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Thanks to the collective efforts of our finance team (Genevieve MacMillan, Linda Yang, Eric Toh, Lucas do Livramento) and the support of all stakeholders, our department has successfully addressed the structural deficit, significantly improving our financial stability. This achievement allows us to enhance support and mentorship for our clinical faculty and to initiate succession planning for academic faculty.

This year, our department saw substantial growth and recognition in both clinical and academic spheres. Across the province, 38 clinical faculty members were recruited to different hospital sites, and 3 research faculty members were recruited into research institutes. Five senior faculty members retired, and 18 faculty members were promoted, including 2 tenured faculty promotions and 16 clinical academic faculty promotions. Our faculty members have been honored with numerous prestigious awards, including four of the sixteen most prestigious Faculty of Medicine Distinguished Achievement Awards. For the full list of awards and detailed descriptions, please refer to the awards section of this report. Congratulations!

On the educational side, we celebrated the graduation of 5 residents, 6 clinical fellows, 3 PhD students, 6 Master’s students, and 14 BMLSc students. Curriculum upgrades are well underway in our BMLSc program, graduate program, and infection prevention and control certificate programs. On the research side, our department successfully...
Zu-hua Gao, MD, PhD, FRCPC, FCAHS
Professor and Head

Zu-hua Gao obtained 125 new research grants (78 grants as PI, 47 grants as co-PI), totaling over $41 million. Our faculty published over 610 peer-reviewed articles and delivered thousands of hours of lectures globally.

It is time to celebrate what we have collectively accomplished in the past year. It is time to reflect on what we have learned during our journey. It is also time for us to evaluate the new reality and plan our future endeavors. As the implementation of our strategic plan continues to unfold, I look forward to working with all of you to achieve even greater levels of accomplishment and impact in the year to come!

Zu-hua Gao
STRATEGIC INITIATIVES

Pathology Grant Application Practicum (PGAP):
This 4-month interactive practicum covered a variety of topics in the domain of preparation and evaluation of competitive grant proposals. Each two-hour hybrid session addressed critical aspects of generating a competitive research grant proposal. Sessions were tailored for early career faculty, clinical faculty new to research, and senior trainees in a transitional role. Using didactic and interactive methods, workshop participants could choose to submit a seed grant application or serve in a grant application reviewer role. The overall objective was to provide critical core skills training for PALM faculty and trainees that complemented their program-specific objectives and facilitated synergy among PALM academics and clinicians. In this inaugural 2024 cycle, 2 collaborative seed grants of $15,000 were awarded from a total of 4 applications received. The grant application practicums were awarded to Maziar Riazzy and Shannon Healy. Feedback from PGAP participants was overwhelmingly positive, and plans are underway to ensure the sustainability of this program and expand its reach. This activity directly supported the first Moving to Action aim for Research, namely, to strengthen clinically relevant research capacity and capability and build connections between clinician-researchers and fundamental science.

Researcher Dashboard:
Led by Sneha Dabgar, we have developed the first iteration of a Researcher Dashboard that enables both the department and individual investigators to track their research grant successes over a 10-year period. By including both the number of applications filed (through the Office of Research Services) as well as number of applications awarded, success rates can be tracked by investigator, research site, gender, career stage, and more. We aim to have this Dashboard be a user-friendly way to support identification of strengths and weaknesses in research across our Department, and for investigators to help prepare their annual Activity Reports as well as applications for seed grants.
Biobanks:

Led by Debbie Bertanjoli, we have successfully gathered information about biobanks held by our Departmental Faculty members. This project has explored methods to increase access to and use of human tissue and fluid specimens, as well as collected information on research interests, available equipment, and supervision. It may now become a priority for future support for staffing and infrastructure expenses through the new Canada Foundation for Innovation Core Facility Stream. For more details, please visit: https://pathology.ubc.ca/academic-faculty-research-interests.
STRATEGIC INITIATIVES

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Bachelor of Medical Laboratory Science (BMLSc):

1. Established a BMLSc Executive/curriculum committee with broad representation from academia, provincial labs, and industry which will advise the program and make recommendations on policies and curriculum.

2. Implemented a BMLSc Co-op program which has been approved by UBC Senate.

3. Carried out a Search to recruit a new Assistant or Associate Professor of Teaching who will also assume the position of Director for the BMLSc Program.

4. Facilitated in-house events to introduce extra-curricular opportunities by collaborating with other units on campus (e.g. Go Global, Career Services, and Enrolment Services).

5. Implemented several strategies to network and advertise the BMLSc Program to reach a broader range of potential applicants (e.g. Indigenous Experience UBC, Online Info Session).

6. Held the Vancouver Summer Program and hosted 31 international students.

7. Started the development of a new BMLSc course in Modern Pathology technologies.

Graduate Programs:

1. Held Round Table consultation about the Graduate Program.

2. Started the development of a new graduate program which has been approved.

3. Carried out a Search to recruit a new Assistant or Associate Professor.
Developed several new courses and updated existing curriculum to include teaching around Big Data analysis and visualization, machine learning, genomic and single cell analysis, and the use of R.

Established an Alumni Engagement Committee.

Surveyed broadly with student and supervisors in the PALM Graduate Studies Program and revised the format of the PALM Comprehensive exam to allow students to develop grant application ideas more closely related to their thesis work.

The PALM Student Association (PaSA) organized several professional development activities and social events for graduate students and post-doctoral fellows.

RESEARCH AND EDUCATIONAL HIGHLIGHTS

Several BMLSc students honed their research skills in PATH 438 Directed Studies and 4th-year BMLSc students hosted a student-led panel discussion with 3rd-year students to share their experiences in finding their research supervisors. Trainees in the Graduate Program received several external awards including a Vanier Award, 4 CGS-Doctoral and 4 CGS-Master awards. Together, as of April 2024, the graduate students in the PALM Graduate Studies program have received over $2.75 million in competitive awards/scholarships over the course of their graduate studies.

EQUITY, DIVERSITY AND INCLUSION (EDI) EFFORTS

The BMLSc Student Resources was updated with UBC’s EDI resources. The BMLSc also expanded its outreach to prospective students in rural BC by offering an online info session in addition to the in-person one. The BMLSc implemented an expedited admission review for Indigenous applicants which resulted in two early admission offers for September 2024. Both the BMLSc and Graduate Studies Program are currently fairly diverse with a majority female and/or racialized students.

COMMUNICATION AND OUTREACH

2023 Outreach and Engagement Highlights:

The BMLSc Program held an alumni reunion attended by over 30 participants. The PALM Graduate Program Alumni Engagement Committee held its first-ever reunion of PALM Graduate Program Alumni on May 16th. BMLSc students were featured in both the FoM Back to School and International Women’s Day features (https://www.med.ubc.ca/news/back-to-school-2023, https://www.med.ubc.ca/news/international-womens-day-2024/). PALM graduate students were featured on several occasions, including on the UBC G+PS website (https://www.grad.ubc.ca/campus-community/meet-our-students/povsheda-tetiana) and the Centre for Blood Research Newsletter (https://cbr.ubc.ca/behind-the-science-improving-the-health-of-women-living-with-hiv/).
EXECUTIVE COMMITTEE

VICE-CHAIR OF CLINICAL EDUCATION
Dr. Mike Nimmo

The DMP successfully matched all four spots within the UBC medical school ecosystem. In efforts to engage sites outside of Vancouver, the DMP program introduced an additional exam in 2023, which will be administered annually and will consist of examiners from across BC putting our current residents through a full mock Royal College oral examination. The DMP program has also condensed the clinical training for residents during their PGY1 year, allowing residents to become fully immersed in their pathology training six months sooner than in previous years. With this accelerated training timeline, the DMP program has also developed dedicated sub-specialty training blocks for the DMP program has also developed dedicated sub-specialty training blocks for residents specializing in an Area of Specialized training in an Area of Specialized training in an Area of Speciality.

1. Physical Space Changes:
- Developments and reassignments that so
far are placing a great burden of stress on the residents. The most pressing change has been the DPLM design at Vancouver General Hospital which has resulted in a significant displacement of residents from the Diagnostic and Molecular Pathology, Hematopathology, and Neuropathology training programs. The residents have been moved away from the main laboratory area which has resulted in increased passage of patient material back and forth through public hospital areas, and increased time away from clinical and educational activities in order to check on cases being ready for review as well as following up.

The residents have also lost space for food and beverage, resulting in residents not being able to work while they have a meal, again reducing productivity and learning opportunities. Inter-resident education is very important to help grow the knowledge base of junior residents and develop communicator and collaborator skills for senior residents; these skills are hindered with the loss of teaching space such as a multi-head microscope where activities such as this typically occur. Lastly, the residents are no longer near to the staff pathologists which removes the 'shadow curriculum' in pathology training, where informal discussions and teaching occur when staff and residents pass by each other or have a spur-of-the-moment interesting case. There are major concerns for the residents being able to return to their previously occupied space in the lab after

2. Technological Changes in Training:
The residency programs at UBC are significantly behind the emerging, and in some cases standard of care, workflow of digital pathology. Although we provided residents with opportunities to learn and excel in

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The case material and staff pathologists are second to none across all three disciplines at VGH, but without a fully supportive physical space, the UBC residency programs will be limited in their ability to reach their full potential. In addition to the redevelopment at VGH, the DMP and HP programs are facing significant space constraints at BC Cancer Agency which has resulted in our residency program having to reassess how many residents can access the case material and staff expertise at BCCA at any given time. Both programs use this site as a main teaching hub for molecular pathology, arguably one of the most important aspects of pathology practice in today's environment. Additionally, BCCA provides DMP residents with opportunities to learn and excel in various fields not available at other sites, which is not only critical for developing skills for practice but also for successful completion of the Royal College examination. Although other sites are being explored to offset some of these changes at VGH and BCCA, including Surrey Memorial, Royal Columbian, Victoria, and other hospitals, they themselves are not in a position to take more than one resident, if at all, at any one time. A concerted effort to provide office space for resident trainees in all disciplines of pathology is crucial, and may have long lasting effects on UBC's ability to recruit and retain pathology residents, who can and want to provide equitable and accessible pathology services throughout BC.

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TECHNICAL CHANGES IN TRAINING:
with examinations in order to help prepare for their examinations in digital pathology, residents across the field do not have access to routine diagnostic care using digital pathology which is becoming more and more a standard work practice in the world. Residents are not able to learn and practice in the field of Clinical Informatics, which comes together with digital pathology. For the UBC programs to attract the best and brightest residents, we will need infrastructure support to implement workflows and educational paradigms, which will in turn expand the skillset of residents as they move into clinical practice and improve the care of patients.

Currently, the DMP program is looking at providing their residents an educational course through the American Society for Clinical Pathology on pathology informatics for the Canadian laboratory landscape and is beginning to be planned but is still several years away from being prepared as a fully imbedded curriculum in the residency training program.

3. Resident Feedback

The residents within the DPLM programs are often top-caliber residents who are self-driven and seek out ample opportunities to further enhance their educational experience. The residents have repeatedly voiced that, although they are able to self-source most of the few shortcomings that are present in the program currently, they are most concerned about the two points previous: the physical space and digital pathology access.

Support for research: Residents can partake in a wide variety of research; however, they are limited in terms of support to submit ethics applications and other research administration. The VGH DPLM does provide some research support on a cost-recovery basis for technical needs, which the residents are able to access through funds from the program.

Acknowledgment: Special thanks to Dr. John Bush, AP Residency Program Director, and Genevieve MacMillan for their significant contributions to this report.
EXECUTIVE COMMITTEE

DIRECTOR OF COMMUNICATIONS
Dr. David Huntsman

Our department has continued to engage within our community and beyond. This report highlights our

COMMUNICATION TOOLS AND PLATFORMS

Our department leverages multiple communication tools to ensure information is effectively disseminated:

Bi-Weekly Bulletin: Our bi-weekly bulletin is essential for keeping our community informed about departmental activities, achievements, and upcoming events. You can access the bulletin archive here.

Social Media Engagement: We actively use social media platforms to share our work and engage with a broader audience. Follow us on:
- Twitter
- Instagram

Annual Events:
- Annual Seasonal Celebration on January 18
- Pathology Day Conference on June 1

Website: Our department's website serves as a comprehensive resource for information on our programs, research, and events. Visit us at pathology.ubc.ca.

Annual Report / Pathology at a Glance: Every year, we produce the "Annual Report / Pathology at a Glance" to provide a comprehensive overview of our department's achievements and activities. The report for 2022 is available here, offering detailed insights into our progress and milestones.

Weekly Grand Rounds: Our weekly Grand Rounds continue to be a cornerstone of our educational offerings, bringing together internal and external experts to present on a variety of topics. On the following page, you will find highlights from 2023.
<table>
<thead>
<tr>
<th>Dr. Ying Wang</th>
<th>&quot;Characterizing atherosclerosis at the molecular level to improve treatment outcome of anti-inflammatory therapies&quot;</th>
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<tbody>
<tr>
<td>Dr. Citlali Márquez</td>
<td>&quot;Using the power of serological multiplex assays to track COVID-19&quot;</td>
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<tr>
<td>Dr. Corree Laule</td>
<td>&quot;Characterizing human brain and spinal cord microstructure with quantitative MRI and histology&quot;</td>
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<td>Dr. Philipp Lange</td>
<td>&quot;Canada's path towards proteome guided therapies and advanced molecular pathology in precision oncology&quot;</td>
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<td>Dr. Aly Karsan</td>
<td>&quot;The Role of Noncoding Genes in the Pathogenesis and Vulnerabilities of Myeloid Cancers&quot;</td>
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<td>Dr. Honglin Luo</td>
<td>&quot;Mastering Immune Chaos: Strategic Interventions for Viral Myocarditis via Innate Pathway Modulation&quot;</td>
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<td>Dr. Kevin Kuchinski</td>
<td>&quot;Hunting for bird flu in the mud: genomic surveillance of avian influenza viruses using environmental specimens from wetland habitats&quot;</td>
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<td>Dr. Ly Vu</td>
<td>&quot;Targeting RNA modifications in Myeloid Leukemia&quot;</td>
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<td>Dr. Zu-hua Gao</td>
<td>&quot;Transform the Future of Pathology and Laboratory Medicine&quot;</td>
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<td>Dr. Hélène Côté and Dr. Michael Nimmo</td>
<td>&quot;Clinical/Scientific Education aspect of our Department Strategic Plan&quot;</td>
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<td>Dr. Suzanne Vercauteren</td>
<td>&quot;Pathology and Laboratory Medicine at BCHHR&quot;</td>
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<tr>
<td>Dr. Cheryl Wellington</td>
<td>&quot;Vice Chair Research, Department of Pathology and Laboratory Medicine: First Year Review&quot;</td>
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<tr>
<td>Dr. Michelle Wong and Dr. Carolyn Shiau</td>
<td>&quot;Better together: the people, programmes, and services of the lab in Fraser Health&quot;</td>
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<td>Dr. Gang Wang</td>
<td>&quot;David Hardwick Pathology Learning Centre&quot;</td>
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<td>Dr. Lucy Perrone</td>
<td>&quot;CMPT: A Clinical Service and External Quality Assessment Partner for Laboratories Performing&quot;</td>
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<td>Dr. Agatha Jassem</td>
<td>&quot;Clinical Scientists in Action&quot;</td>
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The Department’s Equity, Diversity, and Inclusion initiatives focus on two key areas: increasing Indigenous representation and improving the diversity of our academic faculty. We know from our Inclusion Action Survey, that the department is under-represented by indigenous people. Two of our faculty members have taken initiatives to address this by creating opportunities for indigenous children and youth to obtain experience in science.

Corree Laule and Cheryl Niamath’s seed2STEM summer science research program for Indigenous Youth was awarded the Faculty of Medicine’s Strategic Initiative Fund as well as UBC’s STEM funding and a private donation.

The seed2STEM summer science research program for Indigenous youth invites high school students from grades 9 to 12 to participate in paid, six-week summer research internships covering various STEM topics. In addition to earning minimum wage for working 25 hours per week, students engage in weekly research-focused learning modules, hear from guest speakers (including individuals living with spinal cord injuries, STEM professionals, and Indigenous community members), and visit local scientific and cultural sites on field trips.

This program started in 2018 with one student and expanded to 17 students that participated in 2023. We have also focused on the diversity of our academic faculty. Pathology and Laboratory Medicine has historically been under-represented by female faculty members, however, this is starting to change. Two years ago, 30% of the Assistant Professors, tenure track were female. Based on the recruitments in 2024/25 and that two clinical faculty member, Drs. Julia Nasso and Lien Hoang who are on a protected research time program aimed at moving towards academic appointments, 43% of the Assistant Professors are female.

As well, the Department successfully supported Dr. Yasir Mohamud in obtaining the inaugural CIHR Research Excellence, Diversity and Independence (REDI) Early Career Transition Award that supports early career academics who have been underrepresented in academic careers. Pathology and Laboratory Medicine also submitted a nomination for a CRC Tier II for young academics that have a disability. We hope this diversity trend will continue while we keep striving to select the most suitable candidates.

The Pathology and Laboratory Medicine award committee added an award for equity, diversity, and inclusion to its awards. It recognizes the efforts of faculty members, learners, staff, postdoctoral scholars, and staff who contribute to an equitable, diverse, inclusive culture in the Department of Pathology and Laboratory Medicine at UBC. The first award will be presented at Pathology Day 2024.
02
ASSOCIATE DEPARTMENT HEADS
Fraser Health Laboratories have had another busy and productive year in 2023 with multiple region-wide projects ongoing across all disciplines. As the largest regional health authority in BC serving close to 2-million people with our 1300 laboratory staff, we continue to consider how we can support the ever-evolving clinical service delivery and training of more technical and medical learners while navigating staffing challenges and unprecedented growth.

**DIGITAL TRANSFORMATION**

Fraser Health has embarked on its digital transformation journey, moving from Meditech Client Server to Meditech Expanse at 3 of 12 hospitals (Eagle Ridge Hospital, Fraser Canyon Hospital, and Mission Memorial Hospital), with many more sites to make this transition over the coming years. This is being done in concert with numerous hospital site expansions at Burnaby Hospital, Royal Columbian Hospital, New Surrey Hospital (Cloverdale), and the recently announced expansion for Surrey Memorial Hospital. Over the next 10 years, this will add an additional 30% acute site bed capacity to the region and result in many opportunities for our team!

**STRATEGIC GROWTH AND I-CARE MODEL**

As we consider how best to prepare for this growth, the lab team is challenging each discipline to consider how we can leverage technology and collaborate to support our I-CARE strategic model (integration, consolidation, automation, reduction, and elimination of lab test volumes). This has led to multiple exciting projects that are currently in progress, including:

**HIGHLIGHTS FROM FRASER HEALTH**

Annual Report 2023

**ASSOCIATE ACADEMIC DEPARTMENT HEAD FOR FRASER HEALTH**

Dr. Michelle Wong
Medical Biochemistry:
1. Deployment of Remisol Middleware 2.0 and new chemistry analyzers in preparation for installation of automated lines for Abbotsford Regional Hospital and Cancer Centre, Burnaby Hospital, Royal Columbian Hospital, and Surrey Memorial Hospital. Middleware allows us to provide remote technical support across lab sites. We are also leveraging expansion of auto-validation for specific tests – resulting in significant saving for technologist time and an ability to make urgent results available to the patient.

Hematopathology:
2. Advancing technology through Digital Imaging Analyzers and CellaVision version 7, supporting review of blood films and leveraging AI within the platform’s software to support assessment and allow for remote medical support.

Microbiology:
3. The renovation at the Surrey Memorial Hospital consolidated the microbiology laboratory for Fraser Health, expanding the capacity of the blood culture analyzer. Additionally, the facility transitioned from manual to molecular diagnostics for numerous pathogens.

Pre and Post Analysis:
4. Deployment of Positive Patient Identification (PPID) across all sites in Fraser Health, allowing for on-demand label printing by our lab assistant staff performing phlebotomy and improved quality assurance.

Anatomic Pathology:
5. The regional department, in a joint collaboration with the Royal Columbian Hospital Foundation and breast pathologists at RCH, has successfully validated dual chromogenic in situ hybridization (DISH) testing for HER2. This advancement benefits breast cancer patients by providing more accurate diagnostic testing. This will support the BC 10-year Cancer Action Plan with breast cancer patients having all diagnostic information available at the time of first appointment with a specialist. More information can be found here. The Anatomic Pathology team has also been working on building CoPath, which will be deployed simultaneously with Meditech Expanse as Fraser Health continues through its digital transformation.
ASSOCIATE ACADEMIC DEPARTMENT HEAD FOR THE ISLAND HEALTH

Dr. Julie Irving

Table 1. Number of Laboratory Medicine physicians in Island Health with UBC Clinical Faculty appointment/total number staff.

Approximately 45 laboratory medicine physicians actively practice in Island Health, 29 (64%) of whom hold UBC clinical faculty appointments. Almost half are anatomical pathologists at the Royal Jubilee Hospital in Victoria, and of these, 42% are at the rank of clinical instructor (see Tables 1 and 2).

Table 2. Total number (percentage) of Laboratory Medicine physicians in Island Health by clinical rank.

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<th>Anatomical Pathology</th>
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<th>Medical Microbiology</th>
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Many of the above physicians participate in clinical teaching, particularly in the Island Medical Program, and 4th year students in the Island Medical Program annually aggregating to many hundreds. The participation and presentation at regional meetings and conferences for pathologists and pathology residents is robust, with pathologist participation and presentation at regional journal clubs, surgical and medical rounds, and clinicopathologic conferences including BC Cancer tumor boards. Weekly intradepartmental Anatomical Pathology case rounds are also held at the Royal Jubilee Hospital.

HIGHLIGHTS OF ADDITIONAL RESEARCH ACCOMPLISHMENTS, EDUCATIONAL ENDEAVORS, AND CLINICAL IMPACT:

Dr. Jennifer Duncan (Hematopathology, North Island Hospital - Comox Valley) and Dr. Gwen Clarke (Hematopathology, Royal Jubilee Hospital) had two abstracts accepted for work on implementing an immunohematology approach to managing patients treated with Anti-CD38, to be presented at the Canadian Society for Transfusion Medicine. Many of the above physicians participate in teaching of medical students (usually 3rd and 4th year students in the Island Medical Program) and residents (usually AP/GP/MM residents on elective rotation, as well as occasional Family Medicine residents), annually aggregating to many hundreds of teaching hours. Interdepartmental engagement is robust, with pathologist participation and presentation at regional meetings and conferences for pathologists and pathology residents is robust, with pathologist participation and presentation at regional journal clubs, surgical and medical rounds, and clinicopathologic conferences including BC Cancer tumor boards. Weekly intradepartmental Anatomical Pathology case rounds are also held at the Royal Jubilee Hospital.

SPOTLIGHT ON UBC CLINICAL FACULTY IN ISLAND HEALTH - DR. ANTONIO SUBTIL-DEOLIVEIRA

Dr. Antonio Subtil-DeOliveira joined the Division of Anatomical Pathology at the University of British Columbia in 2018. Dr. Subtil-DeOliveira is double trained and board certified in Dermatopathology (Mayo School of Graduate Medical Education) and Hematopathology (Emory University). In addition to his high volume Anatomical Pathology practice servicing patients at the Royal Jubilee Hospital in Victoria, he has published 60 peer-reviewed articles, many in high impact journals, which in 2023 was highlighted by a comprehensive analysis of primary cutaneous T-cell lymphomas (Saleh JS, Subtil A, Hristoy AC. Human Pathol 2023;140:75-100). Dr. Subtil contributes significantly to the education of medical students and residents on elective rotations in Victoria. He is a sought-after keynote speaker on regional, national, and international stages, with over 100 invited lectures, most recently at the 43rd Annual Meeting of the Australasian Society of Dermatopathology in Melbourne and the 60th Annual Meeting of the American Society of Dermatopathology in Chicago, both held in the fall of 2023. Stay tuned for his continued global impact in 2024 as Dr. Subtil engages pathology audiences in Vancouver, Halifax, New Zealand, Australia, and his native Brazil.

HIGHLIGHTS OF ADDITIONAL RESEARCH ACCOMPLISHMENTS, EDUCATIONAL ENDEAVORS, AND CLINICAL IMPACT:

Dr. Jennifer Duncan (Hematopathology, North Island Hospital - Comox Valley) and Dr. Gwen Clarke (Hematopathology, Royal Jubilee Hospital) had two abstracts accepted for work on implementing an immunohematology approach to managing patients treated with Anti-CD38, to be presented at the Canadian Society for Transfusion Medicine. Many of the above physicians participate in teaching of medical students (usually 3rd and 4th year students in the Island Medical Program) and residents (usually AP/GP/MM residents on elective rotation, as well as occasional Family Medicine residents), annually aggregating to many hundreds of teaching hours. Interdepartmental engagement is robust, with pathologist participation and presentation at regional journal clubs, surgical and medical rounds, and clinicopathologic conferences including BC Cancer tumor boards. Weekly intradepartmental Anatomical Pathology case rounds are also held at the Royal Jubilee Hospital.

SPOTLIGHT ON UBC CLINICAL FACULTY IN ISLAND HEALTH - DR. ANTONIO SUBTIL-DEOLIVEIRA

Dr. Antonio Subtil-DeOliveira joined the Division of Anatomical Pathology at the University of British Columbia in 2018. Dr. Subtil-DeOliveira is double trained and board certified in Dermatopathology (Mayo School of Graduate Medical Education) and Hematopathology (Emory University). In addition to his high volume Anatomical Pathology practice servicing patients at the Royal Jubilee Hospital in Victoria, he has published 60 peer-reviewed articles, many in high impact journals, which in 2023 was highlighted by a comprehensive analysis of primary cutaneous T-cell lymphomas (Saleh JS, Subtil A, Hristoy AC. Human Pathol 2023;140:75-100). Dr. Subtil contributes significantly to the education of medical students and residents on elective rotations in Victoria. He is a sought-after keynote speaker on regional, national, and international stages, with over 100 invited lectures, most recently at the 43rd Annual Meeting of the Australasian Society of Dermatopathology in Melbourne and the 60th Annual Meeting of the American Society of Dermatopathology in Chicago, both held in the fall of 2023. Stay tuned for his continued global impact in 2024 as Dr. Subtil engages pathology audiences in Vancouver, Halifax, New Zealand, Australia, and his native Brazil.

HIGHLIGHTS OF ADDITIONAL RESEARCH ACCOMPLISHMENTS, EDUCATIONAL ENDEAVORS, AND CLINICAL IMPACT:

Dr. Jennifer Duncan (Hematopathology, North Island Hospital - Comox Valley) and Dr. Gwen Clarke (Hematopathology, Royal Jubilee Hospital) had two abstracts accepted for work on implementing an immunohematology approach to managing patients treated with Anti-CD38, to be presented at the Canadian Society for Transfusion Medicine. Many of the above physicians participate in teaching of medical students (usually 3rd and 4th year students in the Island Medical Program) and residents (usually AP/GP/MM residents on elective rotation, as well as occasional Family Medicine residents), annually aggregating to many hundreds of teaching hours. Interdepartmental engagement is robust, with pathologist participation and presentation at regional journal clubs, surgical and medical rounds, and clinicopathologic conferences including BC Cancer tumor boards. Weekly intradepartmental Anatomical Pathology case rounds are also held at the Royal Jubilee Hospital.
Dr. Jennifer Duncan will also be giving an invited presentation: "Weathering Stormy Times in the Blood Bank – a Different Perspective on Island Life."

Teaching honorable mentions: Dr. Kirsten Fleming and Dr. Tunde Adegbola. They serve special recognition for outstanding teaching efforts in Anatomical Pathology at Nanaimo Regional General Hospital. In 2023, a total of 6 medical students in their 4th year of the Island Medical Program each spent 2 weeks on rotation under their supervision, which is highly commendable given the exceptionally busy practice of community pathologists.

In Victoria, the Gynecological Pathologist team continued their long-standing weekly 2-hour sessions given to medical students and Family Medicine residents during their rotation block in Obstetrics and Gynecology.

In 2024, 5 Pathology residents (from UBC, Calgary, and Saskatchewan) will pursue month-long elective rotations on Vancouver Island (1 in North Island – Campbell River Hospital and 4 in South Island – Royal Jubilee Hospital).

As leaders in the field, members of the Division of Medical Microbiology produced Annual Reports in Antimicrobial Stewardship as well as Infection Prevention and Control.

Dr. Davide Salina, among his many responsibilities as Division Lead for Anatomical Pathology, established telepathology services at Island Health sites. Specifically, the utilization of telepathology between Victoria General and Royal Jubilee Hospitals has been a significant milestone in the ability to share digital pathology images during intraoperative frozen section analysis to obtain subspecialty intradepartmental consultation, as well as sustain quality assurance practices (e.g., histological confirmation by a second pathologist for all patients with a new/initial diagnosis of malignancy).

Dr. Allison Hall (Anatomical Pathology, RJH) is the Island Health pathology representative to the Provincial HPV Screening Clinical Care Working Group, established May 2023. The group is accountable to the Executive Director of Cancer Screening at BC Cancer, and has a mandate to share information with clinical stakeholders regarding the upcoming changes for cervix screening to HPV primary screening, obtain input from a variety of clinical experts to support the updating of program standards and clinical practice guidelines, and to ensure a fulsome communication plan for physicians in the province who will be interested in and/or affected by this policy change.

Dr. Julie Irving (Anatomical Pathology, RJH) gave a presentation to Island Health pathologists and gynecologists entitled...
A practical overview of ancillary biomarker and molecular testing in endometrial carcinoma in February 2023. The recent introduction of reflex biomarker and molecular testing performed on tissue from all patients with newly diagnosed endometrial cancers, as recommended by the Provincial Gynecology Tumor Group at BC Cancer, is critical for accurate endometrial tumor classification and appropriate patient management. As such, it is imperative that pathologists understand how to interpret and report immunohistochemistry for p53, DNA mismatch repair proteins, and estrogen receptor, and are familiar with the ordering process for next generation sequencing (including POLE mutation status) currently performed in Vancouver.

Technologist, pathology assistant, and transcription staff, the backbone of Anatomical Pathology at the Royal Jubilee Hospital, showcase their team spirit during the annual Halloween tradition with the 2023 theme “1980s movies.”
ASSOCIATE ACADEMIC DEPARTMENT HEAD FOR THE INTERIOR HEALTH AUTHORITY

Dr. Denis Bonin

The Interior Health Laboratory Program serves a population of over 800,000 people across a vast geographic area spanning 215,000 square kilometers and two time zones. The program employs 800 laboratory professionals who work in various capacities to ensure quality diagnostic services. There are 53 outpatient collection centers and 22 hospital sites within the Interior Health region, providing accessible and comprehensive laboratory services to meet the healthcare needs of the community. In 2023, the program achieved several significant milestones.

Onboarded 119 new staff members:

- 73 full-time staff members
- 46 casual staff members
- 38 MLTs
- 76 MLAs
- 5 CXLTs

Major Initiatives in 2023:

1. Completed chemistry instrumentation refresh project:
   - 53 new chemistry analyzers were operationalized across 22 healthcare facilities.

2. Reduced technical staff vacancy rate by 4.8%; from 17.4% (2022) to 12.6% (2023).
Physician order entry and clinical documentation are now fully electronic in all acute care areas.

**Molecular Expansion in Microbiology:**

Group A Streptococcus molecular testing for inpatient and emergency room throat specimens, resulting in a significant decrease in turn around time facilitating better patient care and promoting antimicrobial stewardship. Additionally, meningoencephalitis testing was implemented regionally, decreasing turn around time on this critical test to hours instead of the days required for reference laboratory testing.

**Implementation of Middleware Regional Solution:**

A middleware solution from Data Innovations is being implemented across all IH laboratories. The initial phase of Coagulation Middleware was partially completed in 2023. Plans are underway for implementing Hematology and Chemistry Middleware over the next two years. Once fully implemented, the middleware solution will increase productivity through automation of manual processes, decrease turn around times through autoverification of near normal results and enhance quality by facilitating regional oversight of QC data.

**IH Climate and Sustainability Strategy:**

Physician order entry and clinical documentation are now fully electronic in all acute care areas.

**Changes Implemented:**

- Closing lab BLRVDIH\W\FDELOHQWHVDVKHVZHQQQRWLQXVHWRUHGXFFHQH\UFQVXPSLRLQHTXD\KRPHVRISRHZUXVDJHSHUGD\
**Physician Engagement:**

Physicians and their dyad partners are working collaboratively to enhance our laboratory processes.

48% of IH laboratory MDs and PhDs have one or more laboratory leadership roles including Site Laboratory Medical Directors (12), Site Department Heads (6) and Discipline Leads (9). Two medical microbiologists completed the NAVIG8 Physician Leadership program offered in Interior Health. Many more laboratory professionals are engaged in quality improvement projects and Discipline Working Groups. Our laboratory physicians are also serving as IH physician leaders including HAMAC Chair (Lisa Steele), RMAC Chair (Stephanie Nolan), Antimicrobial Stewardship Director (Edith Blondel-Hill) and IPAC Medical Director (Amir Hadzic). In addition, our laboratory professionals participate in provincial and national committees.

**Academic Appointments:**

In 2023, the percentage of laboratory professionals (MDs and PhDs) in IH with academic appointments increased from 63% to 71%. There were 8 new UBC appointments from IH: Kyra Berg (KGH), Helen Bibby (KGH), Lisa Borretta (KGH), Launny Lowden (EKRH), Lincoln Pac (EKRH), Laura Tapley (KGH), Valerie Taylor (KGH), Catalin Taraboanta (EKRH).

**Academic Promotions:**

Dr. Karina Rodriguez-Capote was promoted to Clinical Professor. Drs. Teralee Burton and Kristin Hauff were promoted to Clinical Assistant Professor.

**Academic Contributions:**

Our pathologists, medical microbiologists and clinical biochemists continue to be involved in teaching and research. For example, in 2023, Dr. David Grynspan co-authored 3 articles on the topic of placental pathology and participated in the formation of the Placenta Glycomics Research Program, a collaboration between IH Pathology, UBC Okanagan, BC Women’s and Children’s Hospital Department of Pathology, and Carleton University in Ottawa. The program unites UBC-O’s exceptional glycoscience team (Drs. Wes Zandberg and Kirk Bergstrom) with placental pathologists at IH and in Vancouver. The program also brings in the expertise of the Connor Lab at Carleton University (Dr Kristin Connor): a national leader in placentology and maternal nutrition. The program’s aim is to contribute to knowledge about maternal nutrition and metabolic complications of pregnancy such as maternal diabetes.

In another example, the IH clinical biochemists (Drs. Teralee Burton, Karina Rodriguez-Capote, Kristin Hauff and Dailin Li) collectively published 2 articles and an abstract; presented at provincial (BCSLS, BCCDC) and national (CSCC) conferences; provided international webinars (IFCC) served on provincial (DAP, BCACC, MBAC), national (CSCC, CACB) and international (IFCC, ADLM) committees; served as an examiner for the CACB.
and on an editorial board (ADLM). Two of our biochemists contributed to the Choosing Wisely Canada's climate-conscious recommendations, Choosing Wisely and Climate Action. The medical microbiology team published their verification of molecular vaginitis panel testing in 2023 after becoming the first laboratory in Canada to go live with this testing, after which many other groups followed suit. A team member presented the study to a large audience at the 2023 European Clinical Microbiology and Infectious Diseases conference in Copenhagen, Denmark. Multiple Microbiology group members presented at the BCSLS meeting in 2023. In addition to serving on numerous health authority based committees, microbiology group members also served on many provincial and national organizations (e.g., UBC residency training committee, Provincial Infection Control Network, Canadian Nosocomial Infection Surveillance Program, BC Provincial Microbiology Advisor Committee, BC Provincial Antimicrobial Clinical Expert group) and one microbiologist served as an examiner for the Royal College Medical Microbiology exam board. Group members had numerous invitations to present grand rounds or at educational events for different physicians groups across the region, as well as to present at the provincial Infectious Diseases rounds.

**Upcoming initiatives:**

- **Implementation of the Beckman Coulter automation lines at KGH and RIH:** The implementation of the automation lines will increase productivity, increase capacity, reduce turn around times, and improve work safety. The Remisol builds for the Beckman automation lines are scheduled for KGH (summer 2024) and RIH (spring 2025).

- **Meditech Expanse 2.2 will be implemented at all IH sites (Acute, Community, Primary Care, Mental Health, Long Term Care) in the fall of 2024.**

- **Expansion of Cellavision:** Cellavision (digital blood smear morphology) was implemented in Kamloops and Kelowna in 2021. Expansion into Vernon, Cranbrook and Trail is expected to be completed in 2024.
Evaluating the Utility of Plasma Biomarkers to Diagnose Autopsy Confirmed Alzheimer’s Disease

Debbie Stukas, Shannon Pfueger, Imogene Scott, Ian McKenna, Veronica Hirsch, Tegan Beaucage, Robin Hsing, Cheryl Wellinghaupt, and Jennifer Cooper

Alzheimer’s Disease

Alzheimer’s disease (AD) is the most common form of neurodegeneration in old age, accounting for 50-70% of cases of dementia. The disease is characterized by the accumulation of amyloid plaques and neurofibrillary tangles in the brain, which lead to neuronal dysfunction and ultimately death.

Biomarkers

Biomarkers are potential indicators of disease, and their detection can provide valuable information about the progression and severity of Alzheimer’s disease. Plasma biomarkers are particularly attractive due to their ease of measurement and potential for widespread use.

Biomarker Selection

The selection of plasma biomarkers for diagnostic and research purposes involves careful consideration of their specificity, sensitivity, and utility in differentiating between healthy aging and mild cognitive impairment.

Study Participants

The CARD Clinic Cohort and Sample Analysis involved a diverse group of individuals with a range of cognitive statuses. The sample was carefully selected to ensure a balanced representation of healthy controls, mild cognitive impairment (MCI), and Alzheimer’s disease (AD) patients.

Sample Analysis

Blood samples were analyzed for the presence of specific biomarkers using advanced mass spectrometry techniques.

Cohort Demographics

The cohort included a mix of men and women of varying ages, with a focus on capturing a wide range of cognitive states.

Implications for Diagnosis

The identification of reliable plasma biomarkers for Alzheimer’s disease has significant implications for diagnostic accuracy and early intervention. These biomarkers can help in the timely detection of the disease, allowing for more effective management and treatment strategies.

Detection of AD Pathology

The presence of specific biomarkers can be used to predict the likelihood of developing Alzheimer’s disease, providing a valuable tool for both research and clinical settings.

Influence of Co-Pathology

Other neurological conditions, such as Parkinson’s disease and Lewy Body Dementia, can coexist with Alzheimer’s disease, complicating its diagnosis. Understanding the interplay of these conditions is crucial for developing effective treatment strategies.

Conclusion

The use of plasma biomarkers in the diagnosis of Alzheimer’s disease is a promising area of research. Continued efforts to refine these markers and improve their diagnostic utility are essential for advancing our understanding of this complex condition.

References

03
DEPARTMENT FACT SHEET
TRAINING AND ROTATION SUMMARY
FOR MEDICAL STUDENTS AND
RESIDENTS IN 2023

This section provides a comprehensive summary of the training and rotation activities within the Department of Pathology and Laboratory Medicine at UBC for the year 2023. It includes detailed information on the number of medical students, residents, clinical fellows, and teaching faculty across various hospital sites and specializations.

Total number of medical students trained at each site:

<table>
<thead>
<tr>
<th>Site</th>
<th>Students</th>
<th>Preceptors</th>
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</thead>
<tbody>
<tr>
<td>BCCDC</td>
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<td>6 preceptors</td>
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<tr>
<td>DMP</td>
<td>21 students</td>
<td>20 preceptors</td>
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Hematopathology

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<th>Preceptors</th>
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<td>%&amp; &amp; +</td>
<td>6 students</td>
<td>4 preceptors</td>
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<tr>
<td>9*+</td>
<td>6 students</td>
<td>SUHFHSWRUV</td>
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<tr>
<td>63+</td>
<td>5 students</td>
<td>3 preceptors</td>
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<tr>
<td>5&amp; +</td>
<td>3 students</td>
<td>8 preceptors</td>
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Microbiology

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<td>4 preceptors</td>
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<td>9*+</td>
<td>2 students</td>
<td>3 preceptors</td>
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<tr>
<td>63+</td>
<td>9 students</td>
<td>4 preceptors</td>
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DMP

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Neuropathology

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<td>2 students</td>
<td>8 preceptors</td>
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<tr>
<td>9*+</td>
<td>21 students</td>
<td>20 preceptors</td>
</tr>
<tr>
<td>63+</td>
<td>5 students</td>
<td>SUHFHSWRUV</td>
</tr>
</tbody>
</table>
Number of Residents and Fellows Trained or Rotated by Site in 2023.
For a detailed view, please refer to the full PDF report.

<table>
<thead>
<tr>
<th>Site</th>
<th># of residents and fellows, per site</th>
<th># of teaching faculty, per site</th>
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</thead>
<tbody>
<tr>
<td>Vancouver Coastal</td>
<td>116</td>
<td>53</td>
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<tr>
<td>Coastal</td>
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<td>30</td>
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<tr>
<td>BCCA</td>
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<td>20</td>
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<tr>
<td>C&amp;W</td>
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<td>22</td>
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<tr>
<td>BCCDC</td>
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<td>6</td>
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<tr>
<td>LifeLabs</td>
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<td>3</td>
</tr>
<tr>
<td>Island Health</td>
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<td>4</td>
</tr>
<tr>
<td>Interior</td>
<td>0</td>
<td>5</td>
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<tr>
<td>Fraser</td>
<td>26</td>
<td>22</td>
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For a detailed view, please refer to the full PDF report.
**FACULTY BY RANK**

727$/  
$662&,$7(0(0%)(56$1'9,6,7,1*)

**FACULTY BY DEGREE**

$662&,$7(0(0%)(56$1'9,6,7,1*)

EXCLUDING: PDF, RESEARCH ASSOCIATE, ASSOCIATE MEMBERS & VISITING MEMBERS

Department Fact Sheet
FACULTY BY AGE GROUP

FEMALE: 168
MALE: 213

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Faculty Members</th>
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<tr>
<td>25-34</td>
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<tr>
<td>35-44</td>
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<tr>
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<td>55-65</td>
<td>77</td>
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<td>&gt;66</td>
<td>51</td>
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</table>

EMPLOYEE GROUPS

STAFF APPOINTMENTS

• 6HFWHULDO & OHULFDO & 83
• 33 M & P - AAPS
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FACULTY APPOINTMENTS

• 48 Academic Faculty
• 313 Clinical Faculty
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• 3')& OLQ HOORZ V5HVHDUFK $VVRFLDWHV
We are pleased to welcome the following new clinical faculty members who have joined the Department of Pathology and Laboratory Medicine in 2023. Their expertise and dedication will significantly contribute to our mission of excellence in education, research, and clinical service.

### Provincial Health Services Authority

**BC Cancer**
- Priya Johal - Clinical Instructor
- Jinesa Moodley - Clinical Instructor

**BC Children’s and Women’s**
- Laura Brett - Clinical Instructor
- Sam Chorlton - Clinical Instructor
- Jonathan Gubbay - Clinical Associate Professor
- Marsha Speevak - Clinical Instructor
- Stacey Hume - Clinical Associate Professor

**BC Centre for Disease Control**
- Sandrine Merette - Clinical Assistant Professor

**Royal Columbian Hospital**
- Edwin Ho - Clinical Instructor
- Ariel Liu - Clinical Instructor
- Ashley Newbigging - Clinical Instructor

**Surrey Memorial Hospital**
- Wenzian Chen - Clinical Instructor
- Nissreen Mohammad - Clinical Instructor
- Sarisha Naidoo - Clinical Assistant Professor

**Burnaby Hospital**
- Lucy Bradley - Clinical Instructor

**East Kootenay Regional Hospital**
- Launey Lowden - Clinical Instructor
- Lincoln Pac - Clinical Instructor
- Catalin Taraboanta - Clinical Assistant Professor

**Kelowna General Hospital**
- Helen Bibby - Clinical Instructor
- Valerie Taylor - Clinical Instructor
- Kyra Berg - Clinical Instructor
- Lisa Borretta - Clinical Instructor
- Laura Tapley - Clinical Instructor

**Royal Jubilee Hospital**
- Jenny Chu - Clinical Instructor
- Ramesh Saeedi - Clinical Assistant Professor

**Victoria General Hospital**
- Janny Chu - Clinical Instructor
We extend our heartfelt gratitude and best wishes to the following retired faculty members for their years of dedicated service and contributions to the department.

Retired Faculty Members

• John Galbraith - Clinical Associate Professor
• Cheryl Wright - Clinical Instructor
• Dr. Dana Devine - Professor Emerita
• Dr. Victor Ling - Professor Emeritus
• Dr. Avi Ostry - Clinical Associate Professor (deceased)

Faculty Promotions

Promotion to Clinical Professor

• Dr. Christine Tyson
• Dr. Wei Xiong
• Dr. Hui-Min Yang
• Dr. Mari DeMarco
• Dr. Karina Rodriguez-Capote
• Dr. Pedro Sequeira Farinha

Promotion to Clinical Associate Professor

• Dr. Maziar Riazy
• Dr. Audi Setiadi
• Dr. Nancy Matic
• Dr. Lisa Li
• Dr. Maid Moteabbed
• Dr. Lik Hang Lee

Promotion to Clinical Assistant Professor

• Dr. Claudine Desruisseaux
• Dr. Carlos Villamil
• Dr. Daniel Owen
• Dr. Youness Elkhalidy

Promotion to Professor

• Dr. Kevin Bennewith

Promotion to Associate Professor

• Dr. Philipp Lange

John Galbraith
Cheryl Wright
Dr. Dana Devine
Dr. Victor Ling
Dr. Avi Ostry
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<th>Site Name</th>
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<tr>
<td>Royal Inland Hospital Kamloops</td>
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<tr>
<td>Royal Jubilee Hospital / VGH, Victoria</td>
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<td>Vernon Jubilee Hospital</td>
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<tr>
<td>Abbotsford Regional Hospital</td>
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<td>BC Cancer</td>
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<td>BC Centre for Disease Control</td>
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<tr>
<td>BC Children’s &amp; Women's Hospitals</td>
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<td>LifeLabs / Community</td>
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<td>UBC</td>
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<td>Vancouver General Hospital</td>
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<td>Fort St. John Hospital</td>
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<td>Nanaimo Regional General Hospital</td>
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<td>Penticton Regional Hospital</td>
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<td>E. Kootenay Regional Hospital, Cranbrook</td>
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<td>Courtenay</td>
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<td>Burnaby Hospital</td>
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<td>Richmond Hospital</td>
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<td>Lions Gate</td>
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<tr>
<td>Lions Gate</td>
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</table>
# Affiliated Clinical Academic Facilities

## BC Cancer
- Abbotsford Regional Hospital
- Burnaby Hospital
- Lions Gate Hospital
- Fort St. John Hospital
- Vernon General Hospital
- Penticton General Hospital
- Nanaimo Regional Hospital
- Richmond Hospital
- Terrace Mills Memorial Hospital
- Vernon Jubilee Hospital
- Royal Inland Hospital, Kamloops

## UBC Affiliated Research Centres
- Centre for Blood Research
- Centre for Heart Lung Innovation
- Djavad Mowafaghian Ctr for Brain Health
- ICORD
- BC Centre for Disease Control
- Vancouver Prostate Centre

## UBC Affiliated Research Institutes
- BC Cancer Research Institute
- BC Children’s Hospital Research Institute
- Life Sciences Institute
- Providence Health Care Research Institute
- Vancouver Coastal Health Research Institute
- Women’s Health Research Institute

## Affiliated Clinical Academic Facilities
- BC Cancer
- BC Children’s Hospital
- BC Women’s Hospital & Health Centre
- Kelowna General Hospital
- Royal Columbian Hospital
- Royal Jubilee Hospital
- St. Paul’s Hospital
- Surrey Memorial Hospital
- University Hospital of Northern B.C.
- Vancouver General Hospital
- UBC Hospital
- Victoria General Hospital

## UBC Affiliated Research Centres
- BC Cancer Research Institute
- BC Children’s Hospital Research Institute
- Life Sciences Institute
- Providence Health Care Research Institute
- Vancouver Coastal Health Research Institute
- Women’s Health Research Institute

## UBC Affiliated Research Institutes
- BC Cancer Research Institute
- BC Children’s Hospital Research Institute
- Life Sciences Institute
- Providence Health Care Research Institute
- Vancouver Coastal Health Research Institute
- Women’s Health Research Institute
Our academic programs continue to foster excellence in education and research, producing highly skilled professionals equipped to contribute significantly to their fields. The following statistics highlight the achievements and scope of our various programs:

**EDUCATION PROGRAMS**

<table>
<thead>
<tr>
<th>Program of Study</th>
<th>Students</th>
</tr>
</thead>
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<tr>
<td>MSc</td>
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<tr>
<td>PhD</td>
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<tr>
<td>MD/PhD Program</td>
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<tr>
<td>Total</td>
<td>63</td>
</tr>
</tbody>
</table>

| # of Supervisors | 34 |

**BMLSc MAJOR AWARDS 2023:**

- BMLSc Graduates' Choice for Teaching Excellence Award:
  'U6RSKLD3DUN
  'U-DPHV/DQDQG
  'U1DUJHV+DGMHVIDQGLDUL

- The Reid Memorial Cup:
  'U1DUJHV+DGMHVIDQGLDUL

**GRADUATE STUDIES MAJOR AWARDS 2023:**

- Vanier Canada Graduate Scholarship: 9ULWL%KDJDW
- Canada Graduate Scholarships — Doctoral (CGS D):
  /RX0RX&DL
  -H0QLI9U&RQSHU
  )DQJ)DQJ/L
  -R\FH=KDQJ
- Canada Graduate Scholarships — Master’s (CGS M):
  0DULD|OLVKDHY
  5HEHFD+R
  0LFKDHQ/DQH
  (ULF/LX
- Four Year Doctoral Fellowship (4YF):
  *X0GDOHLQ7DQXQOLRQJ
  0DULD|OLVKDHY

<table>
<thead>
<tr>
<th>Course</th>
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<th>#Students</th>
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<td>PATH 451</td>
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<td>PATH 467</td>
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<tr>
<td>PATH 477</td>
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<td>Total</td>
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**GRADUATE STUDIES MAJOR AWARDS 2023:**

- Vanier Canada Graduate Scholarship: 9ULWL%KDJDW
- Canada Graduate Scholarships — Doctoral (CGS D):
  /RX0RX&DL
  -H0QLI9U&RQSHU
  )DQJ)DQJ/L
  -R\FH=KDQJ
- Canada Graduate Scholarships — Master’s (CGS M):
  0DULD|OLVKDHY
  5HEHFD+R
  0LFKDHQ/DQH
  (ULF/LX
- Four Year Doctoral Fellowship (4YF):
  *X0GDOHLQ7DQXQOLRQJ
  0DULD|OLVKDHY

**Undergraduate Courses**

<table>
<thead>
<tr>
<th>Course</th>
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<td>PATH 375.002</td>
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<td>PATH 417</td>
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<td>PATH 437</td>
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Department Fact Sheet
### RESIDENCY MAJOR AWARDS 2023:
- OHOY1Q%HUQVWHLQ$ZDUG
- 'U5LFKDUG&UDZIRUG
- Roberta Millar Award:
  - 'U1DQF\VDWLFOHGFLFUR
  - 'U3HWU6FKWXJ1XUR3DWK
  - 'U.JLVWDOUFRQ+HPH3DWK

### 390 students & trainees
This includes: 63 in Graduate Studies; 151 in Undergraduate Courses; 39 in Residency Programs and 9 in Fellowships

### Program of Study Residents

<table>
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<tr>
<th>Specialty</th>
<th># of students</th>
<th># of weeks</th>
<th>VFMP Hospital</th>
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</thead>
<tbody>
<tr>
<td>DMP - Diagnostic &amp; Molecular Pathology</td>
<td>22</td>
<td>52</td>
<td>VGH, SPH, CWH</td>
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<tr>
<td>FP - Forensic Pathology</td>
<td>18</td>
<td>42</td>
<td>ARH, BH</td>
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<tr>
<td>HP - Hematopathology</td>
<td>15</td>
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<td>CWH, VGH, RCH</td>
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<tr>
<td>MM - Medical Microbiology</td>
<td>15</td>
<td>29</td>
<td>SPH, VGH, CWH</td>
</tr>
<tr>
<td>LCG - Lab Cancer Genetics</td>
<td>2</td>
<td>4</td>
<td>VGH</td>
</tr>
<tr>
<td>NP - Neuropathology</td>
<td>7</td>
<td>18</td>
<td>VGH</td>
</tr>
</tbody>
</table>

### CPC sessions (year 1 & 2)

- # of Faculty Participating: 28
- Instructional hours: 56

### Fourth Year Electives

- # of Faculty Participating: 84
- # of sessions: 1126
This section highlights the significant research contributions of our faculty members, showcasing their impact through metrics such as citations, h-index, and i10-index, sourced from Google Scholar. Presented here are the top 10 faculty members from both our academic and clinical department members.

### RESEARCH METRICS OF OUR FACULTY 2023

<table>
<thead>
<tr>
<th>#</th>
<th>Academic</th>
<th>Clinical</th>
</tr>
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<tbody>
<tr>
<td>David Huntsman #1</td>
<td>Citations 105,369 (All), 60,435 (Since 2019)</td>
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<td>Ian Mackenzie #4</td>
<td>Citations 62,794 (All), 24,999 (Since 2019)</td>
<td>Citations 4,209</td>
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<td>hindex 106 (All), 67 (Since 2019)</td>
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<td>i10inde 244 (All), 198 (Since 2019)</td>
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<td>Citations 28,036 (All), 11,826 (Since 2019)</td>
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<td>Andre Mattman #4</td>
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<td>Marc Romney #7</td>
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<td>Citations 78,731 (All), 37,862 (Since 2019)</td>
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<td>Samual Aparicio #2</td>
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<td>Torsten Nielsen #3</td>
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<tr>
<td>Aly Karsan #9</td>
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<td>i10inde 174 (All), 119 (Since 2019)</td>
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<td>Richard Crawford #9</td>
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</tr>
<tr>
<td></td>
<td>i10inde 45</td>
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</tbody>
</table>
In 2023, our Principal Investigators received over $41,231,444 in grant funding. This substantial support underscores the impactful and diverse research conducted by our faculty, furthering advancements in various scientific fields.

In 2023, our faculty published over 610 refereed publications. This high number shows the wide range of our research and our dedication to advancing science and making important contributions in many areas.
$3,001,386
85 total
$22,718,259.97 total
$184,570.07

RESEARCH GRANT FUNDING SOURCES

REVENUE & BUDGET

5(6($5& +$5$17)81',1*6285& (6

$37,183,078 total

*HQHUDO3XUSRVH2SHUDWLQJ )XQGV6DODU\&RVW5HFRYHU

$4,156,532.47 )XQGVUHFRYHUHGIRUVDOODUL(VE) bill back arrangement with partner institutions

*HQHUDO3XUSRVH2SHUDWLQJ )XQGV)HHIRU6HUYLFH

5HY HQXHJHQHUDWHGIRUPJHH IRU6HUYLFHDFFRXQWVDQGPLV

*HQHUDORSHUDWLQJIQGVIURP8&

$37,183,078 total

5HVHDUFK$ZDUGV

(Funds awarded to LGQVLYLGXDOVRUJIRRXSVIURPVYDULRXVUVHHDUFKJUDQWLQJ agencies)

6SHFLE3XUSRVH)XQGV

(Funds from PGME, contracts and agreements)

(QGRZPHQW)XQGV

)XQGV)HQHUDWHG IURPHQGRZPHQWV

*HQHUDO3XUSRVH2SHUDWLQJIQGV

$575,884.90

$22,718,259.97

$6,405,572.03 (General operating funds from UBC)

$4,156,532.47 (Funds recovered for salaries by bill back arrangement with partner institutions)

$1,829,594.76 (Revenue generated from Fee for Service accounts and misc.

$182,576.07

$332,199.73 (Funds generated from endowments)

$22,718,259.97 (Funds awarded to individuals or groups from various research granting agencies)

$805,978.90

$905,978.90

$11,156,532.47

$22,718,259.97 total

45
AWARD RECIPIENTS 2023

EXTERNAL AWARDS 2023

SAM APARICIO, Professor
Cancer Society’s Robert L. Noble Prize
Renewal of the Tier 1 Canada Research Chair in Blood Cancers

DAVID HUNTSMAN, Professor
Memorial University, Doctorate of Science honoris causa for being global leader within the Canadian cancer research community
Recognized with Medicine Leader Award for 2023 ranked #911 in the world ranking and #29 in Canada
Renewal of the Tier 1 Canada Research Chair in Molecular and Genomic Pathology

YONGJIN PARK, Assistant Professor
Named Canada Research Chair in Integrative Causality Inference of Cancer Mechanisms (Tier 2)

PETER WATSON, Professor
International Society for Biological and Environmental Repositories (ISBER), Outstanding Achievement in Biobanking Award 2023

POUL SORENSEN, Professor
Honored as an ambassador of the Technical University of Munich

TORSTEN NIELEN, Professor
Elected as a Fellow of the Canadian Academy of Health Sciences, 2023

DAVID SCHAEFFER, Associate Professor
Appointed as the inaugural Pancreatic Cancer Research Chair at Vancouver General Hospital (VGH)

UBC & FACULTY OF MEDICINE AWARDS 2023

DAVID HUNTSMAN, Professor
10th annual Dr. Chew Wei Memorial Prize in Cancer Research, UBC
Excellence in Clinical or Applied Research, Faculty of Medicine Distinguished Achievement Award

AMANDA BRADLEY, Associate Professor of Teaching
Excellence in Education, Faculty of Medicine Distinguished Achievement Award

ALY KARSAN, Professor
Excellence in Clinical or Applied Research, Faculty of Medicine Distinguished Achievement Award

HONGLIN LUO, Professor
Excellence in Basic Science Research, Faculty of Medicine Distinguished Achievement Award

DEPARTMENT OF PATHOLOGY AND LABORATORY MEDICINE AWARDS 2023

MUHAMMAD MORSHED, Clinical Professor
Education: Undergraduate Education and Graduate Education (VGH) Award

GHADA AL-RAWAHI, Professor
(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQHWGDQG)HOORZ(GXFDWLRQSHVHQLQW
YING WANG, Assistant Professor
Research And Discovery: Faculty researchers who are within 7 years of their faculty appointment

LINDA HOANG, Clinical Professor
Clinical Service: Clinical Service in Academic Settings/University Hospitals

MEL KRAJDEN, Professor
David Hardwick Lifetime Achievement Award (Golden Bow Tie Award)

WILLSON JANG, Team Lead - Microbiology & Virology Laboratory, Providence Health Care
Staff Service Award: Technicians and technologists

HONOR CHEUNG
Trainee Award: MSc Student

SUEFAY LIU
Trainee Award: Post-Doctoral Fellow, Fellow, or Resident

SOPHIA PARK, Clinical Associate Professor
BMLSc Students Award: Teaching Excellence Award

WENPENG (WILLIAM) WANG
Philip E. Reid Memorial CUP Award for Outstanding Contribution to the BMLSc Program

PETER SCHUTZ, Clinical Associate Professor
Dr. Melvyn Bernstein Resident Teaching Award (for non-AP staff) - NP

RICHARD CRAWFORD, Clinical Professor
Dr. Roberta Miller Resident Teaching Award (for AP Staff)

WILL LOCKWOOD, Associate Professor
Research And Discovery: All other Faculty

DAVID GRANVILLE, Professor
Most Valuable Player (MVP) Award

HELEENA MISTRY, Assistant to Department Head
Staff Service Award: Administrative Staff

ANDRE MATTMAN, Clinical Professor
Community Engagement and Philanthropy Award

AMIRHOSSEIN BAHREYNI
Trainee Award: PhD Student or Candidate

JAMES LAN, Assistant Professor
BMLSc Students Award: Teaching Excellence Award

JENNIFER XENAKIS, Educational Services Manager BMLSc
BMLSc Students Award: Teaching Excellence Award

NANCY MATIC, Clinical Associate Professor
Dr. Melvyn Bernstein Resident Teaching Award (for non-AP staff) - MM

KRISTA MARCON, Clinical Assistant Professor
Dr. Melvyn Bernstein Resident Teaching Award (for non-AP staff) - HP
04
HIGHLIGHTED RESEARCH AND TRAINING SUBMISSIONS
In 2023, the UBC CDC Faculty of Pathology and Laboratory Medicine led 12 major research projects as Principal Investigators or Co-Principal Investigators, with a combined funding of over $11M. These projects cover diverse areas such as respiratory viruses, pathogen control, tuberculosis, COVID-19, and antimicrobial resistance. Additionally, we trained 38 students and residents. This included 5 summer undergraduate students, 27 residents, and 6 graduate students.

Trainees at UBC CDC (2023):
- **Total Trainees:** 38
- **Undergraduate Students:** 5 summer students
- **Residents:** 27
- **Graduate Students:** 6 trained by UBC CDC Pathology
- **PHL Fellows:** 7

Curriculum Changes in 2023:
- **General Role:** UBC CDC is primarily a research center and not involved in teaching or curriculum delivery.
- **New Addition:** The BCCDC PHL rotation for Medical Microbiology residents now includes a Pathogen Genomics rotation as an optional area of focus.

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Challenges in Delivering Educational:
- **SPACE**
  - **Issue:** Insufficient space for wet lab work and desk space due to an increased number of faculty and research grants
  - **Mitigation:** Implemented hybrid work schedules
  - **Impact:** Space limitation prevents further expansion of research programs, including taking on more graduate students
RESEARCH BANDWIDTH

Student Feedback on Training Experience

- **Seminars and Networking:** Students express interest in BCCDC Work in Progress seminars and enjoyed networking events hosted by the student engagement committee.

- **Breadth of Exposure:** Students commend the unique learning experience at BCCDC, highlighting the skilled expertise and specialized microbiology exposure available only at this reference laboratory setting.

- **Unique Training Site:** BCCDC PHL is the only site providing training and exposure to public health and reference laboratory clinical practice, with opportunities to participate in related research and innovations.

- **Challenges:** Students noted insufficient faculty contact time, crucial for unique training exposure at this site.

- **Appreciation:** Trainees greatly appreciate the wet-lab mycology and parasitology didactic sessions provided by BCCDC PHL technologists as part of Path 722.

Planned Developments for Student Training Programs (Next Academic Year)

- **Status:** No new developments or expansions planned.

Notable Successes (2023)

- **PhD Defenses:** 2 PhD students successfully defended their theses.

- **New PhDs:** Dr. Aidan Nikiforuk and Dr. Kevin Kuchinski.

Research Activities Overview

Active Research Projects

- **SAFEGUARD:** Surveillance Alert for Fast Spread of Viruses Using Wastewater Testing (Genome Canada/Genome BC; $3M).

Notable active research projects in 2023 with UBC CDC Faculty of Pathology and Lab Medicine as co-investigators:

- **CAMP:** Mpxo Canada Africa Mpxo Partnership aimed at understanding the transmission and disease burden of this emerging pathogen.

- **PREVENT-COVID Study:** Prospective Evaluation of Immunity after COVID-19 vaccines (PHAC; $1.9M).

- **Healthcare Infection Metrics:** Establishing quality metrics for healthcare associated infection analysis (UBC FoM; $10k).

- **Lyme Disease Diagnosis Optimization:** Establishing infrastructure to support threat (CIHR; $200k).

- **MERMAID:** Metabolomics for Infectious Diseases (Health Research BC; $450k).

51
- **Mvox Surveillance:** Optimizing Mvox surveillance strategies and preventing epidemic resurgence: a three-province mathematical PRGHOLQYVWXG1&,+5N
- **COVID-19 Antenatal Serosurveillance:** 3+$/
- **SHSN:** 6HOQLIHO+RXVKROG6XYHLOODQFH1HWZLQ
- **Biomass Smoke Exposure:** Biomass smoke H[SRXUHDOQG&29,'LQWHUGLVLFSOLQDU,|SURMIWIZ%/XQJ$VVRFLDWRQH
- **Community-Based Testing:** Drawing on &29,'WHVWLQLQORYDWLRQVWRLQIRUPVFDQHXS of community-based testing for communicable GLVHDHVVLQ%&+HDOWK&DQGDO

### Student Involvement in Research

- **Guadalein Tanunliong (PhD Student):** [YDOXDWLQJLPPXQIHUSRQVHWRGL#IHGQW] Coronaviruses and associated clinical outcomes in antenatal women
- **Brynn McMillan (PhD Student):** Evaluating LPPXQIUXVSVRQVHWR&29,'YDFLQLQVLQ community-dwelling elderly
- **Fang Fang Li (PhD Student):** [LQNLQJHDUQ]OLIH viral exposures to outcomes, and investigating the use of serological testing in neurological disorders
- **Arnold Okpani (PhD Student):** Occupational XH[DOHWDGXULQJWKH&29,'SDQGHPLF
- **Avani Bhangav (Co-op Student from UVic):** Establishing quality metrics for healthcare-associated infection analysis
- **Liam Bryne (Graduate Student):** Characterizing antimicrobial resistance in wastewater
- **Angel Yao (Undergraduate Student):** Investigating comprehensive testing DSSURDFKVHIVUWLFLNQHGWLYEDWLRQ
- **Kevin Kuchinski (Completed PhD in 2023):** 6HTXHQFLODYMOLQJXHQLJHQPHVVLQXG from wild bird habitats to prevent outbreaks and prepare for pandemics
- **Aidan Nikiforuk (Completed PhD in 2023):** 8QGUVRDQGLQJWKHUROHRI$&[,]+$Q56 &R9WUDQVPLVVRQ
- **Darcy Sutherland (PhD Student):** Unlocking antimicrobial peptides as novel therapeutics against multi-drug resistant bacteria
Trainees at BCCA (2023)
- BC Cancer Pathology trained 53 trainees, primarily residents rotating through BCCA Pathology.

Curriculum Changes in 2023
- Total Involved: All of our pathologists and scientists, totaling 23, participated in trainees’ teaching.

Planned Developments for Student Training Programs (Next Academic Year)
- New Capacity: 1HZ0\UHQRY\DWHGR  FHSVDFH will host 2 more residents or fellows in BC Cancer pathology.
- Additional Fellows: 3 new clinical fellows starting this year.
- Challenge: Overall capacity for trainees’ rotation remains tight.

Student Feedback on Training Experience
- Feedback: All feedback has been excellent.
- Reason: 9HU\GHGLFD\WHGDQGNQRZO\GHJHDEOH\VWD  was implemented a couple of years prior.

Challenges in Delivering Educational Programs
- Major Challenge: Eviction by hospital administration, including the closing of 1 of 2 resident rooms.
- Impact: Limits the number of trainees and prevents implementation of teaching programs.
- Resolution: Informed UBC Pathology Residency Program to limit trainees to a maximum of 5, lack of space for a multiheaded microscope also affects resident training.

Research Activities Overview
- Total Publications: 72
- New Research Initiatives/REB Approved: 8
- Total New Grants Funded (as PI): 11
- Total New Funding Received (as PI): $5,243,441
- Tumor Banks Led by BC Cancer Pathologists: APSKRDP\XQJ 8

Student Involvement in Research
- All research projects involve trainees, including graduate students, medical students, residents, and fellow.
SIGNIFICANT RESEARCH INITIATIVES IN 2023

Highlighted Research and Training

The following are two significant research initiatives submitted by the BC Cancer Lymphoma Group, led by Dr. Christian Steidl and Dr. David Scott. These projects exemplify the group's commitment to advancing lymphoma care through innovative research and clinical applications.

Dr. Christian Steidl, Executive Director, Research at BC Cancer Research Centre; Research Director of Centre for Lymphoid Cancer; Head, Department of Lymphoid Cancer Research

BC CANCER LYMPHOMA GROUP

Project 1:

Implementation of Digital Gene Expression Assay, LExA120 at BC Cancer:

Since 2018, the Centre for Lymphoid Cancer (CLC) team at BC Cancer (BCC) has been leading a large-scale applied research project to address the most significant knowledge gap in lymphoma care: understanding the biology of relapsed lymphoid cancers. This pan-Canadian study is funded by Genome Canada, Genome BC, Canadian Institutes of Health Research, and the BC Cancer Foundation.

Key Contributions:

Development of Assays:

- **Development of Lymph2Cx:** A digital gene expression-based platform (20-gene assay) applied to FFPE biopsies to assign cell-of-origin (COO) in DLBCL.
- **Modification to Lymph3Cx:** Expanded the assay to include 58 genes to distinguish PMBCL from DLBCL subtypes, resulting in the Lymph3Cx assay.
- **DLBCL90 Assay:** Further modified the assay to identify clinically and biologically distinct patient groups with double hit or dark zone signatures, leading to the development of the 90-gene DLBCL90 assay.
SIGNIFICANT RESEARCH INITIATIVES IN 2023

LExA120 Assay: Incorporated all subclassification features into one assay, named LExA120, which underwent cross-validation in BC and Ontario. Achieved BC College of Physicians and Surgeons Diagnostic Accreditation Program (DAP) laboratory accreditation in October 2023.

Clinical Impact: The LExA120 assay is now part of the routine pathology diagnostic work-up of aggressive B-cell lymphomas across the province, significantly advancing precision medicine and improving patient outcomes by providing accurate molecular subtyping.

Published Work:
- Mottok et al., Blood 2018
- Ennishi et al., J. Clin. Oncol, 2018

Project 2: Molecular Subgroups and Clonal Evolution in Relapsed/Refractory DLBCL in BC:

This project investigates the biological and clinical heterogeneity of DLBCL, focusing on the molecular subtyping and clonal evolution in relapsed/refractory DLBCL (rrDLBCL) patients. The research team at the Centre for Lymphoid Cancer (CLC) performed a population-based study on over 1,100 patients diagnosed with DLBCL between 2005 and 2010 in British Columbia.

Key Contributions:
- DZsig Identification: Defined a germinal center-origin, aggressive B-cell lymphoma signature (DZsig) with lower 2-year overall survival outcomes.
- Whole Genome/Exome Sequencing: Performed sequencing on paired tumour biopsies from 73 patients, revealing significant insights into the mutational divergence and clonal evolution associated with relapse timing.
- Clinical Management Recommendations: Suggested that late relapses can be managed as genetically distinct diseases sensitive to immuno-chemotherapy, while refractory and early relapse diseases may require alternatives to chemotherapy.

Clinical Impact: This study emphasizes the need for refined molecular profiling to identify high-risk DLBCL subgroups that would benefit from more aggressive therapeutic regimens. It also provides a basis for tailored treatment strategies for rrDLBCL patients, potentially improving their outcomes.

Published Work:
- Alduaij et al., Blood, 2023
- Hilton et al., JCO 2023
INTERNATIONAL KI67 IN BREAST CANCER WORKING GROUP

Introduction:

Dr. Torsten O. Nielsen, Professor of Pathology & Laboratory Medicine and MD/PhD Program Director at UBC, leads a research team focused on standardizing the immunohistochemical assessment of the Ki67 biomarker. This biomarker is crucial for stratifying risk and guiding treatment in breast cancer. Since 2011, the team, which includes renowned experts from UBC and other prestigious institutions, has developed international guidelines and tools to ensure the biomarker’s clinical and analytical validity.

Project:

Since an initial meeting in 2011, a team of pathologists, oncologists, and biostatisticians has worked to standardize the immunohistochemical assessment and interpretation of the Ki67 biomarker. Their goal is to ensure it is used in both an analytically and clinically valid way to stratify risk and guide treatment in breast cancer. The leadership group includes Torsten Nielsen and Sam Leung from UBC, along with Mitch Dowsett (London, Royal Marsden), Dan Hayes (University of Michigan), Lisa McShane (US National Cancer Institute), and David Rimm (Yale). This work has resulted in international guidelines for staining and scoring this marker of cancer cell proliferation (Nielsen TO, Leung SC et al. J Natl Cancer Inst 2021 PMID: 33369635), and freely available software tools accessible to pathologists worldwide (Ki67 in Breast Cancer Working Group).

Key Contributions:

- International Guidelines: Published guidelines for staining and scoring Ki67 in the Journal of the National Cancer Institute.
- Software Tools: Developed tools accessible to pathologists globally (Ki67 in Breast Cancer Working Group).

Clinical Impact:

Contributed to a clinical trial enabling women with low-risk breast tumors to avoid radiation therapy based on Ki67 analyses, published in The New England Journal of Medicine.

Published Work and Presentations:

**BC CANCER SORENSEN LAB**

$V WKH \ 'LUHFWRU RI $70^\circ U 3RXO 6RUHVHQ KW FRQWLQXHG WR PDNH JURXQGEUHDLQJ FRQWULEXWLQLQVR WHSHGDWULFQRFQRORJ\UHVHDFUK,QLVZ RUN KDVFHHQLQVWUXPHQWDO\LQ DFFHOHWDWLQJSHGLDUL FF DQFHUV WKHUHDSHXWLFVIURPEHQFK WREHV GLGSDUWLFXODUO\DGGUDQFHJURXQGEUHDLQJ $DQG the urgent need for improved treatments for relapsed or metastatic childhood cancers.

**Key Contributions and Clinical Impact:**

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- $GGUHVHG\VHQRZV\XULY DOWDWHVLQFKLO GRGFDQFHUVZLWKLQQR YD WLYHUHVHDFK\EDVIH DWJ 9DQFRXYHUÍ
- /HG WKH GLV FRYHU\RIWXPRUÉDVVRFLDWHGVXU1DFHSURQWHLQV DSVRWHQWDLOLPXQRWKHUDS\WD (ZLQ) VDUF RPDDQGRWHKULJÊULVF NFKLO GRGFDQFHUVÍ
- 6HLRUDXWKRURIWKXHSEOL DF DLQRO 5G50<61QGSHQGHQHWPHFKDQLVP HHGLDWLQJ VHFUHWPH UHSURJ\UDPLO\JDQGPHWDVDWLQL\O&1EDPSOLHGQH XUREODVWRPDÉZKLFKHGQHLQWLGQRYHOPHFKDQLVPVRIPHW DV WDLF DFLWJLQXHUXREODVWRPĐEXEOLVKHGLQ6FLQFH$6GYDQFHVQLÍ

2VVHRVDUF RPD5HVHDFUK

- $ZDUQHG\QVÉ8E\EWKH2VWHRVDUF RPD, QVWLXWXH IRUW KXH SURMHFWÖ+DUQHQVVL QJWKH RVWHRVDUF RPD VX UIDFH RPHIRULPPXQRWKHUDSLWDUJHWVWREORFNPW DV WDLF DFLWÚ Ú
- )RFX VHRQGLHQWLI\LQJQHZWUHDWPHQWVIRUP HDVVDWLFRVWHRVDUF RPDÉZKLFKVLJ ÚDQWOV VXUYLY DOU DHUVÍ

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- /HDQG DWDUJ\HHWHGSURMHFWZLWLQGH0WDERKXEZLWK$700HEU'ÚÍ 6HWK3DUNHUÍ
- ,QHYVLJ\DWHVKRZWXPRUFOOVDP DQJ\HPWDEROFLWUHV DQGLWLVPSDFW RQ& ß5 7FH OOH\H FW IXQGHGLWK Í PLOOLQRWEWKH7HUÍ\JRJRXQGDWLRLQDO GWKH/RW W6 RK Q+HFKW0HPRULDO )RXQGD WLRQÍ

&ROODERUDWLYHÍ

- $QQRXQHGFRQO O UD WLRQZLWK0DVVD FKXVHHWWV*HQ HUDO+RVSLWDO WKURXJK'HUPÉ %LRPH 3KDUPDFHXWLF DQV ,QFÍ ÉZKHUH'ÚÍ 6RUHQVHQV HUYH V H DV & ĐÍ
- ,QROYHGLQDQGDU,PXQ XRÁ(QJLQ HHLUQJ DQG %LRPDX IDFWXULQJ +XEÍ
Project 1: **Self-disinfecting Surfaces: Copper in Action**

The VCH Medical Microbiology laboratory led a collaborative one-year cross-Canadian partnership between infection control researchers, transit authorities, and private industry to assess the antimicrobial efficacy and durability of three different copper products on high-touch surfaces. In-situ testing demonstrated significant reductions in bacterial colony counts and adenosine triphosphate (ATP) readings on copper surfaces compared to controls. After 200 simulated cleaning events, a norovirus surrogate demonstrated a 99% reduction and a COVID-19 surrogate had a 90-99% reduction on all copper surfaces compared to controls. This groundbreaking study, fully funded by Teck as part of its Copper & Health program, was the first of its kind in North America. The project results led to national and international recognition, with three major publications and a white paper requested by the American Public Transport Association.

**Published Work:**


The medical microbiology laboratory has been under a tremendous amount of pressure in the last 4 years. VCH Microbiology and Infection Prevention and Control rose to the occasion, providing fast and reliable results and clinical support when the province needed it the most. Meanwhile, major innovations are needed to prepare for human resource changes in the population of care. Below are the actions taken to prepare for those changes.

Dr. Marthe K. Charles, Clinical Associate Professor, Director of Infection Prevention and Control

**Highlighted Research and Training**

- Project 1: Self-disinfecting Surfaces: Copper in Action

3XEOLVKHG:RU

- LOOLDPV7&ÈSVVHOLQ(È0DJ)XOOL7È:RJQRZ7È+DPJHK+È1DKNLDHÈ:DLVPDQÈÈ6RWMNYRDÈ'L[RQ 5ÈU1FHÈKDUOHVOI 2QÈHÈHDUWULDOHYDOXDWLQJWKHGUXDELOLW\DGDLQDLPLFLRELOHÈ FDFRILQ5XSÈOLFWUDQSVRUWDLRQV\VWHPVÈ6FL5HSI ÐDUÍ GRLÈI VEEÈI 3Ö,ÈOIG,È13ÖG
Project 2: Rapid Noninvasive Environmental Screening of Human Pathogens: The VCH Medical Microbiology team advanced scientific knowledge in canine biological scent detection through the Canines For Care (C4C) team. Collaborating with Health Canada, they developed rigorous methodology to train dogs to detect COVID-19. The trained canines showed 100% sensitivity and 93% specificity in identifying COVID-19 in a laboratory setting. They successfully transferred these skills to a clinical setting in a long-term care facility. This research, in collaboration with BC Cancer Research, identified unique volatile organic compounds (VOCs) predictive of positive COVID-19 samples, demonstrating excellent concordance between canines and GC-MS analysis. This significant research adds to the limited studies comparing dog olfaction to GC-MS, enhancing the science of canine biodetection.

Published Work:

Project 3: Automation and Artificial Intelligence in the Microbiology Laboratory: Drawing from its experience with frontline automation (Tarzan®, WASP®, Copan™) since 2008, the VCH Medical Microbiology laboratory has enhanced its capabilities by adding 6 “smart incubators” to the robot. This major installation is the second high volume total laboratory automation in a UBC affiliated centralized laboratory after the one from Dr. Pamela Kibsey in Interior Health Authority (2014). Facing a human resource crisis, the automation of mundane tasks and the integration of artificial intelligence will enable the microbiology laboratory to support community care growth and handle increased volume. The VCH Microbiology laboratory serves 12 healthcare centers and outpatients, processing over 500,000 samples.

Project 4: Emerging Technologies in Clinical Microbiology: The VCH Medical Microbiology laboratory has been at the forefront of integrating new technologies into its workflow. Recent investments in high-throughput sequencing (HTS) have allowed for the rapid identification of novel pathogens. Additionally, the laboratory has begun to utilize machine learning algorithms to predict antibiotic resistance patterns from bacterial genome sequences. These advancements have significantly improved the turnaround time for diagnostic results, enabling earlier patient care decisions.

Published Work:

[59]
annually from across the province, including Bella Bella. This total laboratory automation includes North American premiere features like the Radian® for fast automated susceptibility testing and the Colibri® for routine susceptibility and identification testing. This innovation combines automation and AI to improve result times, quality, and operational efficiency.

The new WHO TB strategy aims for an 80% reduction in new TB cases by 2030, with diagnostics playing a central role. Vancouver Coastal is considered low incidence for TB, with 92% of reviewed slides negative for Mycobacterial infection. Technologists spend a minimum of 10 minutes confirming a negative slide. The VCH Medical Microbiology Laboratory has advanced routine microbiology by using automated digital microscopy paired with AI. They demonstrated that automated digital microscopy combined with DNN-trained software can effectively screen and separate positive from negative AFB-smears. In a study of 286 slides, the concordance, positive, and negative agreements between manual and digital microscopy were 95.5%, 96.2%, and 95.2%, respectively. Published in a peer-reviewed journal, these findings support further research and operational efficiency in identifying Mycobacterial infections, contributing to the WHO goal to end TB.

Published Work:

Publications:


Research and Educational Highlights:

• Held 23 active research grants totaling over $30 million in aggregate funding.

• Awarded two new grants in 2023:
  2. USA Department of Defence: $2.5 million USD for improving diagnosis of brain injury caused by intimate partner violence (2024-2028).

• In the process of establishing a Fluid Biomarker Core Facility supported by CFI.

• Published 10 new papers in 2023, with 4 additional papers under review.

• Supervised 11 trainees and 7 staff, graduated 3 BSc students, and taught in the Pathology and Neuroscience graduate programs.
• Committed to EDI best practices to address systemic barriers and biases
• Provided EDI and unconscious bias training to lab members
• Supported career progression through accommodations and career leaves

Communication and Outreach:
• Delivered 27 invited research presentations in 2023
• Conducted Departmental Rounds in Dec 2023
• Held a Fluid Biomarker Open House in June 2023
• Featured at various events including the UBC Emeriti Tea and CLEAR Research Day
• Hosted two donor visits and initiated discussions on fluid biomarkers with Northern Health
Introduction:

The VGH Immunology Laboratory provides high-complexity testing to serve all solid organ and hematopoietic stem cell transplant programs in British Columbia. In 2023, the VGH Immunology Laboratory was the first in Canada to validate the use of nanopore-sequencing technology to perform real-time, granular assessment of donor-recipient HLA compatibility to guide the selection of immunosuppression for kidney transplant recipients. The Immunology Laboratory continues to be a leader nationally and internationally in the development and clinical translation of precision technologies in transplantation medicine.

Key Contributions and Clinical Impact:

Unified Metric for Allo-Sensitization:

- Developed a unified metric to combine the effects of HLA and ABO allo-sensitization.
- Demonstrated reduction in inequity in access to transplantation for candidates from ethnic minority groups.
- Published in the American Journal of Transplantation and presented at various international conferences including the American Transplant Congress, Canadian Society of Transplantation, American Society of Histocompatibility and Immunogenetics, and meetings in Singapore, Saudi Arabia, and Ukraine.

Funding and Research:

- Received funding from the Canadian Donation and Transplantation Research Program to accelerate ABO-incompatible transplantation in Canada, addressing difficult-to-match candidates on the waiting list.

CanPREVENT AMR Program:

- Co-leads the CanPREVENT AMR program with Drs. Keown and Sherwood, funded by Genome Canada ($12,000,000).
- Focuses on reducing premature kidney transplant loss due to antibody-mediated rejection through precision medicine technologies.
- Successfully initiated a national Nanopore-based sequencing infrastructure across all 14 Canadian Transplant Immunology Laboratories for rapid, real-time DNA sequencing.

UBC Precision Medicine in Transplantation Research Excellence Cluster:

- Part of a cluster that includes partnerships with institutions in Australia, Germany, and Austria.
- Hosted a 2-day Precision-Tx symposium in December 2022, attracting international experts and Transplant Immunology Laboratories for rapid, real-time DNA sequencing.

For a detailed list of my published work, please see the Publication Section, page # 99.
**Clinical Implementation of Optical Genome Mapping as a Front-Line Diagnostic Test for Hematological Neoplasms**

Dr. Zeid Hamadeh, Clinical Instructor, Dept of Pathology & Laboratory Medicine UBC; Lab Scientist, Cytogenomics, Vancouver Coastal Health

**Introduction:**
Since November 2023, the Cytogenomics Lab has profiled 61 patients using OGM, achieving a 97% quality control success rate. Clinically significant findings were demonstrated in 49% of cases, influencing treatment decisions.

**Validation and Launch:**
The validation and clinical launch of OGM were presented at numerous national and international conferences, including the 2023 Canadian College of Medical Geneticists (CCMG) annual scientific conference.

**Clinical Impact:**
- **Patients Profiled:** 61
- **Quality Control Success Rate:** 97%
- **Clinically Significant Findings:** 49% (30/61).

**Future Plans:**
The lab plans to expand OGM testing to include myelodysplastic syndrome, relapsed acute leukemias, and chronic lymphocytic leukemia.

**Presented Results at:**
- 2023 Canadian College of Medical Geneticists (CCMG) annual scientific conference
- 2023 Cancer Genomics Consortium (CGC) conference
- 2023 American Society of Hematology (ASH) conference
- 2024 American College of Medical Geneticists (ACMG) conference

Abstracts have also been accepted for presentation at the 2024 CCMG and 2024 CGC annual meetings, and are under consideration for the 2024 European Society of Human Genetics (ESHG) annual meeting.

Further more, we are preparing a scientific manuscript based on our exceptional validation data.

**Conclusion:**
OGM is revolutionizing genome diagnostics, uncovering significant alterations previously missed by lower resolution analyses.

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Highlighted Research and Training
Figure 1. Optical genome mapping (OGM) resolves a complex case of acute myeloid leukemia (AML) with higher resolution and accuracy compared with karyotype and FISH. 

A. Karyotype analysis shows a complex karyotype with a four-way translocation between chromosomes 1, 3, 9 and 22 and an unbalanced rearrangement between chromosomes 1 and 10. 

B. Interphase and C. Metaphase FISH using a BCR/ABL1 probe set confirmed the presence of the BCR::ABL1 fusion and revealed one fusion signal on the derivative chromosome 22, one ABL1 signal on the long-arm of both the normal and derivative chromosome 9, and one BCR signal on the normal chromosome 22 and derivative chromosome 3, consistent with the observed four-way translocation. 

D. OGM detected the presence of a 4-way translocation positive for the BCR::ABL1 fusion, an unbalanced rearrangement between chromosomes 1 and 10 that involved a large terminal deletion of chromosome 10 and several prognostically relevant small intragenic deletions, including IKZF1.
SALINE GARGLE SAMPLE COLLECTION FOR COVID-19 TESTING IN BOTSWANA

**Project:** Saline Gargle Sample Collection for COVID-19 Testing in Botswana: First pioneered by BC Children’s Hospital researchers, saline mouth rinse gargle (SG) collection has been implemented in Canada and globally as an alternative to nasopharyngeal (NP) swabs for COVID-19 testing. SG samples can be self-collected, reducing the need for trained health workers and the amount of personal protective equipment and flocked swabs needed, with near equivalent diagnostic validity. While SG samples have the potential to support resource-limited health settings, innovative sample methods are infrequently clinically validated in low- and middle-income countries. Botswana, as a resource-limited health setting, stands to benefit from the scale-up of this method to address a gap in COVID-19 testing.

**Key Contributions:** Through the leadership of Dr. David Goldfarb at the Department of Pathology and Laboratory Medicine at BC Children’s, in collaboration with the Institute of Global Health, the University of Botswana, and the Botswana-Harvard Partnership, data on the performance of SG collection for COVID-19 testing was systematically compiled. This effort led to the clinical validation of SG sample collection methods for COVID-19 testing in Botswana.

**Clinical Impact:** The project not only validated SG sample collection within a resource-limited health setting but also supported research by Botswanan investigators into direct PCR molecular testing of SG samples to streamline laboratory workflows, and Next-Generation Sequencing of SG samples for COVID-19 variants. Furthermore, it facilitated capacity building for trainees in Canada and Botswana, resulting in Masters degrees from UBC and the University of Botswana.
Kwana Lechille led the clinical validation study in Botswana for her MPhil in Medical Sciences at the University of Botswana. She is anticipating to graduate in 2024.

Iryna Kayda led the systematic review on the sensitivity of gargle sample collection compared to swabs for SARS-CoV2 detection. She graduated with an MSc in Experimental Medicine from UBC in Nov 2023.

She graduated with an MSc in Experimental Medicine from UBC in Nov 2023.
Dr. Marc Romney, Clinical Professor, Pathology and Laboratory Medicine, UBC; Medical Microbiologist St. Paul's Hospital

INSTALLATION OF AI-ASSISTED LABORATORY SYSTEM AT ST. PAUL’S HOSPITAL

Project: INSTALLATION OF AI-ASSISTED LABORATORY SYSTEM AT ST. PAUL’S HOSPITAL

Dr. Marc Romney, Head of Medical Microbiology and Virology, introduced the new AI-assisted machine designed to enhance the microbiology laboratory at St. Paul’s Hospital in Vancouver. This significant investment of $1 million has led to the installation of an advanced automated AI-based system for setting up bacterial cultures. The new system employs artificial intelligence and sophisticated robotics to manage repetitive tasks, thereby allowing human staff to focus on more complex and critical work.

Key Contributions: The AI-based lab system, known as the WASPLab (Walk-Away Specimen Processor), features two robots, affectionately named Tarzan and Jane. These robots utilize artificial intelligence to process up to 70 percent of the hospital’s microbiology samples. They perform tasks such as unscrewing specimen tubes and streaking samples onto bacterial culture plates. This automation of clinical microbiology marks a significant advancement, being the first of its kind in Western Canada; moreover, it significantly streamlines the workflow within the lab.

Clinical Impact: St. Paul’s Hospital processes over 145,000 microbiological samples each year from British Columbia and Yukon. The introduction of the WASPLab system has significantly improved efficiency by automating routine and manual tasks. This innovation has provided the laboratory staff with greater flexibility, enabling them to concentrate on more intricate analyses. While the system occasionally requires human oversight for error correction, the overall impact has been highly positive, with increased productivity and reduced turnaround times for sample processing.

Partnerships and Future Developments: The development and customization of the WASPLab were achieved through close collaboration with Copan, an Italy-based manufacturer of laboratory automation and innovation. This project was generously funded by a donor and the St. Paul’s Hospital Foundation, demonstrating a successful partnership that has paved the way for future advancements in laboratory automation. Plans are already in place to implement a second WASPLab in a state-of-the-art laboratory at the new St. Paul’s Hospital, set to open in 2027.
Innovative Treatment Targets Blood Clots Without Increased Bleeding Risk

Dr. Jay Kizhakkedathu, Professor at the Centre for Blood Research, Department of Pathology and Laboratory Medicine and Department of Chemistry at the University of British Columbia

Project: Innovative Treatment Targets Blood Clots Without Increased Bleeding Risk

Innovative Treatment Targets Blood Clots Without Increased Bleeding Risk: Dr. Jayachandran Kizhakkedathu, a professor and Canada Research Chair at UBC's Department of Pathology and Laboratory Medicine and the UBC Centre for Blood Research, led the development of MPI 8. His innovative approach targets polyphosphate, a molecule involved in blood clotting that accelerates the process but is not essential for it. This strategy differs from existing blood thinners that target enzymes essential for blood clotting and carry a significant risk of bleeding. The expertise of Dr. Kizhakkedathu and his team at UBC's Centre for Blood Research was crucial in creating a compound that can bind to polyphosphate and inhibit its action, effectively reducing the risk of bleeding while preventing blood clots.

Clinical Impact: The development of MPI 8 represents a major breakthrough in the field of blood clot prevention and treatment. By targeting a specific molecule involved in clot formation without disrupting the natural clotting process, MPI 8 has proven to be safer and more effective in animal models. This discovery holds enormous potential to improve human lives by reducing the risk of bleeding associated with current blood thinners. Initial preclinical studies in mice demonstrated MPI 8's remarkable effectiveness in preventing blood clots without increasing bleeding risk and showed no signs of toxicity, even at high doses.

Published Work:
• This research was published in Nature Communications: La, C.C., Smith, S.A., Vappala, S. et al. Smart thrombosis inhibitors without bleeding side effects via charge tunable ligand design. Nat Commun 14, 2177 (2023). https://doi.org/10.1038/s41467-023-37709-0

Dr. Jay Kizhakkedathu, Professor at the Centre for Blood Research, Department of Pathology and Laboratory Medicine and Department of Chemistry at the University of British Columbia
The University of British Columbia thanks the Rix Family Foundation for playing an integral part in advancing our understanding of how we can improve the quality of laboratory services worldwide. British Columbia's medical community is thankful for Dr. Rix's unwavering commitment to medical mentorship, the well-being of British Columbians and the advances he made in laboratory quality assurance. UBC and Dr. Lucy Perrone, the inaugural Donald B. Rix Professor in Laboratory Quality at UBC, are pleased to present this update.

Global Initiatives:

**CMPT:***

- Number of EQA schemes in microbiology expanded to 19 programs now. These are now officially included in the new scope of accreditation to ISO 17043 (renewed by A2LA in April 2024)
- EQA Enrollment (see map below) continues to grow in the eastern part of Canada and internationally to:
  - Georgetown, Guyana
  - Ljubljana, Slovenia
  - Coventry, UK
  - Uppsala, Sweden
  - Olympia, WA, USA
  - St. David’s Island, Bermuda

The University of British Columbia thanks the Rix Family Foundation for playing an integral part in advancing our understanding of how we can improve the quality of laboratory services.

**CMPT:**

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- (4$QROOPHQHVHPDSEQORZFRQWLQXHVWRJRURZLQWTKHDVWHUQSDUWRQ&BDPGDDQG internationally to:
  - *HRU*HWRZQ*X\DQD
  - /MXEOMDQD6ORYHQLD
  - Coventry, UK
  - Uppsala, Sweden
  - 20\PSDL:$86
  - St. David’s Island, Bermuda
Dr. Perrone visited The Medical Research Council Unit of The Gambia at the London School of Hygiene & Tropical Medicine in Banjul, The Gambia in June 2023 and will return to Banjul this June to plan for their development as an EQA provider in West Africa.

New CMPT contracts are expected in 2024 for Burundi, the Gambia, and Oman.

17 students from Ethiopia completed CMPT's continuing professional development course in microbiology.

International EQA training restarted. CMPT is hosting 2 trainees from Oman CPHL in August 2024.

POLQM:

- 72 students enrolled in LQM certificate - 27 from The Gambia, 14 from outside of Canada representing 10 countries. (In other words, 31 students from Canada, 41 students from outside of Canada representing 11 countries.)
- Launched new micro-certificate in Antimicrobial Susceptibility Testing and Interpretation. 27 students enrolled in AST&I Micro certificate - 9 from outside of Canada representing 7 countries.
- Lab Quality Conference - In June 2023, POLQM hosted a hybrid-format laboratory quality conference featuring more than 20 speakers and 140 delegates attending in person or by video link. This year's theme was "Ensuring Quality in a Changing Diagnostic Landscape" and attracted international participants. Dr. Perrone secured sponsorship from Providence Health Care, a health and wellness resource for families, patients and residents from all parts of British Columbia, and LifeLabs, which performs laboratory tests to help diagnose, treat, monitor and prevent diseases for millions of Canadians.
International projects and impact:

1. **Bangladesh:**

   In 2023 Dr. Perrone served as a Senior Advisor to the Ministry of Health and Family Welfare in Bangladesh to write the National Public Health Laboratory Strategy for Infectious Diseases 2024-30. This work includes extensive stakeholder engagement and communication, conducting a comprehensive situation and SWOT analysis, revising the national strategy and supporting the development of a budgeted operational plan with Ministerial validation and national laboratory implementation of the strategy.

   **Project Outputs:** 1DWLRQDO3XEOLF+HDOWK/DERUDWRU/6WUDWH\IRU,QIHWLQ%DQJODGHVK(VJOLVK

2. **The Gambia - Development of The National Essential Diagnostics List:**

   Access to quality, affordable, and appropriate health products is indispensable to advance universal health coverage, address health emergencies, and promote healthier populations. WHO published The First Model List of Essential in Vitro Diagnostics (EDL) in May 2018, in order to provide a new tool for governments to prioritize in vitro diagnostics for national decision making. The model EDL is intended to serve as a reference resource that countries can adapt to their context to develop or update their own national essential diagnostic lists (NEDLs). A NEDL has the potential to positively impact public and private health care delivery through highlighting which diagnostics should be prioritized for funding, through the standardization of test methodologies and allocation of tests across the tiered health system, and the alignment of stakeholder perspectives on the importance of diagnostics.

   To help accelerate NEDL development, Dr. Perrone supported the Foundation for Innovative New Diagnostics (FIND), the WHO and several international organizations to develop and implement tools that support countries in their development of NEDLs.

   **Project Outputs:** 1DWLRQDO3XEOLF+HDOWK/DERUDWRU/6WUDWH\IRU,QIHWLQ%DQJODGHVK(VJOLVK

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Highlighted Research and Training
The Infection Prevention and Control (IPAC) Certificate Program: The Infection Prevention and Control (IPAC) Certificate has received a three-year endorsement from IPAC Canada, a national association dedicated to promoting best practices and advancing knowledge in infection prevention and control. Additionally, the Ministry of Health has allocated funding for the UBC IPAC certificate program to support and encourage infection prevention and control education of healthcare workers within B.C. Since 2021, we have reimbursed 27 eligible students covering tuition and textbook expenses.

The IPAC Certificate is currently undergoing revision and will be consolidated into a 25-week online program. This comprehensive program, led by Drs. Aleksandra Stefanovic, Elisa Lloyd-Smith, Ghada Al-Rawahi, and Titus Wong, is being developed in collaboration with Extended Learning and is generously supported by the Ministry of Health.
APPENDIX: FUNDING AND PUBLICATIONS FOR 2023
## Principal Investigator Grants

<table>
<thead>
<tr>
<th>Principal Investigator</th>
<th>Grant Period</th>
<th>Funding Source</th>
<th>Description</th>
<th>Funding Amount</th>
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<tbody>
<tr>
<td>Aparicio, Samuel</td>
<td>2023 - 2025</td>
<td>Mark Foundation</td>
<td>The Origins of CIN: Deconstructing compound copy-structural mutational process phenotypes of cancers at single gene and genome resolution</td>
<td>$250,000 USD</td>
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<tr>
<td>Aparicio, Samuel</td>
<td>2023 - 2025</td>
<td>National Institutes of Health</td>
<td>New York Genome Characterization Center: Somatic Mosaicism across Human Tissues</td>
<td>$1,500,000</td>
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<tr>
<td>Aparicio, Samuel</td>
<td>2023 - 2028</td>
<td>Canadian Institutes of Health Research (CIHR)</td>
<td>Mechanisms and targeting of repair</td>
<td>$1,048,050</td>
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<tr>
<td>Aparicio, Samuel</td>
<td>2023 - 2028</td>
<td>CIHR</td>
<td>Decoding the impact of single cell mutational processes in triple negative breast cancer and high grade serous ovarian cancer</td>
<td>$1,040,400</td>
</tr>
<tr>
<td>Aparicio, Samuel</td>
<td>2023 - 2024</td>
<td>Breast Cancer Research Foundation</td>
<td>Developing predictive biomarkers for genome targeting agents in TNBC, to single cell resolution</td>
<td>$301,185</td>
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<tr>
<td>Aparicio, Samuel</td>
<td>2023 - Present</td>
<td>Royal Society</td>
<td>Wolfson Visiting Fellowships</td>
<td>$139,512</td>
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<tr>
<td>Aparicio, Samuel</td>
<td>2023 - 2024</td>
<td>Canadian Cancer Society</td>
<td>Decoding the impact of single cell mutational processes in triple negative breast cancer and high grade serous ovarian cancer</td>
<td>$100,000</td>
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<tr>
<td>Aparicio, Samuel</td>
<td>2023 - 2024</td>
<td>Canadian Cancer Society</td>
<td>2022 Robert L. Noble Prize</td>
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<tr>
<td>Aparicio, Samuel</td>
<td>2023 - 2025</td>
<td>MacMillan Family Foundation</td>
<td>Bulk and single cell base oxidation</td>
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<td>Aparicio, Samuel</td>
<td>2023 - 2025</td>
<td>MacMillan Family Foundation</td>
<td>Copy number alterations and epigenetic rewiring in single cells that affect the activity and efficacy of genome-targeting drugs</td>
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<td>Bally, Marcel</td>
<td>2023 - 2026</td>
<td>Nanomedicines Innovation</td>
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<td>Bally, Marcel</td>
<td>2023 - 2024</td>
<td>University of Victoria</td>
<td>Nanotherapeutics Clusters</td>
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<td>2023 - 2025</td>
<td>Nanomedicines Innovation</td>
<td>1HWZRUN10,1</td>
<td>$48,000</td>
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**Appendix: Funding and Publications for 2023**

- **Mark Foundation**
  - Funding: $250,000 USD
  - Description: The Origins of CIN: Deconstructing compound copy-structural mutational process phenotypes of cancers at single gene and genome resolution

- **National Institutes of Health**
  - Funding: $1,500,000
  - Description: New York Genome Characterization Center: Somatic Mosaicism across Human Tissues

- **Canadian Institutes of Health Research (CIHR)**
  - Funding: $1,048,050
  - Description: Mechanisms and targeting of repair

- **CIHR**
  - Funding: $1,040,400
  - Description: Decoding the impact of single cell mutational processes in triple negative breast cancer and high grade serous ovarian cancer

- **Breast Cancer Research Foundation**
  - Funding: $301,185
  - Description: Developing predictive biomarkers for genome targeting agents in TNBC, to single cell resolution

- **Royal Society**
  - Funding: $139,512
  - Description: Wolfson Visiting Fellowships

- **Canadian Cancer Society**
  - Funding: $100,000
  - Description: Decoding the impact of single cell mutational processes in triple negative breast cancer and high grade serous ovarian cancer

- **Canadian Cancer Society**
  - Funding: $20,000
  - Description: 2022 Robert L. Noble Prize

- **MacMillan Family Foundation**
  - Funding: $0
  - Description: Bulk and single cell base oxidation

- **MacMillan Family Foundation**
  - Funding: $0
  - Description: Copy number alterations and epigenetic rewiring in single cells that affect the activity and efficacy of genome-targeting drugs
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<th>Years</th>
<th>Funding Body</th>
<th>Description</th>
<th>Amount</th>
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<td>Bally, Marcel</td>
<td>2023 - 2025</td>
<td>NanoMedicines Innovation Network</td>
<td>PharmaCore: Business Planning and Development</td>
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<td>0LUR51LSQKLELWURGHOLYHUHGLQ0LSLG nanoparticles to reduce lung injury in mouse models of acute respiratory</td>
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<td>distress syndrome</td>
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<td>2023 - 2029</td>
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<td>MicroRNA-inhibitor delivered in lipid nanoparticles to reduce lung injury in mouse models of acute respiratory</td>
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<td>Bashashati, Ali</td>
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<td>NSERC CREATE Program</td>
<td>MUSIC: Multi-Scale multi-modal Image &amp; omics Computing for health</td>
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<td>aRtificial intElligence-driven computational pathology platform for metastic cancer</td>
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<td>blocker telmisartan to promote anti-tumour immune responses</td>
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<td>Bennewith, Kevin</td>
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<td>BC Cancer Foundation</td>
<td>Basic/translational research to improve radiotherapy efficacy for localized and metastatic cancer</td>
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<td>Repurposing the angiotensin II receptor blocker telmisartan to promote anti-tumour immune responses</td>
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<td>Scintica InvivO2 500 sterile hypoxia chamber</td>
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<td>2023 - 2023</td>
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<td>Glucose restriction-mediated changes to mitochondria as a driver of anti-tumour CD8+ T cell function.</td>
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<td>mucosa: a paradigm-shifting platform for postsurgical wound repair, local precision therapy and prevention of</td>
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<td>cancers of the esophagus and stomach.</td>
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<td>characterization of the mucosa</td>
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<td>Chen, Michael</td>
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<td>Vancouver Island Health Authority</td>
<td>Rapid Pathogen Identification Using Lipidomics in Ventilated Patients with Pneumonia</td>
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<td>DeMarco, Mari</td>
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<td>Alzheimer Society &amp; CIHR CCNA</td>
<td>Knowledge Translation Exchange Program</td>
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<td>Dubland, Joshua (Project</td>
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<td>UBC Precision Health Catalyst</td>
<td>Who will benefit from colchicine to reduce heart attacks? Characterizing the inflammation baseline status of</td>
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<td>Gao, Zu-Hua</td>
<td>2023 - 2025</td>
<td>Canada Foundation</td>
<td>Hydrogel-based adhesive artificial mucosa: a paradigm-shifting platform for postsurgical wound repair, local</td>
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<td>precision therapy and prevention of cancers of the esophagus and stomach.</td>
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<td>mitigation of the mucosa to prevent cancer.</td>
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<td>2023 - 2025</td>
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<td>Hydrogel-based adhesive artificial mucosa (HAAM); a novel versatile platform for cancer therapy and prevention</td>
<td>$317,551</td>
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<td>characteristics of the mucosa to prevent cancer.</td>
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<td>characterize the inflammation baseline status of patients with coronary atherosclerosis</td>
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<td>2023 - 2025</td>
<td>Canucks for Kids Diabetes</td>
<td>Beta cell triosephosphate isomerase (TPI) as a novel therapeutic target in diabetes</td>
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<td>Evaluation and Implementation of Self- &amp; ROOHFWHG6DSPOH7SHVIRU&amp;29,'569DQGQ;XHQDQ</td>
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<td>Hirsch-Reinshagen, Veronica</td>
<td>2023 - 2027</td>
<td>CIHR</td>
<td>Neuropathology of cognitive impairment in chronic schizophrenia</td>
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<td>Huntsman, David</td>
<td>2023 - 2027</td>
<td>Department of Defense</td>
<td>Ovarian Cancer Observatory: Prevention, Impact, and Learning from Opportunistic Salpingectomy</td>
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<td>Karsan, Aly</td>
<td>2023 - 2026</td>
<td>Terry Fox Research Institute</td>
<td>Single cell sequencing to interrogate the evolving clonal structure of leukemia from diagnosis to relapse</td>
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<td>Hoang, Linda</td>
<td>2023 - 2024</td>
<td>CIHR</td>
<td>Globally Emerging Food and Waterborne Parasitic Diseases BC Centre for Disease Control, Canada and National Institute of Health, Vietnam</td>
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<td>Kizhakkedathu, Jayachandran</td>
<td>2023 - 2029</td>
<td>NSERC-CREATE</td>
<td>Training in Polyelectrolyte Biosystems for Tomorrow's Health Challenges</td>
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<td>Kizhakkedathu, Jayachandran</td>
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<td>CIHR</td>
<td>Localized immuno-cloaking organ engineering approach to prevent transplant rejection without immunosuppressants</td>
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<td>Lam, Wan</td>
<td>2023 - 2027</td>
<td>Terry Fox Research Institute</td>
<td>The Terry Fox New Frontiers Program Project in The Environment and Lung Cancer</td>
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<td>Lan, James</td>
<td>2023 - 2024</td>
<td>CDTRP - Canadian Donation</td>
<td>Accelerating the Translation of a Novel Luminex Anti-ABO Antibody Detection Technology to Expand the Use of ABO-Incompatible Transplantation in Canada</td>
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<td>Lockwood, William</td>
<td>2023 - 2027</td>
<td>Terry Fox Research Institute</td>
<td>Environment and Lung Cancer</td>
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<td>Lockwood, William</td>
<td>2023 - 2025</td>
<td>Cancer Research Society</td>
<td>ILK as a mediator of drug tolerant persister cell survival and target for combination therapy in EGFR mutant lung adenocarcinoma</td>
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<td>Lockwood, William</td>
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<td>Canadian Institutes for Health Research - Project Grant</td>
<td>SNF2 Histone Linker PHD RING Helicase as a novel tumor suppressor gene and risk factor in lung adenocarcinoma development</td>
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<td>Luo, Honglin</td>
<td>2023 - 2028</td>
<td>CIHR</td>
<td>Innate inflammatory mechanisms of viral myocarditis: Role of the cytosolic DNA-sensing pathway</td>
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<td>McGinnis, Eric</td>
<td>2023 - Present</td>
<td>UBC Faculty of Medicine</td>
<td>Rapid targeted gene sequencing and high-resolution optical genome mapping to optimize selection of targeted therapies in acute myeloid leukemia</td>
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<tr>
<td>Name</td>
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<td>Organization</td>
<td>Project Description</td>
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<td>McGinnis, Eric</td>
<td>2023 - 2025</td>
<td>Canadian Blood Services</td>
<td>Demonstration of genetic blood group transition in patients undergoing ABO- mismatched hematopoietic stem cell transplantation by peripheral blood quantitative polymerase chain reaction targeting the ABO locus</td>
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<td>Minchinton, Andrew</td>
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<td>Hypoxia in Pancreatic Cancers: Turning a Liability into a Therapeutic Benefit</td>
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<td>Nielsen, Torsten</td>
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<td>CIHR</td>
<td>Translating Epigenomics into Clinical Care for Synovial Sarcoma</td>
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<td>Park, Yongjin</td>
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<td>VGH and UBC Hospital Foundation</td>
<td>Integrative Causality Inference of Cancer Mechanisms</td>
<td>$600,000</td>
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<td>Rakic, Bojana</td>
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<td>BC Children's Hospital</td>
<td>Pilot project to evaluate point of care testing in MSUD patients</td>
<td>$2,500</td>
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<td>Schaeffer, David</td>
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<td>VGH and UBC Hospital Foundation</td>
<td>Pancreatic Cancer Research Chair at Vancouver General Hospital</td>
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<td>Sorensen, Poul</td>
<td>2023 - 2024</td>
<td>Rutledge Foundation</td>
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<td>Sorensen, Poul</td>
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<td>Harnessing the osteosarcoma surfaceome for immunotherapy targets to block metastatic capacity</td>
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<td>Sorensen, Poul</td>
<td>2023 - 2027</td>
<td>Terry Fox Research Institute (TFRI)</td>
<td>The Spatial Metabolome Hubble Project to Decipher Tumor-Driven Immunosuppression (MetaboHUB)</td>
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<td>Steidl, Christian</td>
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<td>Functional characterization of TMEM30A loss-of-function mutations in DLBCL</td>
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<td>Setiadi, Audi</td>
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<td>BCCH Pathology &amp; Laboratory Medicine</td>
<td>Pilot Project for the Evaluation of Automated Plasma Cytokine Analysis for CAR-T cell associated Cytokine Release Syndrome</td>
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<td>Project Title</td>
<td>Award Amount</td>
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<td>Takei, Fumio</td>
<td>2023 - 2028</td>
<td>Canada Institute of Health Research</td>
<td>Innate lymphoid cells in hepatitis and liver fibrosis</td>
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<td>Venturutti, Leandro</td>
<td>2023 - 2023</td>
<td>Canadian Foundation for Knowledge Development Fund</td>
<td>Delineating aggressive B-cell lymphomas heterogeneity and pathogenic trajectories to optimize cell-based immunotherapies</td>
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<td>Venturutti, Leandro</td>
<td>2023 - 2023</td>
<td>BC Cancer Foundation (BCCF) &amp; B.C. Knowledge Development Fund</td>
<td>Delineating aggressive B-cell lymphomas heterogeneity and pathogenic trajectories to optimize cell-based immunotherapies</td>
<td>$500,000</td>
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<td>Venturutti, Leandro</td>
<td>2023 - 2023</td>
<td>BC Cancer Foundation (BCCF) &amp; B.C. Knowledge Development Fund</td>
<td>Delineating aggressive B-cell lymphomas heterogeneity and pathogenic trajectories to optimize cell-based immunotherapies</td>
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<td>Verchere, Bruce</td>
<td>2023 - 2024</td>
<td>CIHR (Bridge Grant)</td>
<td>Genetic and acquired defects in islet prohormone processing</td>
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<td>Verchere, Bruce</td>
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<td>Diabetes Canada</td>
<td>Islet prohormone processing and beta cell dysfunction in type 1 diabetes</td>
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<td>Verchere, Bruce</td>
<td>2023 - 2025</td>
<td>Diabetes Canada</td>
<td>Islet prohormone processing and beta cell dysfunction in type 1 diabetes</td>
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<td>Verchere, Bruce</td>
<td>2023 - 2025</td>
<td>Stem Cell Network</td>
<td>Delineating aggressive B-cell lymphomas heterogeneity and pathogenic trajectories to optimize cell-based immunotherapies</td>
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<td>Wang, Ying</td>
<td>2023 - 2024</td>
<td>UBC Precision Health Catalyst</td>
<td>Whether plane of motion and complexity of blood-biomarkers for monitoring TBI evolution</td>
<td>$50,000</td>
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<td>Wang, Gang</td>
<td>2023 - 2024</td>
<td>AstraZeneca</td>
<td>Institutional review for prostate cancer oncopanel testing in BC Cancer</td>
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<td>Wang, Gang</td>
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<td>University of British Columbia</td>
<td>Innovative deep-learning based program for cervical cancer screening</td>
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<td>Wellington, Cheryl</td>
<td>2023 - 2027</td>
<td>National Institutes of Health (NIH) (USA)</td>
<td>Analytical characterization and validation of blood-biomarkers for monitoring TBI evolution</td>
<td>$6,240,133</td>
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<td>Wellington, Cheryl</td>
<td>2023 - 2027</td>
<td>Canadian Institutes of Health Research (CIHR)</td>
<td>Using translational biomarkers to define whether plane of motion and complexity of blood-biomarkers for monitoring TBI evolution</td>
<td>$1,293,201</td>
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<td>Wellington, Cheryl</td>
<td>2023 - 2023</td>
<td>DMCBH Alzheimer Disease Research Grant</td>
<td>The role of Inflammatory bowel disease in the development of Alzheimer disease</td>
<td>$3,000</td>
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<tr>
<td>Xiong, Wei</td>
<td>2023 - 2023</td>
<td>PHC’s inaugural Planetary Health Funding Award</td>
<td>Their groundbreaking research project will delve into the examination of greenhouse emissions from digital pathology in comparison to traditional glass-slide pathology</td>
<td>$3,000</td>
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</tbody>
</table>
These grants highlight collaborative research efforts where our faculty members are serving as co-principal investigators, demonstrating their contributions to joint research initiatives.

### Co-Principal Investigator Grants

<table>
<thead>
<tr>
<th>PI</th>
<th>CO-PI</th>
<th>Date</th>
<th>Agency</th>
<th>Title</th>
<th>Amaoun</th>
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<tbody>
<tr>
<td>-RDQ%UXJH</td>
<td>Aparicio S/LYLQJWVRQ’9HQLNWDUDPDQ’S’LOOA</td>
<td>2023 - 2023</td>
<td>*UDIQGCDWLQRQ</td>
<td>Development of strategies to track and prevent breast cancer</td>
<td>86%</td>
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<tr>
<td></td>
<td>Aparicio S/LYLQJWVRQ’9HQLNWDUDPDQ’S’LOOA</td>
<td></td>
<td></td>
<td>GYH HORS PHQWLQ%5 $PXWDWLQRQ carriers</td>
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</tr>
<tr>
<td>5DPRQ.OHLQ*HOWLQ</td>
<td>Kevin Bennewith JUDQFLV/Q Yongjin Park</td>
<td>2023 - 2028</td>
<td>Canadian Institutes RI+HDOWK5HVHDUFK</td>
<td>*OXFRVHUHVLWUFWLQROPHGL changes to mitochondria as a GULYHURIDQWLWXPRXU &amp; ‘7HOOO function</td>
<td></td>
</tr>
<tr>
<td>Elizabeth King</td>
<td>Helene Cote, Melanie M urray, Chanson Brumme, Stacey Tkachuk</td>
<td>2023 - 2024</td>
<td>&amp; +5</td>
<td>@HFWVRIIDJHRQDQLUHWURYLUDO concentrations and adverse drug UHDFWLQRQVIRUZRPHQZLWK +9</td>
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</tr>
<tr>
<td>Elizabeth King</td>
<td>Helene Cote, Melanie M urray, Chanson %UX PPHODUN +XO6WDFTkachuk, Alice Tseng, Shelly Tognazzini</td>
<td>2023 - 2024</td>
<td>&amp; +5</td>
<td>5SURMHFWJUDQW - Community Based 5HVHDUFK</td>
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</tr>
<tr>
<td>Michael Anglasio</td>
<td>Helene Cote, Ali Bedaiwy 0RKDPHG3DXO&lt;RXQJ*LOOLDQ+DQOH%DVLOH T essier-Cloutier, A Lee, A Talhouk</td>
<td>2023 - 2024</td>
<td>&amp; +5</td>
<td>5SURMHFWJUDQW - Community Based 5HVHDUFK</td>
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</tr>
<tr>
<td>-RKQ%HVW</td>
<td>DeMarco ML</td>
<td>2023 - Present</td>
<td>&amp; +5 &amp; DWDO\WV *UDQW</td>
<td>Cognitive aging in middle and older-aged Canadians: Consideration of genetic risk, PRGLDHOHDFWRUVDOGELRORLFDOSex</td>
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<tr>
<td>-HVVLFD/LDXZ</td>
<td>-HQQLHUH+XWFK Didid Grynspan</td>
<td>2023 - Present</td>
<td>%&amp; +5&amp;DWDO\WV JUDQW &amp; R $SSOFLDQW</td>
<td>3ODFHQWDO*URZWK)DFWURWR 5HGXFH8UJH0W0DWHUQDODQG Neonatal Transport in BC: A pilot study</td>
<td></td>
</tr>
<tr>
<td>B. Shagdan, B. Kwon</td>
<td>A Macnab, M Sekhon, $3XUDQJ(6DUIH* Dumont, B Molavi, V Hirsch-Reinshagen, B *ULEERQV</td>
<td>2023 - 2026</td>
<td>US Department of Defence</td>
<td>Advanced Physiologic Monitoring at the Site of Spinal Cord Injury</td>
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<tr>
<td>Mark Cembrowski</td>
<td>V Hirsch-Reinshagen, 1+DFKLH0\DWKHL*5GHNRj Maguire</td>
<td>2023 - 2025</td>
<td>New Frontiers in 5HVHDUFK\XQG</td>
<td>7KHFOOHV\SHVSHFL\EDVVLVR1 epilepsy and treatment in the living human brain</td>
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</tr>
<tr>
<td>Name</td>
<td>Title</td>
<td>Amount</td>
<td>Year</td>
<td>Description</td>
<td></td>
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<td>-----------------------------------------------------------------------------------------------</td>
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<tr>
<td>Mel Krajden</td>
<td>CFI Biosciences Research Infrastructure Fund: Building Operational Laboratory Strength to enhance Risk 3 pathogen research</td>
<td>$4,148,345</td>
<td>2023-2027</td>
<td>BOLSTER-3-Pathogen Research: Building Operational Laboratory Strength to enhance Risk 3 pathogen research</td>
<td></td>
</tr>
<tr>
<td>Michael Irvine</td>
<td>CIHR - Mpox (monkeypox) and zoonotic threats: Optimizing Mpox surveillance strategies and preventing epidemic resurgence: a three-province mathematical modelling study</td>
<td>$500,000</td>
<td>2023-2025</td>
<td>CIHR - Mpox (monkeypox) and zoonotic threats: Optimizing Mpox surveillance strategies and preventing epidemic resurgence: a three-province mathematical modelling study</td>
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<tr>
<td>L. Evgin</td>
<td>BC Cancer Foundation (Innovation support fund): Spectramax Id3 plate reader</td>
<td>$1,987,890</td>
<td>2023-2024</td>
<td>Spectramax Id3 plate reader for the Development of Universal Blood</td>
<td></td>
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<tr>
<td>J. Pizzorno</td>
<td>Lopker Family Foundation: Testing natural compounds for their ability to reverse cancer cell-induced upregulation of Glycolysis</td>
<td>$107,060</td>
<td>2023-Present</td>
<td>Testing natural compounds for their ability to reverse cancer cell-induced upregulation of Glycolysis</td>
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<tr>
<td>Leonard Foster</td>
<td>Canada Foundation for Innovation: A National prospective epitope-compatibility matching program for Canadian renal transplant patients</td>
<td>$7,140,211</td>
<td>2023-Present</td>
<td>A National prospective epitope-compatibility matching program for Canadian renal transplant patients</td>
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<tr>
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<td>$1,987,890</td>
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<td>2023-Present</td>
<td>A National prospective epitope-compatibility matching program for Canadian renal transplant patients</td>
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<tr>
<td>Code</td>
<td>Name</td>
<td>Institution(s)</td>
<td>Grant Type</td>
<td>Title</td>
<td>Funding Amount</td>
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<tr>
<td>YRQQH</td>
<td>Bombard</td>
<td>2023 - Present</td>
<td>&amp;,$+5</td>
<td>7K+H4QW U/LFV 8SGDWH'HVLJQLQJ and evaluating a patient platform to deliver updated genomic results</td>
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<tr>
<td>5RELQ</td>
<td>Urquhart</td>
<td>2023 - 2028</td>
<td>&amp;,$+5</td>
<td>Changing the narrative of lung cancer to improve prevention for DOW smokers</td>
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<tr>
<td>0HGU5</td>
<td>Aparicio</td>
<td>2023 - Present</td>
<td>&amp;,$+5</td>
<td>Decoding the impact of single cell mutational processes in 71% &amp; +62%</td>
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<tr>
<td>HOOV</td>
<td>Brown, PhD, Assistant Professor, Dept. of Pediatrics, Faculty of Medicine, The University of BC</td>
<td>2023 - Present</td>
<td>&amp;,$+5</td>
<td>Evaluating the utility of adult-GH@HGSURJQRVWLDFRDPUNUV Are they appropriate in childhood onset primary chronic vasculitis?</td>
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<tr>
<td>6LSPPQ</td>
<td>M Rosin, /DURQGH 9DQFRXYHU6LWH/HDGV</td>
<td>2023 - 2026</td>
<td>1,$+1&amp;</td>
<td>CP-CTNet M4OC-Prevent: Metformin for oral cancer prevention. Continuation of Trial.</td>
<td>86'</td>
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<tr>
<td>5WPDU</td>
<td>Cescon, Andrew Roth</td>
<td>2023 - 2028</td>
<td>RI+HDOWK 5HV HDU</td>
<td>Decoding the impact of single cell mutational processes on WKGUXWQHVODQGVFDSHRI genomically unstable cancers -RUX5ROH&amp;RDSSOLFDQW</td>
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<tr>
<td>5RHUW</td>
<td>Shannon Russell, Natalie Prystajecky, Agatha Jassem, M-RQ 7/ROR-DPHV=ORVQLN Inna Sekirov</td>
<td>2023 - 2025</td>
<td>&amp;,$+5</td>
<td>Canada-Africa Monkeypox 3DVWQHUVKLS5S03 Characterizing transmission dynamics and evaluating medical countermeasures to inform the clinical and public health</td>
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<td>5RHUW</td>
<td>Darrel Tan, Audu, Kozak</td>
<td>2023 - 2025</td>
<td>&amp;,$+5</td>
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<tr>
<td>Funding Source</td>
<td>Project Title</td>
<td>Principal Investigator(s)</td>
<td>Co-Investigator(s)</td>
<td>Funding Amount</td>
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<tr>
<td>Canadian Cancer Society (CCS)</td>
<td>Casper-PANC: Canadian strategy for personalized management of pancreatic cancer</td>
<td>S. Gallinger, J. Knox, D. Renouf, G. Zogopoulos, DF. Schaeffer (co-applicant)</td>
<td></td>
<td>$7,500,000</td>
<td></td>
</tr>
<tr>
<td>CFRI Biosciences Research Infrastructure Fund</td>
<td>BOLSTER-3-Pathogen Research: Building Operational Laboratory Strength To Enhance Risk 3 Pathogen Research</td>
<td>M. Krajden, L. Hoang, C. Hogan, A. Jassem, J. Johnston, M. Morshed, N. Prystajecky, M. Singal, D. Skowronski, I. Sekirov</td>
<td>- Co-Applicant</td>
<td>$4,148,345</td>
<td></td>
</tr>
<tr>
<td>UBC Precision Health Catalyst Grant 2023</td>
<td>Rapid targeted gene sequencing and high-resolution optical genome mapping to optimize selection of targeted therapies in acute myeloid leukemia</td>
<td>E. McGinnis, R. Stubbins, T. Spence, K. Sherwood, Z. Hamadeh, K. Shopsowitz, S. Yip</td>
<td></td>
<td>$50,000</td>
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<tr>
<td>Canadian Institute of Health Research (CIHR)</td>
<td>A Randomized, Multicenter Canadian Trial to Evaluate the Clinical Utility of Donor-Derived Cell Free DNA Testing for Renal Allograft Injury</td>
<td>J. Lan, J. Gill, M. Mengel, W. Lee, A. Liu, R. Liwski, R. Gunaratham, A. Gangji, M. Lisbonette, M. Keown</td>
<td></td>
<td>$945</td>
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<tr>
<td>CDTRP – Canadian Donation and Transplantation Research Programme – Innovation Grant Competition 2023</td>
<td>Accelerating the Translation of a Novel Luminex Anti-ABO Antibody Detection Technology to Expand the Use of ABO-incompatible Transplantation in Canada</td>
<td>J. Lan, J. Gill, R. Suri, M. Mengel, S. Sherwood, L. Wang</td>
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<td>$30,000</td>
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<tr>
<td>Canadian Institute of Health Research (CIHR)</td>
<td>A prospective interventional study to prevent allosensitization in patients who have failed a first kidney transplant</td>
<td>J. Lan, J. Gill, R. Suri, M. Mengel, S. Sherwood, L. Wang</td>
<td></td>
<td>$705,000</td>
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<tr>
<td>Michael Cuccione Foundation</td>
<td>A National prospective epitope-compatibility matching program for Canadian renal transplant patients</td>
<td>P. Keown, K. Sherwood, R. Kridel, C. Steidl</td>
<td></td>
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</table>
Mohamed Ali Bedaiwy
Savitha Balachandran, Sabina Dobrer, KS -RVHSK6DUHND/LVRQNR\-H4UVRQ\7HU Paul
2023 - 2024 D & ,+5&DWDO|VW*UDW
Prediction of Pregnancy Outcomes Using Point-of-Care First Trimester Biomarkers in D5HFXUHWHQ3UHJQDQFYRVV Population

N. Bradley
Turley, Elona
2023 - Present Kaye Fund & RPSHWLWRQ8+
1RUWKHUQSOEHUWD9LVRH01QRIUPH*XLGDQFLRQF$FXWH 7UDXPDYDOXDWLRQ159,*S7(DVWLF

-X OLH MacFarlane
Hilary Vallance
2023 BC Ministry of +HDOWK,QQRDYDWL Pathway Program
First tier Non-Invasive Prenatal Screening

/SLGHRXW
B. Verchere/X FLDOQL --R0RQVRQ37KRPSVRQ0DQLWRED
2023 - 2028 & ,+5-5)7HDP *UDQWV3UHFLVLRQ Medicine in Type 1 Diabetes /HYUDJLQJELRORJLFDOVH(DQX genomics for beta cell-directed precision medicine in type 1 diabetes

/5XV$OJDU
:LDRLDR/LGang Wang
2023 - 2025 *RYHUQHPQWRIN Canada Cell-Based Medical Diagnostic Testing on a Smartphone for /R5HUVRXUFH&RPPXQLWLHV

Anna
0F*XLUH
Stephen Yip, Stephen /DP-DQFLFH/HXQJ 5HQOOGOH\(H\Will Lockwood
2023 - 2024 /QJ&DQFHU&DQDG3LOR6XG|RQKH5HODWLRQVKLSEHWHQHQ*HQRPLF$OWHUDWLQRQV Exposure to Air Pollution and $FFOHUDWHG/XQJ$JLQ1HYHULQPRNHUVZLWK/XQJ&DQFHU

*HODUHK Zadeh
)DGHULFR*DLWL6KHLODQVRXUL&ROODERUD
2023 - 2028 Canadian Cancer Society Establishing a non-invasive approach to accurately diagnose and assess brain tumours

Intan Schrader, Steve -RQHV3HWHU /DQVGRUS
Stephen Yip&R DSSOLFDQW
2023 - 2026 *HQRPH&DQGDG*HQRPLF$SSOLFDWLQRQV Partnership Program: 3DUHQWkΩ RIkΩ 2ULJLQkΩ $ZD\UH genomics analysis*

-HQLIHU Chan & Marshall Pitz
Stephen Yip, Namita Sinha, Sidney Croul, $GULHQQH:HHNV-HUHP5R\ 59
2023 - 2026 The Terry Fox 7KH3DQ&DQDGLDQ/RZHUJUDGH10LHPD02+3a/*SURMHFW Enabling biomarker-driven treatment options for relapsed /+PXWDQWJOLRDPV

Michael Underhill
Stephen Yip/HVOH\+LOO Kelly McNagny
2023 - 2028 & ,+5 Fate and function of MPs within the MB tumour PLFURHQYLRQPHQW3URMHFWJUDQW kΩ ¥53 7

5DSKDOH Charest-Morin
Stephen Yip, Nicolas Dea, Chetan Bettegowda
2023 - 2025 New Frontiers in SHVHUQXQGQ *RYHUQPHQWRIBQDGD Personalized medicine for primary bone tumours of the spine
Appendix: Funding and Publications for 2023

Amanda Wilmer. Evaluation of the Aptima BV and CV/TV assays compared to conventional laboratory based testing methods for the diagnosis of vaginitis. Diagn Microbiol Infect Dis. 2023 Aug;106(4)


Maryam Asadi, Amirali Darbandsari, Hossein Farahani, Pouya Ahmadvand, Martni Koebel, David Farnell, Andrew Churg, Melissa Caza, Marthe Charles, Kerstin Locher, Linda Hoang, Morgan Tucker, Jeremie Mandy, Heather Jewsbury, and James W. Kronstad. Proteasome inhibitors increase the efficacy of immune checkpoint inhibitors in cancer patients (submitted), 2023.


Bissonnette, Mei

1X[HQW-3LVQVCQHHWISH=] [leq|=] DUDK0+DULLY6&1RQDUJHWHGDWLYHSDQ0D0LSRV[@SGHTDXF 3UHLQWHUHYLRQWLQDURP3URYLQFHDVWQDLWXRQXU+7FHOIXQWLQRQLQHYLHZSUSHULQXXEQRQELR5]LY

Bennewith, Kevin

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Bennewith, Kevin

SUHEUR-RRZOH5HH&0%HQHQLZWLK./DQG*DQLVLW[{WUFDEXOHQQDUYHVFHOVSURPRWHDFWLYDWRQISRULQ]DPPDRWQVURVURVWURHDEWWWRFUHFWYQDQFQHQRHURFVXWLQVLQKLVQLELWURUWHDHVQWRIVWJDVH9QRO SDLWQVQLQHYNLQVR

Bennewith, Kevin

2K-(&HGGUGHEUG5%)RSS/0DQND(6HU711L2DL63DWHUVQRV$5PQDQDIW1XWUD-4H36ODUNOS:DOG+DOWVRVRQW]H.5UFXPDQOWX6V7LX/L/(DQ)37DLG6H2FQKHUH%3DU<DEUL0%HQHQHLZWLK./DQGQHOLQ*HQOWL 5,QGXFLOQ]D]R[L]HGUHGR[EDODQFHPURYVHVDOWLWXPRXU+7FHOIXQWFRLQQLQHYLHZSUHLQWQLQHSEQRQELR5]LY

Bennewith, Kevin

2K-(&HGGUGHEUG5%)RSS/0DQND(6HU711L2DL63DWHUVQRV$5PQDQDIW1XWUD-4H36ODUNOS:DOG+DOWVRVRQW]H.5UFXPDQOWX6V7LX/L/(DQ)37DLG6H2FQKHUH%3DU<DEUL0%HQHQHLZWLK./DQGQHOLQ*HQOWL 5,QGXFLOQ]D]R[L]HGUHGR[EDODQFHPURYVHVDOWLWXPRXU+7FHOIXQWFRLQQLQHYLHZSUHLQWQLQHSEQRQELR5]LY

Bennewith, Kevin

H&S:0;DGZVZLW%8-UEDE0+DPLORWQ6IDG%HQHQLZWLK./FRYIVVDWKLVRUVÃ.±,SRURYGHVKGHUDSHXWLFZ VF+LQURUSKDUQU[HOFHTDXPRVXFHOOFUFDLQPR3SDWHLQWVNLDQJOIQRWQLQVULHQHUFSSWURFRENVH"LY

Bennewith, Kevin

SUHEUR-RRZOH5HH&0%HQHQLZWLK./DQG*DQLVLW[{WUFDEXOHQQDUYHVFHOVSURPRWHDFWLYDWRQISRULQ]DPPDRWQVURVURVWURHDEWWWRFUHFWYQDQFQHQRHURFVXWLQVLQKLVQLELWURUWHDHVQWRIVWJDVH9QRO SDLWQVQLQHYNLQVR

Belanger, Corrie

%HQDQ[ HU5&5RKFH.6H0DSWLRGQRX3UH0VHVQ3-FNER(&KDUOHQ0V4XLFNYHUXVX4DQLWDLWLYH(YDQXDLW)

Bashashati, Ali

0DUHP5V6DLPSPLDUL6UDEDOQVDWDL+RVRHLO]DUDQDOQLR3X]6SDKPDGYDGODUWLRHDOEYDYLDG1DUOHQDOQ

Bashashati, Ali


Roozbeh Bazargani, Ali Bashashati*, Septimiu Salcudean*, “Multi-Scale Relational Graph Convolutional Network for...
Goldfarb, David

Goldfarb, David

Goldfarb, David

Goldfarb, David

Goldfarb, David

Goldfarb, David

Goldfarb, David

Grant, Jennifer

Grant, Jennifer

Grant, Jennifer

Grant, Jennifer

Grant, Jennifer

Granville, David

Granville, David

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Granville, David

Appendix: Funding and Publications for 2023
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Dual COVID-19 vaccination, and strong third dose responses. J Infect Dis. 2023; 97(8): e0060423 - CA (IF=5.4)

Multiple human enteropathogens in Norway rats (Rattus norvegicus) from an under-resourced neighborhood of downtown Vancouver, British Columbia. Accepted to PLOS Neglected Tropical Diseases (September 18, 2023).


End to end data automation for pooled sample SARS-CoV-2 live virus neutralization after four COVID-19 vaccine doses in people with HIV receiving suppressive ART. AIDS. 2023; 37(5):709-721.

Impact of age and SARS-CoV-2 breakthrough infection on humoral immune durability following three-dose COVID-19 vaccination in people with HIV receiving suppressive ART. AIDS. 2023; 37(5):709-721.

Antibody response to the COVID-19 vaccine among people with HIV receiving suppressive ART. J Infect Dis. 2023; 97(8): e0060423 - CA (IF=5.4)

Impact of age and SARS-CoV-2 breakthrough infection on humoral immune durability following three-dose COVID-19 vaccination in people with HIV receiving suppressive ART. AIDS. 2023; 37(5):709-721.


Testing the limits of multiplex respiratory virus assays at high cycle threshold values. Accepted to the Journal of the Association of Medical Microbiology and Infectious Diseases (March 6, 2023).


RQ PCR* (%) UFP H & 1LNXUD%URFPDQ05%UXPH=% & 29, 9'DFFLQH, PXQ LWG(6 WXG(3)TDP856 & R9OLHYLVXQVXQWUDOFJWLDRQDIWHRUX Y6, 29, YDFQLQHRVGLQHSRSHOZLWK +9, UHFHLYLQYXJVSUHVLV Y57, 5, 6

Model based on Multiple Linear Regression (MLR) analysis of various factors affecting the number of COVID-19 cases in a specific area. To appear in the International Journal of Health Sciences (IJHS).

Data analysis and modeling for COVID-19 vaccine effectiveness in people with HIV receiving suppressive ART. J Infect Dis. 2023; 97(8): e0060423 - CA (IF=5.4)

Multiple human enteropathogens in Norway rats (Rattus norvegicus) from an under-resourced neighborhood of downtown Vancouver, British Columbia. Accepted to PLOS Neglected Tropical Diseases (September 18, 2023).


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RQ PCR* (%) UFP H & 1LNXUD%URFPDQ05%UXPH=% & 29, 9'DFFLQH, PXQ LWG(6 WXG(3)TDP856 & R9OLHYLVXQVXQWUDOFJWLDRQDIWHRUX Y6, 29, YDFQLQHRVGLQHSRSHOZLWK +9, UHFHLYLQYXJVSUHVLV Y57, 5, 6

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Impact of age and SARS-CoV-2 breakthrough infection on humoral immune durability following three-dose COVID-19 vaccination in people with HIV receiving suppressive ART. AIDS. 2023; 37(5):709-721.


Testing the limits of multiplex respiratory virus assays at high cycle threshold values. Accepted to the Journal of the Association of Medical Microbiology and Infectious Diseases (March 6, 2023).


McRae, Susanna

Minchinton, Andrew

Monsalve, Maria

Moodley, Jinesa

Morrison, Douglas

Morshed, Muhammad

Morshed, Muhammad

Morshed, Muhammad
Romney, Marc

5LWFKLH*<RXQJH03U|VWDMHFN15RQPH0\0|RZH\0\0DWF156GDSDWDELWLO|IVLQJOHQQFOHRWLGHSROJ|PRUSKLV SROPHUHVHKDFLQHDFLWQR633&5IRYXEWXSLQJ6556&9DQGDQHZ633&5IRU;\%,%\%DQG%4 %4&OLQOFLURELRO,QIHF2WFGRLMFLP(SXE-XE30\30\30\30.

Romney, Marc

/L/RZH\0/DFKODQ(5RPQH0\0.ULJKWSDWLFLISLHGLPROR[RIFWRP|DORY LVXDVQQLYLDODJHLVVDQHWHVWLQLIRUVQRLGRUJDQDOMGERQHPDUURZWDUVQSODQWSDILHQWVIURP\&OLQ9LUR6HSGRL M MFY(SXE-XE30\30.

Romney, Marc

5LWFKLH）/HXQJ9+LPVZRUKW*%HUVE\$/HJ;\&KRUQWOQ6\6WHDQRYLF5SRPQH0\0DWF1/RZH\0]R VRODWH1R3UROEP8VLQ]D1RYHOVWHLQO6THQF35&5WR,QN5DWVVR+XPQDLKJH0OQLVVDHVQLQ SUEDQRPXQLW|0L0UFREL05SHFUWXSXJHGRLYSHFUXP(SXED0\30\30\30\30.

Romney, Marc

6WHIDQRYLF5SDWFL15WFLKH*//RZH\0/HXQ9+X0090DPO0ZDUO0KDP5/DQH665RPQH0\0XOWLGLUXJ 5HVULVDQW6KLJHODQVRQQHL%DFWHUHPLDDPRQ|HUVRQVQ5HSHLQ5FDQRXYHU%ULW (PHU),QIHF2LVXJGRLHLG30\30\30\30.

Romney, Marc

&KXQJ3\DSRLQWQ56DQJ<\QQQLV60ZLDPQJL56HNFNPDLHU6\%DUDG(9RQJ/LDQ56LPRQV-/RZH& SPQPH1*0%UXPH&1LNXQUDU0RFPQ03%UXPH=0DQKWEH29/YDFQDQHLPQXQLW|VWXGWHDP 6556R9OLOYHUXVQXHWWVDOL|DWRLQDIWUHRXYU29/YDFQDLHGRYVHLSQHRSHQZLWKL+9HUFHLYLOQVX5S UQDLWULHWURYLUODWKHUDS5\6SU\GRL4'S(SXE)HE30\30\30\30.

Romney, Marc

/D5RLQWQ52ZLDPQJL6RKHJXQ3.6DQJ<\QVHQQ65HNFNPDLHU6\%DUDG(0RUDQ*DFDLD1'ZWQDL6\'XQPQ 063|DOLNLDH55QLV6-زاRQ(/0DJPQX+0RPHLJLKR*5RQ7646HUQ3%UXQV&RAVWQLQX N&6RSHSU&QQLVS/6HXQJ9+RPHY'H1DUOFRO0LPRQV+4HFGJRNP3UWDMHFN1/RZH&5 RPOQH0%DUULR5*5LOOHPL6%UXPH60-ORQDQHU6*+X000DUUQLVLXUDU0RFPQ03%UXPH=0QWLERG UHVSQRQGUXDQWELOLW|ROORZLQJKWUHHGRVHRQURDYLVUGLVHVDHYDFQLWDLRQLSHROSHZLW
+9HUFHLYLOQVX5SUQDLWULHWURYLUODWKHUDS5\6SU\GRL4'S(SXE)HF30\30\30\30.

Romney, Marc

/D5RLQWQ52ZLDPQJL6RKHJXQ3.6DQJ<\QVHQQ8PYLOJL0LKR*5R6DOLNLDH56HNFNPDLHU6RUDQ*DFDLD1 'ZWQDL6\'XQPQO63|DOLNLHRH55QLV6\-زاRQ(0DJPQX+0RPHLJLKR*5RQ7646HUQ3%UXQV&RAVWQLQX N&6RSHSU&QQLVS/6HXQJ9+RPHY'H1DUOFRO0LPRQV+4HFGJRNP3UWDMHFN1/RZH&5 3QDWRSKWH5R5V5%PQ0H0%DUULR5*5LOOHPL6%UXPH60-ORQDQHU6*+X000DUUQLVLXUDU0RFPQ03%UXPH=0QWLERG UHVSQRQGUXDQWELOLW|ROORZLQJKWUHHGRVHRQURDYLVUGLVHVDHYDFQLWDLRQLSHROSHZLW 9HUFHLYLOQVX5SUQDLWULHWURYLUODWKHUDS5\6SU\GRL4'S(SXE)HE30\30\30\30.

Romney, Marc

$IU$D$KDO4LQG6ELKLQFKDOHSU,LQHJ5DWKD1DVVHP<\DXXR-UHUNDHGH0QDYHU1DYHHQGQMDEXD3PL %KUPQOS%DUPOO+1J$PDOQDLOPHUR-KQROEUDWLDKQUDQ5SRPH0%QQLIUQHQULQGD01>RDOJH0AUDOMGQ H&DKWHULQH55R$DQ3UHGLFLWLRQ165566R9WUDQVLPVLVRQDQPFLVEVDHRQSRXSODWLRQ0HQHF0D F0DFKQOHJHDQULQDJQPDQPHFQDKQVWPLRFQHLOQLVWXGPHG5\LY

Romney, Marc

<DQ,(DLQD2HYLYS5RPQH0\0.6LQ-HU\0-DN33HU-\\\LVL-SJRDN57YLX+%ORRLWQ67UDQ96KDGQ7 7D3P3KUXHYDQGH06(VWUGDH&RGHFLGR%URZQ76ZDNRWLSSHE.7+45ROZL00.LQJUDV&2OLYHU0 O+ODQGQHZLFO65HGW0LQW|WKLQJXWQLQD06HURORLFSVHRQQWHR299DFFQDQLWRLQQWKLH&KJR GGQ\LQVHD53SXODWLRQ\&OLQFLD05HDUFK3URQDFQ-DQ-QOHQ\HDOWKLVVDUGRL 30\30\30\30.

Romney, Marc


Romney, Marc

Romney, Marc

Russell, Shannon
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Laureano M, Clarke G, Yan M. How do I provide rare red cells to patients? Transfusion 2023;63(4): 670-678. SA
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Appendix: Funding and Publications for 2023

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Huang WY, Izevbaye I, Lepine G, Martins Filho SN, Papadakis AI, Park PC, Riviere JB, Sheffield BS, Spatz A, Spriggs E,
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2023;54(1):19-24. CA
with the revised assessment of bleeding and transfusion (RABT) score at Canadian level I trauma centres. Injury
Zlosnik, James

Director & Head

- **Department Head:** U=X KD*DR3UR1HVV RU DQG'HSDUWPHQW +HDG
- **Director, Human Resources and Administration:** HQHY LH H0DF0LOODQ
- **Executive Assistant to Department Head:** Sneha Dabgar

Executive Committee Members

- **Vice Chair of Research:** U&KHU\O;H0OLQJ WRQ
- **Vice-Chair of Clinical Education:** Dr. Mike Nimmo
- **Vice Chair of Scientific Education:** 'U+p0qQH & \{Wp
- **Director of Communications:** Dr. David +XQWVPDQ
- **Director, Equity, Diversity and Inclusion:** Dr.

Associate Department Heads

- **Regional Associate Academic Department Head for the Island Health:** 'U-X OLH,UY LQJ
- **Associate Academic Department Head for Fraser Health Authority:** 'U0LFK HOOH;RQJ
- **Chief Provincial Diagnostics Officer, Provincial Laboratory Medicine Services, and Adjunct Professor, UBC Department of Pathology and Laboratory Medicine:** Mr. Craig Ivany
- **Regional Academic Associate Department Head for the Interior Health Authority:** Dr. Denis Bonin

Programs Directors

- **Residency Program:** Dr. Mike Nimmo
- **Graduate & Postdoctoral Studies:** +P0qQH & \{Wp
- **BMLSc Program, Associate Director:** Ms. <XNR,NH>JDPL/HH
- **POLQM and CMPT Programs:** 'U/XF'$ Perrone
- **The Infection Prevention and Control (IPAC) Certificate Program:** Dr. Aleksandra 6WHIDQRYLF'U(OLVD/OR)G6PLWK'U*KDGD $05DZDLQ0G'U7LWXV;RQJ