FOR INFORMATION **PUBLIC** **OPEN SESSION**

TO:	Academic Board
SPONSOR:	Professor Leah Cowen, Vice-President, Research and Innovation, and Strategic Initiative
CONTACT INFO:	416-978-4984, vp.research@utoronto.ca
PRESENTER:	See above
CONTACT INFO:	
DATE:	April 11, 2024 for April 18, 2024
AGENDA ITEM:	4

ITEM IDENTIFICATION:

2023 Annual Report, Division of the Vice-President, Research & Innovation

JURISDICTIONAL INFORMATION:

The annual report for the Division of the Vice-President, Research and Innovation is considered by the Academic Board for information. (Academic Board Terms of Reference, Section 5.2.12)

GOVERNANCE PATH:

1. **Academic Board [for information] (April 18, 2024)**

PREVIOUS ACTION TAKEN:

This report is provided annually to the Academic Board.

HIGHLIGHTS:

In a year of exciting accomplishments at U of T, we continued to build on our legacy of discovery and innovation that has improved lives and expanded knowledge for nearly two centuries.

U of T and the Division of the Vice-President, Research & Innovation (VPRI) continues to diligently support the talent, creativity and collaboration of our researchers, innovators, entrepreneurs, and learners as they conduct world class research and innovation. Our 2023 Annual Report highlights these accomplishments and the impact of the research taking place at U of T by reporting on key performance metrics. The report also focuses on important initiatives and service improvements we have implemented to support research and innovation.

The attached presentation provides key highlights. Please explore 2023.research.utoronto.ca to learn more about how we continue to facilitate research and innovation at a world-class institution.

FINANCIAL IMPLICATIONS:

None.

RECOMMENDATION:

For information only.

DOCUMENTATION PROVIDED:

2023 VPRI Annual Report Presentation, Division of the Vice-President, Research & Innovation

Link to full online report: 2023.research.utoronto.ca

RESEARCH & INNOVATION

UNIVERSITY OF TORONTO

DEFY GRAVITY

2023 Annual Report

CONTENTS

3 A MESSAGE FROM THE VICE-PRESIDENT

4 U OF T'S RANKINGS

6 AWARDS & HONOURS

8 IMPACT AWARDS

10 FUNDING

14 Acceleration Consortium

15 Social Sciences and Humanities

17 Climate Positive Energy

19 Innovation and Commercialization

21 U of T Entrepreneurship

24 Data Sciences Institute

25 Life Sciences Hub

27 Connaught Fund

28 Centre for Research & Innovation Support

29 U of T Research Account and Discover Research

31 VPRI Services

32 Serving the U of T Community

Note:
All researchers pictured in this report are using the appropriate safety gear for the research depicted.

A MESSAGE FROM THE VICE-PRESIDENT

As Canada's leading university and one of the top public universities in the world, the University of Toronto plays a critical role in creating impactful research and innovation that tackle global grand challenges.

In a year of exciting growth at U of T, particularly in AI research and the bioinnovation sector, we continued to build on our legacy of discovery and innovation that has improved lives and expanded knowledge for nearly two centuries.

In 2023, U of T ranked #1 in Canada and #3 among North American public universities in the prestigious Times Higher Education World University Rankings. Not only did QS Top Universities rank U of T the top university in the world for sustainability, recognizing our ability to address the world's greatest environmental, social and governance challenges, but the journal *Nature* also ranked U of T the second most prolific university for health sciences research. Further, we remain a leader in supporting research-based startups, ranking among the top five university business incubators. The depth and breadth of U of T's world-class research enterprise is recognized both through the positive impacts our research has on our community and the prestigious awards and honours our faculty receive.

2023 was marked by exciting wins and opportunities. In April, U of T received the largest federal research grant ever awarded to a Canadian university. This $200-million grant from the Canada First Research Excellence Fund (CFREF) for U of T's Acceleration Consortium (AC) has already revolutionized the speed of materials discovery. Across the downtown campus from where we are breaking ground on the new home for AC, the prominent 750,000-square-foot Schwartz Reisman Innovation Campus has begun turbocharging the next wave of Canadian innovation. As one of the newest buildings on the skyline, it represents our investment in innovation and our ambition to make Toronto a global hub for entrepreneurship.

The Division of the Vice-President, Research & Innovation (VPRI) continued to support U of T's vast research and innovation enterprise in 2023. It expedited the administration of critical research funding, helped researchers and innovators build successful partnerships and conducted crucial oversight and compliance for our research community. Last spring, the VPRI engaged the U of T community and partner hospitals, as well as leaders of national and international research and innovation organizations, in 32 consultation sessions as we developed **U of T's Institutional Strategic Research Plan 2024–2029**. It expresses the university's core commitment to research excellence and identifies strategic research opportunities over the next five years.

U of T and partner hospitals propel the Toronto region as a leading global hub for life sciences research through the **Toronto Academic Health Science Network (TAHSN)**, which comprises U of T and 14 academic hospitals. In November, health sciences strategy consultants SHIFT Health evaluated the impact of TAHSN against five leading life sciences hubs in North America and determined it to be among the most productive and collaborative in the world, driving discovery that leads to new products and companies.

Collaborations across disciplines and networks are also enabled through U of T's 22 **Institutional Strategic Initiatives (ISIs)**. They catalyze research in the life sciences and beyond and are transforming the newest areas of research including sustainable energy, regenerative medicine and machine learning. U of T is one of the few global institutions able to deploy initiatives that span fields and faculties to advance large-scale, high-impact research to solve multi-faceted challenges.

The VPRI has ongoing commitments to integrating equity, diversity and inclusion (EDI) practices into its internal programs, addressing sponsor requirements related to EDI and developing resources. Our Standing Committee on EDI in Research and Innovation provides guidance on these matters. The VPRI is also dedicated to increasing capacity and supports for Indigenous research through initiatives like the Indigenous Research Network, and by working closely with the Provostial Academic Advisor on Indigenous Research, who provides leadership and guidance to colleagues conducting research in and with Indigenous communities.

Finally, I want to thank the VPRI team for all they have accomplished this past year. It is inspiring to see their dedication as we continue to strengthen research and innovation support tools and resources, enabling University of Toronto's world-class research and innovation to continue to improve our world.

Sincerely,

Professor Leah E. Cowen
Vice-President, Research and Innovation, and Strategic Initiatives

U OF T'S RANKINGS

#1 **in the world for sustainability**
(QS Sustainability Rankings 2024)

in Canada by global university rankings
(ARWU 2023, NTU Ranking 2023, QS 2024, Times Higher Education 2023–24, U.S. News 2022–23)

#2 **most prolific health sciences research university in the world**
(Nature Index 2023)

#3 **among North American public universities**
(Times Higher Education World University Rankings 2023–24)

most cited university in the world
(Clarivate Analytics InCites, 2018–22)

#5 **in the world for the number of highly cited articles (top 10% most cited)**
(Clarivate Analytics InCites, 2018–22)

U OF T'S RANKINGS

#21 **university in the world**
(Times Higher Education–World University Rankings 2023–24, QS World University Rankings 2024)

Top 5 **university business incubators in the world**
(UBI Global's World Benchmark Study, 2021–22)

Top 25 **in all major global university rankings**
(ARWU 2023, NTU Ranking 2023, QS 2024, Times Higher Education 2023–24, U.S. News 2022–23)

Ranked among the Top 50 **in 48 subjects—more subjects than any other university**
(QS World University Rankings by subject 2023)

AWARDS & HONOURS

U OF T HIGHLIGHTS

Key 2023 awards metric

125
international and major national research awards were received by U of T researchers

50%
of Canada's Social Sciences and Humanities Research Council (SSHRC) Impact Awards for faculty were awarded to U of T researchers, including U of T's second SSHRC Gold Medal in 3 years

48%
of major international awards won by researchers at Canadian universities were awarded to U of T (Universities Canada Global Excellence Initiative, 2021–23)

Recognizing the impact and excellence of our researchers through global and national research awards and honours is a key priority for U of T, as they reinforce the university's reputation as a research powerhouse.

The VPRI's **University Awards and Honours** portfolio supports researchers and staff with award strategy and nomination development, as well as managing the administration of internal awards programs.

Recognition by national academies
Globally renowned national academies such as the U.K.'s Royal Society and the American National Academy of Medicine seek the expertise of our researchers to advise on issues of public importance. U of T researchers hold over 40% of foreign academy memberships awarded to faculty at Canadian institutions between 2014 and 2023.

U of T continues to lead in elections to Canada's national academies.

This year, **Professor Yu Sun**, Department of Mechanical and Industrial Engineering, achieved the rare distinction of fellowship in all three Canadian academies.

AWARDS & HONOURS

International Recognition for Up-to-the-Minute Research

Wolf Prize in Medicine, Israel
Awarded annually to scientists and artists globally for achievements in the interest of humanity and friendly relations among peoples.

VinFuture Prize for Innovators with Outstanding Achievements in Emerging Fields, Vietnam
Awarded to authors of breakthrough scientific research studies and innovations that have improved lives and the environment for future generations.

University Professor Daniel Drucker
Department of Medicine and Sinai Health

For his discovery of the actions of the GLP-1 hormone and subsequent decades of work that have led to GLP-1-based medicines that transform treatment of diabetes and obesity. *Science* magazine declared GLP-1 medicines for weight loss its 2023 Breakthrough of the Year.

Guggenheim Fellowship, United States
Awarded to exceptional individuals in pursuit of scholarship in any field of knowledge and creation in any art form, under the freest possible conditions.

Associate Professor Diana Valencia
Department of Physical and Environmental Sciences, University of Toronto Scarborough

For her research on exoplanets using new data from the James Webb Space Telescope.

New Horizons Prize in Mathematics, United States
Awarded to promising early-career researchers who have produced important work in mathematics.

Associate Professor Michael Groechenig
Department of Mathematical and Computational Sciences, University of Toronto Mississauga

For his insights into arithmetic geometry, recognized in the Breakthrough Prize suite as promising advancements in the field.

IMPACT AWARDS

RECOGNIZING RESEARCH IMPACT AT U OF T

U of T brings together top minds from across many disciplines to discover and implement solutions to the world's most pressing challenges. Our outstanding researchers are committed to understanding today's world—and looking ahead to what is possible.

The impact of our researchers' work has been recognized by prestigious awards nationally.

President's Impact Awards

The **President's Impact Awards (PIAs)** were established by U of T in 2017 to honour the incredible impact that researchers' work can have beyond academia. The awards recognize contributions that emerge from academic scholarship and have fully realized, demonstrable impacts in any domain ranging from arts and culture and community involvement to the environment and scientific or technological innovations. In 2023, the awards recognized the work of 17 laureates.

SSHRC Impact Awards

The **Social Sciences and Humanities Research Council (SSHRC) Impact Awards** recognize outstanding researchers, celebrating their research activities and achievements funded by SSHRC.

In 2023, past PIA laureate Professor Kang Lee, Department of Applied Psychology and Human Development, won the SSHRC Insight Award, one of two SSHRC Impact Awards won by U of T scholars — an unprecedented result for the university.

SSHRC Gold Medal

University Professor David Dyzenhaus
Faculty of Law and Department of Philosophy

For his profound impacts on the field of legal philosophy and on defending the rule of law globally. His explorations of the rule of law as a commitment that imposes a moral discipline on the state have influenced courts in Canada and abroad, as well as the South African Truth and Reconciliation Commission.

SSHRC Insight Award

Professor Kang Lee
Department of Applied Psychology and Human Development

For groundbreaking insights into childhood dishonesty that have led to innovations in legal, clinical and healthcare practices, including reforms in Canadian legal procedures for admitting children as witnesses in criminal courts.

IMPACT AWARDS

Awarding impact in environmental research

U of T researchers are actively identifying sustainability solutions to address critical concerns caused by climate change. This work has been recognized with environmental impact awards.

Frontiers Planet Prize National Champions

Global competition for scientists and research institutions to propose solutions to help the planet.

University Professor Marie-Josée Fortin
Department of Ecology and Evolutionary Biology (Senior Author)

Associate Professor Martin Krkosek
Department of Ecology and Evolutionary Biology

Former PhD student Ariel Greiner
Department of Ecology and Evolutionary Biology (Corresponding Author)

Adjunct Professor Emily Darling
Department of Ecology and Evolutionary Biology

For new research demonstrating the potential of six major networks of climate-resilient reefs to sustain and save the world's coral reef habitat, highlighting the strategic importance of maintaining "stepping stone reefs" to optimize reef reseeding through the natural dispersal of coral larvae.

Governor General's Innovation Award

Celebrates excellence in innovation across all sectors of Canadian society.

Professor Carl Mitchell
Department of Physical and Environmental Sciences, UTSC

Professor Frank Wania
Department of Physical and Environmental Sciences, UTSC

Professor David McLagan
Queen's University and former PhD student, Department of Physical and Environmental Sciences, UTSC

For development of the innovative MerPAS Mercury Passive Air Sampler, which runs without the need for electricity or gas and is being used in monitoring networks in Canada and abroad that aim to measure and reduce global mercury emissions.

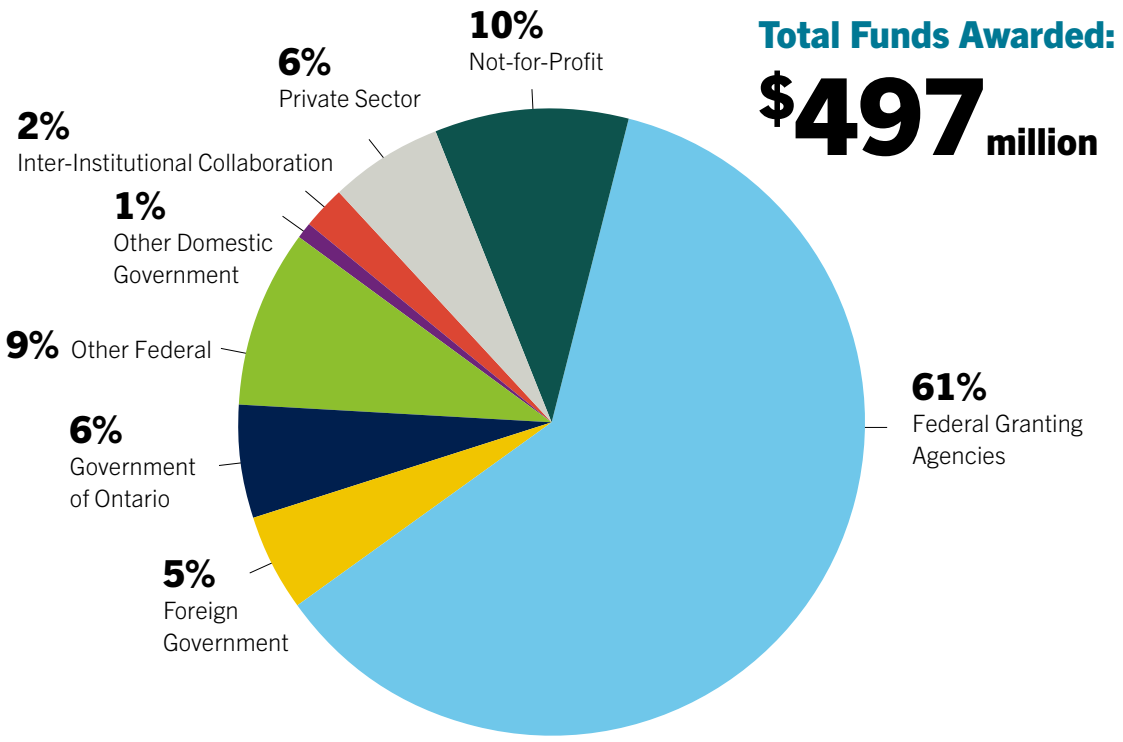
FUNDING

POWERING RESEARCH AND INNOVATION AT U OF T

From revolutionary ideas and life-saving discoveries to game-changing innovations, U of T is proud to be the driver of Canada's largest university research and innovation ecosystem. Its global impact improves lives as it powers the Ontario and Canadian economies. This work is made possible with investments from our funding partners.

Research funding in 2022–23

Research Funds Awarded to U of T by Sector (2022–23)



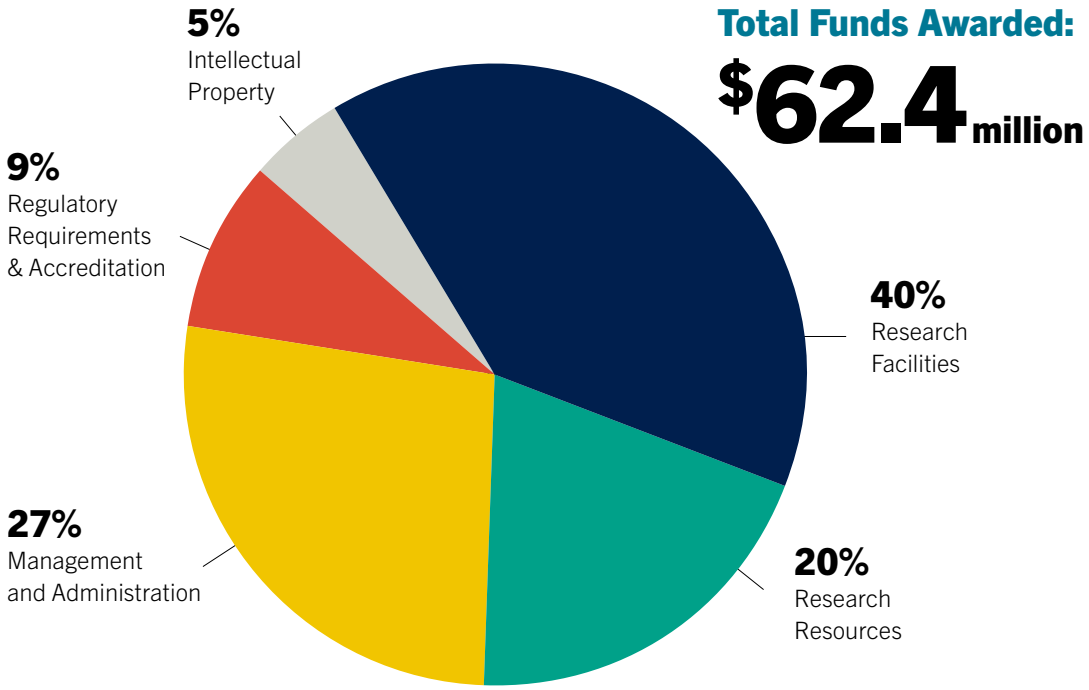
In 2022–23,[1] U of T led Canadian universities with $497 million in overall received investment and $1.49 billion when combined with partner hospitals. 61% of our funding came from federal granting agencies, including the Canadian Institutes of Health Research (CIHR), Natural Sciences and Engineering Research Council (NSERC) and Social Sciences and Humanities Research Council (SSHRC).

As we grow our global research impact, U of T continues to diversify funding sources through research collaborations, industry partnerships and other international opportunities. These comprised 20% of U of T's total funds in 2022–23.

1 Figures are for the federal government's grant year from April to March.

FUNDING

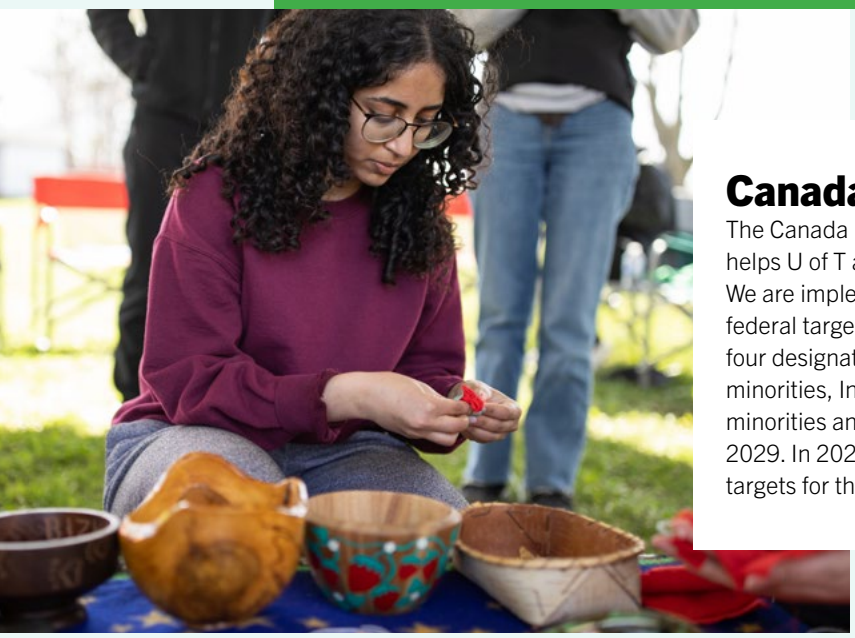
Research Support Fund Expenditures by Eligible Categories (2022–23)



Total Funds Awarded:
$62.4 million

The federal Research Support Fund (RSF) assists universities with the costs associated with managing a large-scale research enterprise to maintain a world-class research environment. In 2022–23, U of T received $62.4 million in total funds from the RSF. These funds helped address the indirect costs of research such as the maintenance of modern labs and equipment, retaining research administrative support staff and ensuring compliance with regulatory and ethical standards.

This funding includes $4.3 million awarded through a dedicated new RSF funding stream for research security. Introduced for 2022–23, this supports institutional projects to enhance security across the entire research enterprise, including increasing our capacity to identify, assess and mitigate potential risks.



Canada Research Chairs

The Canada Research Chairs (CRC) program helps U of T attract and retain top researchers. We are implementing strategies to meet federal targets for the representation of CRC's four designated groups (women and gender minorities, Indigenous peoples, racialized minorities and persons with disabilities) by 2029. In 2023, U of T surpassed its interim targets for the designated groups.

342

Canada Research Chairs:
U of T holds the most CRCs of any university, 110 more than our nearest peer.

FUNDING

Research funding in action

- **Canada Foundation for Innovation (CFI)** invested an historic $277 million across five years (2017–18 to 2022–23) to support key research infrastructure at U of T, which included $35 million from CFI's Biosciences Research Infrastructure Fund (BRIF) to revitalize the **Toronto High Containment Facility**.

- **Canada First Research Excellence Fund (CFREF)** supported U of T's **Medicine by Design (MbD)** with an initial seed investment of $114 million in 2015. Over eight years, MbD invested $75 million into more than 170 research projects on regenerative medicine, including $6.4 million awarded in 2023. This year, U of T was awarded a $200 million CFREF grant, the largest federal research grant in Canadian history, for the **Acceleration Consortium (AC)**, which is now building up key operational infrastructure by investing in equipment and lab space, recruiting staff scientists, awarding research grants and co-creating its Equity, Diversity and Inclusion Action Plan.

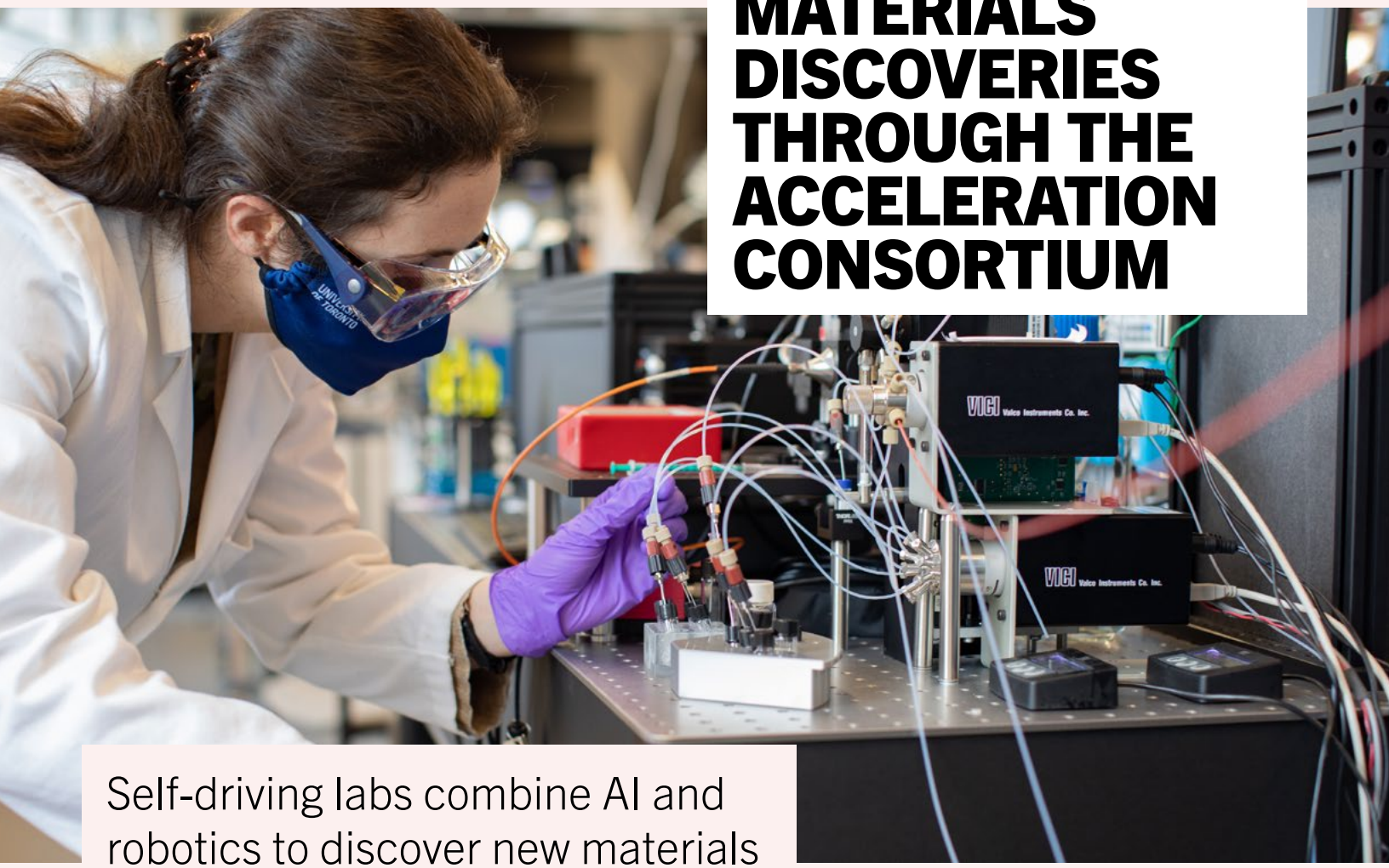
- **Canada Biomedical Research Fund (CBRF)** invested $2 million in 2023 to establish the U of T-led **Canadian Hub for Health Intelligence and Innovation in Infectious Diseases (HI^3)**, one of five national hubs that will enhance Canada's ability to respond quickly, effectively and equitably to future pandemics.

Visit **VPRI By the Numbers** to learn more about funding at U of T.

“Few universities in the world can rival U of T’s internationally recognized strengths in research, innovation and inclusive excellence.”

Professor Leah E. Cowen
Vice-President, Research and Innovation,
and Strategic Initiatives

SUPERCHARGING MATERIALS DISCOVERIES THROUGH THE ACCELERATION CONSORTIUM



Self-driving labs combine AI and robotics to discover new materials for energy, medicine and more

Launched in 2020, the **Acceleration Consortium (AC)** fundamentally transforms the search for new materials with applications in energy, manufacturing, medicine and many other fields. By combining AI and robotics, AC researchers can automate and speed up the process of searching through millions of potential materials to find those with the desired properties.

This strategy, known as self-driving labs, has already shown its worth. In January 2023, a partnership between AC, Insilico Medicine and DeepMind, a subsidiary of Alphabet, identified a candidate molecule that has the potential to one day treat hepatocellular carcinoma (HCC), a type of liver cancer. From describing the target to finding the potential drug candidate, the team took about 30 days to do what would have taken months or years with the traditional approach.

In April 2023, the VPRI's **Research Services Office (RSO)** led the successful proposal development to secure $200 million from the Canada First Research Excellence Fund (CFREF) — the largest federal research grant ever awarded to a Canadian university — to fund a major expansion of AC's capabilities. Seven self-driving labs are currently in development, each of which focuses on a different material class that can have multiple applications. Examples include inorganic catalysts for carbon capture, polymers for wearable sensors and new environmentally friendly battery materials.

By 2026, these labs will evolve into core facilities that service the entire university and the other AC partners. AC is also expanding its network through its Accelerate conference, which in 2023 brought together more than 350 representatives from 16 countries to build new partnerships around its unique model.

AC is one of more than 22 Institutional Strategic Initiatives across the University of Toronto that increase the capacity to support large-scale, high-impact interdisciplinary research that addresses grand societal challenges, such as climate change, human health and inequity.

RECOGNIZED RESEARCH LEADERSHIP IN THE SOCIAL SCIENCES AND HUMANITIES

U of T is ranked 1st in Canada by the *Times Higher Education* subject rankings

U of T is a global leader in social sciences and humanities, and ranked 13th in the arts & humanities and 24th in the social sciences in the *Times Higher Education* 2023–24 rankings by subject.

In 2023, U of T continued to showcase our leadership in the social sciences and humanities through our ongoing commitment to support collaborative research activities through world-class institutes like the Jackman Humanities Institute and through innovative community engagement initiatives. Our humanities scholars examine the cultural, historical, philosophical, linguistic and artistic dimensions of human experience and help us to understand the diversity and complexity of our world. U of T social scientists are leaders in developing pedagogy and policy that become the backbone of Ontario and federal legislation, improving the lives of Canadians.

2023 global subject rankings
(*Times Higher Education* 2023–24)

9th
in education

Powering research with $5 million in SSHRC Partnership Grants

In April 2023, two U of T researchers were each awarded $2.5 million in Partnership Grants from the Social Sciences and Humanities Research Council (SSHRC). The VPRI's **Research Services Office (RSO)** facilitated the acquisition of this funding, which supports partnerships between academic researchers and community partners that advance knowledge and understanding of critical issues of intellectual, social, economic and cultural significance.

These grants power the work of Professor Catherine Sabiston, Faculty of Kinesiology & Physical Education, who is building equitable, diverse and inclusive participation, access and quality experiences in youth sport — with a special focus on girls. Professor Janice Du Mont, Dalla Lana School of Public Health, also received a SSHRC Partnership Grant to support her work with local organizations that formed the **trans-LINK Network**, a national network dedicated to better addressing the needs of trans and gender diverse survivors of sexual assault and intimate partner violence.

In 2023, five U of T researchers received SSHRC Partnership Development Grants and 46 projects were awarded SSHRC Insight Grants, which support partnerships and research excellence in the social sciences and humanities.

2023 global subject rankings

(*Times Higher Education* 2023–24)

10th
in psychology

13th
in arts & humanities

21st
in law

24th
in social sciences and business & economics

Enabling community-partnered research with the Connaught Fund

The Connaught Fund's Community Partnership Research Program supports early-stage research partnerships between U of T and community partners, fostering access to each other's unique knowledge, expertise and capabilities on issues of shared interest. This program furthers U of T's commitment to cultivating collaborations and partnerships that ensure research outcomes benefit the community. In 2023, supported research included the work of Professor Angela Mashford-Pringle, Dalla Lana School of Public Health, who is developing relationships with First Nations in a community-based research project studying climate-health adaptation that targets Lyme disease.

Bolstering social sciences and humanities research with ISIs

The **Institutional Strategic Initiatives (ISIs)** portfolio supports interdisciplinary research networks dedicated to addressing global grand challenges. By bringing together experts from diverse domains, ISIs nurture collaborative research and the training of future research leaders who can tackle the complex issues of today. Here is a snapshot of select ISIs that are catalyzing research in the social sciences and humanities:

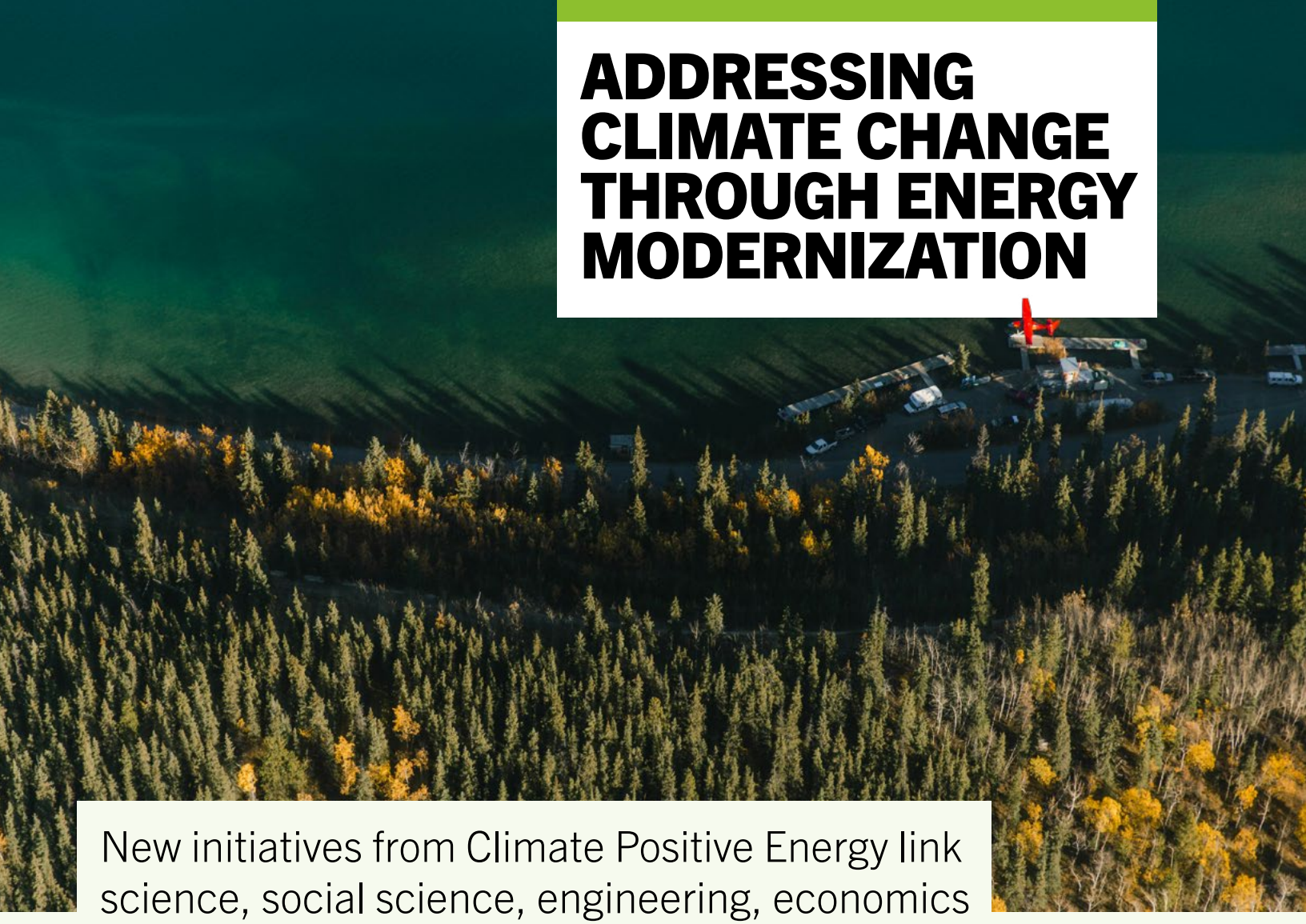
- **Critical Digital Humanities Initiative (CDHI)** enables collaborations across disciplines and domains that emphasize questions of power, social justice and critical theory in digital humanities research. Through training and cross-disciplinary collaboration, CDHI equips humanities scholars with the tools of the digital revolution so they may continue to analyze power, culture and equity in the information age with an historical perspective.

- **School of Cities** creates new and just ways for cities and their residents to thrive by fostering opportunity, collaboration, insight and knowledge exchange with a global reach. The School of Cities addresses the big questions and politics that concern our urban lives by supporting leading diverse scholars, practitioners and community members to challenge, expand and create new understandings, policies and practices in our urban spaces. Its work plays a critical role in addressing climate change and justice, migration and belonging, and inequality and democracy.

- **Schwartz Reisman Institute for Technology and Society (SRI)** works to ensure that powerful emerging technologies like artificial intelligence are safe, fair, ethical and make the world better for everyone. SRI scholars develop new frameworks to understand the social implications of technologies today and help transform laws, institutions and social values to ensure technology is designed, governed and deployed to deliver a more just and inclusive world.

- **Sustainable Development Goals (SDGs@UofT)** mobilize a community of scholars and practitioners leading transformative research taking place across disciplines that empowers positive actions on the United Nations' 17 Sustainable Development Goals (SDGs) and informs future global goals for an equitable and sustainable future.

ADDRESSING CLIMATE CHANGE THROUGH ENERGY MODERNIZATION



New initiatives from Climate Positive Energy link science, social science, engineering, economics and policy to transform our energy systems

The ongoing climate crisis is an "everybody" problem from a research perspective — new technologies must be matched with innovative policies and a deep understanding of the social and economic factors that affect their adoption. As the most sustainable university in the world (QS World University Rankings: Sustainability, 2024), U of T is home to a rich community of expert researchers who are uniquely positioned to provide the solutions that are needed now more than ever.

One example is **Climate Positive Energy**, an **Institutional Strategic Initiative** dedicated to developing solutions that transform energy systems, ensuring equitable energy access and production, acknowledging the uneven burdens of energy generation and helping Canada become a global clean-energy model. Two large projects — the CANSTOREnergy Project and the Grid Modernization, Testing and Simulation Centre — illustrate how multidisciplinary collaboration can further contribute to Canada's energy system.

Developing community-tailored clean energy technologies

A $24 million grant from the federal New Frontiers in Research Fund — Transformation Competition is supporting the **CANSTOREnergy Project**. This project brings together researchers from 11 Canadian universities, along with community, utility and industry partners. Together, they consider how to develop technologies that convert carbon-based emissions into useful products, such as fuels and raw materials, and create a reduced-emissions, or even net-zero, means of seasonal storage for renewable energy.

This project focuses on two very different regions, one in Canada's north and one in the south, recognizing that there is no one-size-fits-all approach in a vast country like ours. The research team is collaborating with local community members and advisers in Indigenous nations, utilities, government, non-profit groups and industry.

Many northern communities are not connected to the electrical grid that supplies power to much of the U.S. and Canada, and as a result rely on diesel generators, which are emissions intensive. While northern communities have been leaders in integrating renewable energy, the intermittent nature of wind and solar energy do not provide the necessary security for the communities to depend on renewable generation when they need power most.

Meanwhile, southern Canada is home to densely populated urban centres in which the local economy is sometimes fuelled by heavy industry like steel mills. The environmental costs, such as air pollution, are unevenly distributed and disproportionately impact low-income and marginalized communities.

CANSTOREnergy allows communities in both regions to contribute to the development of emerging energy technologies, such as hydrogen or carbon-based fuels produced from renewable electricity and help determine if these are appropriate and desired options for long-term energy storage. At the core of the CANSTOREnergy project is a commitment to engaging community members on their energy challenges and whether and how carbon conversion technologies could fit into their future.

Grid modernization for green electricity

Ontario's Independent Electricity System Operator estimates that electricity demand could more than double by 2050. Moreover, the widespread adoption of electric vehicles (EVs), heat pumps, residential-scale renewables and other technologies is changing how, where and when electricity is needed — challenges that were not anticipated when the grid was developed decades ago.

Climate Positive Energy's new **Grid Modernization, Testing and Simulation Centre** will bring together government, industry and academia to facilitate the evolution to a more decarbonized, decentralized and digitized power system. The first of its kind in Canada, the centre will help address a market capacity gap related to technology testing and real-time simulation of various grid models.

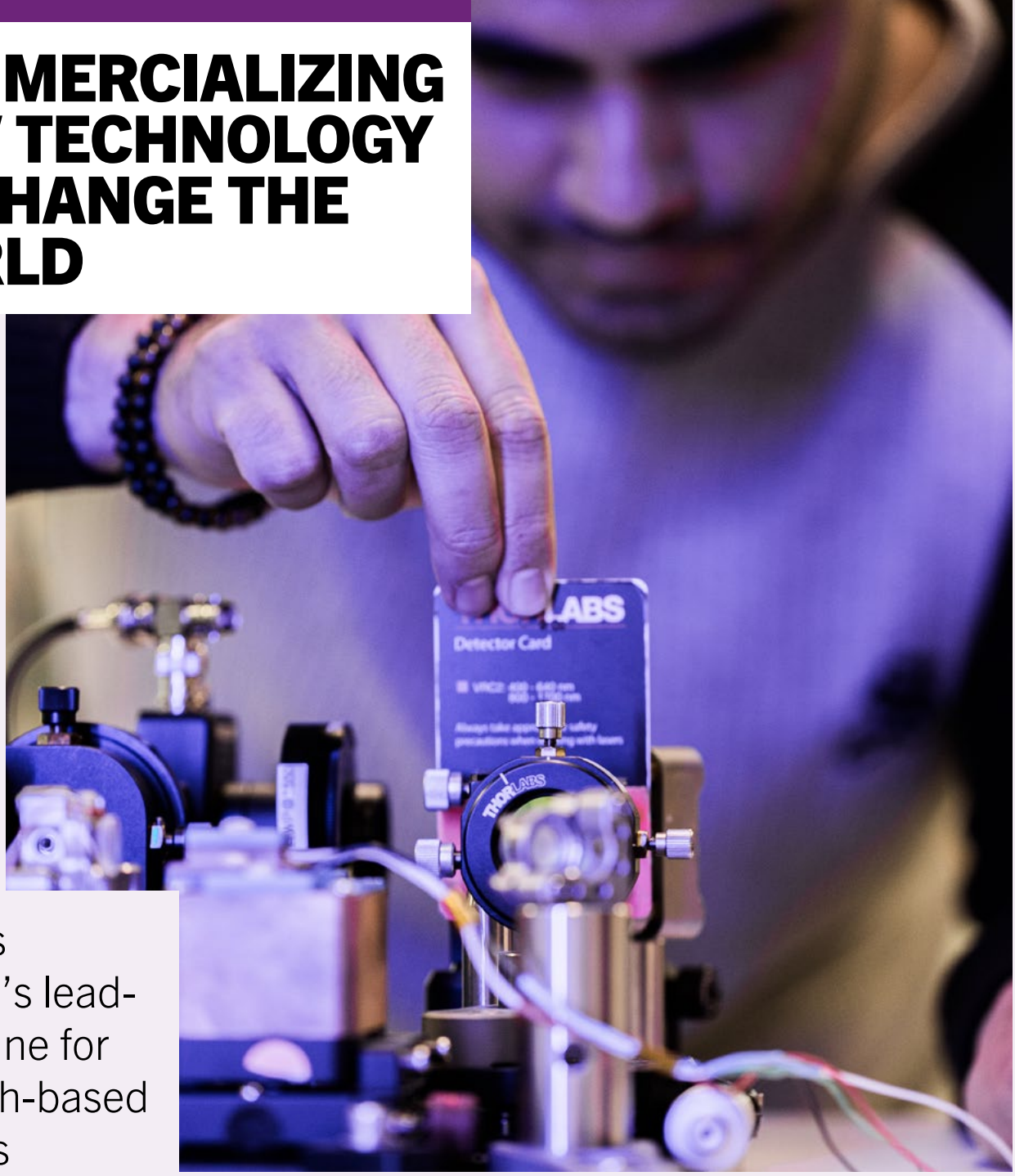
For example, by simulating various scenarios for the distribution of EV charging stations, U of T researchers can support utilities and grid operators, as well as the Ontario auto industry and its supply chain, in the transition to clean energy.

Such simulations can also help electricity suppliers understand how EVs will change their demand curve and how best to counter cybersecurity threats. Micro-grid connections to renewable energy in rural areas — specifically in northern communities — is another important factor that the centre will service through its modelling capabilities.

The centre will also offer companies opportunities to test and benchmark their new technologies, from more efficient EV chargers to new forms of energy storage, including the latest battery designs and technologies that convert electricity into hydrogen- or carbon-based fuels.

The centre is supported by a $5 million investment from the Federal Development Agency for Southern Ontario (FedDev), $5 million from Natural Resources Canada (NRCan) and $12.6 million from other partners. The centre will provide a platform for thought leadership in energy transition and will work with 50 partners from the energy ecosystem, including federal agencies, industry and original equipment manufacturers, utilities, regulators and small and medium-sized enterprises.

COMMERCIALIZING NEW TECHNOLOGY TO CHANGE THE WORLD



U of T is Canada's leading engine for research-based startups

U of T's entrepreneurship community is Canada's leading engine for research-based startups and a global leader in transforming ideas into vital products and services. Over the past decade, U of T researchers, clinicians and students have launched 650 startups and created 9,000 jobs. Many of these companies are now among Canada's most dynamic. U of T outpaced every other Canadian university and generated more than $3 billion in investment in the past decade. In 2023, UBI Global ranked U of T among the top five university business incubators in the world.

To ensure researchers, innovators and entrepreneurs at the university are supported as they seek to protect their ideas, launch new companies and commercialize their research, the VPRI's **Innovations & Partnerships Office (IPO)** serves as the first stop for questions, guidance and support to the U of T community. IPO manages U of T's portfolio of intellectual property and helps build successful relationships between industry, government and the U of T research community. IPO's expertise in licensing, startup creation, business development and legal matters helps turn U of T innovations into products, services, companies and jobs. IPO also facilitates the introduction of startups to potential investors through U of T-hosted entrepreneurship initiatives such as **Deep Tech Download and UTEST Investor Days**.

Commercialization at U of T in 2023

35
licensing and option agreements

70
priority patent applications

140
inventions disclosures

Here are a few U of T research-based companies that made headlines in 2023:

1. Launching clinical trials for a transformative diabetes therapeutic

In September 2023, diabetes life sciences company and U of T startup **Zucara Therapeutics** reached its biggest milestone to date, starting second-phase clinical trials with human testing. Its innovative therapeutic, ZT-01, prevents potentially dangerous nighttime low blood glucose levels in sleeping diabetics. One step closer to market, this therapeutic could greatly improve the quality of life for diabetics globally.

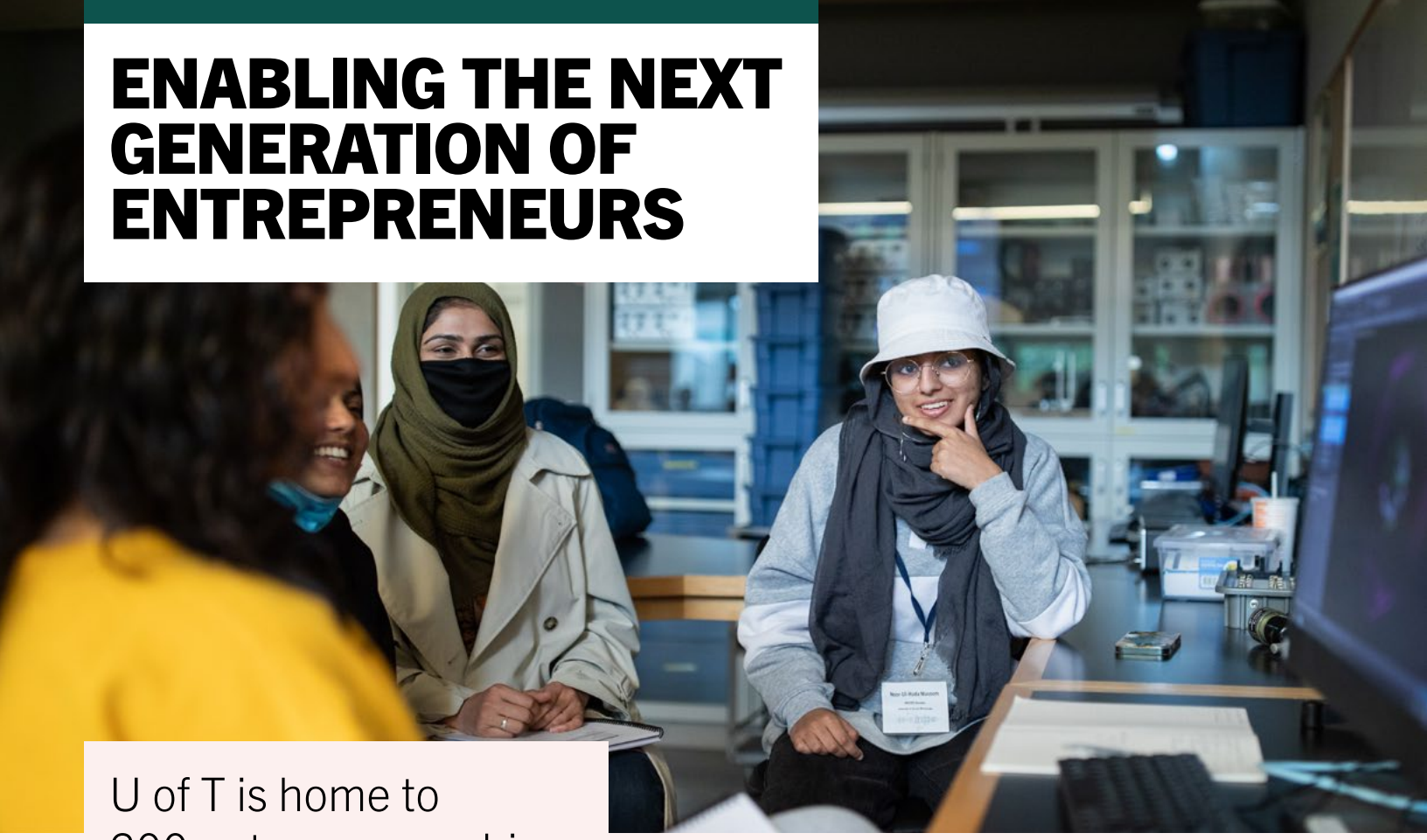
2. Recognizing the future of sustainable farming

Sustainable farming and clean technology company **Vive Crop Protection** develops green fungicides and insecticides to help growers reduce the environmental impact of farming, while also increasing crop quality and yields. In 2023, this U of T startup gained recognition for its sustainable innovations in the *Globe and Mail*'s Ranking of Canada's Top Growing Companies, the Deloitte Technology Fast 500™ and as a recipient of the Clean Technology award in Deloitte's Technology Fast 50 Program.

3. Fighting Cancer with AI

Biopharmaceutical company **Phenomic AI** built an AI-powered drug discovery platform to develop cancer therapies that target the tumour stroma, a complex barrier surrounding cancers that can prevent today's medicines from working. In November 2023, the U of T startup entered into a strategic collaboration and licensing agreement with biopharmaceutical company Boehringer Ingelheim for $9 million in research funding and collaboration milestones and could lead to a further $500 million in future licensing fees and royalties on product sales. The same month, Phenomic AI formed a second partnership with cell therapy biotech company Xyphos Biosciences. Both collaborations will support the development of new therapies to advance the future of cancer treatment.

ENABLING THE NEXT GENERATION OF ENTREPRENEURS



U of T is home to 200 entrepreneurship-related courses

U of T is Canada's leading engine for research-based startups and a global leader in transforming ideas into products and services that impact the world.

Part of a powerful network of 12 accelerators across three campuses, the VPRI's **University of Toronto Entrepreneurship (UTE)** supports, develops and celebrates our best and brightest founders and their startups through a broad range of resources, network access and entrepreneurship activities. U of T's entrepreneurship community is committed to creating an environment that is inclusive and representative of the diverse and talented innovators and entrepreneurs around us.

Schwartz Reisman Innovation Campus: A new home for Research and Innovation

In 2023, U of T Entrepreneurship, ONRamp and UTEST moved into the new **Schwartz Reisman Innovation Campus**, a 750,000-square-foot space that anchors U of T's world-leading artificial intelligence scientists and startups in the heart of Toronto's Discovery District. Supported by a $100-million donation from Gerald Schwartz and Heather Reisman, the innovation campus represents a transformative opportunity for U of T to develop new spaces dedicated to innovation, forge opportunities to attract national and international partners, including those from the private and venture financing sectors, and to further catalyze development of Canada's leading innovation ecosystem.

The Schwartz Reisman Innovation Campus is home to campus accelerators like the **University of Toronto Early-Stage Technology (UTEST)** program, the **Centre for Entrepreneurship** and the **Innovations & Partnerships Office (IPO)**, which work to protect U of T researchers' intellectual property (IP) and the commercialization of innovations. It is also headquarters for U of T Entrepreneurship and the ONRamp co-working and community space, which provide 24-hour hot desk access, business services and perks, event invitations and an ecosystem of peers to U of T's earliest-stage entrepreneurs.

U of T's entrepreneurship ecosystem

#1

in Canada for research-based startups

U of T's entrepreneurship ecosystem

650
venture capital-backed startup companies created by U of T entrepreneurs over the past decade

U of T startups have raised over
$3 billion
in venture funding in the past decade

9,000+
jobs created by U of T startups over the past decade

12
startup accelerators and incubators

690
teams supported annually

Providing training and growth opportunities for startups

U of T hosts many programs and initiatives that provide mentorship, expertise, resources and strategic connections to entrepreneurs at all stages of their journey, so they have the tools they need to effectively start, build and scale their businesses. As a top global university, we provide an incredible range of unique offerings to current or aspiring innovators:

- **Black Founders Network (BFN) Smart Start Awards**, supported by KPMG, awards financial and non-financial support to early-stage Black entrepreneurs. In 2023, 12 recipients received the inaugural awards, valued at $4,000 each, to help get their ideas off the ground.

- The **Indigenous Entrepreneurship Program**, hosted in partnership with UTM's **ICUBE** and UTSC's **The BRIDGE** along with training consultant RedBird Circle, offers a 14-week entrepreneurship program based on traditional knowledge, created in collaboration with Indigenous experts. In 2023, the program returned for a second year of workshops, guiding the development of entrepreneurship competencies, eliminating barriers, facilitating partnerships and mentorships and building pathways to success for Indigenous entrepreneurs.

- The **FemSTEM Program**, hosted by **Health Innovation Hub (H2i)**, offers events designed to inspire, engage and celebrate women entrepreneurs. The 2023 season included panel discussions and keynote conversations with successful women entrepreneurs such as President and CEO of Thornhill Medical, Lesley Gouldie, as well as a pitch competition featuring women-led startups competing for $40,000 in prizes.

- **University of Toronto Early-Stage Technology (UTEST)**, delivered in partnership with Toronto Innovation Acceleration Partners (TIAP) and with funding from the **Connaught Fund**, supports entrepreneurs creating research-based companies with investment capital, mentoring, business strategy and incubation space. In 2023, the program accelerated 26 U of T-based startups and six companies from our partner hospitals.

NOTABLE STARTUPS AT U OF T

In 2023, U of T-affiliated startups continued to dominate the headlines and achieve significant funding milestones.

Companies experiencing monumental growth

These companies have made the sprint from seed stage to scale-up over the last few years, with some reaching "unicorn" status, a valuation of over $1 billion.

BenchSci

- **BenchSci** uses AI to accelerate the drug development process
- Founded by alumni Liran Belenzon and Thomas Leung, and supported by U of T accelerators including **Creative Destruction Lab (CDL)**, **The Entrepreneurship Hatchery** and **H2i**
- Raised $129 million in total funding

XANADU

- **Xanadu** builds hardware and software for quantum computing
- Founded by former post-doctoral researcher Christian Weedbrook and supported by U of T accelerator CDL
- Secured $178.6 million in venture funding

cohere

- **Cohere** is an AI language-processing software startup
- Founded by alumni Nick Frosst and Aidan Gomez and their associate Ivan Zhang, and backed by some of the university's most recognized AI luminaries, including Geoffrey Hinton and Raquel Urtasun
- Raised a total of $325.9 million in funding and valued at $2.1 billion, gaining unicorn status

KEPLER

- **Kepler** is a satellite communications company building the internet for space
- Founded by UTIAS aerospace engineers Mina Mitry, Wen Cheng Chong, Mark Michael and Jeffrey Osborne, and supported by U of T accelerators The Entrepreneurship Hatchery, CDL and **Start@UTIAS**
- Raised a total of $128.4 million in funding

Startups to Watch

From clean portable energy solutions to turning food waste into biodegradable plastics, these are some of the up-and-coming startups where you can expect to see big things in the future.

Reeddi

- **Reeddi** provides portable energy capsules charged by solar power, which it hopes to provide to the 600 million people on the African continent living without access to electricity
- Founded by UTSC alumnus Olugbenga Olubanjo and supported by U of T accelerators **Black Founders Network**, **UTEST** and **Centre for Entrepreneurship**
- In 2023, was featured as an innovator in Bloomberg's Gamechangers web series

Genecis

- **Genecis Bioindustries** uses engineered bacteria to turn food waste into biodegradable bioplastics, which may one day be used to create packaging, textiles, media tools and more
- Founded by UTSC alumna Luna Yu and supported by U of T accelerator The Entrepreneurship Hatchery
- In 2023, raised funds from Amazon's Climate Pledge Fund and has amassed $13.5 million in venture capital funding

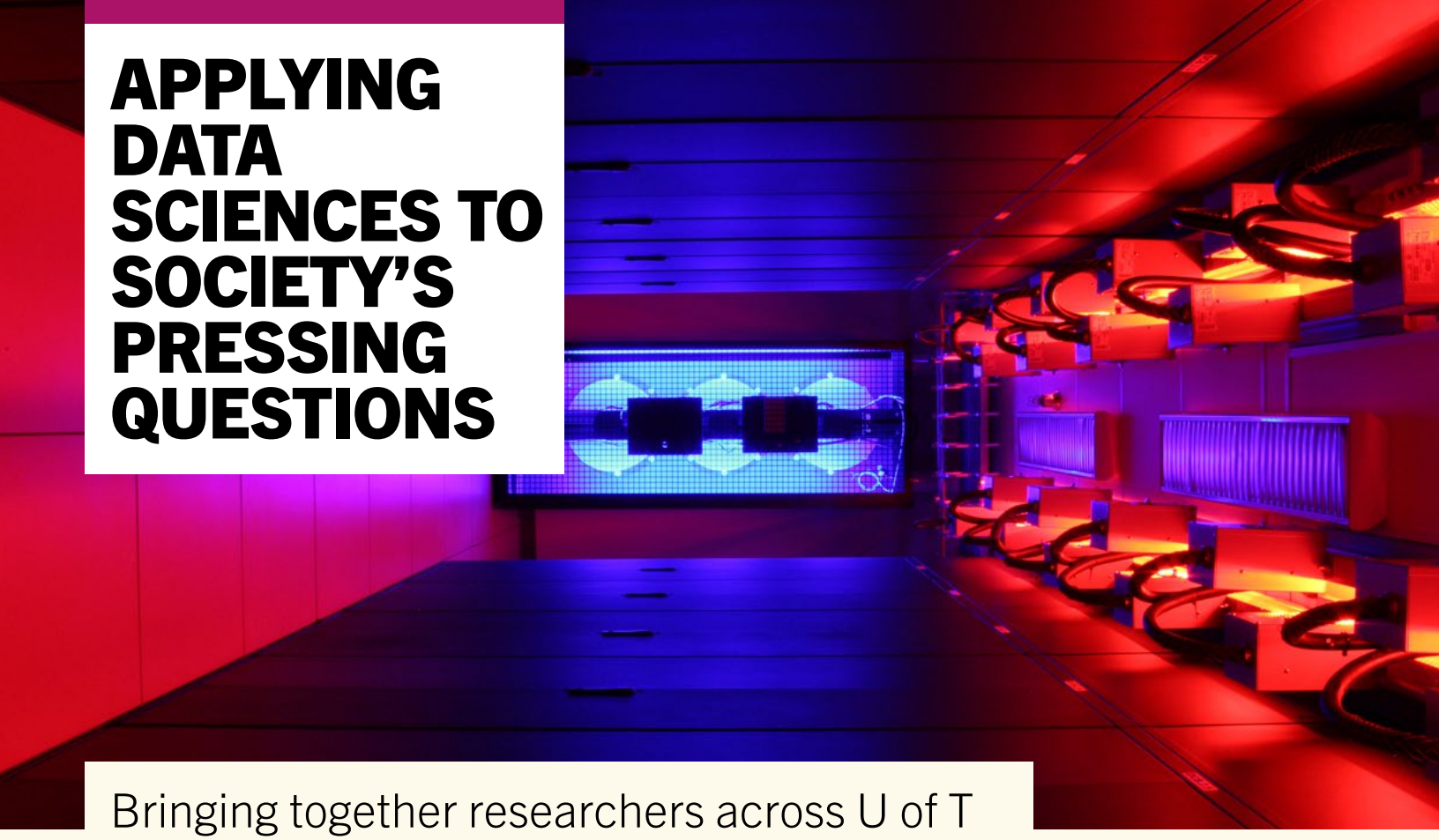
ALT TEX

- **ALT TEX** is developing a polyester alternative using food waste to reduce the production of clothes made of plastics that will not break down in landfills.
- Founded by alumna Avneet Ghotra and her associate, Myra Arshad, and supported by UTM accelerator **ICUBE**
- In 2023, received $300,000 Global Change Award from the H&M Foundation

TransCrypts

- **TransCrypts** developed a blockchain-based document verification platform that gives people direct access to their official documents, such as medical records
- Founded by Zain Zaidi and Ali Zaheer, and supported by UTSC accelerator **The Hub**
- In 2023, graduated from top Silicon Valley accelerator Y-Combinator and raised $3.2 million in funding from investors including Mark Cuban to help Ukrainian refugees securely access their medical records

APPLYING DATA SCIENCES TO SOCIETY'S PRESSING QUESTIONS



Bringing together researchers across U of T to accelerate the impact of the data sciences

From health care, economics and astrophysics to climate change, digital humanities and the promise of smart cities, the world is in the midst of a data revolution. Complex, massive and unique data sets are being generated and analyzed across a broad spectrum of disciplines at an unprecedented rate and being used to innovate solutions to society's most challenging problems.

The **Data Sciences Institute (DSI)** is harnessing this opportunity. An **Institutional Strategic Initiative** that launched in 2021, the DSI unifies data sciences research across the university, its affiliated research institutes and external partners into a central hub and incubator for data sciences research, training and partnerships. Its mission is to accelerate the impact of data sciences across disciplines to address pressing societal questions and inform solutions to drive positive social change.

2023 was a busy year for DSI, marked by important achievements in training, research and collaboration, pushing forward its mission for societal impact. In August 2023, DSI wrapped up another cycle of the **Summer Undergraduate Data Science (SUDS) Opportunities Program**, which provides undergraduate students paid opportunities to engage in exciting hands-on research with data scientists, while connecting with other students in enriching activities and programming.

One groundbreaking project to come out of this year's cohort is a tool that focuses on school dropout rates using machine learning. This project was a collaboration between U of T undergraduate student Ziqi Shu, Professor Zahra Shakeri, Dalla Lana School of Public Health, and data scientists from a new DSI partner, the United Nations Children's Fund (UNICEF). Professor Shakeri notes that in the future, UNICEF hopes to use this pilot to "harness the power of data science and create an adaptable, publicly accessible system that could support countries in addressing the critical issue of school dropouts…ultimately safeguarding every child's right to education."[1]

In October 2023, DSI partnered with career training non-profit Palette to launch the **DSI Data Science and Machine Learning Software Foundations Certificates**, helping Canada meet its growing need for talent in data science and machine learning. The program is designed to equip aspiring data sciences professionals with essential technical skills and upskilling opportunities and is supported by a $2.3 million grant from Innovation, Science and Economic Development Canada (ISED).

1 Elhawash, Sara, "Unlocking the Power of Data: DSI and UNICEF Collaborate to Advance Data Science Research and Training" (July 26, 2023), https://datasciences.utoronto.ca/unlocking-the-power-of-data-dsi-and-unicef-collaborate-to-advance-data-science-research-and-training/.

HOME TO A WORLD-CLASS LIFE SCIENCES HUB

2nd

most prolific university globally in health sciences output (*Nature*, 2023)

Developing solutions that bolster Canada's health security

Cloaking donor cells and tissue grafts with genetic modifications to prevent immune system rejection. Fabricating a heart-on-a-chip with 3D printing to obtain accurate predictions of drug efficacy. Releasing to market the Steadi-Two, a glove designed to reduce hand tremors in seniors.

These are just a few recent examples of research and innovation discoveries powered by U of T's world-class life sciences network, which develops solutions that increase Canada's health security and economic growth.

In June 2023, *Nature* ranked U of T the second most prolific university for health sciences research in the world, just behind Harvard University. U of T stands out as the only Canadian institution on this top-10 list, dominated by U.S. schools.

TAHSN anchors Canada's life sciences powerhouse

At the centre of Canada's life sciences ecosystem is the **Toronto Academic Health Science Network (TAHSN)**, a dynamic group of academic health organizations providing leading-edge research, teaching and clinical care. The network links U of T and 14 Greater Toronto Area academic hospitals ranked among the best in the world for research and impact. TAHSN is one of the largest and most productive academic health centres in North America and serves one of the most diverse regions in the world.

In November 2023, health sciences strategy consultants SHIFT Health evaluated TAHSN's impact against five leading life sciences hubs in North America, including Boston's Center for Integration of Medicine and Innovative Technology (CIMIT) and Baltimore's Johns Hopkins University. The evaluation gave TAHSN high marks in producing top-quality research, engaging in high rates of multidisciplinary and global collaborations, leading in clinical trials for drugs and therapies, and cultivating dynamic and advanced training environments that attract talent.

TAHSN's world-class leadership and competitive advantages require continued investments in health research funding and commitments to support infrastructure, early phase clinical trials, scaled growth of local startups, competitive wages for researchers and employees and development of the talent pipeline.

ISIs for a healthy future

A key player in U of T's vibrant life sciences hub is our 22 **Institutional Strategic Initiatives (ISIs)**, U of T's large-scale interdisciplinary strategic research networks that are launched and/or supported by the VPRI's ISI team. Each is dedicated to addressing a different grand challenge faced by society. Several ISIs concentrate our research and innovation expertise in the life sciences:

- **The Centre for Research and Applications in Fluidic Technologies (CRAFT)** is transforming Canada into a world leader in creating and deploying microfluidics-enabled medical devices, which manipulate fluids at micron-length scale to allow for point-of-care diagnostics, organ-on-a-chip devices and organ-scale tissue substitutes. 2023 marked the renewal of CRAFT's long-term partnership with the National Research Council (NRC), with the addition of Unity Health Toronto as a strategic research partner in microfluidics translational research.

- **Emerging & Pandemic Infections Consortium (EPIC)** is harnessing a community of experts using innovative approaches to ensure the fight against emerging infections utilizes the partnerships, expertise and infrastructure established to combat COVID-19 to create a stronger, more dynamic ecosystem of collaboration. In 2023, EPIC researchers used synthetic biology to create low-cost diagnostic tests, thereby improving infectious disease surveillance through global access.

- **Medicine by Design** is strategically curating and funding a high-risk, high-reward research portfolio in regenerative medicine with the potential for "moonshot" breakthroughs to defeat diseases that today are considered incurable, such as blindness, heart disease and diabetes. In 2023, building on the $114-million initial seed investment from the Canada First Research Excellence Fund (CFREF), a new strategic alliance with Canadian not-for-profit organization **CCRM** was formed to support the development and commercialization of U of T discoveries in regenerative medicine.

- **PRiME** answers emerging challenges in precision medicine — medicine personalized for the patient — by seeking to understand the biology of disease, creating new diagnostics and developing novel therapeutic and drug discovery strategies. In 2023, PRiME partnered with life sciences venture adMare BioInnovations to translate U of T's academic research into impact by developing life-changing therapeutics that will benefit the global population.

CREATING RESEARCH OPPORTUNITIES THROUGH THE CONNAUGHT FUND

Over $186 million awarded to U of T researchers since 1972

U of T's **Connaught Fund** is the largest internal university research funding program in Canada with an endowment worth over $170 million. Awarding more than $5 million each year to U of T researchers and trainees, the fund promotes research and applies U of T's professional expertise and resources to matters of public interest in all research fields.

The Connaught Fund supports a wide breadth of research across many disciplines: Professor Devon Healey, Ontario Institute for Studies in Education (OISE) is seeking to understand blindness as an alternate form of perception and a valuable way of experiencing and knowing the world. Professor Prentiss Dantzler, Department of Sociology, is exploring the relationship between homeowners' associations and racial segregation. Professor Pedro Mateo Pedro, Department of Linguistics, is leading a collaboration to revitalize Itzaj, an endangered Mayan language of Guatemala.

Nine Connaught Fund streams provide funding opportunities to a broad range of researchers, from graduate students and early-career researchers to interdisciplinary teams and entrepreneurs. **Here are just three of the programs offered:**

- **New Researcher Award** supports the research of early-career faculty members, which helps them establish their research profile and increase their competitiveness for future funding opportunities. This program recently supported the work of Professor Madeleine Mant, Department of Anthropology, UTM, who is studying the lessons learned from the polio epidemic for application to current challenges like vaccine confidence and long COVID.

- **Major Research Challenge for Black Researchers**, developed in collaboration with the Black Research Network (BRN), strengthens the research capacity of the university's Black researchers. Professor Notisha Massaquoi, Department of Health & Society, UTSC, received funding in 2023 to conduct Black health equity research that seeks tangible solutions to the social determinants of Canada's racial health gap.

- **PhDs for Public Impact Fellowship Program** supports PhD students pursuing public impact scholarship that makes meaningful contributions to our local and global communities. In 2023, PhD candidate Joseph Sebastian, Institute of Biomedical Engineering, received funding to use ultrasound imaging to non-invasively probe the acoustic and mechanical properties of hearts-on-chips, an organ-on-a-chip technology.

CRIS IS HELPING RESEARCHERS HONE THEIR SKILLS AND BUILD THEIR RESEARCH NETWORKS

200+
video resources

240+
supported events

230+
resources and tools

Anticipating and addressing the support needs of the U of T research community

The **Centre for Research & Innovation Support (CRIS)** is the resource hub for the U of T research and innovation community. Launched in 2019 by the VPRI, the **University of Toronto Libraries and Information Technology Services (ITS)**, CRIS enhances the visibility and access to resources and services from across the tri-campus, promoting continuous skills development of researchers and enabling research collaborations and partnerships.

CRIS programming covers topics from research leadership and personal effectiveness to skills training for research tools.

1. Developing the skills to establish new research relationships

CRIS offers a range of training opportunities and resources to help researchers develop the skills needed to facilitate respectful, balanced and productive conversations in interdisciplinary research relationships. In 2023, CRIS co-created **Collaboration Café** with the **Department of Laboratory Medicine and Pathobiology**, a leadership-facilitated faculty development day resulting in five funded projects of strategic importance to the department.

2. Using creative approaches to boost research knowledge translation and mobilization

CRIS provides U of T researchers with training to develop creative approaches to research knowledge translation and mobilization. The **Drawing Across the Disciplines** webinar and workshop series explores ways to communicate research findings through a range of media including graphic facilitation, comics and data visualization.

3. Relationship building through community-engaged research

U of T supports fostering collaborations and partnerships to co-create knowledge and resources that benefit the community. In 2023, CRIS launched the **Community-Engaged Research (CER) Faculty Discussion Club**, a series of workshops for researchers interested in deepening their understanding and practice of CER by connecting with and learning from their colleagues. Each session focused on a specific topic such as the foundations of a CER relationship and how to initiate and nurture collaborations and research co-creation.

4. Leveraging peers to improve writing practice

Writing effectively and establishing good writing practices are essential skills that researchers need in order to successfully communicate and disseminate their scholarship. In 2023, CRIS introduced two training programs designed to harness peer support to improve writing skills through the modelling of effective writing practices and demystifying the publication process. **Faculty Writing Accelerator: 12 Weeks to Publication** supports researchers aiming to complete a writing project and **Book Proposal Studio** helps faculty to complete a submission-ready book proposal packet.

IMPROVING U OF T'S DIGITAL INFRASTRUCTURE FOR RESEARCHERS

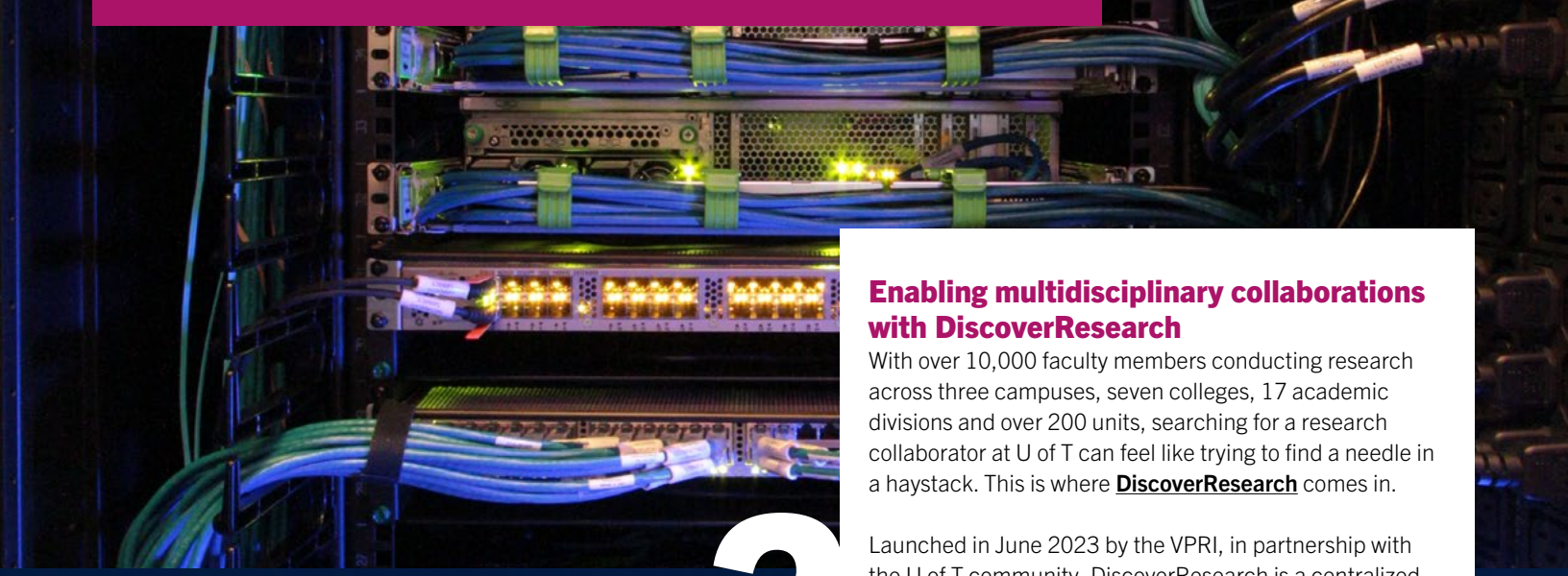
Behind the scenes of U of T's world-class research and innovation ecosystem is a powerful digital infrastructure, comprising a network of tools ranging from operating systems and informational databases to administrative portals and supercomputers. U of T's researchers are supported by this digital infrastructure that ensures effective, efficient, accurate, integrated and transparent management of research activities, harmonized across central service units and partner offices in the academic divisions.

Modernizing research management with UTRAC

In December 2023, U of T successfully launched the **University of Toronto Research Account (UTRAC)** to provide information on funded research awards integral to the management of research projects. UTRAC merges important financial data and award conditions in a user-friendly package with enhanced capabilities and built-in support tools.

Led by the VPRI's **Portfolio Operations & Budget** group in partnership with U of T's **Enterprise Applications & Solutions Integration (EASI)**, the deployment of UTRAC marks the completion of the first phase of the multi-phase **My Research Funds** initiative that aims to modernize key information systems essential to the administration of research funding and projects by researchers and research administrators.

This project is part of a larger institution-wide digital transformation initiative, the **U of T Enterprise Modernization Program**, led by EASI to upgrade administrative management systems accessed by more than 33,000 staff and faculty.



2

Enabling multidisciplinary collaborations with DiscoverResearch

With over 10,000 faculty members conducting research across three campuses, seven colleges, 17 academic divisions and over 200 units, searching for a research collaborator at U of T can feel like trying to find a needle in a haystack. This is where **DiscoverResearch** comes in.

Launched in June 2023 by the VPRI, in partnership with the U of T community, DiscoverResearch is a centralized database of searchable faculty profiles designed to connect potential collaborators with U of T faculty and improve the public visibility of scholars. The website facilitates multidisciplinary research collaboration, signals availability for media requests and graduate student supervision and assists anyone interested in community, industry and international partnerships.

With over 2,300 public profiles featuring scholarly works, academic appointments, leadership activities, teaching experience and more, DiscoverResearch allows faculty to tell their story in their own way. Powerful data feeds of scholarly works, grants and bibliometric data automatically keep profiles current.

Further maximizing and centralizing the capabilities of DiscoverResearch, the VPRI is implementing integrations with other key U of T platforms such as **Blue Door**, a service that matches U of T experts with global organizations seeking to partner or collaborate with the university, and **Blue Book**, a directory connecting media with U of T experts. On the backend, U of T is using unparalleled data integration to support the U of T Quality Assurance Program and provide more accurate and inclusive bibliometric measures for the review of academic units and programs. DiscoverResearch has quickly become a core U of T service.

FIVE VPRI SERVICES YOU MAY NOT KNOW ABOUT

Supporting researchers and innovators at every stage

Here is a snapshot of five services and resources provided by the VPRI.

1. Navigating new research security guidelines

Recently, the Government of Canada implemented additional requirements and guidelines to safeguard Canadian research. In anticipation of this change, in 2023 the VPRI formed the **Research Security Team (RST)** and developed **research security resource pages**. Informed by national security expertise and geopolitical security evidence, the RST supports the U of T research community by assessing and advising on risks.

2. Disclosing an invention to kickstart the commercialization pathway

For U of T inventors, the VPRI's **Innovations and Partnerships Office (IPO)** supports the innovation and commercialization process. The first step for tapping into these services is to complete a confidential **Invention Disclosure** form. IPO will then help you commercialize your invention into a potentially marketable product or process, creating social and economic value. VPRI supports include patent protection, negotiating licensing agreements, sourcing funding for a proof-of-concept and developing long-term relationships with strategic partners.

3. Ensuring a safe research environment

We all deserve a safe research, work and study environment. The VPRI's **Office of Environmental Health & Safety (EHS)** offers on-demand support services for occupational and research-related health and safety issues. Members from the U of T community can request consultations to explore a range of subjects, from the safe use of biohazards, chemicals, radiation and lasers to off-campus safety, occupational health and how to plan a safe public event.

4. Accessing supercomputers to manage your big data sets

Does your research require supercomputing to manage an enormous dataset? **SciNet** is the place for you. Home to Niagara, one of the fastest supercomputers in Canada, SciNet is the supercomputer centre at U of T helping power research from biomedical sciences and aerospace engineering to astrophysics and climate science. Any qualified researcher at a Canadian university is eligible to use SciNet's supercomputers or consult with our in-house supercomputing experts free of charge.

5. Designing your study's human research ethics protocol

If you are a researcher designing a study with human participants, the VPRI can help you. The **Research Oversight & Compliance Office (ROCO)** offers **Human Research Ethics Program (HREP) Consultation** to advise on potential ethical concerns that may arise during the study and how to navigate the Research Ethics Board (REB) review process.

SERVING THE U OF T COMMUNITY

The VPRI supports U of T's vast research and innovation enterprise at every stage across all three campuses.

The following pages provide a snapshot of our annual activities.

RESEARCH FUNDING

The VPRI provides a range of services supporting the research funding life cycle, from identifying funding opportunities to advising on proposal development, agreement negotiation and post-award management.

From 2021–2023 we annually supported an average of:

2,450
principal investigators

320
private sector partners

and managed

4,030
funding applications

$540M
in awarded funding

9,770
research grants

INNOVATION & ENTREPRENEURSHIP

The VPRI helps build successful partnerships between industry, business, government and the U of T research community, while managing the university's intellectual property portfolio.

We annually manage an average of:

140
invention disclosures

70
priority patent applications

35
licensing and option agreements

285
commercialization projects

OVERSIGHT & COMPLIANCE

The VPRI ensures that the university fulfills its research-related ethical, legal and financial reporting obligations, including human and animal research ethics, environmental health and safety, occupational health and financial reporting and auditing.

In 2023, we managed:

22,410
environmental health and safety trainees

4,357
occupational health and safety assessments

50
human and animal ethics post-approval reviews

543
animal ethics protocol reviews

1,830
human ethics protocol reviews

920
lab inspections

8,481
financial reports and audits conducted

RESEARCH TRAINING & RESOURCES

We provide training, professional development and resources to help ensure the U of T research community is equipped with up-to-date skills and best practices.

In 2023, research training and resources included:

2,300+
public profiles curated in DiscoverResearch

#1
most used dashboards across U of T

300+
training sessions for faculty and staff led by the VPRI

60
research administrators supported by the Community for Research Excellence (CORE)

LOOKING AHEAD

"Over the next year, we will continue to build on our legacy of discovery that improves lives, achieves global impact and advances the world's collective knowledge by leveraging our globally recognized strengths in research and innovation. Guided by our bold new **Institutional Strategic Research Plan 2024–2029**, we will help guide the facilitation of research and innovation and provide opportunities for partnerships and collaborations."

Professor Leah E. Cowen
Vice-President, Research and Innovation,
and Strategic Initiatives

research.utoronto.ca