biochemRocks

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Chair's Welcome Message

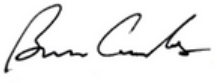
This past year has been a time of renewal and rejuvenation and I continue to feel these undertones reverberating in the Department of Biochemistry and Biomedical Sciences.

There has been many new and exciting changes to the department in our research and education domains. On the research side, we recruited three new faculty members to the department (Dr. Lindsay Kalan, Dr. Cameron Currie, and Dr. Hong Han), and have another three faculty searches underway. Drs. Kalan and Currie joined us from the University of Wisconsin, Madison where they had set up thriving research programs in the areas of bacterial pathogenesis and drug discovery. Dr. Han was recruited from the Donnelly Centre at the University of Toronto where she pioneered multi-omic platforms for ultra-high-throughput single-cell profiling in cancer systems. As a member of our department, Dr. Han is also affiliated with the Centre for Discovery and Cancer Research (CDCR). Among our other ongoing searches, we are recruiting through the Provost's Strategic Equity and Excellence in Recruitment to advance Black academic excellence in the Faculty of Health Sciences, and we have initiated a second collaborative hire with the CDCR in the area of cancer bioinformatics. These new members and their teams represent remarkable growth and opportunity to enhance our existing strengths and to expand into new areas for the department.

Our department is known for delivering cutting-edge education programs and work is underway to refresh some key components of our curriculum. At a recent departmental education retreat, I was inspired by the creative energy emanating from members of our faculty and staff, which generated new and bold ideas for us to consider for the future. I look forward to sharing these ideas with you as the months progress. This year we completed the move of the Biochemistry undergraduate program to the Faculty of Health Sciences and welcomed the first Fall cohort into FHS. To accommodate this growth, we built out a new BBS Education Program office in the former BDC office suite where all our learners, both undergraduate and graduate, can connect with their program staff when they need to. I am also excited to announce an active recruitment that is underway for a teaching-track faculty member in BBS to advance the department's education mandate. A special acknowledgement goes out to one of our education leaders, Dr. Caitlin Mullarkey, who was awarded the 2023 President's Award for Outstanding Contributions to Teaching and Learning, McMaster University's highest honour for teaching excellence. Caitlin has been a tremendous asset to the department as our Associate Chair, Undergraduate Education whose work has advanced all pillars of McMaster's core values and strategic priorities and elevated our reputation for excellence in teaching and learning.

As 2023 progresses, keep an eye on the BBS main office, which will be undergoing renovation and expansion so that our operations and finance teams can be co-located in one physical location. Moves are already underway to kick off Phase 1 of this space plan. This has been a priority for me as Chair, and I am delighted to finally see it coming together.

As I mention often, the people that call BBS home are what make this place so special. The staff, faculty, students, fellows, and trainees help create and sustain our vibrancy and are the conduits for our creative energies. Lately I've been reading "The Creative Act" by award-winning music producer Rick Rubin. Although Rubin is in the music business, much of his writing on creativity resonates with other creative pursuits, including much of what we do in academia. A quote from his recent book hit home for me: "No matter what tools you use to create, the true instrument is you". It is such a joy to have a front-row seat to all the creative outputs that members of our department produce each year.



Associate Chair Undergraduate Education Report

The 2022-23 year has been one filled with exciting achievements as the Department embarked on its first year with all academic programs housed in the Faculty of Health Sciences. For the first time since 2018-19 (!), in-person learning for the entire year returned which allowed us to welcome back long standing traditions such as the Welcome BBQ in September. It was energizing and long overdue to see students and faculty teeming with eagerness at the start of the term! One of the biggest changes undergraduate students navigated was the launch of the new Biochemistry Educational Programs Office (HSC 4H30), dedicated to serving the advising needs of our undergraduate students. With Shari McCollin at the helm in her new role as Academic Manager of Undergraduate Programs, the Undergraduate Office played a vital role in the smooth and effective implementation of the department's undergraduate education initiatives. This was also due in no small part to the tremendous efforts of Taylor Gauthier (Academic Advisor) and Michelle Biro (Academic Administrative Assistant). As we look to embark on our second year within FHS, the team will undoubtedly continue to provide exceptional guidance and support to allow our students to successfully navigate their undergraduate careers.

Our undergraduate programs' reputation for excellence and outstanding academic achievement has remained unwavering and constant. This is abundantly evident in the myriad of academic awards our undergraduate students have been recognized with in the last academic year (see page 23 for a full summary). These include the University's highest and most prestigious honors. Katherine Dykema, a recent graduate of the Biomedical Research Specialization stream, was honored with the Governor General's Academic Medal at the Faculty of Health Sciences Convocation in May. Established in 1873, this award recognizes exceptional academic achievement. Only two undergraduate students at McMaster are selected for this award each year. Earning this accolade not only places Katherine among the top graduating students at McMaster, but it also places her among the top students in all of Canada! Katherine completed her senior thesis under the mentorship of BBS faculty member Dr. Lori Burrows, where her project evaluated the impact of nutrient limitation on the susceptibility of Pseudomonas aeruginosa to the antibiotic vancomycin. Excitingly she will be returning to the department in January 2024 to begin her graduate studies with Dr. Eric Brown. Congratulations Katherine!

"The Biochemistry and Biomedical Science programs provide students with the opportunity to flourish into determined, innovative leaders who have unique approaches to solving widely discussed challenges in the field. Through engaging lectures, ground-breaking research, and intensive labs, we really get to immerse ourselves in the world of biochemistry and solve problems with a critical lens. The students, staff, faculty, and administration have also built a welcoming environment and a supportive community to last far beyond the academic year."

Samarah Maqbool
Level II, Honours Biochemistry

Year in Review | Undergraduate Education

Following the successful launch of the Summer Scholars Program in 2022, the department was thrilled to welcome our second cohort of scholars to campus in May 2023. Once again, there was tremendous enthusiasm and keen participation from both faculty and students for the program. We received over five times the number of student applications for available spots. Ultimately, nine scholars from four Universities across Ontario were selected as part of the second cohort. Their training kicked off with two weeks of intensive boot camps in May in the Biochemistry teaching labs under the very skillful and capable tutelage of Dr. Felicia Vulcu and Vivian Leong. After wrapping up the boot camps, the scholars began their immersive research placements in the labs of participating faculty members. The scholars embarked on a diverse range of projects from biophysics to organic chemistry synthesis! The capstone symposium in August, celebrated the accomplishments of our scholars. Each scholar highlighted their research endeavors in a presentation in front of a packed audience in the Farncombe Atrium. A tremendous asset to the program this year was the guidance provided to our current scholars by our 2022 alumni. Four Summer Scholars returned to the laboratories of their research mentors for summer 2023, all of whom were supported by summer research awards. Joshua Russell (Dr. Matthew Miller), Breanne McAlpin (Dr. Jonathan Schertzer), and Jola Adeoye (Dr. Gerry Wright) received competitive NSERC Undergraduate Research Awards to support their work. Additionally, Shreya Sharma (Dr. Deb Sloboda) was awarded an Undergraduate Student Research Fellowship by the McMaster Institute for Research on Aging to continue her project. The scholars, past and present, continue to bring fresh perspectives, innovative ideas, and foster a dynamic learning environment. We look forward to growing our SSP alumni network in future years with each new cohort!

The upcoming year holds much promise and excitement! In Winter 2024, Dr. Jon Stokes will teach the inaugural offering of BIOCHEM 3AB3: Antibiotics are the Corner of Medicine. The course will explore the history of antibiotic discovery and the influence of these drugs on modern medicine. As evidenced by how quickly seats disappeared during the enrollment period - students are avidly anticipating this new course! I am perpetually grateful for the continued dedication and mentorship of our undergraduate students by department faculty members. This past academic year saw 116 students complete intensive fourth-year thesis project courses, and more than 60% of those students were directly supervised by BBS Core, Joint, and Associate Faculty – a truly remarkable effort. Our students, faculty, and staff are the genuine driving force behind the department, creating a wonderfully vibrant community.

"Honours Biochemistry has cultivated my lab skills and led to me taking on various laboratory projects. Everyday I use the fundamental skills taught in BIOCHEM 2L06 as an assistant in the Kumar Lab at UC Anschutz Medical School. In the lab, I primarily genotype mouse models to propel discoveries in endocrinology and reproductive health. I am also looking forward to being a trainee at McMaster's MCTR as part of the research course, BIOCHEM 3R06. I am thankful for the learning opportunities in BBS that have prepared me for laboratory research."

Hayley Modi
Level III, Honours Biochemistry

"Being in the Biochemistry program has been a blast so far. I loved how the professors introduced the program smoothly in the second year, allowing us to enjoy the program and leaving room for mistakes. For instance, the Biochemistry 2L06 teaching method showed me the research skills required in the lab, which further ensured success in my research courses."

Ali Mohammad
Level IV, Honours Biochemistry

"This year, I received the wonderful opportunity to do my fourth-year thesis project in Dr. Steinberg's lab. The project I worked on aligned well with my interests in obesity & diabetes research, and the tremendous support I received from the members at this lab and the BBS team helped me succeed in my project. The knowledge and skills I have gained from my time at Dr. Steinberg's lab, in addition to the biochemistry courses I took, helped me further develop scientifically and professionally. The courses, academic support, and opportunities offered by BBS have overall helped me become more confident in my scientific career journey!"

Jenny Doan
Level V, Honours Biochemistry Co-op

Associate Chair Graduate Education Report

Over the past year, it's been an exciting transition into the role of Associate Chair, Graduate Education. First off, I'd like to express my sincere gratitude to my predecessor, Dr. Matthew Miller, for his continued guidance as I've come to learn the ropes of the Biochemistry Graduate Program. As the pandemic continues to fade into the background, it has been energizing seeing our graduate program start to return to its vibrant self as we continue to rebuild our community spirit after several years of necessary social distancing. To this end, the Biochemistry Graduate Program in collaboration with the BBS Graduate Student Association (BBSGSA) recently held our first graduate student focused in-person social event since 2019. This event was a resounding success with over 100 registered attendees that included both graduate students and faculty alike. The smooth execution of this event was due in no small part to our intrepid Graduate Officers, Lisa Kush and Nadia Butt, and BBSGSA President, Luke Yaeger, and I thank them for all their hard work in making this event run smoothly. The Biochemistry Graduate Program is looking forward to hosting additional events in the coming semesters and it is our hope that get-togethers such as these not only provide a venue to foster new friendships but also to initiate fruitful scientific collaborations among BBS labs.

The 2022-23 academic year was full of many notable accomplishments that were recognized by annual awards given out by our graduate program. Monica Warner from Dr. Sara Andres' lab was awarded the Thomas Neilson Award for her outstanding performance on her PhD Candidacy Exam. PhD students Evan Shepherdson (Elliot Lab), Nathan Bullen (Whitney Lab), and Michael D'Agostino (Miller Lab) were awarded BBS Impact awards for their impactful first author or co-first author publications in the widely-read academic journals PNAS, Molecular Cell, and Cell, respectively. I find it truly remarkable that BBS graduate students consistently lead such comprehensive studies and publish them in the most influential scientific journals, and I suspect this draws much admiration from other graduate programs across the country.

Our graduate student seminar series returned to in-person this past academic year and I would like to commend all our speakers for their excellent presentations. We recognize that due to virtual learning made necessary by COVID-19, many of our newer students may not have had the opportunity to give in-person presentations in the upper years of their undergraduate degree programs but despite this challenge, BBS students at all levels excelled at communicating their research findings to our department. The Karl Freeman Prizes are given out annually to recognize the top ranked peer-evaluated student seminars in our PhD and MSc programs. This year's PhD awardees were Evan Shepherdson (Elliot Lab, 1st place) and Rebecca Burchett (Bramson Lab, 2nd place) and the MSc prizes went to Ikram Qaderi (Burrows Lab, 1st place) and Yona Tugg (Miller Lab, 2nd place). Congratulations to all presenters and awardees and I very much look forward to next year's lineup of student presentations.

"Completing my PhD in the Biochemistry Graduate Program in the Department of Biochemistry and Biomedical Sciences has provided me with the resources and skills to conduct innovative, high-quality research, publish in top peer-reviewed journals, and develop as an educator. I'm grateful for the opportunities I've had, and I look forward to applying my graduate training as I pursue a career in education."

Patrycja Jazwiec
PhD Level V

"The Department of Biochemistry has been an exceptional academic home throughout my journey as a PhD candidate. The faculty's unwavering support, cutting-edge research opportunities, and collaborative environment have fostered my growth as a scientist and have equipped me with the skills and knowledge necessary to continue pursuing scientific excellence as I continue on my academic journey."

Sophie Ngana
MD/PhD Level IV

Stipend increases were another major order of business for the Biochemistry Graduate Program over the past year. In keeping with our commitment of raising MSc and PhD stipends by a minimum of 10% per year over the past two years, we have now increased MSc base stipends to $29,098 and PhD base stipends to $36,552 for all current and incoming students, which will be implemented this upcoming fall semester. These new stipend rates are among the most competitive in Canada and we sincerely hope that they help offset the steep increases to the cost of living that we've witnessed over the past few years.

Another important development in our program was the long overdue launch of our new graduate program website. This new website provides current and prospective BBS graduate students with all the information they need to succeed in graduate school including information about a prospective supervisor, scholarship opportunities, committee meeting forms, and thesis defense procedures and timelines.

Finally, thanks to organizational efforts of Nadia Butt, Lisa Kush, Stephanie Ward, and Sarah Cumin, the Biochemistry Grad Program hosted a financial wellness workshop entitled "Making Money Sense" featuring credit counsellor and Mac's Money Coach, Terry Bennett. Based on the feedback we received, this event was popular among our graduate student community, and we will continue to explore additional topics of interest for future workshops.

As the upcoming academic year approaches, I hope that everyone gets a chance to recharge over the summer months and I wish you all a happy, healthy, and productive 2023-2024.

John Whitney, PhD
Associate Chair, Graduate Education
Assistant Dean

Director BDC Program Report

This past year was one of renewal, with the BDC and MBDC programs closer than ever to 'normal' in-person instruction, research, and internship placements, with the highlight being our first in-person BDC Engage Symposium in a number of years! It was great to have our Level 3, Level 4, and MBDC students, staff, faculty, and community partners together to celebrate the success of our students and to learn from each other. Thanks to Dr. Richard Gold of McGill University joining us as Keynote Speaker as well as to the staff, students, and faculty who made this event a success!

Nyla Mitchell
Incoming Level IV BDC

"The BDC program has been a profoundly enriching experience. It has allowed me to build on my research and entrepreneurial skills in an engaging and collaborative environment, equipping me with the tools needed to engage confidently in my current and future endeavours. Through interdisciplinary coursework, problem-based learning projects and valuable networking opportunities, the BDC program has deepened my interest in research and entrepreneurship and expanded my view of career opportunities within industry, health care and academia."

This was also a year of change in the BDC office. I returned as Director from my research leave and wish to thank Drs. Yingfu Li and Jonathan Schertzer for running the program in my absence, particularly given the administrative challenges posed by online learning after-effects. Long-standing Manager of the BDC Program, Dr. Nancy McKenzie, left to start work in the Office of the Provost at McMaster but we were joined by Shari-Ann McCollin as Academic Manager of Undergraduate Programs in the Department of Biochemistry & Biomedical Sciences. Career Development and Relationship Manager Emily Talyor was also on maternity leave, so in the past year, her duties were fulfilled by Sheema Yousefzai. I enjoyed teaching BiomedDC 701 with Sheema this past year and we wish her much success as her contract ends and Emily returns in July 2023.

This was also a milestone year for the BDC program as we underwent our first 7-year Institutional Quality Assurance Process (IQAP) review. In January 2015, the BDC program implemented an accelerated launch with a group of 12 brave students who completed an abbreviated third-year curriculum. Since 2015, BDC undergraduate enrollment has maintained a steady state of ~107 students, while MBDC graduate enrollment has expanded from an initial cohort of 8 to a steady state of ~34 students.

Yet, 2023-2024 is looking to have our largest MBDC cohort ever! Notably, to date 76 companies have hired 144 MBDC interns over a wide variety of sectors and 44% of internships have led to job offers. The IQAP process is a rigorous review of all aspects of the undergraduate BDC and graduate MBDC programs and I thank all the students who took the time to provide feedback on the programs and participated in the virtual site visit, plus the staff and faculty who met with the IQAP reviewers. We received constructive feedback and ideas and have begun planning changes and growth to the programs based on your feedback. It is a challenging time of change and growth in the Life Sciences Sector in Ontario, Canada, and beyond and the BDC/MBDC programs need to meet these challenges. Yet, the consistent message we hear from our community partners is that BDC & MBDC graduates are nimble, know how to work a room (or ZOOM!), and stand out for their scientific depth and business savvy. Special thanks to the BDC and BBS staff for their help in preparing the IQAP report, plus contributions from Dr. Brian Coombes, Dr. Jonathan Schertzer, Dr. Caitlin Mullarkey, Dawn Lilley, Sarah Cumin, and Dorothy Nizinski.

"The BDC program has provided me with the necessary foundation that will help me achieve my career goals within the biotech/pharmaceutical industry. Firstly, the ability to receive individual mentorship from accomplished research and business faculty has been an exceptional resource to build upon my existing knowledge base. Also, the opportunity to experience a multi-faceted course load has helped provide me with a competitive edge in the workforce, which I look forward to employing in my MBDC internship. Lastly, the focus on teamwork and collaboration has allowed me to form close relationships with my peers and mentors resulting in an established educational network."

Hassan Khan
MBDC Program, Class of 2023

Thanks also go this year to the BDC office staff – Jennifer Crane, Sheema Yousefzai, Michelle Biro – and BDC Associate Director Dr. Jonathan Schertzer for a year of incredibly hard work to ensure success in all aspects of the program. But I would be remiss in not highlighting the collective effort of all the staff of the Department of Biochemistry & Biomedical Sciences during this past year. Both our BDC and Biochemistry undergraduate programs are now housed in the Faculty of Health Sciences and we now more than ever work collectively to support our students. I expect more fruitful collaborations between Biochemistry and BDC in the coming years!

Lastly, I'd like to recognize the excellence of our students. Whether teaching in BiomedDC 701, sitting in on the pitches in BiomedDC 4B03, meeting in the incoming class in September, watching our thesis students defend their research, or working with our MBDC students on their internships, I am very proud of your hard work and accomplishments. I look forward to 2023-2024!

Andrew G. McArthur
Director, Biomedical Discovery and Commercialization Program

Photos:
Pg. 8 (Top Left) BDC Engage, March 31, 2023 CIBC Hall
Pg. 9 (Bottom Left, L to R) Dr. Eric Brown, MBDC Internship Poster Award Winners: Daniel Carr, Eric Situ, Amy Wang
Pg. 9 (Bottom Right) MBDC Internship Presenter: Brenda Nkonge, Life Sciences Business Analyst Intern at Innovation Factory

Associate Chair Research Report

Every year that I begin to write the Research Report, I attempt to condense it into 2 pages - every year I fail because there is so much amazing news to tell everyone about. This year is no exception - 2023 has been a remarkable year of research success, peppered with prestigious awards, a myriad of amazing publications and grant successes, and celebrity stardom for at least one BBS faculty member. This is a testament to the unwavering dedication and collaborative spirit of our brilliant faculty, students and staff. We all know that the path to success is not without its challenges, but it is through collective resilience, perseverance, and belief in one another that we triumph and succeed. This year for me, has reinforced the notion that success is not achieved in isolation, but rather through the shared efforts and unwavering support of a community united in its pursuit of knowledge and innovation.

As we emerge out of three years of difficulty and pandemic hardship our BBS faculty - for the third year going - continued to push innovation boundaries related to infectious diseases. Dr. Matthew Miller (Scientific Director of the Michael G. DeGroote Institute for Infectious Disease Research) is part of a research team that received $8.2 million for Phase 2 human trials to evaluate the safety and immunogenicity of their COVID-19 vaccine, which will be delivered by inhaled aerosol - the progress on this work has been amazing and we look forward to seeing the outcome of the trial. Matt is also serving as the inaugural co-scientific director of the Canadian Pandemic Preparedness Hub (CP2H) - partnering with the University of Ottawa- which is one of five major research hubs and part of a $10 million investment announced March 2 by the Minister of Innovation Science and Industry François-Philippe Champagne, and the Minister of Health Jean-Yves Duclos. The multidisciplinary research hubs will accelerate research and development of next-generation vaccines, therapeutics and diagnostics, while supporting training and development to expand the pipeline of skilled talent. Exciting times indeed!

Although COVID-19 is something that will likely continue to populate my yearly reports, our campus and community brought our meetings, lectures, and events back in-person over the last year - which was a welcome change to the isolation we have had in recent years. Our faculty and students continued to make ground breaking discoveries and research advances in all sorts of fields and disciplines. Yingfu Li was in the press for his recent publication on an accessible, rapid test for food contamination with Salmonella; Jonathan Stokes made a big splash with work he did with colleagues in and outside of BBS on using AI to discover new ways to combat antimicrobial resistance and fight the 'superbug' A. baumannii - Jon was interviewed on CNN, The Current, The Spectator and was featured on many media outlets online including SciTech Daily YouTube channel- our BBS celebrity!

Photo:
(Top Left) Oral Presentation Winners, Left to Right: Dominique Tertigas (Surrette Lab), Dr. Kate Kennedy (Sloboda Lab), Tess Wilson (Poinar Lab), Jake Brill (Li Lab), Amro Elrafie (Bhatia Lab)

Gerry Wright brought the Sci into Sci-Fi in his article in The Conversation; and Deb Sloboda and her team chatted to podcasters and journalists about their work on the perinatal microbiome and infant gut colonization.

Research funding in Canada has not been at the top of our government's priority list over the last few years and it continues to be challenging garnering research funds for all this innovation. But, despite these challenges, BBS faculty won a total of $13.2M grant funding in 2022-23. Congratulations to all the grant awardees - among the recipients were Drs Jonathan Schertzer and Greg Steinberg who both won Diabetes Canada grants; Dr Yingfu Li won a $1.3 million dollar Weston Grant; Drs Cameron Currie, Lindsay Kalan and Jonathan Schertzer all won CFI infrastructure grants and Dr Eric Brown a CIHR Project Grant. We continue to offer our faculty members exemplars to view and assistance with peer review of grants – please reach out if you need these services – we want you to be successful!

Year in Review | Research

The last year has again, been a fantastic publication year with outstanding new scientific discoveries. This past year we collectively published hundreds of papers (over 250 by my count), including two papers by Dr. Richard Epand which appeared on the front covers in both journals. Dr. Mike Surette published a cool paper with colleagues in Biology looking at the microbiome of spiders and invertebrates exposed to municipal wastewater effluent; Dr. Lindsay Kalan published a paper on biosynthetic diversity in the skin microbiome; Dr. Jon Schertzer published a review on using postbiotics in new ways to combat metabolic disease; Dr. Sara Andres showed some cool interactions in bacterial DNA repair; Dr. Andrew McArthur's paper on CARD*Shark will have your head swimming with possibilities; Dr. Cameron Currie's paper showcases using nasal microbiomes of healthy children to identify bacteria that could be sources of therapeutics; Dr. Lori Burrows and her team showed that iron transporters are important for antimicrobial effectiveness; and Dr. Deb Sloboda published a paper on how the pandemic impacted adolescents and young adults. There are so many more amazing BBS published papers to read – so have a look at them here!

Given our amazing scientific productivity it's not surprising that BBS research outputs have been recognized by local, national and international media. Matt Miller continues to be an expert voice on influenza virus treatments and published new approaches to treat the flu. Gerry Wright's work on the pandemic continues to showcase as well as provide insight into fungal infections; Dr. John Whitney's work on ADP-ribosyltransferase toxins delivered between competing bacteria in P. aeruginosa was showcased online; Drs. Sheila Singh and Jakob Magolan have partnered with adMare - a Canadian non-profit organization working to identify promising discoveries in health and drug technologies - to develop a targeted therapy and approach that could prevent the formation of metastases in patients with brain cancer; and Dr. Greg Steinberg's team discovery of a unique protein that promotes weight loss was showcased online. We are so proud that BBS is all over the web!

Photos:
(Top Left) Poster Presentation Winners, Left to Right: Nathan Roberge (Burrows Lab), Caylie Shull (Bhatia Lab), Jalees Nasir (McArthur Lab), Dr. Tatiane Ribeiro (Sloboda Lab), Maya George (Wright Lab)
(Bottom Left): Victoria Coles (Burrows Lab) Recipient of the Bordeleau Memorial Scholarship

It's not surprising that with all this research success and publications that many of our BBS faculty won numerous awards. In 2022-23 the BBS Research Advisory Awards committee submitted 8 different nominations for awards and honours. A big thank you to Drs. Sara Andres, Lesley MacNeil and Jon Schertzer for helping our BBS faculty with their nominations and applications. Drs. Eric Brown and Sheila Singh were elected fellows of the Canadian Academy of Health Sciences and Dr. Brian Coombes a fellow of the American Academy of Microbiology; Drs. Lori Burrows and John Whitney were both honoured with awards at this year's CSMB meeting - Lori won the Canadian Science Publishing Senior Investigator Award, which recognizes inclusive excellence in research, mentorship, leadership and outreach and John won the CSMB New Investigator Award (adding to his other 2022 ACS Infectious Diseases Young Investigator Award), which is given to early-career researchers who exhibit research and leadership excellence. It's so great that they were able to share their success together at the same meeting! Lori also received the Canadian Association for Clinical Microbiology and Infectious Diseases 2023 John G. Fitzgerald Award for significantly advancing the field of medial microbiology - what an amazing year for Lori! Dr. Mike Surette received the 2023 Murray Award for career achievement this year from the Canadian Microbiology Society; Dr. Gerry Wright won the MUFA Award for Outstanding Service; and finally, both Drs. Lindsay Kalan and Deborah Sloboda were awarded Canada Research Chairs in 2023 (Tier 2 and Tier 1 respectively). What an exceptional year of awards! Although the BBS Awards committee tries to find awards for everyone in the Department, we don't know of all of them - so please continue to contact me in the future if there are any awards that you would like to be nominated for!

Year in Review | Research

The year 2023 marks the 4th year of the BBS Research Symposium and our first year back in-person post pandemic. What an amazing time seeing everyone presenting cutting-edge science and having the opportunity to network together in person as a Department. This year, the 2023 BBSRS was held a bit later in the year – May 30-31, 2023 – starting online with a virtual career panel that included Dr. Shane Caldwell a research scientist from Amgen, Lesia Szyca a biomedical illustrator from TVASurg and Dr. Michael Le, a development manager from the Centre for Commercialization of Regenerative Medicine - the panel had some amazing tips for our trainees! The next day began with a keynote given by Dr. Laura Hug from the University of Waterloo, followed by a series of exceptional talks by our very own BBS trainees. This year we went outside for our poster sessions - where we gathered in a tent on our campus green to mix and mingle, talking about science and enjoy the outdoors (and a few freezies). It is truly a highlight of my year to hear about all the amazing science that everyone in our Department is doing. I always marvel at how our graduate student-run event is so incredibly organized (some of the conferences I have been to could learn from this team) - this year the Organizing Team was made up of co-chairs Erica Yeo and Dana Sowa; Fundraising Chair Kristi Lichimo, Scientific Program Chair Megan Schuck, Logistics Chair Jeong-Ah Yoo, and Communication Chair Colin Bruce. Guiding them were faculty advisors (Dr. Deb Sloboda, Dr Sara Andres – special thanks to Sara for continuing to support the BBSRS!) and keeping us organized were Katie Raposo and Stephanie Ward in the BBS office. We had 11 trainee awards given out this year (thanks to some amazing fundraising - well done Kristi!) – but as always, I think everyone deserves an award because the science presented is just incredibly high calibre! A special thank you to the Bordeleau family who donated funds towards the Bordeleau Memorial Scholarship for Graduate Student Mental Health Awareness again this year. This very special award is dedicated to Roger Bordeleau and places emphasis on supporting mental health in graduate students. This year the Award was given to Victoria Coles in the Burrows Lab. Finally, a big thanks goes out to all the internal and external sponsors of this amazing research event - we couldn't do it without their support! The Organizing Committee is already thinking about the 2024 BBS Research Symposium – so if anyone is interested in helping out reach out to Dana Sowa in the Andres Lab!

The 2022-23 BBS Seminar Series was finally feeling "back to normal" with a mix of in-person and virtual seminars. We intend to continue to offer this hybrid format so that more of us (regardless of where we are located) can hear our amazing speakers. New in 2022-23 we asked you all ahead of time - who do you want to hear speak at our Seminar Series - and we organized the year's list of external speakers by September so you could plan your attendance accordingly. Katie Raposo and the Seminar Committee (thanks Jon Schertzer, Lesley MacNeil, Kate Kennedy and Saad Syed) worked hard and as a result we had an exceptional year of outstanding talks given to us from all over the world. We also offered workshops this year; Drs. Sara Andres and Andrew McArthur kicked off our workshops with a "Show and Tell" about e-lab books and what they use to keep their labs running efficiently and carbon-neutral J. We also held a series of Research Data Management (RDM) Workshops hosted by the team at the McMaster Library - a big thank you to Danica Evering for helping us organize these workshops. This past year we had workshops on the basics of RDM; an intro to ORCID; how to make a Data Management Plan and coming up in September 2023 we will have the team come back and tell us about Data Storage - don't miss that one! Next year we have more workshops planned, so be sure to check out the list of Seminars on the BBS website in September.

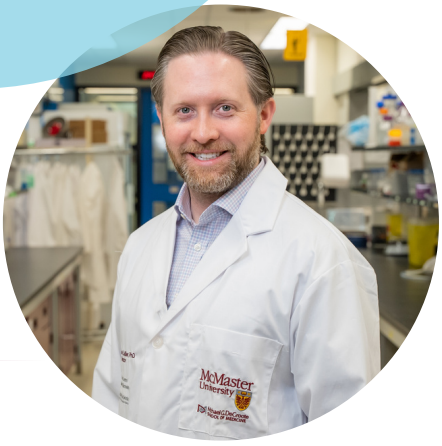
Another great initiative that was launched in 2022-23 was our BBS Faculty Information Portal - here is your one-stop-shop on everything BBS - including forms, contacts, workshop recordings, teaching resources, lab resources, health and safely, hiring and recruiting and so much more. This is a Portal for you - our BBS members - so if you don't have access (or don't know if you do) contact Stephanie Ward at the BBS office and she can get you in! There is so much there - explore it by clicking through all the folders, and also use the search bar to find something specific that you need.

Finally - this past year has also brought us new faculty members – Dr. Hong Han joined us late in 2022 and she has settled in to the Centre for Discovery in Cancer Research (CDCR) - welcome Hong we are excited to work with you and see how your BBS science journey evolves. She joins our other recent faculty recruits Drs. Lindsay Kalan and Cameron Currie - together these brilliant scientists are outstanding additions to our research in cancer, microbiology and antimicrobial discovery.

Congratulations BBS - as I reflect upon the tremendous accomplishments of this past year, and the incredible strides made in our respective fields, I look forward to another chapter filled with limitless possibilities!

Deborah Sloboda, PhD
Associate Chair, Research

Photo:
Keynote speaker, Dr. Laura Hug , University of Waterloo



Institute for Infectious Disease Research

It is with immense pleasure that I write to you for the first time as Director of the Michael G. DeGroote Institute for Infectious Disease Research (IIDR). The past year has been transformational for the IIDR. The Institute's leadership and administrative team underwent the largest changes since its founding over 15 years ago, and we have achieved successes in a number of major funding competitions that will transform and amplify our infectious disease research program for many years to come.

At the outset of this update, and on behalf of all members of the IIDR past and present, I want to extend our immense gratitude to Dr. Gerry Wright for his visionary leadership that has cemented McMaster as an international force in the infectious diseases space. Dr. Wright served as Inaugural Director of the IIDR for its first 15 years, from 2007 to 2022. Dr. Wright's accomplishments as Director are too numerous to list, but include co-design of MDCL, securing over $20 million in philanthropic funding to support the Institute, growing our state-of-the-art Centre for Microbial Chemical Biology (CMCB) facility, and establishing the David Braley Centre for Antibiotic Discovery (DBCAD). While it is impossible to fill Dr. Wright's large shoes, I am immensely privileged to have inherited such a thriving Institute and am fully committed to ensuring our continued growth and future success.

In addition, we express our heartfelt thanks to Dr. Lori Burrows, who has been Associate Director of IIDR since 2018, and served as Interim Director of the IIDR during Dr. Wright's transition to leading the Global Nexus initiative. Dr. Burrows has been instrumental in providing stability and vision to the IIDR throughout her tenure in this role, but especially during this period of transition. Dr. Burrows has graciously agreed to remain in her role as Associate Director for the next three years in order to provide continuity and ongoing leadership support.

Moreover, I would like to acknowledge the immeasurable contributions of our former staff. In particular, I would like to thank Gina Mannen, who served the IIDR as Administrative Director since its founding. Her dedication and strategic guidance have been instrumental to our growth and success. We would also like to congratulate Blake Dillon, Christina Krajinovic, and Josie Middleton who have all grown into exciting new positions within the University. At the same time, we have had the pleasure of welcoming several new staff members to the IIDR team! Vishal Soni brings extensive postsecondary expertise to his role as Manager of Finance & Administration, Larissa Viana is an experienced office professional has also recently joined us to provide expert administrative assistance. Angelina Lam stepped into the IIDR Communications portfolio and has been instrumental in supporting many of our major initiatives over the past several months, including the proposals noted below.

In the spring of this year, McMaster was successful in a competition to be named one of 5 biomanufacturing "Hubs" in Canada supported by the Canada Biomedical Research Fund (CBRF). The Canadian Pandemic Preparedness Hub (CP2H), is co-administered by the University of Ottawa. Dr. Miller will serve as Scientific Director of CP2H alongside Dr. John Bell from University of Ottawa (who completed his PhD at McMaster in 1982). Several members of the IIDR are also serving on CP2H Steering Committee, including Drs. Lichty, Solemanyi, and Wright. These Hubs are central to the federal government's Sciences Strategy (BLSS), a $2.2

billion dollar investment to improve domestic biomanufacturing capacity and pandemic preparedness. In stage 1 of this competition, we were successful in an application to construct a new ~$15 million Containment Level 2+/3 laboratory that will roughly quadruple the size of our current facility, allowing for study of new animal models of infection, and insect vector-borne pathogens. Stage 2 of this program is currently underway with funding decisions expected in March 2024. CP2H will have access to up to $138.5M in infrastructure funding, and $215M in research/training funding over the next four years. Many of our members have spent their summers preparing major applications for this competition. The BLSS also resulted in a new Clinical Trials fund administered by the Canadian Institutes of Health Research (CIHR). Many IIDR members who have been instrumental in the development of the McMaster inhaled COVID-19 vaccine received ~$8.5M from this fund to support Phase II clinical trials which are expected to begin in early 2024.

Typical of our reputation as a world-leading innovators in infectious disease research, our members continue to produce top-tier research publications. For example, Dr. Hendrik Poinar's group, with a team of international collaborators, reported in Nature that genes selected because they conferred protection against the Black Death are now associated with autoimmune disease susceptibility. Dr. Wright's laboratory published a study in Molecular Cell describing a novel mechanism of broad-spectrum resistance to rifamycins mediated by HelR, a helicase-like protein found in many Actinobacteria. Meanwhile, the team of Dr. Stokes has bolstered our leadership in the areas of artificial intelligence and machine learning – publishing a widely publicized report in Nature Chemical Biology describing a deep learning-guided discovery of a novel antibiotic targeting the highly antibiotic resistant Acinetobacter baumannii.

Finally, I would like to congratulate several of our IIDR members on their achievements in this past year. Notably, Dr. Burrows was awarded the 2023 John G. FitzGerald Award from the Canadian Association for Clinical Microbiology and Infectious Diseases (CACMID), Dr. Brian Coombes was elected as a fellow to the American Academy of Microbiology (AAM), and Dr. John Whitney received the 2022 American Chemical Society (ACS) Infectious Diseases Young Investigator Award.

I wish all of our members the very best as we enter into the 2023/2024 academic year and look forward to the exciting discoveries and successes that are sure to follow!

Matthew S Miller, PhD
Scientific Director, IID/DBCAD

Co-Contributor:
Angelina Lam
Marketing & Communications Associate
IIDR

Global Nexus

It was a big year for McMaster University's pandemic innovation hub. Indeed, Canada's Global Nexus for Pandemics and Biological Threats evolved to become the Global Nexus School for Pandemic Prevention & Response, a new university enterprise where diverse experts are training the next generation of scientists and scholars and conducting cutting-edge research.

Earlier this year, the School proudly unveiled a new interdisciplinary minor called 'the Impact of Infectious Disease on Individuals and Society,' which will be available to all McMaster undergraduate students in 2023-24. The minor, developed by Lesley MacNeil, assistant professor in the Department of Biochemistry and Biomedical Sciences (BBS), will offer students a holistic learning experience that considers the social, economic, and health impacts of infectious disease threats.

The Global Nexus also continued its support for the BBS Summer Scholars Program, which, in partnership with the Michael G. DeGroote Institute for Infectious Disease Research (IIDR), brings Ontario-based students who identify as Black, Indigenous, and/or 2SLGBTQIA+ to McMaster on fully funded research scholarships each summer. The Global Nexus is likewise funding undergraduate student research through its Robert Alan Kennedy Research Excellence Awards. This program provides two undergrads with $7,500 each to conduct research into pandemic preparedness.

In addition to this student-focused work, the Global Nexus also hosted a range of public education events in recent months. Its Conversations roundtable series welcomed hundreds of guests to important discussions about acute infectious threats, pandemic response, and the intersections of race and healthcare. Public lectures, featuring speakers from Queen's University and Duke University, were held on campus to spark dialogue about global pandemic-related research priorities. The Global Nexus also started a career-advice talk series for all graduate students and postdocs, which ran for 13 episodes over the summer term. As well, the Global Nexus hosted a large symposium on antimicrobial resistance, and has a similar event planned for 2023 that will focus on vaccinology.

On the research side, Global Nexus initiatives have attracted significant funding to McMaster. Notably, Global Nexus researchers received more than $8M in funding from the Canadian Institutes for Health Research (CIHR), enabling Phase-2 human trials for a next-generation COVID-19 vaccine. The new made-at-McMaster vaccine — administered by inhalation instead of injection — is designed to provide robust immunity against variants of SARS-CoV-2. This work is led by IIDR Director Matthew Miller (BBS), along with colleagues from the departments of Medicine and Pathology & Molecular Medicine.

Photos:
Top Left: Delegates from the NRC tour McMaster Labs, following the signing of an MOU with Global Nexus
Top Right: 1st Annual AMR Symposium, Invited Guest Speaker Kevin Outterson, Professor at Boston University and Director of CARB-X

The Global Nexus also received $2M to play a leading role in a new federal initiative designed to protect Canadians against future pandemics and emerging threats. Through the initiative, McMaster and the University of Ottawa are co-leading the Canadian Pandemic Preparedness Hub (CP2H), one of five new research hubs established across the country. The multidisciplinary CP2H is accelerating the research, development, and commercialization of new vaccines, therapeutics, and diagnostics. Building on this new infrastructure, the Global Nexus also secured $8.6M from the Canada Foundation for Innovation (CFI) in late-2022, which will be used to expand CL2+/CL3 capacity at McMaster. Together, this new infrastructure will strengthen infectious disease and immunological research at McMaster, and foster the development of new medicines, vaccines, and diagnostics, all to combat some of the world's most consequential pathogens.

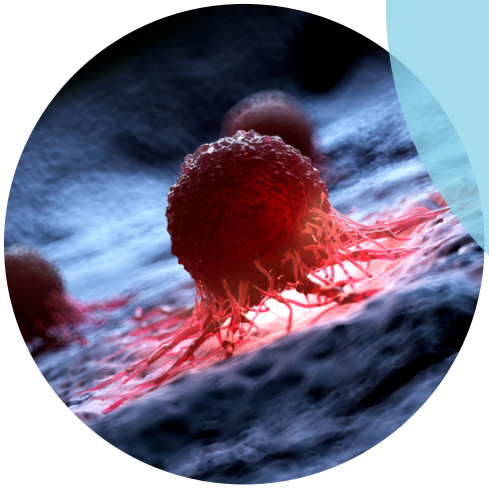
Through the Global Nexus, McMaster also led a range of important studies related to pandemic prevention and response. Using AI, Jon Stokes (BBS) discovered a new antibiotic with activity against a dangerous superbug; Jianping Xu (Biology) discovered drug-resistant fungi in one of the most remote regions on the planet; Lori Burrows (BBS) explored new tactics for treating infections caused by drug-resistant bacteria; and Hendrik Poinar (Anthropology) provided new insights about the historic Black Death pandemic.

Finally, the Global Nexus has served as a conduit for a number of national and international groups to explore partnerships with McMaster. Delegates from the German Center for Infection Research (DZIF) and the University of Birmingham, among others, visited campus to explore opportunities for collaboration with McMaster. Similarly, a memorandum of understanding was signed between the Global Nexus and the National Research Council of Canada, which established a shared interest in collaborating on research related to infectious diseases, antimicrobial resistance, drug discovery, diagnostics, biocompatible materials, and other areas. The Global Nexus also partnered with the University of Guelph to fund undergraduate research into 'One Health' solutions to pandemic problems — those that holistically consider human, animal, and environmental wellbeing.

Together, the new academic opportunities, investments in research, groundbreaking discoveries, and strategic collaborations all made possible by the Global Nexus position McMaster to be a powerhouse in pandemic preparedness for years to come.

Contributed by
Blake Dillon
Strategic Communications Manager
Global Nexus School for Pandemic Prevention & Response

Photos:
Top Left: Jonathan Stokes, Assistant Professor in the Department of Biochemistry & Biomedical Sciences, used AI to identify a new antibacterial compound that targets the pathogen Acinetobacter baumannii.
Bottom Left: Jianping Xu, Professor in the Department of Biology, discovered drug-resistant fungi in the remote regions of the Himalayas.



Hong Han, PhD, Assistant Professor

Dr. Hong Han joined the Department of Biochemistry and Biomedical Sciences in November of 2022 from the Donnelly Centre at the University of Toronto where she was the first recipient of the Home Research Fellowship, which allowed her to begin a semi-independent research program. During her tenure as a research fellow, she led the development of several innovative technology platforms for large-scale genetic, drug screens and single-cell genomics, which resulted in the discovery of novel modulators and mechanisms of lineage development and human disease. Dr. Han's research program in Cancer Systems Biology will be based at the Centre for Discovery in Cancer Research (CDCR). The CDCR brings together cancer experts working in labs and clinical settings from across Hamilton and is focused on building expertise in a variety of treatment-resistant cancers.

Tell us a bit about your background prior to coming to McMaster.

I have always been interested in science, biology, and medicine. I am grateful for the tremendous mentoring, support, encouragement, and collaborations I have received through different stages of my career. I completed my B.Sc. Honours degree in Biology at the University of British Columbia. Working in the labs of Dr. Reinhard Jetter and Dr. Dolph Schluter as an undergraduate researcher greatly broadened my horizons. Toward the end of my undergraduate study, I got very interested in the emerging high-throughput sequencing and screening technologies and their applications in biomedical research. This led me to pursue Ph.D. in Molecular Genetics at the University of Toronto. Co-supervision by Drs. Benjamin Blencowe and Jason Moffat gave me a fantastic opportunity for high-throughput characterization of RNA and gene regulation in physiological and pathological contexts. Together, these lay the foundation for my current research in developing systemic approaches to the study of complex human diseases, especially treatment-resistant cancers.

What are your research interests and why did you choose the CDCR at McMaster as the place to establish your program?

My lab works at the interface of cancer biology, multilayer gene regulation, and innovative high-throughput technologies. We are interested in RNA regulation and its coordination with other gene regulatory layers that control cancer progression and therapy response. The CDCR is a very collegial environment that brings together scientists and clinicians with expertise in many areas of cancer research and is an ideal place to establish my research program. As a member of the CDCR and the Department of Biochemistry and Biomedical Sciences, I am excited to bring a unique skillset that I believe will strengthen existing collaborations that I have made since arriving and provide opportunities to develop new partnerships at McMaster and in Hamilton. Before I arrived at McMaster, Dr. Sheila Singh, the Director of the CDCR and I were already collaborating on studies of glioblastoma.

What have been your biggest challenges and successes over this first year at McMaster?

Being a new assistant professor requires balancing many different responsibilities like recruiting staff and students, setting up and managing the lab, navigating institutional policies and procedures, networking with colleagues and applying for grants. Since arriving I have set up my lab and team and with the support of the university, submitted applications to the Canada Research Chair's program and the Canadian Foundation for Innovation to obtain funding for specialized lab equipment to build integrated single-cell and SPAR-Seq platforms. It has been a very busy nine months so far. I am really grateful for the tremendous support and help I received during this process from the department, the CDCR, and the Faculty of Health Sciences.

I would say my biggest success so far has been establishing fruitful collaborations in a short period of time; I have really enjoyed the many great interactions I have experienced since arriving in Hamilton, not only with colleagues within the Department of Biochemistry and Biomedical Sciences and at the CDCR but also with clinician-scientists at our partner hospitals. I have already formed new collaborations that will provide access to clinical samples that are critical to my work. I am working with Dr. Guillaume Pare at Population Health Research Institute (PHRI) and Dr. Marc Jeschke at Hamilton Health Sciences (HHS) to analyze patient samples using single-cell omics platforms.

What are your research goals for the next five years?

With the support of the university, I am excited to build a collaborative, multi-disciplinary research program in cancer systems biology. The main focus of my lab is to systematically study tumour-immune-tissue interactions at single-cell resolution to understand the dynamic evolution of the tumour ecosystem, such as treatment-resistant glioblastoma and prostate cancer. In collaboration with scientists and clinicians, my goal is to improve the prognosis and treatment for cancer patients through a variety of technological approaches for large-scale genetic/drug screening and ultra-high-throughput single-cell profiling that my team and I will continue to develop here at McMaster.

All successful researchers can credit mentors that have supported them along the way, who would you say has had the greatest impact on your career to date and why?

I have been very fortunate to have many incredible mentors throughout my academic career. Their mentorship, leadership, and vision have greatly inspired me and helped shape who I am as a researcher. My PhD advisors, Drs. Ben Blencowe and Jason Moffat, in particular, helped me grow not only as a student, but also as an independent thinker and a scientist. Their insights and dedication to research and mentoring are contagious and will continue to have a positive impact on me in my career.

Looking ahead 25-30 years, what do you hope will be the legacy of your work?

My hope is that the technological platforms we are building in my lab will lead to regional, national, and international collaborations that benefit the biomedical community broadly and aid in the discovery of new cancer biomarkers and therapeutics. Together with colleagues and leaders from related fields, we look forward to integrating single-cell multi-omics and in-depth screening data with medical information to establish a "digital cancer biobank". If we can stimulate and advance cancer research by continuing to develop and improve high-throughput technologies, improve our understanding of cancer progression models, and create a new generation of RNA-multimodal therapeutics, we will make an important contribution to the field as a team.

When you are not focused on science, what do you like to do for fun? How do you maintain a work-life balance?

I enjoy cooking; I especially like to cook a variety of seafood for family and friends. I also love to travel, meet new people, and experience other cultures - a great way to keep an open mind. I am fortunate to have a very supportive family that has always encouraged me, and I draw strength and support from them. My husband and I work in related fields; he is a clinical cancer geneticist, so we understand each other's work-life challenges. We maintain balance by being together and doing things we enjoy, such as spending time with friends and family, exercising and travelling.

Han Lab

Sarah Cumin, Manager of Staff and Academic Operations

Sarah has worked at McMaster since 2015 and joined BBS in the fall of 2019. She is a Human Resources professional with over 19 years of experience. Sarah has made a very positive impact on our faculty, staff and students by sharing her core values and inspiring us to employ a growth mindset, express gratitude for those moments that bring us happiness, to value our colleagues and find strategies to maintain work-life balance.

Sarah, you are coming up on your fourth anniversary with the department, what do you enjoy most about your role and being a part of the BBS community?

There are many things that I truly enjoy about my role in BBS and being a part of this community. One thing that stands out for me is the positive culture that stems from the Department Chair. Dr. Coombes has created an environment that empowers folks to work to their full potential and to commit to innovation and to always keep focusing forward. I feel valued for my contributions to the team, and I value our team's contributions. Each member of our team is provided with the tools necessary to complete their role, and they are empowered to provide an excellent experience. Our team believes in one another, and we all take pride and celebrate one another's achievements. Being a part of this team gives me a great sense of belonging within the community and I am grateful for playing a role in the success of BBS.

Where do you draw your inspiration from to help you be successful in your role?

I draw my inspiration from the many great leaders I have had the pleasure to work with throughout my career. I believe that to lead people I need to provide a high level of trust, respect and create an environment for continuous learning. Working within a high performing environment is something I strive for, because when our team feels they are inspired to be their best, they are happier and more motivated. Nothing makes me more motivated than working with a team that fully shows up for their role and gives their best, making mistakes along the way and learning and growing from those mistakes. In my role I always aim to provide an environment that cultivates a safe and successful community. One of my favourite things is to recognize individuals and express to them how valued they are.

You like to inspire people to develop a "growth mindset". Tell us more about this philosophy and why you think this is important.

The Growth Mindset is a concept studied by researcher Dr. Carole Dweck. When I was introduced to her research, I truly had an aha moment! This is what we need to do to continuously move forward. A Growth Mindset is an intentional review of what we are doing now, and how we can move from a fixed (comfortable) mindset to a growth (sometimes uncomfortable) mindset. When you believe in your abilities, you can accomplish great things. A Growth Mindset drives motivation, achievement and innovation, and I believe that it is necessary to achieve progress.

You are a big proponent of Health and Wellness in the workplace. What do you like to do to maintain work-life balance?

Health and well-being is a fundamental part of living a full life, whether it be in the workplace or personal time. I feel that we must always consider our health and well-being, and take notice of how we can control how we react in a variety of situations. Self-care, is not selfish, rather it is a way to look after ones' self to be resilient and bounce back faster from tough days. For me, self care includes spending time with my family and also in solitude. I love to camp, hike, and forest bathe and take gratitude in the things all around us. Watching a sunset brings me great joy as I am mindful in the moment and take gratitude for the peace it brings.

Photo:
Top Left: *"Self care is sunset at Killbear"*

Lindsay Carfrae, PhD

McMaster biochemistry first sparked my interest in research during my fourth-year undergraduate thesis. My intention had always been to finish my undergrad and begin looking for a job. However, it only took a couple of months in Dr. Brown's lab to make me reconsider my perspective on graduate studies. The collaborative environment of the department quickly won me over and showed me the promise of research. I was thrilled to begin my PhD in Dr. Brown's lab in 2017, looking to uncover uncharted aspects of bacterial biology and exploit these processes for antibacterial therapies.

My Ph.D. research focused on modulating bacterial metabolism to combat antibiotic-resistant pathogens. Collaborations within the Department were integral to the success of the research and how I met many great friends in grad school. I loved that my research had translational aspects and contributed to combatting antibiotic resistance.

When it came time for me to decide what was next, I knew that I wanted to continue to contribute to inspiring research. Uncovering complex bacterial biology by designing and executing experiments always gave me a feeling of excitement. I reflected on what I wanted and came up with three goals for my next role: 1) to work on relevant and interesting scientific questions that have a positive impact on the world; 2) to gain new skills and perspectives through collaborating with brilliant scientists; and 3) to contribute to inspiring research using my experience to solve challenging problems. This led me to my current position as a postdoctoral researcher at Genentech.

"When it came time for me to decide what was next, I knew that I wanted to continue to contribute to inspiring research."

After graduating in the summer of 2022, I moved to the Bay area to begin my postdoc at Genentech in their infectious diseases department. Genentech has a unique postdoctoral program that focuses on basic science questions but gives the opportunity to gain perspective on the biotechnology industry. My research at Genentech focuses on host-pathogen interactions which allows me to use my experience in bacterial physiology while learning about the host aspects. My time at McMaster was pivotal in helping me develop the problem-solving and critical-thinking skills that I use every day. I am very thankful to my Ph.D. supervisor, Dr. Eric Brown, the Brown lab, and friends in the Biochemistry department for making my graduate school experience such a great one. I loved my time at McMaster and am excited to see where the future will lead.

Jasmine Yang

MBDC - Class of 2023

I graduated from the BDC program in 2021, equipped with a strong foundation in the biomedical sciences and a wealth of knowledge on the commercialization process for biomedical products.

After graduating from BDC, I still had a keen appetite for business knowledge and acumen. The MBDC program was thus a natural next step for me. The ability to further explore the commercialization process, combined with the opportunity to gain experience through an internship placement, was incredibly exciting.

Before starting MBDC, I wanted to gain experience working in the pharmaceutical industry. With support from BDC staff, namely Emily Taylor and Jennifer Crane, I was able to intern at Novo Nordisk's US headquarters on the Omnichannel Marketing team. There, I applied the skills I developed throughout my time in the BDC program and learned new skills as well. I also gained a better understanding of the pharmaceutical industry at large, and all the moving parts that come together to launch a new biomedical product into the public market. John Burrows, my mentor who I met through the BDC program, generously shared his time and wise advice with me during this period.

Although I enjoyed my role in marketing and working in the setting of a large pharmaceutical company, I wanted to expose myself to a different role and the start-up environment for my next internship. My mentor and MBDC supervisor, Dr. John Whitney, graciously connected me with Dr. Seemay Chou, CEO and Co-Founder of Arcadia Science, a Berkeley-based biotech start-up that performs cutting edge research in emerging (non-traditional) organisms, while also challenging the way science is conducted, published, and funded. I was fortunate enough to complete the first half of my MBDC internship placement at Arcadia. There, I worked on the translation team, translating findings from the lab to potential products for various markets. I was incredibly supported at Arcadia and thoroughly enjoyed my role.

As for the second half of my MBDC internship, I was selected to join Sanofi's highly competitive rotational development program. There, I worked on segmenting hospitals in the US to prepare for the launch of Sanofi's newest product. I also collaborated with the other interns to propose a strategy for increasing vaccination rates in the US post pandemic while also increasing market share for Sanofi's products.

Afterwards, I was able to join the program on a full-time basis and I started my first rotation this February, as a Pediatric Vaccine Specialist. In my current role, I am responsible for driving business in the greater Berkeley area and increasing brand awareness and market share through sales. After this, I will be returning to Sanofi's headquarters in New Jersey to take on a role in marketing for my second rotation. My third and final rotation is to be determined, but I hope I will have the chance to help launch a product internationally on a global team.

"Through the BDC and MBDC programs, I was able to make meaningful connections and find incredible mentors."

Through the BDC and MBDC programs, I was able to make meaningful connections and find incredible mentors who provided me with a tremendous amount of support, leading me to arrive at the point in my career I find myself at today. As such, I am deeply grateful to the BDC/MBDC program as well as to all the amazing people/mentors I was able to meet along the way!

Nathan Bullen

An ADP-ribosyltransferase toxin kills bacterial cells by modifying structured non-coding RNAs

It is said that things don't often go to plan. In graduate school, I have learned that this is the rule rather than the exception. My research primarily revolves around bacterial protein toxins and their mechanism of inducing cell death. Recently, we published an article in Molecular Cell that describes our discovery and characterization of an RNA-targeting ADP-ribosyltransferase (ART) toxin from Pseudomonas aeruginosa called RhsP2. While ARTs are a well-studied enzyme class found across various organisms, none had been demonstrated to modify RNA until now. This discovery is particularly exciting as it opens new avenues for exploring the involvement of these enzymes in both prokaryotic and eukaryotic RNA biology. Although exciting, this discovery only came about as a consequence of my original plans going awry.

During my first year of graduate school, I focused on studying an entirely different toxin . We possessed compelling evidence suggesting that this toxin functioned as a periplasmic protease. To ascertain its activity against the cell wall, we sent purified enzyme samples to our collaborators. However, they promptly informed us that another research group had submitted the exact same protein for analysis weeks before, and that this group was in the process of completing their reviews. Unfortunately, this meant our project, which I had dedicated a year to, hit a dead end. Though this was discouraging, it wasn't all bad news; the other group graciously included our data in their manuscript. Moreover, this setback forced me to explore alternative ideas, ultimately leading me to work on RhsP2. From this experience I learned that while research rarely proceeds as planned, this unpredictability is important and can lead to even greater discoveries.

2022 Graduate Program Impact Award Winners

Nathan Bullen
PhD Candidate
Supervisor:
Dr. John Whitney

Mike D'Agostino
PhD Candidate
Supervisor:
Dr. Matthew Miller

Evan Shepherdson
PhD Candidate
Supervisor:
Dr. Marie Elliot

Mike D'Agostino

Respiratory mucosal delivery of next-generation COVID-19 vaccine provides robust protection against both ancestral and variant strains of SARS-CoV-2

The COVID-19 pandemic propelled experimental vaccine platforms like mRNA and adenovirus-vectored vaccines into the spotlight after years of development. As I transitioned from my MSc in Dr. Zhou Xing's lab (expert on respiratory mucosal adenovirus-vectored vaccines) to a PhD in Dr. Matthew Miller's lab (expert on respiratory viruses), I was fortunate enough to have some background knowledge in both fields. When CIHR emergency funding was granted to Drs. Xing, Miller, Smaill, and Lichty, I was chosen as a co-lead for the preclinical development alongside my close friend Dr. Sam Afkhami.

Due to the accelerated timeline necessitated by the pandemic, we had the freedom to purchase whatever resources required, a hugely supportive team, but we also only had one shot per experiment. After a year of fine-tuning, our experiments transformed into a well-oiled machine. For one of our last experiments we attempted to showcase our vaccine's broad reactivity to coronavirus antigens. These mouse sacrifice days were demanding (the most we worked was 36/42 hours over two days). As we were wrapping up for the day (17 hours in), we placed our precious samples on ice carefully nestled within a Styrofoam cooler. As we readied ourselves to transport the plate to the flow cytometer, the Styrofoam snapped under the weight of its contents dumping our samples on the floor right before our planned run. Fortunately, most of those readouts were supplementary, but the panic that engulfed us in that moment was indescribable, reminding us that you can't always prepare for every eventuality.

Evan Shepherdson

Cryptic specialized metabolites drive Streptomyces exploration and provide a competitive advantage during growth with other microbes

As the prevalence of multi-drug resistant infections is on the rise, there is increased demand for the discovery of new antibiotics. The bacteria Streptomyces are amazing sources of natural products that supply us with over two-thirds of the antibiotics in use today, and it is estimated that up to 90% of their potential products remain undiscovered. A major challenge to tapping into these potentially novel therapeutics is that the genes responsible for their synthesis are not active under standard laboratory conditions where they are typically studied. There is a rich history of antibiotic production being stimulated when Streptomyces transition between different stages of their sporulating life cycle, suggesting a strong link between metabolism and bacterial growth and development.

In 2017, the Elliot lab discovered a new mode of growth in Streptomyces where they exit from their normal sporulating life cycle entirely and begin growing across solid surfaces at rates much faster than we've seen before. In my work continuing this project, I made adjustments to our stimulating conditions that promoted even faster expansion of Streptomyces colonies. Excitingly, we saw that growth under these new conditions stimulated the production of multiple metabolites with antibiotic activity, including the antibiotic chloramphenicol and an iron-binding siderophore. While these molecules have previously been characterized, we are hoping to apply the same conditions to different Streptomyces species to similarly stimulate the production of new antibiotics. This work was published in Proceedings of the National Academy of Sciences.

George Kluck, PhD

Apolipoprotein A1 protects against necrotic core development in atherosclerotic plaques: PDZK1-dependent high-density lipoprotein suppression of necroptosis in macrophages

Atherosclerosis, a chronic disease characterized by arterial wall plaque buildup, significantly contributes to cardiovascular ailments. Notably, the formation of necrotic cores, enriched with remnants from deceased macrophages, escalates the risk of plaque rupture, leading to potential thrombosis. High-density lipoprotein (HDL), often deemed the "good cholesterol", offers atheroprotective effects on cells within these plaques, partially attributed to the scavenger receptor class B type I (SR-B1) and the adapter protein PDZK1.

Behind the Paper

Our work exploring the nuanced role of HDL in necroptosis and necrotic core formation, sought to illuminate a pathway that could offer a novel therapeutic target for atherosclerosis. However, the journey towards this discovery was not without challenges. Upon the initial manuscript submission, the research team was met with a significant challenge from one of the reviewers. A request for a more detailed mechanistic pathway of the processes involved was put forth. The nature of this request implied the undertaking of a series of intricate and time-consuming experiments. Undeterred, the team viewed this as an opportunity rather than an obstacle. They embarked on the demanding task of expanding their experimental approach, guided by a commitment to scientific rigor and accuracy. Each day in the lab was a step towards fulfilling the request, and every setback, a chance to learn and refine their methodology. After weeks of concerted effort, the team successfully incorporated the additional data, effectively addressing the reviewer's request. The final manuscript, now more comprehensive, was not only a representation of the team's dedication but also a valuable contribution to the understanding of atherosclerosis. Their journey, challenging yet rewarding, underscores the essence of scientific research—perseverance in the face of challenges and the continuous pursuit of knowledge. Despite the hurdles encountered, the team's commitment to their research culminated in valuable insights that could guide the future treatment of atherosclerosis.

Zijie Zhang, PhD

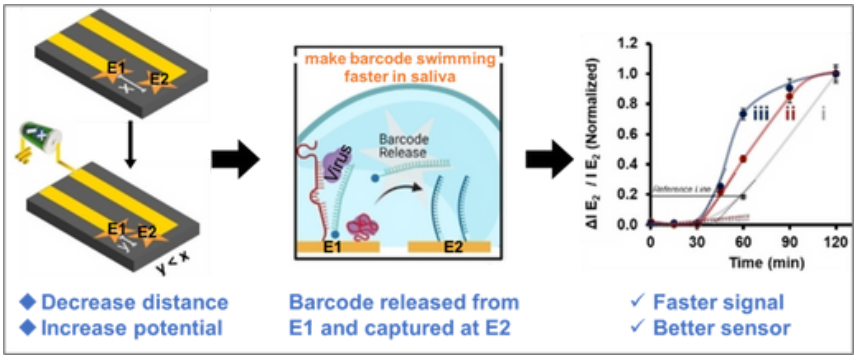
A DNA Barcode-Based Aptosensor Enables Rapid Testing of Porcine Epidemic Diarrhea Viruses Saliva Using Electrochemical Readout

Detecting viruses rapidly is crucial in preventing the spread of infectious diseases. Unfortunately, most virus tests conducted in centralized labs take 2-4 days to yield results. This prompted us to develop a more efficient sensor for faster virus detection.

Imagine this (see the cartoon below): we created a new electrochemical chip with not one, but two electrodes—E1 and E2. These electrodes surpassed the traditional single-electrode design in terms of accuracy and sensitivity. When the sneaky viruses appear, they bind to E1 (thanks to aptamers), triggering the release of the barcode. The barcode then dives into the solution, swims along, and finally gets captured at E2, causing a signal change that allows us to detect the viruses.

Now, here's the funny part. While our sensor worked swimmingly in a watery solution, it experienced significant signal slowdown when tested with saliva. It appears the barcode was getting stuck in the sticky saliva mess. However, we refused to be discouraged and devised two solutions: First, we increased the positive potential on the electrodes to accelerate the barcode's swimming speed, given its negative charge; Second, we brought the two electrodes closer together.

Guess what? Our plan worked! Detection time decreased from 120 minutes to 60 minutes, all while maintaining a high level of sensitivity. So exciting!



2022 Postdoctoral Impact Award Winners

Jose Bozelli
Postdoctoral Fellow
Supervisor:
Dr. Richard Epand

George Kluck
Postdoctoral Fellow
Supervisor:
Dr. Bernardo Trigatti

Zijie Zhang
Postdoctoral Fellow
Supervisor:
Dr. Yingfu Li

2022 Undergraduate Awards

BIOCHEMISTRY PROGRAM

The Cynthia and Ruth Gould Academic Grant
Angelina Lam

The CFUW - Hamilton Scholarship
Angelina Lam

The Dr. Harry Lyman Hooker Scholarships
Katherine Dykema
Christian Jacobsen-Perez
Misaal Mehboob
Julia Perfetto
Mathias Wang

The Dr. Sina Sazgar Memorial Scholarship
Ali Mohammad

The Dubeck Biochemistry Award
Misaal Mehboob
Jonathan Monteiro

The Edwin Marwin Dalley Memorial Scholarships
Yaser Al Moayad
Kevin Cao

The Ernest Robert MacKenzie Kay Scholarships
Fiorelle Aguilar Lopez
Jenny Doan
Mira Ishak
Misaal Mehboob
Daniel Mobilio
Jonathan Monteiro
Yossef Nafea
Angela Schmidt
Abithiny Selvarajah

The Hamilton Industrial Scholarships
Breanna Fuca

The John D. McNie Achievement Award of Excellence
Maryam Othman

The J. L. W. Gill Prizes
Katherine Dykema
Christian Jacobsen-Perez
Misaal Mehboob
Julia Perfetto

The Josephine Staples Brien Scholarship
Angela Schmidt

The McMaster Undergraduate Scholarships
Yoohyun Park

The Morris and Sarah Rosenhead Memorial Prize
Rishitha Garapati

The Provost's Honour Roll Medal
Yaser Al Moayad
Andrei Bogza
Noah Brittain
Kevin Cao
Xurui Chen
Ethan Chung
Emily D'Agostini
Matthew Davidson
Katherine Dykema
Michal Feigis
Breanna Fuca
Yasamin Ghasemi
Darleen Ha
Yun-Shin Huang
Szu-Wei Hwang
Christian Jacobsen-Perez
Deepikaa Jeevananthan
Sareen Karshafian
Angelina Lam
Samantha Lew
Alexa Mansour
Alyssa Mark
Misaal Mehboob
Andrew Mitchell
Ali Mohammad
Julia Perfetto
Christopher Shenouda
Simran Shergill
Ali Siddiqui
Yusra Tariq
Serena Uppal
Mathias Wang
Stephanie Wang
Karena Wong
Nathan Yuen
Chi Zhang

The Ross Hume Hall Memorial Scholarship
Jenny Doan

The Sam Lawrence Prize
Marius Vinzon Ygonia

The Science Alumni Scholarships
Zaim Khan

The Somerville Scholarships
Deepikaa Jeevananthan
Chi Zhang

The University Senate Scholarships
Parnia Abolghasemi
Justin Alvarado
Andrei Bogza
Noah Brittain
Cynthia Chung
Sufiyan Dalvi
Michal Feigis
Yasamin Ghasemi
Darleen Ha
Yun-Shin Huang
Szu-Wei Hwang
Nada Ibrahim
Bryan Lan
Alexa Mansour
Madison McKellar
Andrew Mitchell
Hayley Nault
Maryam Othman
Angela Schmidt
Ali Siddiqui

The Yates Scholarships
Ethan Chung
Emily D'Agostini
Matthew Davidson
Karena Wong

BIOMEDICAL DISCOVERY AND COMMERCIALIZATION PROGRAM

BDC Summer Training Scholarship
Ron Galaev

2022 Graduate Awards

BIOCHEMISTRY GRADUATE PROGRAM

CIHR CGSD
Tony Chen
Daniel Marko

CIHR CGSM
Arshpreet Bhatwa
Matthew Melki
Allyson Moore
Megan Tu
Yona Tugg
Allanah Wilson

Fred and Helen Knight Enrichment Award
Emily Bordeleau
Mike D'Agostino
Tim Klein
Matthew Surette
Haley Zubyk

GSA Travel Scholarship
Agata Kieliszek
Kate Miyasaki

IIIDR Award of Excellence
Michael D'Agostino
Ikram Qaderi

Impact Award
Basma Ahmed
Amany Al-Anany
Rabia Fatima
Tim Klein
Hannah Stacey

Karl Freeman Award
Pradhariny Prabagaran (MSc, 1st place)
Dirk Grebenc (MSc, 2nd place)
Marie-Ange Massicotte (PhD, 1st place)
Agata Kielszek (PhD, 2nd place)

MD/PhD CHIR Award
Jake Colautti

Michael Kamin Hart Memorial Scholarship
Amogelang Raphenya
Ali Zhang

Michael Kiley Scholarship in Antibiotic Resistance
Matthew Surette

NSERC CGSD
Nathan Roberge
Erica Yeo

NSERC CGSM
Jake Brill
Ikram Qaderi
Nazli Robin
Prakhar Shah

NSERC PGSD
Dana Sowa

Ontario Graduate Fellowship
Christine Cerson
Monica Warner

Ontario Graduate Scholarship
Andrea Alexei
Victoria Coles
Lena Darwish
Dirk Hackenberger
Sahil Karnani
Agata Kieliszek
Kristi Lichimo
Art Marzok
Kate Miyasaki...
Shariful Sakib
Yujin Suk
Vithushan Surendran
Dominique Tertigas
Veronica Tran
Tess Wilson

Physician Services Incorporated
Ali Zhang

The BBS Graduate Seminar Series Excellence Award
Ali Zhang

The Thomas Neilson Scholarship
Connor Nurmi

Yates Scholarship
Agata Kieliszek

MBDC PROGRAM

Ontario Graduate Scholarship
Evan Hun

BDC Graduate Scholarship
Brenda Nkonge

BDC Entry Scholarship
Lovette Chan
Tyler Cusimano
Ron Galaev
Hamna Imtiaz
Brenda Nkonge
Jenil Patel
Dhruvrajsinh Rathod
Jarsita Singh
Jing Bo Wang
Angela Yang

Director's Hustle Awards
Dhruv Rathod
Evan Squire
Ryan Dsouza
Zeel Patel

Monica Warner
2022 Thomas Neilson Award Winner
Outstanding Performance Candidacy Exam
Supervisor: Dr. Sara Andres

2022 Graduands

MASTER OF SCIENCE

8 April
Jordyn Perry
Brian Coombes
Investigating Adaptive Regulatory Evolution of Intracellular Arginine Metabolism in Salmonella Typhimurium

14 April
Andriana Tetenych
Sara Andres
Molecular Function of a Translesion DNA Synthesis Complex

12 May
Arnav Kaul
Jake Magolan
The Synthesis and Antimicrobial Evaluation of Novel Sideromycins

24 May
Natasha Savic
Ray Truant
Developing a Clinically Relevant Isogenic Cell Line of Huntington's Disease

26 May
Janice Tai
Alex Hynes
Conditioning New Behaviours in Salmonella Using Physical and Non-physical Landscapes

20 June
Anita Singh
Jon Schertzer
Microbiota-derived D-Lactate Alters Macrophage Inflammation

23 June
Sara Pishyar
Tobias Berg
Adaptation of a Clinical Multiparameter Flow Cytometry for the Enrichment of Measurable Residual Disease Cells in Acute Myeloid Leukemia

27 June
Pradhariny Prabagaran
Tobias Berg
Friends or Foes? Acute Myeloid Leukemia and the Bone Marrow Microenvironment

15 July
Victor Blaga
Nathan Magarvey
Comprehensive Mapping of Bacterial Metabolism Guides Inquiry Into Specialized Metabolites

28 July
Amirahmad Azhieh
John Whitney
Divergent Immunity Proteins Protect Against a Type VI Secretion System Effector Family Found in the Human Gut Microbiome

19 August
Anna-Lise Bissola
Ishac Nazy
Epitope-Targetted Strategies for Inhibiting Pathogenic Immune Complex Formation in Heparin-Induced Thrombocytopenia

25 August
Charisa Henly
Mick Bhatia
Characterization of the Bone Marrow Niche in Acute Myeloid Leukemia Patients

2 September
Arman Edalatmand
Andrew McArthur
Contextualizing Antimicrobial Resistance Determinants Using Deep-Learning Language Models

7 September
Rebecca Barnshaw
Lori Burrows
Single Point Mutations in Type IV Pilus Fiber Proteins Restore Twitching in Delta-pilU Mutants

9 September
Darryl Chan
Jon Schertzer
Inhibitors of Bruton's Tyrosine Kinase Alter NF-kB and NLRP3 Inflammation in Macrophages

2 December
Mercy Daka
Ishac Nazy
Differentiating Between Heparin-Induced Thrombocytopenia and Vaccine-Induced Thrombotic Thrombocytopenia Antibody Epitopes on PF4

13 December
Kartik Sachar
John Whitney
Role of an Accessory Protein Family in Type VI Secretion System

MASTER OF BIOMEDICAL DISCOVERY AND COMMERCIALIZATION

Preston Chan
Terran Comer
Sydney Da Cunha
Kevin Dai
Archan Dave
Annamaria Dobrin
Osayande Ehanah Jr.
Jose Esguerra
Angelica Giansante
Kristyn Guglielmin
Yang Hu
Hiba Imran
Lee Jiang
Xingjian (Jim) Jiang
Norrisah Khan
Alyshia Laidlaw
Yuxin (Monica) Lin
Hiba Minhaj
Mohamed Mohammad
Sigaan Nagalingam
Tung Nguyen
Hadeeqa Noman
Leander Ovid
Nitai Pandith
Meshwa Pandya
Dhiren Pranami
Ethan Raizman
Abhira Raveendran
Victoria Schofield-Zioba
Aarsh Shah
Prabakar Shan
Gazikamrun Sultanaamin
Jasmine Yang
Jia Zhong

DOCTORAL

10 January
Nader El-Sayes
Karen Mossman
Improving Outcomes for Cancer Immunotherapy

21 April
Kristina Klobucar
Eric Brown
Genetic and Chemical Targeting of the Gram-negative Outer Membrane to Potentiate Large-Scaffold Antibiotic

26 April
Yeun Yin (Madeline) Tong
Eric Brown
Carbon Source Effects on Bacterial Growth and Antibiotic Efficacy

26 April
Ava Keyvani Chahi
Kristine Hope
Characterizing the Role of the Transcription Factor PLAG1 in Human Hematopoietic Stem and Progenitor Cells

17 June
Chirayu Chokshi
Sheila Singh
Functional Genetic Screening and Therapeutic Targeting of Recurrent Glioblastoma

19 July
Lindsey Carfrae
Eric Brown
Exploiting Bacterial Nutrient Stress in the Treatment of Antibiotic-Resistant Pathogens

21 July
Tim Klein
John Whitney
Mechanistic Insights into Type VIIb Secretion System Effector Export and Neutralization

22 August
Caitlyn Rotondo
Gerry Wright
The Efficacy of Aspergillomarasmine A to Overcome β-lactam Antibiotic Resistance

25 August
Emily Bordeleau
Gerry Wright
Genomic Enzymology Study of the Aminoglycoside Antibiotic Acetyltransferases

7 September
Nadeem Murtaza
Karun Singh
The Shared Signaling Pathways of Autism-risk Genes and their Disruption by Genetic Variants

15 September
Chad Brown
Karun Singh
A Human In Vitro Investigation of the Autism Spectrum Disorder Risk Gene SCN2A

15 September
Shu Hua Xu
Kristin Hope
Characterizing the Role of the Transcription Factor PLAG2 in the Initiation of Preleukemic State

16 September
Deanna Porras
Mick Bhatia
Deriving Induced Pluripotent Stem Cells from Acute Myeloid Leukemia Patients Towards Applications of Autologous Therapies and Disease Modeling

19 September
Shahrokh Shekarriz
Mike Surette
Characterizing the Human Intestinal Microbiota in Healthy Individuals and Patients with Ulcerative Colitis using Culture-Dependent and Independent Approaches

14 December
Kim Pho
Lesley MacNeil
Uncovering Mechanisms Behind Microbiota-induced Neuroprotection in C. elegans Models of Alzheimer's Disease

BBSS

The 2022-2023 year brought back many exciting events in person that had previously been placed on hold due to the pandemic. The Biochemistry and Biomedical Sciences (BBS) students engaged in both academic and social activities run by a passionate team of executives; the Biochemistry and Biomedical Sciences Society (BBSS).

For the first time since 2019, the BBSS and Biomedical Discovery and Commercialization Society (BDCS) held a formal in January. Winter Wonderlab was highly successful, and the BBSS can't wait to hold another one this year. This formal was an excellent opportunity for BBS and BDC students to connect. To promote connections within the BBS department, the Broteins mentorship program helped transition new second year biochemistry students. They were partnered with an upper year to direct them to resources and answer any questions they had. The Broteins held test review sessions and along with the social team, a successful games night to introduce the pairs.

"Meet the Profs" and "Life After Level II" were held to provide academic and career support to the BBS students. Forming connections with professors within the department allowed students to learn about research opportunities and provided guidance as to the different paths through academia. Outside of academic endeavors, social events were held to increase the sense of community within the BBS department. Bonfires, pottery painting, bowling, and Halloween pumpkin painting all helped to increase interaction between students. Finally, our fundraising team was able to raise over $300 for the Native Women's Centre by selling Krispy Kreme doughnuts!

The BBSS is ecstatic to introduce our new team of executives, who are already planning for another successful year of events. We can't wait to introduce new initiatives to connect to incoming biochemistry second years, increase bonding between BBS students and professors, and provide students the opportunity to share their experiences conducting research at McMaster. Many familiar events will be held, but we also can't wait to share the new ideas we have been working on!

Molly Heath and Autumn Arnold
Co-Presidents

BBSS Committee Members

Molly Heath- President
Autumn Arnold- President
Erika Apel- VP Social
Rebecca Snow- VP Social
Bailey Sisk- VP External
Giuliano Caltagirone - VP External
Shiyani Balakumar- VP Academics
Jenny Tindall- VP Academics
Noha Loy- Creative Ambassador
Alina Khan- Creative Ambassador
Hareet Sidhu- VP Internal
Michelle Song- VP Finance
Vian Tran- VP Broteins
Emily D'Agostini- VP Broteins
Anika Ranadive- VP Fundraising
Cassady Smith- VP Fundraising

BDCS

BDCS Committee Members
bdcsociety@gmail.com

Matthew Liu, President
Hareet Sidhu, VP Academic
Yatharth Dave, VP Administration
Sakina Hussain, VP Marketing & Communications
Michelle Li, VP Finance
Aiman Dhiloon, VP External Affairs
Samantha Dacalos, VP Mentorship
Ishika Vaid, VP Social

Matthew Liu
BDCS President

I'm infinitely grateful for the BDC program and how it shaped my first in-person school year. The program satisfies my interest in science and business and helped me develop a vision for future career opportunities. The program was designed by passionate faculty members, proven by the carefully curated course content and devotion to student success. Also, the program provided opportunities to listen and network with industry professionals and sharpen my collaboration and communication skills through the BDC Engage project.

Along with faculty support, the BDCS has created a community for students within the tight-knit program. Social events made a return, such as the annual BBSS & BDCS formal and the new VP Mentorship created events to guide the new cohort. The new BDCS team is excited to innovate upon the success of this year through new initiatives for the next school year. In the meantime, best wishes to the class of 2023 and the new chapter that awaits, and a warm welcome to the class of 2025!

BBSGSA

BBSGSA Committee Members
bbsgsa@mcmaster.ca

Luke Yaeger
Megan Tu
Monica Warner
Serena Yang
Yi Peng
Alisha Anand
Jake Colautti
Dominique Tertigas
Maya George
Mei Nee Chiu
Nazli Robin
Prakhar Shah
Veronica Tran

Looking back on the year of events for the BBSGSA, there are a number of bright spots to highlight. We saw the return of the annual Halloween costume competition (see photos page 33). Despite an absence from the perennial powerhouse Li Lab, the 2022 competition remained fierce. The Burrows lab supplied enough vitamins and minerals for the rest of the Department, while the Tetris-themed MacNeil lab had a stacked team but was blocked from the title as they couldn't fit their pieces on the podium. Ultimately, the Wright Lab turned in a strong effort with an ode to Shrek and won the competition. Like an onion, their performance had layers. More recently, we've begun hosting monthly coffee houses again. The coffee house (and accompanying free donuts) is well received and full of faces new and old. We're looking forward to growing these in the coming year. In May, perhaps the highlight of the year, was our patio social at The Phoenix. The tables filled up fast and thanks to the tasty array of free food, the students' stomachs filled up soon after. We're eyeing another event in the fall to welcome the new cohort of students. As we plan ahead for the next year, we hope to our favourite events return. From the pumpkin carving and gingerbread house competitions to the summer barbeque and Biochem Olympics, we're excited to bring more spirit to the department.

Finally, it's with great honour that I am resigning from the head of the BBSGSA. It's been a tumultuous last few years, and perhaps not conducive to holding events, I'm proud to have carried the old traditions from before the pandemic through. Moving forward, I'll be passing the reins to Monica Warner, who is ready and excited to keep up our mandate of promoting a fun and well-connected student body.

Luke Yaeger
Chancellor, BBSGSA

Faculty

In Memoriam

Dr. Richard Epand
Professor Emeritus

In July, Biochemistry lost one of it's most beloved and respected faculty members, Professor Emeritus, Dr. Richard Epand. Dr. Epand joined the department in 1974 and continued to work tirelessly up until his passing and with his postdoctoral fellow, Dr. Jose Bozelli, he continued his prolific body of work long past his official retirement. In 2022, he was honoured for his life's work at the Richard Epand Symposium - Molecular Events at the Membrane Interface. The Faculty of Health Sciences is assembling a book capturing the numerous heartfelt comments, anecdotes and condolences shared by his colleagues and friends. Our hearts go out to his wife and long-time research collaborator Raquel and his son. Richard, you will be deeply missed.

Appointments

The department was pleased to welcome **Dr. Hong Han**, appointed at the rank of Assistant Professor on November 1, 2022. You can read more about her in the Faculty Focus section.

Drs. **Jake Magolan** and **Jon Schertzer** were promoted to the rank of Professor effective July 1, 2023.

Dr. **Deb Sloboda** was granted tenure effective July 1, 2022. Congratulations Deb!

Dr. **John Whitney** became Associate Chair and Assistant Dean, Graduate Studies taking over the role from Dr. **Matt Miller** who stepped down to become the Scientific Director of the IIDR.

The department welcomed several new associate faculty members including **Marc Jeschke**, **Marie Pigeyre**, **Leyla Soleymani** and **Samantha Wilson**. You can learn more about their research programs on the BBS website.

Service Milestones

Name	Title	Years of Service
Michelle Biro	Academic Assistant	5
Taylor Gauthier	Academic Advisor	5
Nathan Magarvey	Associate Professor	15
Maya Alam	Research Associate	15
Eric Brown	Professor	25
Gerard Wright	Professor	30
Daniel Yang	Professor	35
Radhey Gupta	Professor	45

Staff

Arrivals and Departures

Emily Taylor returned from maternity leave in July 2023 to her role as Career and Development Relationship Manager (CDRM) in the MBDC program. Thanks goes to **Sheema Yousefzai** who covered Emily during her leave. We wish Sheema well in her future endeavours. **Tracy Stojanovic** who served in the role of Executive Assistant to the Chair, left the department last October to join the Vice President Research (VPR) office at the University. A big thank you goes out to Tracy for her many years of service to the department!

Appointments

Katie Raposo was promoted to the role of Executive Assistant to the Chair. Congratulations Katie! **Stephanie Ward** was hired into the Operations Assistant role vacated by Katie. We are so pleased to welcome Stephanie as a permanent member of the BBS core administrative team!

Photo:
Department Meet & Greet June 2023
Top L to R: Stephanie Ward, Shari McCollin
Bottom L to R: Sheema Yousefzai, Taylor Gauthier, Cait Mullarkey, Michelle Allan

BBS Community Social Events

Welcome Barbeque
September 2022

LAB HALLOWEEN COSTUME COMPETITION

Wright Lab "Shrekking Along"

Coombes Lab "Stranger Things Happen in the Lab"

Sloboda Lab "Cruella and the Gang"

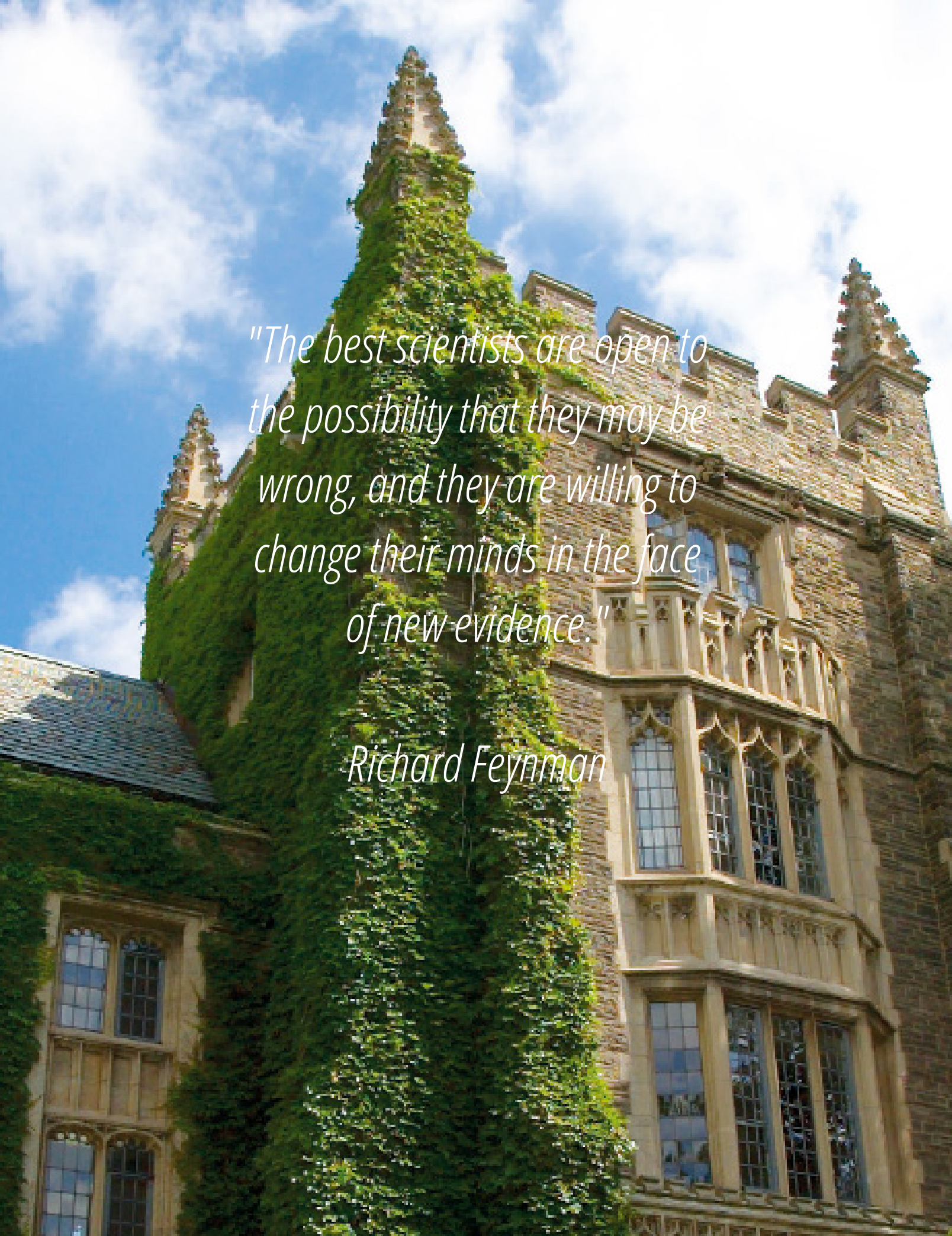
BBS Community Academic Events

AMR Symposium

BBSRS Symposium

BDC Engage

SSP Symposium


"The best scientists are open to the possibility that they may be wrong, and they are willing to change their minds in the face of new evidence."
Richard Feynman