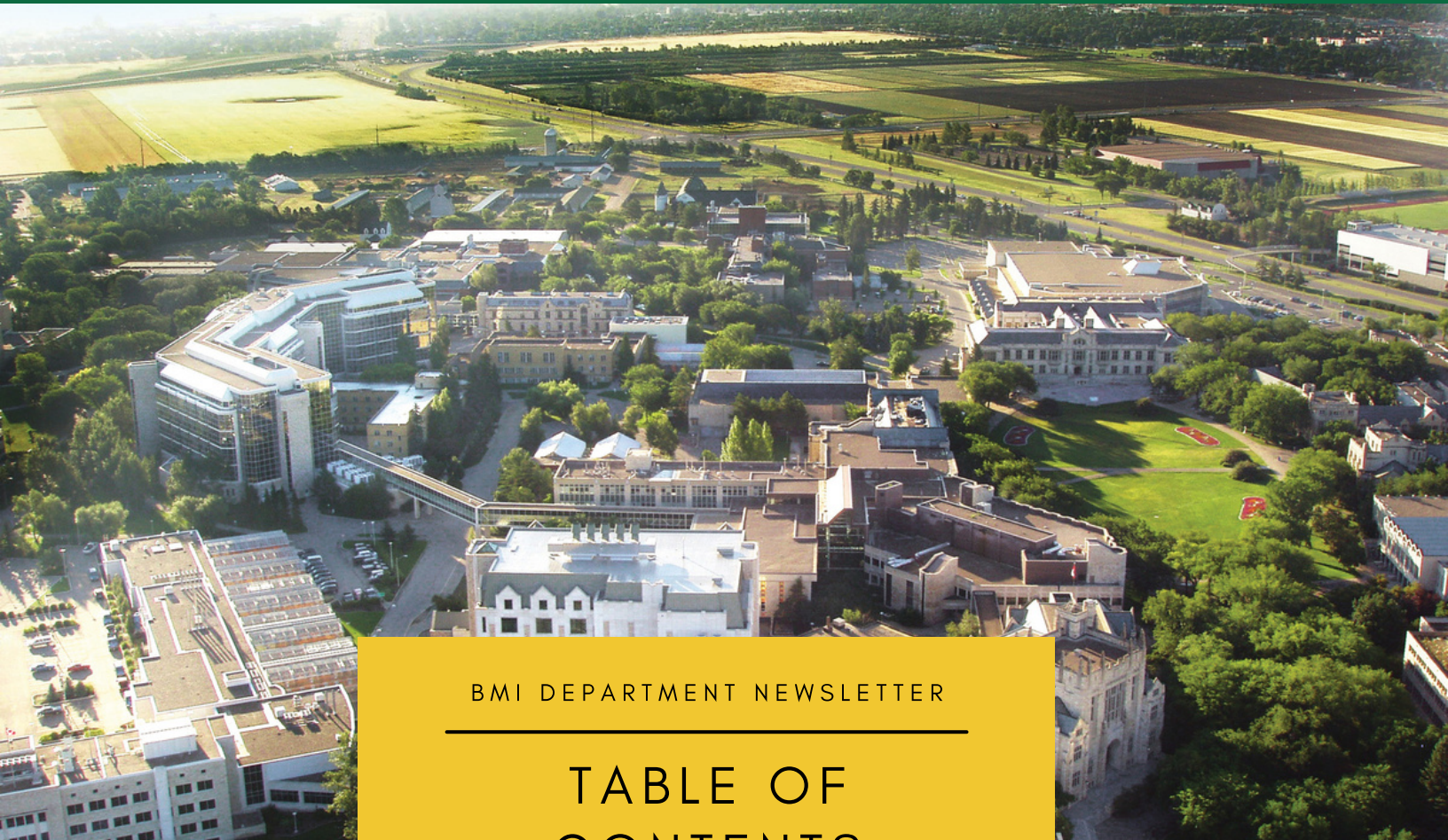


DEPARTMENT OF BIOCHEMISTRY, MICROBIOLOGY &
IMMUNOLOGY

ANNUAL NEWSLETTER

ISSUE 3 • FALL 2021

BE WHAT THE WORLD NEEDS



BMI DEPARTMENT NEWSLETTER

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MESSAGE FROM THE DEPARTMENT HEAD

It is hard to believe that this is our third annual newsletter! We have received a lot of positive feedback on the two previous editions which provides the motivation to keep them coming. These newsletters have helped showcase the activities of our faculty, staff and students to the rest of the university community as well as to our alumni, donors, job applicants, and potential students. This newsletter also reports on a variety of activities, successes, and achievements that individuals associated with the department experienced this past year.

COVID-19 continued to be the big story on campus over the past year, and I am proud of all of our faculty, staff and students for the creativity, innovation and resilience that they have demonstrated. While there were certainly disruptions to research and to how our courses were delivered, all of us in the department would admit that COVID-19 forced us to experiment with how we do things and ask how we might do things differently. We certainly agree with President Peter Stoicheff when he stated in an address to the university community earlier this year that "it will not be business as usual post-pandemic," and that there "will be a new normal." From the perspective of our department, one of the things we discovered is that we can hold research seminars remotely with over 100 people in the "audience" from different parts of the world without crashing the system. In the past, we made it a goal to bring in several outside speakers per year to our seminar series. However, there were significant financial costs associated with doing so, especially when bringing someone from outside Canada, and many of our potential speakers are in high demand and are unable or unwilling to give us two days out of their lives to come to Saskatoon. With a remote option viable, the above restrictions no longer apply and as a

result our seminar series has been forever changed. Another change that will almost certainly happen relates to work arrangements for our staff that could have a significant positive impact on work-life balance. These last 18 months has shown us that staff can do some or most of their work quite effectively from home. While an in-person presence of staff is desirable and necessary to help forge the relationships that make up a healthy, dynamic community, there are obvious benefits in providing staff with flexibility, particularly when we know the work can get done and done well.

September 2021 saw the first undergraduate students enroll in the new direct-entry Bachelor of Sciences in Biomedical Sciences degree program that is a partnership between the Colleges of Arts & Science and Medicine (see article [here](#)). This will be the degree program for students wanting to major in Biochemistry, Microbiology & Immunology. While the major is multidisciplinary in nature, it has been designed so that students wanting a heavier emphasis on either Biochemistry or Microbiology & Immunology can do so through course selection. There are early signs that this new degree program is attracting much student interest as enrollment is strong. The College of Medicine is strongly supportive of this new undergraduate degree program and has made significant investments in it that you will read about elsewhere in this newsletter. These investments include the purchase of new equipment and completion of much-needed renovations to our undergraduate laboratories. We are grateful for the support that the college has provided to ensure that our undergraduate laboratories provide students with modern equipment and facilities in which to pursue their curiosities and passions.



While COVID-19 impacted the research activities of the department, there were still many successes during the past year, some of which are highlighted in this newsletter. Faculty renewal continues to be a key driver for research momentum in the department. In addition to the three faculty that we recruited over the past three years, we are close to finalizing the recruitment of two additional faculty. Importantly, four of the five recruitments conduct research in the area of Host-Pathogen Interactions which is a strategic area for the department. Over the past year, we have also taken active steps to strengthen our relationship with VIDO-Intervac. Three of our faculty are also VIDO scientists, and four other scientists at VIDO are adjunct members of the department who add significant value to our research and academic missions. Discussions between the department and VIDO-Intervac occur on a regular and frequent basis to identify areas of common interests, to capitalize on opportunities that arise, and in general to identify ways to work effectively together.

I will close by quoting Peter Drucker, a well-known management consultant, educator and author, who once stated that "The best way to predict the future is to create it." I am confident that after reading this newsletter, you will agree with me that it has been another very active and successful year for the Department, and that we are creating a future that predictably will be very bright indeed.

SPOTLIGHT ON NEW EMPLOYEES



CARESSA CALDWELL

Caressa joined the department in August 2021 as a Laboratory Coordinator. She graduated with her M.Sc. in Applied Microbiology from the College of Agriculture at USask. Following her degree, she worked as a Research Associate for 11 years for Novozymes BioAg, an agricultural biotech company in Saskatoon. Our undergraduate students will benefit greatly from the large toolbox of experimental techniques and research experience that she brings with her.



ROBYN CLAYPOOL

Robyn joined the team in May 2021 after relocating from Vancouver to Saskatoon. In her role as Clerical Assistant, she is supporting the administrative needs of both the departments of Anatomy, Physiology & Pharmacology, as well as Biochemistry, Microbiology & Immunology. She comes with a strong background in administration, primarily from her work with law firms. She is looking forward to expanding her administrative knowledge in academia and to working with students.

"A GREAT EMPLOYEE IS LIKE A FOUR LEAF CLOVER, HARD TO FIND & LUCKY TO HAVE."

- TAMMY COHEN

BRUNA BONAVIA-FISHER



Bruna was reassigned to be the dedicated Research Facilitator for the Biomedical Sciences departments in January 2021 after serving 12 years with the Office of the Vice-Dean Research (OVDR). Bruna has worked at USask in several units on campus including SSSC, CRC/CFI office, and the International Office. As a Research Facilitator in the CoM, serving clinical and biomedical science faculty, she has been assisting faculty members to develop their research programs and grant applications for the past decade. She also participates in committees at the university level like the AREB and USASK tri-council internal review and forums. She brings a wealth of knowledge on the national and university research landscape. Bruna is very excited to focus her service to faculty of the Biomedical Sciences departments.

YEARS OF SERVICE RECOGNITION

A number of our team members reached important milestones in their careers with the University. We would like to extend our congratulations and our thank you for their continued service to the department.

Bill Roesler • 31 years
Troy Harkness • 20 years
Joyce Wilson • 15 years
Yuliang Wu • 10 years
Mirek Cygler • 10 years

ALUMNI SUCCESS

Sayem Miah, who completed his PhD studies under Erique Lukong, was recently recruited into a tenure-track assistant professor position at UAMS Winthrop P. Rockefeller Cancer Institute in Little Rock, Arkansas. Sayem and Erique's recent publication in *Sciences Advances* was key to his appointment. Congratulations Sayem!



SAYEM MIAH



ERIQUE LUKONG



BILL ROESLER



TROY HARKNESS



JOYCE WILSON



YULIANG WU



MIREK CYGLER



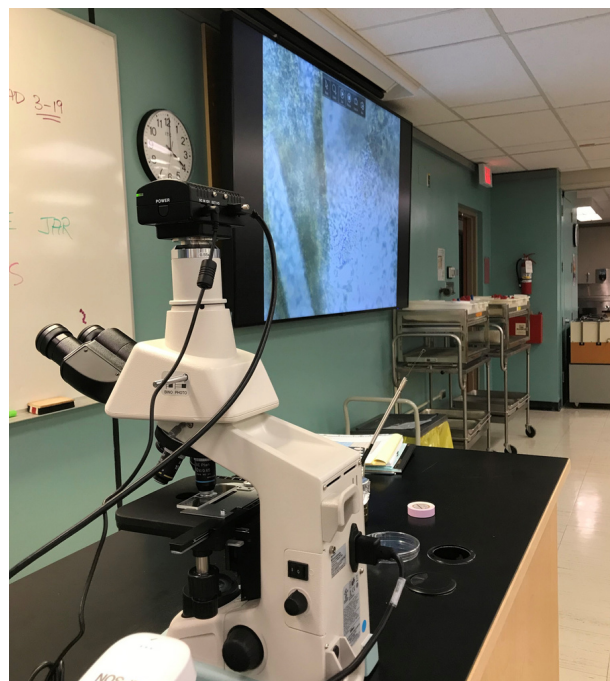


LAB RENOVATIONS & NEW MICROSCOPES SUPPORT STUDENT LEARNING

Learners in the College of Medicine will be able to see small and learn large thanks to the purchase of new microscopes by the two Biomedical Sciences departments. These purchases were made possible by a generous \$42,309 donation from the Laura McClelland fund, along with significant support from the College of Medicine. The new lab equipment enables students to produce sharable, enhanced images of their lab results and experiments. The microscopes have a larger field of focus, improved ergonomics and lower energy requirements, and will be used by up to 300 biomedical students per term.



In addition to new microscopes, the undergraduate student labs underwent some major renovations and upgrades during the past year, just in time for the start of our new Biomedical Sciences programs. These renovations were much needed, since the labs were 50 years old and had not undergone any significant upgrades until now. Four different lab spaces in the B-wing were the target of these improvements, and included new 98" monitors, new computers and sound systems, document cameras, WiFi hubs to improve connectivity issues, and replacement of vintage swing-out stools with modern rolling lab chairs. These substantive renovations were made possible due to the cooperation and financial contributions of the College of Medicine, the Department of Anatomy, Physiology and Pharmacology, and our department. Students in all of the Biomedical Sciences programs will greatly benefit from the modernization of these labs.



BIOMEDICAL SCIENCES EDI COMMITTEE

The Departments of Biochemistry, Microbiology, and Immunology (BMI) and Anatomy, Physiology, and Pharmacology (APP) are committed to the principles of equity, diversity, and inclusion (EDI) in all areas of our work, including faculty recruitment, our day-to-day work environment, student and trainee outreach, and Indigenous inclusion. We have established a committee that is actively working to establish a culture in our departments that reflects the Canadian population and welcomes the uniqueness of individuals. We believe that by fostering this culture, our research and teaching missions will be more successful and reflect the values of our faculty, staff, and students. The joint BMI and APP EDI committee is composed of **Joyce Wilson** (Co-Chair), **Thomas Fisher** (Co-Chair), **Kerry Lavender**, **Eriq Lukong**, **Jenny-Lee Thomassin**, **Juan Ianowski**, **Julia Boughner**,

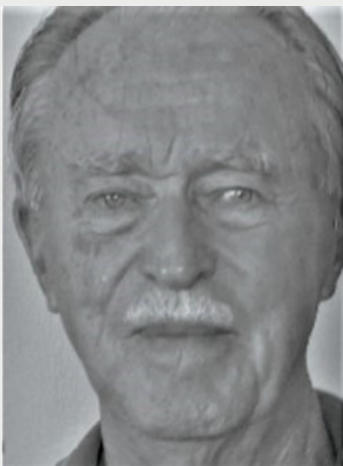
Kyle Anderson, **Kevin Chuang**, **Veronica Campanucci**, and **John Howland**, with help from **Erin Prosser-Loose**. In the 2020-21 academic year, the committee developed new processes for faculty hiring that addresses EDI, including the submission of an EDI statement by the applicants and the development of candidate assessment rubrics designed to reduce unconscious bias. The new rubrics were used for two recent faculty searches conducted by BMI. The committee was also successful in launching a funding program within the OVDR to cover family leave for graduate students or post-doctoral fellows who are not covered by other programs. For the coming 2021-22 academic year, the committee will focus on enhancing knowledge and principles of EDI and improving EDI issues that affect students and trainees.



IN REMEMBRANCE

Professor Emeritus James (Jim) Wood

January 25, 1930 - September 16, 2021



Dr. Jim Wood, a long-time faculty member in the former Biochemistry department, recently passed away at the age of 91. Jim was recruited to the University in 1968 as head of the department, a position he held for 19 years. Under his leadership, the department experienced significant growth and expansion particularly in its research profile. Jim was recognized internationally for his research in neurochemistry. Those of us who knew him appreciated his sense of humor and his story-telling. Jim retired from the University in 1997 which gave him more time to work on his golf game and other activities. We extend our condolences to his three sons Roderick, Rob, and John and their families. The full obituary can be read [here](#).

RESEARCH SUCCESS

OLEG DMITRIEV & SCOT LEARY

Congratulations to **Oleg Dmitriev** and **Scot Leary**, who received a CIHR project grant for their project titled, "Molecular mechanism of copper and platinum drug transport in human cells." Oleg is Principal Investigator on the project, with Scot as co-applicant.

Oleg was also corresponding author on a paper published in the *Biophysical Journal* titled, "At sixes and sevens; a cryptic domain in the metal binding chain of the human copper transporter ATP7A." This paper was featured in the *New and Notable* section of the journal issue in which it appeared. See [here](#).



OLEG DMITRIEV



SCOT LEARY

ANIL KUMAR



Join us in congratulating our most recent faculty recruit, **Anil Kumar**, on a very successful first year at USask! Anil was co-applicant (along with Dr.

Tom Hobman (PI), U of A) on a one-year CIHR Emerging COVID-19 Research Gaps and Priorities - Variants grant titled, "Comparative analyses of how SARS-CoV-2 variants of concern affect the host response in cells of the respiratory tract." Furthermore, Anil's application to the Saskatchewan Health Research Foundation Biomedical Establishment grant competition was ranked No. 1 by the panel, for his project, "Enterovirus-D68 host interactions and Acute Flaccid Myelitis." And, if that wasn't enough, he also received a \$100K bridging grant from the CIHR for his project titled, "Functional analyses of pathogenicity determinants of emerging SARS-Coronavirus-2 variants." Anil was also interviewed by the College of Medicine communications team, who published an article on his work. To read the full article, see [here](#).

JOYCE WILSON

Joyce Wilson received \$305K in funding from CoVRR-Net (Coronavirus Variants Rapid Response Network) for her project titled "Generation and Rapid Evaluation of Current and Future SARS-CoV-2 Variants of Concern." Joyce was Principal Investigator on this project, with Darryl Falzarano (VIDO) as co-applicant, and our own, **Kerry Lavender**, as collaborator. Joyce also received a nomination for the 2021 YWCA Women of Distinction Awards. Congratulations Joyce!



JENNY-LEE THOMASSIN

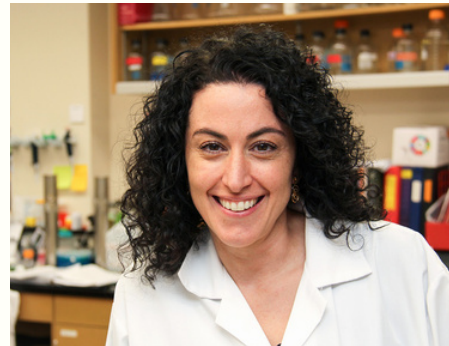
In May 2020, Jenny-Lee began her appointment at USask as Assistant Professor. In her short time here, she has secured an NSERC 5-year Discovery grant for her research on "Identification and characterization of the type II secretion system in carbapenemase-producing *Klebsiella pneumoniae* ST258." In addition, she received a Saskatchewan Health Research Foundation Biomedical Establishment grant, and was ranked No. 5 in the competition. This proposed work is focused on identifying novel cargo proteins exported by disease-causing *Escherichia coli* and understanding how these proteins contribute to the infectious process. Congratulations on a very successful first year!



"Research is formalized curiosity. It is poking and prying with a purpose"
- Zora Neale Hurston

LINDA CHELICO

Linda was co-corresponding author, along with Frank Kirchhoff from Ulm University, on a significant article published in the *Journal*



of Virology. Co-authors were Linda's post-doctoral fellow Amit Gaba, and former M.Sc. student Tyson Follack. The article, "Adaptation of HIV-2 Vifs to human APOBEC3 proteins," was selected for a "spotlight" by the journal. See below for a detailed description of the research and its importance.

Human Immunodeficiency Virus Type 2 (HIV-2) is a zoonotic infection that resulted from transmission of Simian Immunodeficiency Virus (SIV) from the sooty mangabey monkey into humans. Only two of the nine subtypes of HIV-2 that originated from independent zoonotic transmissions of SIVsmm infecting sooty mangabeys have spread significantly in human populations. This research investigated how SIV adapted to humans, enabling the spread of HIV-2. A key protein/protein interface in immunodeficiency virus zoonotic transmissions is the viral Vif protein and the human APOBEC3 enzymes. Vif induces degradation of APOBEC3 enzymes, which would otherwise induce mutagenesis and inactivation of the SIV or HIV genomes. Their work went on to show that the Vif proteins of epidemic HIV-2 strains gained significant activity against human APOBEC3 to efficiently increase viral infectivity. The results suggest that adaptation of Vif function to human APOBEC3 proteins was required for epidemic spread of HIV-2.

YULIANG WU

Yuliang Wu and John DeCoteau (Pathology and Laboratory Medicine) received a SHRF Top Collaborative Innovation Development Grant: Biomedical, for their work to identify drugs targeting an RNA helicase (enzyme) named DDX41 whose mutations cause leukemia diseases. Congratulations Yuliang and team!





NEW BLOG: CURE EXPERIENTIAL LEARNING COURSE

Guess what! There's a new blog in town! ["From Student to Researcher in One Term!"](#)

Over the summer, Harold, Sheryl and Dawn¹ teamed up to create the Tribble² - equivalent of a blog series on their new CURE course (course-based undergraduate research experience). They started by taking on the challenge of trying to write a single 500 word blog post. But then they ended up writing a series of 15 jaw-dropping, laugh-out-loud, information-packed posts exploring the great, but relatively unknown, CURE. If you need a refresher on what a CURE course entails, you are in luck as they provide an excellent outline in [their very first post](#).

Be CUREious and check out their series by [clicking this link](#) - we dare you.

No, really, come on ... [give it a try!](#)

You will love the NO-BULL approach to CURing ANY course. BE CUREageous. This is not just any "run of the MILLS" strategy. It could 'Harold' the 'Dawn' of a new phase in your teaching and research!

Bu seriously, their [blog series](#) outlines their step-by-step rationale and approach for integrating CURE practices and principles into any course.

¹ Harold Bull, Sheryl Mills, Dawn Giesbrecht

² Beloved Star Trek Episode: 'The Trouble with Tribbles', 1967. Season 2, episode 15...just in case you are keen on reference checks.



TEACHING EXCELLENCE (continued)



SCOTT NAPPER

Scott was nominated for a USSU Teaching Excellence Award by students enrolled in his BMSC 200 course, Biomolecules. Unfortunately, he was unable to be considered for this award since he had been awarded it in the previous academic year. In addition, he, alongside co-instructors Drs. Erika Dyck and Simonne Horwitz, were nominated for a joint teaching award for their new course HIST 237, History of Infectious Diseases and Vaccination. This course made its debut in January 2021, and was featured in a USask news article found [here](#). In [this article](#), published by the

College of Medicine, Scott's dedication to his teaching and research was further highlighted. Thank you to Scott for his continued commitment to academia!

"Tell me and I forget. Teach me and I remember. Involve me and I learn."

- Benjamin Franklin

HAROLD BULL

Harold Bull, alongside collaborators Kalyani Premkumar and Jeremiah Wezenamo Acharibasam, published an article in the *Canadian Journal for the Scholarship of Teaching and Learning*. This article titled, "Using an Innovative Intervention to Promote Active Learning in an Introductory Microbiology Course," reported the development and implementation of 'Team Poster-Projects' as an active learning activity into the introductory microbiology course BMSC 210.3 and examined whether inclusion of the project improved student learning and engagement. This report found modest yet measurable gains in deep-learning over surface learning. Perhaps most significantly, it reports increased student engagement and genuine interest in the subject matter. Consequently, the "Team Poster-Projects" remain in BMSC 210.3 and serve as a vital first delving into student-driven research and presentation for our undergraduate students.



DEPARTMENTAL UNDERGRADUATE SCHOLARSHIPS

CONGRATULATIONS TO THE STUDENTS WHO WERE AWARDED DEPARTMENTAL UNDERGRADUATE SCHOLARSHIPS THIS YEAR! THE AWARDS WERE PRESENTED VIRTUALLY DURING A JACKBOX GAMES NIGHT ON MARCH 19, 2021.

Dr. Louis T.J. Delbaere Memorial Scholarship

This scholarship is awarded to a fourth-year student majoring in Biochemistry who has demonstrated the potential and interest to pursue a career in Biochemistry. \$2,000 award.

Recipient: **Ananna Arna**

Dr. Dorothy Kline Memorial Scholarship

This scholarship is awarded to students majoring in Biochemistry with the highest academic averages in BMSC 200 and BMSC 230. \$1000 award.

Recipient: **Haley Paul**

The Department of Biochemistry Scholarship

This scholarship is awarded to students entering their final year of a B.Sc. 4-year or Honours degree program in Biochemistry. It is based on the overall academic achievement in all 300 and 400 level Biochemistry courses. Two \$500 awards.

Recipients: **Luke Wandzura & Christopher Chivers**



ANANNA ARNA



HALEY PAUL



LUKE WANDZURA



CHRISTOPHER CHIVERS



**"Develop a passion for learning.
If you do, you will never cease
to grow."**

- Anthony J. D'Angelo

UNDERGRADUATE CONVOCAATION AWARDS



Emiola Ogunjimi (Emmy) received the J.F. Morgan Memorial Award for the most outstanding graduate in Microbiology & Immunology. Emmy has been accepted into the USask medicine program and will be continuing her studies here in Saskatoon.



Luke Wandzura was awarded the Most Outstanding Graduate in Biochemistry. We have no doubt Luke will succeed in all of his future endeavors.



DID YOU KNOW?

2021/2022 is the first academic year the new direct entry Biomedical Sciences program is being offered to students. As of September, 282 first-year students have registered in the program.

NSERC UNDERGRADUATE STUDENT RESEARCH AWARDS

Join us in congratulating the four undergraduate students from the BMI program who received NSERC USRA's in 2021!

Ananna Arna (Supervisor: Yuliang Wu)

Sarah Ghezlbash (Supervisor: Joyce Wilson)

Lyubov Pastushenko (Supervisor: Jo-Anne Dillon)

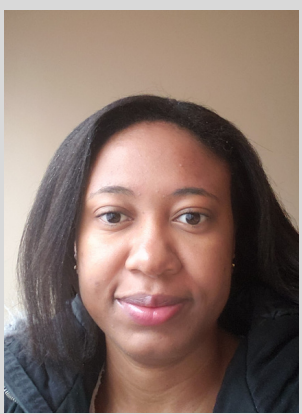
Alina Sami (Supervisor: Linda Chelico)



IRENE GRODUMS MEMORIAL GRADUATE SCHOLARSHIP

Join us in congratulating **Akosiererem Sokaribo** and **Lai Wong**, who were this year's recipients of the **Irene Grodums Memorial Graduate Scholarship**.

Akosiererem Sokaribo, who studies under the supervision of Dr. Aaron White, is focused on developing a vaccine against Salmonella that causes gastroenteritis, and to develop a framework that can be used to identify the functions of unknown genes.



Lai Wong studies under the supervision of Dr. Linda Chelico. Her research aims to investigate the cause and effect relationship between APOBEC3-mediated mutagenesis and cellular phenotypes.

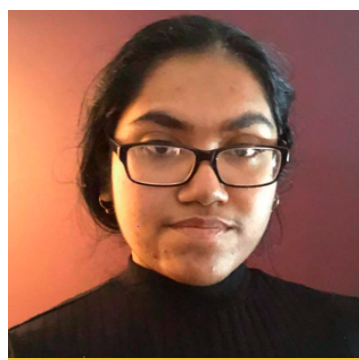


CANADA GRADUATE SCHOLARSHIP MASTER'S CGSM AWARD

Congratulations to **Ananna Arna** and **Michelle Gerber**, who each won a 2021 Canada Graduate Scholarship Master's CGSM award.

Ananna Arna, who is studying under the supervision of Dr. Yuliang Wu, is investigating RNA Dead-box helicase DDX41 and its possible role in mRNP granule processing bodies (P-bodies) formation and how the disruption in this mechanism might lead to the onset of hematologic cancers: myelodysplastic syndromes (MDS) and acute myeloid leukemia (AML).

Michelle Gerber is studying under Dr. Aaron White; her research investigates the host-pathogen interactions between *Salmonella typhimurium* and the intestinal epithelium and immune cells of the host.



ANANNA ARNA



MICHELLE GERBER

2021 TRI-AGENCY PHD NATIONAL COMPETITION

Michael Palmer, who is studying under Dr. Joyce Wilson, had his name forwarded to the 2021 Tri-Agency PhD National Competitions for NSERC. Congratulations Michael!