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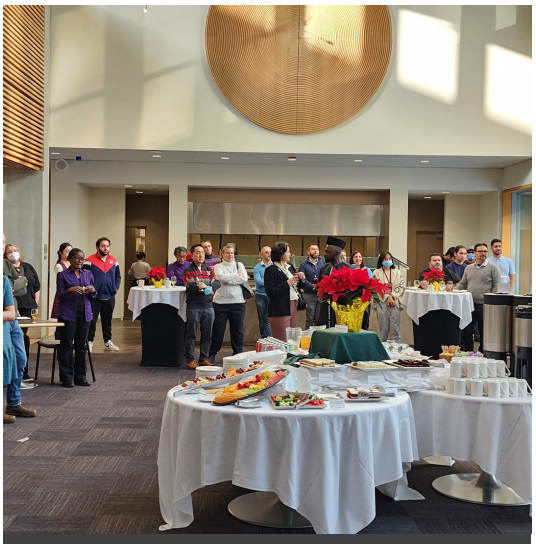
Dean's Round-up: December 2022

As we wrapped up the year, we highlighted our standout moments of positive change in 2022 on our website and social media channels as part of York University's #BestofYU campaign. Thank you to everyone for helping us celebrate the achievements of our community.



The Faculty hosted its annual Holiday Reception on December 16 to celebrate another year of outstanding service and achievements by our faculty and staff. Thank you to everyone who attended and to the staff who assisted with planning the event.

CONGRATULATIONS

Dawn Bazely (Biology) received the 2022 Sandford Fleming Medal for excellence in science communication from the Royal Canadian Institute for Science (RCIScience).

A new carpenter bee was named after **Sandra Rehan** (Biology): *Ceratina rehanae*. The naming is in dedication of her life's work establishing small carpenter bees as a model system for behavioural genomics and biodiversity conservation.

Sapna Sharma (Biology) received Postdoctoral Supervisor Award from the Faculty of Graduate Studies.

MORE NEWS

The Faculty of Science and VPRI co-sponsored the 2022 Canadian Mathematical Society Winter meeting with Toronto Metropolitan University. The **Department of Mathematics & Statistics** was a major contributor in the organization of this meeting:

- Student volunteers: **Ravish Kamath**, **Geneva Liwag** and **Gregoire Ranson**
- **Allysa Lumley** and student **Yohana Solomon** from the York Chapter of the Association of Women in Mathematics co-organized the EDI Luncheon.
- **Jude Kong** chaired the public Mitacs Lecture.
- Mini-course lecturers: **Jairo Diaz-Rodriguez** taught "Machine learning from the perspective of data science;" and **Pam Sargent** co-taught "Instructional skills for new instructors."
- Educational and scientific sessions: **Nantel Bergeron** and **Mike Zabrocki** organized "Algebraic combinatorics and representation theory;" **Michael Chen**, **Hyejin Ku** and **Hongmei Zhu** organized "Machine learning in finance;" **Amenda Chow** co-organized "Community building in instructor training;" **Ilijas Farah** co-organized "Facets of operator algebras;" **Patrick Ingram** co-organized "Diophantine arithmetic geometry and number theory;" postdoc **Sooyeong Kim** co-organized "Algebraic and spectral graph theory;" and **Paul Szeptycki** and former student **Keegan Dasilva Barbosa** organized "Set theory and its applications."
- Speakers: graduate students **Daniel Calderon, Kelvin Chan, Victor Huang, Chifeng Shen, Chrystal Smith** and **Farhad Soltani**; postdocs **Cesar Corral, Lucas Gagnon, Ao Li, Vinicius Rodrigues** and **Nancy Wallace**; faculty members **Michael Chen, Hanna Jankowski, Jude Kong, Paul Skoufranis, Jianhong Wu** and **Huiaping Zhu**.
- Scientific co-director: **Ada Chan**

Our **Science Engagement Programs** office planned and hosted more than 130 students from a local high school (James Cardinal McGuigan) over three days. The visit was a finale to their STEAM projects on wildlife conservation and climate change. While the students were on campus, they conducted a science experiment, dissected plants, toured the campus and listened to research presentations, including “Chemistry of Climate Change” by **Cora Young** (Chemistry) and **Trevor VandenBoer** (Chemistry).

The Office of International Collaborations and Partnerships, including Director of International Collaborations and Partnerships **Hugo Chen** and Science International Recruiting Coordinator **Mingming Li** hosted a Holiday Gathering Event for science international students from international partners.

In collaboration with the York University Chinese office, York Science organized a 2+2 / 2+3 Undergraduate International Collaboration Education Programs info session for students from Shandong University. **Stephen Watson** (Mathematics & Statistics) and Director of International Collaborations and Partnerships **Hugo Chen** presented to more

than 100 prospective students. **Andrew Skelton** (Mathematics & Statistics) and **Jairo Diaz-Rodriguez** (Mathematics & Statistics) also presented a demo class at the session.

Ten science students were recruited to the second cohort of the Global Leaders of York Science.

YFile profiled upcoming programming at the **Allan I. Carswell Observatory** and highlighted some astronomical events to look out for in December and January. The story included quotes from Director **Elaina Hyde**.

Jude Kong (Mathematics & Statistics) presented the keynote talk “Leveraging Artificial Intelligence for Clinical Public Health in Africa” at the Ghanian Mathematical Biology and Medicine Workshop, as well as the keynote talk “Leveraging AI for Clinical Public and Global health Needs: Implications for Policies and Lessons Learned from the ACADIC project” at the New York University Abu Dhabi Global Perspectives in Science Lecture Series. He was invited to two panel conversations at the Bill & Melinda Gates Foundation: (1) Ethics and Efficacy of modelling and machine learning, and (2) The politics of data. He also organized and took part in a panel discussion on "Towards an Inclusive Data Governance Policy for the use of AI in Africa" in the Data for Policy Conference at the Evans School of Public Policy and Governance, University of Washington.

YFile profiled the "The Overcoming Epidemics: Transnational Black Communities’ Response, Recovery and Resilience" research cluster at York, which includes **Jude Kong** (Mathematics & Statistics).

YFile profiled **Kevin McGregor** (Mathematics & Statistics) and his work as a biostatistician and his projects related to understanding the makeup of the human gut microbiome.

Iain Moyles (Mathematics & Statistics) was an invited speaker at the Guangdong-Hong Kong-Macao Greater Bay Area Workshop on Mathematical Technology December 17-18; his talk was titled “Space charge layers in a mathematical model of a solid electrolyte.”

Jennifer van Wijngaarden (Chemistry) joined the editorial board of *ChemPhysChem*, which is published by Chemistry Europe, as association of 16 European Chemical Societies.

Jihyeon Jessie Yang (Mathematics & Statistics) presented "Counting and the Universe" for grade five and six students as a part of the Ask a Mathematician program at the Fields Institute.

YFile highlighted mathematical modelling research led by **Huaiping Zhu** (Mathematics & Statistics) that found it would become difficult to control monkeypox outbreaks in a metropolitan area if the virus were to spill over into wild animal hosts, such as rodents.

RESEARCH HIGHLIGHTS

Undergraduate student **Haleema Ahmed**, undergraduate student **Taylor Cargill**, postdoc **Nicola Luigi Bragazzi** and **Jude Dzevela Kong** (Mathematics & Statistics) published Dataset of non-pharmaceutical interventions and community support measures across Canadian universities and colleges during COVID-19 in 2020 in *Frontiers in Public Health*.

PhD student **Nicholas Bragagnolo** and **Gerald F. Audette** (Chemistry) published Solution characterization of the dynamic conjugative entry exclusion protein TraG in *Structural Dynamics*.

PhD student **Majeed Bushra**, Jummy David, postdoc **Nicola Luigi Bragazzi**, postdoc **Zachary McCarthy**, postdoc **Martin David Grunnill**, **Jane Marie Heffernan**, **Jianhong Wu**, and **Woldegebriel Assefa Woldegerima** (Mathematics & Statistics) published Mitigating co-circulation of seasonal influenza and COVID-19 pandemic in the presence of vaccination: A mathematical modelling approach in *Frontiers in Public Health*.

Kohitij Kar (Biology), Simon Kornblith and Evelina Fedorenko published Interpretability of artificial neural network models in artificial intelligence versus neuroscience in *Nature Machine Intelligence*.

Postdoc **Chapin S. Korosec**, Suzan Farhang-Sardroodi, postdoc **David W. Dick**, postdoc **Sameneh Gholami**, adjunct member **Mohammad Sajjad Ghaemi**, **Iain R. Moyles**, Morgan Craig, adjunct member **Hsu Kiang Ooi** and **Jane M. Heffernan** (Mathematics & Statistics) published Long-term durability of immune responses to the BNT162b2 and mRNA-1273 vaccines based on dosage, age and sex in *Scientific Reports*.

Annastacia D. Stubbs, former MSc student **Melodie Lao**, Chen Wang, Jonathan P.D. Abbatt, John Hoffnagle, **Trevor C. VandenBoer** (Chemistry) and Tara F. Kahan published Near-source hypochlorous acid emissions from indoor bleach cleaning in *Environmental Science: Processes and Impacts*.

Robert Reynolds and **Allan Stauffer** (Mathematics & Statistics) published Extended de Montmort-Prudnikov Sum in *Mathematics*, as well as A Quadruple Integral Involving the Exponential Logarithm of Quotient Radicals in Terms of the Hurwitz-Lerch Zeta Function in the *Ural Mathematical Journal*.

Former PhD student **Ryan Scott**, **Sapna Sharma**, and **Roberto Quinlan** (Biology) published The limnological response of Arctic deltaic lakes to alterations in flood regime in *Inland Waters*.

Undergraduate student **Thomas Wu**, Master's student **Mohammad Arshad Imrit** (Biology), postdoc **Zahra Movahedinia** (Mathematics & Statistics), **Jude Kong** (Mathematics & Statistics), R. Iestyn Woolway, and **Sapna Sharma** (Biology) published Climate tracking by freshwater fishes suggests that fish diversity in temperate lakes may be increasingly threatened by climate warming in *Diversity and Distributions*.

For a full list of publications from the Faculty of Science, see our website.

MEDIA

Elizabeth Clare (Biology) spoke with the podcast show *GeneticsUnzipped* about detecting rare animals through environmental DNA techniques.

Elaina Hyde (Physics & Astronomy) was interviewed by *CBC News* about the occultation of Mars by our moon, and by *AM900* about the Gemenid meteor shower, U.S. scientists achieving nuclear fusion, ISS, Canadarm and astronauts. As well, she was quoted in a *University Affairs* article that profiled the **Allan I. Carswell Observatory** and its new domes.

Administrative Assistant **Tianna McFarlane**'s adhesive bandage company "Heal In Colour" was highlighted in a *CBC* online story.

Ozzy Mermut (Physics & Astronomy) spoke to *CTV News* and *AM 800 CKLW* about her team's new device that detects light emitted from plants to measure their health.

Jesse Rogerson (Science, Technology & Society) spoke to *CBC Radio* and *CP24* about the past year's accomplishments in space.

Sarah Rugheimer (Physics & Astronomy) was interviewed by *Newstalk 1010* about a recent meteor shower, and by *Newstalk 800 CJAD* and *Newstalk 1290 CJBK* about the possibility of contact with aliens in light of the post-detection hub that has been set up in Scotland.

Modelling research by **Seyed Moghadas** (Mathematics & Statistics) and his team, which found that hospitalization and death toll from COVID-19 in the U.S. would be about four times higher without vaccines, was covered in *Ars Technica*.

EVENTS

Jan 19: Faculty of Science EDI Book Club, 1:30-2:30pm on Zoom.
Jan 23: York Science Social, 2-4pm, Second Student Centre Convention Centre.
Jan 30: Honours & Awards Ceremony, 7-9pm, Second Student Centre Convention Centre.
Jan 31: Faculty of Science Peer Grading Workshop using Kritik with Mary-Helen Armour, 12-1:30pm on Zoom. RSVP

For a full list of events, visit our Community 2022 website.

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.

Hanyang University

Hanyang University is a private research university in South Korea. The main campus is in Seoul, and the second one, the Education Research Industry Cluster, in Ansan. Hanyang (한양;漢陽) derives from the former name of the capital Seoul which was used during the Chosun Dynasty.

Hanyang University has an alumni network of 330,000. In 2018, Hanyang was ranked 1st for the number of CEO alumni of venture companies. In 2019, QS World University Rankings ranked Hanyang University 150th.

The University welcomes over 7,400 foreign students each year and more than 3,000 students study abroad annually. HYU counts the Massachusetts Institute of Technology, University of Cambridge, and Tsinghua University among its 820 partner universities in 88 countries.