



UBC MD PhD

UBC MD/PhD Program

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Newsletter – Winter 2009

http://www.med.ubc.ca/education/md_ugrad/mdphd/news.htm

UBC MD/PhD Student Research Forum & Open House – 8 September 2008

The ninth annual UBC MD/PhD Student Research Forum and Open House was held on Monday, 8 September 2008, 1:00-4:00 pm, at the UBC Brain Research Centre. Opening remarks by

Dr. Lynn Raymond, Director of the MD/PhD Program, set off the exciting half-day event.

Our thanks go to our invited guest speakers:



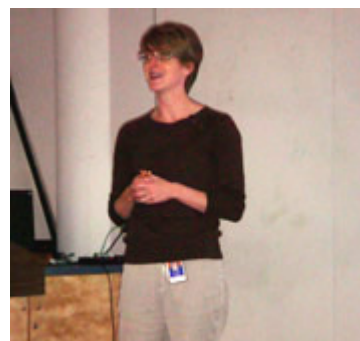
Dr. Richard Hegele, Professor and Head, Pathology & Laboratory Medicine, and James Hogg iCAPTURE Centre for Cardiovascular and Pulmonary Research, presented “Post-MD/PhD – The Mid-career Level and Beyond”



Dr. Aly Karsan, Hematopathologist, BC Cancer Agency, and Associate Professor, Pathology & Laboratory Medicine, UBC, presented “The Evolution of a Clinician-Scientist”



We also thank two of our alumni who gave talks. **Dr. Patrick Tang**, Medical Microbiologist, BC Centre for Disease Control, and Clinical Assistant Professor, Pathology & Laboratory Medicine, UBC, presented “Becoming an MD/PhD”. **Dr. Claire Sheldon**, Resident in Ophthalmology, UBC, presented “Reflecting on My Experience in the MD/PhD Program”.



UBC MD/PhD Student Research Forum & Open House (con't)



Aaron Joe, Year 6 MD/PhD student, presented “Seeing the Forest for the Trees: Perspectives from a 6th Year Student”.

Our Associate Program Director, **Dr. Torsten Nielsen**, talked about our MD/PhD Admissions/Advisory Committee and our Seminar Series.

Our sincere thanks go to them.



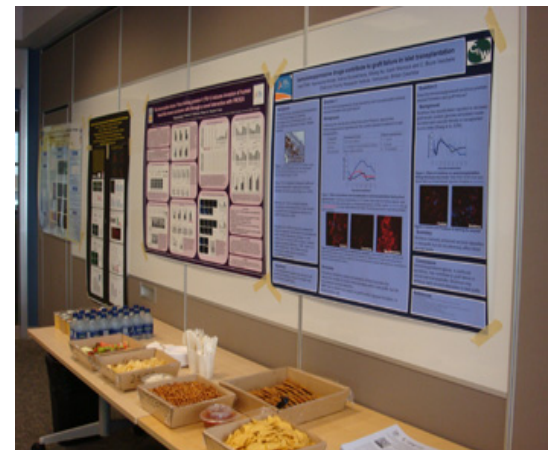
Four MD/PhD students presented their outstanding research posters:

Arezoo Astanehe, Year 4 (supervisor: Dr. Sandra Dunn)
“The transcription factor Y-Box binding protein (YB-1) induces invasion of human basal-like breast carcinoma cells through a novel interaction with PIK3CA”

Aaron Joe, Year 5 (supervisor: Dr. Fabio Rossi)
“Committed adipogenic progenitors are responsible for novel adipocyte generation in response to dietary stimuli”

Michael Kozoriz, Year 3 (supervisor: Dr. Christian Naus)
1) “Potassium uptake by astrocyte mitochondria”
2) “Removal of the c-terminus of Cx43 results in enhanced damage during stroke”

Patrick Yang, Year 4 (supervisor: Dr. Erik Skarsgard)
“Chitosan mediated fetal gene therapy for cystic fibrosis”



The forum had an excellent turnout, with faculty members, students, guests, and potential applicants in attendance. Potential applicants had some excellent questions and good discussion with the speakers and the current MD/PhD students. Special thanks go to **Arezoo Astanehe** and **Patrick Yang** for organizing the Open House and taking some great photos for us.

Program Admissions & Advisory Committee (PAAC) 2008-2009

The MD/PhD Advisory/Admissions Committee consists of clinician-scientists, basic scientists, graduate program advisors, student research supervisors and a senior student representative. Membership is appointed and reviewed annually by the Program Director. In order to ensure that the MD/PhD Committee may benefit from maximum faculty involvement and has a healthy turn-over rate, members who have completed a 3-year term will automatically be rotated off the Committee, but can serve additional terms after a 3-year hiatus. The Committee meets at least once a year to review the admissions process and to finalize the ranking of MD/PhD applicants and to assign the CIHR MD/PhD Studentships to individual MD/PhD students. Members of the Committee also serve on the student Thesis Research Supervisory Committees, the PhD Comprehensive Examination Committees and the PhD Final Oral Examination Committees.

Program Admissions & Advisory Committee (PAAC) 2008-2009 (con't)



Lynn Raymond, MD, PhD

Director, MD/PhD Program, UBC
Professor, Neuroscience, Department of Psychiatry, UBC
<http://www.neuroscience.ubc.ca/raymond.htm>



Torsten Nielsen, MD/PhD

Associate Director, MD/PhD Program, UBC
Associate Professor, Anatomical Pathology, Department of Pathology & Laboratory Medicine, UBC
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Delbert Dorscheid, MD, PhD

Associate Professor, Critical Care, Department of Medicine, UBC
The James Hogg iCAPTURE Centre for Cardiovascular and Pulmonary Research
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Vincent Duronio, PhD

Professor, Respiratory, Department of Medicine, UBC
Director, Experimental Medicine Graduate Program, UBC
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Christian Naus, PhD

Professor, Department of Cellular and Physiological Sciences, UBC
Director Pro Tem, Life Sciences Institute, UBC
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Sally Osborne, PhD

Senior Instructor & Undergraduate Advisor, Department of Cellular & Physiological Sciences, UBC
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Fabio Rossi, MD, PhD

Associate Professor, Department of Medical Genetics, UBC
Canada Research Chair in Regenerative Medicine
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Alan So, MD

Assistant Professor, Department of Urologic Sciences, UBC
Research Scientist, Prostate Centre at Vancouver Coastal Health Research Institute
http://www.vchri.ca/s/IIFL_InvestigatorAbstracts.asp?ReportID=124903



Rusung Tan, MD, PhD

Professor, Department of Pathology & Laboratory Medicine, UBC
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Arezoo Astanehe

MD/PhD Student (Year 4), UBC

Our sincere thanks go to Drs. Neil Cashman, Sandra Dunn and Blair Leavitt for their contribution to the MD/PhD Committee in the past three years. We welcome three new members to the MD/PhD Committee: Drs. Christian Naus, Fabio Rossi and Alan So. Thank you for the support of the MD/PhD Program.

Thank you!!

5th Annual MUS Medical Student Research Forum – 6 November 2008

The 5th annual Medical Undergraduate Society (MUS) Medical Student Research Forum was held on Thursday, 6 November 2008, 6:00-9:30 pm, at the UBC Medical Student & Alumni Centre (MSAC) and was extremely successful. This annual event was to showcase the research talent found in all four medical classes whether the research arose from a summer research project, through the MD/PhD Program, or during research prior to entering medical school. The event was video-conferenced to the Northern Medical Program (NMP) and the Island Medical Program (IMP). There were a record number of abstract submissions (75 in total)!!

Dr. Gavin Stuart, Dean, Faculty of Medicine, UBC opened the forum. The two outstanding keynote speakers were our very own **Dr. Liam Brunham**, MD/PhD Class of 2008 and Resident, Internal Medicine Program, UBC, presented “Training Pathways for the Clinician Scientist”, and **Dr. David Huntsman**, Associate Professor, Department of Pathology & Laboratory Medicine, UBC and Medical Director, Centre for Translational and Applied Genomics (CTGA), Provincial Health Services Authority (PHSA) Laboratories, presented “Individualizing Cancer Control – One Cancer at a Time”. Our Program Director, **Dr. Lynn Raymond**, spoke at the end of the event. The panel of judges were: **Drs. Jason Barton, Michael Fabian, Cindy-Ann Lucky, David Mathers, Joanne Matsubara, Ivan Robert Nabi, Nina Panagiotopoulos, Lynn Raymond, Michael Rekart, Sharon Salloum, Ted Steiner and Angela Towle**. Our sincere thanks go to Dean Gavin Stuart, the speakers and all the judges for their support of this event.



Five MD/PhD students presented their outstanding research posters:

Michael Copley, Year 1, supervisor (Dr. Connie Eaves), presented “Distinct and stable transcriptional features of fetal and adult hematopoietic stem cells”.

Will Guest, Year 2, supervisor (Dr. Neil Cashman), presented “Unfolding energy landscapes of the cellular prion protein”.

Heather Heine, Year 6, supervisor (Dr. Bruce McManus), presented “Defects in de novo neoangiogenesis in CD34KO mice revealed in a Matrigel chamber model”.

Claire Heslop, Year 5, supervisor (Dr. John Hill), presented “Effects of low neighbourhood socioeconomic status on inflammation, oxidative stress, and risk of mortality in patients with coronary artery disease”.

Clara Westwell-Roper, Year 1, supervisor (Dr. Bruce Verchere), presented “Role of TLR4 in multiple low dose streptozotocin-induced diabetes”.

Clara Westwell-Roper was chosen to receive a poster prize. Congratulations! Well done, everyone!

Special thanks go to **Michael Copley**, Year 1, MD/PhD student (right), and **Rupinder Sohal**, MUS VP Academic & MD 11 (left), for organizing the forum.



UBC MD/PhD PROGRAM

MD/PhD Student Representative - Arezoo Astanehe



Arezoo Astanehe, Year 4 MD/PhD student, won the Best Oral Presentation Award at the CSCI/CIHR Young Investigators Forum (Toronto, Ontario, September 2008). Arezoo presented “The transcription factor Y-box binding protein-1 (YB-1) induces expression of the *PIK3CA* oncogene leading to increased invasion of basal-like breast carcinoma cells”.

Congratulations!

Message from Arezoo:

I was born in Iran, and moved to Vancouver with my parents and sister when I was 13 years old. Having to leave my family and friends and learn a completely new language and culture taught me at a young age the skills to adapt, to always appreciate the opportunities that I get, and to work hard. Although this may sound cliché, I always wanted to be a medical doctor. My “love” for research came about later on when I was participating in ovarian cancer research with Dr. Nelly Auersperg, a pioneer in the field. Upon completion of my MSc, I entered Medical School at UBC. Soon after the commencement of classes, I found myself missing research. Lectures would constantly raise questions in my mind, and I would find myself back in the lab at any opportunity that I got. So I decided to apply for the MD/PhD Program during the first year of medical school and I was lucky, excited, and very grateful to be accepted into this amazing program. I am now in the fourth year of my studies, conducting the PhD portion under the supervision of the wonderful Dr. Sandra Dunn (Experimental Medicine) at the Child and Family Research Institute working on breast cancer.

Breast cancer is a heterogeneous disease consisting of various subtypes. One of the most aggressive is the basal-like breast carcinoma (BLBC) often referred to as “triple negative” breast cancers since they do not express estrogen or progesterone receptors and they do not over-express HER-2. Treatment options for women diagnosed with BLBC is typically limited to conventional chemotherapies as they do not benefit from the targeted therapies offered to women with estrogen receptor positive luminal (ex. Tamoxifen) or HER-2 subtype tumors (ex. Trastuzumab). Therefore, there is a great need for identifying molecular targets to help improve the outcome for women with BLBC. Our lab focuses on the Y-Box Binding Protein-1 (YB-1), an oncogenic transcription/translation factor with elevated expression levels in a number of different malignancies, as a molecular target. My project specifically involves studying the role of YB-1 in the regulation of *PIK3CA*, which is another important oncogene implicated in cancer. Considering the interest that *PIK3CA* and its downstream signalling have generated in the past two decades, there is very limited knowledge on its transcriptional regulation. In fact we have recently characterized the *PIK3CA* promoter region and reported the first study on its transcriptional regulation. Currently, I am working on the transcriptional induction of *PIK3CA* by YB-1 with the aim to better understand the mechanisms that contribute to BLBC and in turn improve the therapeutic outcome of women diagnosed with this aggressive disease.

Being in the MD/PhD Program has taught me to be organized and efficient in all aspects of my life. People often ask me if it is hard doing both degrees at the same time. In fact, my husband refers to me as the Energizer Bunny wondering why I never get tired. My answer is because I love what I do. Now don't get me wrong, it can definitely get difficult at times when deadlines are approaching and you have to deal with manuscripts coming back for insane revisions, but at the end of the day if you love doing what you're doing it makes it much easier, more exhilarating, and definitely worthwhile. I try to be a balanced individual and enjoy all aspects of my life. Outside of the lab, I love spending any time I get with my husband, my adorable nephew and niece, and the rest of my family and friends doing all sorts of stuff. This is a lifestyle choice and hopefully in the future I will be able to balance a life as a clinician-scientist alongside a great family.

Meet Our Incoming Students – September 2008



Michael Copley

I am delighted to join the community of MD/PhD students at UBC. Born in Victoria, British Columbia, I graduated in 2006 with a BSc in Biochemistry from the University of Victoria. Following my undergraduate degree I started graduate studies through UBC under the guidance of Dr. Connie Eaves at the Terry Fox Lab (TFL). I am thrilled to be able to continue this work for the PhD portion of my degree. My research focuses on understanding how and why hematopoietic stem cells (HSCs; a rare population of bone marrow cells that ultimately give rise to all blood cells) change during development. HSCs derived from fetal versus adult tissues are both functionally and molecularly distinct; specifically, fetal HSCs are highly proliferative and have a higher self-renewal potential when compared to their principally quiescent adult counterparts. Our lab has recently demonstrated that HSCs reliably and completely switch from the fetal to adult state between 3 and 4 weeks after birth. The current focus of my work is to elucidate the mechanistic basis of this HSC developmental switch. It is hoped that this work will contribute to our understanding of HSC self-renewal and therefore inform methods by which this can be enhanced to improve HSC transplantation based therapies.

When I'm not in the lab or studying I try to engage in activities that feed my passion for the performing arts. My major artistic outlet since arriving in Vancouver has been singing with the male voice choir Chor Leoni. This summer I spent two weeks with Chor Leoni touring the Czech Republic. Another recent artistic highlight was performing and touring a two-person play entitled "Potentilla" for the Victoria, Regina and Saskatoon Fringe Theatre Festivals. Other activities I enjoy are yoga, snowboarding and hiking. I would like to thank the students and faculty of the UBC MD and MD/PhD Programs for a most welcoming and encouraging first semester. I eagerly anticipate sharing the challenges and occasional triumph of the years ahead.



Clara Westwell-Roper

I am thrilled to have been accepted to the UBC MD/PhD Program and look forward to the clinical and research years to come. After three months of medical school, I am inspired by my talented classmates, humbled by the depths of renal physiology, and very proud of my shiny new sphygmomanometer (although my dinner guests are tired of the ongoing blood pressure monitoring!).

I grew up in North Vancouver and completed an undergraduate degree in Microbiology and Immunology at UBC. I developed an interest in inflammatory disease at an early age and spent my later high school years exploring signaling pathways involved in macrophage activation (thanks to many tolerant and encouraging mentors). I then spent two summers testing inhibitors of integrin-linked kinase in models of inflammation and cancer at QLT Inc., a local biotech company. I completed a directed studies project and summer studentship with Dr. C. Bruce Verchere (Pathology and Laboratory Medicine, UBC), examining the role of toll-like receptors (TLRs) in pancreatic islet transplantation. After a brief but exciting stint working at Science World, I started an honours thesis with Dr. Jan P. Dutz (Experimental Medicine), investigating the role of the nuclear protein HMGB-1 in diabetes development. My interest in infectious disease then led me to the laboratory of Dr. Charles Thompson (Microbiology and Immunology), where I studied antibiotic resistance in mycobacteria.

I will return to work with Dr. Verchere on my PhD, which will focus on the role of TLR signaling in diabetes development and beta cell homeostasis. Increasing evidence suggests that TLRs – so-called “pattern recognition receptors” activated by conserved microbial components – can also recognize endogenous antigens involved in the pathogenesis of autoimmune disease. We hypothesize that TLRs respond to contents released by necrotic beta cells, contributing to activation of antigen-presenting cells and autoreactive T cells in Type 1 diabetes. TLRs are also expressed on beta cells but little is known about the effects of endogenous TLR ligands on beta cell function. Furthermore, these receptors may play an important role in inflammatory states associated with Type 2 diabetes, a condition that has rapidly become a devastating global epidemic.

Outside the lab, I enjoy teaching and spend much of my time coordinating a mentorship program for the Science Fair Foundation of BC. I also enjoy hiking, snowshoeing, cross-country skiing, baking, watercolour painting, and attempting to sing.

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

This well established seminar series is aimed at illustrating the relationship that exists between clinical practice and medical research. The meetings offer a casual and relaxed atmosphere in which to profile individuals who have successfully combined both clinical and research aspects into their medical careers. In addition to talking about their active research, the invited speakers also talk about their experiences, discuss their training background, share their advice for prospective clinician-scientists, and talk about their opinions on career development options for clinician-scientists.

All faculty, clinical investigator trainees and students in the Faculty of Medicine are invited. Presentations are video-conferenced and broadcast to the Island Medical Program and the Northern Medical Program. The event is being held at the Medical Student Alumni Centre, 12th Avenue & Heather Street, at 6:00 - 7:00 pm. Information on our seminars is available at http://www.med.ubc.ca/education/md_ugrad/mdphd/Seminars.htm.



Dr. Dianne Miller,
Associate Professor & Division Head,
Gynaecologic Oncology, Department
of Obstetrics & Gynaecology, UBC,
spoke on 1 December 2008.
Thanks, Dr. Miller.

PhD Comprehensive Exams

The intent of the comprehensive examination is to ensure that the student has adequately prepared for the proposed thesis research and can gain maximum benefit from this experience. The comprehensive examination format consists of two parts:

- a CIHR style research grant proposal in an area of the student's research
- an oral examination.

The following three MD/PhD students have been admitted to candidacy. Congratulations!

Patrick Yang (Year 4) successfully passed his PhD comprehensive examination on 5 June 2008. Patrick is completing his PhD research with Dr. Erik Skarsgard, in the Experimental Medicine Graduate Program. His thesis topic is "The distribution and expression of transgene in fetal mice following in utero gene delivery of non-viral vector for gene replacement therapy". His examination committee members are: Drs. Catherine Pallen (Chair), Peter Pare, Wendy Robinson, Beth Simpson and David Speert. Thanks everyone!

Brennan Eadie (Year 4) successfully passed his PhD comprehensive examination on 22 September 2008. Brennan is completing his PhD research with Drs. Brian Christie and Yu-Tian Wang, in the Neuroscience Graduate Program. His thesis topic is "Role of the dentate gyrus in the pathophysiology of a mouse model of Fragile X syndrome". His examination committee members are: Drs. Neil Cashman (Chair), Ken Baimbridge, John Church, Liisa Galea and Tim Murphy. Thanks everyone!

Michael Kozoriz (Year 3) successfully passed his PhD comprehensive examination on 13 November 2008. Michael is completing his PhD research with Dr. Christian Naus, in the Department of Cellular & Physiological Sciences. His thesis topic is "Mechanisms of connexin 43 mediated protection". His examination committee members are: Drs. Ken Baimbridge (Chair), John Church, Brian MacVicar, Tim Murphy and Gord Rintoul. Thanks everyone!

Graduate Entrance Scholarship (GES)

Top-up funding (GES) of up to \$5000 for the first year is available to help recruit top applicants to UBC. This one-time award is offered to the top incoming new graduate students.

Congratulations go to **Clara Westwell-Roper** for winning this award in 2008.

Selected Publications (2008)

- (01) **Astanehe A**, Arenillas D, Wasserman WW, Leung PC, Dunn SE, Davies BR, Mills GB, Auersperg N. Mechanisms underlying p53 regulation of PIK3CA transcription in ovarian surface epithelium and in ovarian cancer. *J Cell Sci.* 121(5):664-74. 2008. [PMID [18270270](#)]
- (02) **Berkhout SG**. Buns in the oven: Objectification, surrogacy, and women's autonomy. *Social Theory and Practice* 34:1 2008.
- (03) **Brunham LR**, Kruit JK, Verchere CB, Hayden MR. Cholesterol in islet dysfunction and type 2 diabetes. *J Clin Invest.* 118(2):403-8. 2008. [PMID [18246189](#)]
- (04) Christie BR, **Eadie BD**, Kannangara TS, Robillard JM, Shin J, Titterness AK. Exercising our brains: how physical activity impacts synaptic plasticity in the dentate gyrus. *Neuromolecular Med.* 10(2):47-58. 2008. [PMID [18535925](#)]
- (05) Hu Q, **Coburn B**, Deng W, Li Y, Shi X, Lan Q, Wang B, Coombes BK, Finlay BB. Salmonella enterica serovar Senftenberg human clinical isolates lacking SPI-1. *J Clin Microbiol.* 46(4):1330-6. 2008. [PMID [18272702](#)]
- (06) Lee C, Dhillon J, Wang MY, Gao Y, Hu K, Park E, **Astanehe A**, Hung MC, Eirew P, Eaves CJ, Dunn SE. Targeting YB-1 in HER-2 overexpressing breast cancer cells induces apoptosis via the mTOR/STAT3 pathway and suppresses tumor growth in mice. *Can Res.* 68:8661-6. 2008.
- (07) Meng F, Marek P, **Potter KJ**, Verchere CB, Raleigh DP. Rifampicin does not prevent amyloid fibril formation by human islet amyloid polypeptide but does inhibit fibril thioflavin-T interactions: implications for mechanistic studies of beta-cell death. *Biochem.* 47(22):6016-24. 2008. [PMID [18457428](#)]
- (08) **Sekirov I**, Tam NM, Jogova M, Robertson ML, Li Y, Lupp C, Finlay BB. Antibiotic-induced perturbations of the intestinal microbiota alter host susceptibility to enteric infection. *Infect Immun.* 76(10):4726-36. 2008. [PMID [18678663](#)]
- (09) **Young FB**. A life without pain? Hedonists take note. *Clin Genet.* 73(1):31-3. 2008. [PMID: [18070140](#)]
- (10) **Young FB**. When adaptive processes go awry: gain-of-function in SCN9A. *Clin Genet.* 73(1):34-6. 2008. [PMID: [18070139](#)]

Clinician Investigator Trainee Association of Canada (CITAC-ACCFC)

The mission of the CITAC-ACCFC is to identify and represent the unique interests of MS/MSc, MD/PhD and CIP trainees across Canada, to endorse action to improve the academic and postgraduate career opportunities of its members and to organize and promote other activities that will enable clinician trainees to reach their highest potential. On September 24-25, 2008 CITAC held its Annual General Meeting in Toronto where elections for this year's (2008-2009) executive council and committee chairs were held. We are pleased to announce that students in the UBC MD/PhD Program are performing leading executive roles and participating in the committees:

Fiona Young	– President (Elect) & Co-Vice President Internal	
	– Institutional Program Representative, UBC (Outgoing)	
Will Guest	– Institutional Program Representative, UBC (Incoming)	
Suze Berkhout	– Chair, Policy Committee	Arezoo Astanehe – Chair, Finance Committee
Aaron Joe	– Vice President External (Elect)	Kate Potter – Secretary
Patrick Tang	(MD/PhD Alumni) – CITAC Advisory Board	

XX

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, 2N6 - 2818 Detwiller Pavilion, 2255 Wesbrook Mall, UBC, Vancouver, BC, Canada V6T 2A1. Phone: 1-604-822-7198 Fax: 1-604-822-7917 Email: ubcmdphd@interchange.ubc.ca Website: <http://www.med.ubc.ca/mdphd>

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