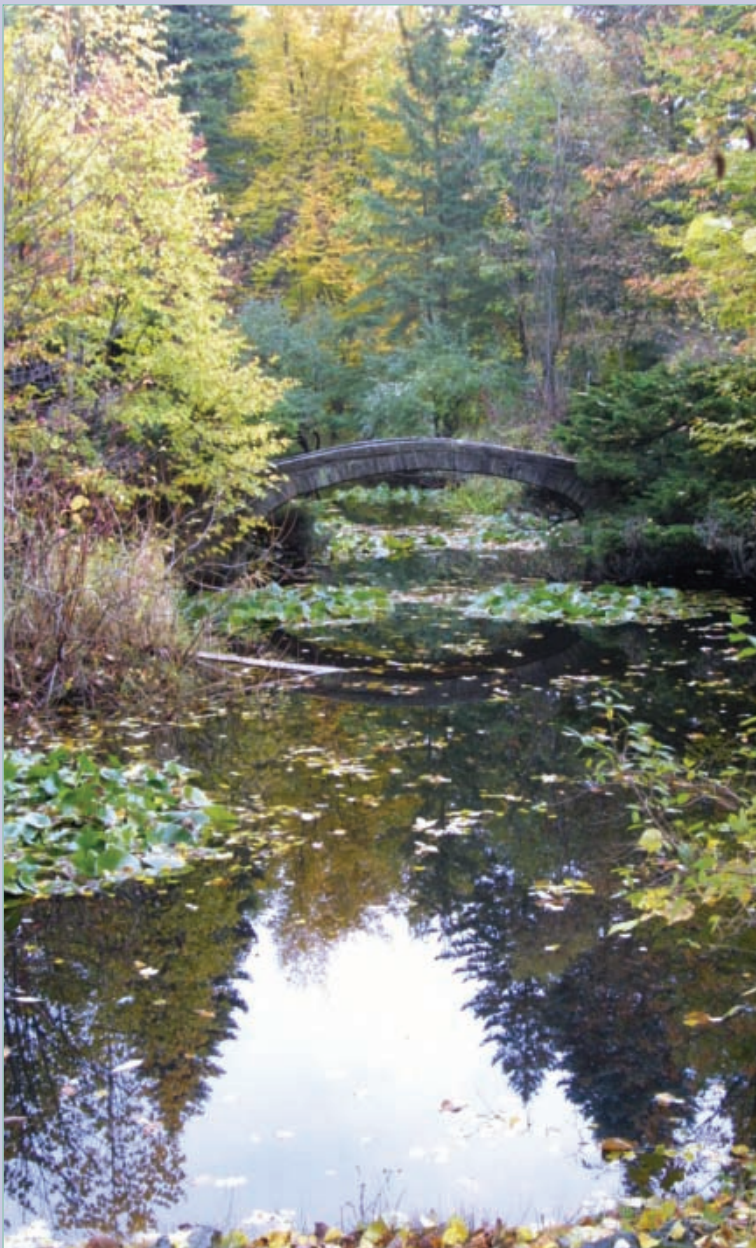
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Bridge Over Time



The casual observer might not think of modern-day Mississauga, Ontario, as a place to find idyllic pastoral scenes, but this picture says otherwise. The Lislehurst Bridge spans a manmade pond on the University of Toronto Mississauga campus, not far from the historic home where vice-president and principal Ian Orchard and his family reside.

“The bridge is picturesque year-round because it reflects the seasons that are going on around us,” says Orchard. “We have lots of walkers who go through the campus and through the woods, even in winter. Often you’ll see people walking over the bridge and reflecting, looking down in the pool. You hear the frogs croaking as you go by in the spring and summer. It’s lovely.” The bridge is also a popular spot for wedding photos. During the warmer months, Orchard often finds limousines lined up near the house as couples pose in the rustic surroundings.

The Lislehurst estate was built by the Schreiber family, descendants of Sir Isaac Brock. The house was constructed in 1885, but the bridge and pond were added later by Reginald Watkins, a Hamilton businessman who bought the property in 1928. Watkins eventually sold it to U of T, and Mississauga declared Lislehurst a heritage site almost a quarter-century ago.

Orchard believes the estate and the bridge provide an important historical reminder for the U of T Mississauga students, staff and faculty who pass through the bucolic patch of nature in the midst of the city. “Even though we’re a very young campus,” he says, “we have this reflection of history built into it.”

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