



CBR

THE CENTRE FOR BLOOD RESEARCH

NOVEMBER 2023

INNOVATIVE TREATMENT
targets blood clots without
increased bleeding risk

HOT BEES
are dead bees

**20TH ANNIVERSARY
CELEBRATION OF THE
CENTRE FOR BLOOD
RESEARCH**



ABOUT CBR

The CBR aims to improve the health and well-being of patients through innovative research in blood and blood-related processes.



Patient-driven. Innovative. Community.

Over the past year, donor support has helped us develop novel approaches to battle severe bleeding in rural areas, delineate the mechanisms of inflammatory diseases, and increase the quality of blood products used in transfusions — only a few examples among many pioneering discoveries. With your continued support, the CBR will further transform innovative ideas into life-enhancing solutions.

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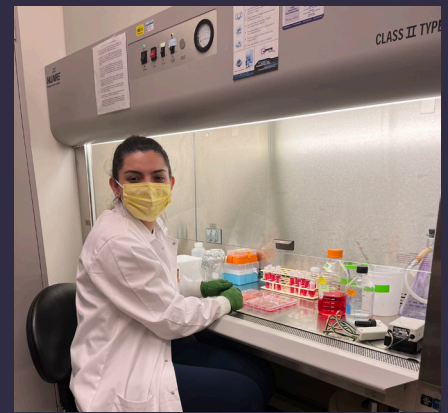
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CBR Research & Clinical Goals

- Improve the quality and safety of blood product collection, storage and delivery
- Create new knowledge to better treat bleeding and clotting disorders
- Develop novel approaches to modulate the immune system to treat inflammation and infections and promote wound repair



EDUCATION

CBR Education Commitment

- Support student research through competitive undergraduate, graduate, and postgraduate awards
- Offer a range of stimulating educational symposia, workshops, and seminars
- Provide cutting-edge career development opportunities for our trainees

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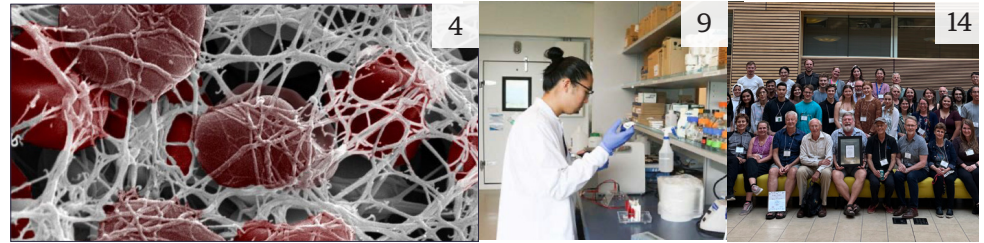
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The KT Committee publishes at CBR News (cbr.ubc.ca) and covers a wide range of topics, from recent research highlights and opinion pieces on science and academia, to event coverage and CBR initiatives. If you are interested in participating in the KT Committee, email Kaitlyn at: kaitlyn.chuong@ubc.ca or talk to one of the members! All undergraduates, graduate students, PDFs, RAs, and technicians are welcome to join.

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Innovative treatment targets blood clots without increased bleeding risk

THIS ARTICLE ORIGINALLY POSTED ON UBC NEWS WEBSITE.

FOR MORE INFORMATION, CONTACT ERIK ROLFSEN, ERIK.ROLFSEN@UBC.CA

Safyer and more effective blood thinners could be on the way following a groundbreaking discovery by researchers at UBC and the University of Michigan, published today in *Nature Communications*.

By combining their expertise in blood clotting systems and chemical synthesis, the researchers have designed a new compound called MPI 8 that offers the potential to prevent blood clots without any increased risk of bleeding—a common side effect of existing blood thinners. For children with vasculitis. “The development of MPI 8 represents a major breakthrough in the field of blood clot prevention and treatment,” said Dr. Jay Kizhakkedathu, a professor and Canada Research Chair at UBC’s department of pathology and laboratory medicine and the UBC Centre for Blood Research. “By targeting a specific molecule involved in clot formation without disrupting the natural clotting process, we’ve created a blood thinner that has proven safer and more effective in animal models, with enormous potential to improve human lives as well.”

Further research will be needed to confirm the safety and efficacy of MPI 8 in humans, but initial results offer hope for a new era in blood clot prevention and thrombosis treatment while serving as a testament to the power of collaboration in research medicine.

Blood clots are a serious health concern affecting millions of people around the world. When left untreated, they can lead to life-threatening conditions such as deep vein thrombosis,

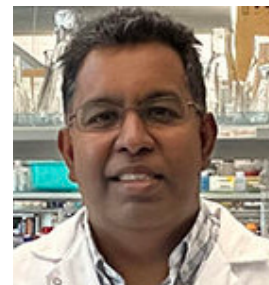
heart attack, pulmonary embolism and stroke.

Blood thinners, also known as anticoagulants or antithrombotic drugs, are essential in the treatment and prevention of blood clots but carry a significant risk of bleeding. This can cause complications and limit their use in some patients.

Existing blood thinners such as heparin, direct oral anticoagulants (DOACs) and warfarin work by targeting enzymes that are essential for blood clotting. However, they must be carefully dosed and monitored because disabling those enzymes threatens the normal clotting process required to heal wounds.

UBC and Michigan researchers took an innovative approach to instead target polyphosphate, a molecule involved in blood clotting that accelerates the process but is not essential for it.

“Our thought was that polyphosphate might be a safer target to go after with an antithrombotic drug, because it would just slow these clotting reactions down—even if we take out 100 per cent of the action of the polyphosphate,” said Dr. Jim Morrissey, a professor of biological chemistry and internal medicine at the University of Michigan whose work has illuminated the role of polyphosphate in blood clotting. “We really had to come up with an extremely novel way to target it compared to the usual drugs that target clotting, and that’s where the expertise of Dr. Kizhakkedathu’s lab became so important.”



Dr. Jayachandran Kizhakkedathu

After building a library of potential molecules and screening them for their desired criteria, the Kizhakkedathu lab zeroed in on MPI 8. This unique molecule has “smart” binding groups with positive charges that are drawn to polyphosphate’s negative charge. It will bind to polyphosphate and inhibit it while leaving the body’s other negatively charged cells and proteins alone, eliminating toxic side effects.

In preclinical studies, MPI 8 demonstrated remarkable effectiveness in preventing blood clots in mice without increasing bleeding risk. The drug showed no signs of toxicity, even at high doses.

“Not only does the drug show promise as a safer and more effective option for patients, but the design platform we used to create MPI 8 is flexible, potentially allowing for the development of additional compounds with similar properties and efficacy,” said Dr. Chanel La, who worked on the project as a chemistry PhD student in the Kizhakkedathu lab. “Assuming our work continues to produce positive results, I would be very excited to get MPI 8 into an approved clinical trial and bring this drug closer to becoming a reality for patients in need.”

UBC and the University of Michigan have filed a patent application for the technology.

CBR Travel Awards: Attending the Gordon Research Conference

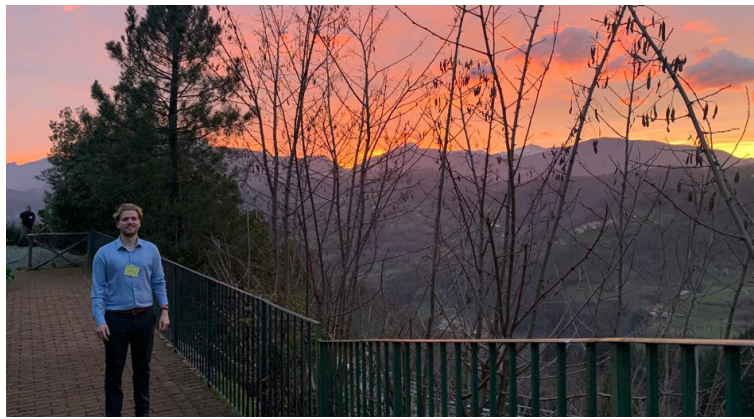
BY COLTON STRONG, PHD CANDIDATE

SUPERVISORS: DR. CHRISTIAN KASTRUP &
DR. DANA DEVINE

CONFERENCE: 2023 CELL BIOLOGY OF
MEGAKARYOCYTES AND PLATELETS - GORDON
RESEARCH CONFERENCE

LOCATION: LUCCA, LU, ITALY

POSTER PRESENTATION TITLE: EXPRESSION OF
EXOGENOUS PROTEINS IN DONOR PLATELETS USING
OPTIMIZED LIPID NANOPARTICLES AND MRNA



Colton Strong enjoys a sunset behind the Tuscan mountains.

The Gordon Research Conference (GRC) on the cell biology of megakaryocytes and platelets is a premier, international scientific conference that happens every two years within the field of blood research.

This year, the conference was held near Lucca, Italy in March 2023 and was attended by senior investigators, junior researchers and trainees. Leaders in the field presented recent unpublished data to educate attendees and inspire interactive group discussion. Over the five-day conference, I attended numerous oral communication sessions and poster presentations focused on basic discoveries, technological innovations and clinical progress within platelet and megakaryocyte biology. The conference themes this year included the clinical importance of platelet receptors, megakaryocyte development in the bone marrow niche, and new technologies to expand platelets as a cell therapy; themes that aligned closely to my own research focus. Among these topics, interesting discussions centred around the occurrence of megakaryopoiesis outside the bone marrow, controversy in proposed mechanisms of platelet biogenesis and the feasibility of in vitro platelets to replace standard donor-derived platelets for transfusion.

GRCs are designed to be smaller in size compared to most conferences to facilitate a more relaxed and collaborative atmosphere. Program events beyond presentations and posters included social activities and gatherings intended to promote informal interactions

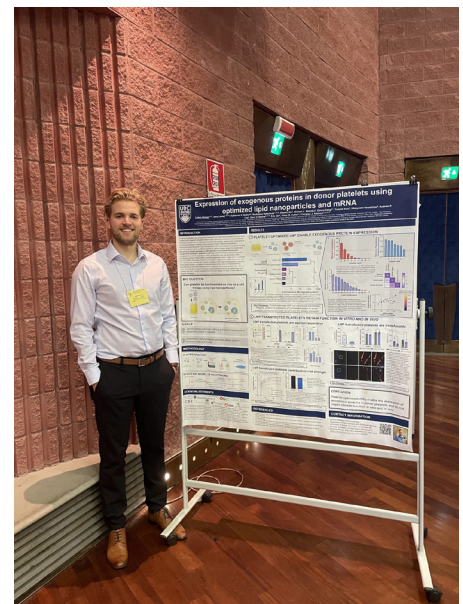
between established researchers and junior trainees. Attendees participate in breakfast, lunch and dinner together in addition to various social hours. For example, one notable event that I participated in was the conference soccer (or football) game, a highly revered tradition that happens each time the platelet and megakaryocyte GRC community convenes. In this environment, I had increased exposure to principal investigators and professors which helped me expand my professional network. Through these connections, I not only received invaluable experimental recommendations, but was also provided personal advice regarding a career in academia.

This year, I was selected to give a poster presentation at the GRC. As a third year PhD candidate within the Centre for Blood Research at UBC, attending this conference expanded my network and my research impact. In my poster presentation, I shared new data describing how our team is using lipid nanoparticle (LNP) technology to produce designer platelets. Our goals are to supercharge donor-derived platelets for improved clotting and to expand platelets as a cell therapy. Building on previous data showing that platelets can be engineered to express luminescent enzymes, I showed that LNP transfected platelets participate in hemostasis in an animal model of bleeding. This data sparked significant excitement from conference attendees. Researchers from around the world expressed interest in collaborating with our group to apply platelet-optimized LNPs to their own research in applications

such as platelet signalling, megakaryocyte engineering and in deciphering platelet aging. These collaborations will be highly beneficial to our lab program and in establishing our platelet-LNP technology as a research tool.

Attending the GRC on platelets and megakaryocytes has been highly beneficial to my current research training and career which would not have been possible without the funding opportunities provided by the CBR.

Learn more about CBR Travel Awards at:
www.tinyurl.com/cbrtravellawards



Colton Strong at the 2023 GRC on the cell biology of megakaryocytes and platelets in front of his poster.

CBR Travel Awards: Attending the 29th International Congress of The Transplant Society (TTS 2022)

BY H. DANIEL LUO, PHD CANDIDATE

SUPERVISORS: DR. JAYACHANDRAN N. KIZHAKKEDATHU

CONFERENCE: 29TH INTERNATIONAL CONGRESS OF THE
TRANSPLANT SOCIETY

LOCATION: BUENOS AIRES, ARGENTINA
POSTER PRESENTATION TITLE: ACHIEVING LOCALIZED
IMMUNOSUPPRESSION THROUGH EX VIVO
ENGINEERING OF ORGAN BLOOD VESSELS

The Transplant Society holds a biennial congress inviting international experts and key opinion leaders in transplantation science and medicine to discuss a variety of topics ranging from cutting edge science to the latest controversies in ethics and public policy. Through these discussions, best practices and novel research are disseminated in hopes for transplant program development for organ donation and procurement across a wide array of jurisdictions. The 29th international congress – with the theme “committed to access and transparency” – was held in the beautiful capital of Argentina, Buenos Aires.

With a sizeable 5-day program containing more than 190 oral presentations, 320 mini oral presentations, 150 campfire presentations and 450 poster presentations, a cornucopia of research, discussion and debate—with extensive coverage of current advancements in transplantation—occurred. I was fortunate enough to be accepted for an oral presentation under the Immunosuppression and Cellular Immunology session. Through this opportunity, I presented my research on achieving localized immunosuppression through ex vivo engineering of organ blood vessels. In the allocated time of 7 minutes for presentation followed by 3

minutes of questions, I endeavoured to present an ex vivo organ engineering approach where we fortify the endothelium with immunomodulatory polymers during preservation. The technique’s therapeutical potential was illustrated using mouse arterial and kidney transplant models that showed increased protection from ischemic and immune damage resulting in healthier graft tissue. This ex vivo organ engineering approach using immunomodulatory polymers was previously published and summarized in a manuscript in Nature Biomedical Engineering.

As a PhD trainee, it was a great honour and opportunity to disseminate my research on the global stage. This experience afforded me the chance to speak to global leaders of transplant immunology to further my knowledge, discuss future experimental models, and create meaningful connections. In addition, this meeting was particularly exciting because it was my introduction to gatherings comprised of both trainees and professionals from a variety of sectors, including academia, clinic, and industry. The expanded representation in attendance allowed me to critically assess my science from not only the research lens, but also in its clinical relevance and translational feasibility—bridging basic science to clinical needs.

Though the opportunity to attend TTS 2022 was exciting, visiting Argentina for the first time was also exhilarating. After

a 16-hour flight, I was welcomed into the beautiful Spanish speaking city of Buenos Aires and ready to experience its culture and arts. The congress—held in the hometown of the president of the society—proudly opened with tango and malambo, both of which are Argentinian dances. Then, after several opening addresses delivered in both English and Spanish, including one delivered on behalf of the Pope, an impassioned performance by double lung transplant survivor and Latin pop singer, El Puma, closed the evening. The ceremony was expertly curated to connect the arts of the hosting city and members of the transplantation community. When I had my own leisure time, I used my limited Spanish to navigate historical neighbourhoods like La Boca and visit various landmarks like the Obelisk of Buenos Aires, the Recoleta Cemetery and the pink presidential palace, La Casa Rosada.

This extraordinary experience was possible with the help of the CBR Travel Award. Overall, this award supports trainees in their professional growth towards becoming research leaders outside the confines of UBC. The opportunities to attend national and international meetings also allows CBR trainees to experience different culture and arts through travel. I would like to thank the CBR for this unforgettable opportunity and their unwavering support towards the growth of their trainees through programs like this.



H. Daniel Luo presenting a novel organ engineering approach at TTS2022.

Hot bees are dead bees:

Research supported by the CBR Transition Grant shows that male bumble bees are more sensitive to heat than honey bees

BY ALISON MCAFEE (SHE/HER), PHD (GENOME SCIENCE AND TECHNOLOGY)

The drumbeat of our changing climate is getting louder every year. The 2018 wildfire season was the worst in British Columbia's recorded history. In 2019, we had a record-setting hot spring. In 2021, BC felt some of the hottest temperatures ever registered in the country. Now, in 2022, records have been shattered again with an unusually warm fall. It seems like we're on track to break the record for the most records broken in the last five years, and there's no sign of abating.

And we aren't the only ones feeling the heat. Pollinators, like honey bees and bumble bees, are feeling it too. My research on male and female honey bees shows that hot temperatures can lead to infertility, making it harder for them to reproduce and maintain robust colonies. But how different types of bees withstand hot temperatures is not well understood, and thanks to the support of a CBR Transition Grant, I am working on finding this out. Until receiving this grant, I had only researched honey bees, and did not have experience handling and rearing other bee species. I wanted to study bumble bees because their populations are more vulnerable than honey bees, yet so little is known about them. Honey bees are useful models, but we also need to research other species directly, including at least some of the 45 different species of bumble bees in Canada. The CBR Transition Grant has given me the opportunity to buy and rear commercially produced bumble bees (*Bombus impatiens*), giving me skills which I can transfer to other bumble bee species, too.

And with our changing climate, studying bumble bee heat tolerance is a salient topic. In 2020, researchers at the University of Ottawa found that extreme temperatures are the best predictors of local bumble bee extinctions. Male honey bees are notoriously sensitive to heat - much more than their female counterparts - but sensitivity of most bumble bee species is not known. If they are sensitive, that could be driving the relationship between heat and extinction.

Last summer, I began to test how male *Bombus impatiens* heat tolerance stacked up to male honey bees. But I didn't compare these bumble bees to your average honey bee: I compared them to honey bees with genetic origins from Ukraine, Australia, and California; rationale being, stocks from different climates might have different heat tolerances. In a "common garden" experiment, I reared the bumble bees and honey bees imported from different countries together at UBC and measured male survival after a heat challenge.

The results shocked me. I actually expected the bumble bee males to be made of tougher stuff than honey bee males, since bumble bee males live most of their mature lives outside the



A male Bombus impatiens caught in the garden.

nest, subsisting on food they forage for themselves. They are exposed to whatever Mother Nature throws at them, whereas honey bee males can go back to their air-conditioned colonies. But the bumble bees were actually significantly more likely to die, with only about 65% surviving a short heat challenge (4 h at 42° C) compared to 95% of honey bees. Honey bees from different genetic origins fared similarly, and I am currently working on seeing if their fertility suffered or stayed the same. This finding does not bode well for the bumble bees, but male survival and fertility is only half of the equation. Similar to honey bees, queen bumble bees mate and store sperm within a specialized organ, the spermatheca, for their lifetime (one year). The biological processes enabling this long-term storage, and how extreme temperatures influence them, though, is largely a mystery for bumble bees and other social insects.

Through a collaboration with researchers at the University of Brussels, Belgium, I am now working to determine the similarities and differences between honey bee, bumble bee, and ant sperm storage using comparative proteomics. Once complete, this research will tell us how generalizable the data for honey bees are, and whether they are a useful indicator for how environmental stress might impact queens of other species.

I am deeply thankful for the support of the CBR Transition Grant, which has made this research possible. The funds have given me the freedom to bring a new study organism into the lab and develop the expertise needed to maintain, propagate, and experiment with them. These projects are small but important steps towards understanding how climate change may impact broader insect populations, and finding out which are in the most in need of protection.

Learn more about CBR Transition Grants and how you can apply:
<https://cbr.ubc.ca/research-and-training/grad-pdf-training/>

Emerging artificial intelligence methods to assess transfusion quality

BY: ERIK LAMOUREUX, PHD STUDENT, MA LAB

This is a summary of Erik Lamoureux's paper "Assessing red blood cell deformability from microscopy images using deep learning", published in the journal - *Lab on a Chip*. Erik is a PhD Student from the Ma Lab (Multi-Scale Design Laboratory) at the Centre for Blood Research (CBR) at the University of British Columbia.

Around half of all Canadians will require a blood transfusion in their lifetime or know someone else who will. Despite how common blood transfusions are, only four percent of Canadians are blood donors². Due to the scarcity of blood for transfusion, it is vital to use the existing blood supply as efficiently as possible. It is well known that blood type is assessed - O, A, B, or AB, with +/- Rhesus (Rh) factor - to ensure blood compatibility between the donor and recipient. In addition to blood type, recent research indicates that the shape and deformability of red blood cells (RBCs) are important factors contributing to the effectiveness of a blood transfusion.

Red blood cells and deformability

The deformability of red blood cells - their ability to squeeze through small spaces - is vital for their navigation through the body. During circulation, RBCs squeeze through small gaps in the microvasculature to deliver oxygen and remove carbon dioxide from cells and tissues. Not only do RBCs need to squeeze through these small gaps, but they must also do this repeatedly; they circulate through the body once every 60 seconds and endure for a 120-day life span. Due to this, RBC deformability is vital for effective circulation.

Why deformability matters

Red blood cell deformability degrades as the cell ages, and when the cell becomes too rigid to pass through the microvasculature,

it is engulfed and destroyed by immune cells called phagocytes. Because of this relationship between a cell's deformability and longevity, RBC deformability is considered a potential biomarker for transfusion quality. Donated RBCs for transfusion confer differing benefits to transfusion recipients^{3, 4}, potentially in part due to natural differences in RBC deformability between donors⁵. Ideally, blood banks could sort blood units based on patient need. More deformable and longer-lasting blood should be distributed to chronic transfusion patients to extend the time between their needed transfusions. On the other hand, more rigid and shorter-lasting blood should be distributed to acute transfusion patients (e.g., trauma patients) who just need a blood top-up and can otherwise produce an adequate blood supply.

Microfluidics to assess deformability

In our lab, we developed a microfluidic

device to sort RBCs based on their deformability⁶. RBCs suspended in fluid are sent through microchannels that are as small as the width of a human hair. Microfluidic platforms provide advantages compared to conventional laboratory assessment techniques. Namely, microfluidics benefit from precise fluid manipulation and control, require small volumes of fluid and biological samples (on the order of fractions of a millilitre), and can probe features of individual cells in a fast and highly efficient manner. In our device, the cells enter a grid-like sorting region consisting of small constrictions of different sizes for the cells to squeeze through. This sorting is similar to cells squeezing through small gaps in the body's microvasculature. The cells are sorted from the bottom of the grid to the top (relative to Fig. 1) and these constrictions get progressively smaller along the flow path. Based on a cell's ability to squeeze through these gaps, they are sorted to different outlets indicating their level of

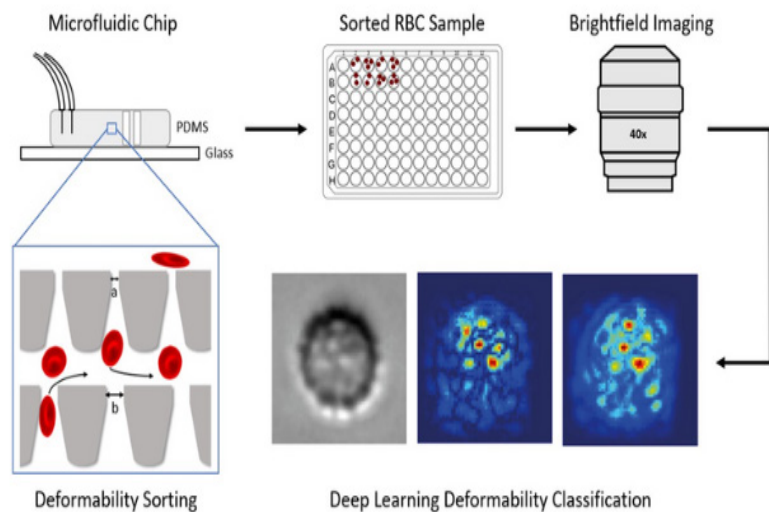


Fig. 1. Experimental procedure. Red blood cells are sorted based on their deformability using a microfluidic device. The sorted cells are extracted, imaged, processed, and assessed using artificial intelligence (AI) image analysis methods. This AI method, called deep learning, can accurately predict a donor's deformability profile from cell images¹.

deformability. This allows us to determine a donor-specific rigidity score and provides us with the true deformability levels of the cells for use in training a machine learning model.

Artificial intelligence (AI) to assess deformability

To increase the accessibility of determining RBC deformability, we sought to develop computer-based techniques to predict deformability from images. After microfluidic deformability sorting, sorted cells are extracted from the device and imaged using a microscope. The microscope captures digital images of the cells which are then processed into smaller single-cell images. These single cell images are input to an artificial intelligence model called a deep learning network. This network consists of cascading and interconnected mathematical operations that learn patterns in the data. The network updates its connections and how the data flows through these structures based on feedback from the microfluidic deformability labels corresponding to each image. By passing enough images through

the network many times, the model is trained to identify a cell's deformability level based on its surface features, patterns, and structures. All told, this AI-based method correctly predicted the deformability of individual RBC images with $81 \pm 11\%$ accuracy averaged across 10 donors¹. As both methods also produce a rigidity score for the RBCs of each donor, we further assessed the model by comparing the AI-derived rigidity score to the ex vivo-derived score. We found that the deep learning-derived rigidity scores were accurate to within $10 \pm 7\%$ of the value obtained using the microfluidic device.

Benefits of artificial intelligence methods

Using machine learning methods to determine red blood cell properties from images has huge potential to benefit transfusion medicine research and practice⁷. By assessing red cell quality based on morphological features identified in images, this approach

could be introduced to any research laboratory or clinic with an adequate microscope and computer. Future work will focus on streamlining this procedure, determining viable use cases and limitations, and ideally developing a generalizable model that can assess the RBC deformability profile of new donors at the point of care.

¹ E. S. Lamoureux, E. Islamzadeh, M. V. J. Wiens, K. Matthews, S. P. Duffy, and H. Ma, "Assessing red blood cell deformability from microscopy images using deep learning", *Lab Chip*, vol. 22, no. 1, pp. 26–39, 2022, doi: 10.1039/D1LC00066A.

² Canadian Blood Services, "Half of all Canadians will either need blood or know someone who will need blood at some point in their lives", *Canadian Blood Services*, 2022. [Online]. Available: <https://myaccount.blood.ca/en/faq/half-all-canadians-will-either-need-blood-or-know-someone-who-will-need-blood-some-point-their>

³ O. Garaud and J.-D. Tissot, "Blood and Blood Components: From Similarities to Differences", *Front. Med.*, vol. 5, p. 84, Apr. 2018, doi: 10.3389/fmed.2018.00084.

⁴ J. R. Hess, "Conventional blood banking and blood component storage regulation: opportunities for improvement", *Blood Transfusion*, 2010, doi: 10.2450/2010.0035.

⁵ E. Islamzadeh et al., "Deformability based sorting of stored red blood cells reveals donor-dependent aging curves", *Lab Chip*, vol. 20, no. 2, pp. 226–235, 2020, doi: 10.1039/C9LC01058K.

⁶ Q. Guo et al., "Deformability based sorting of red blood cells improves diagnostic sensitivity for malaria caused by *Plasmodium falciparum*", *Lab Chip*, vol. 16, no. 4, pp. 645–654, 2016, doi: 10.1039/C5LC01248A.

⁷ J. A. Sebastian, M. C. Kalos, and J. P. Acker, "Emerging use of machine learning and advanced technologies to assess red cell quality", *Transfusion and Apheresis Science*, vol. 59, no. 6, p. 103020, Dec. 2020, doi: 10.1016/j.transci.2020.103020.

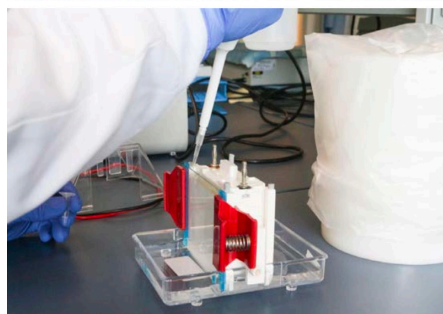
A day in the life of a platelet scientist

BY RHONDA THYGESEN, MSC STUDENT, FOSTER LAB

This piece is part of the "Day in the Life of a Scientist" series, where Rhonda Thygesen uses photography and writing to give a unique lens into the daily lives of CBR researchers. In this piece, she covers the research of MSc student, Steven Jiang.

Steven Jiang is a 2nd year Masters of Science student at the University of British Columbia (UBC) in the department of biochemistry and molecular biology and the Centre for Blood Research (CBR), under the supervision of Dr. Hugh Kim.

Steven's research focuses on the effect of platelets on rheumatoid arthritis, an inflammatory disease that causes joint pain in more than 1% of Canadians.



Read the full story at: <https://cbr.ubc.ca/day-in-the-life-of-a-platelet-scientist/>

The CBR celebrates #WomenInScience

For the International Day of Women and Girls in Science, we had the pleasure of speaking with the CBR women scientists at different points in their career journey.



Tseday Zewdu Tegegn, Ph.D. candidate in the Dr. Pryzdial lab.

Tell us about yourself:

I was born and raised in Addis Ababa, Ethiopia, located in the horn of Africa. Once I completed high school, I moved to Washington, DC to pursue undergraduate studies. My primary interest growing up was learning about improving health and quality of life. Even though I had a passion for studying medicine, I became more intrigued with scientific research. After earning a Bachelor's degree in Biology, I worked at the U.S. Food and Drug Administration (FDA) as a postbaccalaureate fellow. Afterward, I enrolled in the Pathology and Laboratory Medicine graduate program at UBC.

Tell us about your research:

According to the World Health Organization, about 50% of the world's population lives in regions where the dengue virus (DENV) is endemic. About 25,000 deaths are reported annually from symptomatic patients exhibiting severe hemorrhage and vascular leakage. The most common clinical manifestation

observed in all forms of DENV infection is the reduction of platelet numbers which can lead to clinical bleeding (thrombocytopenia). However, the mechanism by which DENV induces thrombocytopenia is not well understood. My research focuses on DENV-infected platelets and megakaryocytes and following host and virus protein synthesis that can contribute to thrombocytopenia development during infection.

What sparked your interest in science?

I am always interested in learning new things and expanding my knowledge in different areas of life. Growing up, I was always fascinated by blood and transfusion due to the unfortunate experience of losing an aunt from a hemorrhage during birth.

What is your favorite thing about science?

I like the humility that comes from not understanding everything fully and the excitement that comes from understanding something better each day.

Do you have any advice for young girls interested in STEM?

People like to share their expertise and things that they are passionate about. Ask and learn from those ahead of you in your area of interest and seek out good mentors that can see your potential. Lastly, build a community around you with diverse interests to help you grow in other areas of life.

What award or achievement are you most proud of?

I am most proud of my ability to stay on track despite challenges. It is easy to be proud of a specific achievement, but to keep showing up and trying again is an underrated achievement that anyone can experience every day in the field of research.

Is there anything else you'd like to add?

Thank you to all the mentors that supported me throughout my journey as a girl in STEM.



**Dr. Patrícia de Oliveira Benedit,
Postdoctoral Fellow in the Dr. Conway Lab**

Tell us about yourself:

I am a Pharmacologist who specializes in the discovery and development of preclinical drugs. I have been working across academia and in a Contract Research Organization (CRO). I have a master and PhD in Pharmacology and my key current areas of interest include type two diabetes, obesity and cardiovascular research.

Tell us about your research:

Our laboratory has shown that expression levels of the transmembrane glycoprotein CD248 have been inversely correlated with adipose tissue function, insulin sensitivity, and glucose and lipid homeostasis in mice and humans. Additionally, in vivo suppression of adipocyte CD248 in mice reverses the detrimental effects on glucose metabolism and insulin sensitivity. I am investigating the mechanisms by which CD248 acts as a molecular switch that induces the transition of white adipose tissue from a healthy to an unhealthy state during obesity and diabetes.

What sparked your interest in science?

My interest in science was sparked by two main factors. Firstly, my passion for science and medicine. I want to make a difference in the world and have a positive impact on people's lives by improving human health and treating diseases. Secondly, curiosity and a desire to solve problems. As a Scientist, I need to solve complex scientific problems and understand the intricacies of biology and disease, which is challenging and rewarding for me.

What has been your biggest challenge as a scientist?

Coping with failure! I often put myself under significant pressure to produce results and make meaningful contributions to my field. Failure or negative results can be disheartening, leading to feelings of self-doubt and inadequacy despite having the necessary skills and knowledge for my work. I am still learning how to deal with my impostor syndrome.

Do you have any advice for young girls interested in STEM?

I would advise all women and girls who are interested in science to stay curious and open-minded. Be open to new ideas and don't be afraid to ask questions or seek out answers to things that intrigue you. Dive deep into the amazing world of knowledge. Believe that you can succeed in science and don't let anyone tell you otherwise.

What award or achievement are you most proud of?

I have been fortunate to work on several very interesting projects during my career. When I worked at a CRO, I had a fantastic experience launching a novel cardiovascular research axis for the company. After that, the company was able to bring cardiometabolic drug candidates to the clinical phase faster and more efficiently.

Is there anything else you'd like to add?

Being a great scientist requires interpersonal skills. Advancing science goes hand in hand with a culture of collaboration. Science is often a team effort and good scientists are able to work well with others by sharing information and resources. Understanding the perspectives and motivations of others is essential for effective collaboration. Good collaborators are able to put themselves in others' shoes and are respectful of different opinions. When eyes are opened to the support culture of collaboration, it's magical.



Marie-Soleil Smith, Ph.D. candidate in the Dr. Côté lab.

Tell us about yourself:

I was raised in Nanton, AB, a small town of 2000 people about an hour South of Calgary. Growing up, I was a competitive dancer, and was so involved that I went to a high school that specialized in balancing athletics with academics. I continued to dance on the UBC Dance Team during my undergrad in Microbiology and Immunology. Although I no longer dance as frequently as I used to, I now love staying active through running, cycling, yoga, and playing volleyball.

Tell us about your research:

Each year, approximately 1.1 million children are exposed to antiretrovirals (ARVs) in utero to prevent vertical transmission of HIV from mother to child. Most ARVs can cross the placenta, but the short- and long- term safety of many ARVs have not been fully characterized in the context of pregnancy. In my research I compare the effects of ARVs on cultured human embryonic stem cells as a model of a developing embryo and examine the mechanisms of adverse effects observed. My research will provide crucial pre-clinical information on the relative toxicity/safety of ARVs, which may help inform and guide future human trials and strategies for the treatment of HIV in women of reproductive age.

What has been your biggest challenge as a scientist?

Something that continues to challenge

me as a scientist is imposter syndrome. As a first-generation graduate student it is hard to feel like I belong. Overall, I do think this challenge has also been a blessing as I've had to push myself to be self-motivated. It is also why I am so involved in extracurricular activities and desire to contribute to the scientific communities I am a part of.

What is your favorite thing about science?

You can learn something new every single day! It sounds cliché, but the world of science is so broad, exciting, and fantastic and there's always a new problem to solve.

Do you have any advice for young girls interested in STEM?

Never be afraid to try something new and keep your options open. Every path you take in life can be filled with lots of detours, U-turns, and traffic circles so enjoy the ride and know that you can always go back, forward, or whichever direction you choose.

What award or achievement are you most proud of?

I feel so privileged to have received the Killam Doctoral Scholarship. It is an honour to hold an award that recognizes well-rounded students who are contributing to the advancement of learning.

Is there anything else you'd like to add?

Happy International Day of Women and Girls in Science to all my mentors and mentees along my journey!

February 11 is recognized by the United Nations as the International Day of Women and Girls in Science, which highlights the contributions of women in STEM and aims for full and equal access to participation in science, technology, and innovation for women and girls.

CBR Events, Socials & Activities

CBR 2023 New Year Social

January 26 | LSC Pod

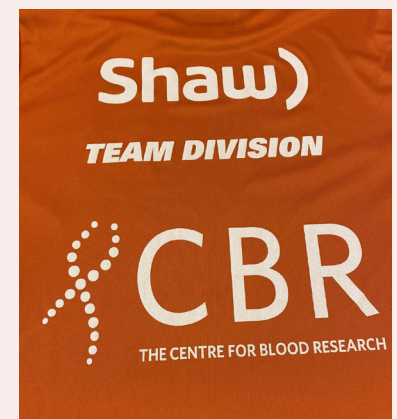
We held the 2023 New Year Social! A Thursday afternoon well-spent with great people, beverages, and food! Thank you to everyone who attended!



CBR proudly participated in the 39th annual Vancouver Sun Run

April 16 | Vancouver, BC

The CBR Team participated in the 39th annual Vancouver Sun Run on April 16, 2023. Congratulations to all the runners! We had one CBR Team that won the 5th place among 38 teams in 10K Team Results - Education Category!



CBR Skills Development Workshop: Exploring Career Options: Danielle Barkley, Ph.D.

March 28

Dr. Barkley shared some insightful takeaways with our audience:

As a graduate student, your most valuable career development resources are curiosity, flexibility, and an open mind. As you think about your career, you may wish to consider the following:

1. Skills - What you know how to do and are good at.
2. Interests - The type of work you like to do, the questions you want to answer, and the problems you want to solve.
3. Values - What you care about and how you want to show up in the world.

EXPLORING CAREER OPTIONS
TUESDAY, MARCH 28, 2023 | 2-3 PM PT

FACILITATED BY:
DANIELLE BARKLEY, PH.D.
Career Educator,
Centre for Student Involvement and Careers

Register:
<https://tinyurl.com/ExploringCareerOptions-0328>

Questions? Contact: CBR Education Program Manager,
parvin@mail.ubc.ca

For any questions about the Career "Ask Me Anything" (AMA) Café series or CBR Workshops, contact the CBR's Communications & Programs Coordinator, Kaitlyn Chuong at kaitlyn.chuong@ubc.ca.

CBR 2023 Summer Studentship Program - Welcome Lunch

May 9 | LSC Pod

We celebrated our Summer students with a welcome lunch. We are looking forward to a fun & productive summer together as we explore professional development workshops and fun events alongside research!

During the program, students will work on a defined research project with a UBC supervisor, participate in professional development programming, and present their research at our CBR Research Day.



Equity, Diversity & Inclusion (EDI) workshop with Dr. Maria Tokuyama

May 16 | LSI

The Centre for Blood Research (CBR) was pleased to hold a Workshop “Equity, Diversity & Inclusion (EDI)” with Dr. Maria Tokuyama, Assistant Professor, Department of Microbiology & Immunology, UBC.



Research 180 Video Competition

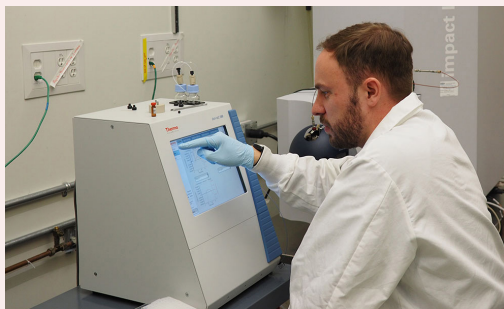
2022-2023 | Online

This year, Canadian Blood Services offered the Research 180 Video Competition in partnership with the Centre for Blood Research at the University of British Columbia.

In this twist on the Lay Science Writing competition from previous years, trainees were challenged to create original videos showcasing their research in 180 seconds or less. Trainees were encouraged to practice their knowledge translation skills by presenting their research in a format that can be shared on online platforms and social media channels to engage the public.



Elyn Rowe, Devine Lab - 1st Place Winner



Dr. Peter Bell, Overall Lab, 2nd Place Winner

CBR Seminars

Wednesdays from 1-2PM PT | LSC3 & Zoom

CBR seminars feature insightful scientific talks, with speakers from a range of clinical, industry and academic backgrounds. This year we've had over 20 speakers present at a seminar!

Know a speaker, or want to present at a CBR seminar? Contact Kaitlyn Chuong, kaitlyn.chuong@ubc.ca.



Read about more events and activities at: www.cbr.ubc.ca/category/news/events/



20th Anniversary Celebration of the Centre for Blood Research (CBR): Commemorating Two Decades of Historical Milestones and Outstanding Achievements

BY JOHN PERRIER, GRADUATE STUDENT, DR. PRYZDIAL LAB

On July 7th the Centre for Blood Research (CBR) celebrated its 20-year anniversary, inviting CBR alumni to join current members in learning about the beginnings of the centre. This celebration featured an array of engaging activities, from blood-related trivia that intrigued the curious minds to captivating talks delivered by CBR's principal investigators Dr. Ed Pryzdial and Dr. Chris Overall, as well as a panel discussion featuring past, current, and original CBR members, providing unique insights into the centre's evolution. The evening concluded with a dinner and social gathering, where many generations of the CBR had an opportunity to meet and enjoy delicious food and drink.

Revisiting the Creation of the Centre for Blood Research

The celebration began with a founder's talk by Dr. Ross MacGillivray, the founding director of the centre (pictured centre, below). Dr. MacGillivray took the audience back to 2002, when the idea of forming an interdisciplinary centre first arose. In response to the Krever inquiry, Dr. MacGillivray and fellow blood researchers Drs. Don Brooks, Dana Devine, Charles Haynes, and Grant Mauk sought to create a space

for interdisciplinary research in blood and transfusion medicine to excel. The founders secured \$15 million in funding from the Canadian Foundation for Innovation, with 40% of the support provided by the government of British Columbia. In a collaborative approach with the University, the CBR provided a portion of these funds towards the construction of the new Life Sciences Institute (LSI) in 2004, resulting in occupancy of the fourth floor. Dr. MacGillivray highlighted the importance of the relationship that the CBR has maintained between academia and industry, benefiting from the strong support of partners such as Bayer and the Canadian Blood Services. Settling into Excellence at the LSI

Dr. Ed Pryzdial continued the journey by discussing the operations of the first couple of years at the new Life Science Institute. Moving multiple labs into the new space revealed areas of the design plan that needed some extra love and attention. Working out these kinks resulted in a state-of-the-art facility, where research could be conducted close to many collaborators of varying areas of expertise. Then came the challenge of connecting with leaders across Canada and the world, a task

which the CBR continues to uphold today. Dr. Chris Overall shed light on the collaborative efforts of the original CBR members successfully securing grants that kickstarted research in the centre, also allowing for the recruitment of new members.



Dr. Ed Conway, Interim Director of the CBR, cutting the CBR Anniversary cake in the Life Sciences Institute Atrium.

Perspectives From the Many Generations of the CBR

Members of the CBR Graduate Award Program (GAP) invited Dr. Ed Pryzdial (Principal Investigator), Eva Yap (former CBR Researcher, MSc, Med) and Daniel Luo (PhD Student) to for a panel discussion on career progression in academia, how the CBR has supported learning and well-being, and how to empower the next generation of scientists. During the interactive session, one audience member inquired about effective collaboration and outreach opportunities for postdocs both within and outside the CBR. The panel's responses highlighted the valuable resources provided by the CBR and suggested leveraging the COCO club, a group dedicated to fostering social gatherings for postdocs and research associates on a monthly basis. Additionally, they encouraged utilizing the networks of PIs as a means to expand professional connections and collaborations.

Trivia Time: Blood and Brain Teasers

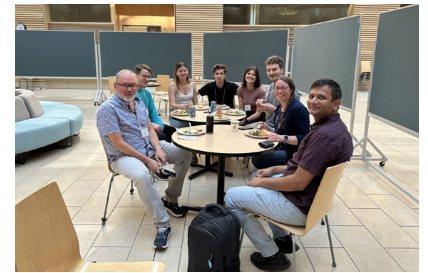
The GAP hosted an engaging round of blood-related trivia. Questions ranged from fun facts about founding members of the centre to identifying the compound in horseshoe crabs that makes their blood blue! The competition was fierce, with

new winners emerging in each round. Ultimately, Katherine Serrano took first place, followed by Steven Jiang in second, and John Perrier third. Katherine expressed her joy at winning the trivia quiz and shared her deep connection with the CBR. "The CBR is a very special place to me with many great memories. I've been with the CBR from the beginning, 20 years ago. It's wonderful to be back here, surrounded by so many familiar faces," she said, reflecting on the cherished moments at the CBR.

The CBR's 20th anniversary was organized by recipients of the 2022-2023 CBR Graduate Award Program. Members Elyn Rowe and Henry West shared their experiences in organizing the event.

"Having the opportunity to organize a large-scale event through the GAP program was a unique experience for a graduate student. It felt particularly special to organize a celebration of the CBR to highlight its history and all of its achievements over the past 20 years! While it was stressful in the weeks leading up to the event - wondering if everything would come together - I'm very proud of how it all came together." - Elyn Rowe, Devine Lab

"Organizing the 20th anniversary celebration of the founding of the Centre for Blood Research was a rewarding experience. Planning this evening allowed



Members of the CBR share dinner and refreshments to cap off the evening.

the GAP participants to develop a number of organizational skills we would not have had the opportunity to develop without the program; and seeing the success of the event was definitely gratifying." - Henry West, Pryzdial Lab

The CBR thanks the 2022-2023 GAP program members, Ahmed Kabil, Deasung (Jayden) Jang, Elyn Rowe, Felix Hong, Henry West, Loulou Cai, Marie Johns, Peyman Malek Mohammadi Nouri and The CBR Education Program Manager, Dr. Parvin Bolourani for their tremendous efforts in arranging this anniversary event. It was an evening filled with laughter, pride, and great conversations. It was fabulous to have Dr. MacGillivray and many others back in the building, the centre looks forward to what the next 20 years have in store!



Members of the CBR share dinner and refreshments to cap off the evening.

Earl W. Davie Symposium 2022: Sixteen years of scientific learning and opportunity

BY AHMED KABIL, PHD CANDIDATE, MCNAGNY LAB & LOULOU CAI, PHD CANDIDATE, CÔTÉ LAB

The Earl W. Davie Symposium is an annual symposium hosted by the Centre for Blood Research. This symposium brings together researchers, varied healthcare workers, and other professionals for a day of scientific communication, learning, and inspiration. -The 16th annual Earl W Davie symposium was held at UBC Robson Square in a hybrid format, with local and international attendees in-person and over zoom.

Ahmed Kabil quote: “The Centre for blood research is one of the most diverse programs at UBC, representing a slew of viewpoints and that has enriched my experience and sparked amazing ideas that are out of the box.”



Pictured (left to right): Taylor de Silva, Cedrick Carter, Colton Strong



Pictured: Nancy Yang, MSc student, Cote Lab

An Exciting day of Research:

[Ahmed] One of my favourite speakers of the day was Dr. Benjamin Lai, who described a case of a 63-year-old man in his clinic with recurrent small-vessel thrombosis. This thrombosis was associated with antiphospholipid syndrome (APS) auto-reactive antibodies. Most treatment options involve anti-thrombotics, but they do not seem to work well, hence the introduction of other options such as immunosuppressives.

Clinical and mouse data demonstrated that NETosis, extrusion of DNA upon neutrophil death, is highly upregulated in thrombotic APS. This dysregulation provides a perfect scaffold, bringing various protein factors and cells together to propagate and clot. In addition, the activation of the complement pathway appears to be a part of APS driven thrombosis given the decrease in thrombocytes in mice deficient in complement proteins. This opens the door to therapeutic options such as

Eculizumab, a complement inhibitor, but its response in patients with catastrophic APS is inconsistent, with 55% of patients non-responsive. Therefore, there is a missing piece to the puzzle.

B cells are known producers of APS antibodies and have been targeted using rituximab (CD20 inhibition), but patient outcomes remain quite variable. Remarkably, despite the depletion of B cells, APS antibody levels remained present, even 52 weeks post-treatment. Ultimately, patients with APS have an immune system that is skewed towards an increased proportion of CD19+CD20- plasma cells, and depletion of these plasma cells is key in decreasing APS antibody expression levels. This indicates that the wrong type of B cell may have been targeted and we should instead look at targeting the CD19+CD20- plasma cells using options such as Bortezomib and Daratumumab in the exciting future of APS treatment.

[Loulou] The CBR is a highly multidisciplinary research institute. Dr. Kelly McNagny's lab is a great example of the breadth of research that CBR members participate in. One project that the lab is interested in is investigating the role of PODXL in tumor progression, and the potential therapeutic potential of two antibodies against different PODXL epitopes.

PODXL is a general adhesion blocker and helps regulate the architecture of the cell surface. Cancers that express PODXL are associated with poor prognosis and high mortality. To investigate The role of PODXL in tumor progression and metastasis was investigated using CRISPR, and it was found that the knockout of PODXL resulted in crippled tumor growth in two different cancer cell lines. PODO83 was the first antibody discussed that exhibits therapeutic potential. Prophylactic therapy with PODO83 was shown to block tumor growth in immunodeficient mice. PODO83 also slows the growth of already established tumors and blocks metastasis in the same mice models. The lab is currently developing humanized mouse models to test for toxicity.

The second antibody, PODO447, specifically binds the tumor-specific PODXL and shows great promise for attacking "cold" tumors (tumors with few immune infiltrates). PODO447 was shown to effectively eliminate tumors in vivo, with higher effectiveness in mice who are not completely immunodeficient. This indicates that treatment with PODO443 works better when residual tumor cells can be killed by the endogenous immune system. This research is an exciting step forward in cancer therapeutics.

The Exemplary Trainees

From oral talks to poster presentations, trainees were prominently featured in this year's Earl W. Davie Symposium. Six students presented oral talks on innovative topics such as leveraging lipid nanoparticle technology to improve platelet function, modifying clotting factors, and investigating how actin binding proteins regulate platelet cell contraction. The event also showcased 15 posters with a wide breadth of topics ranging from optimizing parameters for

blood and platelet storage, improvements to clinical trial implementation, T-cell immunology, to insulin-triggered signaling. Colton Strong, PhD Candidate from the Devine & Kastrup Labs won the People's Choice Award for best oral presentation, and Henry West, MSc student from the Pryzdial lab was awarded the best poster award (pictured below).

The Centre for Blood Research would like to thank our event sponsors, without whom the The 16th Annual Earl W. Davie Symposium would not have been possible:

the Naiman-Vickars Endowment Fund, Bayer, the Canadian Blood Services, novo nordisk, Stago and GRIFOLS.

Congratulations to the organizers and all the award winners on a fantastic event! See you all next year.

Read about past Earl W. Davie symposia at: <https://cbr.ubc.ca/events/earl-w-davie-symposium/>



Pictured (left to right): Ahmed Kabil, Loulou Cai, and Felix Hong



Pictured: Dr. Parvin Bolourani (Left), the CBR's Education Program Manager, presenting Henry West, MSc Student, with a prize for winning the best poster presentation.



2023 CBR Summer Students tour the netCAD Blood4Research Facility

BY CHRISTINA PAN, CBR SUMMER STUDENT ALUM & SHOUKA FARROKH, CBR SUMMER STUDENT ALUM

On July 20th, 2023, the 2023 Centre for Blood Research (CBR) summer students visited the netCAD Blood4Research facility, tucked away in UBC's University Village. Our tour of the facility offered an opportunity to learn about what they do, why they do it, and how it all fits into the larger Canadian Blood Services (CBS) network.

Unlike most CBS donor centres, the netCAD facility is unique in collecting blood for research and development rather than clinical purposes. Not only does this netCAD facility test new technologies to help improve blood products to be deployed in clinical settings, such as UV pathogen inactivation, but they also provide blood products for academic research. Due to the lower demand for blood products at netCAD and the limited shelf life of the

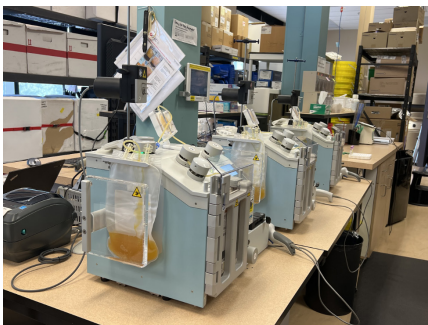
blood products, instead of collecting blood from as many donors as possible, blood is collected on an as-needed basis. This can be for netCAD's needs, industry needs, or for supplying researchers in academia. Given the many uses, companies, hospitals, and scholars alike rely on this invaluable resource; blood.

As part of the tour, we got an overview of the blood processing method, from donation to the final product. We walked through the typical steps a donor would take upon arriving at the facility. When the donors arrive with their ID, they fill out a questionnaire, followed by a screening, to emphasize donor and recipient safety. After a typical whole blood donation of about 480ml, all donors are allotted 5-15 minutes of rest time with plenty of water and juice.

In an exciting "behind the scenes" look, we were given the chance to see the blood processing after collection. As the blood is collected, it is mixed with an anticoagulant to prevent clotting as it leaves the body. Whole blood units can then be separated into the plasma, buffy coat, and red blood cells. The separation process involves centrifuging the units and separating the components based on density, with the plasma at the top and the blood cells at the bottom. The separated components can undergo further processing to reach the final product; for instance, the red blood

cells are further filtered to separate any additional white blood cells that could cause an immune response in a donor. Plasma from four different donors can be combined to make one large unit of pooled plasma. As we witnessed the process of removing white cells from red cells, as well as the separation of the plasma and buffy coat, we learned that each donation turns into three blood products. Each of the three blood products has different storage requirements: red cells can be stored in the fridge for 42 days, platelets can be stored in an incubator for 7-10 days, and plasma can be frozen for longer-term storage. We were also briefly introduced to apheresis, where whole blood is taken, but the red cells are returned to the donor, and only the platelets and plasma are kept.

Our visit to the netCAD facility was a valuable and informative experience as researchers to learn more about the importance of blood donation and its many applications. As always, there is a great need for donors in Canada. As such, we encourage everyone to donate blood whenever possible, and feel free to learn a thing or two about the donation centre in the process!



netCAD facility

Read more summer student stories:
[www.tinyurl.com/
cbrsummerstudentshipprogram](http://www.tinyurl.com/cbrsummerstudentshipprogram)

Meet the researcher: Dr. Michael Sutherland

BY DR. EMILY PARK, POSTDOCTORAL
FELLOW, MA LAB



Dr. Michael Sutherland

You have been a member of the CBR since its inception! How did you begin your career?

I completed my PhD in biochemistry at the University of Ottawa with my current supervisor, Dr. Ed Pryzdial. Right before the CBR became an entity, Ed moved his lab to UBC in Vancouver. I finished my doctoral research and writing here at UBC, and then I defended back in Ottawa. After that, Ed offered me a position to continue the project. Having been a student for so long, familiarity with the project and financial factors made staying in Vancouver an easy decision. I thought it would be short-term, but I stayed for over 20 years.

What can you tell us about your current research?

I study the activation of coagulation proteins on the surface of envelope viruses, most recently coronavirus and dengue, and how this activation affects infection. Our early studies with herpes viruses (HSV1 and 2) and cytomegalovirus showed that phospholipid, which is usually sequestered inside cells and only exposed at the site of vascular injury, is on the surface of these viruses. We also found that tissue factor, a cofactor for one of the enzyme complexes involved in coagulation, is present on the surface of these viruses, and have used some commonly prescribed anticoagulation drugs as antiviral agents. Our unique work aims to determine the role of host-derived elements (such as phospholipid

For this edition of "Meet the Researcher", we had the pleasure of interviewing Dr. Sutherland about his background, his research studying the activation of coagulation proteins on the surface of enveloped viruses and how it affects infection, and his interests outside the lab.

and tissue factor) that are acquired by the virus during infection, and understand why this happens. For example, we have conducted a lot of enzyme generation and plaque assays and used mouse models of infection and inhibition assays to determine the role of viral tissue factor.

What is your mentoring strategy?

I aim to provide a safe and supportive environment for students and colleagues to learn and grow. I make sure that everyone knows the basics and understands that safety is always a top priority. I provide space for people to come and talk to me without fear of judgment, and I am always learning and adapting to meet the needs of those who I am mentoring. I try to adjust my approach to accommodate everyone's different ways of learning - some people need oral directions, while others prefer written guidance. Overall, my strategy is to be supportive, understanding, and flexible to help students and colleagues achieve their goals.

What does a typical workday look like?

I bike to work, usually super early in the morning around 5:30am, and I plan my day in my head as I ride. I enjoy getting in before everyone else as it's quiet and I get my own space. I typically write out a calendar and to-do list for the day, and cross things off as they are completed. After grabbing a coffee, I tend to go back and forth between tissue culture, whether it's growing cells or viruses, and administrative work. It's always different depending on what's going on! I often have meetings scheduled throughout the day, so I need to fit those in as well. Getting in early allows me to leave early and have some time to myself in the afternoon. Biking home also allows me to decompress from the day, which I feel is important.

As an experienced scientist, what advice do you have for early career scientists?

Prioritize diligence and consistency in your work. It is important to always do what is required rather than what is easy, and to resist the temptation to cut corners. This

means consistently following protocols to facilitate troubleshooting of experiments. Additionally, science cannot be forced into a schedule. Projects often require significant time and effort so my advice would be to persevere, prioritize the quality of your work, and celebrate the small victories along the way.

Managing to obtain and maintain funding for long-standing projects such as yours speaks to the value and impact of the work. What career accomplishments are you most proud of?

I think longevity is one of my biggest career accomplishments. To enjoy what I'm doing, be consistently challenged, and support trainees is hugely rewarding. This particular blood coagulation and infection project I am working on has been funded and evolving continuously for 20 years. That's a significant achievement for myself and Dr. Ed Pryzdial, and I am proud and satisfied to see it grow and succeed.

Is there anything else you would like to say that you haven't said yet?

The CBR is a great community to be a part of. There are always people coming and going, but there's a strong sense of support here, and people are friendly and willing to help out. The CBR initiatives, especially the health and wellness committee and the knowledge translation team, are helpful, and the CBR offers unique scholarship opportunities and education programs that provide opportunities for students. In general, I think it's a very supportive and beneficial group to be a part of.



Michael took this picture on a trip.

CBR Research Day 2023: Celebrating our summer students!

BY PANIZ GHAVIMI & RAYAN RAMADAN,
SUMMER STUDENTS ALUM (2023)

It's that time of the year! 23 summer students start to roam the CBR hallways, doing everything from lab, clinical, and computational research – all to get ready for Research Day 2023.

Each year, students have the opportunity to apply for the CBR Summer Studentship Program. This program supports them financially and academically through weekly seminars, workshops, and funding.

On August 9th, students, friends, family, and the CBR community gathered in-person and online to attend the annual CBR Research Day. The day started with a delicious catered lunch and brief remarks from Dr. Ed Conway, CBR director. Following the opening remarks, 23 enthusiastic students presented the research projects they had been working on all summer in a 3-minute oral talk.

Afterwards, Dr. Conway announced the recipient of the Neil Mackenzie Mentorship Excellence Award. Dr. Neil Mackenzie, a late Postdoctoral Fellow in Dr. Brömme's lab, was a devoted and caring mentor who was always available to support and motivate students and colleagues. This year's Neil Mackenzie Mentorship Excellence Award recipient was Dr. Grace Cole, a Postdoctoral Fellow in Dr. Karsan's lab. Dr. Cole indicated the significance of her mentors in her career and expressed the importance of mentorship and creating a friendly environment for the growth of students.

Next, Dr. Megan Smith, associate professor in creative technologies, provided a fascinating presentation on "Designing a New Future". She expressed the importance of connecting physical computing within virtual reality

environments. Dr. Smith described her various interesting projects and explained how she rode a networked vintage stationary bike across Canada.

Guests convened in the LSC Atrium to find posters covering the research topics presented during the oral presentations. Students were able to engage in lively conversations and answer questions about various details in their studies. This also presented a networking opportunity for students to get to know other members of the CBR community.

The evening concluded with an announcement of the "Best Oral Presentation" and the "Best Poster Presentation", awarded to Zechariah Geoffrey Noronha and Max Yang respectively. The best oral presentation was evaluated based on peer scoring, helping students engage in the process of evaluating science communication. A panel of judges evaluated the best poster presentation.

The variety of workshops and seminars leading up to this day helped students actively engage with presentations, presenters, and attendees. We asked a couple of students about their CBR Research Day experience:

"I was able to connect with other students who are also passionate about research and learn about a variety of studies that are going on". – May Jang, summer student

"Throughout CBR research day, I was able to connect with like-minded researchers and participate in a significant academic milestone- a poster presentation - which boosted my confidence and makes me endeavour to present in more future conferences." - Akilesh Shankar, summer student



Volunteers at the CBR Research Day 2023 check-in table.

Students got to walk out with more than just rolled-up posters. Research Day showcased their months of hard work to a community full of support! A special thank you goes out to the CBR community for their support and attendance at CBR Research Day 2023.

Many thanks to our sponsors, without whom the CBR Summer Studentship Program and CBR Research Day would not be possible: the Neil Mackenzie Memorial Fund, the Naiman-Vickars Endowment Fund, Bayer, the Canadian Blood Services, Stago and GRIFOLS. Additionally, we are grateful for all the support and kindness of Dr. Parvin Bolourani, Education Program Manager.

See you again next year!

Learn more about CBR Research Day:
<https://cbr.ubc.ca/events/research-day/>

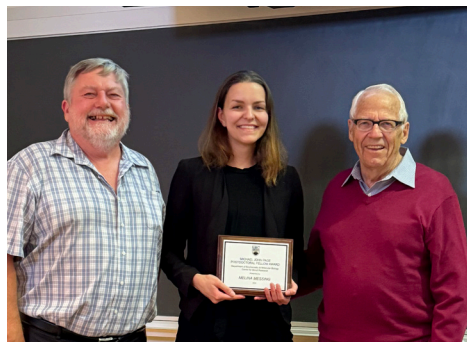


People gathered in the LSC Atrium.



Students, family, friends and the CBR community gathered for student presentations.

Michael John Page Postdoctoral Fellowship Award Recipient 2023: Dr. Melina Messing



L-R: Dr. Ross MacGillivray, Dr. Melina Messing, Roger Page

Tell us about your research.

My research focuses on immune responses in several conditions including muscular dystrophy, childhood allergic disease and most recently, COVID-19. One specific focus has been the use of high-dimensional immune cell characterization methods like mass cytometry to uncover skewed immune responses in the context of various diseases as well as immune biomarkers that aid with disease prediction, diagnosis, treatment, and prevention. My research on COVID-19 is one such example. During the peak of the pandemic, we obtained peripheral blood samples from ICU COVID-19 patients from which I isolated immune cells for the characterization of the immune response to the virus using a mass cytometry panel containing 40 antibodies. This led to the discovery of set of immune biomarkers that, at the time of ICU admission, was predictive of disease outcome.

How did you feel when you received the Michael John Page Postdoctoral Fellow Award?

I felt very excited and honoured. I was not fortunate enough to meet Michael but from what I learned about him; he was an

exceptional member of the community. I am truly honoured to receive an award that is given in his name. There are many scholarships/awards that recognize scientific achievements but few that focus on the extra-curricular activities that are such an important part of a scientific career and often go unnoticed. To be recognized for such activities like mentorship, equity, diversity, and inclusion (EDI) advocacy and science outreach, has really validated that my time was well spent undertaking those various activities.

What do you enjoy about science?

To me, the best aspect about science is being at the forefront of discovery. While many moments are filled with long hours, unsuccessful experiments, or non-significant data, it all is worth it in the light of a novel discovery such as a disease biomarker or a previously unknown mechanism that changes our understanding of physiological processes or diseases.

What's your passion in life? What motivates you?

Besides the obvious answer that my passion in life is science, I would say that my passion is to do something meaningful in my life that is challenging but fills everyday with purpose and long-term successes. I highly value my own personal growth even if that means failing a lot at first to achieve something in the future. I am also very much motivated by my family. I have an incredible support system that stands by my side through the toughest of times and it is very fulfilling to me to be able to show them that all their support and efforts are paying off.



Melina playing the cello.



Melina in the lab.

What are some of your most significant extra-curricular achievements (science or non-science)?

While I enjoy various extracurricular activities, the one that I cherish the most is student mentorship. I think this comes from having had incredible mentors myself that played such an important part in my career and personal development. Therefore, whenever I see the opportunity to do the same for new students/scientists, I enjoy 'going the extra mile' to make a lasting impact and inspire a passion for science. Based on my mentorship, I have been able to witness multiple students become interested in research, win awards, obtain scholarships, and start on the path to become a scientist. Making such a lasting impact on someone else's scientific journey feels like one of my most significant achievements with regards to extra-curricular activities.

What advice do you have to current or aspiring Postdoctoral Fellows?

Giving advice is tricky because everyone's experience and scientific path is so different. There were many things that I was told are essential to become a successful scientist (such as great networking skills, receiving important scholarships, publishing high impact). I didn't have any of these things for a long time, my career path deviated from the norm in many ways, and, for a long time, I did not feel that I belonged in this community. As it turns out though, one's individual path is entirely good enough if you have a true passion for science and dedication to your work. The one thing that I ever needed to be successful was an incredibly supportive mentor that believed in my abilities at times when I did not believe in them myself (Thank you Kelly McNagny!).

Meet the 2023-2024 Graduate Award Program (GAP)



I am Aleksander (Alek) Lazarski, PhD Candidate, Dr. Natalie Strynadka Lab. I perform functional and structural characterization on *S. aureus* secretion and export systems through techniques such as isothermal titration calorimetry, X-ray crystallography, and Cryo-EM. Determination of these protein structures allows for a greater understanding of *S. aureus* pathogenesis, as well as provides a foundation for novel therapeutic development.

Hobbies: Fly fishing, Hockey/Softball, and walking my dogs.

If I were an animal: I'd be a bald eagle as it would symbolize my love of the outdoors and the great pacific northwest. I would also be free to catch fish easier.

My name is David Lim and I am a PhD student in chemistry under the supervision of Dr. Jayachandran Kizhakkedathu and Dr. Suzana Straus. My research focuses on developing novel thrombosis inhibitors for the prevention and/or treatment of immunothrombosis, while still maintaining haemostasis. I hope that my work will allow the more in-depth understanding of immunothrombosis, besides providing a novel strategy which has the potential to significantly improve the clinical outcomes of many Canadians suffering from thrombotic and associated inflammatory diseases.

Hobbies: I like staying active, so you can find me hitting the gym, going on a hike, or biking. I am currently learning how to skateboard and play guitar.

If I were an animal: I would be a panda so I could just be snoozing and people would still reckon that I was cute.



I am Debajeet Ghosh, a PhD student working in Dr. Aly Karsan's Lab. Currently, I am working on investigating the role of different genetic elements in propagating different models/subtypes of Acute Myeloid Leukemia. The first model involves the impact of a DNA damage protein in instigating AML-associated chromosomal abnormalities. My second project involves an inflammatory positive feedback loop that we hypothesize promotes clonal hematopoiesis of indeterminate potential (CHIP).

Hobbies: I love reading fiction, staying active/exercise, and video games.

If I were an animal: I'd be a bat because I love spooky things. I hate the sun, from my perspective, life is often times upside down, and I love a good berry.

My name is Grace Kuo and I am a Masters student in the McNagny Lab. My research focuses on generating ILCs from engineered pluripotent stem cells and exploring their functionality as a next-generation toolset for understanding ILC cell fate decisions, lineage plasticity, and advancing CAR-ILC immunotherapy.

Hobbies: I enjoy doing yoga, snowboarding, hiking, and pencil sketching.

If I were an animal: I would be a koala so that I could sleep all day and still have all the koalifications!



Hi, my name is Iryna Liubchak, MEdSc, 2nd year PhD student in Dr. Karen Cheung's Lab. I'm working on the interdisciplinary collaborative project named Mend the Gap which aims to develop a treatment for spinal cord injury. My research focus is on the fabrication and in vitro testing of injectable hydrogel biomaterials. I'm developing a hydrogel that can be quickly polymerized through exposure to visible light, and I'm applying this hydrogel for 3D culture of neurons using microfluidic devices to study axonal growth.

Hobbies: I like hiking, skiing, going to the gym, reading and listening to music.

If I were an animal: I would probably be a dog because I love going on long walks with friends!



My name is John Perrier, I am a Masters student in the department of Pathology and Laboratory Medicine. In the Pryzdial Lab, my research focuses on the exploitation of a host encoded protein, tissue factor, by a diverse range of enveloped viruses. Tissue factor initiates clotting and has important roles in cell signaling; on the surface of enveloped viruses, tissue factor has been shown to be required for in vitro and in vivo infection. The aim of my research is to identify the decryption of viral tissue factor as the basis for enhanced in vitro infection across distinct virus families, supporting tissue factor as a target for broad-spectrum antiviral therapeutics.

Hobbies: I like to camp, eat grilled cheese and go for the occasional run.

If I were an animal: I would be a chipmunk because I am curious and love to explore.

My name is Joyce Teodoro and I am a PhD student in Dr. Hong Ma's Lab. My research involves developing a method for separating cells according to selection criteria derived from microscopy images.

Hobbies: I love spending time with family, watching the Whitecaps play at BC Place and recently, I have also been enjoying swimming.

If I were an animal: I would really like to be a bird! Wouldn't it be nice to be able to fly anywhere and not need a passport?



My name is Juliet Kien Zama, a 1st year Masters student in the department of Pathology and Laboratory Medicine. I'm currently working in the Côté laboratory! My research is focused on examining markers of immune aging and inflammation among women living with human immunodeficiency virus (HIV) and hepatitis C virus (HCV) over time.

Hobbies: I like to cook, listen to music, or just take a short nap.

If I were an animal: I would be an eagle because they have great vision and are fearless. No matter the strength of a prey, the eagle does not move their focus from it until it's captured. That's how I see myself.

My name is Kiran Toor, and I am a Master's student in the Women+ and Children's Health Sciences Program in the Brown Lab. My research focuses on evaluating renal and pulmonary disease in pediatric-onset ANCA-associated vasculitis. This is a rare disease, that causes inflammation and damage to small and medium sized blood vessels. I hope to evaluate disease course, outcomes and predictors of outcomes. Ultimately, having direct implications for patient care by improving the ability to counsel pediatric patients and their families, anticipating disease course and prognosis and by discovering what factors may predict worse or milder renal and pulmonary disease.

Hobbies: I enjoy hiking, exploring new spots in Vancouver, reading and baking.

If I were an animal: I would be a butterfly as they like to explore the world and nature, and they are often symbols of transformation and growth!



My name is Stephanie Besoiu and I am a PhD student in the Jeffries Lab! I am studying a relatively new type of immune cell called type 2 innate immune cells (ILC2s), in a process called antigen presentation, an important component of cancer and vaccine immunity.

Hobbies: I love crocheting, playing volleyball and going to concerts. (I'm always interested in hearing new band recommendations)

If I were an animal: I would be a cat, as I also just want to lounge and take naps in the sun!

The CBR Graduate Award Program (GAP) is an educational development program available to MSc and PhD students. The program provides successful applicants with funding, as well as a chance to develop professional experience that is useful in and beyond academia.

National Postdoc Appreciation Week 2023: Celebrating CBR Postdocs and Research Associates

In honour of National Postdoc Appreciation Week (NPAW), we spoke with a couple Centre for Blood Research (CBR) Postdoctoral Fellows and Research Associates, to highlight their work, share their stories and celebrate their journeys.



Dr. Anna Herrmann
Postdoctoral Scientist
Strynadka Lab

Tell me about your research.

We are trying to treat sepsis which is an over-inflammation of the body and still leads to patients dying from it due to a lack of treatment. We are using the combined power of biology and chemistry with the goal to target and rehabilitate affected cell surfaces. By mimicking naturally occurring sugar units, we are trying to help the body to help itself in fighting off such inflammatory diseases!

What led you to the lab?

I did my PhD in Germany and had listened to a talk given by Jay, who I work for now. I

really liked his presentation and his research, so when I heard he had an open position, just when I had finished my PhD, I took the chance and moved to Vancouver. It took a bit of courage because of the pandemic and working in a completely new field of research but I am so glad I did because I learned a lot and had an overall great experience.

What do you enjoy most about science?

There are lots of opportunities to go in whatever direction you want to go and there is not just one single path to resolve your (research) problems. As overwhelming as it can be, I learned to appreciate it and see it as an advantage. Finally, and maybe most importantly, I like how diverse and international research is and that it allows us to travel, work and collaborate across borders.

What do you do outside the lab?

I love doing all sorts of activities! I like outdoor activities like snowboarding and snow shoeing in the winter. I hiked the Juan de Fuca trail and also went on a 5-day kayaking tour. I also enjoy traveling, going to see concerts or dance performances. This year, I tried wheel throwing, pottery and tie dyeing. I also love just hanging out at the beach or at a bar with my friends.



Dr. Georgina Butler
Research Associate
Overall Lab

Tell me about your research.

My research is focused around proteases, enzymes that work like scissors to cut other proteins, of which we have more than 500. Some proteins are completely destroyed by proteases, but others are lightly trimmed which can change their function by altering how they interact with other proteins. Using proteomics techniques, I am investigating the role that proteases play as master regulators by identifying which proteins they cut, and the effect that trimming has on protein function. Following on from MMPs, I have been looking at the SARS-CoV-2 main protease to determine which human proteins are cut and how this helps viral infection, to identify therapeutic targets for COVID-19.

What led you to the lab?

I arrived in the lab in January 1999 from the U.K. I remember being shocked at how much it rained - 1999 was a record snowfall year - they had to dig channels in the snow for the chairlifts on the North Shore. I was studying structure-function relationships

of matrix metalloproteinases (MMPs) with Prof. Gill Murphy in the UK and came to Prof. Chris Overall's lab at UBC with a Wellcome Trust Travelling Fellowship to expand on that work. It was supposed to be for 2 years, but almost 25 years later I'm still here!

What does being a Research Associate (RA) involve?

Being an RA has enabled me to continue to work at the bench for my whole career, something that most Principal Investigators (PIs) do not get to do. One of the most enjoyable aspects of my job is designing projects and supervising CBR summer students, COOP students and PhD students. I was very happy to receive the Centre for Blood Research Neil Mackenzie Mentorship Excellence Award in 2019. I have additional responsibilities that facilitate the smooth running of the lab, such as writing animal care and ethics protocols, editing lab manuscripts and grant writing. Being an RA has its challenges: the position is grant dependent, contracts are annual and as a group, RAs tend to fall between the cracks, being neither tenure track faculty nor postdocs. However, despite this, I have really enjoyed my 2 decades in this position and being a part of the CBR community since the opening of the Life Sciences building in 2005.

What do you do outside the lab?

I love working at the bench because it is like doing crafts - at home, I alternate between many different projects - stained glass, macramé, photography, sewing, quilting, furniture upholstery, crochet, watercolour painting, acrylic pouring, gardening, furniture and clothing upcycling. At the moment, I am trying to keep unwearable clothes out of the landfill by crocheting them into rugs. I also enjoy canoeing, mountain biking, skiing with my family, and being with my cats.



Dr. Michael Hughes

Research Associate

McNagny Lab

Tell me about your research.

I'm a Research Associate in the Kelly McNagny Group. I have been working to develop new immunotherapies for cancer, trying to understand the mechanisms underlying inflammatory disease in mucosal tissues (like the gut and lung) and exploring how normal gut bacteria (flora) shapes immune response. I am also trying to figure out the genetic and environmental triggers that cause a progressive kidney failure syndrome. Although these seem like diverse interests, there are surprisingly common themes that connect the projects. With links to blood development and transfusion medicine (the place it all started). And, importantly, these aren't solo efforts! We have teams of trainees at all levels contributing to this work. I do my best to mentor and guide them through the projects.

What do you do outside the lab?

My wife (also a scientist) and I used to have hobbies, but now we have a 9-year-old daughter. Our outside the lab time is fully dedicated to her activities: swimming, skating, gymnastics, soccer & music lessons.

Except for the music lessons, I'm not much help but I very much enjoying watching her learn and grow. I can't think of a better way to spend my time!

What led you to the lab?

I remember seeing Kelly present at a conference when I was a PhD student. The energy and passion he had for his own research inspired me. When it came time to find a PDF position, he was one of the first labs I looked to. Meeting with his students and PDFs convinced me that he brought that same kind of passion and curiosity to his lab as a mentor. I very much wanted to be a part of that environment.

What do you enjoy most about science?

I love to learn something new every day. I'm thankful that my job is essentially that - doing my best to acquire knowledge and make discoveries. I also very much like mentoring and sharing the joy of learning with trainees. Being a part of trainees' development and helping them achieve their goals is the most rewarding part of my work.

Read more NPAW profiles on the next page! >

National Postdoc Appreciation Week 2023



Dr. Grace Cole

**Postdoctoral Research
Fellow**

Karsan Lab

Tell me about your research.

Many blood cancer patients require a stem cell transplant but are unable to find a donor. One possibility to circumvent the need for donors is generating blood cells by reprogramming the patient's own healthy cells. I am researching which factors promote blood cell formation during development so that we can improve these protocols.

What led you to the lab?

My wife and I met while we were completing our PhDs in our native Northern Ireland. We discovered pretty early that we both wanted a change and decided to travel. After completing our graduate studies, we applied for visas and moved out to Vancouver although neither of us had a job lined up. I applied for jobs in labs where the research appealed to me and I really admired the work Aly's [Karsan] lab had been doing in leukemia. I applied for a position as a research assistant before transitioning into a postdoc role about 3 years ago.

What do you do outside the lab?

I have always loved sports and exercising! I try to get to the gym or go jogging 5 times a week. I am also a huge rugby fan and at the moment am spending far too much time following all of the Rugby World Cup results. To relax, I love reading and playing with my cats, Zeus and Apollo.

What advice would you give to someone still searching for a program/Postdoc position?

Finding the right fit is important. The project and the research environment should match up with your skills and also help you develop as a researcher. When you find a lab that could be a good match it can be helpful to attend lab meetings to hear more about the ongoing projects. It's also an opportunity to talk to some of the lab members to see what training opportunities they have had.



Dr. Marine Theret

Research Associate

Overall Lab

Tell me about your research.

I work with a specific type of adult stem cells that are present through the body. These cells play an important role to keep tissue organized at resting state. However, they also participate in the formation of fibrotic scar after

changes in the environment that can be due to a damage or infections. These stem cells act on the inflammation by secreting many cytokines. My research aims to understand which signal within these stem cells is regulating their immune functions. Findings from my project can be applied to chronic inflammatory diseases such as Multiple Sclerosis.

What led you to the lab?

I have known Fabio Rossi through his amazing work in the skeletal muscle field. I met him at my first international conference in 2014 during a Federation of American Societies of Experimental Biology (FASEB) meeting. At that meeting, he gave one of the most amazing talks I've ever attended and I told myself that I should apply to his lab for my postdoctoral training. After a few emails, skype calls, and a visit in 2015, I moved to Vancouver in May 2016.

What do you do outside the lab?

I try to make the most of my time out of the lab by enjoying the outdoors. Lots of my weekend will be spend hiking, camping, backpacking and swimming in lakes. My last trip was 6 day long in the Rockies!

What is an award or achievement that you are proudest of?

The award I am most proudest of is the Neil Mackenzie Mentorship Excellence Award. I received this award from the CBR in 2021. Before, I would struggle with mentoring under stress. I have learned how be more attentive to other's need and I was thrilled to receive such positive feedback from my students!

Thanks to everyone who participated in NPAW 2023! Thank you to all of our postdoctoral scholars and research associates for their significant contributions to research and discovery.

CBR SCIENTISTS IN THE NEWS

*research, media mentions &
news articles*

UBC Applied Science research awarded over \$3.7 million from New Frontiers in Research Fund (NFRF)

The NFRF supports world-leading interdisciplinary, transformative and rapid-response Canadian-led research. Dr. Hongshen Ma has been awarded \$250,000 for his research in immune profiling using single cell cytokine secretome and transcriptome analysis.

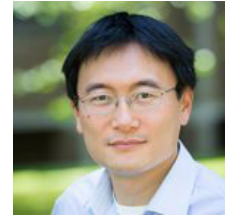
How superbugs get their superpowers

A recent study led by UBC researchers, including senior author, Dr. Natalie Strynadka, is shedding light on how one of the world's most notorious superbugs, *Staphylococcus aureus* (*S. aureus*), develops resistance to antibiotics.



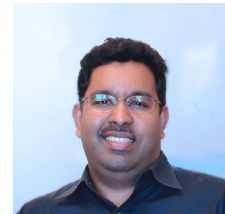
Two CBR scientists appointed as new Canada Research Chairs

Dr. Aly Karsan and Dr. Jayachandran Kizhakkedathu are among a group of Canada Research Chairs (CRCs) announced by the Government of Canada.



Faculty of Medicine researchers awarded \$26 million through CIHR Project Grants

A total of 54 projects led by UBC Faculty of Medicine researchers were awarded more than \$26 million in combined funding. Dr. Jayachandran Kizhakkedathu was awarded a project grant and Dr. Kelly McNagny was awarded a project grant and priority announcement.



Left to right, top to bottom: Drs. Natalie Strynadka, Kelly McNagny, Hongshen Ma, Aly Karsan, and Jayachandran Kizhakkedathu.

Neil Mackenzie Mentorship Excellence Award Nominees 2023

Mentorship is an integral part of the CBR and the CBR Summer Studentship Program. Each year, the CBR will recognize an individual who has demonstrated outstanding commitment to mentorship and the development of others, in memory of Dr. Neil Mackenzie, a late Postdoctoral Fellow in Dr. Brömme's lab.

CBR members have the opportunity to nominate their mentors for the Neil Mackenzie Mentorship Excellence Award. The award recipient is announced at CBR Research Day in August.

We were so pleased to receive nominations for 10 individuals this year! Congratulations to all, and thank you for fostering a supportive learning environment at the CBR.

2023 Nominees

Dr. Grace Cole, Karsan Lab - Recipient

Kevin Gonzales, Conway Lab

Dr. Kyung Bok (KB) Choi, Jefferies Lab

Dr. Melina Messing, McNagny Lab

Dr. Michael Sutherland, Prydzial Lab

Dr. Morten Ritso, Rossi Lab

Dr. Nasim Kajabadi, Rossi Lab

Dr. Nooshin Safikhan, Conway Lab

Dr. Patricia de Oliveira Benedet, Conway Lab

Peter Grin, Overall Lab



Dr. Grace Cole holding the Neil Mackenzie Mentorship Excellence Award with Dr. Parvin Bolourani.

Neil Mackenzie Mentorship Excellence Award Recipient 2023: Dr. Grace Cole



Dr. Grace Cole is a Postdoctoral Research Fellow in the Karsan Lab. Grace is researching which factors promote blood cell formation during development so that protocols around stem cell transplant and the need for donors can be improved. Grace completed their PhD in Northern Ireland and moved to Vancouver after completing their graduate studies. Outside the lab, Grace is an avid rugby fan and loves exercising! They also enjoy reading, and playing with their cats, Zeus and Apollo.

We were able to interview Grace and learn more about their mentorship journey and what receiving this award means to them.

How did you feel when you found out that you received the award?

I was so overwhelmed when I heard the news. I have always enjoyed teaching and supporting students and lab mates. It was such a great feeling to know that my colleagues see and value that. The Neil Mackenzie Award is very special and meaningful, and even being nominated is a huge compliment. I would like to thank my team for taking the time to nominate me and to acknowledge that aspect of my work. Considering how many excellent mentors we have at CBR, winning was very unexpected and I am really proud to be a recipient.

What qualities do you think are important for anyone in a mentor position?

Although I think all mentor-mentee relationships look different, these are some of the qualities that I try to bring to my mentorship:

1. Making time: I think that this is one of the most important qualities for being a successful mentor. Depending on the stage that your mentee is at, they may need a lot of time and patience, especially at an early stage of their career. If you dedicate time for the relationship initially, it will allow you to set expectations, understand their goals, and reflect on where they need support. Checking in regularly to give feedback and to see how they feel things are going is key.

2. Establishing good communication: Being approachable and encouraging your student to communicate with you if they have issues will help their (and your) development a lot. When I start working with a new student I try to let them know early on how much time they can expect to spend with me, what I hope to see, and how that might change as they become more independent. Part of that is encouraging them to ask questions when they are unsure of something and letting them know when a good time is to approach me with any issues they are having. I also let them know that making mistakes is a normal part of the learning process and that they can come to me if they think something has gone wrong so that we can figure it out together.

3. Being adaptable: Even if you don't realize it, you have a communication and mentorship style, and because everyone is different, your natural approach will be more compatible with some people than others. It is important to reflect on what works well for your mentee and to be able to adjust accordingly. This could involve making changes to how you communicate and asking for their feedback.

What's the most rewarding part of mentorship?

For me the most rewarding part of mentorship is seeing growth in the people you are working with. Seeing students gaining confidence and applying the knowledge that they have acquired during their time with us makes me feel like I have really contributed to their development.

What's your biggest challenge as a mentor?

I want to give students enough information, context and training that they understand what they are doing. On the other hand, I don't want to deny them the chance to learn things independently or work things out for themselves. I can find it challenging to strike this balance and am still learning how to give students the right level of input and support. I want to make sure that I am providing them enough guidance while also giving them the opportunity for personal growth and developing their trouble shooting skills.

Tell me about a few mentors who have greatly influenced your own scientific journey.

I studied Pharmacy for my undergrad, but struggled a lot. I felt like I didn't fit in well in an environment that was quite conservative and normative. I also had a hard time connecting with classmates and lecturers which made me struggle to see a future for myself in the profession. Now I know that this was at least in part because I did not see myself represented in the faculty or staff who led our placements. I am really grateful to Prof Brendan Gilmore who gave me my first experiences in research, which was a much better fit for me. His mentorship was hugely influential for me as he saw my potential and encouraged me to apply for graduate studies. I am also grateful to my PhD supervisor, Prof Helen McCarthy, who, I hope she won't mind me saying so, was pretty non-normative herself. The environment she created allowed me to be myself and developed me into an independent thinker. My current supervisor, Prof Aly Karsan, has also helped me develop a lot during my time in the lab.

What are your parting words on mentorship?

I think it's important to realize that while a lot of mentoring will be through formal activities like supervising students, you will also do a lot of informal mentoring. Sometimes, you may not even realise that some people consider you a mentor. What I mean by this is, academia is a very collaborative environment and we are all learning from and teaching each other.

The people around you, especially those junior to you, are always learning from you and your example. How you interact with people, the time you take to share your expertise or offer your feedback and support can set the standard for the environment and be very influential to those around you.

Grace would also like to extend thanks to all the past students that helped develop their mentoring skills. They also thank their lab mates, past and present, especially the senior grad students and postdocs who took the time to pass their knowledge and skills over. Lastly, Grace said they wouldn't be here if it wasn't for organizations who funded their education including Prostate Cancer UK, the UK's Medical Research Council, and Health Research BC.



Grace's two cats, Zeus and Apollo.

Learn more about the award at:
www.tinyurl.com/cbrneilmackenzieaward

REINVENTING PROBES & WHEELS: A PROFILE ON ANDY AN

BY MOPELOLA AKINLAJA, PHD CANDIDATE, FOSTER LAB

I had the opportunity of chatting with Andy An, an MD/PhD candidate in Professor Bob Hancock's lab at the CBR. I learned about some of his passions, including bioinformatics, science communication, and pottery. Andy's PhD research interests revolve around understanding the immune dysregulation in sepsis, which is life-threatening organ dysfunction due to an out-of-control host response to infection. Interestingly, he described his introduction to sepsis research as serendipitous. He met with Bob to

discuss his interest in a different topic for the doctorate portion of his degree. As fate would have it, he was inducted into the world of sepsis, a topic that ended up fascinating him and being more relevant to his clinical interests. Andy explained how complicated of a disease sepsis is, killing millions of people each year, with no personalized treatment currently available.

Read Andy's full profile on:
<https://cbr.ubc.ca/category/news/profiles/>



Andy making pottery.

CBR KUDOS & LAURELS

awards, achievements & accolades

Dr. Natalie Strynadka awarded University Killam Professor, UBC's highest faculty honor

The University Killam Professorship recognizes exceptional teachers and researchers who are leaders in their fields, and who have received international recognition for their talents and achievements.

Dr. Md Mahamud ur Rashid, Dr. Pryzdial Lab receives Canadian Institutes of Health Research (CIHR) Fellowship Award

Dr. Md Mahamud ur Rashid is awarded the CIHR Fellowship for investigating the role of host-derived clotting factors in viral pathogenesis and infection, targeting these for the development of broad-spectrum antiviral agents.

Dr. Aly Karsan awarded Excellence in Clinical or Applied Research

Dr. Aly Karsan is a 2023 Faculty of Medicine Distinguished Achievement Award recipient, which recognizes faculty members who exemplify exceptional contributions in the areas of education, research and/or service, and who are dedicated to advancing both the Faculty's values and vision of transforming health for everyone.

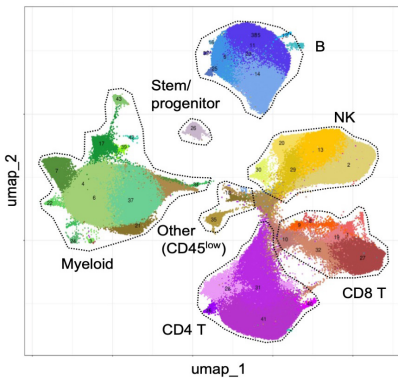
SLAS Announced \$100,000 Graduate Education Fellowship Grant Awarded to Samuel G. Berryman, Ph.D. Candidate in Dr. Ma Lab

The SLAS grant will support Berryman's research in developing and designing technologies for studying Chimeric antigen receptor (CAR)-T cells, a cell type used for a novel form of cancer therapy. (RSC) in recognition of his outstanding scholarly and scientific achievement.

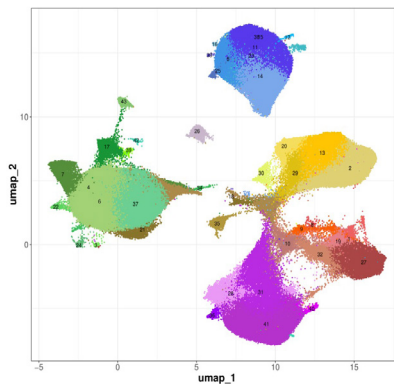
Read about more awards and accolades at: www.cbr.ubc.ca/category/news/awards/

CBR MAGAZINE COVER ART CONTEST

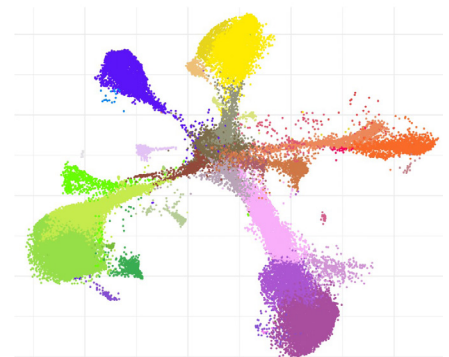
This year's cover art contest winner is Dr. Melina Messing, Postdoctoral Fellow, McNagny Lab.



For this entry, immune populations were manually labeled.



For this entry, immune populations were not labelled but cluster numbers were not removed.



This is a more artistic brush-stroke style clustering plot without any labels.



"The Diversity of Umbilical Cord Blood Immune Cell Populations"

Isolated umbilical cord blood immune cells were characterized using mass cytometry (CyTOF). The image was generated with the Rphenograph clustering algorithm and each dot on the image represents a single cell.



CBR alumni: Get in touch!



Regardless of when you graduated, we hope that you will keep in touch and stay engaged with us!

Are you a CBR alum who wants to share your experiences, connect with the CBR, have your profile featured, or update your contact information?

Contact the CBR Communications and Programs Coordinator: Kaitlyn Chuong (kaitlyn.chuong@ubc.ca)

Visit our alumni page: www.cbr.ubc.ca/alumni



We would like to thank our sponsors for their generous support, without whom the Earl W. Davie Symposium and CBR Programs would not have been possible:



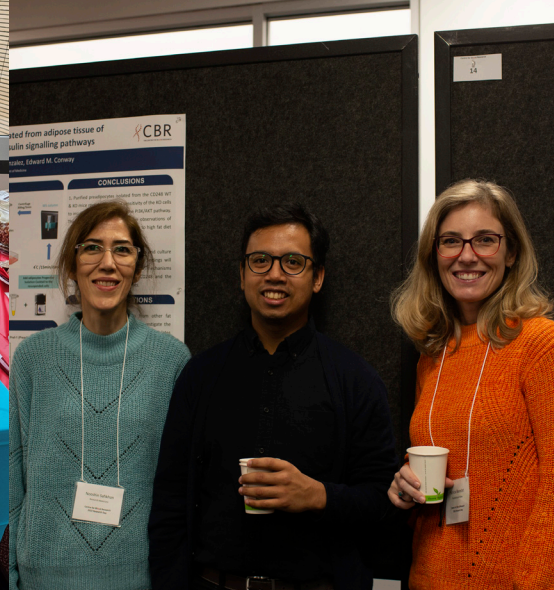
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