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Molecular Genetics
UNIVERSITY OF TORONTO

MoGeNews

Issue 16 - September 2021

Editor's message

Welcome everyone to the new academic year! We welcome 77 MSc/Ph.D. research students, 6 MSc Genetic Counselling students, and 21 MHS Sc Medical Genomics students to Molecular Genetics this fall.

We are adjusting to continuing life with Covid-19, and we all hope that life will return to fewer restrictions and normality sooner than later now that vaccination is mandatory for return to campus. Some undergraduate and graduate classes are still online; others returning in-person this fall. Rotations for our incoming graduate students are in progress. We are at 75% capacity in campus research labs. Links to University covid information and resources can be found at the end of this newsletter.

We have changes to the editorial team for this newsletter to report. Soha Usmani is the new *Science Writer* for Molecular Genetics (see below), and Dr. Martina Steiner joins as *Coordinator, Communications, Careers & Alumni Relations*. We also highlight the Temerty Faculty of Medicine initiative, "Temerty Medicine Connect", which is a social platform dedicated to our community (see the story below). We encourage everyone to join!

As always, this newsletter would not be possible without contributions from our community. Thanks to Alexandra Willis, Nikki Case, Iosifina Fotiadou, Anson Sathaseevan, Matthew Rok, Anna Bojagora, Mallory Wiggans, Scott Gray-Owen, Matthaueus Ware, Stacy Hewson, and Jovana Drinjakovic for commentary and images for this issue.

Barbara Funnell
Martina Steiner
Soha Usmani



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Community News and Events

Join Temerty Medicine Connect

To all MoGen students, alumni, faculty, and staff, we urge you to create an account on the social media platform Temerty Medicine Connect! This is specialized for

current and former students, faculty, staff, and alumni at the Faculty of Medicine and its affiliated departments to:

Temerty Medicine

Temerty Medicine Connect

- Create and maintain connections and networks with students, alumni, staff, and faculty
- Find out relevant job opportunities and postings
- Stay updated on related news and events (seminars, workshops, talks)—and post them to inform others who might be interested
- Discover mentors or become a mentor yourself to guide career and academic paths
- Join a group connecting you with others in the same departments or institutes

Create an account on [TMC](#) if you haven't already!



6th Molecular Genetics Career Development Alumni Symposium



The 6th MoGen Career Development Symposium was held on Monday, May 31, 2021 on Zoom.

Our goals are to promote interactions between trainees and our many extraordinary alumni from the Department of Molecular Genetics. This year we invited 25 alumni as mentors (pictured above) from around the globe and representing a diverse set of careers, including biotech, science policy, law, business, academia, and science education to name a few. The afternoon included three round-table discussions in which alumni were "seated" in breakout rooms with small groups of trainees. These discussions were followed by two "focused learning" sessions, presenting career skills to our trainees. The first was a moderated discussion: "*Building skills during your graduate studies for nonacademic careers*", featuring 3 MoGen alumni, Dr. Anna Georges (Corbin Therapeutics), Dr. James Havey (Life Molecular Imaging), and Dr. Gabe Musso (BioSymetrics). The moderator was grad student Iosifina Fotiadou. The second session, "*How to search for postdoctoral opportunities*", was presented by Dr. Teresa O'Meara (University of Michigan).

The symposium was organized by Dr. Barbara Funnell and a team of students, staff and faculty: Iosifina Fotiadou, Sophie Karolczak, Umama Siddiqi, Chen Chen, Magali Aguilera Uribe, Matt Rok, Alex Rigney, Zachary Coulson, Ryan Chieu, Kwame Diko and Dr. Martina Steiner.

We hope that 2022 will allow us to resume the in-person Career Development Symposium. Stay tuned to this newsletter and the MoGen website!

Career Resources Group, GSA

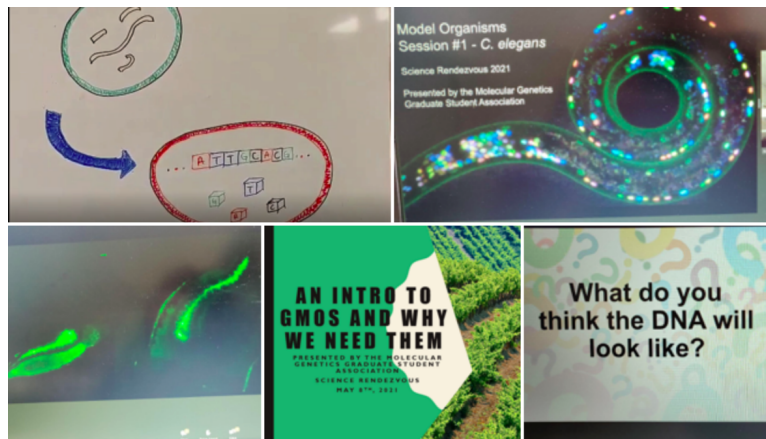
Hello MoGen members!

I want to introduce the Career Resources Team to you all. We are a group of Molecular Genetics graduate students aiming to inform the community about career opportunities available to individuals with a graduate degree in Molecular Genetics. Our team aspires to help graduate students identify occupations of interest and build the necessary skills to pursue such careers early in their graduate studies.

To do so, we are organizing monthly themed career seminars where guest speakers share their experiences pursuing a specific career. These seminars include a networking section during which the attendees may interact with the guest speakers and ask them individual questions. Moreover, we are also working on organizing skill-building seminars (one per semester). In addition to that, our team has a group of journalists that interview MoGen Alumni and post those interviews on the “Alumni Spotlight” section of the MoGen website.

Our monthly career seminars will be back starting October 2021! Please stay tuned for them!

We are also accepting new members at any point. If you are interested in roles including organizing our career seminar and skill-building workshops, becoming a journalist and interviewing MoGen alumni, handing our social media platforms, or helping with graphic designing, feel free to reach out by emailing the career resources coordinator, **Iosifina Fotiadou**. We will be happy to have you as a team member!



Science Rendezvous 2021

On May 8, 2021, MoGen welcomed hundreds of school-aged children across the GTA to our annual science presentations at Science Rendezvous. MoGen has a long-standing interest in

outreach initiatives. Our ongoing demonstrations at Science Rendezvous represent an important step in how the department seeks to engage the public in science. This year's event saw a shift towards an entirely virtual format, presenting creative booth design and format opportunities.

MoGen ran a total of five booths. We hosted live demonstrations on animal models featuring mutant *C. elegans* and glow-in-the-dark zebrafish. Our live demonstrations also featured a fruit-based DNA extraction, which included a handy printout protocol

for attendees to try at home. Our pre-recorded sessions exhibited genetically modified organisms and their impact on human health, as well as a computational biology demonstration featuring sequence alignment and genetic relatedness.

The pre-recorded sessions can be viewed on the University of Toronto's Science Rendezvous [official YouTube channel](#), in addition to other pre-recorded videos from other departments and groups for this year's event.

We look forward to welcoming attendees at next year's event, which will hopefully see a return to in-person demonstrations!



MoGen Virtual Retreat 2021

The MoGen GSA alongside the faculty and administrative organizers once again held a successful virtual retreat in Sep 23rd, 2021. This year, the retreat started with

opening remarks by **Dr. Tim Hughes** and proceeded with exciting faculty talks from **Drs. Gregory Costain, Brian Kalish, Jeehye Park, Sagi Abelson, Peter Roy, and Lucy Osborne**. The topics included:

- How translational genomics helped diagnose a paediatric patient with a rare variant causing hereditary mucin deficiency
- How maternal infection impacts neonatal neurodevelopment
- Knock-in mouse models to study ALS pathogenesis
- Mouse models to study 7q11.23 copy number variation (being Williams-Beuren and Dup7 hereditary disorders)
- How mutation profiles in ageing blood cells can be used to assess risk of acute myeloid leukemia (AML) diagnosis
- Using the *C. elegans* pharyngeal cuticle to study intrinsically disordered proteins (IDPs), which includes pathogenic amyloids

Therapist Mitch Evans from Shift Collab ran a wellness workshop discussing and providing tools to help deal with stress and feeling overwhelmed, as well as talking about how the pandemic has impacted mental health overall. His lovely cat Linda also made a quick guest appearance!

After a coffee break, three concurrent student talk sessions occurred lead by chairs **Drs. Daniel Schramek, Julie Lefebvre, and Lucy Osborne**. Four students

presented per session and gave captivating overviews of their projects.

Afterwards, organizers **Reuben Samson and Zoe Clarke** led an 8-second challenge between two faculty teams. The winners were the "Cranium Crushers", consisting of **Drs. Kieran Campbell, Alan Davidson, and Julie Lefebvre**. Attendees also had the pleasure of viewing [a Cats musical parody on YouTube](#) by organizer Zoe Clarke and Alastair Kierulf lamenting the struggles of research and lab work, with guest appearances from **Dr. Ian Scott and the Ramalho-Santos lab**.

To wrap things up, the student awards ceremony commenced. For the student talk awards (which had three sets of winners for each session), **Biren Dave, Anna Axakova, and Afrin Bhattacharya won first place, while Katarina Maksimovic, Zoe Clarke, and Wendy Choi** won second. The t-shirt design contest was won by **Matthaeus Ware**, whose logo will be displayed on the tops gifted to attendees (and featured in the accompanying image). Finally, the research awards were announced and are highlighted under Trainee awards below. Congratulations to you all!

Step Challenge

During July, over 40 MoGen students participated in the MoGen Step Challenge. Students participated in the weekly challenges individually or as part of a team for the month-long challenge. For the weekly challenges, the objective was to reach a step goal each day of the week, and each week, the step goal would increase. For the month-long team challenge, eight teams displayed team spirit and effort, striving to reach the highest overall step count to win gift cards for a celebratory team dinner.

MoGen students worked hard to get their steps in, with 71% of students hitting the 5K steps/day goal in week 1 and 50% reaching the 7K steps/day and 8K steps/day goals for weeks 2 and 3, respectively. Impressively, 46% of participants met the challenge's 10K steps/day goal for the most demanding week! The winning team secured the title of champion with over 1.6 million cumulative steps. The runners-up came in a close second, only around 18K steps behind.

Congratulations to all participants! Your hard work and dedication have been recognized!

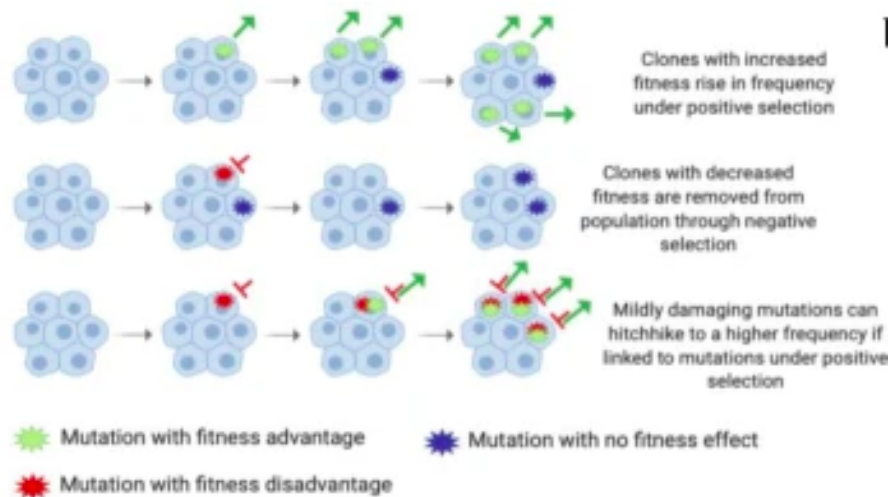
Equity, Diversity & Mental Health in MoGen!

Welcome to all new MoGen students! **The MoGen Equity, Diversity, Inclusion**

(EDI) & Mental Health Committee is a small group within the GSA committed to fostering an equitable, safe, and productive workspace for all department members. We are developing initiatives that educate students about EDI issues in STEM fields and ways to consider EDI in our own research projects and the future as career scientists and leaders. We are always looking for new members – please email mogen.edi.utoronto@gmail.com if you want to learn more. Also, check out the Health Resources book made by members of our committee – this guide is a great place to start when looking to access mental health support on campus.



Research Highlights

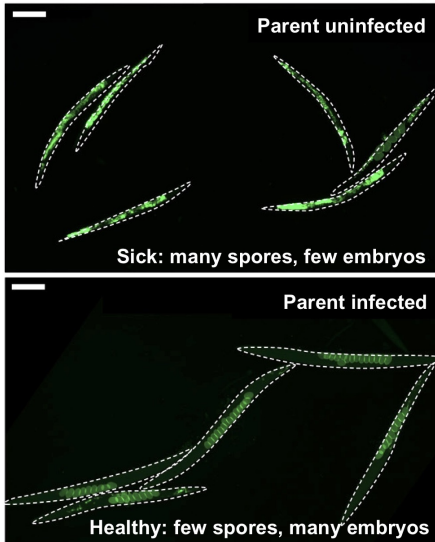


Using Blood to Predict Disease Onset

Dr. John Dick is developing a method for detecting disease markers in blood samples, specifically for age-related conditions such as heart disease, with a multidisciplinary team involving MoGen faculty **Drs. Philip Awadalla, Sagi Abelson and Gary Bader**. His lab previously demonstrated the "age-related clonal hematopoiesis" (ARCH) process, defined as ageing blood stem cells accumulating mutations and clonally expanding to the point where they make up most of the blood cell population. With funding from Medicine by Design, the team has two aims: predicting heart disease risk with ARCH genetic markers and determining how ARCH-impacted blood cells contribute to heart disease with single-cell sequencing. The study will analyze a large cohort of blood samples from heart disease patients and controls, analyzing DNA with an ARCH-detection platform in the Abelson lab. [Read the whole story on Medicine by Design news.](#)

Related to this, Dr. Awadalla conducted a study that unearthed how evolutionary selection impacts blood ageing and cancer risk by proxy. The team used population genetics and a type of machine learning called deep neural network model that models evolutionary processes to sequence acute myeloid leukemia (AML)—a kind of blood cell cancer—patient blood samples. They found negative selection—aka when natural selection purges specific alleles in a population—helps prevent disease-predisposing clones from propagating and that negative and neutral selection decreases the risk of pathogenicity. In addition, detrimental mutations accumulated with ARCH-associated driver mutations. [Read the whole story on U of T News.](#) (*Nature Communications* 2021, doi=[10.1038/s41467-021-25172-8](https://doi.org/10.1038/s41467-021-25172-8))

DY96 (microsporidia spores and worm embryos)



protects *C.elegans* progeny against infection

Inherited immunity describes how infected parents can produce offspring with enhanced immunity phenotypes, protecting future generations from pathogenic infection.

Unfortunately, the mechanisms underlying this epigenetic phenomenon are poorly understood. Microsporidia are intracellular parasites that infect almost all animals, causing substantial agricultural losses and lethal infection in humans. Treatment options for this emerging pathogen are limited, making the research into treatments all the more critical.

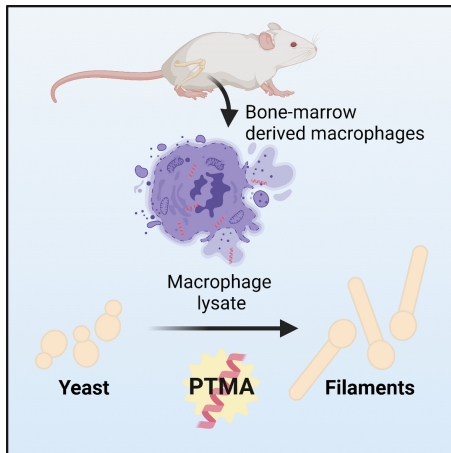
By infecting *C. elegans* with the natural microsporidian pathogen *Nematocida parisii*, **Dr. Aaron Reinke's** lab demonstrated that infected worms produce progeny robustly resistant to microsporidia. The authors then show that immunity in offspring prevents host cell invasion by the parasite and protects the worm against the bacterial pathogen *Pseudomonas aeruginosa*. They also found a parental transcriptional response to infection that induces inherited immunity and can be constitutively activated in mutant worms to yield protected offspring—even in the absence of parental infection. Induction of the same transcriptional response in parents by different biotic (viral) and abiotic (heavy metal) stresses primes offspring against infection. Together, their results show how distinct stresses in the parental environment can protect offspring against multiple classes of pathogens.

The lab is now using biochemical techniques to uncover the immune factors protecting primed offspring against microsporidia and is developing genetic screens to dissect the mechanisms underlying the transmission of immunity.

(*Science Advances* 2021, doi= [10.1126/sciadv.abf3114](https://doi.org/10.1126/sciadv.abf3114))

How Macrophages Unwittingly Help Fungi Evade the Immune System

Evading the immune system is critical for many pathogens to successfully survive and infect their host, including fungi like *Candida albicans*. *C. albicans* is a natural member of the human microbiota but also a cause of both

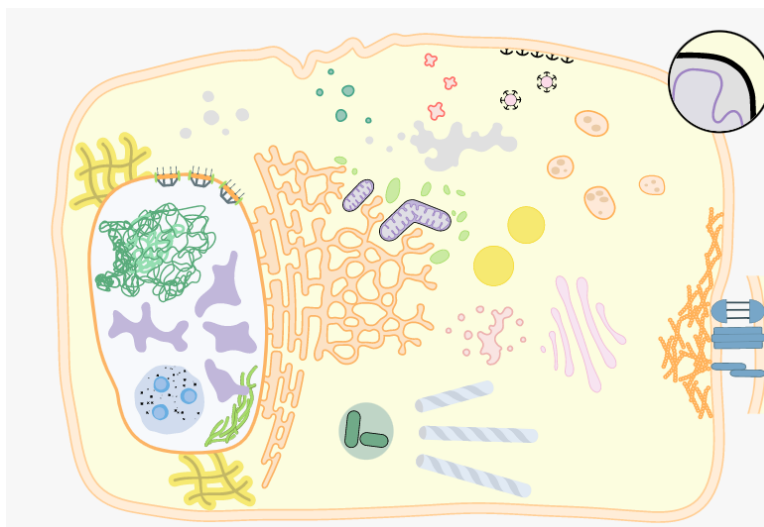


superficial and life-threatening infections. A major virulence trait of this fungus is its ability to transition between two morphological states: yeast and filaments. The yeast form is needed for colonization and dissemination via the bloodstream, while the filamentous form is crucial for tissue invasion and deep-seated infection. *C. albicans* undergoes filamentation in response to many host cues, including internalization by macrophages. Previous research demonstrated that stresses within the macrophage phagosome are responsible for

triggering this transition, however researchers in **Dr. Leah Cowen's** lab identified the immunomodulatory phosphoprotein prothymosin alpha (PTMA) as an additional trigger of filamentation.

The team found that incubating *C. albicans* in human and mouse macrophage lysate induced filamentation. They then used bioactivity-guided fractionation coupled to mass spectrometry to identify macrophage protein candidates, leading to the identification of PTMA. Further, they found that incubating macrophage lysate with antibodies against the N- or C-terminus of PTMA abolished its ability to induce *C. albicans* filamentation, strongly supporting PTMA as a filament-inducing component of macrophage lysate.

Cell Reports 2021, doi= [10.1016/j.celrep.2021.109584](https://doi.org/10.1016/j.celrep.2021.109584)



Mapping Out the Human Cell and its Organelles

Dr. Anne-Claude Gingras's team at LTRI in Mt. Sinai mapped out the human cell using a biotinylation method called BioID. They precisely located over 4000 intracellular proteins by using 192

markers for proteins with known locations to tag neighbouring unknown proteins.

Mass spectrometry identified the tagged proteins, and various computational methods constructed the cell from said data. As a result, the team discovered new proteins between the endoplasmic reticulum and mitochondria. This study demonstrates the BioID technique as a valuable method of organelle research as it avoids lysing or killing the cell. It is also key to determining how different diseases impact protein localization. The Gingras lab also developed the [Human Cell Map](#) to display and share their assembled cell map for others to browse, analyze and compare their data. [Read the full story here at Sinai Health News and Media.](#) (*Nature* 2021, doi= [10.1038/s41586-021-03592-2](https://doi.org/10.1038/s41586-021-03592-2))

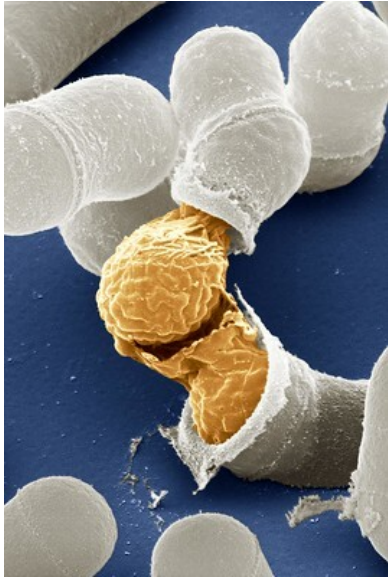


Left: MoGen grad student Furkan Gwenc and Research Associate Steven (Sang) Ahn wearing hoods called powered air purifying respirators (PAPRs) in CL3 facility. Right: CDC infographic on respirators

MoGen Department Work in COVID-19 Industry Research Throughout the COVID-19 pandemic, U of T has been on the frontlines through its hospitals, vaccine clinics, and research from multiple departments and faculties. One of these groups is **Dr. Scott Gray-Owen's lab,**

which made practical use of the combined containment level 3 (C-CL3) facility for their research. One of their first studies focused on testing an innovative mask technology in July 2020, demonstrating that the Quebec-based company Biomedical Inc.'s masks' antimicrobial coating inactivated over 99% of the SARS CoV-2 virus within minutes. In April 2021, the Gray-Owen lab began researching the efficacy of the EB05 monoclonal antibody, developed by the Markham-based company Edesa Biotech (whose founder and vice president are both MoGen graduate alumni). The rationale is that the antibody inhibits Toll-like receptor-2 (TLR4) dimerization, which hopefully suppresses cytokine storms (aka excessive immune response) and limits the development of acute respiratory distress syndrome (ARDS), a leading cause of death in COVID-19 patients. Dr. Gray-Owen's team carries out lab studies in cell and animal models in the C-CL3 unit to understand why TLR4, best known as an immune receptor that recognizes bacteria, has an effect on viral infections and is occurring in parallel with the company's clinical phase 2 trials. [Read the full stories at U of T News](#) for more details on the face mask efficacy study and [Temerty Faculty of Medicine](#)

[news](#) for more information about the Edesa collaboration.



Genetic Resistance of Cells Against Environmental Stressors

Changes in interactions between different genes or alleles can drastically impact phenotypes or traits. Figuring out these networks is critical as cancer, drug dosage, infection, and other environmental stressors alter these interactions—a collaborative study involving department faculty **Drs. Brenda Andrews** and **Charles Boone** revealed that cells resist environmental disturbances more than previously thought. The team subjected yeast cells to various external stimuli, such as microbicides and alternative food sources. They found that their external disturbances failed to modify most gene

interactions—around 93%. In addition, the study discovered the remaining 7% were novel connections that weakly connected functionally distant gene pairs. The paper highlighted the need for mapping reference genetic networks in human cell lines and a global reference genetic network. [Read the full story on Temerty news.](#) (*Science* 2021, doi=[10.1126/science.abf8424](https://doi.org/10.1126/science.abf8424))



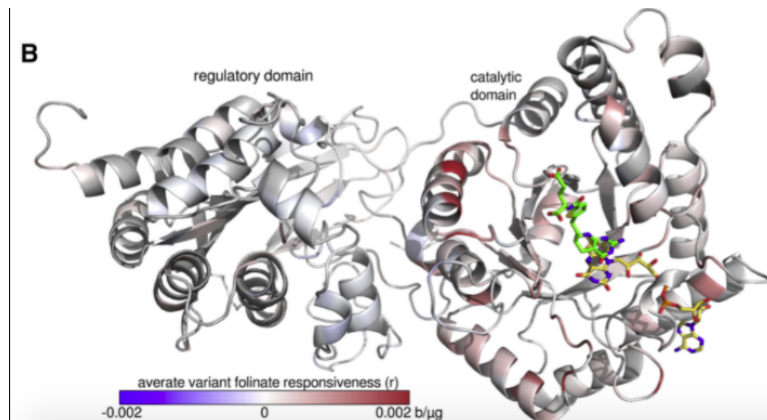
Image by Daniel Witvliet

Novel Insights into Neurobiology of *C. elegans*

Exciting novel *C. elegans* research has come out of **Dr. Mei Zhen's** lab. In one study, the Zhen lab examined brain development and maturation in *C. elegans*. The team reconstructed eight genetically identical (isogenic) worm brains used electron microscopy throughout the postnatal period. They found the preservation of brain geometry and proliferation of synapses and connections

during the worm lifespan. In addition, the results indicated connectivity differences made each brain somewhat unique, and that wiring changes between neurons modified existing connection strength and created new ones, resulting in information processing changes. There was also an increase in signalling from sensory to motor neurons and distinct brain areas forming in older worms. This research could provide critical insight into human brain development and cognition. [Read the full story in Sinai Health News.](#) (Nature 2021, doi=[10.1038/s41586-021-03778-8](https://doi.org/10.1038/s41586-021-03778-8))

In another study, the Zhen lab collaborated with the Faculty of Engineering to develop the RoboWorm, a transgenic *C. elegans* expressing ChR2 ion channels on its muscle cell membranes and is initially paralyzed. It is optogenetically modified, meaning that light controls neurons modified to express light-sensitive ion channels. In this study, blue laser beams triggered calcium ion influx through the channels and make the illuminated muscle cells contract and bend. They could replicate nature natural worm motion with the technically paralyzed RoboWorm and navigate it through a maze. [Find out more on U of T News.](#) (Science Robotics 2021, doi= [10.1126/scirobotics.abe3950](https://doi.org/10.1126/scirobotics.abe3950))

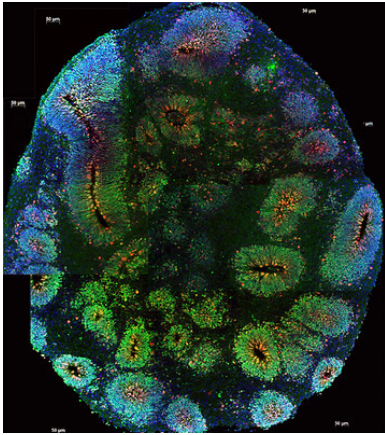


The Role of Genetic Variants in Folate Deficiency

One of our most critical metabolic enzymes is methylene-tetrahydrofolate reductase, or MFTHR, which modifies folate (an essential dietary supplement) into its

biologically active form. This allows it to convert the amino acid homocysteine to the methionine amino acid. Severe MFTHR deficiency is the leading inherited folate metabolism disorder and primarily impacts the central nervous system, while other mutant variants elevate neural tube defect risk. These results in some individuals more susceptible to folate deficiency than others. One of the most common MFTHR gene variants is Ala222Val, carried by roughly half of the human population and characterized by diminished enzyme activity and requiring dietary folate. Among these variants is the phenomenon of incomplete penetrance or genetic resilience, defined by individuals carrying pathogenic alleles not developing the disease.

Dr. Fritz Roth's team created a variant atlas by introducing MFTHR variants into yeast cells and analyzing them in different environments. The data revealed valuable insight into the genetic interactions of the MFTHR gene and mechanisms of the enzyme, such as how catalytic domain variants predicted pathogenicity better than regulatory domain ones and how some variants suppressed the hypomorphic (decreased activity) of the Ala222Val variant. [Get the full details on U of T News..](#) (*American Journal of Human Genetics* 2021, doi=[10.1016/j.ajhg.2021.05.009](https://doi.org/10.1016/j.ajhg.2021.05.009))



Brain development relies heavily on alternative gene splicing, which generates microexons (short-length exons), and could contribute significantly to neurological conditions such as stroke and autism.

Dr. Jeff Wrana joined forces with **Drs. Laurence Pelletier** and **Benjamin Blencowe** use organoids (mini-organs) to model the human brain to examine neural tissue development in a Medicine by Design-supported study. Organoids are preferential to mouse models as they would more accurately replicate human neurology. Dr. Blencowe's lab

previously discovered autistic brains lack a single microexon via genetically engineered mice lacking this microexon demonstrating autistic behaviour. In addition to studying neurological disorders, these organoids can aid in drug development by modelling the blood-brain barrier and testing treatments that regulate microexon splicing. [Read the whole story here on U of T News.](#)



Faculty Highlights and Awards

Welcome to New Faculty

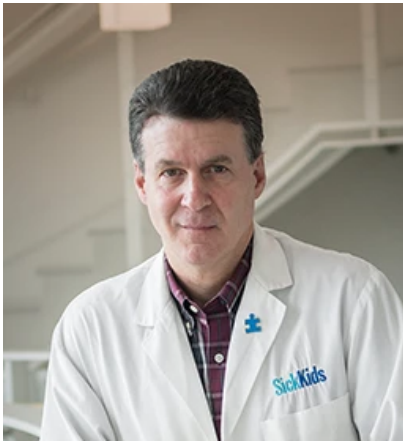
Dr. Gregory Costain is a Scientist-Track Investigator in the Genetics & Genome Biology program at the SickKids Research Institute, and joined the Department as an Assistant Professor in June 2021. He received his MD/PhD in Medical Science from the University of Toronto. The Costain lab is focused on understanding the causes and consequences of rare variation in the human genome. The team uses genome sequencing to discover new disease genes and genotype-



phenotype associations, in a setting of an undiagnosed paediatric disease program.



Honours and Awards



Dr. Stephen Scherer has been appointed the Chief of Research at The Hospital for Sick Children, effective July 2021. Dr. Scherer is a world-renowned researcher in genome sciences, and has received many honours and awards for his research contributions to our understanding of genetic disease. He holds the rank of University Professor at UofT.

Read the full announcement from HSC [here](#).



Dr. Kieran Campbell has been awarded the *David Dime Family Catalyst Initiative – Catalyzing Innovative & Transformative Research Ideas Award*. Research in the Kieran lab focusses on Bayesian models and machine learning for high dimensional biomedical data, including single-cell and cancer genomics.

Canada Research Chairs

Two Molecular Genetics faculty are Spring 2021 recipients of Canada Research Chairs:



Dr. Brenda Andrews - *Tier 1 Canada Research Chair in Systems Genetics & Cell Biology*. The Andrews lab uses functional genomics coupled with yeast genetics and cell biology to study cell cycle transcription factor pathways and mechanisms of cell cycle regulation.



Dr. Daniel Schramek - *Tier 2 Canadian Research Chair in Functional Cancer Genomics*. Dr. Schramek's research focuses on leveraging functional genomics to advance treatments of human cancers in a personalized and highly specific manner by identifying and characterizing why a tumour develops.



Dr. Rafael Montenegro-Burke has been awarded a UofT *Connaught New Researcher Award*, which is given to develop the academic



careers and research profiles of promising new UofT faculty members across numerous disciplines. He is one of the 53 faculty members and among the seven Temerty Faculty of Medicine scientists who won this competition. Dr. Montenegro-Burke's research specializes in charting the metabolome, the whole collection of the molecules (aka metabolites) produced by metabolic reactions—alongside their pathways and conserved or species-specific signatures—with advanced mass spectrometry and bioinformatic methods. To hear more about his recent research and collaborations, [read the full story here on Donnelly Centre News](#).



Dr. Julie Claycomb has received the 2020-2021 *Faculty of Medicine Award for Mid-Career Excellence in Graduate Teaching and Mentorship*. The award is given to honour and celebrate outstanding contributions to graduate education in the Temerty Faculty of Medicine.

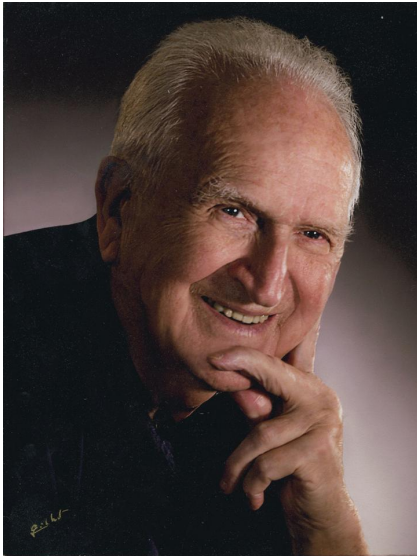


Association of Genetic Counsellor Program Directors Annual Outstanding Supervisor award. The award recognizes one outstanding clinical supervisor from each genetic counselling program. The 2021 winner for the University of Toronto is **Cheryl Cytrynbaum**, who is Associate Faculty in the Genetic Counseling Program. Winners of the award are honored by both the AGCPD and the National Society of Genetic Counselors (NSGC).



Jillian Murphy, Associate Faculty in the Genetic Counselling Program, has been awarded the **Cheryl T. Shuman, Interprofessional Teaching award** in the Division of Clinical and Metabolic Genetics at HSC. The award is named to honor the previous Director of the GC program, Cheryl Shuman, who retired last year. The award is presented annually to an Allied health staff member at any clinical site (genetic counsellor, nurse, nurse practitioner, dietician, social worker) who has demonstrated excellence in teaching and a strong interest in promoting clinical education.

In Memoriam



Emeritus University Professor **Lou Siminovitch**, the founding Chair of our Department, passed away on April 6, 2021 at the age of 100. Lou founded the department in 1969; at that time, we were the Department of Medical Cell Biology in the Medical Sciences Building. Most recently, Lou was Director Emeritus at the Lunenfeld-Tanenbaum Research Institute (LTRI). Lou's recruitment of initial faculty to the department has shaped the direction we have taken and led to the strength and diversity of our science. His impact goes far beyond that of our Department, as he has played many influential roles in the development of science in Canada. His force of nature will be

missed.

At the 50th Anniversary Symposium in 2019, which Lou attended at the age of 99, many of our community reminisced about Lou and his role in their lives as well as in the department and country. In addition, grad students Laura Hergott and Sabrina Hyde interviewed Lou, who reminisced about science and family in his career. Please read the full interview [here](#).

Please see the following tributes to Lou:

* from the University and Temerty Faculty of Medicine

* from LTRI

* from the obituary in the [Globe&Mail \(9April\)](#)



Trainee Highlights and Awards

The Cecil Yip Doctoral Research Award gives financial support to doctoral-stream students working under the Donnelly Centre, of which many of the faculty and students are also MoGen



Winners listed in order from top left corner down to right bottom

members. This year, five out of the nine awardees were MoGen graduate students. The winners and their awarded projects are:

- **Adrian Granda Farias** (Moffat lab) is determining cancer cell genes that allow immune system evasion.
- **Shamira Tabrejee** (Hughes lab) is collaborating with Dr. Jack Greenblatt to discover how chromatin remodelling influences and may predict gene expression.
- **Sara Pour** (Hughes lab) is using deep machine learning to study gene terminal ends.
- **Steven Dupas** (Blencowe lab) is collaborating with Dr. Moffat to learn how microexons impact neurological development and disorders with CRISPR gene editing.
- **Brandon Lieng** (Montenegro-Burke and Röst labs) is working with Drs. Brenda Andrews and Charles Boone to discover novel yeast and later human cell metabolites.

Congratulations to you all! [See the full story on Donnelly Centre news.](#)

*Images taken from [here](#)



The Department of Molecular Genetics proudly announces the first valedictorian of the Master of Health Sciences in Medical Genomics program for the class of 2021, **Mfonobong Udoh-Orok**. He completed his practicum at the Cardiac Genome Clinic at the Ted Rogers Centre for Heart Research and currently works as a bioinformatician at Mount Sinai's Clinical Genomics Center, under Dr. Katherine Siminovitch. Mfon is also the inaugural recipient of the **MHSc McLaughlin Centre Valedictorian Award**, in recognition of Mfon's

outstanding and moving speech to his fellow classmates and his instructors.

Learn more about Mfon through his interviews on the [MoGen website](#), and [Temerty News](#)



Dr. Marina Musa has been awarded the 2021 **Charles H. Best Fellowship** for postdoctoral research. Marina joined the lab of Andy Fraser to study the metabolism of parasitic round worms, also known as helminths, which infect the guts of about one billion people worldwide. The prestigious fellowship is awarded annually by The Charles H.

Best Foundation to a postdoctoral researcher in the Donnelly Centre whose research has potential to benefit society.

Please read the full story [here](#).



Graduate Student Awards 2021

Molecular Genetics has a number of competitive awards and fellowships given annually to our graduate students and announced at the retreat. Congratulations to all students!!

L.W. MacPherson Award

Jacqueline Watt

(Liu lab)



Roman Pakula Award
Sophie Karolczak
(Dowling lab)



Norman Bethune Award
Shamira Tabrejee
(Hughes lab)



Eric Hani Fellowship
Jhenielle Campbell
(Navarre lab)



The Dr. Louis Siminovitch Catalyst Award
Vernon Monteiro
(Hurd lab)



The Genetic Counselling Program student awards 2021



McLaughlin Centre, Cheryl Shuman Award
Meaghan Leslie
(2nd year GC student)

McLaughlin Centre, Merit Based Entrance



Scholarship
Lydia Vermeer
(1st year GC student)





Simone Rusu, an MGY Specialist, was awarded the **2021 Clarence Fuerst/DTL Award** as the best student in the MGY Genetics lab courses, MGY314 and MGY315. The award comes with a certificate and cheque for \$250. It is administered by the Division of Teaching Labs (DTL) in the Temerty Faculty of Medicine, and is given to honour the late Dr. Clarence Fuerst. Clarence was a lambda geneticist, recruited by Lou Siminovitch to the Department, and was responsible for setting up our original lab course experiments in the (then) MGB program.

Summer student poster session awards 2021

On Aug 5, 2021, Molecular Genetics and Biochemistry held a joint virtual poster day to highlight the summer research performed by undergraduates in our departments. The event was organized by Profs. Marc Meneghini and John Glover. We used the online platform Spatial Chat to create 13 virtual rooms containing 50 posters, representing over 35 of our labs. Attendees could "stroll" through these rooms to view posters and talk to the presenters. In addition, over 50 grad students and others participated to judge the posters and decide on the top 3 presentations. This was very difficult because the quality of our undergraduate science is very high, and we are grateful to the judges for their hard work. The top 3 posters were:

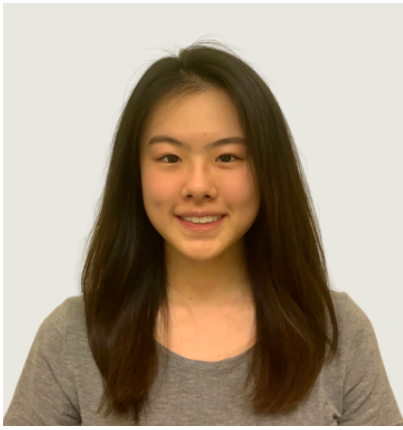


1st Prize

Cindy Fang

Bioinformatics and Computational Biology
Specialist

(Campbell lab)



2nd Prize

Stephanie Chuang

Molecular Genetics & Microbiology and
Biochemistry Major

(Houry lab)



3rd Prize

Michelle Glossop

Molecular Genetics & Microbiology Specialist

(Maxwell lab)



Staff Highlights



Soha Usmani is the MoGen department's new Science Writer and will be assisting the department's communications coordinator, Dr. Martina Steiner. She graduated from U of T in June 2021 with an Honour's Bachelor's of Science, completing a double major in CSB and MGY and a minor in Immunology. In addition, she was an editor and news writer at the MicroVision undergraduate journal, run by the MGYSU.

If you have a publication or MoGen-related news story to share on social media or the department

website, please email Soha [here!](#)



Please visit the following links for COVID-19 resources and updates:

[University of Toronto: UTogether](#)

[Temerty Faculty of Medicine: Return to campus](#)



Links to previous editions of MoGeNews

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[Issue 14](#)

See [Issue 14](#) for links to all earlier newsletters (Issues 1 to 13)



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