

MISSISSAUGA / ST. GEORGE / SCARBOROUGH

University of Toronto

MAGAZINE

JOURNEY TO FREEDOM

Student Jaivet Ealom's
extraordinary story of
courage and perseverance
as a Rohingya refugee

Spring 2023

PLUS: CURING TORONTO'S HUNGER PAINS – THE CASE FOR STUDYING VIDEO GAMES – 150 YEARS OF ENGINEERING FIRSTS –
MAGIC AND THE MIND – USING AI TO DETECT HEART PROBLEMS – WHAT TREE RINGS CAN TELL US

HYPED FOR TYPE

DATE: MARCH 1
TIME: 12:38 P.M.
CAMPUS: ST. GEORGE

At a time when books are increasingly downloaded, some U of T graduate students are learning how to create traditional printed volumes using 19th-century letterpresses and a vast collection of wood and metal type in the Bibliography Room at Massey College.

The students come from a variety of disciplines but are all interested in the history of the book. They say the hands-on experience of painstakingly setting type and mechanically printing a single sheet at a time sometimes takes their studies in new directions – and gets them to use their brain differently.

“The slow pace of letterpress printing allows for a more thoughtful creative process and lets me demonstrate an artistry I didn’t think I possessed,” says Kathryn Middleton (at left), a Master of Information student.

Adriana Ciocci (right), a PhD candidate at the Institute for the History and Philosophy of Science and Technology, is making verdigris ink using 17th-century directions. She says finding an ink recipe was difficult because print shops at the time guarded them closely – as food companies today would a “secret sauce.”

She likens the diverse students who use the room, under the expert guidance of college printer Kit MacNeil, to an artist studio – a place “that encourages experimentation while acknowledging the inevitability of making errors while learning.”
 —Scott Anderson



PHOTOGRAPH BY POLINA TEIF

MEET THE 'COBOT'

DATE: MARCH 29

TIME: 2:52 P.M.

CAMPUS: MISSISSAUGA

The Undergraduate Robotics Teaching Laboratory offers students at U of T Mississauga a hands-on, practical way to learn what a robot is and how it works. Here, Reinhard Grassmann, a PhD candidate in computer science (left) and Puspita Dewi, a first-year engineering student, test how well a robot can grip a 3D-printed tool.

The recently opened learning space features seven collaborative robot arms, known as "cobots." Designed for co-operative tasks in which humans and robots work side-by-side, these cobots have multiple moving joints and safety sensors so they can safely interact with humans. They can be remotely controlled in real-time and employ computer interfaces and cameras to sense their surroundings.

The cobots are used for experiential learning and project-based assessments in robotics courses, as well as research projects involving machine learning, object manipulation and autonomous task execution.

"I think it's, by far, the most up-to-date teaching lab I've seen anywhere in Canada," says Jessica Burgner-Kahrs, vice-chair of UTM's department of mathematical and computational science.

Open to the whole U of T community and a resource for the U of T Robotics Institute, the lab will be used primarily by upper-year computer science students. —Patricia Lonergan



PHOTOGRAPH BY CHLOE ELLINGSON

CREATION STORY

DATE: JANUARY 16
TIME: 1:18 P.M.
CAMPUS: SCARBOROUGH

A group of U of T Scarborough students and recent alumni are honouring their roots while learning about Indigenous culture and traditions as part of a collaborative mural project.

The mural, which was to be displayed this spring at The Meeting Place, depicts 20 different cultural symbols from around the world stencilled and sewn in a ring on the back of a turtle. Turtles play a central role in many Indigenous creation stories, while Algonquian- and Iroquoian-speaking peoples also refer to the continent of North America as Turtle Island. The inner circle of the mural features four different moccasins representing Indigenous nations across North America; a medicine wheel sits at the centre of the turtle's back.

Here, Mandy Nelson (BSc 2021 UTSC) applies finishing touches to the mural's inner ring.

The project started last year when 15 non-Indigenous students from U of T Scarborough visited the Toronto Biennial of Art exhibit. Later, they learned about Indigenous culture and land acknowledgements under the guidance of Juanita Muise, U of T Scarborough's Indigenous engagement co-ordinator.

Kevin Turingan, a fourth-year sociology student, chose to draw the distinctive eight-rayed golden sun found on the national flag of the Philippines. "Honouring where my family is from was a special experience, but it was also a powerful reminder that we all came from somewhere else and are living as settlers on Indigenous land." —Don Campbell



PHOTO BY DYLAN TOOMBS



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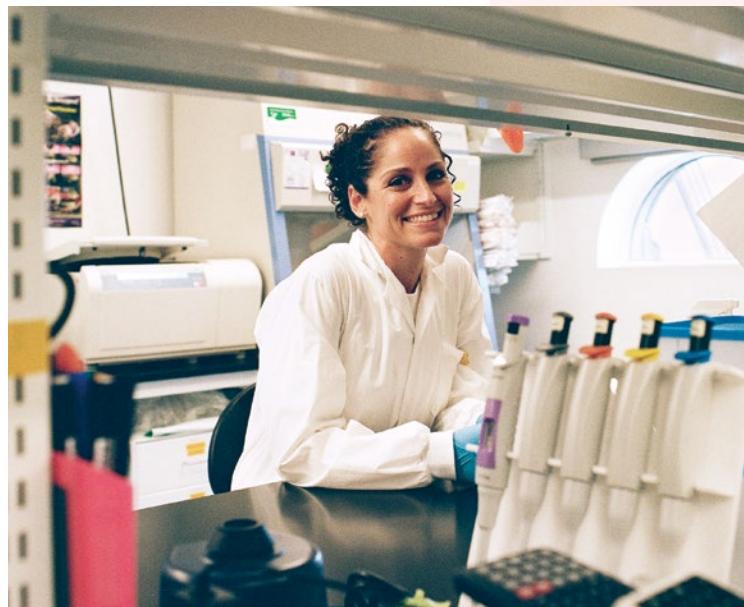
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ON THE COVER



Jaivet Ealom crossed more than one ocean to get to Canada, so photographer Luis Mora shot the fourth-year U of T student at Toronto's lakefront, symbolizing the kind of "rebirth" Ealom, a Rohingya from Myanmar, experienced during his journey – and in making Canada his home.

PHOTOGRAPHS BY (FAR LEFT) POLINA TEIF; (TOP) KRISTINA DITTMAR

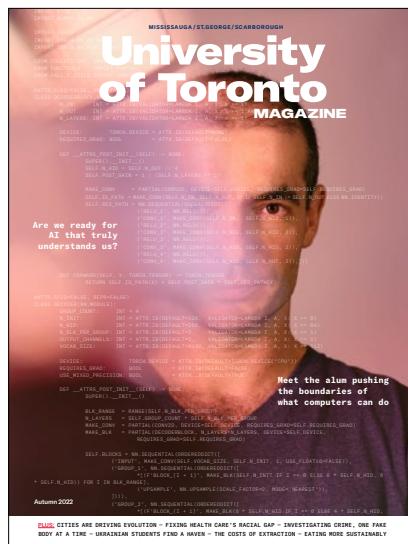
A stranger helped Rebecka buy a laptop.

Rebecka Ferraro (MI 2023) is putting herself through university. But it's hard to study user experience design and create apps without a special—and expensive—laptop. Thanks to Florence Partridge (BLSc 1939), who left U of T a bequest for a scholarship, Rebecka got the computer she needed.

"Her gift meant a lot," says Rebecka. "To leave funds to people she would never meet, so they can pursue opportunities she could never have imagined—that's really thoughtful and extremely meaningful."

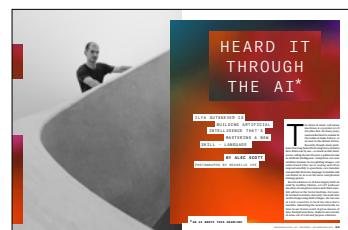
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I would like to have learned more about Ilya Sutskever’s thinking on the societal issues raised by [his company] OpenAI

ANNE THACKRAY, MA 1974, TORONTO



AI’s Advances

Our Autumn 2022 issue featured a profile of alum Ilya Sutskever, whose company OpenAI is building artificial intelligence that can write original prose and create images based on a text description.

Creating art, even with the help of computers, is part of what makes us human. Computer-generated illustrations for children’s books may reduce opportunities for children’s book illustrators. Do Ilya Sutskever and his colleagues, in a field dominated by men, sufficiently value the children’s book field, which is dominated by women?

As climate change reminds us daily, the “because it’s there” attitude toward scientific development – nowadays bolstered by the prospect of great wealth – is no longer enough. I would like to have learned more about Ilya Sutskever’s thinking on the societal issues raised by OpenAI.

So, how much does OpenAI charge for its headline-writing services? Asking for a friend. @MCGILLNEWSMAG

Leaving research-related tasks to artificial intelligence frees our time to strategize – which leads to best practices and maximizes our potential. I’m looking forward to many more exciting advances!

MARIA-LUISE SEBALD,
BA 1968 INNIS, BEd 1970 OISE,
MBA 1973, THORNHILL, ONTARIO

What are you doing to reduce your carbon footprint?



As part of its Climate Positive plan, the University of Toronto has committed to reducing its net carbon emissions to zero by 2050. Students tell us they are also taking action – by cutting back on single-use plastics, for example, and using other ways besides driving to get around. Surveys have found that climate change is a top-five issue for Canadian youth. Among the students’ “other” responses: choosing more environmentally friendly products, cooking at home more often and conserving electricity and water. Diljot Badessha, a fourth-year student at U of T Mississauga, says she recently started composting at home to reduce food waste. “Doing that small task doesn’t seem like a lot, but I’m proud of it and I think I’m helping.”

This highly unscientific poll of 100 U of T students was conducted across the three campuses in January 2023.

ILLUSTRATION BY DAVID SPARSHOTT



Scarborough’s Long History with Diversity
The Autumn 2022 issue included a feature about how U of T’s new Scarborough Academy of Medicine and Integrated Health will address the racial gap in Canadian health care.

The Scarborough General Hospital, a U of T teaching hospital, has been a global centre for diversity and health for 30 years. This three-decade experience has included groundbreaking published research on ethnicity and health, extensive community engagement and lectures – and networking and sharing across U of T, as well as nationally and globally. The generous gifts by the Orlando Corporation and the opening of the Scarborough Academy of Medicine and Integrated Health will add to this foundation and help reduce disparities further.

DR. VIVIAN RAMBIHAR, ADJUNCT ASSISTANT PROFESSOR OF MEDICINE, U OF T, TORONTO

Seeing Every Side
In his most recent column, U of T president Meric Gertler argued that universities can boost democracy by fostering respectful debate on contentious issues.

As of late, universities have been known to be echo chambers. We must guard against discrimination, but healthy debate of sensitive topics is required for democracy to flourish.

TOM LAVRISA, BAsC 1977
GLOUCESTER, ONTARIO

“Structured academic controversy” is a teaching strategy designed by David and Roger Johnson in which students take turns debating both sides of an issue. We did this with Grade 4 students in a project with the Ministry of Education in Tasmania about 25 years ago. The students, who had been taught how to suspend judgment, disagree agreeably, accept and extend the ideas of others, and consider all factors, debated whether students with AIDS should be able to come to their school. In the end, most students were in favour. Debating, like playing the violin or volleyball, requires a certain set of skills. It helps if those participating in a debate argue both sides of an issue – not just to understand each perspective, but to “feel” them as well.

BARRIE BENNETT, PROFESSOR EMERITUS, OISE, TORONTO

Teaching Music to All
The Autumn 2022 issue included a Q&A with Juno Award-winning music teacher Darren Hamilton (BEd 2008 OISE), who advocates for greater diversity in music education.

As a U of T Music grad and former Peel District School Board music teacher and principal, I appreciated Darren Hamilton’s fresh perspectives on how music teaching needs to adjust to the realities of our ever-changing society.

WAYNE JONES, BMus 1972,
OAKVILLE, ONTARIO

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SINCE WE LAST SPOKE



U OF T SCARBOROUGH WISDOM TETTEY REAPPOINTED VP AND PRINCIPAL
Professor Wisdom Tettey will serve a second five-year term as principal of U of T Scarborough and vice-president of U of T. A scholar of the African diaspora, politics and media, he begins his new term July 1.

Under Tettey, U of T Scarborough has recruited a more diverse group of faculty and students and mobilized universities across Canada to address anti-Black racism and promote Black inclusion.

The campus has also undertaken an extensive curriculum

review, expanded programs for student mental health and well-being, and started planning or constructing several new buildings – including Indigenous House, a medical academy and a student residence.

Tettey says he is excited to expand on these achievements. “Everything we’ve accomplished together is a testament to the hard work and commitment of our entire community, which has really embraced a collective vision of inclusive excellence,” he says. “I’m truly looking forward to what the next five years will bring.”

U OF T MISSISSAUGA BOOK HISTORY RESEARCH EARNS MAJOR GRANT

A team of researchers are looking beyond the written texts of centuries-old books to unlock a treasure trove of knowledge. This interdisciplinary project, titled Hidden Stories, is co-ordinated by U of T Mississauga’s Old Books New Science Lab, and is supported by a \$2.7-million grant from the Mellon Foundation. Examining books in the Thomas Fisher Rare Book Library and from around the world, researchers will explore the systems, peoples and cultures

that make a book, analyzing every part of a book’s history, including often overlooked aspects, such as metals in ink or fungi on pages.

The research team aims to emphasize stories that book history has tended to suppress, including those that were destroyed or dismissed by colonization. “Recovering knowledge people have ignored, stolen or excluded, and then sharing it – openly and truthfully – is necessary for our world to thrive,” says Alexandra Gillespie, the lab’s director.

Among the project’s collaborators are members of the Mississaugas of the Credit First Nation and the Munsee Delaware Nation.

ST. GEORGE U OF T RANKED SECOND GLOBALLY IN SUSTAINABILITY

The University of Toronto has been ranked second in the world and first in Canada in the inaugural QS World University Rankings: Sustainability. Out of 700 post-secondary institutions worldwide, only the University of California, Berkeley, placed higher than U of T.

In compiling the ranking, QS evaluates how post-secondary institutions are taking action on environmental and social challenges; U of T placed third in the environmental category and seventh in social.

“As an institution, U of T has made sustainability a top priority,” says U of T President Meric Gertler.

“We are ensuring that sustainability and climate action permeate our research, teaching and learning and our partnerships and operations, while also setting an example in our local and global communities.”

In a post at its website, QS noted that in evaluating universities, it looks at everything “from the impact that alumni are making in science and technology to solve climate issues to ... research being done across the UN’s 17 Sustainable Development Goals.”



THE VALUE OF 'BEING THERE'

As the world emerges from the COVID-19 pandemic, and as travel restrictions ease, members of the U of T community have been able to resume in-person international activities. Student demand to study abroad has rapidly returned to pre-pandemic levels. And while Zoom and Teams continue to facilitate global research and conference activity, our scholars are travelling once again, when face-to-face collaboration is needed.

Within the past several months I have visited India and Africa, experiences that have resoundingly reaffirmed U of T's strategic priority of deepening its global engagement – and the value of “being there.”

This past January we opened the University of Toronto Centre in India, in partnership with Tata Trusts. The Mumbai-based centre will enable us to expand and deepen our activities in this crucial region, creating new opportunities for scholars and innovators from our two countries to work together to address economic, social and environmental

challenges in major urban areas. On the same trip, I met with the leadership of the Indian Institute of Technology Bombay and the Tata Institute for Social Sciences, to renew our collaborative research and teaching partnerships. The productive energy of those meetings attests to the long-term relationships we have built with both institutions. While virtual meetings sustained these relationships during the pandemic, meeting in person once again has breathed new life into these important partnerships.

Last September, I represented the university at the 10th anniversary celebration of the Mastercard Foundation's African Scholars Program, in Kigali. I also met with the leaders of eight African universities with whom we are working on a new program supported by Mastercard Foundation, to contribute to the continent's health sector development. Once again, I was struck by the value of face-to-face meetings in deepening the trust that underpins this network. Our investment in those relationships over the past decade positions us well for the success of our future collaboration. I also visited Nairobi, to meet with our alumni in the region as well as prospective students and their parents. It was incredibly exciting to see first-hand the impact of our sustained effort to recruit fantastic students to come to U of T.

These two snapshots illustrate the results of the university's international strategy. Established in 2017, it has recently been updated for the next five years – a revision led by Professor Joseph Wong, vice-president, international. The original plan offered a strategic vision encompassing student recruitment and mobility, alumni engagement, and institutional and corporate partnerships. The renewed plan affirms and seeks to build on this foundation, scaling up philanthropic support for our international priorities, developing new partnerships in low- and middle-income countries, and responding to major shifts in the geopolitical landscape.

With one-third of our students and one-half of our faculty now coming from outside Canada, such an intentional and comprehensive strategy is essential to our success.

MERIC GERTLER

PHOTOGRAPH BY LISA SAKULENSKY



He never gave up on himself. Or anyone else.

Meet the racial justice champion and inspiration for the Hollywood film, *The Hurricane*.

At age 15, Lesra Martin (BA 1988) was poor, illiterate and navigating a tough New York neighbourhood. Until a group of Canadians gave him a way out. Today he's a U of T alum and acclaimed lawyer who helped secure the freedom of Rubin “The Hurricane” Carter. Join Lesra for a conversation about overcoming obstacles and paying it forward.

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All U of T alumni are members of the U of T Alumni Association and invited to join us for the Annual General Meeting, which immediately follows Lesra Martin's online interview.



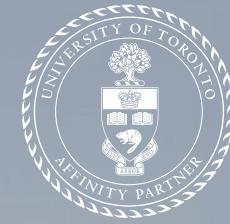
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DEFY
GRAVITY

BY
MARIAM MATTI

PHOTOGRAPHS BY
LUIS MORA

Journey to Freedom

THE INSPIRING AND
COURAGEOUS STORY OF A
ROHINGYA STUDENT WHO FLED
A BRUTAL REGIME AND
FOUND REFUGE IN CANADA



TURNING AN OLD factory space into a community centre for Rohingya refugees was not easy, but it was a deeply personal mission for Jaivet Ealom. There were many late nights cleaning, painting and sourcing furniture to create a warm and welcoming space that would eventually become the Rohingya Centre of Canada.

The organization now helps newcomers connect with services and, hopefully, find a community. It is a place Ealom wishes existed when he arrived in Toronto on a cold, snowy night more than five years ago. “When I came here, I had nowhere to go,” he says. “Knowing that our brothers and sisters who are new won’t have to start from scratch makes it all worth it for me.”

Growing up in Myanmar, as a member of the Rohingya minority, Ealom faced systemic discrimination and was denied citizenship rights. Like hundreds of thousands of Rohingyas, he was forced to flee.

His attempt to become a refugee in another country turned into an agonizing tale of survival. He almost drowned, was detained multiple times – once for more than three years – and travelled through six countries before finally finding refuge in Canada in 2017.

Now 29, Ealom is planning to graduate in the fall with a double major in economics and political science from U of T. He has written a book, *Escape from Manus Prison: One Man’s Daring Quest for Freedom*, which details his triumphant and harrowing journey.

Stepping inside his first class at U of T just months after his arrival in Canada, Ealom says he felt anxious and found it difficult to focus. He is naturally a quiet and reserved person, and the scars of his journey were still fresh. “The environment was so new to me,” he says. “I was coming from [a detention centre] in a jungle. I wasn’t accustomed to the lights, the technology, the people.”

Although the change was overwhelming, he says his time at U of T has helped him make sense of the events that have unfolded in his life.

EALOM GREW UP in a town in the northwest of Myanmar. He could not travel outside a five-kilometre-wide radius without encountering military checkpoints and harassment – a state of existence he describes as a “roofless prison.” He witnessed horrific acts carried out by security forces and grew up without necessities others might take for granted. Living with two hours of electricity every second day was the norm and the government blocked access to higher education for Rohingya students. He came to understand that if he stayed in Myanmar, he would be jailed – or killed. “If you want to live, then you need to leave,” he says. “It was a decision I was forced to take.”

Ealom threw himself into a new world – leaving his family and everything he knew to travel to Jakarta, Indonesia, where the UN refugee agency had an office. He thought claiming asylum would be possible, but the process turned out to be chaotic. Facing years in limbo without the documentation he needed to work or study, he decided to leave the sprawling capital and take his chances on a boat to Darwin, Australia.

On the third day of the journey, water started pouring in through the vessel’s cracked hull. A lone fisherman spotted the sinking boat and called for help. When Ealom finally reached shore, he welcomed the feeling of sand between his toes. “I couldn’t quite believe I’d survived,” he writes in his book. “It was 15 June 2013, the day of my rebirth, and I quietly celebrated it – more than my actual birthday – every year since.”

Ealom found his way back to Jakarta, where he decided to try to reach Australia again. “This time, I bought a truck inner tube and a pump – so I would have a make-shift flotation device,” he says.

During the voyage, Australia’s then-prime minister, Kevin Rudd, announced that asylum seekers arriving by boat without a visa would not be resettled in the country. Without any knowledge of this change, Ealom felt a sense of relief when Australian officials intercepted the boat. “That lasted about 30 minutes,” he says. “I was given a paper at the detention centre that said ‘unlawful citizen’ and I thought, ‘I didn’t do anything wrong, there must be some miscommunication.’ But that wasn’t the case.”

He spent 148 days in a detention centre on Christmas Island before being transferred to Manus Island, in Papua New Guinea, where he would spend the next three and a half years of his life in prison.

He had grown used to the human rights abuses in Myanmar, but the conditions on Manus were just as bad. His cell was a “dark, hot, depressing steel box” and the detainees were subjected to the daily indignity of having to line up for the bathroom and for every meal. In the rotten food, he often found maggots and bits of gravel.

Ealom and many of his friends inside the prison got to their breaking point. “I was withdrawn from everything. I wasn’t really

“IF YOU WANT TO LIVE, THEN YOU NEED TO LEAVE. IT WAS A DECISION I WAS FORCED TO TAKE”

interested in living life,” he says. “Everything that happened inside the prison was structured in a way to dehumanize you.”

One day, a friendly caseworker gave him access to an e-book called *Man’s Search for Meaning*, by Viktor Frankl. Written in 1946, the memoir chronicles Frankl’s experience as a prisoner in Nazi concentration camps.

It took Ealom months to print out the entire book, which he sewed together by hand – a frustrating and painstaking process. But it was worth it. “That was when I got on my feet again,” he says. “The biggest take-away from that book was to separate the physical pain from your inner self and how to keep your inner self intact from the situation that’s happening around you.”



Jaivet Ealom: “I feel this moral obligation to help”

Ealom a sandwich. Ealom never imagined he’d end up in Toronto where he didn’t know anyone, but for the first time in years he felt like he could build a life.

With \$45 to his name and no winter clothing, Ealom’s first stop after the airport was Seaton House, a shelter downtown. The chatter from the radios that staff members carried was triggering for Ealom – “I couldn’t sleep,” he says.

He made some connections through the Rohingya community in the city, and moved in with a family in Waterloo, Ontario. While he was working on his refugee claim, he travelled regularly by bus from Waterloo to Scarborough to visit his lawyer’s office. One day, Ealom found himself with extra time downtown waiting for the bus back to Waterloo.

He stumbled upon a tour of U of T’s St. George campus. “I was around Victoria College and thought, ‘Wow, these buildings are so nice.’ I saw a group of students and parents, so I thought I’d just tailgate them,” he says. He applied to U of T later that month. He was accepted, and was able to pay his tuition and living expenses through a part-time job and the help of the Ontario Student Assistance Program.

For the first semester, he sat at the back of the class and didn’t speak to anyone. He felt disconnected from his fellow students because of the age difference and vastly different life experiences.

Questioning authority in Myanmar and in prison could lead to punishment so the idea of challenging his professors was foreign to him. Ealom did not learn critical thinking in school in Myanmar, so he developed and honed that skill at

U of T. In fourth year, he took an independent study course with Matthew Walton, an assistant professor in the department of political science. It was an opportunity for Ealom to delve into his interest in Myanmar politics and economics.

Together, he and Walton developed a study plan with questions Ealom was interested in investigating. He says the process felt collaborative, engaging and rewarding. “Independent study was helpful for me and might be for someone else who comes from an unconventional background,” he says. The course enabled Ealom to apply his unique life experience to his studies while at the same time drawing on academic theory and research to understand his life experience.

He is now considering law school after graduation. He hopes eventually to return to Myanmar and make meaningful systemic changes – ones that would grant citizenship rights to the Rohingyas. “I feel this moral obligation to help,” he says, adding that he doesn’t fear returning to a place he once fled, as long as his actions don’t put his parents in danger.

Time has healed some of the trauma Ealom experienced. It’s an ongoing process, helped by knowing he has a safety net in Canada. “For most of my life, it’s always been people telling me where I can and can’t go – you can’t stay in Myanmar and you don’t belong in Australia,” he says. “Now, I know I can go wherever I want. I can come back to Canada, and I will be welcomed here. I can be myself. “That’s something new to me.” ■



**MOST OF
TODAY'S STUDENTS
PLAY VIDEO GAMES.**

WHAT CAN WE LEARN FROM STUDYING THEM?

BY JOHN LORINC

**ILLUSTRATIONS BY
GEORGE WYLESOL**

At the beginning of each course, Larry Switzky asks students in his undergraduate gaming studies class to share a brief gaming experience that “moved” them.

“There are no two accounts that are entirely alike,” says the associate professor of English and drama at U of T Mississauga. “Some people talk about playing games since they were kids, some people talk about picking up games in high school. Gaming got a lot of people through the pandemic because it was a form of being social or having purpose in a meaningful activity when a lot of students felt devoid of purpose, or they didn’t have any connection to their peers because they had to be locked away in their homes.”

I turn the mini-assignment around on him: what was a gaming experience that moved him? After thinking for a moment, he mentions an interactive text-based game he played when he was a kid, called *Planetfall*. It featured a robot companion named Floyd who was childlike, funny and often outrageous. But the game’s logic drove toward a difficult eventuality: “At a certain point, Floyd volunteers to die, and I remember being devastated by this as a kid,” he says. “I had to step away for a while and think about whether I wanted to continue.”

Reflecting on those conflicted childhood feelings, Switzky observes that he became deeply engaged with what he admits was a technologically rudimentary game. The experience struck a nerve in a way that other media – such as books and TV – didn’t.



The collection, with 14,000 games and 5,000 game magazine issues, is an archivist's treasure trove, and offers UTM an invaluable opportunity to both teach and conduct research. "We've got this unbelievable archive," says O'Flynn. "That's a tremendous resource for this program. We want to take advantage of this and have students going in there as often as they can."

Chris Young, the head of UTM Library's collections and digital scholarship, pokes his head into a quiet room off the main study area. The small space, dubbed the Archives and Special Collections Reading Room, looks like almost any other study nook on a modern campus – carrels with terminals line one wall. But this space is not meant for reading, per se.

The terminals are of varying vintages and include classics from Atari and Nintendo. Nearby shelves are piled high with brightly coloured joysticks, consoles, game cartridges and gaming magazines. "A lot of students aren't familiar with these older ones," Young says. "But they can come in and look at these games and play them."

The gear in this reading room, however, is only the tip of a digital iceberg. Young, a well-known game scholar who researched Toronto's game developer scene while working on his PhD, leads me to a lower level and an inauspicious door to a room with a window obscured by blinds – a place he refers to as "a national treasure." The space is piled high with bankers' boxes overflowing with consoles and cartridges. Along one wall sits a line of arcade cabinets that look like they've time-travelled here from the 1980s.

He glances around the room, which seems to hold the promise of untold riches – if you're a gaming aficionado, that is. "I think of it as the final scene in *Raiders of the Lost Ark*. The trouble is trying to find the ark."

The collection has begun to function as a kind of library for students enrolled in UTM's game studies courses, but, as Young points out, the bulk of the material hasn't yet been catalogued, and some of the older hardware needs to be fixed or cleaned.

Switzky has two graduate students who are currently working on a longer-term archival project to "bridge the gap" between the collection and the public. The question, says Karl Manis, a PhD candidate in the department of English, "is how to get students engaged with a collection of mostly analog games that haven't been organized by genre or developer, and get them thinking about the unique value of it as an archive and also the historical value of it as almost a time capsule."

Manis and his fellow research assistant, Mitchell Gunn (a PhD candidate studying video games and

literary theory), often find themselves working with students for whom the older games, with their controllers and rudimentary graphics, are both novel and thought-provoking – and sometimes less dated than one might expect. Manis says the goal is to help students think about the "unique materiality" of the older games, like their specialized consoles and cartridges – features that are far less common in today's world of multi-player online games with surround sound and powerful graphics. "This was an opportunity to dig into an archive and figure out what the physical aspects of play would actually feel like."

There's also the question of how games relate to, or adapt, other forms of storytelling, such as film and literature. Manis points out that there's a genre of fiction written in the early 2000s that grapples with the threat posed by digital games and digital information, with their ability to create worlds and non-linear narratives, and their impact on reading or literature. He cites the example of Mark Danielewski's novel *House of Leaves*, which takes place in a labyrinth and features not only unconventional prose but quirky layouts that evoke the game-like experience. "There was this sense that video games and digital media more generally might offer this kind of immersive experience, but there was also an anxiety about what that meant for how we continue to tell stories and communicate with one another." As with comics and graphic novels, games were seen as crass, commercial and lacking in literary value.

Game studies courses at UTM also delve into the many ways in which games hold a mirror to what's going on elsewhere in contemporary culture, and in particular the way games have become such a significant pastime for Millennials and Gen Z. "I'm fascinated by the resurgence of board games and role-playing games," says Switzky, noting that the trope of the solitary gamer sitting alone in a basement or a bedroom bears little resemblance to the social nature of gaming.

He further invites his students to consider the role of computer games in the age-old debate about what, exactly, constitutes art and literature. "For many, games are our students' first encounter with art," he observes. "They also become interested in questions of plot, character, narrative, the aesthetic qualities of an artwork through video games. It's a gateway to other forms of artistic experience, but these games are worthy of study in their own right."

Switzky contrasts Roger Ebert's famous take-down – that games, with their focus on winning, preclude genuine artistic experience – with the thesis of a 2005 book by Steven Johnson entitled *Everything Bad is Good for You*, which argues that the prevalence of increasingly sophisticated electronic forms of entertainment, from games to TV series, are actually making society *more* intelligent. "We're teaching a debate," he says. "I find both sides compelling."

GAME CHANGERS

Five rare and intriguing items from U of T Mississauga's Syd Bolton collection



Atari's Home Pong Console (1976)
After the success of the Pong arcade machine, Atari created a home console that connected to a TV. Such single-game consoles were common before cartridge systems, which could play multiple games.



Extra-Terrestrials (1983)
There exist only 100 copies of this Canadian-made Atari 2600 game, which were sold mostly door to door. The library has two of them, as well as the prototype copy.



Wrecking Crew (1985)
In this lesser-known Mario game, Mario or Luigi have to destroy all doors, walls and ladders on each level while avoiding monsters. It includes 100 levels and a design mode for players to create their own stages.



EarthBound (1995)
Released on the Super Nintendo Entertainment System, this role-playing game included a 135-page player's guide. The game initially sold poorly but has since developed a cult following.



ClayFighter: Sculptor's Cut (1998)
An update to ClayFighter 63½, this edition was released only as a Blockbuster Video rental. It added four characters cut from the original and changed some gameplay.

O'Flynn has also sought to create opportunities for students to gather and just talk about games, world-making, and research opportunities. Before the pandemic, she ran an informal group for about 10 students who met to play and then discuss video games. "We had so much fun," she recalls. "Half-way through, the students asked if their partners and roommates could come."

What she finds most compelling, however, is the fact that gaming seems especially well suited to the mental landscape that the 21st century, with its daunting and open-ended complexity and demands. "[In video games], we're not bound by the norms of this world. We're not bound by the norms of these bodies. We can do all kinds of things. Video games offer this kind of space of inquiry that is really interdisciplinary in its possibilities. The implications of video game design and playing video games and the insights that we can gain from them are actually important on a much wider scale." ■



● BY
MEGAN
EASTON



FOOD BANK USE IN
TORONTO IS SOARING.
CAN A U OF T
SCARBOROUGH LAB HELP?

HUNGER PAINS



● PHOTOGRAPHS
BY
CHRISTOPHER
KATSAROV LUNA





Top: Chris, a volunteer with the Scarborough Food Security Initiative, delivers bread to the Cliffside food bank. Bottom: preparing meals for the Healthy Meal Program

THE FIRST TIME

Suman Roy (above) runs six food banks in Scarborough but sees them as a Band-Aid solution: "I'll know I've been successful the day I can shut them down."

Suman Roy used a food bank, he was curious to see what was in the bag he had been handed. "I sat down in a little courtyard nearby and started going through it," says Roy, who immigrated to Canada in 2002 with \$42 in his pocket. "One of the items was a box of dry bread pieces that I thought I'd break my teeth on. Even though I was very hungry, I threw it out. I know now that it was a stuffing mix. But then, coming from India, I had no idea." Today, Roy is the founder and CEO of Feed Scarborough, an organization that operates six food banks designed to offer clients choice and autonomy – things he didn't experience as a food bank client – alongside various programs aimed at dismantling the systemic barriers to food security. "Before the pandemic, I never imagined I'd be running food banks," he says, pointing to his career as an executive chef, food educator and fierce advocate for universal access

to healthy, culturally relevant food. "I've always said that food banks are a Band-Aid solution that shouldn't exist, and I still do. But in 2020 some friends and I watched food banks closing and the demand going up, and we had to do something." Roy found a group of like-minded people in the researchers, students and community leaders at U of T Scarborough's Feeding City Lab, a virtual network that also launched in 2020 to study, among other things, the pandemic's impact on local and global food insecurity. Since then, the research has expanded to broader questions around food systems and "food justice" – which focuses on eliminating disparities in food production, distribution and access. This is one of the lab's ultimate goals: transforming the current, unjust food system into a sustainable, equitable one where food insecurity no longer exists. "Social justice issues are strongly embedded in our research," says Jo Sharma, the lab's lead researcher and an associate professor in the department of historical and cultural studies and the Culinary Research Centre. She and her colleagues, including Roy, work from the shared conviction that food should be a human right, not a commodity, and that poverty reduction must be central to any strategy to alleviate food insecurity.

The pandemic exposed and widened the cracks in already stretched food systems worldwide. U of T's PROOF, a food policy research program, reports that, in 2021, some 5.8 million Canadians lived in households that were food insecure (defined as having inadequate access to food for economic reasons), with the highest rates in Indigenous and racialized communities. A report by Food Banks Canada shows that, between 2019 and 2022, Canada saw the largest increase in food bank use since the 2008 recession. Today's high inflation has only exacerbated the situation; experts say food insecurity will increase in 2023 and beyond.

"Just as Suman was able to mobilize people to set up food banks during the pandemic, our lab brought people together with an urgent mission," says Sharma. "Now, in what we might call the late pandemic, we're working with community partners like Feed Scarborough to help build back better. We collaborate directly with people on the food frontlines, and every project comes out of conversations about their challenges and priorities."

BUILDING BETTER FOOD BANKS

For those working toward food justice, food banks are seen as a vital stopgap that should eventually become unnecessary. Until that happens, the Feeding City Lab is helping its collaborators improve food banks by incorporating food justice values and programming into their operations. At the six food banks Suman Roy runs, people never leave with food they don't want or need. Instead, they have an experience much like going to a grocery store – choosing items in well-labelled aisles and checking out with a cashier (using prepaid cards). "Most clients come to food banks with shame and a feeling of stigma," says Roy. "We're trying to give them a sense of dignity."

Researchers at the Feeding City Lab collaborated with Roy's team to create Feed Scarborough's website, which allows clients to order online. They also provided guidance and expertise in helping Roy's team introduce a free service for turning startup ideas (in any industry, not just food services) into viable businesses. This is part of Feed Scarborough's array of poverty-reduction initiatives, which range from mental health and housing support to culinary training. "U of T Scarborough researchers work alongside us to write grant proposals for these programs and develop the policy objectives driving our advocacy around long-term solutions to food insecurity," says Roy. "I'll know I've been successful the day I can shut down the food banks."

REACHING OUT TO RESTAURANTS Restaurants and small food enterprises are essential to the food security and livelihood of marginalized communities. More than 25 per cent of the people who work in food services are immigrants, and the whole workforce tends to be young. During the pandemic, when the industry needed government support, the Feeding City Lab helped increase the effectiveness of municipal assistance programs.

The City of Toronto asked the lab for assistance in understanding why some small restaurants weren't applying for municipal grants. The researchers



decided to concentrate on ethno-culturally diverse restaurants, in line with the lab's emphasis on equity issues. "We matched students working in the lab with restaurants based on their familiarity with the owners' language and cultural norms, which instantly built trust and led to good interviews," says Noah Allison, a postdoctoral fellow at U of T Scarborough.

Top: A volunteer welcomes a client at the Scarborough Food Bank. Bottom: Inside the Scarborough Food Security Initiative's warehouse

“In the end, we increased the restaurateurs’ awareness of government funding sources, produced a comprehensive report for the city and gathered important research data.”

● **TRANSFORMING FARMERS’ MARKETS**

In many Toronto neighbourhoods, it’s not easy to get locally grown, fresh, affordable food – especially produce that is used in diverse cuisines. “An organi-

By offering options for online ordering, pick-up and delivery, the Scarborough Farmers’ Market improved local residents’ access to sustainably produced food that suits their tastes. They could buy bitter melon, for example, a fruit used in Asian cooking, and the leafy green vegetable known as “callaloo” in the Caribbean. “It’s about food sovereignty – the ability of people to choose what they eat, who produces it and how they get it,” says Allison. The research team also conducted interviews with vendors and customers, delivering insight to the market organizers on what was working, what wasn’t and how to improve.

● **GROWING FOOD LOCALLY**

Shortly after the Centre for Immigrant and Community Services opened its first food bank during the pandemic, it enlisted the Feeding City Lab to survey clients on their needs. One key finding was that people wanted to see more of the vegetables commonly used in their cultural dishes. To supply these, the lab helped the centre secure grants to double the size of its community garden and build a greenhouse. Brian Joyce, director of community services at the centre, says the lab provided important data on the value of these projects, which helped secure the grants. “People can grow food at our facilities, and soon we’ll give them the supplies for a container garden or garden bed at home,” he says. When inflation led to a doubling of users at the food bank over the past year, the growing spaces eased the supply crunch.

“We rely on the expertise of U of T Scarborough researchers in so many areas,” says Joyce. “The university has soil experts, for example, who can tell us if our gardening ideas are viable. And we use the Feeding City network to trade ideas with organizations that are operating similar food programs here and across the world.”

● **SEEDS FOR CHANGE ON CAMPUS**

Food insecurity among Canadian post-secondary students is alarmingly high. A 2021 survey found 57 per cent of respondents at 13 institutions faced some level of food insecurity, so

it’s no surprise that students are deeply invested in the issue. “They’re doing all kinds of work to create more socially just and ecologically rational food systems,” says Michael Classens, a collaborator at Feeding City and assistant professor at U of T’s School of the Environment. “We’re learning from them and discovering ways to support their efforts, such as linking them to similar student initiatives or sharing

our knowledge of food production and procurement.” (U of T’s student unions operate food banks at each campus, and students experiencing food insecurity are encouraged to contact their registrar’s office to find out how the university can help.)

The number of growing spaces on North American campuses is rising, producing both food and learning opportunities. The crops often go to campus food banks or food operations, and students can gain volunteer or research experience working in the gardens. “We’re also seeing more institutions integrate food systems education into course curricula, allowing students to explore concepts such as food justice,” says Classens, who is developing a new course called “The Edible Campus.” Students in one of his existing courses recently worked on a project with The Stop food centre to incorporate food production in a pre- and post-natal nutrition program. “Seeing what students are doing on and off campus to contribute to better food systems gives me a lot of hope.”

● **TALKING ABOUT FOOD INSECURITY**

“There’s a critical mass of people who are passionately involved in, and informed about, issues of food insecurity, but they’re often separated by geography, resources and language,” says Sharma. “Our lab is a central point for sharing knowledge, especially with individuals and groups who don’t have the capacity to do it themselves.” Feeding City hosts regular roundtable discussions and webinars and recently constructed an online library containing all the lab’s research – along with practical knowledge from food organizations. “We’re making it easy for our community partners, especially those in the Global South, to compare and apply effective solutions,” she says.

A podcast series, available this spring, will feature people working on the food frontlines. “Hearing from them in their own words is so important,” says Jaclyn Rohel, a postdoctoral fellow at U of T’s Jackman Humanities Institute and head of the Feeding City podcast team. “It’s a powerful way to create connections and share knowledge.” The first few episodes will showcase conversations with local food advocates, but later episodes will have interviews with people across the Feeding City global network. To help researchers and community organizations

develop their own podcasts, Rohel and her team are building a podcasting toolkit that will be offered in multiple languages.

~~~~~  
SUMAN ROY IS KNOWN for his energy and commitment to the vision of a hunger-free Scarborough. But these days he’s feeling a bit daunted. His food banks are serving 7,000 people every week, more than double the number at the beginning of 2022. “I’m pessimistic about 2023, but I’m still optimistic about long-term change,” he says, pointing to several new collaborations with the Feeding City Lab underway. Roy is particularly excited about a grant application for a program that will offer training and subsidized retail space to first-time food entrepreneurs from immigrant and racialized communities.

Sharma puts it this way: “We have to work in the short term while always keeping the long-term goals in mind. It can be very depressing. We can feel defeated and do nothing. Or we can do small things that make a difference, knowing that there are many other people doing the same, and it all adds up.” ■

Clockwise from top right: Austin Boyne, a facilitator at the Centre for Immigrant and Community Services’ urban farm; the farm’s greenhouse; getting ready for spring plantings



# Celebrating our Arbor Award Recipients



The University of Toronto congratulates and thanks our **2022 Arbor Award recipients**. The award is our highest honour for exceptional volunteers who have made sustained and outstanding contributions to the University.

The Arbor Award recalls the University's motto, *Velut Arbor Aevo*: “**May it grow as a tree through the ages.**” Like the roots and trunk of a mighty oak, our volunteers anchor and support U of T and are a pillar of the Defy Gravity campaign.

On the opposite page, we are pleased to present our honourees. To read about each recipient's generous contributions and to find out more about the Arbor Award, please visit:

[uoft.me/arborawards](https://uoft.me/arborawards)

“Through your dedication, wisdom and enthusiasm, you have touched the lives of countless members of our U of T community.”

—Professor Meric Gertler, President, University of Toronto

|                        |                         |                         |                       |
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| Raja Abdo              | Vidia Dhanraj           | Lynn Palazzo Lancefield | Gregory Sam           |
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| Christopher J. Andrews | Chioma Ekpo             | Coco C. J. Lee          | Ivor Simmons          |
| Sharda Angl            | Ian L. Forsyth          | Andre C. Lewis          | Radheyam Simonpillai  |
| Garry Aslanyan         | Sharon C. Geraghty      | Albert Lin              | Jeanette M. Southwood |
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| Heather A. Chalmers    | Henry P. Hill           | Jay Nirula              | Régis Vaillancourt    |
| Robert N. Cherniak     | Andrew Hoffman          | Daniel Norman           | Gina Valle            |
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| Ryan Dermody           | Alexander Kung          | Marcia D. Russell       | Samra Zafar           |

# Back where it all began.

Our student days at U of T were full of new experiences and now's the time to come back for more. Join us at Alumni Reunion 2023! Five days of tri-campus fun, including college and faculty events, street festivities, fascinating lectures and hands-on discovery for the kids. Bring your family and catch up with friends at the biggest alumni gathering of the year.

## Uof T Alumni Reunion 2023 New dates! May 31–June 4

**Register:**  
alumnireunion.utoronto.ca  
*In-person and online events available.*

**@uoftalumni #uoftreunion**

### AN OPPORTUNITY

## New Paths to Success

Youth from under-represented communities get a taste of post-secondary life and pick up useful skills through a recently expanded U of T program



ILLUSTRATION BY OJIMA ABALAKA

**T**une into a recent Hart House Stories podcast and you'll hear students, educators and a social worker talk about the climate crisis. What should governments, corporations and individuals do? With all the alarming news, how do we manage our anxiety? The host is energetic and passionate. The group's opinions are heartfelt. The person who wrote, produced, interviewed and made the music for the episode – Elijah Miller – is justifiably proud. And Miller is not a U of T professor, administrator or undergrad, but a Grade 12 student.

"I came up with questions, edited – everything," says Miller, who got the opportunity through a program called Support, Engage, Experience U of T – or "SEE U of T" – which gives youth from historically under-represented communities a sense of what university is like. "It was super-awesome."

Developed with the Toronto District School Board, and run by Woodsworth College since 2019, the program – which has recently expanded to cover all three campuses – invites



## “WE WANT UNDER-REPRESENTED STUDENTS TO SEE THE UNIVERSITY AS A PLACE WHERE THEY BELONG”

local Grade 11 and 12 students to complete a first-year U of T course at no charge. Participants also do a co-op placement, receive mentoring from a senior-year undergrad and explore the university’s facilities and services. In the process, they earn two high school co-op credits plus a half-credit toward a university degree.

“This is about removing barriers that are created as a result of structural and historical inequities and creating pathways to post-secondary education,” says Ann Lopez, U of T’s provostial advisor on access programs. “Not only does U of T want to attract students who are traditionally under-represented, but we want them to see the university as a place where they belong.” (Lopez collaborated on the creation of the SEE U of T concept with Woodsworth’s then-assistant principal and registrar, Cheryl Shook, and principals and staff at the

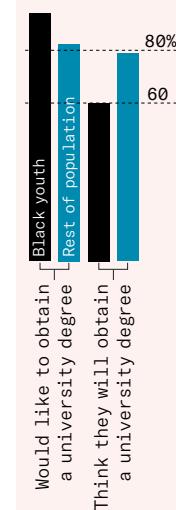
participating high schools, Runnymede Collegiate Institute and Downsview Secondary School.)

U of T has recently intensified efforts to create a more welcoming environment for Black students. In 2020, the university established the U of T Institutional Anti-Black Racism Task Force, whose report the following year made 56 recommendations to promote Black inclusion and excellence across the tri-campus community. The university has accepted all of the recommendations and implemented many of them; it continues to work on others.

Participants in “SEE U of T” can choose from up to 16 courses. For help with assignments, they can turn not only to their course instructor and teaching assistant, but also to an academic advisor dedicated to their cohort and a

### MIND THE GAP

Among Black youth, the disparity between those who aspire to attend university and those who think they *will* is far higher than in the rest of the population.



learning strategist at Woodsworth’s Academic Writing Centre. Co-op placement options are available at up to 24 academic and administrative sites. U of T covers tuition fees and books, and the school board typically provides student supports such as bus tickets and meals.

The program “plays an important role in levelling the playing field for learning opportunities” and “contributes to a more inclusive society,” says Natasha Jesenak, director of access programs and registrarial services at Woodsworth. To date, more than 50 high schoolers across three cohorts have taken part. Fewer participated during the pandemic when activities moved mostly online, but the program will be fully in-person this fall.

U of T Mississauga piloted its own version of “SEE U of T” this past fall in partnership with the Peel District School Board and its two participating schools, Fletcher’s Meadow Secondary School and Meadowvale Secondary School. “SEE UTM” offers a course about critical thinking in science and technology. The students also pick up some valuable life skills.

“You learn how to manage your workload, and how to communicate if you’re falling behind,” says Grade 12 participant Abby-Gayle Isadora Allen. “I learned so much that I can apply to my future.”

Like St. George, UTM offered workshops in areas such as discovering your strengths, and personal finance. Participants were offered 20 hours of one-on-one mentorship by an undergrad. Mentor Tobi Mohammed, who was also the teaching assistant for the science and technology course, helped her mentees with skills such as time management, creating a LinkedIn profile and applying to university.

“We talked about their ambitions and goals, their personal struggles – we talked about everything,” says Mohammed, a fourth-year student in biology for health sciences. As

someone who is Black, she adds, “I wish I’d had something like this in first year.”

This past winter, the access program became active across all three U of T campuses with the introduction of “SEE U of T Scarborough,” which is open to Black and Indigenous students from neighbouring schools. The U of T Scarborough version takes place over two semesters and provides the opportunity to earn five high school credits and a half university credit.

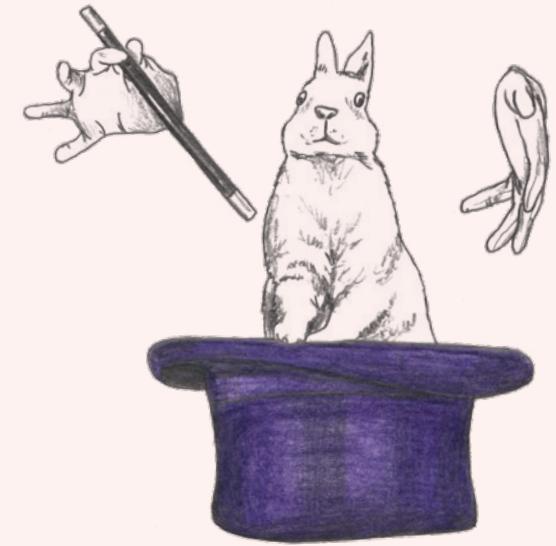
In their winter term of Grade 11, participants spend their afternoons doing their co-op placement at U of T Scarborough sites such as the library, the International Student Centre or The Hub, a startup incubator. When they begin Grade 12 in the fall, these same students return to campus to take a first-year course. They will also take part in learning sessions delivered by various faculties and student service units.

The program’s benefits will extend beyond post-secondary preparation for the participants, says Kyomi Hastings Duncan, associate registrar and director of admissions and student recruitment at U of T Scarborough. “The impact is going to reach into their households and the larger community.”

Jesenak at Woodsworth notes that at least 28 of the former participants have gone on to apply for post-secondary education, with eight accepting offers from U of T.

Elijah Miller is among that group of eight – he’s currently a first-year student at the St. George campus. While higher education was always part of Miller’s plan – both of his parents are university graduates – he says he had harboured doubts about how welcome he would be at a university. How does he feel now about being a university student? Good: “I’m wanted here – and I want to be here,” he says. —Sharon Aschaiek

## A COURSE



## Sleight of Mind

In his popular first-year foundations course, the Psychology of Magic, Dirk Bernhardt-Walther reveals the secrets behind magicians’ tricks as a way of teaching students about the human mind and the fallibility of perception. The associate professor of psychology draws on disappearing acts and other illusions to explain how magicians take advantage of human misjudgment and perceptual gaps to wow audiences. Here, he explains three of their techniques:

### A Bug in the Eye

To make objects disappear, magicians exploit the fact that the human eye has a limited range of resolving luminance contrast: it has trouble seeing a dark object against – especially with bright stage lights nearby.

This is why magicians often perform using a black table or backdrop. Objects such as coins or cards painted black on one side can be made to appear, levitate or disappear, depending which side of the object is facing the audience.

### Telling Stories

Magicians often narrate what’s happening on stage to plant an idea or memory in the audience to distract them from what’s actually occurring. In this way, the magician can convince participants that, for example, a deck of cards has already been shuffled when, in fact, it hasn’t. This aspect of psychology is important, Bernhardt-Walther says, when considering the reliability of eyewitness testimony and how police officers interview witnesses.

### Is It Truly a Choice?

Magicians also give audiences the illusion of free will. In a card trick, for example, a participant may believe they are free to pick any card when in fact the magician – perhaps switching out a regular deck for a deck with only one card – has actually “forced” the audience member to take a certain card. Bernhardt-Walther says the class discussion around free will is typically lively, covering everything from religious beliefs to criminal defence.

—Cynthia Macdonald

## “I Believe in You”

Professor Christina Guzzo has a message for the next generation of women in science

Often, behind every great scientist is ... another great scientist.

So, when Christina Guzzo was finishing her PhD and needed a mentor to further her training, she decided to seek out the best. “I wanted to experience what it’s like to be on the cutting edge,” she says. “Working with Anthony Fauci’s research team was my goal.”

Before Fauci became the public face of the U.S. government’s COVID-19 response, he led the world-renowned HIV research centre at the National Institute of Allergy and Infectious Diseases, part of the National Institutes of Health in Bethesda, Maryland. Guzzo, whose research focused on HIV infection, approached him at an AIDS conference.

Since Guzzo already had a solid body of published research, Fauci agreed to interview her for one of the research centre’s fiercely competitive post-doctoral positions. He was immediately struck by her intelligence, energy and commitment. Fauci says today, “Right from the very beginning, you get the impression that besides being extremely bright, Christina has a sense of purpose – to do good things with the science, with the ultimate purpose of alleviating suffering and death.” He hired her.

Guzzo hit the ground running, quickly acclimating to the intense pace and long hours of the lab and furthering HIV research over the next five years. “It was always clear that she wanted to return to Canada,” Fauci says, “but I can tell you that if she’d wanted to stay in my lab indefinitely, I would have welcomed that. She’s a productive, insightful, creative scientist.”

And now she’s a mentor herself. Since leaving the National Institutes of Health in 2017, Guzzo, 38, has been running her own lab as a professor in the department of biological sciences at U of T Scarborough. “I see how pivotal mentorship can be in shaping opportunities for people entering the sciences,” she says, “particularly young women who may feel excluded or biased against, since I too went through those feelings. And still do.”

While Guzzo encourages all her students to seek out mentors, she makes a point of telling her female students, “I believe in you” or “I know you can do it.” She says, “I feel like young women don’t often hear that others really believe in them, and it’s important for them to hear those words.” She volunteers for Sparking Science, a program designed to help high school girls learn about science and technology careers from female



PHOTOGRAPHS BY KRISTINA DITTMAR

U of T  
Scarborough  
professor  
Christina Guzzo  
←

scientists, offering the kind of early mentorship Guzzo never had. And she’s open with her students about her need to take time off for family issues, so they too will feel comfortable taking time off when necessary. “You still need to work your butt off,” she says with a smile, “but it’s easy when you love your job.”

Mentorship hasn’t always figured so prominently in Guzzo’s life. Throughout her high school and undergrad years, she had no science mentors. She almost didn’t become a scientist at all. She was going to be a basketball player. The child of blue-collar Italian immigrants who settled in Caledon, Ontario, northwest of Toronto, Christina was a teenage sports star and kids’ camp counsellor. While she had always thought science was cool, she was leaning toward varsity basketball.

But as an undergrad at Queen’s University in Kingston, Ontario, in the mid-2000s, she heard about a student-run charitable organization doing HIV-AIDS education for youth internationally. Travel, kids and science? For Guzzo, it was a perfect fit. For the next three summers she headed to Kenya, teaming up with local university students to prepare curricula on HIV and youth empowerment for schools in the massive informal settlements around Nairobi. She didn’t realize it at the time, but she was learning how to teach.

Back at Queen’s, despite her new interest in HIV, Guzzo didn’t volunteer in a lab. “And then I met Katrina Gee.” Young and friendly, Gee was a newly hired professor in the department of microbiology and immunology. They met when Guzzo was presenting her self-directed undergrad thesis project.

The two clicked, and Guzzo now had her first science mentor. Over the next five years, while Guzzo produced some significant research – she published five first-author scientific papers and six co-authored ones – Gee also taught her the importance of having fun along the way. Together, they celebrated not only the big accomplishments, such as an award, but the smaller things too, such as an experiment going right.

Moving to the U.S. to start working in Fauci’s lab, Guzzo was thrilled by the opportunities: a seemingly limitless budget, every sample at her fingertips, every collaborator she could wish for – but a lot of hard work and long hours. “It was science first, before everything,” she recalls. “People [including Fauci] devoted their lives to the work.” Fauci, who at 82 just retired, says it wasn’t his intention to create a workaholic environment. “I don’t want a laboratory full of nerds who have no other interest but science,” he says. “But I do look for people who have a strong, deep, serious commitment to science. And this is Christina, for sure.”

Guzzo was able to handle the workload, produce impressive results and still fit in daily runs. But it was tough having long separations from her husband, a paramedic educator who couldn’t get a U.S. work visa.

The dramatic turning point came in 2016, when Guzzo gave birth six weeks early to a child with Down syndrome. Baby Stella had everything from feeding and swallowing problems to a heart defect, which would all eventually require surgeries. Suddenly, Guzzo went from spending all her time in the lab to keeping vigil in the neonatal ICU. “My whole world changed,” she says, but her professional obligations didn’t let up. Eligible for only the barest minimum maternity leave, she had to go back to work after eight weeks. Her husband, taking a longer paternity leave, moved down from Canada.

Exhausted and stressed, she



Guzzo with daughter Stella: “My whole world changed” ←

## “I SEE HOW PIVOTAL MENTORSHIP CAN BE IN SHAPING OPPORTUNITIES FOR PEOPLE ENTERING THE SCIENCES”

struggled to carry out experiments and finish a major research paper, in between pumping breast milk and meeting with Stella’s doctors. Her work was at risk of suffering, and she knew it. Lacking support systems, she felt she had no choice but to make a life-changing decision: family first, science second. It was time to return to Canada.

“Toronto was very much a coming home for us,” she says. “We both had our families and old friends, and the health-care system was easier to navigate. And I’ve been blown away by how supportive U of T has been.” She also noticed welcome changes in the

culture for working parents, such as academic conferences that offer childcare and grant-review panels that meet online.

Guzzo’s research still centres on HIV infection, which today affects 38 million people – more than half of them women and girls. She studies how the virus hijacks human proteins that

occur naturally on our cells in order to camouflage itself. Her findings may help guide new antiviral targets, vaccines and cure strategies – not just for HIV but for other pathogens, including coronaviruses.

As a mentor, Guzzo emphasizes not just the science but other skills such as effective communication. One grad student, who got the job she wanted in Toronto, told Guzzo that her emphasis on presentation skills gave her the confidence she needed in the job interview process. Another mentee has a post-doc lined up at Harvard University this fall. Fauci says, “I take great pleasure out of seeing Christina succeed, because she’s spreading out her influence and her training to other young people.”

Guzzo agrees that mentorship has benefits for everyone involved. “To me there’s nothing better than knowing that you may have led a student to achieve something that may not have been possible without you.” –**Marcia Kaye**

# 150 Years of Firsts

Did you know that alkaline batteries and touchscreens can trace their origins to U of T Engineering? The faculty is celebrating its sesquicentennial in 2023, marking a century and a half of innovation. Here we look back at some of the bold, compassionate thinkers who helped imagine a better future. Visit [uofteng.ca/150](http://uofteng.ca/150) to learn more.

### A TIMELINE

**1921**  
As an undergraduate, **Edward S. Rogers** creates the first all-electric radio station and is the first Canadian amateur radio operator to transmit a signal across the Atlantic.

**1927**  
**Elsie MacGill** (BASc 1927) is the first woman in Canada to graduate from electrical engineering. As the world’s first female aircraft designer, she earns the nickname “Queen of the Hurricanes.”

**1934**  
**Frank Henry Ralph Pounsett** (BASc 1928) designs the first car radio for General Motors Canada.

**1953**  
**George Klein** (BASc 1928) invents the first electric wheelchair.

**1957**  
**Lewis Urry** (BASc 1950) develops the first commercial alkaline battery, spurring a revolution in consumer electronics. *Time* magazine named it one of the 100 greatest gadgets ever.

**1967**  
**Ursula Franklin** becomes the faculty’s first female professor. In 1984, she is the first woman to receive the title of University Professor – U of T’s highest academic rank.

**1980s**  
**Prof. K.C. Smith**, of electrical engineering, develops the origins of touchscreen technology.

**1996**  
**William C. Shaw** (BASc 1951) and his three co-inventors of the IMAX projector win an Oscar for Scientific and Technical Achievement.

**2009**  
Co-created by **Dongjun Wang** (BASc 1995), the Instant Pot debuts. With millions of units sold, the appliance quickly becomes a staple in kitchens around the world.

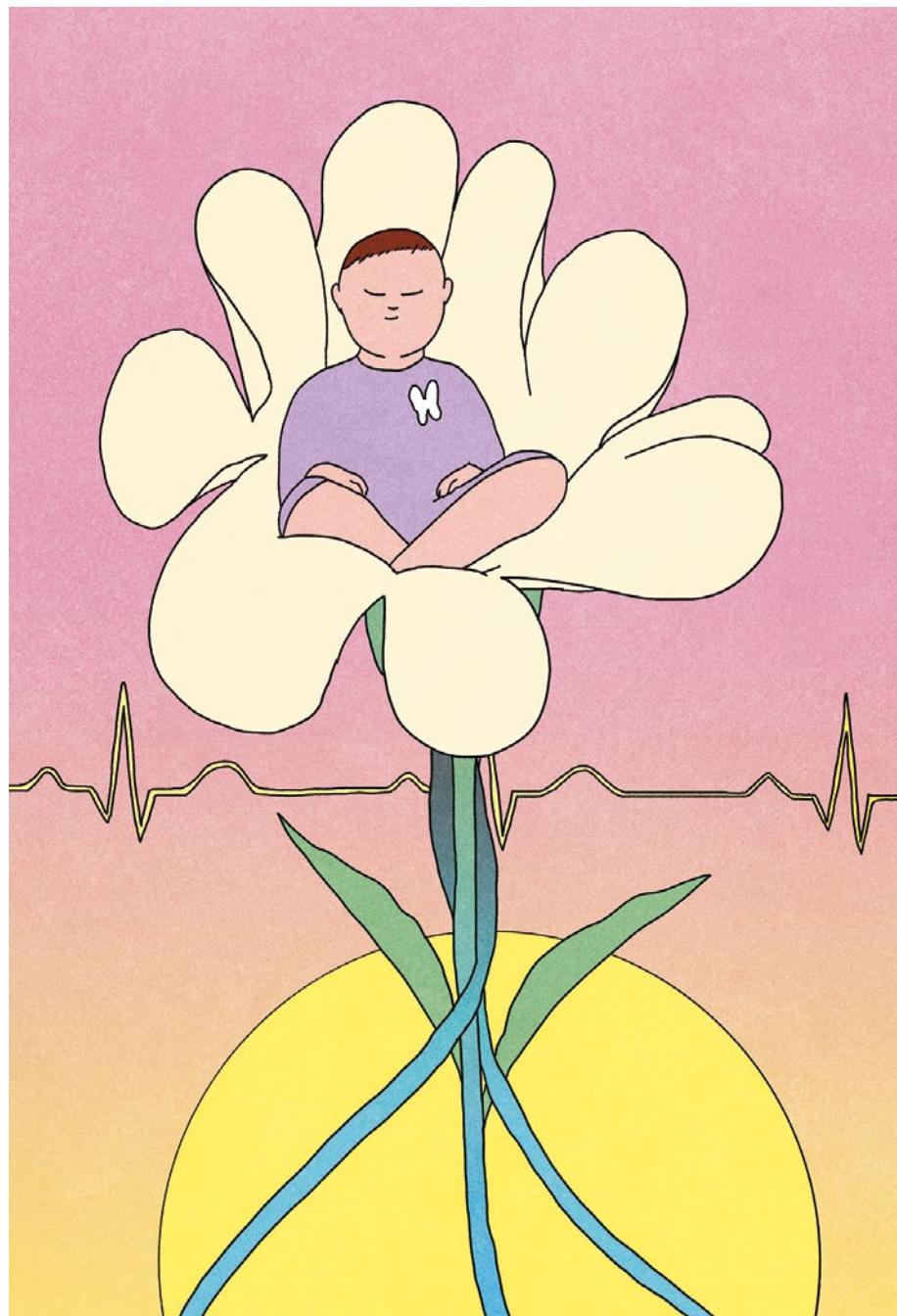
**2015**  
**Prof. Brendan Frey** of electrical and computer engineering co-launches Deep Genomics, the first company to combine deep learning and genome biology to study mutations linked to genetic diseases.

**2020**  
**Inioluwa Deborah Raji** (BASc 2019) is named a Top Innovator Under 35 by *MIT Technology Review* for her research on racial and gender bias in facial recognition technologies.

**2021**  
A portable solar-powered battery made by Reeddi, a startup headed by **Olugbenga Olubanjo** (MASc 2019), is named one of *Time* magazine’s 100 best inventions of the year.

**2022**  
A multidisciplinary team led by **Milica Radisic**, a professor of chemical and biomedical engineering, grows a small-scale model of a human left heart ventricle in the lab.

ILLUSTRATIONS BY DAVID SPARSHOTT



## Tremors of the Heart

How AI could help doctors predict cardiac problems in critically ill children

# A

unique collaboration between University of Toronto engineers and hospital physicians is pioneering the use of artificial intelligence – similar to an AI that helps detect earthquakes – to diagnose heart rhythm abnormalities at Toronto’s Hospital for Sick Children.

The innovative approach, which combines specially trained AI with the expertise of SickKids clinicians, could lead to significantly better health outcomes for critically ill children by providing faster and more accurate diagnosis of heart problems, the researchers say, as well as easing demands on clinicians’ time.

“This could help some of our most vulnerable patients, while also reducing stress on the health-care system,” says Mjaye Mazwi, a staff physician at SickKids and an associate professor at U of T’s Temerty Faculty of Medicine.

When the heart is functioning as it should, it beats to a regular rhythm – the familiar vertical spike followed by ripples that appear on a heart monitor. A heartbeat that is too fast, too slow or chaotic can cause severe complications and death.

Almost one in three children admitted to an intensive care unit experience a heart rhythm anomaly; at SickKids this affects as many as 700 children a year.

ILLUSTRATION BY MARIA WEDEM; PHOTOGRAPH COURTESY OF SICKKIDS

These patients require constant monitoring, which places a high demand on hospital staff who are typically caring for other patients at the same time.

“The challenge is that clinicians cannot continuously monitor every bedside,” says Sebastian Goodfellow, an assistant professor in U of T’s department of civil and mineral engineering and a principal investigator at the Lassonde Institute of Mining. This can lead to a delay in detecting or diagnosing an abnormal heart rhythm, resulting in a worse outcome for the patient.

He and Mazwi, who is SickKids’ director of translational engineering in critical-care medicine, are developing what they believe will be a game-changing solution.

Prior to joining the Faculty of Applied Science and Engineering, Goodfellow worked at a mining startup where he helped build AI models to scan geological data for certain patterns. In 2017, he was invited to enter a “computing in cardiology” challenge with a team from Laussen Labs, a research group at SickKids. There, he met Mazwi, who was interested in using AI to detect heart arrhythmias and was looking for help with the complex challenge of deploying it in the hospital. Goodfellow’s experience made him a natural collaborator.

The AI they are developing is being trained to recognize the warning signs of impending arrhythmia based on clinicians’ expertise and more than 10,000 electrocardiogram readings – a far greater number than even the most experienced clinicians would encounter during their career. Before being deployed with patients, the AI needs to be able to match or exceed the performance of a clinician, and accurately sound the alarm when one of these arrhythmia warning signs appears.

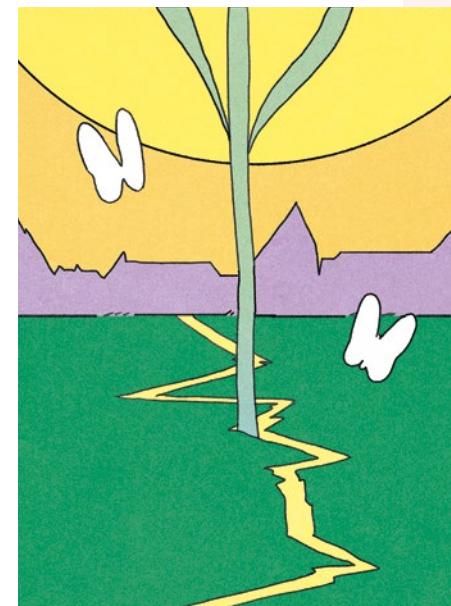
“We want this AI to partner with the best of human intelligence in a kind of collaborative intelligence,” says Mazwi, who is also

research co-lead at the Temerty Centre for Artificial Intelligence Research and Education in Medicine. “We don’t believe that AI will replace clinicians, but we do believe that clinicians who use AI will outperform and replace clinicians who do not.”

The researchers are initially focusing on a specific type of irregular cardiac activity called Junctional Ectopic Tachycardia, or JET, that is especially tricky to detect because it involves subtle changes in the patient’s electrocardiogram. In those who have recently had corrective heart surgery, JET poses a significant risk of injury or death.

Detecting and treating JET early reduces this risk, which is clearly crucial for the patient. It also helps shorten the patient’s hospital or ICU stay, benefiting the entire health-care system, says Mazwi. Eventually, the researchers hope to develop AI models for detecting every kind of heart rhythm anomaly.

Although AI is making rapid inroads into many areas of life, including medicine, Mazwi says the process in health care is necessarily slower and more careful. An AI model must be tested and



Dr. Mjaye Mazwi (left) and Prof. Sebastian Goodfellow

retested to ensure it will improve both patient outcomes and overall performance in the health-care system before it is used on actual patients. “We’re held to a much higher standard,” he says. “You don’t deploy an AI until you are perfectly sure it will provide gains over the current process.”

The research team at U of T and SickKids is collaborating with clinicians and researchers at other pediatric hospitals in England, Israel and Australia to test the AI models being developed in Toronto. Their two goals: to ascertain if the models work as well on similar patient populations in other hospitals and to sow the seeds for expanding far beyond Canada.

“The timely detection and diagnosis of heart arrhythmias is a challenge; it’s an even greater challenge for hospitals that do not have the funding and expertise that SickKids does,” says Goodfellow. “The real impact will be when we take this technology to underserved communities.” —Phill Snel

*This project is supported by funding from the Ted Rogers Centre for Heart Research and the William G. Williams Research Directorship for Cardiac Analytics. It has also received a U of T Data Sciences Institute Catalyst Grant and a project grant from the Canadian Institutes of Health Research.*

# Solving a climatic puzzle, one tree ring at a time

Anyone who has seen a tree stump will have noticed the rings in the wood and, at some point, learned that counting these rings can tell you the age of the tree. This unique growth not only tells us how long a tree stood, but it also holds clues to past weather patterns.

Trevor Porter, a professor in the department of geography, geomatics and environment at U of T Mississauga, is tapping into this natural archive to create a detailed picture of how Canada's climate has changed over the past 1,000 years. With a network of research sites that span the Yukon and Northwest Territories, his goal is to build a chronology that stretches back long before weather records such as thermometer readings were kept, and to better understand what a future, warmer Arctic may look like.

Trees are sensitive to precipitation and temperature, which affect their annual growth. Porter, who is a paleoclimatologist, analyzes the individual rings, examining their width and the density of the wood and then subtracting the natural pattern of growth to

see how the environment has changed. "What we learn from tree rings is valuable," he says.

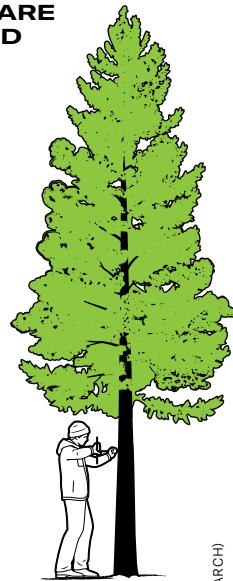
While there are records that go back 10,000 years or more from other sources – ice cores, sediment and ground ice, for example – tree rings provide detailed, annual information that is exactly dated. One of Porter's long-term aims is to create a comprehensive record from the region that goes back a millennium. So far, his team has managed 913 years. "I really want to push this farther back in time," he says, which means looking for dead trees buried in lakes or mud deposits where the wood is preserved.

Porter describes the process of reconstructing the past climate using tree rings – a field known as dendrochronology – as a painstaking exercise. Going back further in time requires matching the pattern in a sequence of rings from a dead tree with a section of rings of a living tree from the same geographic area. With a match, the dead tree can be accurately dated. "It's a bit like solving a jigsaw puzzle," he says. —Patricia Lonergan

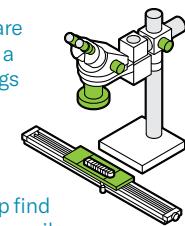
## HOW CORE SAMPLES ARE COLLECTED

Porter and his students travel to northern Canada during the summer to collect core samples from trees at multiple sites.

1. They use a hand-crank increment bore – basically a hollow drill bit – to pull core samples from living trees without harming them.



2. Disk-shaped samples are sliced from dead trees by chainsaw.

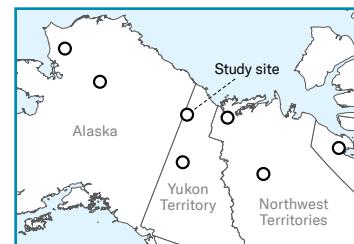


3. The samples are examined under a microscope. Rings are counted and calendar years are assigned to each ring. Dots are added to help find specific decades easily when cross-dating.

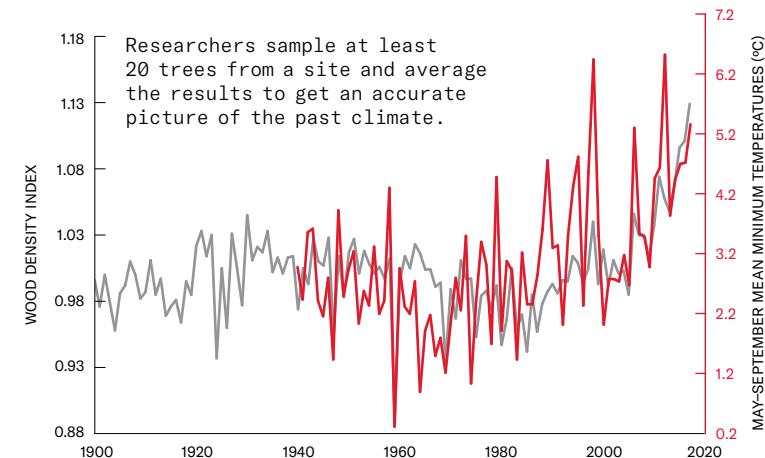
ILLUSTRATIONS BY CHRIS PHILPOT; DATA: PORTER ET AL. (2013), QUATERNARY RESEARCH

## 'YOU CAN'T TALK TO ONE TREE TO GET THE FULL STORY'

To gather data further back in time, researchers aim to include information collected from roughly 50 dead trees. Each tree "remembers" the past differently based on various factors.

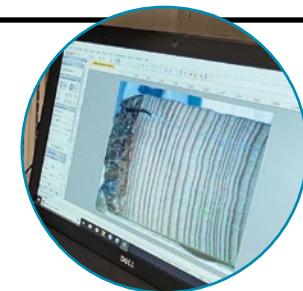
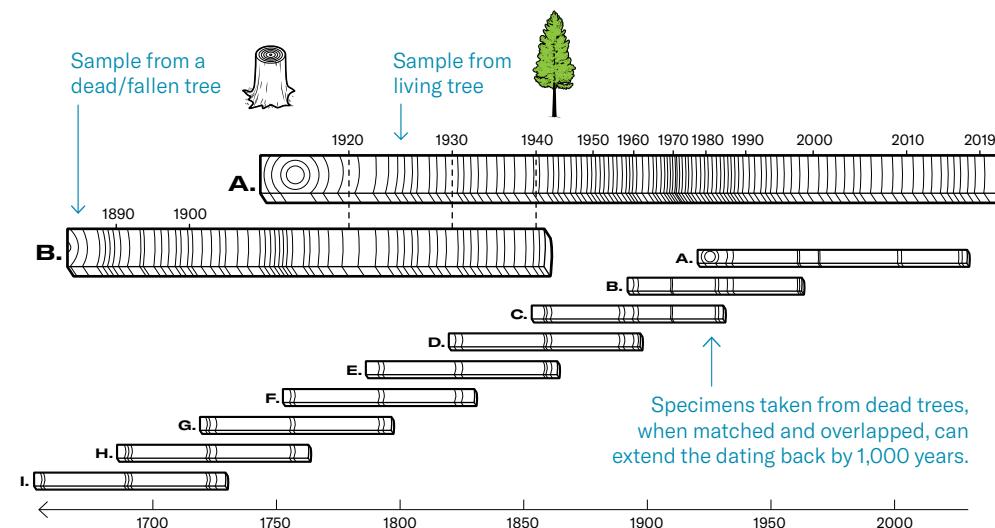


The tree-ring record Porter is building represents thousands of trees across a large region.



## DEAD TREES HELP EXTEND THE CHRONOLOGY

Researchers can determine the date of tree rings on dead tree samples with help from living trees, where the dates are known. By lining up rings on a dead tree with samples from living trees, researchers can compare the pattern of growth on the outer most layers of the dead tree. Once they find a match in the sequence, they can extend the tree ring chronology.



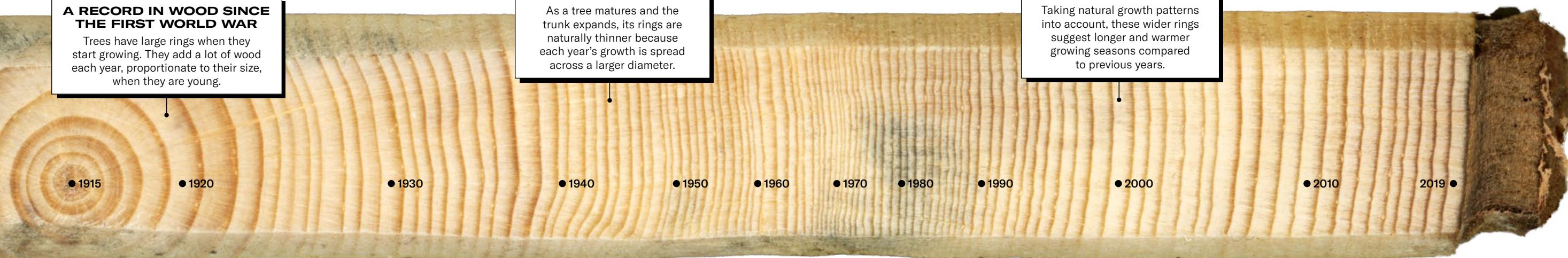
Researchers can take precise measurements – at the micrometre scale – from a scanned image of a tree sample, using image-analysis software. The measurements from each sample are then compared against all other samples to verify the year assigned to each ring.

### A RECORD IN WOOD SINCE THE FIRST WORLD WAR

Trees have large rings when they start growing. They add a lot of wood each year, proportionate to their size, when they are young.

As a tree matures and the trunk expands, its rings are naturally thinner because each year's growth is spread across a larger diameter.

Taking natural growth patterns into account, these wider rings suggest longer and warmer growing seasons compared to previous years.





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## A GIFT



## Rogers Foundation Gives \$90 Million to Usher in New Era in Cardiac Care

Gift will enable the Ted Rogers Centre for Heart Research to expand its research into heart failure — and save lives

**K**atie Shea was just 41 when she was diagnosed with a genetic type of heart muscle disease that is a common cause of heart failure. She had been feeling exhausted but at the time had chalked it up to caring for her three young children. The implications of her diagnosis – dilated cardiomyopathy – were frightening: it was unclear how long she would be able to live with the condition. She would need to go on daily medications and have a defibrillator implanted. “I painfully struggled with the fact that no matter what I did, no matter how hard I worked, this was never going away,” she wrote in a blog post following her diagnosis. “I grieved the loss of the old

me. ... I wondered how the new me was going to raise my children while I adjusted to treatment.”

That day, Shea joined one million other Canadians who have experienced various forms of heart failure. The news was devastating, but she was thankful to receive cutting-edge care and participate in the groundbreaking genetic research of scientists and clinicians at the Ted Rogers Centre for Heart Research.

### Expanding capabilities

These efforts received a major boost last October when the Rogers Foundation announced a \$90-million donation – matched with \$94.2 million in institutional support and additional fundraising – that will significantly

expand the centre's capabilities.

The new gift comes on top of a record \$130-million donation the foundation made in 2014 to establish the centre, a collaboration that harnesses the strengths of its three institutional partners – the Hospital for Sick Children, University Health Network (UHN) and U of T – to reduce the impact of heart failure in Canada.

Researchers at the centre are using artificial intelligence to analyze complex patient data and predict and prevent heart failure. They are building on genetic and biomarker research to reveal the underlying mechanisms of heart failure and to identify new treatments. The centre will also expand genomics-based diagnosis for heart failure, including identification of the genetic causes of cardiomyopathy and congenital heart disease.

After her diagnosis, Shea had her own children screened with echocardiograms and electrocardiograms at SickKids. “Thankfully, all results came back noting normal cardiac function,” she says.

### Cutting hospitalizations in half

One of the centre's biggest achievements in its first decade has been to cut rehospitalizations for heart failure at UHN in half, says Dr. Mansoor Husain, the centre's executive director. He hopes the new funding will help prevent hospitalizations for heart failure on a global scale.

This will involve the enhancement of the centre's Digital Health Platform, which enables the rapid assessment and triaging of patients in real time with wearable devices, sensor-based technologies and AI. This platform will expand across Canada and internationally, beginning with underserved communities, as well as children and youth.

The gift will also help train the next generation of leaders in cardiac care. —Staff

### TAKING HEART

The Rogers Foundation's combined gifts of \$220 million to the Ted Rogers Centre for Heart Research represent one of the most significant philanthropic investments in Canada's history.

The gifts will help address heart failure – one of the world's deadliest illnesses, affecting patients across the lifespan.

PHOTOGRAPH COURTESY OF TED ROGERS CENTRE FOR HEART RESEARCH



←  
**Motivation**  
 Fascination with the world and the people in it  
**Recommended book**  
*Ulysses* by James Joyce  
**Favourite film**  
*Moonlight* by Barry Jenkins  
**Fun pastime**  
 I do yoga, which is wonderful

## Fighting for Justice

In her latest documentary, filmmaker Nisha Pahuja tackles a most difficult topic — sexual assault

Nisha Pahuja (BA 1994 UTM) has always had a passion for storytelling. An independent filmmaker, she has produced and directed four feature documentaries. Her latest, *To Kill a Tiger*, tells the story of Ranjit, a farmer in India who fights for justice after his 13-year-old daughter is sexually assaulted by a group of men. The film won TIFF's Amplify Voices Award for the Best Canadian Feature Film and Best Documentary at the Palm Springs International Film Festival.

### How did you become a documentary filmmaker?

Nearly 25 years ago, a friend introduced me to a producer who was making a documentary about arranged marriages in the South Asian community. They were looking for a researcher with connections to the community. I had no experience, I didn't know much about documentaries or filmmaking, but I was hired. I fell in love with the creative aspect of it and the socio-political commentary inherent to so many docs. I also loved how collaborative it was.

### What is most important to you when producing creative work?

It's always the "why." It's the deepest question and it's what drives me. *To Kill a Tiger* is a simple story about the pursuit of justice, but while I was making it, I was asking why the men did what they did to this child.

### How do you choose your documentary subjects?

I get ideas all the time, but it's the ones that keep you up at night or have many layers that take root.

### What was most challenging about making *To Kill a Tiger*?

Filming a child rape survivor was tough. I didn't have training and I was very conscious of not retraumatizing her. It was about finding the balance between being sensitive to her and sharing the details of the story, while at the same time knowing what we were capturing had the potential to benefit more people.

### It's a difficult story. How did you deal with it personally?

My meditation practice keeps me grounded. My husband does, too.

### What do you want viewers to take away from this film?

Two things: appreciation for this family and what they went through, and a sense that change is possible.

### What advice do you have for aspiring documentarians?

Know yourself. You have to have a burning desire to follow this path. It's not to say you can't make a living at it; you can. But it's hard work and passion needs to drive it.  
 —Ali Raza

PHOTOGRAPH BY POLINA TEIF



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# KIDS TAKE OVER U OF T.

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