



# Action impact

2021-2022 ANNUAL REPORT



● **Land  
Acknowledgment**

**We wish to acknowledge this land** on which the University of Toronto operates. For thousands of years it has been the traditional land of the Huron-Wendat, the Seneca, and the Mississaugas of the Credit. Today, this meeting place is still the home to many Indigenous people from across Turtle Island, and we are grateful to have the opportunity to work on this land.



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● **Message from the Vice-Principal  
Research & Innovation**



# Action Impact

**It has been one year since** I joined the University of Toronto Scarborough as the Vice-Principal of Research & Innovation. This year has flown by, primarily because of all the exciting work we have been doing to forge new paths for our community, the nation, and the world.

While the world faced significant challenges from the ongoing pandemic, we continued to thrive as an organization and in all the research and creative endeavours we support. Our accomplishments during this difficult time demonstrated our perseverance. The Office of the Vice-Principal Research & Innovation (OVPRI) developed strategies to support the recovery of faculty’s research activities and their participation in tri-agency programs. Our strong supports for UTSC faculty yielded increased research productivity and a wider geographical reach for the supported research; this past year alone, our faculty engaged in more research that was located across more than 20 countries.

In this year’s annual report, we celebrate our faculty’s impressive accomplishments. We also demonstrate our support for inspiring inclusive research excellence. Our investments in creating spaces for discussing how to better address systemic inequities and injustices have laid a foundation for transforming our communities into sustainable ones. One of these efforts has been launching the Environmental and Related Technologies Hub (EaRTH) and the Health and Resilience Together (HeaRT) innovation

districts to serve the Eastern GTA community. We also hosted events that stimulated conversations, collaborations, and partnerships among different communities within the Eastern GTA to build a healthier and more equitable future.

Of course, the efforts we have started will not immediately solve the challenges facing society today. However, I am encouraged by the results our efforts have already begun to reveal. The OVPRI will continue to both pursue the paths we have begun to trailblaze and to forge new paths so that we may reach a point when U of T Scarborough will be a center for sustainable innovations in every regard. I am confident we can do so by embracing inclusivity to spark and fuel innovations that address the pressing issues faced by the communities that we serve.

I am confident we can do so by embracing diversity to spark and fuel innovations that address the pressing issues faced by the communities that we serve.

**On behalf of my colleagues in the OVPRI, I want to express our deep thanks to the U of T Scarborough research and scholarly community. It is a pleasure and honour to serve you.**

**Irena F. Creed**, PhD, FRSC  
Professor and Vice-Principal Research & Innovation

# Impact Numbers



**action** \$14.4M in new funding  
**impact**  
Advancing new research to  
make a positive difference



# General Statistics



**320**

Research Funds  
(Number of Grants  
and Contracts)

**220**

Funding Applications

**82**

Funding  
Programs

**56**

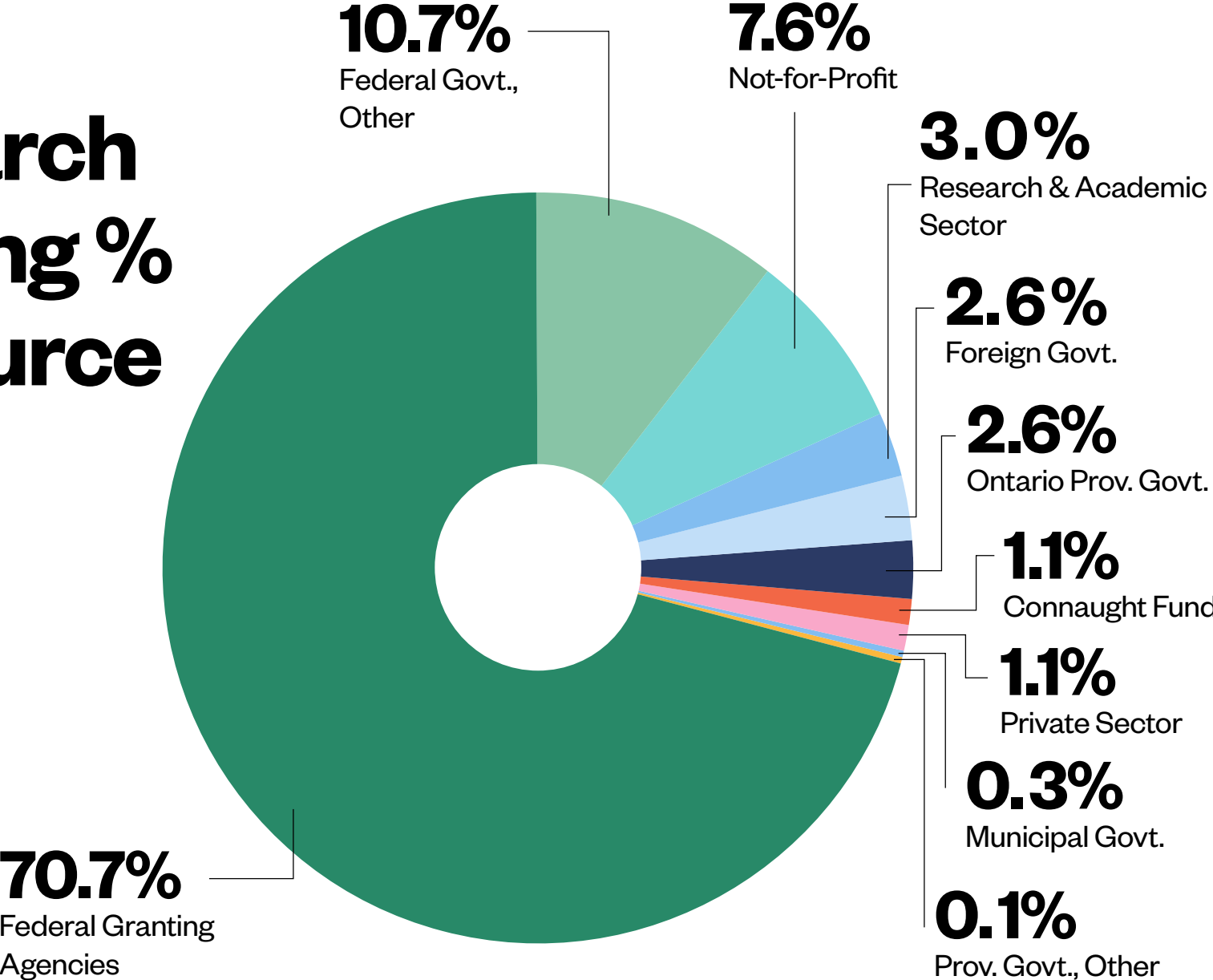
Funding  
Sponsors

**5**

Private Sector  
Partners

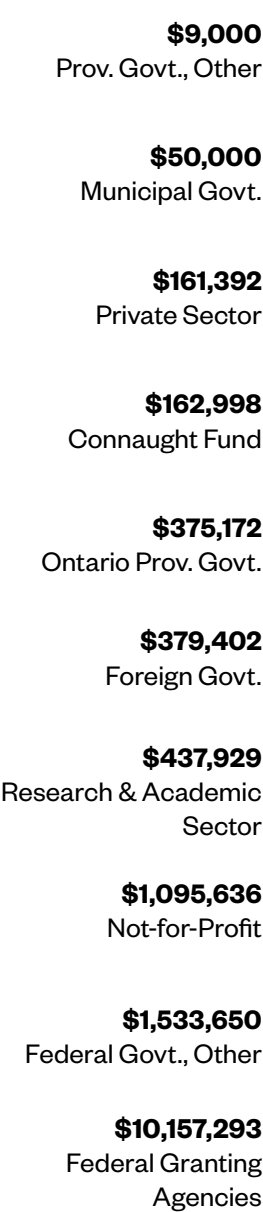


# Total Research Funding % by Source



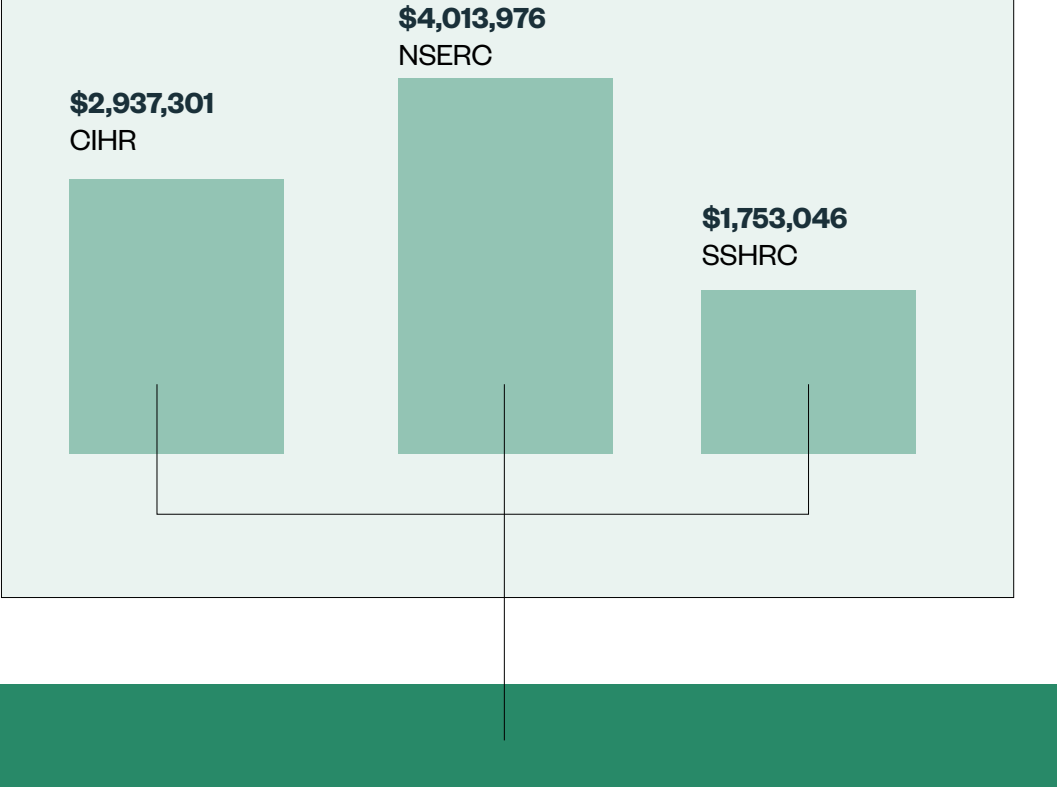
\$14,362,472

## Total Funding

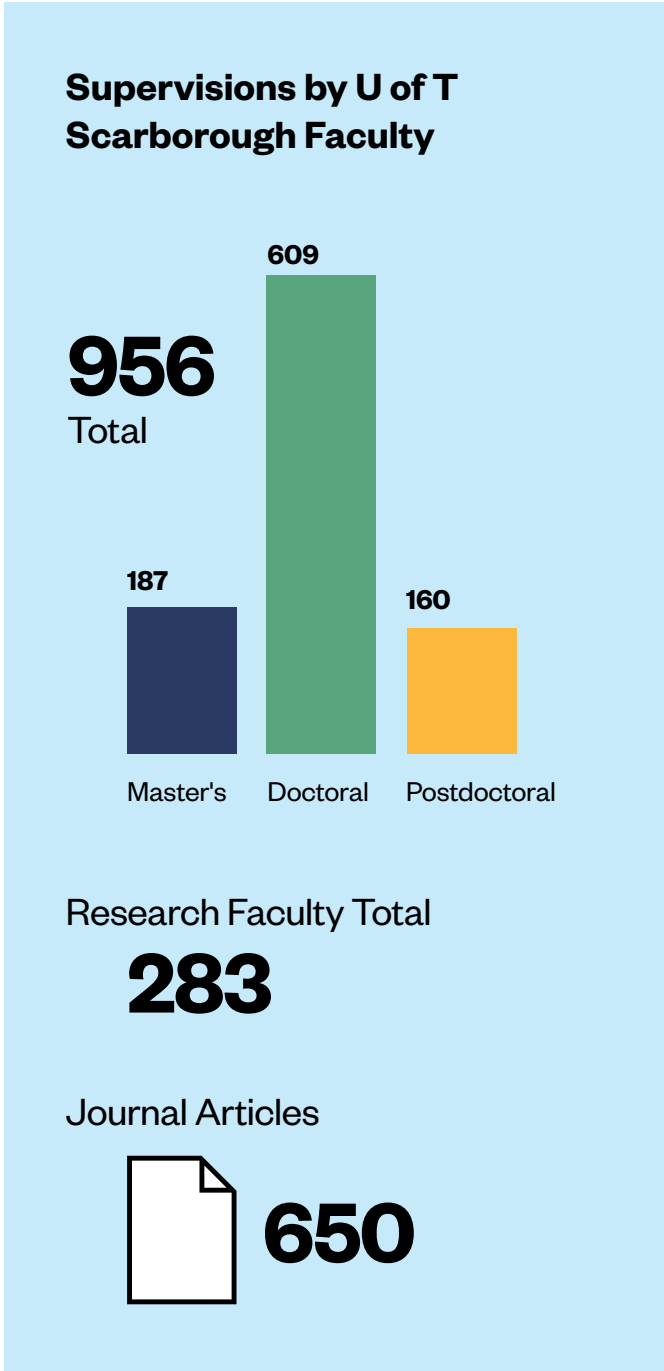
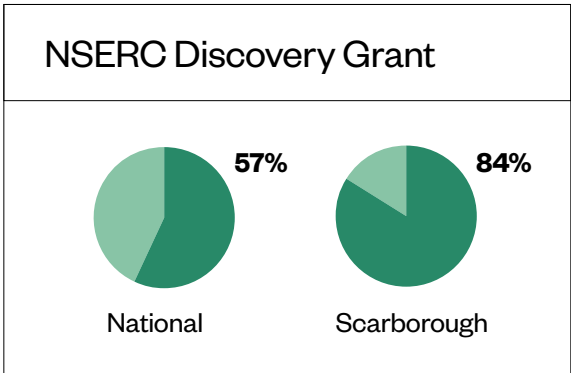
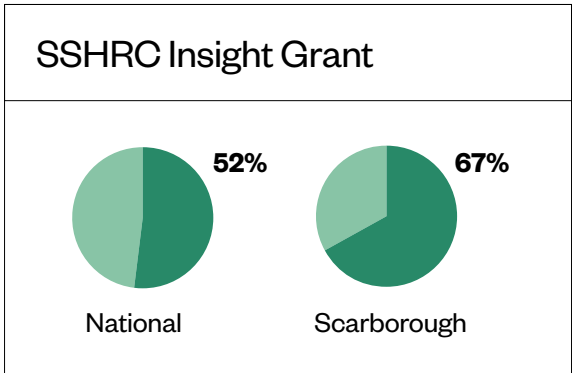
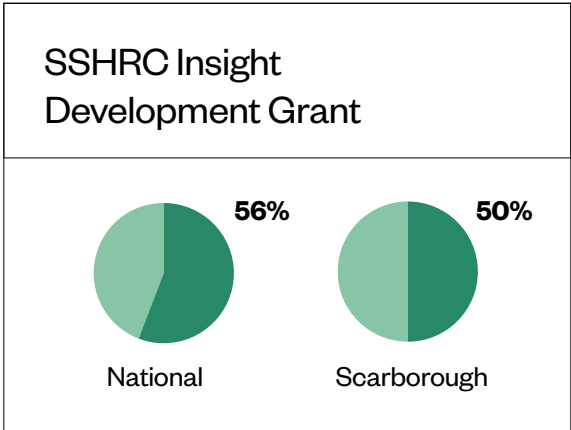
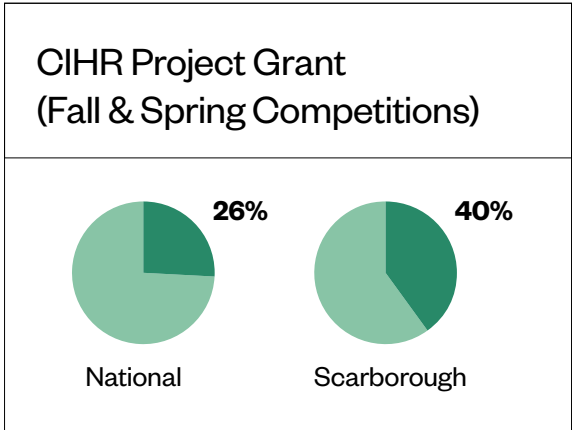


\$8,704,323

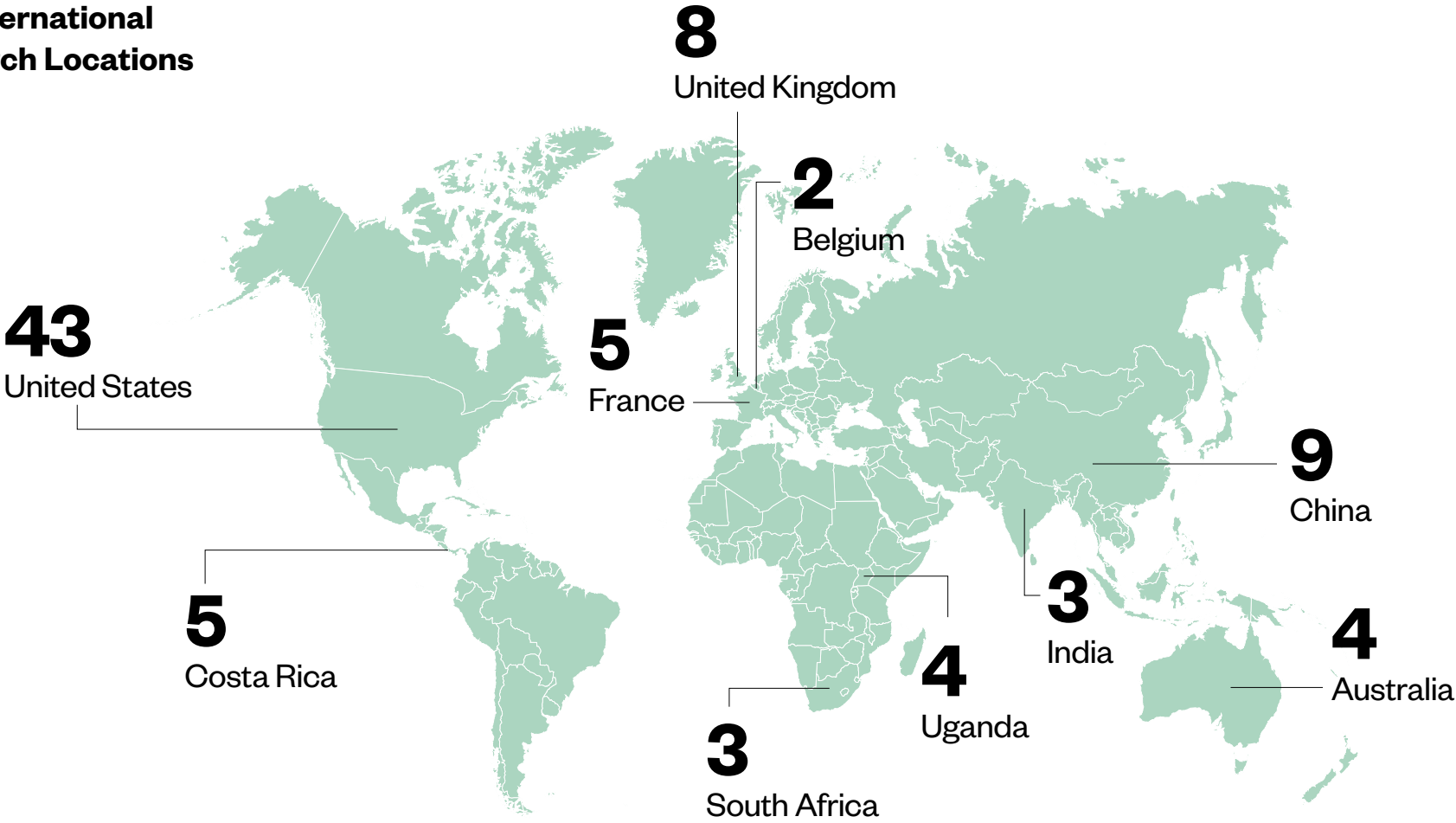
## Total Tri-Agency Funding



# Grant Success



## Top International Research Locations



Commercialization	2017-18	2018-19	2019-20	2020-21	2021-22	Total
New Invention Disclosure	●●●●	●●●●	●●●●	●●●	●●●	22
Priority Patent Applications Filed	●	●●●	●●●●	●		9
Licence and Option Agreements	●	●●●	●●	●	●	8
Startup Companies Formed by Faculty				●	●	2

# Our Strategic Initiatives

**action** Creating an environment that builds strength and global standing  
**impact**  
Research collaborations that spark new ideas and innovation





# Clusters of Scholarly Prominence Program

**The Clusters of Scholarly Prominence Program (CSPP)** is U of T Scarborough’s flagship program for supporting the pursuit of strategic initiatives. The CSPP serves to promote self-sustaining, interdisciplinary, inter-departmental, collaborative clusters of scholarship in areas of established and emerging strength at U of T Scarborough that have a demonstrable capacity to augment U of T’s global standing through prominence in research, creative activity, and exceptional learning.

“The goals and aspirations of these research clusters reflect our core values at UTSC,” says Professor Irena Creed, Vice-Principal, Research & Innovation.

The second competition in 2021 was awarded to the following clusters:



**Matthew Hoffmann,**  
Professor, Department of Political Science



**Laura Tozer,**  
Assistant Professor, Department of Physical & Environmental Sciences

## Urban Just Transitions from Scarborough to the Globe

Cluster Leads: **Matthew Hoffmann**, Professor, Department of Political Science and **Laura Tozer**, Assistant Professor, Department of Physical & Environmental Sciences

Urban Just Transitions from Scarborough to the Globe brings together researchers from five departments at UTSC that will look at ways to achieve a just transformation to a zero-carbon society and energy system, which will be important in addressing climate change. The cluster will focus on how justice and equity can play a role in transitioning from carbon pollution. It will build relationships with communities in Scarborough and learn how community-university research partnerships can help envision and build a more equitable and sustainable city.

## Sustainable Food and Farming Futures Cluster

Cluster Leads: **Jayeeta Sharma**, Associate Professor, Department of Historical and Cultural Studies and **Marney Isaac**, Professor, Department of Physical & Environmental Sciences and Department of Global Development Studies

The Sustainable Food and Farming Futures Cluster will identify how the environmental impacts of agriculture can be reduced, while simultaneously promoting food security, equitable food systems, and the availability of culturally relevant foods. It will develop innovative research on sustainable agriculture systems (including crop resiliency, urban agriculture, and agroecology) and collaborations with community partners and other stakeholders to advance socially just means of food production.

The cluster will leverage existing expertise from researchers in nine departments on campus.

“UTSC is a leader when it comes to engaging and working collaboratively with community partners on research, and this cluster embodies that model.”

**Jayeeta Sharma**, Associate Professor in the Department of Historical and Cultural Studies



**Jayeeta Sharma,**  
Associate Professor, Department of Historical and Cultural Studies



**Marney Isaac,**  
Professor, Department of Physical & Environmental Sciences and Department of Global Development Studies



# The EaRTH District Collaborative Research Grant

As part of the Environment and Related Technologies Hub (EaRTH) initiative, U of T Scarborough, Centennial College, Ontario Tech University, and Trent University have established the EaRTH District Collaborative Research Grant (EDORG) program to support collaborative research initiatives in areas of mutual strength and shared interest. The EDORG provides initial seed funding of \$50,000 to undertake short-term visits to initiate, deepen, and extend collaborative research links with the goal of enabling principal investigators to make joint proposals to external funding sources for the next phase of their research. Applications must involve at least one researcher from each of the four partner institutions.

The 2021-2022 competition focused on the theme of Water and was awarded to each of the following projects:



## Impacts of Physical Processes on Water Quality in Urban Ponds: Development of a Monitoring Framework

The purpose of this project is to develop a field monitoring and data analysis framework to better understand the physical environment and its effects on water quality in stormwater ponds in the urban landscape. This project has implications for the ecology of these ponds and could help support design decisions made by municipalities and conservation authorities responsible for managing urban ponds.



## Demonstration of Smart Water Systems for Sustainable Cities

This research project will discuss smart water infrastructures to analyze, plan, and manage water networks. The short-term objectives of the proposal include the analysis of water networks and their interactions with other systems in community applications.



## Optimal Best Management Practices for Managing Nutrient Losses

The overarching goal of this project is to identify effective best management practices to address nutrient enrichment by taking a multi-nutrient, collaborative, and community-based approach, using the Bay of Quinte (which routinely experiences harmful algal blooms caused by excess nutrient inputs) in Lake Ontario as a test case.



# EaRTH District at U of T Scarborough

A new partnership involving five universities and colleges across the eastern GTA is bringing a training and innovation hub for green technology to U of T Scarborough.

The Environmental and Related Technologies Hub (EaRTH) will develop the region's green and sustainable technology sector through research, academic programming, and commercialization of advanced technology. The partnership, which includes U of T Scarborough, Centennial College, Ontario Tech University, Durham College, and Trent University, will foster world-class environmental science research, training opportunities for existing and future jobs in the green-tech sector; it will also translate new knowledge and innovation into entrepreneurship.

A major priority of the EaRTH District is to address an urgent need for sustainable solutions to tackle the challenges of climate change by developing technological and social innovations. It will do that by filling a skills gap that currently exists through access to educational programs in the green-tech sector

that include joint degrees, micro-credentialing, and experiential learning. The district will be located on the U of T Scarborough campus and will include the facilities for research, training, and innovation. The partner institutions will work with the public and private sectors, as well as Indigenous communities, in the development of green and sustainable technologies. Each institution will contribute its unique expertise and training in the environmental sciences, advanced technology, and emerging areas of the green-tech economy.

Canada's \$61.9-billion green-tech industry currently employs more than 282,000 people, mostly in waste management services, energy efficient technologies, transportation, environmental remediation, and renewable energy services. EaRTH has the potential to generate \$8.4 billion in economic output, educate 35,000 students, and create more than 4,400 direct jobs once fully operational. Creating an environment where new and innovative technologies are being developed locally will help generate high-quality, in-demand jobs for residents of Scarborough and the Durham Region.





● Our Strategic Initiatives

# Institutional Strategic Initiatives and U of T Scarborough

The University of Toronto Scarborough has expanded its engagement with the University of Toronto's Institutional Strategic Initiatives (ISI) portfolio. As Canada's top university and a global Top 20 institution, the University of Toronto is uniquely positioned to lead life-changing research and innovation. The ISI portfolio streamlines the process of building, growing, and maintaining collaborations across disciplines. It aims to enhance partnerships with external industry, community, and philanthropic partners to tackle some of humanity's grand challenges.

Faculty from U of T Scarborough are actively engaged in various ISIs. In many cases, they play a leadership role, shaping the direction of large-scale strategic initiatives, extending their own research agendas, and building clusters and nodes of specialization.



The **Acceleration Consortium** is leading a paradigm shift in scientific discovery through the development of self-driving artificial intelligence-guided robotic labs that accelerate the discovery of advanced materials and small molecules from decades to years.



The vision of the **Black Research Network (BRN)** is to promote Black excellence at U of T and to enhance the research capacity of Black scholars within the university and on the world stage.



The **Climate Positive Energy Research Initiative** is responding to climate change by supporting Canada in achieving net-negative carbon emissions by 2050.



The **Centre for Research and Innovation for Black Survivors of Homicide Victims (CRIB)** is a multidisciplinary social work research centre focused on using community-based methods and principles to advance research, policy, and practice for Black survivors.



The **Critical Digital Humanities Initiative (CDHI)** enables trans-disciplinary collaborations that emphasize questions of power, social justice, and critical theory in digital humanities research.



The **Data Sciences Institute (DSI)** provides the leadership and capacity to catalyze the transformative nature of data sciences in disciplines, in fair and ethical ways, leveraging and strengthening U of T's pre-eminence in data sciences.



The **Inlight Initiative** will leverage important partnerships between U of T, the Centre for Addiction and Mental Health, and other hospital and community partners to establish a network of experts in student mental health research.



The **Mobility Network** is a multidisciplinary, collaborative, and diverse network of researchers that identifies pathways to more equitable and efficient urban mobility, and provides the evidence needed for effective and lasting societal change.



The **School of Cities** convenes interdisciplinary urban-focused researchers, educators, students, practitioners, and the public to address complex urban challenges, with the aim of making cities and communities more equitable, sustainable, prosperous, and just.



The **Schwartz Reisman Institute for Technology and Society** is a research and solutions hub dedicated to ensuring that powerful technologies like artificial intelligence are safe, fair, and ethical, and make the world better for everyone.



**Sustainable Development Goals @UofT**  
The aim **SDGs@UofT** is to build on our existing research initiatives, form new interdisciplinary and global partnerships, and produce a map for advancing the UN SDGs.

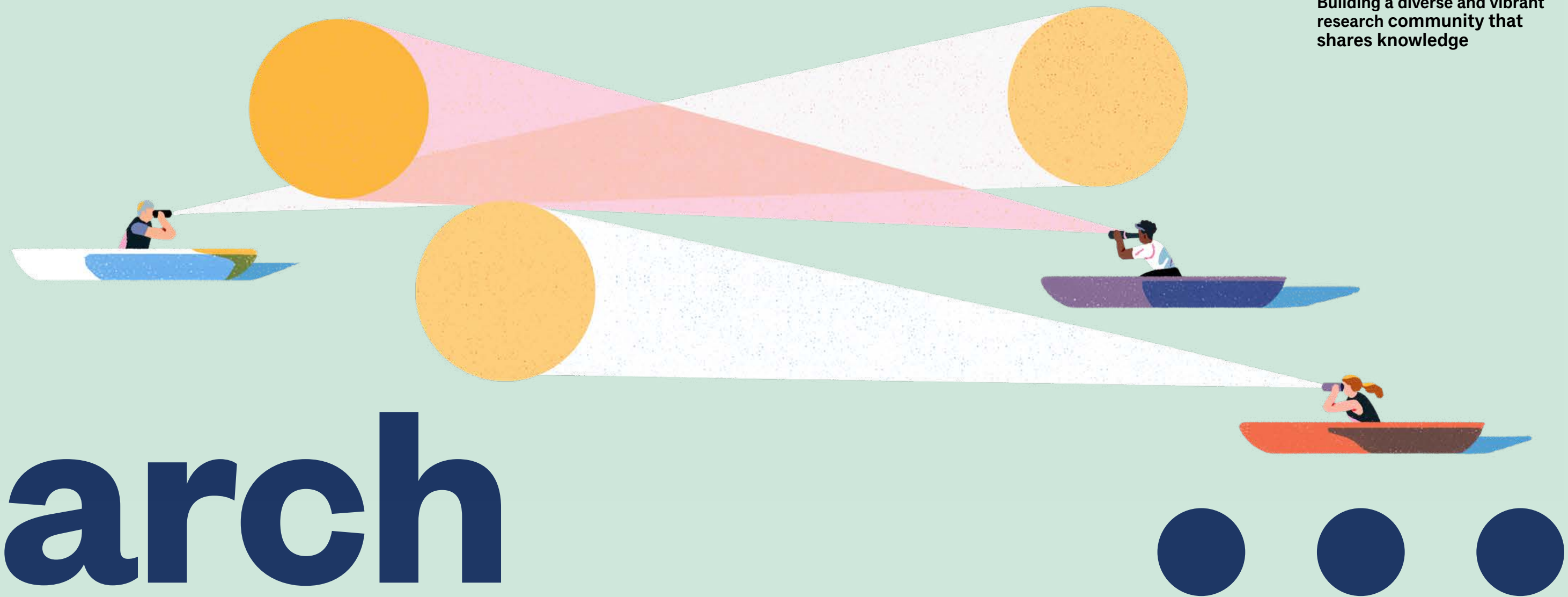


The **Toronto Cannabis and Cannabinoid Research Consortium (TC3)** is an interdisciplinary initiative that aims to advance cannabis and cannabinoid research through research, education and training, resource sharing, knowledge translation, and partnerships.



# Our Research

**action** Generating new  
insights and  
ideas  
**impact**  
Building a diverse and vibrant  
research community that  
shares knowledge



# School closures due to COVID-19 are accelerating inequities among Ontario students

A new report on school closures in Ontario due to COVID-19 suggests that they accelerate inequities in education. The landmark report, which was prepared for Ontario’s Science Advisory Table, shows that we can expect lasting consequences for students’ lifetime earnings and the national economy.

“The narrative right now is that kids will rebound from this,” says **Elizabeth Dhuey**, an Associate Professor in the Department of Management and one of the report’s lead authors. “What’s being lost in the conversation is that there are very real consequences to education loss.”

School closures and the pivot from in-class to virtual learning have been the main culprits behind education loss. This has affected vulnerable populations the most, a group that includes students from lower-socioeconomic backgrounds, racialized children, newcomers to Canada, and students with disabilities. Dhuey says barriers such as a lack of access to computers or high-speed internet mean that some students have stopped learning altogether.

It’s estimated that a month of skill loss from being out of school could result in a one per cent drop in students’ lifetime earnings. Education loss due to the pandemic may also decrease the national income by 0.5 per cent per



year, roughly translating to a \$1.6-trillion GDP loss for Canada. In addition, the loss of access to subsidized meals, school-based health care services, and the social benefits of routine and structure have hurt students’ mental and physical health.

The report recommends several strategies to counter the effects of the disruption. These include treating schools as an essential service and keeping them open wherever circumstances allow. Another strategy is to provide additional funding to adapt curricula, update instruction methods and create student supports that target the groups most disadvantaged by the pandemic.

# Mainstreaming equity in transportation planning

Millions of Canadians are at risk of **transport poverty**, where barriers to getting around combine with social and economic marginalization to limit their full participation in daily life. A new multimillion-dollar project funded by the Social Sciences and Humanities Research Council of Canada will explore the causes of transport poverty while creating ways to address it. The five-year project will be led by **Steven Farber**, an Associate Professor in the Department of Human Geography.

Transport poverty occurs when traditional forms of marginalization, such as poverty or racialization, intersect with transport disadvantages like the inability to afford a car, not feeling safe on the sidewalk, or not being served by adequate public transit options.

The project team will conduct a national survey of transport poverty to develop transportation equity standards, evaluation toolkits, and community-centred planning processes that will be used by planners, decision-makers, and advocates. The team will also create new understandings of transportation equity and identify the structural changes necessary to



reach a more equitable transportation future for all Canadians. The project will experiment with innovative transportation policies and mobility technologies specifically designed to help people living in transport poverty to travel more freely.

The project coincides with a critical juncture in Canadian transportation planning, as COVID-19 has magnified inequities for low-income, immigrant, racialized, and Indigenous residents. Meanwhile, technological changes

such as ride-sharing, on-demand transit, and micro-mobility could either worsen existing inequalities or, if properly managed, improve transportation outcomes.

For Farber, the most important thing to get right is understanding what amenities, resources, and investments people desire for their own neighbourhoods. “Our research will inform how planners can set actionable equity targets in collaboration with communities at risk of transport poverty.”



● **Our Research**

**Teaming up with Chinese researchers to tackle water pollution**

**A collaboration between** Canadian and Chinese scientists is tackling one of China’s most urgent environmental problems – the pollution in its many thousands of lakes, rivers, and reservoirs. For the last 10 years, Professor **George Arhonditsis**, Department Chair of Physical & Environmental Sciences, has been working with colleagues in China to address this challenge. They have one major asset: China recently implemented a nationwide environmental monitoring program, which has yielded voluminous amounts of data.

“Until 15 years ago, there was no serious monitoring of the lakes and rivers in China,” says Arhonditsis. “Then they came up with this national monitoring program, which was a massive undertaking, involving many different universities, institutions, and the private sector.” The result is an enormous database consisting of tens of thousands of individual records. This offers an opportunity to develop machine learning techniques to tease out the significant drivers of water pollution.

One key process is eutrophication, a buildup of nutrients such as nitrogen and phosphorus that leads to the increased growth of algae. Although the science behind eutrophication



is well understood, ecosystems are incredibly complex, making it difficult to track cause-and-effect mechanisms. One of Arhonditsis’s projects involves modelling the eutrophication process and testing watershed management strategies.

Issues are complicated by climate change, which will likely lead to a greater number of extreme weather events. This means that

even if ecosystems are not thrown off-balance altogether, there could be more severe droughts along with more severe precipitation events.

Arhonditsis believes this kind of collaborative project can bring distant nations together for mutual benefit. “There is a great deal of knowledge that we can pick up from our colleagues in China that can be transferred here to Canada and elsewhere.”



**How we manage our emotions in the face of COVID-19 might jeopardize our physical health**

**A new U of T Scarborough study finds** that a common strategy used to manage stress related to health threats may create risks to public health during the pandemic. To manage this kind of stress, people often use cognitive reappraisal, a coping strategy that can help reduce fears by re-interpreting the situation. In the context of COVID-19, this could mean thinking the pandemic isn’t a big deal, or that it will soon blow over.

“When you’re feeling stressed about your health, you may try to think about the situation in a way that helps you stay calm,” says **Brett Ford**, an Assistant Professor in the Department of Psychology and one of the study’s authors. “But those who use coping strategies to deal with a health threat may end up jeopardizing health behaviours.”

“Those who use coping strategies to deal with a health threat may end up jeopardizing health behaviours.”

**Brett Ford**, Assistant Professor in the Department of Psychology

The study, published in *Psychological Science*, found that people who successfully reduced fear in the face of COVID-19 were mentally healthier but less likely to follow public health recommendations such as wearing a mask. This suggests that health messages aimed at reducing fear may backfire and promote fewer health behaviours.

However, the study — which received funding from the Social Sciences and Humanities Research Council of Canada and a U of T COVID-19 Student Engagement Award — also uncovered possible alternatives to fear avoidance. Even in the face of COVID-19, people can use reappraisal to cultivate socially oriented positive emotions such as love, gratitude, compassion, or admiration.

“We’re excited about these findings because there are forms of emotion regulation people can use to manage the stress of the pandemic that don’t come at the cost of vital protective health behaviours,” says Angela Smith, a PhD student at U of T Scarborough and lead author of the study.



# Reputation is key to predicting performance – but it’s often overlooked by employers

**Organizations spend considerable** time, money, and resources searching for employees. But according to a new U of T Scarborough study, they may be overlooking the key ingredient in determining future employee success. “Our reputation seems to be the most important and accurate part of predicting performance,” says **Brian Connelly**, an Associate Professor in the Department of Management and lead author of the study.

With personality measures, the overlap between what is seen by yourself and others is referred to as a trait, while the hidden parts only known to yourself are known as identity. The parts known only by others are referred to as reputation. Personality research has traditionally focused on traits and assumed that the best way to measure them is to ask people to describe themselves.

In contrast, the new study, published in the *Journal of Applied Psychology*, asked 455 South Korean military cadets to rate their own person-

ality, while also being rated by three fellow cadets. The researchers additionally collected ratings on citizenship behaviours as well as academic and job performance. Not surprisingly, the cadets who were conscientious and agreeable tended to perform the highest. But the researchers found it was their reputation – not their traits or identity – that most accurately predicted their success.

“Our findings suggest that it’s those emergent aspects of reputation that are the most important for employers and employees to consider,” says Connelly. In his view, there could be several reasons why reputation is such an accurate predictor of success. It could be that others are better at picking up on information that may get distorted by our self-perception. Peers are also judging reputation based on behaviour; they don’t necessarily know an individual’s thoughts, feelings, goals, or past experiences.



# Babies prefer to listen to a familiar tune – even when it’s sung by a stranger

**In early life**, infants are surrounded by music and songs, mostly sung by family or caregivers. But does it matter who is singing to them? A new U of T Scarborough study shows that infants prefer to listen to familiar tunes – regardless of whether their mom or a stranger is singing.

“We found that the more familiar the song, the more infants listened to that song, even if it was sung by a voice they never heard before,” says **Laura Cirelli**, an Assistant Professor in the Department of Psychology and one of the study’s authors.

Previous studies have demonstrated that even newborns recognize and prefer their mother’s speaking voice. While researchers knew that babies recognize familiar songs, this study is the first to explore whether they respond differently when they hear their parents or someone else singing.

The new study — published in *Developmental Science* — examined the responses of 29 infants to familiar and unfamiliar songs. The infants heard recordings of popular childhood tunes sung by their mother and another mother participating in the study. The clips played on a computer until the infants looked away from the screen, so that their desire to hear the recording could be measured.



Results show that babies were calmer, danced more, and listened longer when they heard a more familiar song. They even recognized song renditions by strangers when they were quite far from their mom’s rendition in tempo and pitch.

Cirelli notes that gaining insight into infant song familiarity is important because songs are a powerful signal for a shared cultural identity and sense of belonging. “Music and particular songs are certainly important to culture, and we use shared song knowledge as an indicator for that.”

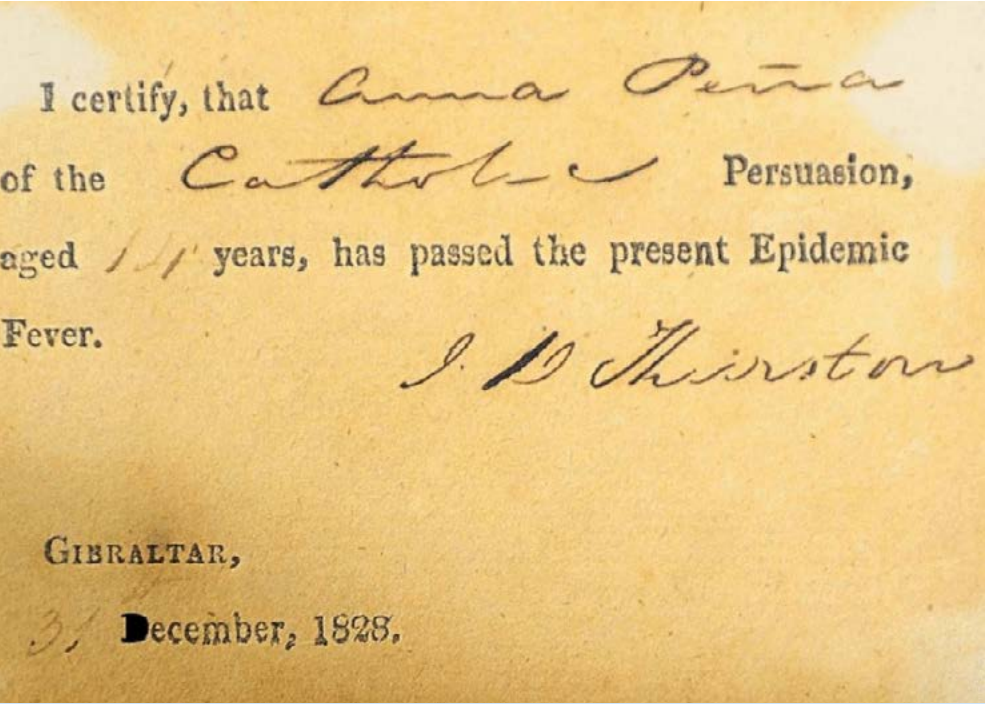


# Wonder what vaccine passports might look like? UTSC research looks at historical evidence of something similar

**Vaccine passports** are a big topic at the moment, but do you ever wonder what one might look like? A new U of T Scarborough research paper gives us a glimpse of the earliest evidence of such certifications.

In 1828, health officials administered immunity passes during a yellow fever epidemic that hit Gibraltar, a British Overseas Territory located on Spain’s southern coast. “A vaccine passport was given if you got the disease and survived. This pass allowed you free movement to be an active participant in a community,” says **Larry Sawchuk**, a Professor in the Department of Anthropology. “To the best of our knowledge, this is the first living example of a vaccine passport.”

The paper, published in *BMJ Global Health*, explores parallels between the precautions used in 19th-century Gibraltar and large-scale strategies in today’s fight against COVID-19. The paper is co-authored by Sawchuk and **Lianne Tripp**, a former graduate student at U of T Scarborough now teaching at the University of Northern British Columbia.



Sawchuk explains that the coordination of resources to control the disease – like printing immunity passes, contact tracing, reporting lack of cleanliness, and quarantine for thousands of citizens – shows Gibraltar was ahead of its time.

So, what are some fundamental lessons from the past when it comes to navigating a pandemic? Aside from health and safety measures, Sawchuk says that one takeaway is trust in the experts to explain how a disease works in populations – including the best way to respond to it. The importance of overall care for our community is another lesson we can learn from 19th-century Gibraltar. “We’re in a prolonged crisis and should face it with concern for the well-being of the global community as a whole.”

# Cavities discovered in 55-million-year-old mammal fossils suggest a sweet tooth for fruit

**A new U of T Scarborough study has discovered the oldest** known cavities ever found in a mammal, the likely result of a diet that included eating fruit. They were discovered in fossils of *Microsyops latidens*, a pointy-snouted animal no bigger than a racoon that went extinct around 54 million years ago.

“These fossils were sitting around for 54 million years and a lot can happen in that time,” says lead author **Keegan Selig**, who recently completed his PhD under the supervision of **Mary Silcox**, a Professor in the Department of Anthropology. Selig is the first to identify little holes in the teeth of some of these fossils as cavities. “I think most people assumed these holes were some kind of damage that happened over time.”

For the research, published in *Scientific Reports*, Selig looked at the fossilized teeth of 1,000 individuals and identified cavities in 77 of them. As for what caused the cavities, Selig says the likely culprit was a fruit-rich diet. While primates had been eating fruit for quite some time before *M. latidens*, fruit became more abundant around 65 million years ago, and primates started eating more of it.



The study, which received funding from the Natural Sciences and Engineering Research Council of Canada, includes the largest and earliest known sample of cavities in an extinct mammal. It also offers a framework to help researchers look for cavities in the fossils of other extinct mammals.

Identifying cavities in fossils can tell us a lot about the biology of these animals. For example, while evolutionary changes in the structure of a jaw or teeth suggest broader changes in diet over time, cavities also offer a window into what specific animals were eating in their lifetime.



● Our  
Research

Internet satellites are set to forever change the sky above Canada. But at what cost?

The night sky is going to get much busier: several internet service companies are planning to launch tens of thousands of satellites in the near future, resulting in a twenty-fold increase of these objects in the Earth’s lower orbit. Their number is estimated to reach 65,000 over the next few years.

According to a recent study published in *The Astronomical Journal*, this is going to affect Canada more than most places on Earth. “This is such a fundamental change to our view of the sky that it requires greater scrutiny,” says **Hanno Rein**, an Associate Professor in the Department of Physical & Environmental Sciences and co-author of the study.

About eight per cent of all the light in the night sky might soon come from satellites. The study found that due to satellite orbits, the highest levels of light pollution will occur near 50 degrees latitude north and south. This means the skies near most large Canadian cities such as Toronto, Vancouver, Calgary, Regina, and Winnipeg will see a significant impact.

The flood of satellites presents a major challenge for astronomers, who will have to contend with light pollution from the thousands of new points of light. The new satellites will also contribute to atmospheric pollution, using rocket fuel during launch and burning up in the Earth’s atmosphere during re-entry.



While satellites have been touted as a way to deliver high-speed internet to rural areas, Rein notes that the service is expensive and that only a relatively small group of people living in wealthy countries will enjoy the benefits. “The light and environmental pollution impact, on the other hand, will be experienced by everyone,” he says.



Vaccine hesitancy, disenfranchisement and trust

A new research project funded by the Canadian Institutes of Health Research explores vaccine hesitancy in historically disenfranchised groups. “There’s a tendency to link vaccine hesitancy with the small but very vocal minority of anti-vaxxers,” says **Notisha Massaquoi**, an Assistant Professor in the Department of Health and Society. “Instead, we’re looking at individuals who face access issues, have concerns based on a history of maltreatment, or feel that public health messages don’t speak to their realities.”

Partnering with Toronto Public Health and several community-based agencies, Massaquoi and fellow researcher **Peter A. Newman** are examining the pandemic experience of racialized sexual, and gender minorities. In large part, the project is about building trust in the health-care system among members of these communities, says Massaquoi. “Their hesitancy isn’t only about the vaccine but about their mistrust of a system that hasn’t treated them well.”

“Their hesitancy isn’t only about the vaccine but about their mistrust of a system that hasn’t treated them well.”

**Notisha Massaquoi**, Assistant Professor in the Department of Health and Society

Rather than approaching vaccine hesitancy as an individual issue rooted in irrational beliefs or deficient scientific understanding, the researchers are exploring the social and structural factors that shape it. This places the onus on governments and public health leaders to address these factors. “Identifying access issues is a crucial first step if public health leaders want to remove barriers,” says Newman. “The distrust and uncertainty in these groups is completely understandable and should be met with respect.”

Once the research is complete, Massaquoi and Newman will collaborate with local partners and a documentary filmmaker to create a professional video for distribution in the community. They will also share their findings with government, policymakers, and community leaders to inform ongoing COVID-19 vaccination campaigns and improve planning for future public health emergencies. “We hope to contribute to a better model of emergency response that recognizes the different issues and concerns in marginalized populations,” says Newman.



# Was sensationalism in COVID-19 news coverage a good thing?

When COVID-19 shut down the world, many were left to sort through ever-changing information about the virus. Now, a study by U of T Scarborough researchers helps us understand the media’s role in communicating life-saving information. “We’re looking at the interface between science, society, and decision-making and actor groups that play a mediating role,” says **Nicole Klenk**, an Associate Professor in the Department of Physical & Environmental Sciences.

Published in *Humanities & Social Sciences Communications*, the study explores the role of print and online news in decision-making by public health agencies. It focuses on national media coverage in Canada, the United Kingdom, and the United States. The research team analyzed 1,331 articles that covered information about public health measures and the transmissibility of COVID-19.

The study pays particular attention to sensationalism and scientific quality. “We define sensationalism as news strategies that make the news seem more extraordinary than



it is,” explains **Jennifer Taylor**, one of several PhD students who co-authored the study. “If you look back at those articles, they weren’t letting us know how extraordinary those circumstances were.”

The study suggests that low sensationalism and low scientific quality in reporting may have downplayed the risks of COVID-19. Scientific quality was lowest in outlets aligned with right-wing politics, specifically the *Toronto Sun*, *New York Post*, and *Daily Mail*. Newspapers

that are generally seen to be on the left, like the *New York Times* and *Washington Post*, leaned toward coverage that unpacked risks associated with the virus and spotted disinformation spread by government leaders.

Overall, reporting was stronger in Canada, says **Brian Pentz**, another PhD student who co-authored the study. Importantly, “higher scientific quality in media coverage correlated with a more effective response by politicians and public institutions.”

# Toronto has more than 700 green roofs. Could they be used for growing food?



U of T Scarborough researchers are studying whether Toronto’s numerous green roofs could be used to grow food. “Urban agriculture is emerging as a key component in bringing resilience to our food systems,” says **Marney Isaac**, a Professor in the Department of Physical & Environmental Sciences who is overseeing the project along with **Scott MacIvor**, an Assistant Professor in the Department of Biological Sciences. “At the same time, new green roofs are popping up across the city. This project is merging the two trends.”

Toronto has one of the most progressive green roof policies in the world. However, most of the city’s green roofs have shallow substrates with little to no irrigation. They’re also planted almost exclusively with Sedum, a succulent that contributes only to draining water and cooling buildings. “We are really interested in transitioning these extensive Sedum green roofs into ones that can perform multiple services,” says Isaac.

The research team is examining detailed interactions between plants and soils. One project — led by PhD student **Adriano Roberto** and master’s student **Andrew Nichols** — includes 400 modules on top of Highland Hall and the Science Wing. Each module contains a crop grown with and without Sedum and subjected to different environmental stressors. The goal is to see whether Sedum can help these crops survive.

“If we just planted beans or parsley in these shallow substrates, not much would grow,” says MacIvor. “But if we mix these with plants that grow well in harsh conditions, they may support these crops.” This process of mixing has been studied extensively but the team is applying the existing knowledge to the harsh growing conditions on green roofs. The research received funds as part of a larger \$1.6-million NSERC CREATE grant.





## Investigating the health effects of fracking in B.C.’s Northeast

**With thousands of wells**, northeastern British Columbia is one of Canada’s most important hubs for fracking – the process of blasting pressurized liquid at rock formations to fracture them and release the natural gas trapped inside. This process causes the emission of chemicals that can cause or exacerbate health problems, including birth defects, cancers, and asthma.

“There are consistent associations with negative health effects,” says **Élyse Caron-Beaudoin**, an Assistant Professor in the Department of Health and Society. However, “what we don’t have a lot of is exposure assessment – measuring the exposure of local communities to chemicals that are potentially emitted during unconventional natural gas operations.”

To fill this gap, Caron-Beaudoin is teaming up with fellow researcher **Marianne Hatzopoulou**. Their project is supported by XSeed, a funding program that aims to catalyze interdisciplinary research collaborations at U of T.

Hatzopoulou will develop air quality models for various fracking scenarios. “Once exposures from the model are assigned to individuals, we want to investigate how they relate to measurements conducted in homes and other markers in biological samples,” she says.

This is where data collected by Caron-Beaudoin — measuring chemicals in indoor air and tap water, as well as the hair and nails of pregnant

women — comes into play. By probing the associations between Hatzopoulou’s air pollution data and Caron-Beaudoin’s samples, the researchers aim to better understand the links between fracking and exposure to toxins.

Ultimately, the team hopes its work can be leveraged to curb the detrimental health impacts of fracking. A more immediate priority is to empower local communities with knowledge about the impact of fracking on their health. This is critical since the communities located near Canada’s fracking hotspots are disproportionately rural and Indigenous and are therefore already disadvantaged by health and economic disparities.



## COVID-19 worsened economic and health conditions for precarious status migrants in the GTA

**A new report highlights the disproportionate impact of COVID-19** on non-status migrants in the GTA. The report was co-authored by **Patricia Landolt**, a Professor in the Department of Sociology. “We wanted to know how COVID-19 was affecting this very vulnerable population that does not have the authorization to live or work in Canada, but they are here, building their lives,” says Landolt.

Research for the report was funded by the Social Sciences and Humanities Research Council of Canada and the FCJ Refugee Centre, a charitable organization that supports displaced newcomers. The research team surveyed 195 non-status migrants who were recruited through the centre. The results show that loss of employment, housing insecurity, and lack of public support programs had a direct, negative impact on non-status migrants.

“We wanted to know how COVID-19 was affecting this very vulnerable population.”

**Patricia Landolt**, Professor in the Department of Sociology

Most precarious migrants work in essential services, which were hit hard by worldwide shutdowns; 31 per cent of participants were laid off during the survey period (March to June 2021). They also faced significantly higher rates of housing insecurity during the pandemic. In addition, the report found a concerning decline in self-rated health: only six per cent of respondents reported “excellent health” compared to 19 per cent before COVID-19.

Participants were highly responsive to public health measures, but factors such as overcrowded housing conditions left them with limited space to self-isolate. Sixty-one per cent reported an increased risk of COVID-19 exposure during their commute and more than half reported a high risk of exposure at work. Precarious migrants were not eligible for OHIP or government supports such as CERB.

Landolt hopes the report will help initiate and inform policy change at the municipal and federal level to secure a quick path to regularization for precarious migrants.



## Reddit saw a huge spike in political polarization in 2016. Who drove it?

A new study published in *Nature* shows that increased political polarization on Reddit was caused by new, largely right-wing users — beginning around the time of the 2016 U.S. presidential election. “Polarization was disproportionately driven by new users appearing on the platform,” says **Ashton Anderson**, an Assistant Professor in the Department of Computer and Mathematical Sciences and lead author of the study.

Reddit is one of the largest online social platforms in the world and is composed of thousands of discussion-based communities called subreddits. It’s been suggested that these like-minded communities can foster polarization, but it wasn’t clear whether that’s because existing users are influenced to move toward more ideological extremes or if the shift is caused by new users.

Anderson, along with PhD student **Isaac Waller**, developed a machine learning-based technique allowing them to assess social stances, including political leanings. Analyzing 5.1 billion Reddit comments posted between 2005 and 2018, they found that individual users did not become significantly more polarized over this period. However, Reddit as a whole underwent dramatic polarization around the 2016 election.



According to Anderson, “the effect was really driven by new users who joined the site who were closer to the right-wing extremes than existing users.” The findings challenge prevailing thinking that Reddit users were becoming more polarized by using the platform. They also suggest that increased polarization may come down to changing dynamics of a specific population, rather than a broader, society-level change in beliefs.

The method developed in this study can be used to quantify the social make-up of other online communities as well, says Anderson. This can help better understand the social contexts of specific online behaviours, such as toxic language use; it can also help with designing other online platforms.

## How family members interpret facial expressions might unlock clues about borderline personality disorder

**Relatives of those with borderline personality disorder (BPD)** show similarities in their brains and personalities, according to a series of studies from U of T Scarborough.

“We are among the first researchers to study how factors in addition to symptoms and personality traits might run in families with BPD,” says **Anthony C. Ruocco**, Professor, Interim Graduate Chair and Director of Clinical Training in U of T Scarborough's Department of Psychology.

BPD is a disorder categorized in part by impulsivity and difficulty with emotional regulation. Ruocco wanted to identify which social and biological factors run in families to offer clues into disorder development and prevention.



Ruocco found symptoms of BPD persist in families more than the actual diagnosis. Relatives also show the same bias toward sad facial expressions, a pattern of weakness and strength in self-regulatory skills, and distinct brain activation patterns during impulse control.

He found both those with BPD and their relatives showed higher levels of depression and substance use disorders. Relatives also received similar psychiatric diagnoses and showed more personality traits associated with emotional dysregulation and impulsivity. People with BPD interpret facial expressions differently than those without the disorder, but Ruocco found their relatives do too. When shown a sad expression, people with BPD and their relatives took longer to decide the emotion, and both

were more likely to interpret it as fearful. Moreover, when looking at impulse control via brain imaging, relatives showed greater brain activity than both people with BPD and the control group. This pattern could mean relatives use more brain resources to control impulses, or they use similar resources differently to regulate themselves.

Ruocco's most recent paper examined which cognitive abilities are associated with impulsivity and BPD. Relatives showed both strengths and weaknesses with executive functions; they had stronger impulse control and abstract thinking abilities, though they also had less efficient problem-solving skills.



## Study finds that grads from some universities fare significantly better in job market

A recent U of T Scarborough study finds that graduates from some Canadian universities fare significantly better in the job market compared to their equally accomplished peers.

The study, published in the *Canadian Review of Sociology*, involved creating fictitious job applicants with virtually identical resumé’s. The only difference was their university — either Waterloo, Queen’s, or Brock.

The researchers applied to 797 online job postings over a four-year period, and for each posting one candidate from Queen’s was paired with a candidate from either Brock or Waterloo. They found that employers responded to applicants from Waterloo 84 per cent more often than those from Brock.

“This tells us that candidates from Brock will have to spend nine extra months to get the same number of employer responses to their job applications as those from Waterloo,” says **Ann Mullen**, an Associate Professor in the Department of Sociology and lead author of the study.



“These are sobering findings. As much as we like to think that Canadian post-secondary education is non-hierarchical, there appears to be a significant advantage in going to one university over another.”

Since employers need to manage a great deal of uncertainty in the hiring process, they might be using a university’s reputation or ranking to decide who to interview.

Another possibility is that employers are making assumptions about a student’s background that go beyond academics.

The findings are important because they challenge the notion that the Canadian higher education system is non-hierarchical and that graduates enter the job market on an equal footing. Even in relatively non-hierarchical systems, status hierarchies have emerged that privilege some graduates over others based on where they attended university.

Mullen also points out that this research isn’t a value judgment on the quality of education or the quality of candidates from certain universities. Instead, it reveals that institutional affiliation seems to matter to employers.



## Showing different types of COVID-19 data can directly influence behaviour during the pandemic

A U of T Scarborough study finds that showing COVID-19 data in a certain way can influence how seriously people view the pandemic, which, in turn, can impact their behaviour.

The study looked at two commonly used types of data: stock (the total case counts since the pandemic started) and flow (the number of new daily cases). Researchers found that people viewed the pandemic as riskier when they were shown total case counts.

“Even a subtle difference in which data are shown can impact how risky people view the pandemic,” says **Sam Maglio**, an Associate Professor in the Department of Management and co-author of the study.

To test the effect, participants were shown either total case counts since the pandemic began or new daily cases. They were then asked to rate the current level of risk associated with the pandemic and how it would affect their behaviour, such as their willingness to dine in restaurants or wear masks.

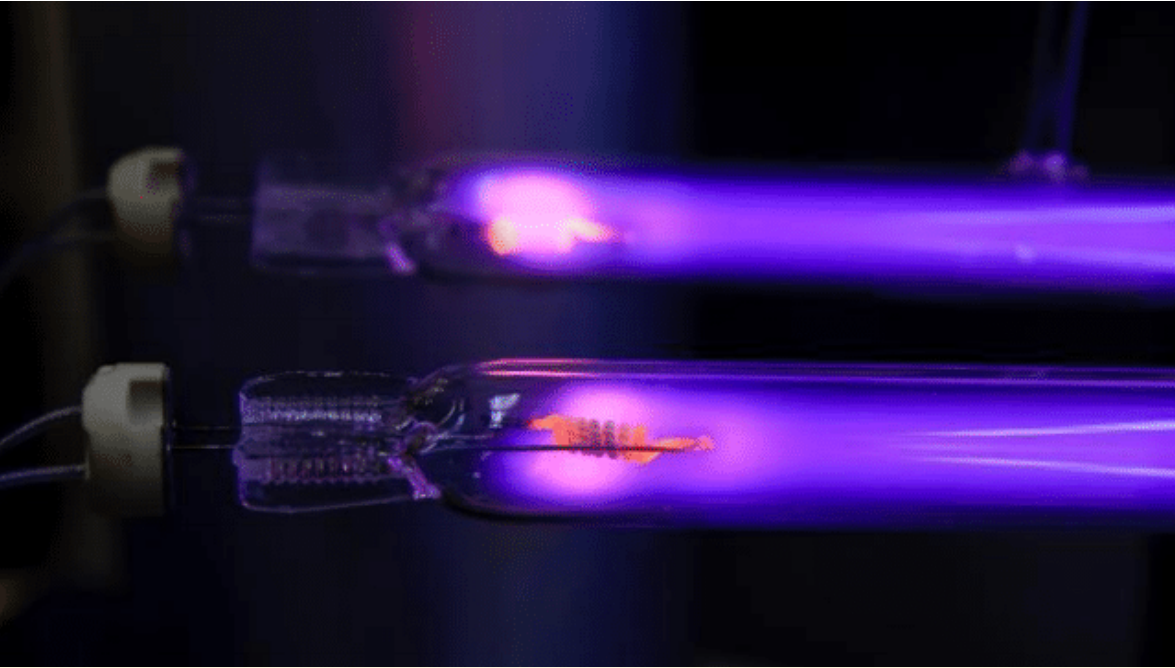
Maglio says since flows can vary but stock is an ever-increasing number, seeing the stock count makes people view the pandemic as more serious, which makes them less willing to engage in riskier behaviour.

He also says the findings suggest showing total case counts causes people to view the pandemic as serious and be vigilant, but continuously doing so may be disingenuous.

An effective way to get people's attention, Maglio says, might be to show the stock number along with a concrete example of an individual hospitalized with the infection.

The findings, published in a COVID-19 edition of the *Journal of Experimental Psychology*, show how small, subtle interventions can change behaviour — and that greater care needs to be taken when presenting data. Maglio says not considering how a message will be interpreted is careless and does a disservice to audiences.





# ‘An underutilized tool’: UV-LED lights can kill coronaviruses and HIV with the flip of a switch

**The same lightbulbs used in offices** and public spaces can destroy coronaviruses and HIV, according to a recent study from U of T Scarborough.

Researchers killed both viruses using UV-LED lights, which can alternate between white light and decontaminating ultraviolet (UV) light. With a cheap retrofit, they could also be used in many standard lighting fixtures, giving them a “unique appeal” for public spaces.

“We’re at a critical time where we need to use every single possible stop to get us out of this pandemic,” says **Christina Guzzo**, an Assistant Professor in the Department of Biological Sciences.

UV lights kill viruses through radiation. Guzzo, alongside her PhD students, first tested the lights on bacterial spores notorious for their resistance to this radiation (known as *Bacillus pumilus* spores).

Within 20 seconds of UV exposure, the spores’ growth dropped by 99 per cent.

The researchers then created droplets containing coronaviruses or HIV to mimic typical ways people encounter viruses in public, such as from coughing, sneezing, or bleeding. With just 30 seconds of exposure to UV light, the virus’s ability to infect dropped by 93 per cent.

Repeated exposure to UV light is key to catching any missed particles – fortunately, it’s as easy as flipping a switch. It’s also simpler to change a lightbulb than an air filtration system.

Moreover, a standardized, germicidal dose of light can be delivered each time, while the process of wiping down spaces with disinfectants leaves room for human error.

But UV radiation damages nucleic acid, and repeated, prolonged exposure is harmful. That’s why Guzzo says the lights should be used when public spaces are empty.

Safe Antivirus Technologies, Inc., a Toronto-based start-up company that partnered with Guzzo for the study, is developing unique UV-LED lighting modules that automatically switch to UV light when a room is empty, then turn back to regular light with movement.

# #CripRitual: See disability differently at U of T Scarborough’s new art exhibit

**At #CripRitual**, a new exhibit at U of T Scarborough’s Doris McCarthy Gallery, the artwork hangs low on the walls. It’s a way to challenge the idea of “standard” height and make those using mobility devices, such as wheelchairs, feel seen.

“There’s something about seeing your own experience reflected in an artwork that can be validating,” says **Cassandra Hartblay**, co-curator of the exhibit and Assistant Professor in the Department of Health and Society.

#CripRitual explores the ways rituals impact disability culture, through work from more than 20 artists. Every piece has a unique QR code that pulls up accessibility features when scanned, including American Sign Language translations and image and video descriptions.

The exhibit’s title comes from a movement to reclaim the term “crip” — a shortened version of a slur for those with disabilities — and “crip theory,” a concept in disability studies



that explores how societies define “normal” bodies. Curators also wanted to counter the cultural norm (or ritual) of associating disability with limitations.

“We wanted to look at ritual and disability in a different way,” says Hartblay, Director of the Centre for Global Disability Studies. “Ritual is actually a way that folks in disability culture are sharing ideas, using the same symbols, and passing on traditions.”

Those rituals fall into four categories: self-care, creating access, art-making, and protest. Amid

the exhibit, a bright blue bench reads “Museum visits are hard on my body,” highlighting the ableism in art spaces without places to sit. One piece looks at how the Quran views disability, another examines living with mental illness as an Indigenous community member.

Hartblay hopes attendees pick up some new terminology and see the diversity in the disability community.

“We’re imagining it as a longer-term project that will exist as a teaching tool,” Hartblay says.



# Faculty & Student Awards

**action** Winning awards  
and honours  
**impact**  
Recognizing excellence and  
achievement in research





# Royal Society of Canada

**Marlene Goldman**, a Professor in the Department of English, has been named a Fellow of the Royal Society of Canada. Established in 2014, this prestigious fellowship is awarded to academic leaders nationwide who have demonstrated high achievement in their careers.

Goldman is an internationally renowned professor, author, and filmmaker.

As an age studies scholar, her interdisciplinary approach to the field focuses on feelings of shame and invisibility as they connect to ageing particularly when it is accompanied by experiences of disability and illness.

Goldman’s latest bilingual film, *Mani Pedi*, follows a retired professional boxer who, after suffering multiple concussions, navigates his medical condition and life as a Laotian refugee in Canada. “*Mani Pedi* is incredibly important to me and to

the Lao-Canadian community, as this is the first time the community has been represented in film.”

Reflecting on this recognition, Goldman says, “I’m really honoured. I would never have been able to achieve this global scholarship if I didn’t work in an incredibly supportive and creative network, and I’m just so pleased that I found that at UTSC.”

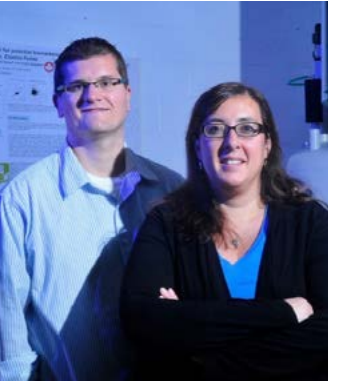


**Marlene Goldman**, Professor, Department of English, **Fellow of the Royal Society of Canada**

**Andre Simpson and Myrna Simpson**, Professors in the Department of Physical & Environmental Sciences, have won the **Royal Society of Chemistry’s Analytical Division Horizon Prize, the Sir George Stokes Award**, along with Professor Aaron Wheeler from U of T’s Department of Chemistry.

Part of an international collaboration that integrated digital microfluidics (DMF) and nuclear magnetic resonance (NMR) spectroscopy for the first time, the technology promises to change the landscape of analytical chemistry with a wide range of uses, from an automated discovery platform in synthetic chemistry, to automated water toxicity testing. The Horizon Prizes celebrate the most exciting, contemporary chemical science at the cutting edge of research and innovation.

“We are completely honoured and humbled to receive this award,” says Andre Simpson. “It was so much fun working on this project, as it brought together scientists from a diversity of fields and across industry and academia. We all found it extremely rewarding, developing technology with potential applications across a range of disciplines, from chemical synthesis to medical diagnosis.”



**Myrna Simpson**, Professor and **Andre Simpson**, Professor, Department of Physical and Environmental Sciences, **Sir George Stokes Award**



## Members and Fellows of the Royal Society of Canada:

- **Bernie Kraatz**, Professor, Department of Physical and Environmental Sciences, Fellow
- **Irena Creed**, Professor, Department of Physical and Environmental Sciences, Fellow
- **Judith Teichman**, Professor, Department of Political Science, Fellow
- **Frank Wania**, Professor, Department of Physical and Environmental Sciences, Fellow
- **Michael Lambek**, Professor Emeritus, Department of Anthropology, Fellow
- **John Friedlander**, Professor, Department of Computer and Mathematical Sciences, Fellow
- **Lisa Jeffrey**, Professor, Department of Computer and Mathematical Sciences, Fellow
- **Katherine Larson**, Professor, Department of English, Member of College of News Scholars, Artists and Scientists
- **Natalie Rothman**, Associate Professor, Department of Historical and Cultural Studies, Member of College of News Scholars, Artists and Scientists
- **Diana Fu**, Associate Professor, Department of Political Science, Member of College of News Scholars, Artists and Scientists
- **Marc Cadotte**, Professor, Department of Biological Sciences, Member of College of News Scholars, Artists and Scientists



## UTSC mathematics professor wins prestigious Sloan fellowship

**Alexander Kupers**, an Assistant Professor in the Department of Computer and Mathematical Sciences, is a recipient of a 2022 **Sloan Research Fellowship**.

Kupers's research focuses on the mathematics of shape, also known as topology. In particular, it tries to understand how simple shapes such as discs and spheres can have complicated symmetries.

“I’m honoured and humbled to have received this recognition,” says Kupers, who is one of five U of T researchers to receive the fellowship this year. “This will be helpful not only in furthering my research, but also in making the sort of mathematics I study more accessible to a wider audience.”

The Sloan Research Fellowship is handed out annually by the Alfred P. Sloan Foundation, a non-profit organization that funds research and education in science, technology, engineering, mathematics, and economics.



**Alexander Kupers**, Assistant Professor, Department of Computer and Mathematical Sciences, 2022 **Sloan Research Fellow**

## UTSC professor awarded international prize for work on exoplanets

**Diana Valencia**, an Associate Professor in the Department of Physical & Environmental Sciences, is the co-recipient of the 2021 Paolo Farinella Prize for her contributions to better understanding of the interior structure and dynamics of terrestrial (rocky) and super-Earth exoplanets.

She was one of the first scientists to combine geophysics and astrophysics to study exoplanets. Her pioneering work includes developing the first interior model and first mass-radius relationship for rocky exoplanets (1-10 Earth masses). Her exploration into the possibility of plate tectonics on super-Earths spurred a lively debate in the field that continues today.



**Diana Valencia**, Associate Professor, Department of Physical & Environmental Sciences, **Paolo Farinella Prize**

She’s also explored the composition of these planets, which has been essential for comparing them to Earth and other exoplanets. Her work on exoplanet GJ 1214b in particular has inspired atmospheric observations of super-Earths and mini-Neptunes to better determine their composition.

# External Award Winners

- **Microsoft Faculty Award**  
**Ashton Anderson**, Assistant Professor, Department of Computer and Mathematical Sciences
- **2021 Bodossaki Distinguished Young Scientist Awards – Science: Mathematics**  
**Stefanos Aretakis**, Assistant Professor, Department of Computer and Mathematical Sciences
- **Young Scientist Prize in Mathematical Physics, International Union of Pure and Applied Physics**  
**Stefanos Aretakis**, Assistant Professor, Department of Computer and Mathematical Sciences
- **American College of Neuropsychopharmacology (ACNP) Associate Membership**  
**Maithe Arruda-Carvalho**, Assistant Professor, Department of Psychology
- **2022 Prix Lumières Award: Firestarter, Institut National de la Recherche Scientifique**  
**Élyse Caron-Beaudoin**, Assistant Professor, Department of Health and Society
- **2022 McGuffey Longevity Award, Textbook & Academic Authors Association**  
**Clayton Childress**, Associate Professor, Department of Sociology
- **Inaugural Amílcar Cabral Prize, Institute of Contemporary History, Lisbon**  
**Esmat Elhalaby**, Assistant Professor, Department of Historical and Cultural Studies
- **Grenville Award, Georgian Bay Land Trust**  
**Nicholas Eyles**, Professor, Department of Physical and Environmental Sciences
- **Janet Taylor Spence Award for Transformative Early Career Contributions, Association for Psychological Science**  
**Brett Ford**, Assistant Professor, Department of Psychology
- **Early Career Award, Society for Neuroeconomics**  
**Cendri Hutcherson**, Associate Professor, Department of Psychology
- **2021 Canadian Mathematical Society Fellow**  
**Lisa Jeffrey**, Professor, Department of Computer and Mathematical Sciences
- **2022 Women of Impact National Gallery**  
**Notisha Massaquoi**, Assistant Professor, Department of Health and Society
- **International Symposium on Computer Architecture (ISCA) Hall of Fame**  
**Gennady Pekhimenko**, Assistant Professor, Department of Computer and Mathematical Sciences
- **2021 Canadian Political Science Association Prize in International Relations**  
**Stefan Renckens**, Assistant Professor, Department of Political Science
- **2022 USENIX Test of Time Award**  
**Bianca Schroeder**, Professor, Department of Computer and Mathematical Sciences
- **James E. Grizzle Distinguished Alumni**  
**Qiang Sun**, Assistant Professor, Department of Computer and Mathematical Sciences
- **2021 André Aisenstadt Prize**  
**Giulio Tiozzo**, Assistant Professor, Department of Computer and Mathematical Sciences
- **International Symposium on Computer Architecture (ISCA) Hall of Fame**  
**Nandita Vijaykumar**, Department of Computer and Mathematical Sciences
- **Gabrielle Roy Prize for Best Book of Canadian Literary Criticism**  
**Karina Vernon**, Associate Professor, Department of English
- **CRM-Fields-PIMS Prize, the Fields Institute for Research in Mathematical Sciences**  
**Bálint Virág**, Professor, Department of Computer and Mathematical Sciences
- **Institute of Mathematical Statistics 2021 Fellow**  
**Bálint Virág**, Professor, Department of Computer and Mathematical Sciences



# Current Canada Research Chairs at U of T Scarborough



**Daniel Bender,**  
Professor,  
Department of  
Historical and Cultural  
Studies, CRC in Food  
and Culture,  
2014-2028



**Brian Connelly,**  
Associate Professor,  
Department of  
Management,  
CRC in Integrative  
Perspectives on  
Personality,  
2016-2026



**Cendri Hutcherson,**  
Associate Professor,  
Department  
of Psychology,  
CRC in Decision  
Neuroscience,  
2018-2023



**Marney Isaac,**  
Professor, Department  
of Physical & Envi-  
ronmental Sciences/  
Global Development  
Studies, CRC in Agro-  
ecosystems and Devel-  
opment,  
2013-2024



**Kagan Kerman,**  
Associate Professor,  
Department  
of Physical &  
Environmental  
Sciences, CRC in the  
Bioelectrochemistry of  
Proteins, 2016-2026



**Bianca Schroeder,**  
Professor, Department  
of Computer and  
Mathematical  
Sciences, CRC in Data  
Centre Technologies,  
2014-2024



**Myrna Simpson,**  
Professor, Physical  
& Environmental  
Sciences, CRC in  
Integrative Molecular  
Biogeochemistry,  
2019-2026



**Bebhinn Treanor,**  
Associate Professor,  
Department of  
Biological Sciences,  
CRC in Spatially  
Resolved Biochemistry,  
2016-2026



**Hilary Brown**  
Assistant Professor,  
Department of Health  
and Society,  
CRC in Disability and  
Reproductive Health  
2019-2026



# Internal Faculty Awards



U of T Scarborough Principal's Research Award:



**Alan Saks**, Professor,  
Department of Management



**William Seager**, Professor,  
Department of Philosophy

U of T Scarborough  
Research Excellence  
Faculty Scholars Award:



**Jessica Wilson**, Professor,  
Department of Philosophy

U of T Scarborough  
Research Excellence  
Faculty Scholars Award:



**Artur Izmaylov**, Professor  
Department of Physical &  
Environmental Sciences

U of T Scarborough  
Research Recognition  
Award:



**Andrea Charise**, Associate  
Professor, Department of  
Health and Society

U of T Scarborough  
Pre-Tenure Faculty Research  
Award, Humanities:



**Mark Campbell**, Assistant  
Professor, Department of Arts,  
Culture and Media

U of T Scarborough  
Pre-Tenure Faculty  
Research Award, Sciences:



**Scott MacIvor**, Assistant  
Professor, Department of  
Biological Sciences



# Connaught New Researcher Award Winners

Year 2020-2021



**Rachel Goffe**, Assistant Professor,  
Department of Human Geography,  
**Connaught New Researcher Award**

**Rachel Goffe**, an Assistant Professor in the Department of Human Geography, is a recipient of the 2020-2021 Connaught New Researcher Award.

Goffe researches how traditions and practices grounded in anti-colonialism become delegitimized through discourses of race and gender.

Now, her work in Jamaica will focus on how legalization structures exclude people who grow illicit ganja from the legal market. Goffe explains that she wants to talk to people about existing economic, spiritual, and medicinal uses and how they are being reshaped by new technologies and state practices to protect legal cannabis.

“For this research, I’m interested in how the idea of contamination shapes the technologies of legalization,” Goffe says. “This includes technologies that allow the product to be traced from the seed to the consumer. How do those technologies, and the investment they require, come to shape new landscapes of production and policing?”

The Connaught New Researcher Awards help new U of T faculty develop strong research programs, with the goal of achieving external funding.

- **Blair Armstrong**, Assistant Professor, Department of Psychology  
*“Understanding How Instruction Impacts Learning to Read”*
- **Anita Benoit**, Assistant Professor, Department of Health and Society  
*“Food and Indigenous Determinant of Health”*
- **Angelina Grigoryeva**, Assistant Professor, Department of Sociology  
*“New Money in the New Economy: The Shift to Stock Compensation and Wealth Inequality”*
- **Elliot Leffler**, Assistant Professor, Department of Arts, Culture and Media  
*“The 2022 Oberammergau Passion Play: An Ethnographic Study of Theatre-Making and Community Dialog”*
- **Andrew McDougall**, Assistant Professor, Department of Political Science  
*“Canadian Constitutional Politics in Transition: From Crisis to Stabilization”*
- **Nandita Vijaykumar**, Assistant Professor, Department of Computer and Mathematical Science  
*“Accelerating Robotic Tasks in Resource-Constrained Autonomous Vehicles”*
- **Shana Ye**, Assistant Professor, Department of Computer and Mathematical Sciences  
*“Sexing the Empire: The Economy of Sexuality and the Rise of Global China”*
- **Yun William Yu** Assistant Professor, Department of Historical and Cultural Studies  
*“Development of a Long-read Haplotype Phasing Methods and Theory”*
- **Rachel Goffe**, Assistant Professor, Department of Human Geography  
*“From Ganja to Cannabis: Racialized Geographies of (Il)licit Drug Supply, from Jamaica to Canada”*



# Student Awards

## Undergraduate Research & Creative Forum

The **UTSC Library** and the Office of the Vice-Principal Research & Innovation are proud sponsors of the Undergraduate Research & Creative Forum (URCF). The URCF is a competitive, adjudicated event that provides a platform for talented University of Toronto Scarborough undergraduate students to display their scholarly and creative activities to a faculty, student, and community audience, while developing their oral presentation skills. The URCF is ideal for all students completing capstone projects, independent research or creative projects, or other faculty-mentored scholarly activities where there are at least preliminary findings to present to a layperson audience. The format of the URCF focuses on translating research findings into knowledge available to others beyond academia. One main objective is to make the project understandable without trivializing or oversimplifying it. Creative projects allow students to describe their creative process to the audience in order to give the audience insights into the work of creative professionals.



**2022 Winners Research Stream**  
**Caitlin Arizala, Abigail Ralph, Omer Jamal**  
Evaluating & Improving COVID-19 Vaccine Clinics for Racialized Youth in Toronto’s COVID-19 Hotspots

**2022 Winners Creative Stream**  
**Bhanvi Sachdeva**  
An Ode to Her: Poetry in Qualitative Research

## Undergraduate Research Prize

**The purpose of the** U of T Scarborough Undergraduate Research Prize is to highlight the achievements of UTSC students who have excelled in research, scholarship, and creative activities in the classroom and beyond. This prize recognizes the research and creative activities of undergraduate students and their overall contribution to U of T Scarborough and illustrates the role of the library in the research process. Students may express their achievements in many forms, such as a traditional paper, database, website, digital project, or creative expression. Three cash prizes of \$1,000 were given out, one each for projects in the humanities, social sciences, and sciences.

- In the Humanities:**
- **Noah Faberman**  
The Abyss of Noah
  - **Zekai Zhao**  
The Genealogy of a Marginalized Art Movement – Reel Asian Film Festival

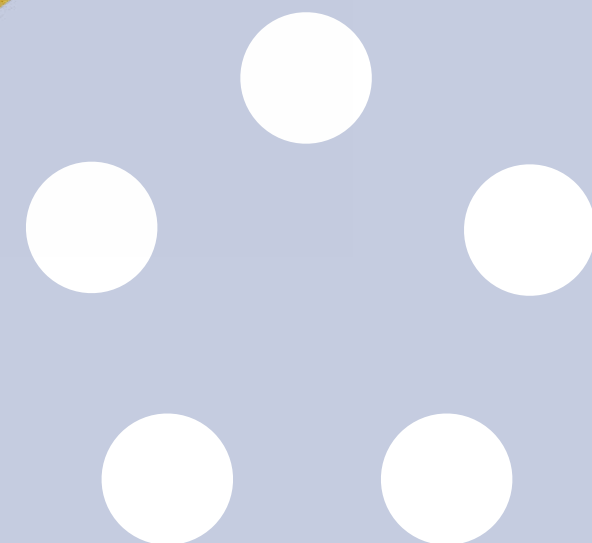
- In the Social Sciences:**
- **Blessing Nkenkor**  
African Indigenous Community-Engaged Epidemic Control: Ebola as a Case Study
  - **Sapolnach Prompiengchai** Online  
Self-Disclosure of Stigmatizing Experience: Does Anonymity Matter?

- In the Sciences:**
- **Jasmin Khela**  
A Review of the Molecular Mechanisms, Diagnosis, and Current Therapies of the Brittle Bone Disease Osteogenesis Imperfecta
  - **Aditi Bansal, Ayuni Weerakoon Ratnayake, Natalie Wong, Sapolnach Prompiengchai** and **Theluckshan Saseetharan**  
Reflection Revisited: Assessing the Impact of Students’ Study Strategy Reflections on Academic Performance in a Foundation Biology Course



# Research Events

**action** Creating opportunities  
for knowledge  
exchange  
**impact**  
Bringing stakeholders  
together to build a healthier  
and more equitable future







# Health Events: Building more equitable health systems in the eastern GTA

**COVID-19 has highlighted** deep health inequities in the Greater Toronto Area and the disproportionate burden it places on Black, Indigenous, and racialized communities. Scarborough was hit particularly hard by the pandemic and experienced some of the highest rates of hospitalizations, patient transfers, and deaths in the province.

Two virtual events were held to understand the roots of health inequities and what can be done to build a better system moving forward. The **Eastern GTA Community Health Pulse** virtual event on Dec. 7, 2021 was a community-based event that

offered a chance for residents to share their experiences and ask experts questions about the pandemic experience in Scarborough. The event included three separate panel discussions centred around important health topics including the impact of COVID-19 on mental health and well-being; fostering resilience through community relationships; and the disproportionate impact COVID-19 has had on Indigenous and racialized communities in the eastern GTA.

Hosted by U of T Scarborough the Partnership for Inclusive Health: **Bridging the Equity Gap in the Eastern GTA**, was held on Feb. 23, 2022 and highlighted ways to bridge the health equity gap. It brought together U of T Scarborough-based health researchers, community health advocates, and senior leaders. Important discussions explored health inequities within the eastern GTA as a way to better define pathways to improving the health and well-being of communities in the region, with a focus on health as a human right.

Health inequities are systemic differences in health outcomes experienced by different populations and communities. These include unequal distribution of health resources and a lack of access to adequate care based on age, race, abilities, income, and where people live. Community advocates and researchers highlighted these as key components of community health and well-being through various presentations and discussions.

“People in the community had to travel downtown to access services they actually trust because those services are specifically targeted to the health needs of Black women... It really showed us that not only do we have limited services for Black communities to respond to COVID in a culturally appropriate manner, but also that those services that do exist were stretched.”

**Notisha Massaquoi**, Assistant Professor in the Department of Health and Society

These events provided an opportunity to strategically mobilize supports and resources to address these challenges and collectively imagine how we can redress these systemic inequities. It was recognized that building a better, more inclusive health-care system in Scarborough requires more than hiring doctors and nurses; it is equally important to hire more nurse practitioners, physiotherapists, occupational therapists, personal support workers, and social workers, all of whom play an important role in delivering health-care services in the community.

There are many steps that need to be taken to address health inequities, said Professor **Irena Creed**, Vice-Principal Research & Innovation at U of T Scarborough. It will require the recruitment of physicians and other health-sector workers; immediate resources to tackle the pandemic; and the long-term development of health policies based on the experiences of people living in the region.

It also became evident throughout the day that this can only be achieved through the creation of a health district in Scarborough, founded on collaborations among anchor institutions

such as universities, health-care providers, and community organizations.

“The conversations here today will help define pathways for a community-engaged, inclusive health district in the eastern GTA. It’s going to require working together and reciprocal relationships so we can identify training, research, and innovation needs,” said Creed.

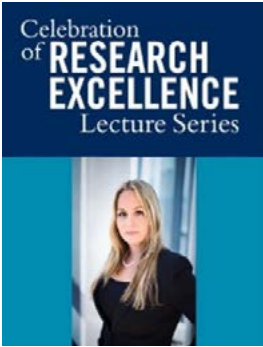
“This is just the start of the conversation, but it’s an exciting time because we’re gaining momentum and we’re moving forward together.”



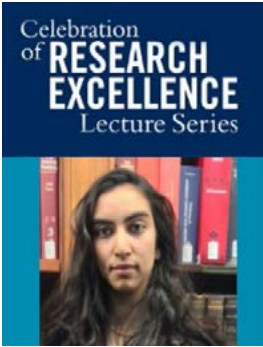
● Research Events

Celebration of Research Excellence Lecture Series

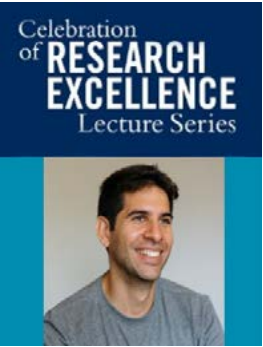
Over the past year, the OVPRI brought the community together to advance the intellectual life of the campus through the U of T Scarborough’s Celebration of Research Excellence Lecture Series. This series features award-winning U of T Scarborough faculty presenting cutting-edge research, sharing innovations and discoveries that are advancing new knowledge and improving lives in Canada and around the world. The 2021-2022 series was comprised of five lectures, featuring leading U of T Scarborough scholars, reflecting the diversity of faculty accomplishments in the humanities, social sciences and physical sciences. These virtual presentations were open to all faculty, staff, and students across all three U of T campuses.



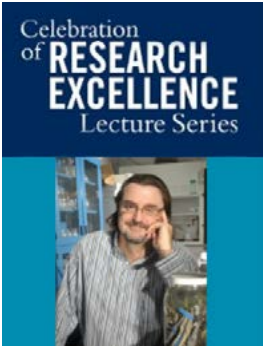
- Professor **Julie McCarthy** Department of Management: “Navigating Disruptive Times”



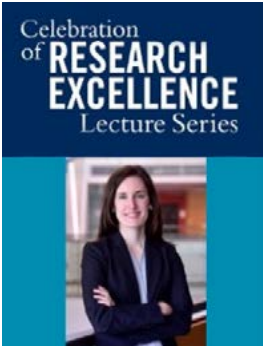
- Associate Professor **Urvashi Chakravarty** Department of English: “Fictions of Consent: Slavery, Servitude, and Free Service in Early Modern England”



- Associate Professor **Stefanos Aretakis** Department of Computer and Mathematical Sciences: “Observing Black Holes with Mathematics”



- Professor **Nick Mandrak** Department of Biological Sciences: “A Brief History of the Fish Communities of the Great Lakes: Past, Present and Future”



- Assistant Professor **Hilary Brown** Department of Health and Society: “Improving Accessibility of Reproductive Health Care for Women with Disabilities”



Science Rendezvous

U of T Scarborough continued its long-standing partnership with the Toronto Zoo and Let’s Talk Science (LTS) to hold Science Rendezvous, a national celebration of science, technology, engineering, art, and math (STEAM) on May 8, 2021. Given the impact of COVID-19, and ensuring the safety of our community, the event relied heavily on virtual programming. Faculty from U of T Scarborough, experts from the Toronto Zoo, and Let’s Talk Science students and volunteers made science come alive through demonstrations, hands-on activities, and fun talks that took science out of the lab and into their homes. It was a great opportunity for everyone to explore their inner scientist.

The virtual event kicked off with an exciting Facebook Live presentation from the Toronto Zoo staff talking about their careers and how their work is related to education in science, technology, engineering, art, and



1,368

Science Rendezvous page views

700

New users

81

Registered teams

math. The event was viewed by over 5,800 people. Attendees were then invited into a virtual platform where they were able to participate in a nationwide Science Chase.

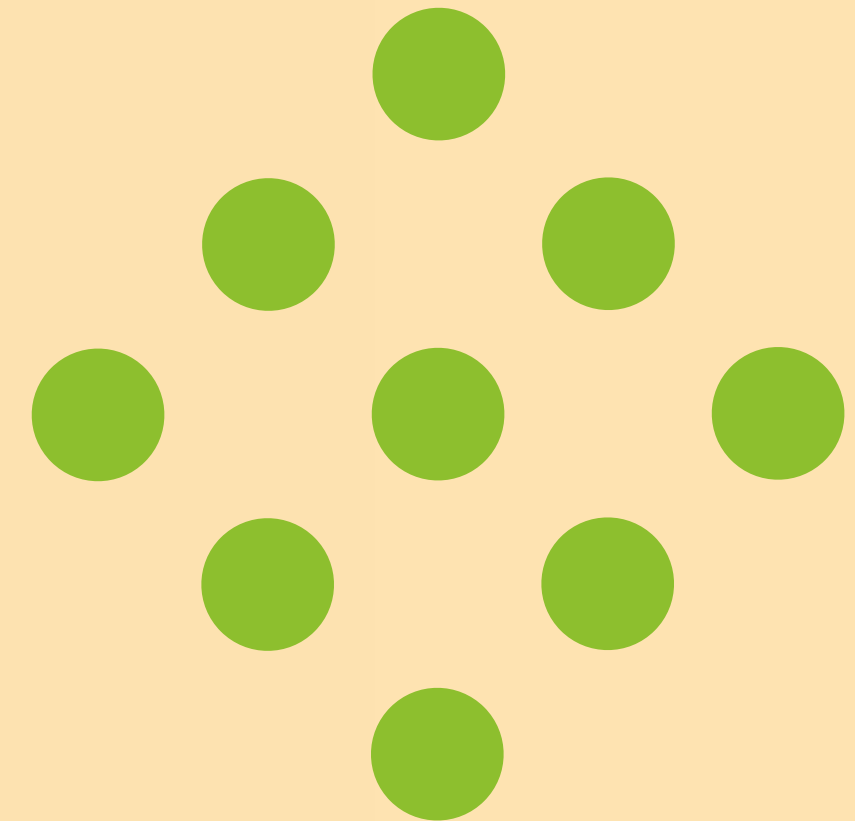
The U of T Scarborough Science Chase was centred on three educational videos filmed at the Toronto Zoo, related to different areas of zoology: Bug House & Invertebrates, Birds & Their Adaptations, and Learn All About Digestion. Let’s Talk Science student volunteers then created their own complementary videos that showcased at-home experiments using materials easily found in the household. In addition to the educational content of each video, there were questions at the end of each video for participants to answer that were part of the broader Science Chase program.



# The Hub



**action** \$10.5M in  
combined revenue  
and investments  
**impact**  
Enabling innovation to thrive





● **The Hub**

**The Hub, U of T Scarborough's** innovation centre and start-up incubator, is now officially a Mitacs-approved accelerator. For the past 10 years, it has helped students and recent alumni from all disciplines launch successful ideas in research commercialization, social innovation, and business creation. This year, 22 new companies were formed and 37 graduated from the Hub, with a combined revenue and investment of \$10.35 million.



The winner of the Hub competition this year was Eye Buddy, an innovative app that helps diagnose vision loss and is currently being used in hospitals across Bangladesh. With the assistance of the Hub, the app's creator, **Pradipta Chowdhury**, has been able to partner with CNIB to bring this tool to the Canadian market.



Combined revenues and investment of Hub start-ups:

**\$10.35 M**

Companies graduated:

**37**

New companies formed:

**22**

Total companies in residence:

**46**

Total percentage of companies with women founders:

**50%**

Total percentage of women (and non-binary) founders:

**42%**

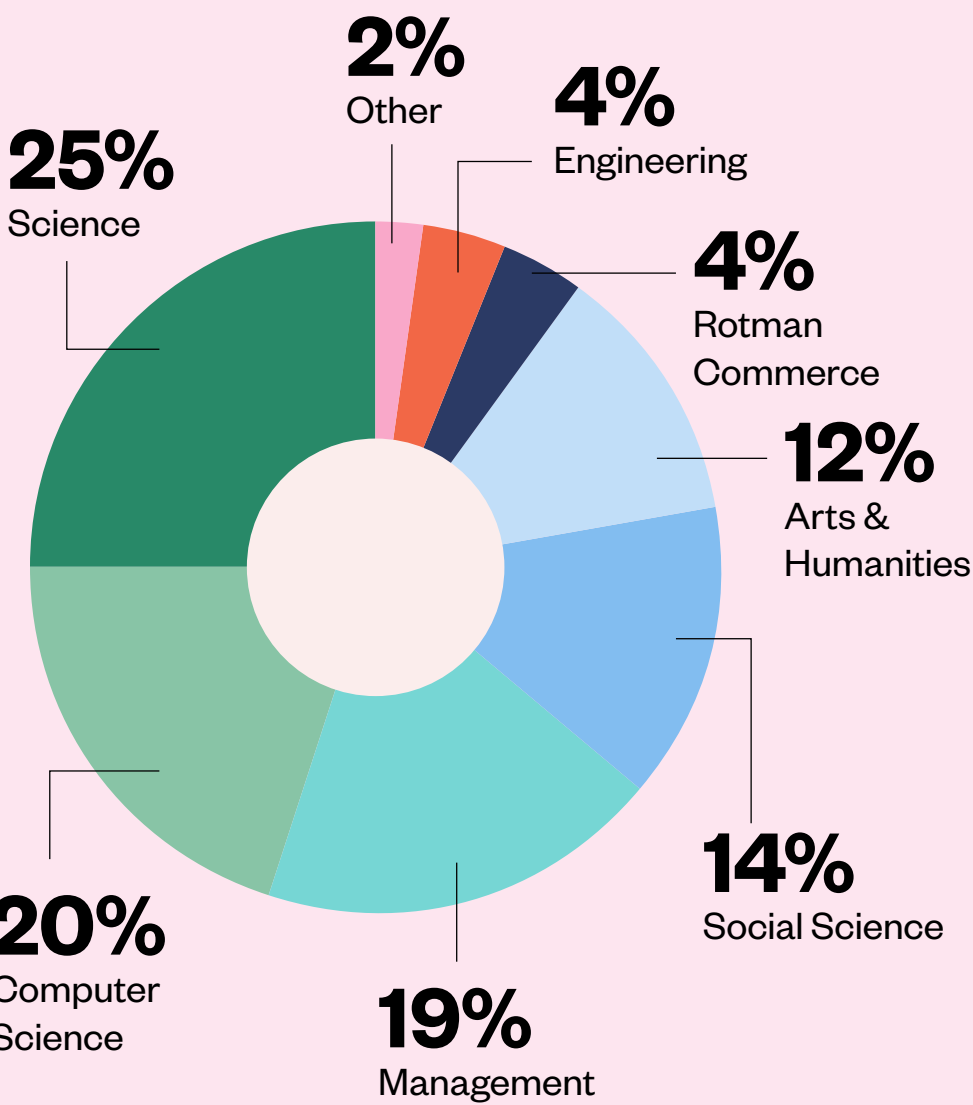
Total percentage of founders identifying as people of colour:

**87%**

Total students participating in Hub events:

**857**

Founders in The Hub by discipline, 2021-2022





● Acknowledgements

**Our thanks go to** everyone in the Office of the Vice-Principal Research & Innovation.

2021-2022 OVPRI Annual Report contributors:  
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