



UBC MD PhD

UBC MD/PhD Program

2894 DETWILLER PAVILION, 2255 WESBROOK MALL, VANCOUVER BC V6T 2A1

Phone: 604-822-7198 Fax: 604-822-7917 Email: md.phd@ubc.ca Website: www.med.ubc.ca/mdphd

Newsletter – 2018 Winter

<http://mdprogram.med.ubc.ca/mdphd/news/>

Student Research Forum & Open House

The 18th annual UBC MD/PhD Student Research Forum and Open House was held on Friday, 8 September 2017, 1:15-4:45 pm, at The Nest, UBC Campus. This annual event is to showcase the research by our students, and to answer questions from prospective new students and faculty interested in our program. Opening remarks by **Dr. Lynn Raymond**, Director of the MD/PhD Program, set off the exciting event.

Sincere thanks to our invited guest speaker, **Dr. Stephen Yip**, Clinician-Scientist/Consultant Neuropathologist, BC Cancer Agency, and an alumnus of our program. He made a fabulous presentation on his active research implementing new genomic technologies into clinical care, discussed how he combines his clinical work and research, and shared his advice for clinician-scientist trainees.



From left: **Victoria Baronas**, **Paulina Piesik** and **Eric Zhao**

➤ Student presentations

Victoria Baronas, **Paulina Piesik** and **Eric Zhao** talked about their experiences in their MD/PhD training.

➤ Poster presentations describing active research by our current MD/PhD students

Frank Lee, “Plasmin cleaves clotting factor Va to accelerate plasminogen activation and fibrin clot dissolution”

Wissam Nassrallah, “Store-operated response in CA1 pyramidal neurons exhibits features of homeostatic synaptic plasticity”

Adam Ramzy, “Removing and replacing insulin in the β -cell”

Michael Skinnider, **Jordan Squair**, **Jennifer Ji**, **David Twa**, “Evaluation of MD/PhD clinician-scientist training in Canada: Quantifying program efficacy”

David Twa, “Targeted high-throughput sequencing and characterization of programmed death ligand structural rearrangements in non-Hodgkin B-cell lymphomas”

Eric Zhao, “Homologous recombination deficiency & platinum-based therapy outcomes in advanced breast cancer”

Program Admissions & Advisory Committee (PAAC) 2017-2018

The MD/PhD Admissions/Advisory Committee consists of four ex-officio members and six appointed members. Ex-officio members hold standing spots on the committee because of their primary positions: the Assistant Dean of MD Admissions, the Assistant Dean of Graduate & Postgraduate Education, the MD/PhD Program Director and the MD/PhD Associate Program Director. Appointed members are composed of clinician-scientists, basic scientists, graduate program advisors, student research supervisors and one senior student representative. To ensure that the MD/PhD Committee may benefit from maximum faculty and program involvement, diverse ideas and a healthy turn-over rate, the appointed members' terms are for three years, renewable once. The full Committee meets at least twice a year to review the admissions process and to finalize the ranking of MD/PhD applicants. Members of the Committee also serve on student Thesis Research Supervisory Committees, PhD Comprehensive Examination Committees and PhD Final Oral Examination Committees.



Shahin Shirzad, MD

Assistant Dean, Admissions, Undergraduate Medical Education, Faculty of Medicine, UBC



Wendy Robinson, PhD

Assistant Dean, Graduate & Postgraduate Education, Faculty of Medicine, UBC



Lynn Raymond, MD, PhD

Director, MD/PhD Program, UBC

Professor, Department of Psychiatry, UBC



Torsten Nielsen, MD/PhD

Associate Director, MD/PhD Program, UBC

Professor, Department of Pathology & Laboratory Medicine, UBC



Shernaz Bamji, PhD

Professor, Department of Cellular & Physiological Sciences, UBC



Liam Brunham, MD/PhD (Alumnus, UBC MD/PhD Program)

Assistant Professor, Department of Medicine, UBC

Principal Investigator, Centre for Heart and Lung Innovation, UBC & St. Paul's Hospital



Eric Jan, PhD

Associate Professor, Department of Biochemistry and Molecular Biology, UBC

Graduate Admissions Advisor, Department of Biochemistry and Molecular Biology, UBC



Alice Mui, PhD

Associate Professor, Department of Surgery, UBC

MD Undergraduate Education, UBC



Millan Patel, MD

Investigator, BC Children's Hospital

Clinical Assistant Professor, Department of Medical Genetics, UBC



Paulina Piesik

Year 4, MD/PhD Student, UBC

UBC MD/PhD PROGRAM

MD/PhD Student Representative – Paulina Piesik

Paulina Piesik, Year 4 student, is our 2017-2018 student representative, along with alternate student representative **Alvin Qiu**, and **Sandy Wright**, our student representative at the Southern Medical Program. The major responsibility of the student representative is to sit on the MD/PhD Admissions/Advisory Committee. Other duties include helping to organize the MD/PhD monthly student meetings/seminars and presenting at student events to promote the MD/PhD Program. Prospective applicants are welcome to contact any of our students to ask questions. <http://mdprogram.med.ubc.ca/mdphd/students/>



Paulina Piesik

Message from Paulina:

It is a great pleasure to serve as the 2017-2018 student representative for the UBC MD/PhD Program. Over the past year, I have been deeply impressed by the great caliber of individuals I get to meet and interact with in this role, including my distinguished peers and those who have applied to join our program. I am personally thankful to program director **Dr. Lynn Raymond**, associate director **Dr. Torsten Nielsen**, and our program coordinator **Jane Lee**. These individuals provide us with amazing support year-round for our academic, professional, and personal well-being. Over the coming few months, myself and the alternate representative, **Alvin Qiu**, will be working on new resources to improve the MD/PhD student experience, particularly interactive workshops that will provide us with tools and strategies that can help manage our uniquely challenging program.

As I approach the halfway mark of this program, I continue to feel deeply grateful for the opportunity to pursue an MD-PhD degree. As a young child, I knew I wanted to be a scientist. This was a goal that I would strive for with undying commitment all my life. What brought me to where I am now was the sudden, jarring realization that “science” or the scientific method – despite all that it has explained so far – has yet to bring humanity relief from many dreadful, pervasive illnesses. While doing coursework for my undergraduate Cell and Developmental Biology degree at the University of British Columbia, I was formally introduced to the enigmatic field of immunology. I was instantly drawn to the mysteries and complexities embedded within the microscopic world of our little immune cells. What intrigued me about immunity is that it is dynamic and adaptive- these characteristics make the immune system amenable to therapeutic manipulation. Since then I have been drawn to research that sets out to explore the ways we can fine-tune our immune systems for treating patients with painful, intractable autoimmune and allergic conditions.

Under the supervision of **Dr. Jan Dutz**, a dually certified rheumatologist-dermatologist and leader in the field of skin immunity, I currently study the immune system of the skin – particularly, the immune cells that prevent excessive inflammation. These cells, including regulatory T cells and their kin, can be influenced by factors applied onto the skin to become better at promoting a phenomenon called immune tolerance, where unwanted inflammation is suppressed. Using the skin as a route for strengthening tolerance is called “topical immunomodulation,” and is an attractive therapeutic option as it is non-invasive. The goal of my PhD thesis is to understand the mechanisms of skin-induced tolerance and to optimize topical immunomodulation so that it may one day be used to treat challenging inflammatory conditions, such as type 1 diabetes and inflammatory bowel disease. I am fortunate to be based out of the BC Children’s Hospital Research Institute (BCCHR), which hosts world-renowned researchers in immunity, particularly in immune regulation and its application to type 1 diabetes and inflammatory bowel disease. The research environment at BCCHR is ideal for MD/PhD trainees to develop the technical and academic skills for success in translational immunology.

Aside from my thesis and medical education, I particularly enjoy volunteering in health and science communication. Over the past two years, I co-chaired the UBC Students in Health Annual Research Conference, a showcase of impressive student scholarship in medicine, and the UBC Skin Cancer Awareness Network, an initiative focused on promoting sun safety and skin health knowledge to the general public. I like to relax and unwind by studying Japanese, chatting with new friends at language meet-ups, and playing the clarinet and viola. The best decision I made during the past year was to adopt a funny little lovebird called Mango, who gives me a daily dose of happiness and cheers me up when I come home from a challenging day in the laboratory.

On that note, I encourage all readers to reflect on the things that inspire you and bring you joy. Happy New Year and all the best!

MD/PhD Student – Jordan Squair – Friedman Award-Winner

Jordan Squair, MD/ PhD student, was awarded the Friedman Award for Scholars in Health. This award allows Jordan to work with **Dr. Grégoire Courtine** at the École Polytechnique Fédérale de Lausanne in Geneva, Switzerland, which he is undertaking within our MD/PhD program. Jordan's research supervisors are **Drs. Andrei Krassioukov** and **Christopher West**, and he is completing his degree in the Experimental Medicine Graduate Program at UBC.

The Friedman Award for Scholars in Health is named after Constance Livingstone-Friedman and Sydney Friedman, the first two faculty members in the UBC Faculty of Medicine. **Drs. Constance and Sydney Friedman** believed that a full well-rounded education requires students to learn from different perspectives and different cultures. The goal of the Friedman Award is to provide funding to graduate students or medical residents so that they can pursue a learning opportunity to further their career or to bring new perspectives to the education they have already received.



Jordan Squair

I arrived to the Wyss Centre for Bio and Neuroengineering (affiliated with the Swiss Federal Institute of Technology) in Geneva approximately six months ago to begin a project investigating the mechanisms of epidural electrical stimulation on the autonomic nervous system. The primary goal of the project is to develop a neuroprosthesis that is empirically targeted to the spinal circuitry responsible for maintaining tone and control of the sympathetic nervous system. We are doing this using some of the most recent technological breakthroughs in neuroscience including whole tissue clearing, optogenetics, chemogenetics, and full transcriptome sequencing, coupled with state-of-the-art bioengineering.

Through our most recent experiments, we are well on our way to understanding how (and where) best to stimulate the spinal cord to elicit blood pressure responses, and have also made significant progress towards understanding how exactly the electrical stimulation is working to accomplish this (through causal neuroanatomical experiments). We expect that with careful experiments over the next two years, we can solve this complex issue that frustrates so many individuals with spinal cord injury.

Jordan also won several other awards this year -- Congratulations!

- IODE War Memorial Scholarship
- Canada Graduate Scholarship Foreign Study Supplement
- Michael Smith Foundation for Health Research / Canadian Institutes of Health Research
- Award for Best Poster Presentation – Experimental Biology, UBC 2017
- Izaak Walton Killam Memorial Pre-Doctoral Fellowship & Travel Award
- Dorothy May Ladner Memorial Fellowship
- UBC Graduate Student Initiative Publication Award
- Mensa Canada Scholarship – Mensa Canada

Publications (selected):

- **Squair JW**, Liu J, Tetzlaff W, Krassioukov AV, West CR. Spinal cord injury induced cardiomyocyte atrophy and impaired cardiac function are severity dependent. *Exp Physiol*. 2017 Dec 12. doi: 10.1113/EP086549. [Epub ahead of print] [[PMID 29235182](#)]
- **Squair JW**, Bélanger LM, Tsang A, Ritchie L, Mac-Thiong JM, Parent S, Christie S, Bailey C, Dhall S, Street J, Ailon T, Paquette S, Dea N, Fisher CG, Dvorak MF, West CR, Kwon BK. Spinal cord perfusion pressure predicts neurologic recovery in acute spinal cord injury. *Neurology*. 2017 Oct 17;89(16):1660-1667. doi: 10.1212/WNL.0000000000004519. Epub 2017 Sep 15. [[PMID 28916535](#)]

MD/PhD Student – Philip Edgcumbe – Crowdsourcing the End of Alzheimer's

From May-October, 2017, **Philip Edgcumbe** was the Bold Innovator and leader of the XPRIZE Alzheimer's Visioneers team. He was tasked with developing a multi-million dollar research incentive prize to End Alzheimer's. He presented the XPRIZE competition concept at the annual XPRIZE Visioneers Summit in October 2017 and beat out four other teams to be named the Top Priority XPRIZE competition for launch in 2018. Furthermore, his team received a \$25 million pledge from the cofounders of Edelman Financial Services to support the Alzheimer's XPRIZE initiative. Philip's home for the summer was in Venice, Los Angeles, but he didn't have much time for surfing because the project took him to over 10 cities to interview over 60 Alzheimer's researchers and advocates. We asked Philip to share his XPRIZE experience with us.



Philip Edgcumbe celebrates the Alzheimer's team's success at the XPRIZE Visioneers Summit.

My time working for XPRIZE was an incredibly rewarding experience. XPRIZE (www.xprize.org) is a non-profit and global leader in solving the world's Grand Challenges by creating and managing large-scale incentive competitions with multi-million dollar prizes. Some of XPRIZE's past and current prizes include the \$10M Ansari XPRIZE for suborbital spaceflight which launched today's \$3B private sector space industry; the \$30M Google Lunar XPRIZE to land a privately funded rover on the Moon; and the \$10M Qualcomm Tricorder XPRIZE to bring healthcare to the palm of your hand. Prize competitions democratize innovation and break research silos.

*During my time at XPRIZE we worked with clinicians, scientists and many other stakeholders to map out how we can transform Alzheimer's. Working at XPRIZE certainly is not like doing the conventional bench to bedside translational research that we are trained to do in the MD/PhD program. However, I have learned that in order to have impact, it is important to be creative, take risks and keep the end goal of helping patients in mind. As part of my mission to build an ecosystem of support for our prize, I met with **Maria Shriver** who taught me how to communicate powerfully and effectively about Alzheimer's. I also met with **Cori Bargmann**, the President of the Chan Zuckerberg Foundation, to make the case that investing in the Alzheimer's XPRIZE would advance human potential.*

*I was grateful that the Faculty of Medicine and the UBC MD/PhD program supported my pursuit of this opportunity. The mission of the UBC MD/PhD program is "...to be Canada's leader in preparing the future generation of clinician-scientists." I feel that the XPRIZE experience helped me to better prepare to be a clinician-scientist and I think it reflects well on UBC that the UBC leadership supported this kind of out-of-the-box opportunity. I would like to also especially thank **Victor Li**, a fellow UBC MD/PhD student, for joining our XPRIZE team as an advisor. Victor did his PhD in Neuroscience with a focus on Alzheimer's and he participated in weekly strategy meetings for the Alzheimer's XPRIZE.*

Philip Edgcumbe

Congratulations! **Philip Edgcumbe** has received the [2017 Canadian Medical Hall of Fame \(CMHF\) Award](#). This award recognizes medical students with an established track record of community leadership, superior communication skills, and a demonstrated interest in advancing knowledge as future leaders and innovators of health care in Canada. **Andrea Jones**, another UBC MD/PhD student, received this award in [2015](#) in recognition of her work to improve the health of people marginalized by poverty, mental illness and addictions.

CSCI/CITAC Annual Conference and Young Investigators Forum

Six MD/PhD students presented their outstanding research at the Canadian Society for Clinical Investigation (CSCI) / Clinician Investigator Trainee Associate of Canada (CITAC) Young Investigators Forum, 20-22 November 2017, in Toronto, Ontario.

Frank Lee (first row, left), “Plasmin converts clotting factor Va from a procoagulant to fibrinolysis cofactor”

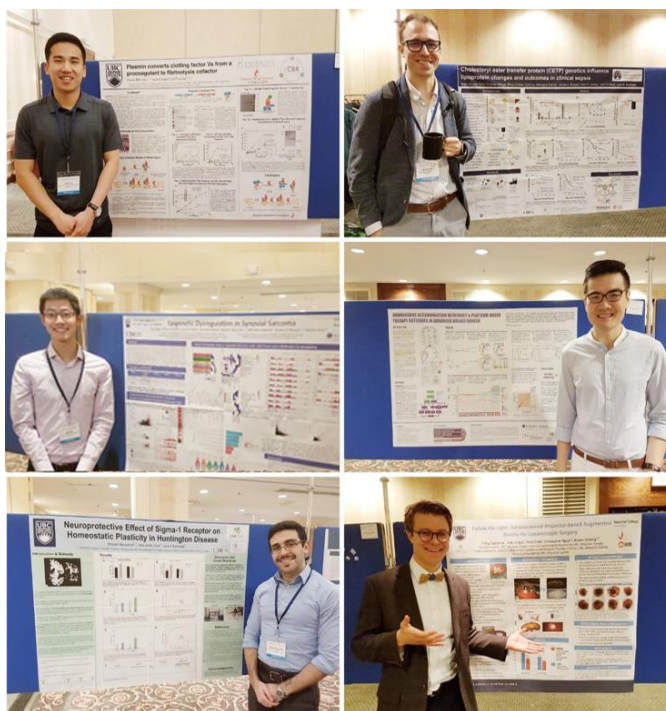
Mark Trinder (first row, right), “Decreased high-density lipoprotein cholesterol level is an early prognostic marker for organ dysfunction and death in suspected clinical sepsis”

Alvin Qiu (second row, left), “Epigenetic dysregulation in synovial sarcoma”

Eric Zhao (second row, right), “The clinical relevance of genomic scars left by deficient homologous recombination in advanced cancer”

Wissam Nassrallah (third row, left), “Neuroprotective effect of sigma-1 receptor on homeostatic plasticity and calcium handling in Huntington disease”

Philip Edgcumbe (third row, right), “Follow the light: intracorporeal projector-based augmented reality for laparoscopic surgery”



Congratulations!

Mark Trinder won a poster presentation award.

Eric Zhao won poster presentation honourable mention.

Alvin Qiu is our institutional representative for UBC at CITAC meeting.

MD/PhD "Building Bridges Seminar Series" - ALL ARE WELCOME

Our seminar series aims to illuminate the relationship that exists between clinical practice and medical research, allowing MD/PhD and other interested students to hear about different career tracks and various ways to combine clinical and research work. In addition to speaking about their active research, the invited speakers discuss their experiences and training backgrounds, share their advice with prospective clinician-scientists, and give their opinions on career development options for clinician-scientists. All faculty, clinical investigator trainees of all stripes, students in the Faculty of Medicine and prospective applicants to our program are invited. Our usual venue is at the Medical Student Alumni Centre, 6:00-7:00 pm, web link at <https://meet.vc.ubc.ca/webapp>.

Invited speakers:

10 April 2017. **Dr. John Boyd**, Critical Care Medicine, Department of Medicine, UBC

27 November 2017. **Dr. Ben Chew**, The Stone Centre, Department of Urology, UBC

Thanks go to the speakers for sharing their clinical and research experiences with us.

Student presentations:

16 October 2017. **Allen Zhang** presented "The interface of malignant and immunologic clonal dynamics in ovarian cancer"

22 January 2018. **Amanda Dancsok** presented "Characterizing the immune microenvironment of sarcomas"

For information on upcoming seminars, please visit our webpage at

<http://mdprogram.med.ubc.ca/mdphd/seminars/>

The students also often organize social events; here is a photo taken after Allen's talk:



From left: **Daniel Kwon**, **Mark Trinder**, **Alvin Qiu**, **Wissam Nassrallah**, **Paulina Piesik**, **Allen Zhang**, **Eric Zhao** and **Amanda Dancsok**

Kudos

Rozlyn Boutin won two awards.

- William, Sadie, and Edwin Rowan Scholarship in Medicine
- Ernest E. Smith Scholarship

Frank Lee won two awards.

- 2nd Place Poster Presentation, Earl W. Davie Symposium, Centre for Blood Research
- Dutkevich Memorial Trust / Haydn Pritchard Award for the best Graduate Student Seminar in PATH 535/635

Alvin Qiu won the William, Sadie and Edwin Rowan Scholarship in Medicine.

He also won travel awards for his presentations at research conferences.

- Canadian Epigenetics, Environment and Health Research Consortium Network (CEEHRC) Travel Award
- Translational Cancer Genomics (TCG) Travel Award

Michael Skinnider two research awards.

- Dorothy May Ladner Memorial Fellowship
- Killam-Donald N. Byers Memorial Prize

Mark Trinder is our MD/PhD student representative serving on the UBC Faculty of Medicine Research Council 2017-2018.

David Twa won two research awards.

- Edward Squires Memorial Scholarship
- Elizabeth C. Walters Research Fellowship

Daniel Woodsworth won the Special University of British Columbia Award.

Allen Zhang won the Graduate Bioinformatics Training Program Travel Award.

Eric Zhao won the John Bosdet Memorial Fund Graduate Student Travel Award.

Student Publications (selected)

Baronas VA, Yang RY, Kurata HT. Extracellular redox sensitivity of Kv1.2 potassium channels. *Sci Rep*. 2017 Aug 22;7(1):9142. doi: 10.1038/s41598-017-08718-z. [[PMID 28831076](#)]

Boutin RCT, Petersen C, Finlay BB. Microbial Insights into Asthmatic Immunopathology. A Forward-Looking Synthesis and Commentary. *Ann Am Thorac Soc*. 2017 Nov;14(Supplement_5):S316-S325. doi: 10.1513/AnnalsATS.201707-534AW. [[PMID 29161080](#)]

Ramzy A, Mojibian M, Kieffer TJ. Insulin deficient mouse β -cells do not fully mature but can be remedied through insulin replacement by islet transplantation. *Endocrinology*. 2017 Sep 27. doi: 10.1210/en.2017-00263. [Epub ahead of print] [[PMID 29029025](#)]

Skinnider MA, Johnston CW, Merwin NJ, Dejong CA, Magarvey NA. Global analysis of prokaryotic tRNA-derived cyclodipeptide biosynthesis. *BMC Genomics*. 2018 Jan 15;19(1):45. doi: 10.1186/s12864-018-4435-1. [[PMID: 29334896](#)]

Twa DDW, **Skinnider MA**, **Squair JW**, Lukac CD; Canadian MD/PhD Program Investigation Group. Cross-sectional-derived determinants of satisfaction with physician-scientist training among Canadian MD/PhD graduates. *PLoS One*. 2017 Sep 28;12(9):e0185218. doi: 10.1371/journal.pone.0185218. eCollection 2017. [[PMID: 28957354](#)]

Wright AD, Smirl JD, Bryk K, van Donkelaar P. A Prospective Transcranial Doppler Ultrasound-Based Evaluation of the Acute and Cumulative Effects of Sport-Related Concussion on Neurovascular Coupling Response Dynamics. *J Neurotrauma*. 2017 Nov 15;34(22):3097-3106. doi: 10.1089/neu.2017.5020. Epub 2017 Aug 4. [[PMID 28627298](#)]

Comments and Suggestions

We welcome comments and suggestions to the UBC MD/PhD Program and to our newsletters.

Please send comments to the MD/PhD Program office, 2894 Detwiller Pavilion, 2255 Wesbrook Mall, UBC, Vancouver, BC, Canada V6T 2A1. Phone: 1-604-822-7198 Fax: 1-604-822-7917

Email: md.phd@ubc.ca Website: <http://www.med.ubc.ca/mdphd>

Edited by Jane Lee, Program Coordinator, MD/PhD Program, UBC