



UBC MD PhD

UBC MD/PhD Program

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Newsletter – 2013 Summer Term

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

Congratulations to the Graduating Class of 2013



Three MD/PhD students crossed the stage at the Chan Centre for the Performing Arts this spring to receive their dual degrees. From left to right: **Will Guest**, **Dr. Gavin Stuart**, Dean of the Faculty of Medicine, **Kate Potter** and **Fiona Young**.

Class of 2013 - Will Guest



Message from **Will Guest**:

It was an exhilarating and bewildering experience crossing the stage at the Chan Centre last week to receive the MD/PhD degrees. For so many years being an MD/PhD student has been a big part of my identity, and undertaking the dual degree program has been the greatest challenge of my life so far. Seeing my name on the parchment drove home that a long but meaningful chapter of my life is ending, while another is about to begin. **Dr. Jason Ford**, who spoke to our class at the Faculty of Medicine graduating ceremony, summed it up well when he said, “the days are long but the years are short”: when I think back on the years at UBC, I clearly remember the nights and weekends forgone in the interest of research or clinical duties, yet it also feels like only the briefest of moments ago that I arrived at UBC and sat in my first year medical classes.

Reaching this point is only thanks to the support and wisdom of all the people in my life who have guided me along the way – my brother, parents, grandparents, friends, teachers, and professors. At UBC, I owe a debt of gratitude to Professor **Lynn Raymond** and **Torsten Nielsen**, the Directors of the MD/PhD program, and to **Jane Lee**, the MD/PhD program administrator, for helping me navigate the sometimes competing demands of research and medical training. I am deeply thankful for the mentorship of my supervisors, Professors **Neil Cashman** and **Steve Plotkin**, from whom I have learned so much.

Next year, I'll be continuing my studies at UBC in the Radiology residency program, which I think fits well with my enthusiasm for physics and its applications in medicine. Residency will bring with it a good number of challenges and adventures, but the MD/PhD program has certainly prepared me well for them!

* * *

Congratulations, Will on the Hamber Medal. This award is awarded to the student who is head of graduating class in Medicine, MD degree, best cumulative record in all years. This award is a tremendous accomplishment for Will in addition to completing his MD/PhD degree in six years and being the youngest graduate of the program.

For more stories on Will, please refer to
<http://med.ubc.ca/getting-a-head-start/>,
<http://oncampus.macleans.ca/education/tag/great-minds/>

Class of 2013 – Kate Potter



Message from **Kate Potter**:

After a busy 8 years, it seemed almost surreal to be on a stage, in cap and gown, graduating from the MD/PhD Program! Looking around at my fellow colleagues in matching gowns, Fiona and Will, I was overcome with pride for their amazing accomplishments and the sense of collegiality amongst members of our unique MD/PhD Program. The grand finale at the end of the graduation walk on stage was a hug from our program director. It has been a great honour to spend time in an amazing program surrounded by incredible people with incredible ideas. I'd particularly like to thank **Dr. Lynn Raymond** and **Dr. Torsten Nielsen**, for their encouragement, support, and the example of mentorship they provide as busy clinician-scientists.

I was fortunate to spend my graduate years in the laboratory of **Dr. Bruce Verchere**. He has been and continues to be a great mentor and teacher. Many thanks to Bruce for the opportunity to work on such a fascinating project (islet amyloid as a cause of pancreatic islet graft failure), for inspiring creativity, and for being so open to expanding projects in diverse and interesting directions. I also owe many thanks to my labmates, in particular **Clara Westwell-Roper, Derek Dai, Joel Montane, Merce Obach** and **Paul Orban**. My keen interest in diabetes mellitus stems from our understanding of islet graft failure as similar in many regards to the pathogenesis of type 2 diabetes, in the context of type 1 diabetic islet graft recipients. My clinical years solidified further my interest in diabetes and my enjoyment of working with this population.

I am delighted to be starting a Pediatrics residency at the University of Calgary. I am excited to see where the next decade takes me, in terms of both research and pediatric subspecialties.

Thank you to all of my many colleagues, mentors, friends and family for all of your support!

Class of 2013 – Fiona Young

Fiona Young's roots lie in Montreal, Quebec, where she grew up and completed a BSc. in Biology at McGill, before venturing on to discover the wonderful things that BC has to offer. During her training at UBC, Fiona pursued her PhD in the laboratory of **Dr. Michael Hayden** at the Centre for Molecular Medicine and Therapeutics. Fiona's research focussed on Huntington Disease, she studied the role of palmitoyl-acyl transferases *in vivo* and in the pathogenesis of Huntington Disease. Her PhD thesis, based largely in genetic and molecular methodology, describes the generation of a mouse model for Huntington Interacting Protein 14 (HIP14) and various aspects of HIP14 biology, a protein thought to play a critical role in Huntington Disease pathogenesis.

On the clinical side, Fiona investigated the importance of non-English language skills in clinical practice. Focusing on French as the second-language, Fiona and three other medical students developed learning resources and workshops for students to practice history-taking in French. The project was adapted in subsequent years by other students to develop resources in additional languages and ultimately in a BC Medical Journal publication describing the initiative. Fiona had an excellent opportunity for participating at the Southern Medical Program Year III Clinical Clerkship Pilot Year in 2011-2012. In the final phase of her medical training, Fiona completed her clerkship in various cities in British Columbia.

Another great contribution from Fiona is her support of Canadian MD/PhD trainees. As a founding member (in 2006) and subsequently VP Internal and Election Officer of the Clinician-Investigator Trainee Association of Canada (CITAC-ACCFC), Fiona played a fundamental role in advocating support for clinician-investigator trainees across Canada. Fiona is also one of the founding members and current Chair of the Board of Directors for the newly formed, Canadian Transverse Myelitis Association.

During her training at UBC, Fiona received generous studentship support from the Canadian Institutes of Health Research (CIHR), in the form of the Walter and Jessie Boyd and Charles Scriver MD/PhD studentship as well as the Michael Smith Foundation for Health Research (MSFHR).

Fiona was matched to Memorial University of Newfoundland in the Obstetrics and Gynaecology Residency Training Program. She loved Newfoundland when she went there to interview, and it will be an adventure for sure!

We wish Fiona best of luck in her career.



UBC MD/PhD PROGRAM

Michael Copley - PhD Thesis Defense



Mike Copley successfully defended his thesis on 28 June 2013. His PhD research supervisor is **Dr. Connie Eaves**, Experimental Medicine Graduate Program.

Mike's dissertation was described as an "excellent thesis" by the external examiner and the examination committee. The volume and quality of the work, as well as of the written thesis meets or exceeds all international requirements.

CONGRATULATIONS!

"Regulation of Developmental Changes in Hematopoietic Stem Cell Self-Renewal"

ABSTRACT

Mouse hematopoietic stem cells (HSCs) undergo a post-natal transition in several properties, including a marked reduction in their self-renewal activity. To investigate the molecular basis of this difference, we devised a single strategy to isolate fetal and adult HSCs at similarly high frequencies. This strategy, involving fluorescence-activated cell sorting of cells with a CD45⁺EPCR⁺CD48⁺CD150⁺ (ESLAM) phenotype, allows isolation of HSCs at a frequency of ~1 in 2 from all developmental time points tested (mouse embryonic day (E) 14.5 to adult). Comparison of differentially expressed genes in primitive populations of fetal and adult hematopoietic cells showed that heightened expression of *Hmga2* was a feature of fetal as compared to adult HSCs. We also identified let-7 microRNAs (miRNAs) and a negative regulator of their biogenesis, *Lin28b*, to be expressed in an opposite and similar pattern to *Hmga2*, respectively. Since *Hmga2* is a well-established target of let-7 miRNAs, we hypothesized that the Lin28b-let-7-Hmga2 axis plays a central role in the determination of fetal versus adult HSC self-renewal identity. We also found that Lin28 overexpression in adult HSCs restores a higher, fetal-like, self-renewal potential in them, and this effect is phenocopied by direct overexpression of *Hmga2*. Conversely, HSCs from fetal *Hmga2*^{-/-} mice display a prematurely acquired adult-like self-renewal activity. Importantly, we show that Lin28-mediated activation of *Hmga2* expression, which is responsible for the activation of a fetal-like self-renewal potential in adult HSCs, is *not* the mechanism by which Lin28 reprograms adult HSCs to undergo fetal-like B-cell differentiation. Together, these findings suggest a model of development in which Lin28b acts as a master regulator and *Hmga2* serves as a more specific downstream modulator of HSC self-renewal. These findings may help inform strategies to improve the therapeutic use of HSCs. Furthermore, since *Lin28b* and *Hmga2* are oncogenes, we speculate that the fetal/neonatal specific pattern of expression of these genes may contribute to the pathogenesis of pediatric leukemias.

* * *

Mike Copley will get immersed back into clinical medicine before starting clerkships this fall. He is participating at the Rural Family Practice Clerkship (4 week practicum in rural communities) in the summer. He is placed to work with **Dr. Gregory DePape** in Port Alberni, BC starting 8 July.

Recent publication:

Copley MR, Babovic S, Benz C, Knapp DJHF, Beer PA, Kent DG, Wohrer S, Treloar DQ, Day C, Rowe K, Mader H, Kuchenbauer F, Humphries RK, Eaves CJ The Lin28b-let-7-Hmga2 axis determines the higher self-renewal potential of fetal haematopoietic stem cells. *Nature Cell Biology*. 2013.

<http://www.nature.com/ncb/journal/vaop/ncurrent/full/ncb2783.html>

Recent presentation:

Copley MR, Kent DG, Benz C, Babovic S, Wohrer S, Treloar DQ, Day CW, Rowe KM, Eaves CJ *Hmga2* expression is required for the high selfrenewal activity of fetal hematopoietic stem cells. International Society for Stem Cell Research Annual Meeting, Boston, MA, USA, 12-15 June 2013.

Daniel Woodsworth

Congratulations, **Daniel Woodsworth**, for winning a Canadian Institutes of Health Research (CIHR) Frederick Banting and Charles Best Canada Graduate Scholarship Doctoral Research Award. This award provides special recognition and support to students who are pursuing a doctoral degree in a health-related field in Canada.

Daniel's PhD research supervisor is **Dr. Robert Holt**, Genome Science & Technology Graduate Program. Daniel is interested in cell engineering: exploiting existing useful features, while adding novel functionality to create improved diagnostic and therapeutic devices. As compared to traditional molecular therapies, cells have a powerful in vivo computational capacity to sense their environment, and then select and effect an appropriate response, which makes them ideal therapeutic systems. For his PhD thesis he is working on engineering cytotoxic lymphocytes to deliver therapeutic proteins exclusively to targeted cell populations. This work involves and relies upon the fields of molecular biology, immunology, synthetic biology and adoptive cell therapy.



Daniel Woodsworth

Matthew Mayer



Matt Mayer

Matt Mayer's recent paper was determined to be within the top 10% of articles published in Journal of Immunology. "Rescue of dysfunctional autophagy attenuates hyperinflammatory responses from cystic fibrosis cells." J Immunol. 2013 Feb 1;190(3):1227-38.

<http://www.ncbi.nlm.nih.gov/pubmed/23264659>.

Matt's paper was:

1) Included in the "In This Issue" featured section of Journal of Immunology

<http://www.jimmunol.org/content/190/3/845>

2) Published as an ImmunoCast - an audio podcast where the journal editor summarizes his paper and comments on its significance

<http://www.jimmunol.org/site/podcast/ITI2013Feb01.mp3>

3) Indexed/published on MDLinx, an online news digest that disseminates "the best new literature" to physician members.

Congratulations!

MD/PhD Student Presentations (selected list)

Farzad Jamshidi and **Julia Pon** both won a Terry Fox Research Institute Trainee Travel Award for presenting their research work at the 4th Annual Scientific Meeting in Ottawa, Ontario, 9-11 May 2013.

Farzad presented his work "Genomics of Epithelioid Sarcoma: use of NGS to study forme fruste tumours".

Julia presented her work "Regulatory Networks Impacted by MEF2B mutations".

Cynthia Min presented her research projects "Recognizing uncertainty in your knowledge: The impact of response options presentation on self-monitoring accuracy" and "Improving the assessment of physician competence" at the 5th Biennial National Conference for Physician Scholars for the Social Sciences and Humanities, 13 April 2013, San Francisco, CA, USA.

Long Nguyen presented at the American Society for Clinical Investigation/Association of American Physicians Joint Meeting, 26-28 April 2013, Chicago, Illinois, USA. "Cellular barcoding of mouse and human mammary epithelial cells reveals large diversity in their in vivo regenerative activity". Long was chosen by the Faculty of Medicine as one of the UBC Delegates for the 5th Annual Canadian National Medical Students Research Symposium (CNMSRS), 4-6 June 2013, Winnipeg, Manitoba. Long presented his project "Clonal tracking studies

reveal heterogeneity in mammary stem cell potential – implications for breast cancer treatment”. Long also received a travel award for his presentation at the CNMSRS meeting. Congratulations!

Clara Westwell-Roper presented at the Keystone Symposium on Metabolic Control of Inflammation and Immunity, 21-26 January 2013, Breckenridge, Colorado, USA. She won a scholarship for her presentation, “Human islet amyloid polypeptide impairs islet function via activation of macrophage Toll-like receptor 2”. Congratulations!

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The Big Presentation – Ready or Not! Clara Westwell-Roper

I recently attended a Cell Symposium entitled *Immunometabolism: From Mechanisms to Therapy*, June 9-11, 2013 in Toronto. The goal of the meeting – co-organized by **Marc Donath** (University Hospital Basel, Switzerland) and **Diane Mathis** (Harvard Medical School) – was to bring together researchers in traditionally distinct fields to discuss immunological-metabolic crosstalk and therapeutic strategies for treating metabolic disease by targeting the immune system.

As explained to me by Dr. Donath, it is relatively easy to attract top speakers to a meeting hosted by the editors of *Cell*. Indeed, the speaker line-up was outstanding, comprised of international experts in the basic and clinical sciences who have made major contributions to our understanding of the immune system in metabolic disease. The keynote speaker was **Gökhan Hotamisligil** (Harvard Medical School), who pioneered work demonstrating an important role for adipose tissue inflammation in obesity and type 2 diabetes. Of particular relevance to my PhD project, Dr. Donath's group carried out early studies showing that pro-inflammatory pathways contribute to beta cell dysfunction in type 2 diabetes, leading to a number of recent clinical trials demonstrating improved beta cell function with anti-interleukin-1 agents in type 2 diabetes.

I made a last-minute decision to attend the symposium and managed to submit a late-breaking abstract for a poster a month or so following the submission deadline. In the two weeks before the meeting, I was particularly busy with lab work and with chaperoning the 17 grade 7-12 students on Team Greater Vancouver during a week at the Canada-Wide Science Fair in Lethbridge. Consequently, I left my poster-making for the flight to Toronto and printed my

poster the night before my session. On the second morning of the meeting, Dr. Donath asked me if I'd like to give a talk to fill the "TBD" slot in the program the following afternoon. Figuring it would be excellent exposure for my work in front of the most expert audience one could imagine, I nervously agreed and for the next several hours contemplated the evening of slide preparation ahead of me. During the subsequent coffee break, however, I learned that there had been a mistake: the TBD slot was in fact that afternoon! I then had four hours to prepare a talk that I otherwise might have spent a few days or weeks mulling over. Luckily, I had some slides ready to go from recent presentations and with the addition of some extra data was ready in a couple hours (except for the title, which I changed by sending the session chair a hastily scribbled note two minutes before he introduced me). Despite the fact that we were running 40 minutes over-time when I got up to speak at the end of the day, I was pleased with the lively question and answer session and with the ensuing conversations about my research (and post-doc opportunities!) during the rest of the meeting.

Of all the talks I have given at international conferences, this was by far the most enjoyable – there is no better way to alleviate presentation anxiety like confining it to a few hours! Lesson learned:

- (1) great talks don't have to take hours of preparation if you can focus on clear communication of material that you are excited about;
- (2) dress as though you might have to speak in front of a large room of world-renowned clinician scientists when you least expect it; and
- (3) take advantage of local opportunities to present as often and widely as possible, as you never know when the practice (and previously prepared slides) will come in handy!

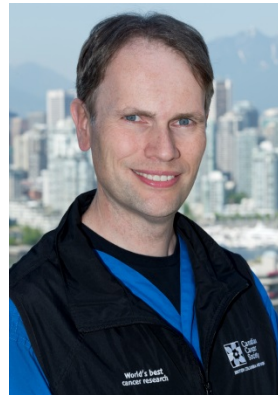
Our great thanks to Clara for sharing her valuable experience with us.

Awards

In an effort to keep pace with our amazing students, current and former Directors of the MD/PhD Program have also been the recipient of major awards. Please see links to Founding Director **Dr. Anthony Chow's** Lifetime Achievement Award from the Association of Medical Microbiology and Infectious Disease (AMMI) Canada, <http://med.ubc.ca/anthony-chow-receives-lifetime-achievement-award/> and our current Associate Director, **Dr. Torsten Nielsen's** Young Investigator Award from the Canadian Cancer Society <http://med.ubc.ca/torsten-nielsen-david-huntsman-receive-canadian-cancer-society-awards/> and UBC Killam Research Prize <http://med.ubc.ca/samuel-aparicio-torsten-nielsen-receive-killam-research-prizes/>



Dr. Anthony Chow



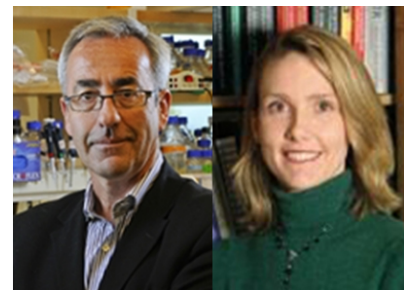
Dr. Torsten Nielsen

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

This well-established seminar series aims to illustrate the relationship that exists between clinical practice and medical research. The seminars are organized for budding clinician-scientists of the MD/PhD and Clinician Investigator Programs, which allow the trainees 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, and students in the Faculty of Medicine are invited. Our usual venue is at the Medical Student Alumni Centre, 6:00-7:00 pm, video-conferenced to Victoria, Prince George and Kelowna.

Our sincere thanks to our guest speakers, **Dr. Graeme Boniface** from Vancouver Prostate Centre and **Dr. Evelyn Stewart**, Associate Professor of Psychiatry at UBC. Dr. Boniface spoke on 23 January 2013, his talk "Translation Research, The Academic: Industry Interface" was well received by the audience. Dr. Stewart's talk was on 6 May 2013, she shared her interesting story on how she was able to build a successful clinician-scientist career and balance her workload.

For information on upcoming seminars, please visit our webpage at <http://mdprogram.med.ubc.ca/mdphd/seminars/>.

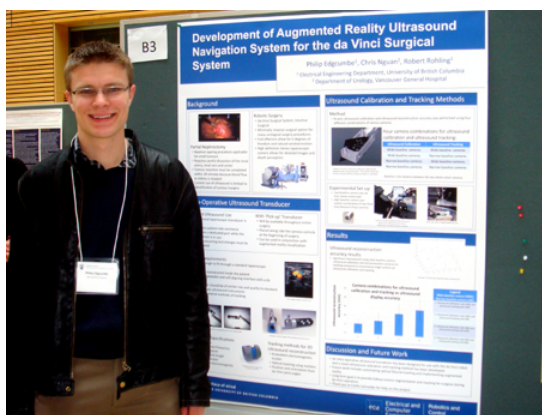


Left: Dr. Graeme Boniface
Right: Dr. Evelyn Stewart

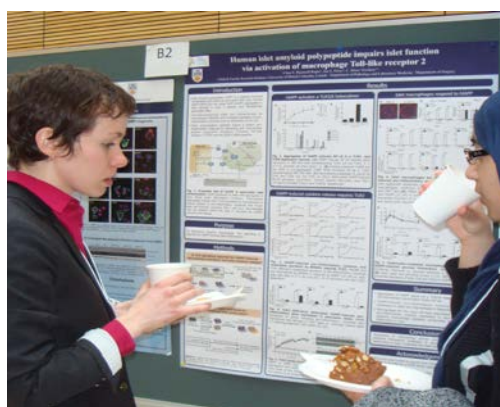
UBC Medicine Undergraduate Research Forum and Journal Release

The 9th Annual UBC Medicine Undergraduate Research Forum (MURF) and UBC Medical Journal Release events were held on Tuesday, 19 February 2013, at the UBC Life Sciences Centre. These events were co-hosted by the UBC Medical Undergraduate Society, UBC Medical Journal and the UBC MD/PhD Program. Opening remarks were delivered by **Dr. Howard Feldman**, Faculty of Medicine Executive Associate Dean in Research.

As in previous years, the research forum included a presentation from the UBC Medical Journal, a student-run academic journal with a goal to engage students in dialogue in medicine. The journal's scope ranges from original research and review articles to medical trends, clinical reports and commentaries in the principles and practice of medicine. Other activities included a panel discussion featuring clinician researchers and residents discussing the incorporation of research into residency and clinical practice, undergraduate student poster presentations, undergraduate student mini oral presentations and a research resource fair. We received over 40 submitted abstracts. This was a great opportunity to showcase the diverse range of projects being conducted by UBC students involved in biomedical health research. The event was video-conferenced to the Island Medical Program, the Northern Medical Program and the Southern Medical Program. Our sincere thanks to everyone involved in this annual event.



Philip Edgcumbe presented his research
“Development of augmented reality ultrasound navigation system for the da Vinci surgical system”



Clara Westwell-Roper (left) presented her research
“Human islet amyloid polypeptide impairs islet function via activation of macrophage Toll-like receptor 2”



2013 MURF Organizing Committee members: MD/PhD representatives
Long Nguyen (left) and **Farzad Jamshidi** (right)

UBC Clinician Investigator Program Research Day

The annual UBC Clinician Investigator Program (CIP) Research Day was held on Monday, 3 June 2013 at the Paetzold Health Education Multi-Purpose Room, Vancouver General Hospital.

The MD/PhD students were invited to present at the CIP Research Day. We welcome this good opportunity for our trainees to mingle with other residents and clinician-scientists trainees.

Philip Edgcumbe presented “Testing the daVinci surgical system for intra-operative ultrasound imaging”.

Farzad Jamshidi presented his poster “Genomic landscape of epithelial sarcoma, significance of SMARCB1 loss and insights into novel therapy”.

Clara Westwell-Roper presented “Activation of macrophage Toll-like receptor 2 by human islet amyloid polypeptide: A trigger for islet inflammation in type 2 diabetes and islet transplantation” and she won the Honorable Mention Prize for Oral Presentation. Congratulations!



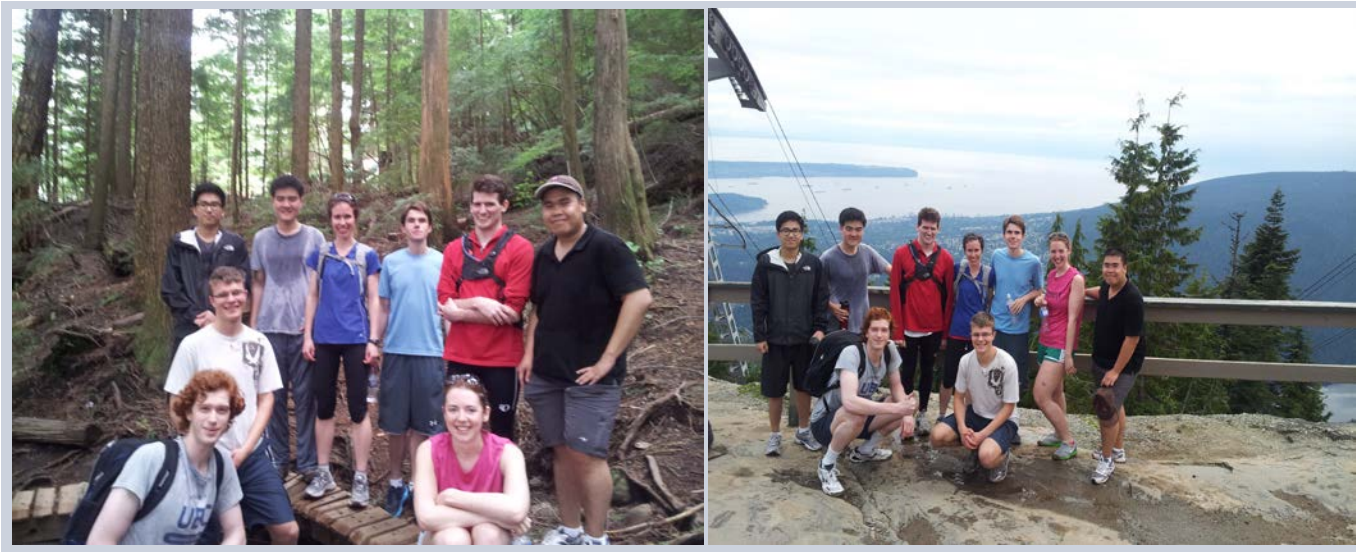
The UBC CIP is available to residents enrolled in specialty or subspecialty residency programs accredited by the Royal College of Physicians and Surgeons of Canada (RCPSC) who have demonstrated an interest in and a potential for a career as clinician investigators. For more information on the CIP, visit their website at <http://www.cipubc.ca>

Below left: **Dr. Sian Spacey**, CIP Director (left) and **Farzad Jamshidi** (right)
Below right: **Clara Westwell-Roper** at her presentation



MD/PhD Summer Social

Our MD/PhD group and guests had a social hiking event at the North Vancouver Grouse Grind -- “Mother Nature’s Stairmaster” -- on Victoria Day, Monday, 20 May 2013. Thanks to **Philip Edgcumbe** for organizing the Grouse Grind trip. Everyone had a great time. Here are the photos to share. Enjoy!



Following the hiking event, the group enjoyed a very pleasant evening at **Dr. Torsten Nielsen**’s residence in North Vancouver. The hikers got to go straight in the pool! Our Program Directors, graduates, students and their families and significant others had an enjoyable time. A highlight was a chance to say goodbye to our graduating class (Kate, Will and Fiona), and meet some of our program’s new recruits (who will be featured in the next newsletter).



Post-CaRMS Outing

After the successful matching results from the Canadian Resident Matching Service (CaRMS) were released, our recent graduates kindly joined the current students for a post-CaRMS outing. The event was held at a nice restaurant on campus. We thank our graduates for sharing their valuable experience about interviewing for residency positions all over Canada, part of the way our senior students help those in the earlier years of the program.

Clockwise: Cynthia Min, Long Nguyen, Fiona Young, Hwan Lee, Will Guest, Victor Li, Philip Edgcumbe, Kate Potter.



MD/PhD Admissions 2014

From January to March 2014, members of the MD/PhD Program Admissions and Advisory Committee will be interviewing and adjudicating an impressive cadre of short-listed applicants. Selected candidates are interviewed separately by the MD/PhD Selection Committee following initial screening in conjunction with the Faculty of Medicine Admissions Committee (who oversees a separate independent interview process using a Multiple Mini-Interview format). Each year, exceptional individuals from across the country are recruited to the UBC MD/PhD Program.

Although there are no specific undergraduate course requirements other than the medical and graduate school prerequisites, substantive prior research is essential for a strong application. The Committee assess the applicant's preparation for his/her research at UBC, as indicated by identifying a potential supervisor(s) or (for out-of-town applicants) area of research at the time the application was received, with more information expected by the time of the interview.

The UBC MD/PhD program received a record number of applications last year. We hope and expect to see a steadily increasing number of applications in the coming academic years. Our Program Director, **Dr. Lynn Raymond**, is happy to meet with prospective applicants to discuss their proposed training in the program. To schedule interviews or group meetings, please contact our Program Coordinator, at ubcmdphd@exchange.ubc.ca.

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
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