science | **YORK U**

Dean's Round-up: June 2023

FACULTY HIGHLIGHTS

The Faculty of Science Spring Convocation Ceremony took place on June 22. Congratulations to all of our graduating students and thank you to all of the staff and faculty members who helped make the ceremony and celebration a success.

Congratulations to the students who received medals and awards at the ceremony:

- Undergraduate students **Areeba Chaudhry**, **Sarah Pullano** and **Nicole Frias** received the [Faculty of Science Gold and Silver Medals](). Chaudhry and Pullano 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.
- PhD student **Kathleen Dogantzis** (Biology) received the [Governor General's Gold Medal](), which recognizes outstanding scholastic achievements of graduate students in Canada. She also received a [Doctoral Dissertation Prize]()

for "Understanding the Evolutionary Origin and Ancestral Complexity of Honey Bee (Apis mellifera) Populations."

- **Pictured above:** PhD student **Farwa Sajadi** (Biology) received a [President's University-Wide Teaching Award](#) (Teaching Assistant category) for enhancing the quality of learning and demonstrating innovation in teaching.

> Faculty members are encouraged to fill out the *Maclean*'s **Reputational Survey.** The Canadian news magazine's annual rankings are considered to be one of the most influential sources for prospective university students when choosing their school, and boosts reputation in higher education. [Complete the survey](#)

CONGRATULATIONS

Thomas Baumgartner (Chemistry) received an NSERC Alliance International Catalyst grant to build a formal collaboration with the Romero-Nieto group at the University of Castilla-La Mancha in Spain. They will be working on "Functional Phosphacycle-Modified Vat Dyes" over the next year.

Ilijas Farah (Mathematics & Statistics) was selected as a [Münster Research Fellow](#), a guest of the Cluster of Excellence "Mathematics Münster."

Biophysics students **Rohith Kaiyum** and **Coral Hillel** received prizes at the 2023 Canadian Association of Physicists Congress, held at the University of New Brunswick. Kaiyum won first place for the Student Oral Presentation Award in the Division of Physics in Medicine and Biology; he also received an honourable mention for the Overall Student Oral Presentation Award. Hillel won second place for the Student Oral Presentation Award in the Division of Physics in Medicine and Biology.

A research study led by **Christine Le** (Chemistry), titled [Synthesis of Carbamoyl Fluorides Using a Difluorophosgene Surrogate Derived from Difluorocarbene and Pyridine N-Oxides](#), was honoured with the [2023 Outstanding Publication of the Year Award](#) from *The Journal of Organic Chemistry*. **Read the** [yFile story](#).

A US patent application by **Steven Wang** (Mathematics & Statistics), former postdoc **Ricky**

Fok and Aijun An (Lassonde), titled "Parallel Residual Neural Network Architecture and System and Method for Training a Residual Neural Network," was approved. The original idea was outlined in a paper titled "Decoupling the Layers in Residual Network" at the 2018 International Conference of Learning Representations (widely considered as one of the top AI conferences).

MORE NEWS

[YFile](#) featured our **Science Explorations Summer Camps**, including a new week-long program called Sustainable Science.

Two teams from the **Department of Mathematics and Statistics** joined the 2023 Case Studies Competitions of the Statistical Society of Canada and presented their work at the Annual Meeting:

- One team consisted of MA students **My Luu**, **Zhiyin Chen** and **Zayeeda Shareen Labiba**, and undergraduate student **Ravish Kamath** , supervised by **Steven Wang** and PhD student Octavia Wong (Health). They presented "Examining contributing factors to long wait times in emergency departments."
- A second team consisted of undergraduate students **Sunqiaohe Zheng**, **Jinqi Guo** and Joseph Chung (University of Toronto), supervised by **Augustine Wong** and Xiaoping Shi (University of British Columbia). They presented "Can we measure the economic impact of climate change with specific metrics?" which received an honorable mention in the competition.

At the 2023 Canadian Discrete and Algorithmic Mathematics Conference, postdoc **Sooyoung Kim** (Mathematics & Statistics) co-organized the session "Quantum Information on Graphs" and gave a talk on "Strong cospectrality between a graph and its line graph." PhD student **Aysa Tajeri** also presented in the open problem session.

At the 25th Conference of the International Linear Algebra Society, postdoc **Sooyoung Kim** presented "Kemeny's constant and Braess edges," and **Ada Chan** (Mathematics & Statistics) presented "Pretty good state transfer among large set of vertices."

Robin Kingsburgh (Natural Science) presented two workshops on "The Colour Literacy Project," and moderated a panel on "Colour and the Perceiver," at the Color Impact: Color & Human Experience Conference, held at Rochester Institute of Technology.

Postdocs **Zahra Nia**, **Blessing Ogbuokiri**, and **Mbogning Fonkou Maxime Descartes** (Mathematics & Statistics), undergraduate student **Taylor Cargill**, community partners and **Jude Kong** (Mathematics & Statistics) presented the results of some of the projects they co-created with the Jane and Finch community to the community.

Jude Kong (Mathematics & Statistics) presented the talk "The impact of responsible local and explainable AI on communities" at the Public Health Association of BC Summer

Institute; a talk on the impact of their AI models on communities across Africa at AESIS's 11th annual conference on the Societal Impact of Science; the talk "Leveraging Responsible, Explainable, & Local AI for Population Health & Health Systems" at the IndabaX Cameroon 2023 conference; the plenary "How mathematics can save lives: mathematical modeling to support infectious disease-based decision-making" and a talk at a session he co-organized on "Dynamics of a cholera transmission model: from Microscopic Cycles to Macroscopic Cycles" at the Canadian Mathematics Society Meeting; as well as two talks, "Mpox dynamic model: incorporating adaptive behavioral changes, different control strategies in the MSM community and under-reporting" and "Leveraging mathematical models to support early management of an emerging disease outbreak: the case of Covid-19 and Africa" at the Computational and Mathematical Population Dynamics 6 (CMPD6) conference in Winnipeg. He also organized and chaired the Canadian Black Scientists Network-Ontario node.

The Black in Mathematics community at York, which was founded by Kong and led by students **Taiye Estwick** and **Sarah Royer** organized a panel discussion on "Mathematics Abstract or Absolute."

The **Global South AI for Pandemic & Epidemic Preparedness & Response Network**, led by **Jude Kong** (Mathematics & Statistics), published their first AI4PEP Newsletter and a podcast series on "All about Artificial Intelligence for healthcare systems."

An international research group of which Professor Emeritus **Kim Maltman** (Mathematics and Statistics) is a member (G. Benton, D. Boito, M. Golterman, A. Keshavarzi, K. Maltman and S. Peris) made the invited presentation "Sum rules and other tools for comparing the dispersive and lattice HVP contributions to g-2" at the IFT workshop on Lattice Gauge Theory Contributions to New Physics Searches, in Madrid, Spain.

Professor Emeritus **Marshall McCall** (Physics & Astronomy) created the video "Let's Make a Galaxy," posted on YouTube. He provides a brief introduction on galaxies, and using Jell-o, demonstrates how galaxies form and evolve.

Iain Moyles (Mathematics & Statistics) co-organized a mini-symposium on Behavioural Epidemiology at the annual meeting for the Canadian Applied and Industrial Mathematics Society held June 12-15 at the University of New Brunswick. He also presented two invited mini-symposia talks at this conference: "Timescale dynamics in an mRNA vaccine model" and "Physical distancing and vaccine compliance behaviour in a mathematical model of COVID-19."

Tom Salisbury (Mathematics & Statistics) delivered a plenary talk titled "Tontines" at the Canadian Applied and Industrial Mathematics Society's annual meeting, and an invited session talk titled "Regulatory constraints and the Riccati tontine" at the annual meeting of the Statistical Society of Canada.

Sapna Sharma (Biology) delivered a plenary titled Trends, drivers, and consequences of ice loss in lakes around the Northern Hemisphere at the International Association of Great

Lakes Research Annual Meeting.

Andrew Skelton (Mathematics & Statistics) and Tyler Pattenden (Western University) hosted the session "Skills Development in the Mathematics Classroom" at the Canadian Mathematical Society Summer Meeting in Ottawa. Skelton and Robert McKeown (LAPS) presented "Improving Testing and Learning with Adaptive Software: ALEKS in a First-Year Math Course" at the Canadian Higher Education Testing Association conference in Toronto.

MA student **Chrystal Smith** (Mathematics & Statistics) presented "Using R-programming in the K-12 Classroom for Mathematical modelling and statistical literacy development" at the Statistical Society of Canada's Ottawa conference.

Woldegebriel Assefa Woldegerima (Mathematics & Statistics) presented "Fractional differential equation models for disease dynamics: hepatitis B-virus with two-age structures as an example," under the session Mathematical Modelling of Ecological, Evolutionary and Infectious Disease Dynamics at the [Canadian Mathematical Society Summer 2023 Meeting](#) in Ottawa. He also gave a contributed talk entitled "["Impact of Demography on the Dynamics of modeling infectious Diseases: Malaria as an example](#)" at the CAIMS 20233 Conference in Fredericton, New Brunswick.

Amy Wu (Mathematics & Statistics) presented an invited talk "Graph-Based Change-Point Detection Methods and Their Applications in Real Problems", at the 2023 ICSA Applied Statistics Symposium in Ann Arbor, MI.

RESEARCH HIGHLIGHTS

Joanne E. Littlefair, James J. Allerton, Andrew S. Brown, David M. Butterfield, Chris Robins, Chloe K. Economou, graduate student **Nina R. Garrett**, and **Elizabeth L. Clare** (Biology) published [Air-quality networks collect environmental DNA with the potential to measure biodiversity at continental scales](#) in *Current Biology*. **Read the [press release from York University](#).**

Robin Kingsburgh (Natural Science) published [The Colour Literacy Project: Revitalising colour education foundations](#) in the *Journal of the International Colour Association*.

Maarten Golterman, **Kim Maltman** (Mathematics & Statistics), and Santiago Peris published [Difference between fixed-order and contour-improved perturbation theory](#) in *Physical Review D*. The paper was selected by the journal editors as one of its "Editor's Suggestions." This is the second highlighted "Editor's Suggestion" paper for their collaboration in the last year.

Robert Reynolds and **Allan Stauffer** (Mathematics & Statistics) published [Extended Bromwich-Hansen Series](#) in *Mathematica Slovaca*.

Tamanna Poonia and **Jennifer van Wijngaarden** (Chemistry) published [Exploring the distinct conformational preferences of allyl ethyl ether and allyl ethyl sulfide using rotational spectroscopy and computational chemistry](#) in *The Journal of Chemical Physics*.

Rosa Orellana and **Mike Zabrocki** (Mathematics & Statistics) published [The Symmetric Group Through a Dual Perspective](#) in the *Notices of the American Mathematical Society*. The [cover art](#) for the June/July 2023 issue of the journal was a picture by Zabrocki.

Research Assistant **Lianna S. Lopez**, PhD Student **Aman Basu**, Research Associate **Kevin Blagrave**, Gerald Bove, Kenton Stewart, **Dawn Bazely**, and **Sapna Sharma** (Biology) published [Establishing a long-term citizen science project? Lessons learned from the Community Lake Ice Collaboration spanning over 30 yr and 1000 lakes](#) in *Limnology and Oceanography Letters*.

For a full list of publications from the Faculty of Science, see our [website](#).

MEDIA

Research findings by **Elizabeth Clare** (Biology) and her team showing that air quality monitoring stations also capture eDNA in the air was covered by more than 500 media outlets across Canada and the world, including *[The Globe and Mail](#)*, *[CBC News](#)*, *[Science](#)*, *[Nature](#)*, *[BBC](#)*, *[The Washington Post](#)*, and more – reaching an estimate of over a billion potential readers.

Elaina Hyde (Physics & Astronomy) spoke to *Newstalk 800* and *Newstalk 1010* about UFO's and unidentified anomalous phenomena.

Trevor VandenBoer (Chemistry) spoke to *CBC Radio* about the complexities of and prediction models for fog.

EVENTS

Aug 16: [Summer Research Conference](#), Life Sciences Building Lobby.

INTERNATIONAL PARTNER INSTITUTION PROFILE

The Faculty of Science has established multiple partnerships with various international institutions. In order to better inform the York Science community of these international partner institutions, we will provide a brief profile of each of them in our Dean's Round-up.

Rosedale Global High School

Rosedale Global High School is an independent, Ontario-based Canadian private high school. In the 2022-2023 academic year, Rosedale Global High School provided learning to secondary education students in collaboration with 62 partners in 95 schools across 17 countries.

The school is operated by Rosedale International Education Inc. (Toronto, Canada), which delivers school learning solutions in K-12 transformative global education. Embracing innovation in academics and technology, Rosedale provides international schools a holistic education solution, supported by an integrated digital learning platform with transformative curriculum and comprehensive quality assurance services, to create life-changing learning outcomes to students around the world.