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Newsletter – Winter 2006

Message from the Director - Dr. Lynn Raymond



After four years of working together with Dr. Anthony Chow as the Co-Director of the MD/PhD Program, I am looking forward to the next five years as the Director. We are all grateful for the leadership and dedication of Dr. Chow over the past decade in building the combined MD/PhD Program at UBC.

Dr. Chow's vision of an integrated program, in which the medical curriculum is interleaved with graduate course work and research, is now well established. Over the past three years we have celebrated the graduation of the first six students from the combined program. All have entered research-intensive residency programs, continuing on the path towards a Clinician-Scientist career. Their successes confirm the effectiveness of the integrated MD/PhD Program at UBC.



In recent years the need for Clinician-Scientists has grown, along with the rapid pace of discovery in genomics, proteomics, new technologies, and many other areas that can be applied to medicine. Moving forward, cutting edge medical research requires multi-disciplinary teams that include not only basic scientists and clinicians, but also experts in bioinformatics, statistics, large scale data analysis, health care systems and other related areas. Clinician-Scientists are uniquely positioned to become leaders of such multi-disciplinary groups, as well as to execute their own translational research that will take discoveries from the lab to the bedside.

To keep pace with the expanding need for Clinician-Scientists, we plan to increase enrolment in the UBC MD/PhD Program over the next several years. The first step towards this goal has been to enlarge the funding base for MD/PhD studentships. We are very grateful to the Michael Smith Foundation for Health Research and to the four UBC-based medical research institutes: Vancouver Coastal Health Research Institute, Child and Family Research Institute, Providence Health Care and BC Cancer Agency for their commitments to supporting student stipends over the next few years (see article on page 2 for details). With this additional funding we have the opportunity to leverage funds from other research-based foundations and potentially double the number of students in our program.

In addition to expanding the MD/PhD Program we are working with other stake-holders at UBC, who are involved in promoting the training of Clinician-Scientists at the postgraduate level, in order to optimize opportunities for graduates of our program to continue in research-intensive residency training programs. As well, our students are involved in a new, nationwide initiative to improve communication between MD/PhD programs and establish networks to disseminate information on postgraduate training, funding opportunities, negotiating faculty positions with protected time for research and other information essential for success as a Clinician-Scientist.

The last decade has seen the establishment of an excellent combined MD/PhD Program at UBC. Over the next several years, we hope to see that program grow and thrive in order to train clinician researchers for the future.

MD/PhD Student Funding

The UBC MD/PhD Program works to integrate clinical and research training right from the beginning and also provides adequate financial support throughout these studies, to maximize chances that our students will continue on to successful careers combining medicine and research. Over the years, we were able to accept only a certain number of applicants per year based on the CIHR MD/PhD studentships that the UBC program was awarded. On occasion we have been able to offer students funding from other sources, but this funding is restricted to only 2 or 3 focused areas. The majority of students in the program are funded by a 6-year CIHR MD/PhD Studentship Award.

We are grateful that the Michael Smith Foundation for Health Research has made a commitment to support an additional MD/PhD student stipend through the end of August 2008. The foundation has expressed interest in an ongoing commitment to our program to support MD/PhD students in their new mandate they are developing for beyond 2008.

Our goal for the next few years is to expand the UBC MD/PhD Program to keep pace with the expansion of the UBC medical school, and to develop stable funding for additional MD/PhD studentship slots. We have received tremendous positive response from four UBC-affiliated research institutes which have committed to ongoing funding support for MD/PhD student stipends beginning in 2006-2007. Our sincere thanks go to

- **BC Cancer Agency**
- **Child and Family Research Institute**
- **Providence Health Care (St. Paul's Hospital)**
- **Vancouver Coast Health Research Institute**

The studentships will be named:

- **BC Cancer Agency-CIHR-UBC MD/PhD Studentship**
- **Child and Family -CIHR-UBC MD/PhD Studentship**
- **Providence Health-CIHR-UBC MD/PhD Studentship**
- **Vancouver Coastal Health-CIHR-UBC MD/PhD Studentship**

The pooled resources from our research institutes will give us the opportunity to offer additional slots as needed, and provide a better match between the number of funded slots and qualified applicants. Our students have historically been evenly distributed among the sites including St. Paul's Hospital, VGH/BCCA, Children and Women's Hospital, and UBC. Importantly, the pooled research institute funding will allow us the opportunity to leverage funding from external organizations.

Training Clinician-Scientists has become a priority in Canada, and recruitment and retention of physicians who make a career of research is the topic of a task force recently initiated by the CIHR. Over the past several years UBC has built a premier program for training Clinician-Scientists. With further improvements in funding we hope to increase the number of students in the program, and to further expand and build on the excellence of the program.



**Thank
you!**

Dr. Lynn Raymond presented a talk on "**The Combined UBC MD/PhD Program and the Clinician-Scientist Career**" on 7 December 2006, at the BC Cancer Agency. There was a good turnout for the talk and the audience had lots of opportunity for questions and discussion. The feedback from the audience was very positive! Potential trainees were interested in the new MD/PhD studentship funding opportunities.

UBC MD/PhD PROGRAM

Our Program

The UBC MD/PhD Program is a 7-year program specifically developed to foster the development of future clinician-investigators in the biomedical sciences. The program is unique in Canada in integrating undergraduate medical studies with PhD level research.

The program started some twenty years ago. However, the program was reviewed and revamped in 1995 under the leadership of Dr. Anthony Chow. Since then, the program has undergone a steady growth in student enrolment and faculty participation. The program has clearly flourished and matured over the years, and is gradually reaching a critical mass.

Under the new leadership of Dr. Lynn Raymond, the program continues its goals in developing and nurturing future “physician-scientists” and providing training for translational research. There are currently 13 students enrolled in the program, and we have a history of 11 alumni. Our MD/PhD students are enjoying excellent success both in their MD studies and in biomedical research. Our students do their PhD research and complete clinical training in various departments and units with the UBC Faculty of Medicine and affiliated teaching hospitals.

The MD/PhD Program has an excellent working relationship with a number of hosting departments or graduate programs over the years, including: Biochemistry & Molecular Biology, Cellular & Physiological Sciences, Experimental Medicine, Healthcare & Epidemiology, Medical Genetics, Microbiology & Immunology, Neuroscience, Pathology & Laboratory Medicine, Pharmacology & Therapeutics, among others.

MD/PhD Admissions 2007

From January to March 2007, members of the MD/PhD Program Admissions and Advisory Committee will be interviewing and adjudicating an impressive cadre of short-listed candidates. All through the years, 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 consideration of admission.

With the expansion of the UBC Undergraduate Medical Program, the UBC MD/PhD program is expecting growth in student numbers in the coming academic years.

Dr. Lynn Raymond is happy to meet with potential applicants to discuss their proposed training in the program. To schedule interviews or group meetings, please contact our Program Coordinator, Jane Lee, at ubcmdphd@interchange.ubc.ca.

Tips - Key Ingredients for Success

- ❖ Identify productive laboratory and effective supervisor:
 - collaborates well with both clinicians & basic scientists
 - lab has PhD and/or MD students, as well as postdocs
 - supportive host Department, Hospital & Institute
- ❖ Meet highest standards of clinical and research training
- ❖ Be passionate for the chosen field of study
- ❖ Learn to collaborate widely and effectively
- ❖ Think and plan well in advance
- ❖ Hone grant writing skills
- ❖ Be patient

UBC MD/PhD Student Research Forum & Open House - 11 September 2006

The seventh annual UBC MD/PhD Student Research Forum and Open House was held on Monday, 11 September 2006, at 1:00 pm, at the UBC Brain Research Centre. Opening remarks by **Dr. Lynn Raymond**, Director, UBC MD/PhD Program, set off the exciting half-day event.

Our two guest speakers, **Dr. Neil Cashman**, Professor, Department of Medicine (Neurology) and Brain Research Centre, UBC, and **Dr. John Mancini**, Director, Continuing Medical Education Program, and Professor, Department of Medicine (Cardiology), UBC, delivered talks on training and career opportunities for clinician scientists and investigators. Our sincere thanks go to them.

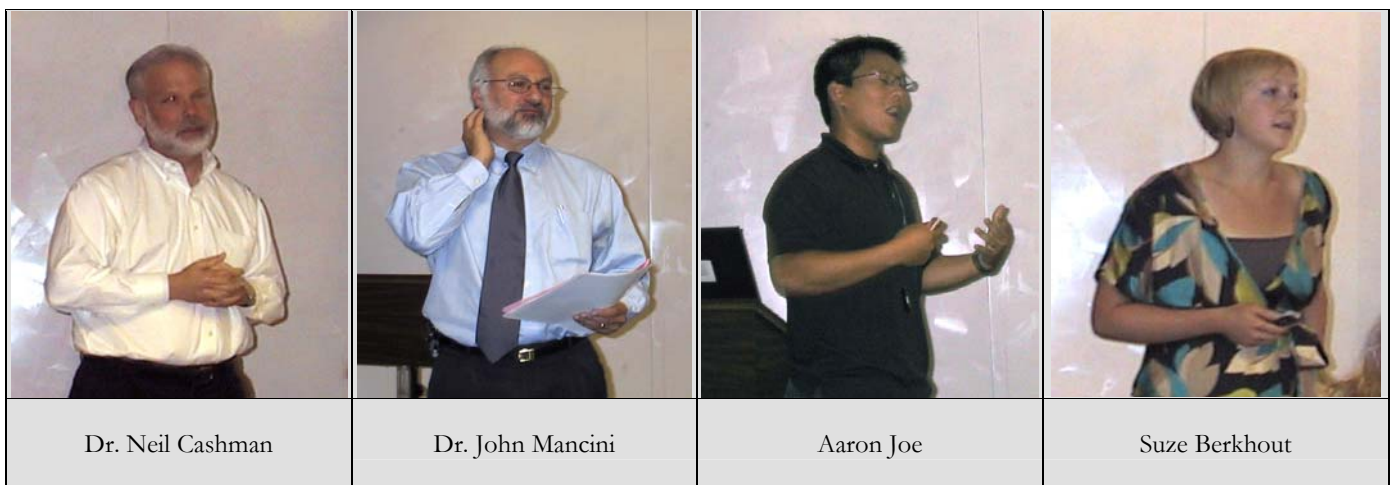
Aaron Joe, Year 4 MD/PhD student, presented a talk on “7 years? You must be crazy! An MD/PhD student’s perspective”. **Suze Berkhout**, Year 3 MD/PhD student, presented a talk on “Humanities-focused MD/PhD Programs: Thinking outside the bench”.

Potential applicants had some excellent questions and good discussion with the speakers and the current MD/PhD students.

Special thanks go to **Inna Sekirov**, Year 4 MD/PhD student, and **Fiona Young**, Year 2 MD/PhD student, for organizing the Open House and taking some great photos for us.



Dr. Lynn Raymond



Inna Sekirov - MD/PhD Student Representative

Inna Sekriov, Year 4 MD/PhD student, is the student representative and **Fiona Young**, Year 2 MD/PhD student, who will succeed Inna as the next student representative, is the alternate student representative for 2006-2007. One of the responsibilities of the student representative is to organize the MD/PhD monthly student meetings. Another major duty of the student representative is to sit on the MD/PhD Program Admissions and Advisory Committee.



Inna Sekirov

Message from Inna:

I graduated from UBC in 2003 with B.Sc. in Microbiology and Immunology. During my undergraduate studies I had a chance to work in a number of different laboratories as a summer and Co-op student, and as a result developed a passion for research. This passion, combined with my keen interest in medicine, led me to pursue a career of a clinician scientist and enroll in the UBC MD/PhD Program.

I am pursuing my PhD at the laboratory of Dr. Brett Finlay at Michael Smith Laboratories, UBC. The Finlay lab's focus is the intestinal infectious diseases, specifically *Salmonella* and pathogenic *E. coli*. The problem of these enteric pathogens is being tackled on all fronts, and my role is to study the contribution of the intestinal normal flora to the disease progression.

Normal flora is composed of archae, fungi, but most notably bacteria. In the intestinal system normal flora constituents outnumber host cells by a factor of 10, with the colon being the most heavily colonized site. Normal flora is crucial for many physiological processes: the morphological development of the gut, both gross and microscopic, proper intestinal motility, dietary processing and micronutrient availability, and the development of the intestinal immune system. Imbalances in normal flora have been implicated in a number of disease states, such as obesity, inflammatory bowel disease, cardiovascular disease and late onset autism. Unfortunately, the majority of normal flora constituents are currently unculturable, posing challenges to research.

I am looking for ways to manipulate the normal flora in defined ways with the aim of elucidating the different contributions of various normal flora constituents to colonization, virulence and induced pathology; in short trying to discern the good the bad and the ugly. When we gain a better insight into the function of our microbial residents and their interactions with the invading pathogens and our bodies, we can find ways to restore or prevent disturbed balances and create new balance points more conducive to health.

During my spare time I enjoy dancing, attending theatrical performances, and befriending any cat that comes in sight. Over the last few years I've tried out almost every conceivable kind of dance: ballroom, salsa, swing, ballet, jazz, and my latest passion – Argentinean tango. Dancing is a great way to stay fit, have fun and make new friends. It always challenges you to rise to new levels, elevates your mood and provides an excellent work-out. Taking dance classes and dancing socially has helped me to stay sane despite all the frustrations and challenges that working in the lab has to offer.

Since 2000 I have been a subscriber to the Stanley Theater. I love the Vancouver theatrical scene – the actors are amazing, capable to undertake any performance that the artistic directors throw at them, the repertoire is diverse and always very engaging. I enjoy the theater so much that during my 2nd MD/PhD year I was a props and costumes coordinator for the 2nd year play, which is put up every year to fundraise for rural practice.

The cat that most often comes into my sight these days is my cat Maslow. We've adopted him in the summer of 2005 and since then he's become a prominent family member, very loving, mischievous, demanding and endlessly adorable. He's taking up a lot of my time, giving a break to all the neighborhood cats that have been the main target of my affections till he appeared. Cats are amazing animals that personify many features that I cherish in anyone: independence and strong character combined with playfulness, charm and tenderness. And for me, listening to a cat purr will always be the ultimate way to de-stress.

Recent Publications (partial) - 2006

- Bertram J, Peacock JW, **Tan C**, Mui AL, Chung SW, Gleave ME, Dedhar S, Cox ME, Ong CJ. Inhibition of the phosphatidylinositol 3'-kinase pathway promotes autocrine Fas-induced death of phosphatase and tensin homologue-deficient prostate cancer cells. *Cancer Res* 66(9):4781-8. 2006. [PMID 16651432]
- Brunham LR**, Kruit JK, Iqbal J, Fievet C, Timmins JM, Pape TD, **Coburn BA**, Bissada N, Staels B, Groen AK, Hussain MM, Parks JS, Kuipers F, Hayden MR. Intestinal ABCA1 directly contributes to HDL biogenesis in vivo. *J Clin Invest* 116(4):1052-62. 2006. [PMID 16543947]
- Brunham LR**, Kruit JK, Pape TD, Parks JS, Kuipers F, Hayden MR. Tissue-specific induction of intestinal ABCA1 expression with a liver X receptor agonist raises plasma HDL cholesterol levels. *Circ Res* 99(7):672-4. 2006. [PMID 16946132]
- Brunham LR**, Singaraja RR, Hayden MR. Variations on a gene: rare and common variants in ABCA1 and their impact on HDL cholesterol levels and atherosclerosis. *Annu Rev Nutr* 26:105-29. 2006. Review. [PMID 16704350]
- Christie BR, Li AM, Redila VA, Booth H, Wong BK, **Eadie BD**, Ernst C, Simpson EM. Deletion of the nuclear receptor Nr2e1 impairs synaptic plasticity and dendritic structure in the mouse dentate gyrus. *Neurosci* 137(3):1031-7. 2006. [PMID 16289828]
- Kozoriz MG**, Bates DC, Bond SR, Lai CP, Moniz DM. Passing potassium with and without gap junctions. *J Neurosci* 26(31):8023-4. 2006. [PMID 16888836]
- Kozoriz MG**, Kuzmiski JB, Hirasawa M, Pittman QJ. Galanin modulates neuronal and synaptic properties in the rat supraoptic nucleus in a use and state dependent manner. *J Neurophysiol* 96(1):154-64. 2006. [PMID 16611841]
- Langlois S, **Yong PJ**, Yong SL, Barrett I, Kalousek DK, Miny P, Exeler R, Morris K, Robinson WP. Postnatal follow-up of prenatally diagnosed trisomy 16 mosaicism. *Prenat Diagn* 26(6):548-58. 2006. [PMID 16683298]
- Noubir S, **Lee JS**, Reiner NE. Pleiotropic effects of phosphatidylinositol 3-kinase in monocyte cell regulation. *Prog Nucleic Acid Res Mol Biol* 81:51-95. 2006. [PMID 16891169]
- Olson AK, **Eadie BD**, Ernst C, Christie BR. Environmental enrichment and voluntary exercise massively increase neurogenesis in the adult hippocampus via dissociable pathways. *Hippocampus* 16(3):250-60. 2006 [PMID 16411242]
- Sekirov I**, Finlay BB. Human and microbe: united we stand. *Nat Med* 12(7):736-7. 2006. [PMID 16829917]
- Shih AY, Fernandes HB, Choi FY, **Kozoriz MG**, Liu Y, Li P, Cowan CM, Klegeris A. Policing the police: astrocytes modulate microglial activation. *J Neurosci* 26(15):3887-8. 2006. [PMID 16611803]
- Singaraja RR, Van Eck M, Bissada N, Zimetti F, Collins HL, Hildebrand RB, Hayden A, **Brunham LR**, Kang MH, Fruchart JC, Van Berkel TJ, Parks JS, Staels B, Rothblat GH, Fievet C, Hayden MR. Both hepatic and extrahepatic ABCA1 have discrete and essential functions in the maintenance of plasma high-density lipoprotein cholesterol levels in vivo. *Circ* 114(12):1301-9. 2006. [PMID 16940190]
- Singaraja RR, Visscher H, James ER, Chroni A, Coutinho JM, **Brunham LR**, Kang MH, Zannis VI, Chimini G, Hayden MR. Specific mutations in ABCA1 have discrete effects on ABCA1 function and lipid phenotypes both in vivo and in vitro. *Circ Res* 99(4):389-97. 2006. [PMID 16873719]
- Wickham ME, Lupp C, Mascarenhas M, Vazquez A, Coombes BK, Brown NF, **Coburn BA**, Deng W, Puente JL, Karmali MA, Finlay BB. Bacterial genetic determinants of non-O157 STEC outbreaks and hemolytic-uremic syndrome after infection. *J Infect Dis* 194(6):819-27. 2006. [PMID 16941350]
- Yong PJ**, Langlois S, Dadelszen P, Robinson W. The association between preeclampsia and placental trisomy 16 mosaicism. *Prenat Diagn* 26(10):956-61. 2006. [PMID 16874839]

3rd Annual MUS Medical Student Research Forum - 15 November 2006

The 3rd annual MUS Medical Student Research Forum was held on Wednesday, November 15, 2006, at 7:00 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. This was the first time ever this event was video-conferenced to the Northern Medical Program (NMP) and the Island Medical Program (IMP). There were a record number of abstract submissions (38 in total) and a full house at the MSAC of 32 poster presenters plus two students who broadcasted their research from Prince George to Vancouver.



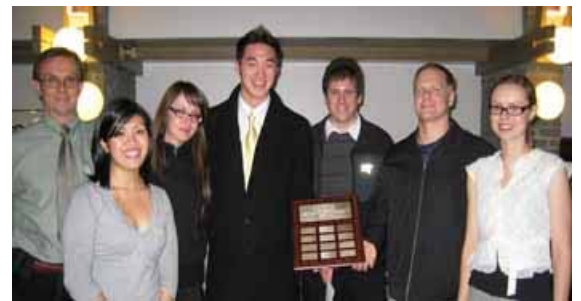
Dr. Bruce McManus



Dr. Clara Tan

The two outstanding keynote speakers were our very own **Dr. Clara Tan** (UBC MD/PhD Class of 2006 and current R1 Surgical Resident) and **Dr. Bruce McManus** (Professor, Department of Pathology & Laboratory Medicine, UBC & Director, iCAPTURE Centre, Providence Health Care, UBC). They presented interesting talks on their lives in the clinic and in research.

The Forum was well-attended with approximately 50 students (3 from Prince George) and 7 faculty members at the event. Our special thanks go to **Dr. Bruce Fleming**, Associate Dean, MD Undergraduate Program, Student Affairs, for his support of this event since its first year and our panel of judges: **Drs. Alison Buchan, Angela Towle, Susan Porter, Claudia Krebs, Brian Conway, and Bruce McManus.**



Dr. Bruce Fleming (left) and the prize winners.

While every presenter at the event was a winner, those that were chosen to receive prizes at the event were:

MD winners: Patrick Yang (MD 09), Elizabeth Roy (MD 09)

Open winners: Michael Kozoriz (MD/PhD I), Aaron Pelman (MD 10)

MD Honourable mentions: Andrea Butler (MD 09), Chris Zappavigna (MD 09)

Open Honourable mentions: Karen Tran (MD 10), Christine McDonald (MD 10)

Well done, everyone!



Michael Kozoriz

Michael Kozoriz, Year 1, MD/PhD student, presented his research project entitled, "Potassium Uptake by Astrocyte Mitochondria" and won a prize. Congratulations, Mike. Mike is completing the PhD portion of his MD/PhD degree with the Department of Cellular & Physiological Sciences, under the supervision of Dr. Christian Naus.

Other MD/PhD students who presented were **Claire Heslop** (Year 3), **Suze Berkhout** (Year 3), **Kate Potter** (Year 2).

Thanks go to **Fiona Young**, Year 2, MD/PhD student, and **May Tee** (MD 08) for organizing the Forum. Thanks also go out to Claire, Suze, as well as Kate, who helped a lot with the food and wine. Suze did a great job of organizing the food and drinks, as well as gifts for speakers!

CSCI/CIHR Joint Program: Young Investigators Forum, Ottawa, September 2006



Arezoo Astanehe



Claire Heslop

UBC was very well represented at the CSCI Young Investigator Forum 2006 in Ottawa. Nine current MD/PhD students were selected to present their outstanding research projects!

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Congratulations go to **Arezoo Astanehe** (left) who won the Best Oral Presentation Award and to **Claire Heslop** (right) who won the Best Poster Presentation Award.

★ ★ ★

Arezoo Astanehe is a Year 2 MD/PhD student and is completing the PhD portion of her MD/PhD degree with the Experimental Medicine Graduate Program, under the supervision of Dr. Sandra Dunn. Arezoo did an excellent oral presentation on her research project entitled, “p53 Regulates *PIK3CA* Transcription and PI3K Activity in Benign and Malignant Ovarian Surface Epithelial Cells”.

Claire Heslop is a Year 3 MD/PhD student and is completing the PhD portion of her MD/PhD degree with the Department of Pathology & Laboratory Medicine, under the supervision of Dr. John Hill. Claire won the poster award on her research project entitled, “CRP Gene Polymorphism Predicts Mortality in Patients with Coronary Artery Disease”.

Congratulations! Other MD/PhD students who presented were: Suze Berkhout, Brennan Eadie, Heather Heine, Aaron Joe, Kate Potter, Inna Sekirov and Fiona Young.



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, D25 - Heather Pavilion East, 2733 Heather Street, VHHSC, Vancouver, BC Canada V5Z 3J5. Phone: 1-604-875-5063. Fax: 1-604-875-4013. Email: ubcmdphd@interchange.ubc.ca. Website: <http://www.med.ubc.ca/mdphd>

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