Empowering Futures

2023

FACULTY OF SCIENCE
ANNUAL REVIEW

science | YORK UNIVERSITÉ UNIVERSITY

contents

A Message from Dean Rui Wang

I feel intensely proud to look back on 2023 and reflect on what we achieved together as a Faculty. There were many special moments and accomplishments for us.

We continued to create a culture in the Faculty of Science where we supported and listened to each other, worked together to solve challenges, encouraged diversity, and celebrated our individual and collective achievements.

In this Annual Review, I am excited to share some of those achievements.

We are developing new programming to meet the demands of today's world in science and technology. In fall 2024, we will be launching two biotechnology programs at York University's Markham Campus, as well as introducing new micro-credentials for science students and professionals to upskill for career success. We are also continuing to advance global engagement by strengthening our international partnerships and creating meaningful opportunities for students at York and abroad to connect and learn from one another.

We have been working to enhance decolonization, equity, diversity, and inclusion efforts in our teaching, research, operations and community outreach. For instance, our Science Engagement Programs collaborated with Skills for Change to deliver a series of online and in-person STEM workshops for black high school youth.

Our researchers continued their pursuit of advancing knowledge through discovery, including solving a longstanding antimatter mystery, measuring the city's air pollution in collaboration with NASA, improving AI machine learning algorithms for healthcare applications, and more. Collectively our faculty members were awarded $20.2 million to continue advancing scientific innovation.

Our faculty members and staff worked diligently to engage and support our Science instructors in enhancing excellence in teaching and learning, including equity, diversity, and inclusion in the classroom. As well, our instructors pursued projects to enhance accessibility and student experience in labs and classrooms.

Our Faculty is committed to fostering scientific discovery and tackling global challenges to create positive change in our world. And we are so lucky to have talented researchers, teachers and staff on our team to help us achieve this. Together, we are all building science for the future and making York Science a great place to learn and conduct research.

Rui Wang
Dean, Faculty of Science
York University

Updates from our Department Chairs

Biology

The department welcomed Professors **Gordon Fitch**, **Eryn McFarlane**, **Luz Puentes Jácome** and **Yuqing Feng**. Over 300 Biology undergraduate students, 11 MSc students, and 28 PhD students convocated in 2023.

ROBERT TSUSHIMA

At the June convocation ceremony, Biology undergraduate students **Areeba Chaudhry** and **Sarah Pullano** received the Faculty of Science Gold Medal; as well, PhD graduate **Farwa Sajadi** received the President's University-Wide Teaching Award. **Mustafa Abdulkadhim** and **Arman Sadr** were awarded the Robert J. Tiffin Student Leadership Award. PhD graduate **Kathleen Dogantzis** was awarded the Doctoral Dissertation Prize for "Understanding the evolutionary origin and ancestral composition of honey bee (Apis mellifera) populations" and a Governor General's Gold Medal for her scholastic achievements as a graduate student.

Two Biology faculty members received Faculty of Science awards: Professor **Charlotte de Araujo** received the Excellence in Teaching Award (Contract Faculty category) and Professor **Elizabeth Clare** received the Early Career Research Award. Professor **Amro Zayed** also received the Postdoctoral Supervisor Award from the Faculty of Graduate Studies. Professor **Laurence Packer** published "Bees of the World: A Guide to Every Family," and Professor **Beth Clare** received the Gizmodo Science Fair award for her study "How Airborne DNA Could Revolutionize Conservation," published in *Current Biology*. Professor **Peter Backx** was elected as a Fellow of the Canadian Academy of Health Sciences in recognition of his research on cardiac arrhythmias, and Professor **Sapna Sharma** was named York Research Chair in Global Change Biology.

The Biology department received over $6 million in research funding, including $780,000 from the Canadian Institutes of Health Research (CIHR) to Professor **Chun Peng** for her research on pre-eclampsia. Postdoctoral Fellow **Hyekyong Sung** was the first York community member to receive the CIHR Research Excellence, Diversity, and Independence Early Career Transition Award.

Professor Robert Tsushima
Chair of the Department of Biology

Physics & Astronomy

The department welcomed new Professors **Rahul Kannan**, **Paul Scholz**, **Nikita Blinov**, and **Charles-Édouard Boukaré**. Professors **Patrick Hall**, **Deborah Harris** and **Marko Horbatsch**, and Adjunct Professor **Junwu Huang** were NSERC Discovery Grant recipients.

PATRICK HALL

Thanks to a generous donation from alumnus Itay Yavin, ten undergraduates in the department competed for prize money in a Fall Campus Day problem-solving competition organized by Professors **Chris Bergevin**, **Sarah Rugheimer**, and **Patrick Hall**.

Postdoctoral fellow **Tejin Cai** and Professor **Deborah Harris** spoke to *Scientific American* about their discovery of a new way to investigate the structure of protons using

neutrinos. Professor **Adam Muzzin**, newly appointed as Graduate Program Director, was awarded a 44-hour program on the James Webb Space Telescope, the second-largest amount of time granted to a Canadian program. Professor **Ozzy Mermut** and collaborators, including Adjunct Professor **Christopher Barrett**, were awarded a grant to study algal blooms in Indigenous lakes of Tkaronto and Six Nations.

Undergraduate student **Sarah Powell** and Professor **Randy Lewis** were instructors at the Quantum Computing Boot Camp held at Jefferson Lab, Virginia. Research led by PhD student **Nelson Nunes** and supervised by Distinguished Research Professor Emeritus and Senior Scholar **Norbert Bartel** verified Albert Einstein's theory of general relativity and the Einstein equivalence principle by measuring Earth's gravitational redshift. PhD student **Jordan Krywonos** (supervised by Professor **Matthew Johnson**) received a Vanier Canada Graduate Scholarship. And, congratulations to biophysics graduate students **Rohith Kaiyum** and **Coral Hillel**, who received prizes for their presentations at the 2023 Canadian Association of Physicists Congress.

Professor Patrick Hall
Chair of the Department of Physics & Astronomy

Science, Technology & Society

Our department was thrilled to re-open the Science, Technology & Society program to major and minor students in fall 2023, with a new course titled Science, Technology and Racial Social Justice launching in winter 2024. We also welcomed a new faculty member, **Jeremy Webb**, as an assistant professor, teaching stream.

A number of our faculty members led national and international efforts that are worth noting. Professor **Hélène Mialet** proposed a new program named "Future Flourishing" that won the international "Future of Being Human" competition held by the Canadian Institute for Advanced Research. Professor **James Elwick** was Program Chair for the meeting of the Canadian Society for History and Philosophy of Science, which included a discussion by Frédéric Bouchard (Université de Montréal) on his "Bouchard Report," which called for changes to how science is funded in Canada. Professor **Conor Douglas** was centrally involved in the organization and delivery of a number of events at the intersection of drugs, rare diseases and society; for instance, he developed and launched the international Global Pharmaceutical & Society Studies Network and its associated webinar series, and co-organized and led the Global Conference on Advancing Social Pharmaceutical Innovation in Utrecht, Netherlands.


VERA PAVRI

ROBIN METCALFE

The Division of Natural Science (NATS) continued to work to expand its course offerings with fascinating and topical curricula. Professors **Ian Lumb**, **Jeremy Webb** and **Stephanie Domenikos** successfully proposed and are developing new courses entitled Understanding AI, Introduction to Astrobiology, and Natural Hazards. NATS faculty also continued to be active in public outreach. Professors **Robin Metcalfe** and **Mary-Helen Armour** participated in the 2023 Astronomers in Residence

program hosted by the Allan I. Carswell Observatory and Killarney Park. Professor **Jesse Rogerson** had numerous media appearances pertaining to a variety of astronomical events. And, Professor **Robin Kingsburgh** was an active contributor to innovations in colour education as a means for removing educational barriers between science and art.

Professor Vera Pavri
Chair of the Department of Science, Technology & Society

Professor Robin Metcalfe
Director of the Division of Natural Science

Mathematics & Statistics

In 2023, the Department of Mathematics & Statistics welcomed four new full-time faculty members: Professors **Miles Couchman** (PhD MIT), **Mohamed Omar** (PhD UC Davis), **Dongchen Li** (PhD Waterloo) and **Kaiqiong Zhao** (PhD McGill). The department now has 52 full-time professors, 26 part-time faculty, 24 postdoctoral fellows and many visiting graduate students and professors. It is the fifth largest department at York University.

MICHAEL HASLAM

The department launched a new undergraduate degree program in Data Science that in its first year achieved enrollments of approximately one hundred students, making it the second largest undergraduate program in the Faculty of Science.

Last year, our faculty members contributed to internationally recognized and NSERC-funded research in industrial mathematics, mathematical finance, scientific computing, mathematical biology, disease modeling, vaccine mathematics, actuarial science, data science, biostatistics, statistical machine learning, statistical methodology and theory, algebraic combinatorics, analysis, number theory, probability theory, set theory, and the scholarship of teaching and learning.

Amongst many excellent honours and awards given to our faculty members, Professor **Jane Heffernan** was inducted into the Royal Society of Canada as a member of the College in a ceremony in 2023. She also began her term as President of the Society for Mathematical Biology and was appointed co-lead of the Canadian Immunization Research Network.

Professor Michael Haslam
Chair of the Department of Mathematics & Statistics

Chemistry

We welcomed two new faculty members, Professors **Lana Hébert** and **Y. Bill Kim**, and celebrated the tremendous achievements of our faculty, staff and students.

Undergraduate students **Pariya Rastegar** and **Nhu (Angela) Nguyen** received national recognition with silver medals from the Canadian Society for Chemistry (CSC) for high academic standing in the biochemistry and chemistry programs, respectively. Graduate students **Na-Yung Seoh** and **Dusty Cadwallader** received NSERC Alexander Graham Bell scholarships, and our inaugural teaching assistant awards celebrated the exceptional contributions of **Victor Flores**, **Charley Garrard** and **Andrea Angelucci**.

Professor **Christine Le** and her students were recognized globally with the 2023 *Journal of Organic Chemistry* Outstanding Publication of the Year Award for their innovative approach to the synthesis of fluorinated intermediates that will be widely

useful in medicinal chemistry. Professor **Ryan Hili** was honoured with the Melanie O'Neil award from the CSC for distinguished contributions to biological chemistry, while Professor **Y. Bill Kim** received the 2023 Petro-Canada Young Innovator Award that will allow him to develop new methods of creating genetic mutations in cells to better understand and treat diseases.

Professors **Kyle Belozerov** and **Derek Jackson** were recognized by the Ontario Ministry of Colleges and Universities with an award of excellence for their design of virtual reality classroom activities to help chemistry students build "3D literacy" to mentally manipulate complex molecules.

Professors **Trevor VandenBoer** and **Cora Young** hosted a team of international researchers for a four-week intensive air quality measurement campaign called THE CIX, while Professor **Christopher Caputo** was invited to join the "Science Meets Parliament" organizing committee to strengthen the connection between the science and policy communities in Canada.

JENNIFER VAN WIJNGAARDEN

Professor Jennifer van Wijngaarden
Chair of the Department of Chemistry

By the Numbers

180
Faculty members
(full-time)

111
Staff members
(full-time)

20
Undergraduate programs

9
Graduate programs

84
Postdoctoral fellows & visitors

4,463
Undergraduate students
64% Canadian
36% International students
(full-time and part-time)

3,802
Undergraduate students to whom Faculty of Science provides service teaching

423
Graduate students
62% Canadian
38% International
(full-time and part-time)

5
Departments:
Biology, Chemistry, Physics & Astronomy, Mathematics & Statistics, Science, Technology & Society

1
Division:
Natural Science

31
Bethune College–affiliated student clubs

$76.6 million
Total annual budget

$20.2 million
Total research funding revenue

$4.0 million
Total fundraising amount
Annualized results since the time of the 2022 Annual Review report (as of April 15, 2024)

23
Canada Research Chairs, York Research Chairs, and Endowed Chairs

18
Fellows and College members of Royal Society of Canada
(current and emeriti)

25
Partnerships with international institutions for academic and research collaboration

3
Organized Research Units based in or led by the Faculty of Science:
Centre for Bee Ecology, Evolution and Conservation
Centre for Research on Biomolecular Interactions
Emergency Mitigation, Engagement, Response, and Governance Institute

4
Research facilities and equipment centres based in the Faculty of Science:
1 Core Analytical Facility (NMR Spectroscopy, Microscopy, and Mass Spectrometry)
2 Technical Shops
1 Science Store

Contributing to the UN Sustainable Development Goals

The Faculty of Science rises to the York University-wide challenge to contribute to the UN Sustainable Development Goals (SDGs), as outlined in the University Academic Plan 2020-2025. Below are highlights of initiatives and projects taking place in the Faculty that tackle key societal challenges aligned with the UN SDGs:

- **SDG 3, Good Health and Well-Being:** Professor **Jude Kong**, Department of Mathematics & Statistics, is leading the Global South Artificial Intelligence for Pandemic and Epidemic Preparedness and Response Network (AI4PEP). The project will help strengthen capacity and support prevention, early detection, preparedness, mitigation, and control of emerging or re-emerging infectious disease outbreaks in low- and middle-income countries in Africa, South Asia, Southeast Asia, Latin America, the Caribbean, and the Middle East.
- **SDG 4, Quality Education:** We provided five summer module courses in the sciences for incoming students and other students at York to improve transition to first year programs. 150 students completed these programs, with significant positive impacts on student success and retention.
- **SDG 5: Gender Equality; SDG 10, Reduced Inequality; and SDG 11, Sustainable Cities and Communities:** Our Science Engagement Programs offered STEM programming to thousands of elementary and high school students in the GTA. This included fully-subsidized programming for youth in marginalized communities, our partnership program with Skills for Change for Black Youth in STEM, and workshops for girls and gender diverse students.
- **SDG 13, Climate Action; and SDG 14, Life Below Water:** Professor **Sapna Sharma**, Department of Biology, was appointed as a Tier 2 York Research Chair (YRC) in Global Change Biology. Her research as YRC will seek to gain a deeper understanding of the ecological impacts of climate change on freshwater availability and quality. The research program will collaborate with researchers across disciplines to develop technological, natural, health and social solutions to water security.
- **SDG 17, Partnerships for the Goals:** In 2023, we launched dozens of research partnerships worldwide, amplifying our academic and research impact and facilitating knowledge exchange on a global scale. We also launched our Globally Networked Learning (GNL) program, enabling students and faculty around the world to share knowledge and collaborate on projects.

New programming meets the demands of industry

As times change, so do the needs of industry, and the Faculty of Science is eager to ensure that people working in science-related positions have the best possible education to meet these new demands.

In fall 2023, our Faculty successfully launched a new undergraduate program in Data Science to train students in the statistical methods, computation skills, and data analysis techniques needed to succeed as a data scientist in their chosen field.

We also worked on developing new biotechnology programs that will launch in fall 2024 at the Markham Campus: a Master's in Biotechnology Management and a Graduate Diploma in Biotechnology, as well as a new micro-credential in Vaccine Production and Quality Control that is aligned with these programs. Furthermore, we developed our first micro-credential to teach skills in NMR (nuclear magnetic resonance) Spectroscopy for Industry, which launched in winter 2024 at the Keele Campus.

STUDENTS IN A LIFE SCIENCES LABORATORY

The biotechnology programs slated for the Markham Campus were designed and developed by Professor **Mark Bayfield**, Department of Biology, and Associate Deans **Hovig Kouyoumdjian** and **Michael Scheid**. Professors **Jade Atallah** and **Luz Adriana Puentes Jácome**, Department of Biology, will be overseeing the two programs.

"Both programs are rooted in industry needs," Atallah said. "Our colleagues did extensive research to ensure industry alignment; an evidence-based approach is driving them."

The two programs will share biotechnology courses for the first year, but the master's students will also take management courses through the Faculty of Liberal Arts & Professional Studies that will allow them to graduate with both a Master's in Biotechnology Management and a Graduate Diploma in Management in under two years. The integrative program also includes a capstone course and a paid internship component with industry. The diploma program requires only two semesters of coursework.

"We want these students to be very versatile," said Puentes Jácome. "They need the professional biotechnology knowledge, but the business background will be very useful in the startup economy, while in established companies, it will give them the skills to move around."

Connecting and Celebrating our Community

The Faculty of Science continued its Community 2022 initiative into the fall/winter and summer 2023 semesters. Created in consultation with our community and launched in fall 2022, the initiative helped faculty, staff, and students reconnect in person and supported the return to a more robust on-campus presence.

In 2023, these events, including our York Science Social, monthly Lunch with the Dean, guided faculty tours, and summer barbeque, were attended by hundreds of community members. Community 2022 built on our Faculty's strong sense of belonging, togetherness, and commitment to support one another. A Faculty-wide survey concluded that the majority of respondents found the programming effective in increasing their connection to our Faculty of Science community, assisting with the transition to on campus work or study, and improving their feeling of well-being.

Making Decolonization, Equity, Diversity, and Inclusion a part of our fabric

Decolonization, Equity, Diversity, and Inclusion (DEDI) principles are central to the way our Faculty is teaching, conducting research, and operating.

We are working to diversify our faculty complement with targeted searches for Black and Indigenous faculty members and by recruiting more women; our Faculty increased its women faculty complement by about three percent to 31.5%, from 2020 to 2023. As well, our staff composition in 2023 reached 60.4% women, 2% Indigenous, 4% persons with a disability, 45.5% racialized, and 5% Black.

Furthermore, our instructors have been implementing a syllabus/course outline template that centres on equity, diversity and inclusion, and welcomes students into their courses. And, they have been incorporating DEDI into their teaching; for instance, a History of Astronomy course introduced Indigenous knowledge to students with a guest lecture by an Indigenous knowledge keeper, and new courses in Science, Technology & Society explore gender and racial social justice in STEM.

DEDI has also been a focus for our community outreach programming. For instance, our Science Engagement Programs office collaborated with Skills for Change to deliver a series of online and in-person STEM workshops for black high school youth (read more on page 29).

Supporting international skills and knowledge exchange

A fruitful partnership between the Faculty of Science and York's Asian Business and Management Program is advancing global engagement by creating meaningful opportunities for students at York and abroad to connect and learn from each other.

One program, Jumpstart Your Future: A Career Bootcamp for Undergrads, hosted 13 students from Shanghai University at the York University Keele Campus in summer 2023. The program curriculum was shaped by the Faculty of Science and featured opportunities for our students and the students from Shanghai to foster connections, share experiences, and grow their cross-cultural understanding. The students attended sessions on topics such as strategic design and innovative thinking, communication and emotional intelligence, and data science; they also participated in experiential site visits to other institutions and companies, and completed a capstone project. Another initiative, the Global Perspectives program, delivered a series of online, non-credit courses in the areas of visual analytics and modeling, and communication in corporate and scientific settings to about 120 students from 28 Chinese universities in 2023.

Faculty of Science hosts science deans from across Canada

Our Faculty hosted the 2023 Annual General Meeting of the Canadian Council of Deans of Science (CCDS) to share knowledge and strengthen pan-Canadian advocacy for science education.

The three-day event was attended by 30 science deans and associate deans from universities across Canada and featured talks by experts on topics including research data storage and security; the impact of artificial intelligence on academic integrity; student and employee mental health and well-being; equity, diversity, inclusion and accessibility in science education; an update on the Natural Sciences and Engineering Research Council of Canada funding mechanisms; and internationalization strategy. Senior leaders from York University also attended and spoke at the event, including Provost and Vice-President Academic **Lisa Philipps** and Vice-President Research and Innovation **Amir Asif**.

"We were successful in our objectives: to learn from each other, share knowledge about pressing issues and challenges in science education, and further our collective voice to help drive positive change by advocating for science education and research as a national priority," said Dean **Rui Wang**, who is also CCDS president.

SCIENCE DEANS AND ASSOCIATE DEANS AT THE 2023 ANNUAL GENERAL MEETING OF THE CANADIAN COUNCIL OF DEANS OF SCIENCE

External Highlights

Professor **Peter Backx**, Department of Biology, was elected as a Fellow to the Canadian Academy of Health Sciences, considered one of the highest honours for individuals in the Canadian health sciences community. Backx holds the Canada Research Chair in Cardiovascular Biology. He has been at the forefront of research designed to better understand the molecular and ionic underpinnings of the heart's electrical and contraction properties, particularly in relationship to disease. His work has bridged information gaps related to cardiac arrhythmias, particularly atrial fibrillation, and led to new treatments for these conditions.

PETER BACKX

CHRISTINE LE

A research paper led by Professor **Christine Le**, Department of Chemistry, was honoured with the 2023 Outstanding Publication of the Year Award from *The Journal of Organic Chemistry*. The award recognizes a paper from the previous year that demonstrates creativity and impact in the field of organic chemistry, with a focus on early-career researchers. Le's study, titled "Synthesis of Carbamoyl Fluorides Using a Difluorophosgene Surrogate Derived from Difluorocarbene and Pyridine N-Oxides," presented an innovative approach to making molecules called carbamoyl fluorides in an efficient way that avoids the use of light-, moisture-, temperature-, and shock-sensitive reagents. Co-authors included York doctoral student **Dusty Cadwallader**, MSc graduate **Tristan R. Tiburcio**, and undergraduate student **George A. Cieszynski**.

Professors **Kyle Belozerov** and **Derek Jackson**, Department of Chemistry, received a Minister's Award of Excellence in the Future-Proofing Ontario's Students category. Sponsored by Ontario's Ministry of Colleges and Universities, the Minister's Awards of Excellence highlight the incredible work of professors, instructors, staff and graduate students on campus, in the community and beyond. They received the award for their work with virtual reality (VR) in chemistry courses. Motivated by the desire to help students learn the structure and behaviour of complex molecules, they developed a variety of interactive VR activities designed to help students manipulate molecules and research crucial aspects of the structure underlying their reactivity and biological function.

KYLE BELOZEROV AND DEREK JACKSON

RYAN HILI

Professor **Ryan Hili**, Department of Chemistry, received the 2023 Melanie O'Neill Young Investigator Award in Biological Chemistry from the Canadian Society for Chemistry. The award is presented to a scientist residing in Canada who has made a distinguished contribution to biological chemistry while working in Canada. Hili is the York Research Chair in Molecular Evolution. His research interests focus on using DNA to program and encode the synthesis of molecular libraries ranging from small molecules to synthetic biopolymers. By using the principles of Darwinian evolution, his lab can evolve these molecular libraries for desired function, yielding small molecule drugs to treat human disease or antibody mimetics for use in medical diagnostics.

Internal Highlights

Faculty of Science Excellence in Educational Leadership Awards

FACULTY CATEGORY

AMENDA CHOW

Professor **Amenda Chow**, Department of Mathematics & Statistics: Her commitment to experiential learning led her to develop the Experimental Math Space at York. She also led major curricular developments, re-designing large first-year courses and developing the first math course with a formal lab component.

VERA PAVRI

Professor and Chair **Vera Pavri**, Department of Science, Technology & Society: She led major program reforms in the department that led to refreshed undergraduate programs re-launching in fall 2023, including new courses focused on equity, diversity and inclusion.

GRADUATE CATEGORY

LAURA KEANE

PhD student **Laura Keane**, Department of Mathematics & Statistics: She demonstrated leadership through her activities with the Association for Women in Mathematics, her participation in the Faculty of Graduate Studies' Academic Policy, Planning and Research Committee, and her continuous efforts to improve teaching and learning in mathematics and statistics.

PhD student **Yohana Solomon**, Department of Mathematics & Statistics: She created opportunities and communities for others, from organizing SummerUp for black high school students to founding the Math in Black community to starting the Association for Women in Mathematics Student Chapter at York University. This created initiatives that directly supported equity, diversity and inclusion in STEM.

Faculty of Science Excellence in Teaching Awards

JUNIOR TENURE STREAM FACULTY CATEGORY

STEPHANIE DOMENIKOS

Professor **Stephanie Domenikos**, Department of Science, Technology & Society: Students described her courses as being challenging but exciting, having a vibrant classroom environment, being highly organized, and offering an elevated learning experience. She also co-developed the University Experience first-year modules, and has led the NATS-Aid Peer Tutoring program since 2019.

CONTRACT FACULTY CATEGORY

CHARLOTTE DE ARAUJO

Professor **Charlotte de Araujo**, Department of Biology: Her students and colleagues describe her as a passionate, engaging, and skilled educator. Students repeatedly comment on her ability to create safe learning spaces conducive to open discussion. In addition, her work in advocating for Open Educational Resources (OER) has led York University to join the OER Rangers Network in Ontario.

RICHARD JARRELL AWARD OF EXCELLENCE FOR TEACHING ASSISTANTS

MSc graduate **Amanvir Virdi,** Department of Biology: She met the challenges of the pandemic with dedication and initiative. She found creative ways to engage students on Zoom and created Teams platforms for students that fostered an active, engaged student community. When in-person labs returned, she provided resources and feedback to support students in lab protocols and reports.

AMANVIR VIRDI

Faculty of Science Excellence in Research Awards

ELIZABETH CLARE

EARLY CAREER RESEARCH AWARD

Professor **Elizabeth Clare**, Department of Biology: Her groundbreaking technique for extracting DNA from air has been widely recognized and publicized globally, establishing her as a leading international scientist on biodiversity monitoring. The impact of her research is evidenced by her prolific record of publications in top tier journals, numerous citations, and ability to secure multimillion-dollar research grants.

ESTABLISHED RESEARCH AWARD

RANDY LEWIS

Professor **Randy Lewis**, Department of Physics & Astronomy: He is internationally renowned in the field of lattice quantum chromodynamics, and best known for his calculations that predict the properties of heavy unstable particles years prior to their experimental discovery in particle accelerators such as the Large Hadron Collider at the European Organization for Nuclear Research (CERN).

EXCELLENCE IN GRADUATE MENTORSHIP AWARD

IAIN MOYLES

Professor **Iain Moyles**, Department of Mathematics & Statistics: He has contributed extensively to the PhD program steering committee and the Teaching Assistant training program. He is a dedicated mentor and supervisor, known for his accessibility to his trainees and his commitment to ensuring their progress in research undertakings with individualized success.

Research Funding

By the Numbers

$20.2 million
Total funding awarded in 2023

$1.9 million
Canadian Institutes of Health Research

$9.1 million
Natural Sciences and Engineering Research Council of Canada

$1.5 million
Contracts and industry

$3.8 million
Canada Research Chairs

$1.3 million
Mitacs and other fellowships

$797 thousand
Provincial, national and international agencies

$365 thousand
Fields Institute

$526 thousand
Foundations, societies, and not-for-profits

$350 thousand
Donations

$380 thousand
Canada Foundation for Innovation, and Ontario Research Fund

$226 thousand
Social Sciences and Humanities Research Council of Canada

Highlights

Natural Sciences and Engineering Research Council of Canada (NSERC)

Our researchers received more than $8.4M in grants from NSERC through the Discovery Grants, Discovery Launch Supplements, Research Tools and Instruments, Alliance, and Collaborative Research and Training Experience programs. These grants enable them to pursue discovery-driven research programs, conduct innovative research activities, train highly qualified personnel, and establish and strengthen diverse partnerships and interdisciplinary collaborations.

Our Discovery Grants recipients included **Jingyi Cao**, **Patrick Hall**, **Deborah Harris**, **Ryan Hili**, **Marko Horbatsch**, **Huaxiong Huang**, **Junwu Huang**, **Patrick Ingram**, **Dongchen Li**, **Seyed Moghadas**, **Kelly Ramsay**, **Emanuel Rosonina**, **Thomas Salisbury**, **Rui Wang**, **Woldegebriel Assefa Woldegerima**, **Yuehua Wu** and **Mike Zabrocki**. The Discovery Launch Supplements recipients included **Jingyi Cao**, **Dongchen Li**, **Kelly Ramsay**, and **Woldegebriel Assefa Woldegerima**. And, the Research Tools and Instruments recipients included **Mark Bayfield**, **Jennifer Chen**, **Sergey Krylov** and **Raymond Kwong**.

DEBORAH HARRIS

Professors **Ryan Hili**, Department of Chemistry, and **Deborah Harris**, Department of Physics & Astronomy, received the largest NSERC Discovery Grants in the Faculty with more than $570K for the project "Exploring the Chemical Diversity of Nucleic Acids" and $480K for the sub-atomic physics project, "Neutrino Oscillations at T2K: New Avenues to Explore," respectively.

EDWARD FURMAN

Five researchers received NSERC Alliance grants totaling $2.6M, including Professors **Thomas Baumgartner**, **Elizabeth Clare**, **Edward Furman**, **John McDermott**, and **Cora Young**. Professor **Edward Furman**, Department of Mathematics & Statistics, received more than $11M through the NSERC Alliance-Mitacs Accelerate program and from industrial partners for a project called "New Order of Risk Management (NORM): Theory and Applications in the Era of Systemic Risk." The project is focused on developing better ways to manage risk and protect Canadians from increasing threats, including financial and geopolitical crises, pandemics and natural disasters.

Professor **Sergey Krylov**, Department of Chemistry, received an NSERC Collaborative Research and Training Experience (CREATE) grant. This initiative will provide approximately $8.6M ($1.65M from NSERC) to lead a team of researchers and industrial leaders in training the next generation of technologically advanced graduates. The "Technology-Enhanced Pharmaceutical Discovery" program will train master's and PhD students with the technical and managerial skills to capitalize on disruptive technologies that aim to impact Canada's research and development in the pharmaceutical industry.

SERGEY KRYLOV

Canadian Institutes of Health Research (CIHR)

Our researchers received a total of $1.9M from CIHR. A few projects are highlighted below and include co-applicants.

CHUN PENG

Professor **Chun Peng**, Department of Biology, received $780K from CIHR to fund a new project associated with her ongoing research into pre-eclampsia, a serious pregnancy disorder characterized by high blood pressure. Peng's project, titled "NLRC5 isoforms in placental development and pathogenesis of pre-eclampsia," builds on findings from a previous project where her team identified two truncated isoforms of a protein called NLRC5 in human placenta. Preliminary results suggest that these NLRC5 isoforms play important roles in regulating placental development and may also contribute to the development of pre-eclampsia.

WOLDEGEBRIEL ASSEFA WOLDEGERIMA

Professor **Woldegebriel Assefa Woldegerima**, Department of Mathematics & Statistics, received $480K from CIHR for his project entitled "Modelling, predicting and risk assessment of mpox and other (re) emerging zoonotic threats to inform decision-making and public health actions." Woldegerima is using epidemiological and geospatial models including mathematical and artificial intelligence-based models to study epidemiology, transmission dynamics, and immunology and intervention strategies to forecast the effectiveness of prevention and control strategies for mpox and other zoonotic diseases in Canada and around the world.

Social Sciences and Humanities Research Council (SSHRC)

Biology Professor **Elizabeth Clare** and co-applicants received $223K from the New Frontiers in Research Fund (Exploration stream). Her project, titled "The ethical challenge to non-invasive environmental (e)DNA technology" attempts to adapt the novel discovery of airborne eDNA to diagnose animal health, with the potential for far-reaching impacts. The team is employing untested prototypes for eDNA collection while simultaneously assessing the ethical implications of the technology and potential for misuse.

Scientists solve longstanding antimatter mystery

As Newton observed, an apple falls from the tree and hits the ground. But what would an antimatter apple do? That was the question an international collaboration with Professor Emeritus **Scott Menary**, Department of Physics & Astronomy, set out to answer. Ultimately, the team was testing Einstein's General Theory of Relativity to see if the theory also held true for antimatter or, in this specific case, antihydrogen. What they found is yes, antihydrogen, like hydrogen, falls down, not up.

The measurement was carried out by the Antihydrogen Laser Physics Apparatus (ALPHA) collaboration using the new ALPHA-g apparatus now in operation at the European Organization for Nuclear Research (CERN). Menary was co-project manager of construction for ALPHA-g's radial Time Projection Chamber (rTPC), which he also helped design. The rTPC was one of two new detectors used in the experiment.

The experiment worked by first creating a sample of antihydrogen atoms, trapping (holding) them in an extraordinarily cold magnetic bottle, then releasing them by varying magnetic fields to measure their gravitational behaviour. The research was published in the journal *Nature*.

THE RTPC ON THE BENCH AT CERN BEFORE BEING INSTALLED IN ALPHA-G. *CREDIT: CERN*

Researchers uncover history of oxygen deprivation in Lake Erie

A team led by Professor **Roberto Quinlan**, Department of Biology, and MSc graduate **Dmitri Perlov** used a novel method to find a history of deep-water oxygen deprivation in Lake Erie that continues today. They looked at how fossilized remains of small insect larvae called chironomids, which are highly sensitive to changing oxygen levels, were affected over the past 150 years.

A lack of deep-water oxygen is concerning because it can spur summer algal blooms, which can affect drinking water and harm or kill fish. The researchers found that Lake Erie has suffered declines and depletion of bottom oxygen in the past, prior to major Euro-American settlements; however, it wasn't as bad as it is today.

"Our study's results emphasize the vulnerability of Lake Erie because it naturally had periods of low oxygen prior to large scale European settlement, urbanization, industrialization, agricultural fertilizers and all these additional stressors that make Lake Erie that much more vulnerable to low oxygen," said Quinlan.

RETRIEVAL OF THE BOX CORER CONTAINING LAKE ERIE SEDIMENTS, FROM WHICH THE SEDIMENT CORES WERE RETRIEVED FOR THIS STUDY. *PHOTO COURTESY OF EUAN REAVIE AND DMITRI PERLOV*

"Of all the Great Lakes, Lake Erie is the most stressed by human influence and has the poorest water quality so it is of great interest to both the United States and Canadian governments."

The research was published in the *Journal of Great Lakes Research*.

York atmospheric scientists analyze city's air pollution

Professors **Cora Young** and **Trevor VandenBoer**, Department of Chemistry, led a team to examine Toronto's air for six weeks in summer 2023 from their rooftop Air Quality Research Station at York.

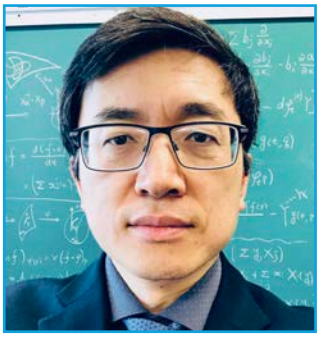
Their project, named THE CIX (Toronto Halogens, Emissions, Contaminants, and Inorganics eXperiment), was part of a field campaign across North America organized by NASA and the National Oceanic and Atmospheric Administration. State-of-the-art instruments were deployed in multiple, coordinated research campaigns, including at York University, to investigate how air pollution sources have shifted over recent decades. Additionally, a NASA aircraft cruised over campus to take air quality readings from higher in the atmosphere.

One of the things THE CIX team hopes to understand is how a mix of trace chemicals will sometimes combine to create little understood, new and changing threats that can contribute to worse air quality.

"There is still so much we don't know about what's impacting the air we breathe, and until we do, it's difficult to effectively target contaminants that are affecting our air quality now and into the future," said Young.

Mathematician uses patented AI algorithm to advance healthcare

Professor **Steven Xiaogang Wang**, Department of Mathematics & Statistics, had a US patent approved for an algorithm that reduces the training time of artificial intelligence (AI) machine learning. Titled "Parallel Residual Neural Network Architecture and System and Method for Training a Residual Neural Network," the patent was based on a collaboration with former postdoctoral fellow Ricky Fok, Professor Aijun An (Lassonde), and former graduate research assistant Zana Rashidi.


STEVEN XIAOGANG WANG

The algorithm's framework uses a mathematical formula to allow residual networks – responsible for the training of AI – to compute in parallel to each other, thereby enabling faster simultaneous learning. Wang is particularly interested in applying his work to health care. "This is my dream and mission," he said.

He has especially focused on using AI to improve care for seniors, and that work earned him a Queen Elizabeth II Platinum Jubilee Award from the House of Commons in 2023 for initiatives to mitigate the spread of COVID-19 in long-term care facilities.

Wang plans to use his patented algorithm in ongoing projects that aim to provide smart monitoring of biological signals for seniors, such as electrocardiogram signals at night.

Establishing a new definition of the human

GRAPHIC REPRESENTING THE FUTURE FLOURISHING PROGRAM AT CIFAR.
COURTESY OF CIFAR

A new program proposed by Professor **Hélène Mialet**, Department of Science, Technology & Society, was one of three winners of the international "Future of Being Human" competition held by the Canadian Institute for Advanced Research (CIFAR). Mialet (principal investigator) is co-director of CIFAR's new Future Flourishing program, which also includes Professor Kristin Andrews (Faculty of Liberal Arts & Professional Studies) as a new Fellow.

Mialet, along with co-directors Tarek Elhaik (University of California, Davis) and Christopher Kelty (University of California, Los Angeles), assembled a network of 16 exceptional scholars and practitioners, including philosophers, historians, curators, conservators, artists and anthropologists from around the world to participate in the program.

"The fundamental question at the core of the Future Flourishing program," explained Mialet, "is how can we live well without human exceptionalism. How can we live well and flourish with those upon whom we depend or with whom we share a common world? The establishment of a new definition of the human will have tremendous implications for how we think about and 'do' politics, ethics, knowledge and morality."

New York Research Chair in Global Change Biology

Professor **Sapna Sharma**, Department of Biology, was named among the 15 newest York Research Chairs (YRC), an internal program that mirrors the national Canada Research Chairs program in recognizing world-leading researchers in a variety of fields.

Sharma was appointed as a Tier 2 YRC in Global Change Biology.

Her research as YRC will seek to gain a deeper understanding of the ecological impacts of climate change on freshwater availability and quality. Sharma's research will capitalize on long-term climatic and ecological time series collected from thousands of lakes and apply cutting-edge statistical and machine learning analyses to forecast the impacts of global environmental change on freshwater security and help to explain macroecological patterns, drivers and impacts of worldwide lake responses to climate change. The research program will collaborate with researchers across disciplines to develop technological, natural, health and social solutions to water security.

SAPNA SHARMA

Undergraduate conference shines spotlight on student researchers

More than 60 students from the Faculties of Science, Health, and Environmental & Urban Change attended the Faculty of Science Summer 2023 Undergraduate Research Conference to present their projects, reflecting work ranging from bee conservation and biochemical innovations to quantum computing and more.

The conference was an opportunity for recipients of the Natural Sciences and Engineering Research Council of Canada Undergraduate Summer Research Awards, the Dean's Undergraduate Research Awards, the Earle Nestmann Undergraduate Research Awards and the York Science Scholars Awards to share projects they had worked on over the summer. Students' presentations were judged by faculty members, postdocs and graduate students, and the winners for best presentations were announced at the end of the event.

The following Science students received awards for their oral presentations: **Hannah Le** (first place), **Chiara Di Scipio** (second place), and **Isaac Kogan** (third place).

STUDENTS PRESENTING THEIR POSTERS AT THE UNDERGRADUATE RESEARCH CONFERENCE

The following Science students received awards for their poster presentations: **Jessica Latimer** (first place), **Sarah Powell** (second place), and **Yash Shrestha** (third place).

Health students were announced in a separate category, with the following receiving awards: **Patrick Hewan** (best oral presentation), and **Mira Bhattacharya** (best poster presentation).

FIRST PLACE WINNERS FROM THE FACULTY OF SCIENCE, L-R: HANNAH LE, JESSICA LATIMER

Supporting excellence in teaching and learning

In 2023, our faculty members and staff worked diligently to engage and support our Science instructors in enhancing excellence in teaching and learning, including decolonization, equity, diversity, and inclusion (DEDI) in the classroom.

Associate Dean of Curriculum and Pedagogy **Hovig Kouyoumdjian** launched a new monthly Teaching & Learning Bulletin for the Faculty of Science community that shares ideas and best practices related to teaching and learning, recent workshops, and upcoming events.

For the 2023-24 academic year, Biology Professor and Pedagogical Innovation Chair in Science Education **Tamara Kelly** and Educational Development Specialist **Ashley Nahornick** continued to refine and assess the EDI syllabus/course outline template for instructors that was launched in 2022; the template aims to help instructors enhance EDI and accessibility in the classroom and welcome students into their courses. Kelly and Nahornick provided one-on-one support and training to numerous instructors on adopting the syllabus, and surveyed instructors on their use of it.

The Faculty of Science hosted nearly a dozen events dedicated to teaching and learning in conjunction with the Faculty's Committee on Teaching & Learning (CoTL), chaired by Professor **Robin Marushia** in the Department of Science, Technology & Society. These events included a full-day, hybrid Teaching & Learning Symposium featuring an Indigenous speaker, Professor **Michelle Hogue** (University of Lethbridge), for all Science instructors and graduate students; an "Open Education Mini-Course for Faculty," presented by Director of Open Scholarship **Stephanie Quail** and Professor **Charlotte de Araujo**, Department of Biology; and "Empowering Educators: Strategies for Enhancing Mathematical Literacy among Students," presented by Professor **Andrew Skelton**, Department of Mathematics & Statistics. As well, we increased opportunities for our instructors to engage in professional development and learn more about the resources offered through the Faculty; these opportunities included drop-in office hours with Nahornick, informal drop-in lunch sessions with members of CoTL, informal chat sessions for faculty members and graduate students with Kelly and Nahornick, and more.

Together with CoTL and the Committee on Equity, Diversity and Inclusion, Kelly and Nahornick hosted an EDI Science Book Club, where instructors came together to discuss the book "Inclusive Teaching-Strategies for Promoting Equity in the College Classroom." They also organized EDI Science Reading Group meetings for instructors to read and unpack academic articles on topics of EDI and science.

As well, CoTL introduced a new stream of teaching and learning awards called the Excellence in Educational Leadership Awards, with categories for faculty members and graduate students (read more on page 16-17).


HOVIG KOUYOUMDJIAN


TAMARA KELLY


ASHLEY NAHORNICK


ROBIN MARUSHIA

Enhancing accessibility and student experience in labs and classrooms

Thanks to funding from the York University Academic Innovation Fund, our faculty members launched projects focused on improving accessibility in teaching labs and making chemistry courses more engaging.

One project, led by Biology Professor **Tamara Kelly** and other faculty members from the Departments of Physics & Astronomy and Biology, aims to reduce inequities in laboratories across York University for students with disabilities. Some Science students are registered with Student Accessibility Services and have accommodation in their courses; however, most recommendations are related to lectures and not laboratories. Kelly's project aims to set the groundwork, and ultimately a framework, for creating more accessible experiential laboratory experiences through a Universal Design for Learning lens, such that all students can engage in positive learning in laboratories.

In 2023, the team completed a review of existing literature in two major areas: accommodations in laboratories, and the experiences of students with disabilities in STEM and supporting students with accommodation. In consultation with accessibility experts, they designed and developed survey questions to assess for student experiences and instructors' attitudes towards accommodations, and they prepared focus group questions to learn more about accessibility in laboratories from students and instructors. As well, the team created a laboratory accessibility checklist and conducted assessments of the first-year Biology, Chemistry, and Physics laboratory spaces to identify barriers and what was missing to make accommodation easier.

Another project, led by Chemistry Professors **Tihana Mirkovic** and **Hovig Kouyoumdjian**, who is also Associate Dean of Curriculum and Pedagogy, is aimed at improving students' learning and engagement in chemistry classes. The team is focused on using a powerful e-learning tool called Adobe Captivate to transform conventional components in courses to more versatile and dynamic modules that create an interactive learning environment.

"Our goal is to allow students to integrate their conceptual and procedural understanding of their labs through active learning opportunities. We hope that the newly developed modules featuring slides, videos, hotspots, 360° navigation, software simulations and knowledge check assessments will provide a learning environment that motivates our students and maximizes their learning potential," said Mirkovic.

They are piloting the tool in Introductory Organic Chemistry I (CHEM2020) and Experimental Chemistry II (CHEM3001) and plan to expand its use in other courses in the Department of Chemistry and Faculty of Science.

Math instructors pilot open-access homework platform for students

Supported by the Dean's Office, including the Faculty of Science IT team, and the Department of Mathematics & Statistics, Professor **Andrew McEachern** and other instructors began piloting the use of WeBWorK – an online, open educational resource – in all sections of a first-year Applied Linear Algebra course (MATH 1025). WeBWorK allows students to practice solving challenging problems as often as they'd like and provides instantaneous feedback. WeBWorK is open source and very customizable; this means it can be downloaded for free, although there are significant costs associated with the server and staff resources. The Faculty of Science is covering these costs to provide the software free of charge to students.

ANDREW MCEACHERN

A thorough evaluation is set to start after the conclusion of the course.

Highlights

Faculty of Science medals for high achievement

Undergraduate students **Areeba Chaudhry**, **Sarah Pullano** and **Nicole Frias** received the Faculty of Science Gold and Silver Medals at the Spring Convocation Ceremony in 2023. Pullano and Chaudhry received a Gold Medal, which is presented to Science students graduating with the highest GPA, and Frias received the Silver Medal, which goes to a Science student who has combined the highest degree of academic achievement with the greatest contribution to undergraduate student life at York.

L-R: AREEBA CHAUDHRY, SARAH PULLANO, NICOLE FRIAS

Thesis and dissertation prizes

MSc graduate **Melodie Lao** and PhD graduate **Kathleen Dogantzis** received thesis and dissertation prizes from the Faculty of Graduate Studies for their outstanding scholarly work.

Lao received a Master's Thesis Prize for "Developing an Automated Nitrous Acid (HONO) Platform to Detect Emerging Pollutants in a Commercial and Domestic Environment."

MELODIE LAO

KATHLEEN DOGANTZIS

Dogantzis received a Doctoral Dissertation Prize for "Understanding the Evolutionary Origin and Ancestral Complexity of Honey Bee (Apis mellifera) Populations." She was also among three York University graduates who received the 2023 Governor General Gold Medals, which recognize the outstanding scholastic achievements of graduate students in Canada.

President's University-Wide Teaching Award

PhD student **Farwa Sajadi** received the President's University-Wide Teaching Award (Teaching Assistant category) for enhancing the quality of learning and demonstrating innovation in teaching. She was honoured for being a TA who fosters an academically enriched environment for learning, advancing student critical thinking and implementing creative approaches to promote student scholarship and engagement.

FARWA SAJADI

Highlights

Empowering youth to experience and explore the sciences

Our Science Engagement Programs office delivers engaging programs for youth to explore topics in science, technology, engineering, and mathematics (STEM). Our programs include march break, summer, and PA Day camps that take place within the Faculty of Science at the Keele Campus of York University, as well as programs and workshops in community centres, schools and other educational institutions.

In 2023, more than 8,100 students and teachers engaged in our youth programs – a more than 75 percent increase compared to the previous year:

- **800+** students participated in on-campus programming, including camps and workshops.
- **1,250+** students participated in off-campus programming in libraries, schools, and virtually.
- **2,100+** people attended York University's Science Rendezvous.
- **3,875+** students participated in CanCode Digital Literacy workshops, a fully-subsidized program offered in partnership with the Government of Canada and Actua.

As well, in 2023, our Science Engagement Programs office collaborated with the Skills for Change – Black Community Access Program to deliver a series of online and in-person STEM workshops for black high school youth. This afterschool program was designed to empower and support Black youth in underserved communities in Toronto who are interested in pursuing careers in STEM. Students engaged in topics including environmental sustainability, biomedical science, space engineering, wearable technology, and more.

"I loved the program, it was fun, interactive, and we got chances to express our feelings about the topics. They built a safe environment and had great things for us to do."

— GRADE 5/6 MINI-ROBOTICS STUDENT

"My kid had enrolled in the Mini Med program with York University and it was the best experience ever! What stands out, is how much of hands on learning the kids get. It is the practical and experiential learning that made it memorable, valuable and a fun learning for the kids. My daughter has a new sense of appreciation for science. If your kid is a science enthusiast, definitely a camp worth trying out."

— GRADE 7/8 MINI-MED PARENT

STUDENT IN GRADE 3/4 SPACE ADVENTURES CAMP

Highlights

Observatory creates opportunities for local and global engagement

In September 2023, the York University **Allan I. Carswell Observatory**, directed by Professor **Elaina Hyde**, officially re-opened for in-person business and outreach again after the completion of a renovation project that featured installing two new robotic domes over its telescopes. It resumed its in-person public tours, which were hugely popular before the pandemic, along with the continuation of its online programming. In 2023, the Observatory hosted eight local high school tours, 22 new public viewing astronomy evenings, 18 grade-school and high-school tour groups, and other special events like Haunted Hydrogen Halloween, which saw over 100 participants. As well, the Observatory held its second annual Astronomer in Residence program in collaboration with Killarney Park, hosting seven residents from May to October 2023.

ALLAN I. CARSWELL OBSERVATORY

The facility also launched a new online proposal system in November 2023 that allows researchers, students, and others to apply for time to use its telescopes. They held their first collaborative observation with the European-led Lucky Star team, which studies trans-neptunian objects.

Science graduates among York U's Top 30 Alumni Under 30

Science alumni **Batool Barodi** (BSc '19), **Clarelle Gonsalves** (BSc '18) and **Shalini Iyer** (BSc '20) were named among York University's 2023 Top 30 Alumni Under 30.

Upon graduation from York, **Barodi** was selected to represent Canada as a youth delegate at the Open Government Partnership Global Summit 2019. She is now a medical student at Central Michigan University, where she focuses her research on heart transplant surgeries. Barodi also creates videos documenting her journey of becoming a doctor and supporting students who don't have access to mentorship opportunities.

Gonsalves is a paediatrics resident at the University of Toronto based out of The Hospital for Sick Children. She is dedicated to standardizing and optimizing health outcomes for children who do not readily have access to specialized care. She completed her MD at McMaster University, where she co-developed a workshop for health professionals and trainees aimed at recognizing and speaking up against racism in healthcare and medical education.

One of **Iyer's** goals is to help break down systemic biases and barriers in science. At York, she was dedicated to increasing accessibility to STEM education for youth through her work with Let's Talk Science. She has also been actively involved in increasing science accessibility for Black youth in the Jane and Finch community through STEM and career workshops. She is now a PhD student in Neuroscience at the University of British Columbia.

L-R: BATOOL BARODI, CLARELLE GONSALVES, SHALINI IYER

Digital Engagement

In 2023, our Faculty saw positive growth and engagement across its social media and networking channels, including LinkedIn, Instagram, TikTok, Facebook, and X, as well as growth in website traffic across all of our Science sites. ***Comparing 2023 to 2022:***

21% growth
Social media engagement rate

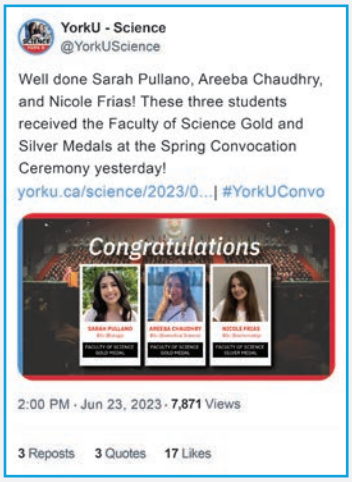
81% growth
Social media post link clicks

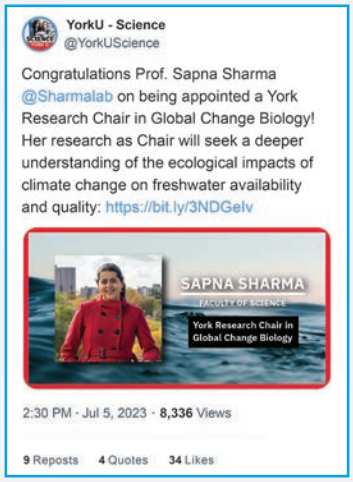
19% growth
Total audience on social media

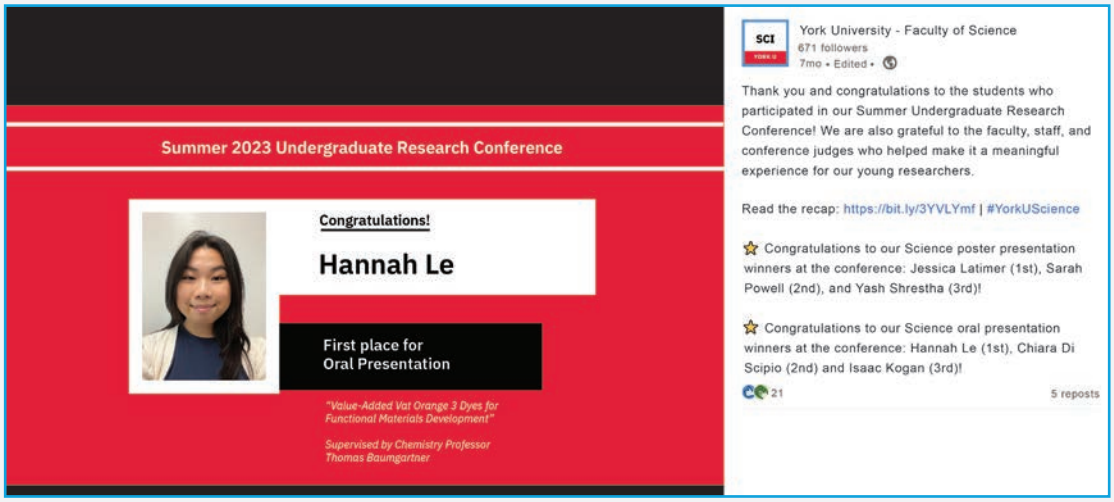
35% growth
Total website visitors

41% growth
Total webpage views

Top performing social media posts in terms of engagement included:







In our internal newsletter, the Dean's Round-up, **+470 highlights** were shared in 2023, including faculty, staff and student honours and awards, presentations, new research, new partnerships, media outreach, events and more.

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