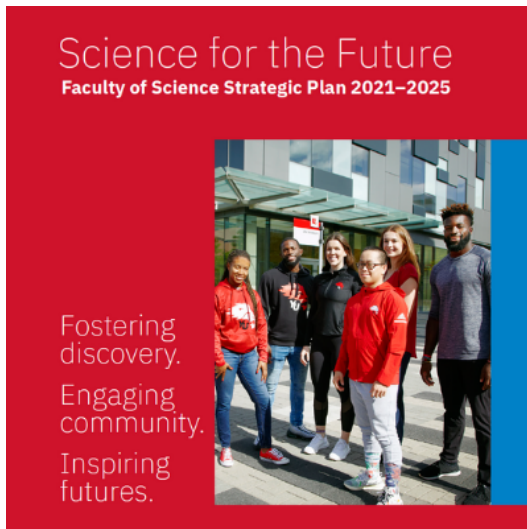
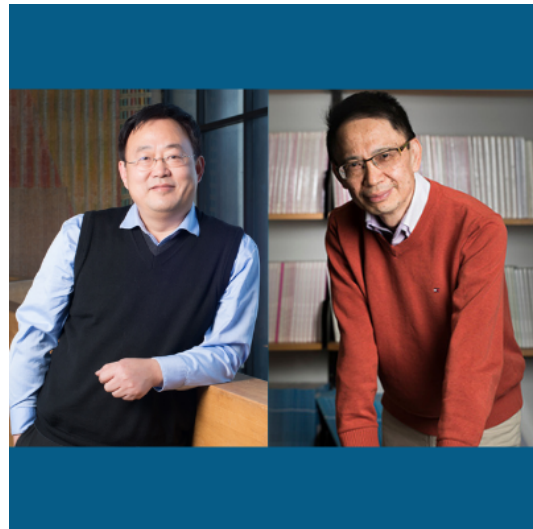


## Dean's Round-up: April 2021

### FACULTY HIGHLIGHTS



The Faculty's new 2020-25 Strategic Plan, *Science for the Future*, was unanimously endorsed by Faculty Council. It supports academic, research, and service excellence, diversity and inclusion, and a student-centered approach to all that we do. To read the plan, [click here](#).



New infectious disease modelling initiatives led by Mathematics & Statistics professors Huaiping Zhu and Jianhong Wu have been awarded more than \$5 million in federal government funding. To read more, see our “featured news” section, below.

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### FEATURED NEWS

#### **One Health Modelling Network and Mathematics for Public Health receive federal government funding**

The One Health Modelling Network, led by **Huaiping Zhu**, and the Mathematics for Public Health (MfPH) initiative, co-led by **Jianhong Wu**, received major funding from the federal government, announced on April 9.

**The One Health Modelling Network for Emerging Infections** received \$2.5 million in funding. This cross-country network consists of more than 100

researchers and collaborators from key academic and government institutions using multidisciplinary knowledge to identify pathogens early. It includes many collaborators from the Faculty of Science, including: **Iain Moyles**, **Jude Kong**, **Hongmei Zhu**, **Jane Heffernan**, **Hanna Jankowski** (Department of Mathematics & Statistics), and **Carly Rozins** (Science & Technology Studies).

**The Mathematics for Public Health (MfPH) initiative, co-led by Wu**, received \$3 million in funding. It is a collaboration between The Fields Institute, the Atlantic Association for Research in Mathematical Sciences (AARMS), the Centre de Recherches Mathématiques (CRM), and the Pacific Institute for Mathematical Sciences (PIMS). It establishes a pan-Canadian, Emerging Infectious Disease Modelling (EIDM) network, with the long-term goal of boosting future epidemic preparedness and improving Canada's resilience in emergency situations.

To learn more, read [the story](#) on our Faculty of Science website.

### **New AI-powered algorithm to predict third wave of COVID-19 in South Africa**

An artificial intelligence-based algorithm, designed by University of the Witwatersrand (Wits University) in partnership with York University, iThemba LABS, and the Provincial Government of Gauteng, shows there is a low risk for a third wave of COVID-19 infection in all provinces of South Africa.

The algorithm was designed as part of the project "Predictive modeling and forecasting of the transmission of COVID-19 in Africa using Artificial Intelligence," led by **Jude Kong** (Mathematics & Statistics), who is director of the Africa-Canada Artificial Intelligence and Data Innovation Consortium.

To learn more, read the University's [media release](#) on this project.

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## **CONGRATULATIONS**

**Tanya Da Sylva** (Biology), was recognized by Student Accessibility Services for her support of students. To read more, [click here](#).

**Eleni Fegaras-Arch** (Biology PhD student) is the recipient of the Susan Mann Dissertation Scholarship for 2021/2022.

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## **OTHER NEWS**

**Dean Rui Wang** issued a special [video message](#) for National Administrative

Professionals Day, recognizing the contributions of our administrative and support staff.

**Thomas Baumgartner** (Chemistry) gave a keynote lecture at the [1st Spanish Workshop for Phosphorus Chemistry](#) in April, titled “Phosphorus-based Concepts for Conjugated Organic Materials.”

**Iain Moyles** and **Amenda Chow** (Mathematics & Statistics) gave a talk titled “Choose your own adventure: Assessment, Integrity, and Effectiveness in Calculus for an Online World” at University of Waterloo's 12th Annual Teaching & Learning Conference. They discussed their experiences and suggestions for improving academic integrity, student learning, and student engagement. To view a recording of the talk, [click here](#).

**Amenda Chow** and PhD student **Laura Keane** (Mathematics & Statistics) co-presented an online math teaching talk at the University of Waterloo Math Teaching Seminars on April 8. The talk was titled, “A Mathematically Inspired Experiment: Students Learning Laboratory and Life Skills in an Online and in-Person World.”

**Saeed Rastgoo** (Physics & Astronomy) was among the organizers of the [LISA-Canada Workshop](#), which took place April 27-29.

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## RESEARCH HIGHLIGHTS

Postdoctoral Fellow **Francesca Scarabel** (Mathematics & Statistics), Lorenzo Pellis, Nicholas H. Ogden, and **Jianhong Wu** (Mathematics & Statistics) published, “[A renewal equation model to assess roles and limitations of contact tracing for disease outbreak control](#)” in *Royal Society Open Science*. The university issued a [media release](#) about this research.

Andrew A. Walker, Samuel D. Robinson, **Jean-Paul V. Paluzzi** (Biology), David J. Merritt, Samantha A. Nixon, Christina I. Schroeder, Jiayi Jin, Mohaddeseh Hedayati Goudarzi, Andrew C. Kotze, Zoltan Dekan, Andy Sombke, Paul F. Alewood, Bryan G. Fry, Marc E. Epstein, Irina Vetter, and Glenn F. King, published “[Production, composition, and mode of action of the painful defensive venom produced by a limacodid caterpillar, \*Doratifera vulnerans\*](#)” in *PNAS*. The research was featured on the journal’s cover.

**Dominic Narang** (Postdoctoral Fellow), D. Andrew James, Matthew T. Balmer, and **Derek J. Wilson** (Chemistry), published, “[Protein Footprinting, Conformational Dynamics, and Core Interface-Adjacent Neutralization](#)”

[“Hotspots” in the SARS-CoV-2 Spike Protein Receptor Binding Domain/Human ACE2 Interaction](#)” in *Journal of the American Society for Mass Spectrometry*.

Irina Oganesyanyan, Cristina Lento, Anurag Tandon, and **Derek J. Wilson** (Chemistry) published [“Conformational dynamics of  \$\alpha\$ -synuclein during the interaction with phospholipid nanodiscs by Millisecond Hydrogen Deuterium Exchange Mass Spectrometry,”](#) in *Journal of the American Society for Mass Spectrometry*. This article was featured on the journal’s front cover.

**Leigh R. Crilley, Andrea A. Angelucci, Brian Malile, Cora J. Young, Trevor C. VandenBoer, and Jennifer I. L. Chen** (Chemistry) published, [“Non-woven materials for cloth-based face masks inserts: relationship between material properties and sub-micron aerosol filtration,”](#) in *Environmental Science: Nano*. The university issued a [media release](#) about this research.

**Chris Luszczyk** (Biology PhD student), Andrew Medeiros, Brent Wolfe, and **Roberto Quinlan** (Biology) published, [“Effects of recent climate and environmental changes on the ecology of a boreal forest lake in Manitoba, Canada,”](#) in *Journal of Pleolimnology*.

Angel Garcia-Chung, James B. Mertens, **Saeed Rastgoo** (Physics & Astronomy), Yaser Tavakoli, and Paulo Vargas Moniz published, [“Propagation of quantum gravity-modified gravitational waves on a classical FLRW spacetime,”](#) in *Phys. Rev. D*.

**Keagan Blanchette, Saurya Das, Samantha Hergott, Saeed Rastgoo,** (Physics & Astronomy) published, [“Black hole singularity resolution via the modified Raychaudhuri equation in loop quantum gravity,”](#) in *Phys. Rev. D*.

Erin Board, **Nassim Bozorgnia** (Physics & Astronomy), Louis E. Strigari, Robert J.J. Grand, Azadeh Fattahi, Carlos S. Frenk, Federico Marinacci, Julio F. Navarro and Kyle A. Oman published, [“Velocity-dependent J-factors for annihilation radiation from cosmological simulations,”](#) in *Journal of Cosmology and Astroparticle Physics*.

R. Iestyn Woolway, **Sapna Sharma** (Biology) et al published, [“Phenological shifts in lake stratification under climate change,”](#) in *Nature Communications*.

Emily K Studd, Amanda E Bates, Andrew J Bramburger, Timothy Fernandes, Brian Hayden, Hugh A L Henry, Murray M Humphries, Rosemary Martin, Bailey C McMeans, Eric R D Moise, Antóin M O’Sullivan, **Sapna**

**Sharma**, (Biology), Brent J Sinclair, Alex O Sutton, Pamela H Templer, and Steven J Cooke published, "[Nine Maxims for the Ecology of Cold-Climate Winters](#)" in *BioScience*.

**Walter Tholen** (Mathematics & Statistics) and former post-doctoral student Leila Yagenah published, "[The comprehensive factorization of Burromi's T-functors](#)," in *Theory and Applications of Categories*.

**Eleni Fegaras-Arch** (Biology PhD student), Michael Berns, and **Arther Forer** (Biology) published, "[Evidence of non-microtubule spindle forces in \*Mesostoma ehrenbergii\* spermatocytes](#)," in *Frontiers in Molecular Biosciences*.

**Alexey Kuznetsov** (Mathematics & Statistics) and PhD student **Justin Miles** published, "[On the rate of convergence of the Gaver-Stehfest algorithm](#)" in *IMA Journal of Numerical Analysis*.

Dmitrii Karp and **Alexey Kuznetsov** (Mathematics & Statistics) published, "[A new identity for a sum of products of the generalized hypergeometric functions](#)" in *Proceedings of the American Mathematical Society*.

**Tom Salisbury** (Mathematics & Statistics) and Mark Holmes published, "A shape theorem for the orthant model" in the *Annals of Probability*" and "Phase transitions for degenerate random environments" in the *Latin American Journal of Probability and Mathematical Statistics*.

Syed Nabeel-Shah, **Jyoti Garg** (Biology research associate), Alejandro Saettone, Kanwal Ashraf (former Biology MSc student), Hyunmin Lee, Suzanne Wahab, Nujhat Ahmed, **Jacob Fine**, (Biology undergraduate student), Joanna Derynck, Marcelo Ponce, Edyta Marcon, Zhaolei Zhang, Jack Greenblatt, **Ronald Pearlman** (Biology), Jean-Philippe Lambert, Jeffrey Fillingham, and Shuye Pu published, "Functional characterization of RebL1 highlights the evolutionary conservation of oncogenic activities of the RBBP4/7 orthologue" in *Tetrahymena thermophila*.

Syed Nabeel-Shah, **Jyoti Garg** (Biology research associate), Pata-Eting Kougnassoukou Tchara, **Ronald Pearlman** (Biology), Jean-Philippe Lambert, and Jeffrey Fillingham published "Functional proteomics protocol for the identification of interaction partners in *Tetrahymena thermophila*" in *STAR Protocols*.

Pirouz Kiani, Elaine Dodsworth, A. B. P. Lever, and **William Pietro** (Chemistry) published "Modelling ligand electrochemical parameters by repulsions-corrected eigenvalues," in the *Journal of Computational Chemistry*.

## MEDIA

Research by **Seyed Moghadas** (Mathematics & Statistics), which found benefits to delaying the second dose of Pfizer and Moderna for 9-15 week, was covered in [Forbes](#).

**Paul Delaney** (Physics & Astronomy) commented on astronomical events in the following outlets: Presentation to York Region Radio Club: Mars update; Global Breakfast TV: The impending flight of Ingenuity; AM640 Jeff McCarthy: The impending flight of Ingenuity; Presentation to Probus Burlington Club: Mars update; AM640 Kelly Cutrara: Blue Origin flight and Ingenuity; AM640 Kelly Cutrara: Ingenuity flight success; AM900 Scott Thompson: Ingenuity flight success; NewsChannel: Ingenuity's first flight; CityTV Breakfast Television: Ingenuity's first flight; CTV National: MOXIE; AM640 Kelly Cutrara: Crew 2 and Mars (MOXIE); AM900 Scott Thompson: Crew 2 and Mars (MOXIE); AM640 Morning Show: Space debris; AM640 Jeff McCarthy: Michael Colins passing; Presentation to DDO (RASC): Mars update.

**Dasantila Golemi-Kotra** (Biology) wrote a piece for [The Conversation](#) addressing questions about new COVID variants. She also spoke with CBC radio about the case for vaccinating essential workers and with [AFP Fact Check](#) about common misconceptions about vaccination, immunity, and disease transmission

**Jane Heffernan** (Mathematics & Statistics) was interviewed by the [Globe and Mail](#) regarding COVID-19 vaccinations, what the summer might look like, and what to expect for this fall.

**Jianhong Wu** (Mathematics & Statistics) commented in the Toronto Star about The City of Hamilton's [contact tracing efforts](#) and the state of Toronto's vaccine supply.

**Jesse Rogerson** (Science & Technology Studies), wrote a piece for [The Conversation](#) about the NASA Mars Ingenuity helicopter flight – a first for space exploration.

