University of British Columbia
M.D./Ph.D. Program

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Newsletter – Summer 2006

★ ★ ★ Dr. Anthony Chow – Happy Retirement ★ ★ ★

Our Thriving MD/PhD Program – from Dr. Anthony W. Chow

As I watched four of our MD/PhD students (Clara Tan, Claire Sheldon, Paul Yong and Jimmy Lee) step onto the podium to receive their MD/PhD dual degree from President Martha Piper during convocation this May, I could not repress a sense of immense pride and fulfillment. It was somewhat of a crowning moment, not just for myself, **Dr. Lynn Raymond** and **Jane Lee**, the visible management team of the UBC MD/PhD Program, but also for a whole lot of other people who believed in and actively supported the Program right from its inception in 1994. It was **Dr. Martin Hollenberg**, former Dean of Medicine, who had the vision and honored me with the privilege and responsibility to revitalize and refocus the UBC Program for training clinician-scientists with a serious commitment to translational research in the health sciences. It was **Drs. John Grace** and **Kenneth Craig**, former Dean of Graduate Studies and Associate Dean of Admissions, respectively, and their capable administrator, **Katriona MacDonald**, who worked hard in laying the foundation for and integration of the MD/PhD Program within the Faculty of Medicine and the Faculty of Graduate Studies. **Dr. Andrew Chalmers**, former Associate Dean of Undergraduate Curriculum, and **Dr. Angela Towle**, the current Associate Dean, pioneered in the modular design of the undergraduate curriculum that permitted a closer integration of medical studies with thesis research. **Drs. James Carter** and **Joanna Bates**, former Associate Dean Admissions, and **Dr. Vera Frinton**, the current Associate Dean, expedited a fair and transparent process for MD/PhD applicant interviews and admissions. **Dr. Susan Porter** and her predecessor **Dr. Joanne Emerman**, in their role as Associate Dean Graduate Education, were invaluable by providing much needed travel funds for MD/PhD students to attend annual meetings and present their research findings to their peers nationally and internationally. **Drs. Andrew Seal** and **Bruce Fleming**, former and current Associate Dean Student Affairs, respectively, provided constant moral support and advice for our students during their protracted undergraduate years. **Donna Rota**, Administrative Director, and her staff in the **Undergraduate Medical Education Office** worked indefatigably to accommodate the extra-ordinary course requirements of individual MD/PhD students. Of course, the Program could not have flourished without the tireless efforts of the MD/PhD Advisory Committee members who interviewed and selected the successful applicants each year, and the various Graduate Advisors of hosting departments and their faculty members who eagerly took on our MD/PhD students and provided an outstanding environment for translational research. We are particularly indebted to **Dr. Frieda Granot,** former Dean of Graduate Studies, and **Dr. Ann Rose**, Associate Dean Student Academic Services, who ensured that MD/PhD students enjoy the care and attention in all aspects of academic services, culminating in a special graduation ceremony for MD/PhD students during convocation, a historic event for UBC. We are deeply indebted to **Dr. John Cairns**, former Dean of Medicine, who allocated

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valuable resources during critical times to allow the financially fragile Program to take root during its formative years. We are of course most grateful to the **Canadian Institutes of Health Research**, **Michael Smith Foundation for Health Research**, and the **Research Institutes of Vancouver Coastal Health, Providence Health Care**, and the **Child & Family Research Institute** for their continuing funding support of the Program, either in the form of MD/PhD studentships, top-up awards, or infrastructure grant-in-aids. We are delighted that **Dean Gavin Stuart** has pledged continuing support of the Program, and has established a formal search for the next Director of the UBC MD/PhD Program. I am deeply grateful to Dr. Lynn Raymond for agreeing to serve as the acting Director upon my retirement on July 1, 2006, until the search process for a new director has been completed. It has been a labour of love in the past 12 years for a whole lot of people, and it is a cause for celebration to see it come to fruition as exemplified by the spectacular successes of our MD/PhD students. The remaining challenge is for our Universities and health care system to continue to nourish and support the clinical and research training of our graduates, and their development into independent investigators, our future leaders of evidence-based health care and delivery in Canadian Medicine.

Dr. Lynn Raymond – MD/PhD Program Director

We are grateful to Dr. Chow for developing the integrated MD/PhD Program at UBC. He has done a tremendous job of coordinating efforts with stakeholders in the Faculty of Graduate Studies, Faculty of Medicine and the numerous departments that have hosted our MD/PhD students over the past 10 years. Under Dr. Chow's leadership, the UBC program has gained a reputation of excellence for the many awards and achievements of our students, and their overwhelming success in completing the dual degree program in seven years. We look forward to following their successes in future years as they complete postgraduate training and become leaders in translational research. Again, many thanks and best wishes to Dr. Chow in his retirement.

As co-Director for the past 4 years, I have learned a great deal from Dr. Chow and will continue to serve as acting Director pending Dean Stuart's review and formal appointment process for the next Director. Importantly, Jane Lee will also remain in the Program Coordinator position; her expert organizational and communication skills keep the program running efficiently. In the next few years, I see the UBC MD/PhD Program continuing to show leadership and excellence through the accomplishments of our students, and expanding enrolment to keep pace with the expansion of the Undergraduate MD Program. To accomplish this, we will work to establish new funding partners for student stipends. The Clinician-Scientist pathway has become a priority at the federal and provincial government levels, and we will work together with the Medical School and provincial organizations to ensure that the UBC MD/PhD Program is well-supported.

Dr. Lynn Raymond is Professor in Psychiatry (Neurological Sciences), Associate member of Department of Medicine (Neurology) and Department of Physiology, CIHR Investigator and MSFHR Senior Scholar.

As a neurologist, Dr. Raymond's special interest is in Huntington disease (HD). Her research interest is in basic mechanisms underlying HD as well as stroke, especially the role of glutamate receptor activity and regulation. Dr. Raymond is the Director of the UBC Huntington Disease Medical Clinic.

The MD/PhD Program staff and students are very grateful that Dr. Raymond has agreed to take on the responsibility as acting Director of the MD/PhD Program as of 1 July 2006. As a star role model for our students, Dr. Raymond has been actively involved with the MD/PhD Program since its inception and has also sat on the MD Admissions Committee. Dr. Raymond will bring a fresh perspective to the Program.

BEST WISHES

To: Dr. Anthony Chow
From: MD/PhD Students & Alumni

You have brought great success to the UBC MD/PhD Program through an enormous amount of hard work and enthusiasm. You have been such a wonderful mentor for us, and we cannot tell you enough how much we appreciate your support and guidance. Thank you very much for everything you have done for us!! We wish you all the best in your future endeavours, and enjoy.

A celebration of
the UBC MD/PhD Program
in honour of the retirement of the
Director, **Dr. Anthony Chow**
was held on 9 June 2006

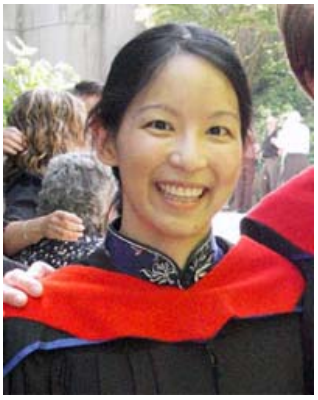
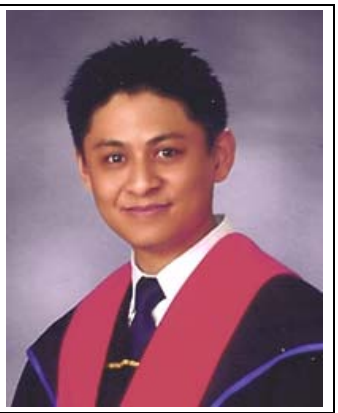
The party also celebrated
the graduation of
Jimmy Lee, Claire Sheldon, Clara Tan and Paul Yong.
Congratulations!

UBC MD/PhD PROGRAM

Our Graduates 2006

From left: Drs. Clara Tan, Claire Sheldon, Paul Yong, Jimmy Lee and Anthony Chow.

We could not be more proud of this bumper crop. C o n g r a t u l a t i o n s !

			
Jimmy Lee, MD/PhD	Claire Sheldon, MD/PhD	Clara Tan, MD/PhD	Paul Yong, MD/PhD

Jimmy Lee, MD/PhD

I completed my PhD in Dr. Neil Reiner's laboratory, investigating the role of the lipid kinase PI3K, in mediating human monocyte functions. The project had many challenges, one of which was to genetically silence an isoform of this kinase in order to study its function more precisely. Eventually, by combining a lentiviral vector approach with RNA interference technology, I was able to do this and then complete my project. Overall it was an interesting experience, and I am very pleased about having gone through the MD/PhD Program. Now I am looking forward to imaging research, which I intend to pursue as a radiologist in the future. Currently, I am doing a year of neuroimaging research as a post-doctoral fellow at UBC, and then enter residency training next year. My current project includes multiple sclerosis imaging and studying the effects of hydration state on magnetic resonance imaging of the brain.

Claire Sheldon, MD/PhD

Wow! It hasn't quite sunk in that my journey through the UBC MD/PhD Program has reached completion. I cannot believe how much work was involved, how much was accomplished, how much I truly enjoyed it and how fast the time went. Wow! As I reflect, this occasion is sprinkled with feelings of accomplishment, sadness and excitement. I began the MD/PhD Program at UBC in 1999 and completed my PhD under the priceless supervision of Dr. John Church in the Department of Cellular & Physiological Sciences. Thinking back, I didn't know truly what I was getting myself into. I was simply (and, perhaps, naively) hanging onto a genuine interest in cellular neurophysiology and a desire to interact with patients and participate in clinical medicine. I was happy that I had found a program that allowed me to combine these ambitions. However, I certainly didn't realize the level of commitment, determination and drive that was required to complete the program (and to do so with a smile on your face). At times, people said I was foolish, glutton for punishment and should re-consider my decision. Nevertheless, at this point, I am proud and enjoy a certain sense of accomplishment. Honestly though, it sometimes baffles my mind that I have this degree - somehow I thought that I would feel smarter.

My feeling of sadness extends from the realization that my time with the MD/PhD Program, as all good things do, has come to an end. I will look back on the past seven years very fondly. To, Drs. Tony (T-Dog) Chow and Lynn Raymond, my sincerest thanks for your unfaltering support, guidance and friendship. To Jane, your co-ordination and organizational skills are no less than phenomenal and you can always be counted on for a smile and pleasant conversation. To my colleagues, I owe you a debt of gratitude - the awareness that I was not alone on this journey was invaluable. Although a small program, the MD/PhD Program enjoys a powerful sense of community and unity.

Finally, the excitement is building for the upcoming adventure. Even now, I am still hanging onto a fundamental fascination for research and clinical medicine and am extremely excited to be moving onto residency training in Ophthalmology here at UBC. I look forward to this challenge and am determined to excel in the clinical and research arenas of Ophthalmology. "I know quite certainly that I have no special gift. Curiosity, obsession and dogged endurance have brought me my ideas" (Albert Einstein).

In sum, I wouldn't have changed a thing.

Clara Tan, MD/PhD

Time flies when you are having fun[1]. The MD/PhD Program has been a fantastic trek full of trials, tears and sweat (literally), failures and successes, but above all, lots of fun.

I would especially like to thank CIHR, UBC Faculty of Medicine, Jean C Barber (Vancouver) Lodge staff, Tony Chow, Lynn Raymond, Shoukat Dedhar, Alice Mui, Jane Lee, my parents (who have been waiting a long time for me to get a job) and my fellow national and international lifelong learners (especially G.P., S.M., P.Y., A.S. & my labmates) for providing me with opportunities, support and resources throughout my journey of acquiring this MD/PhD. Most of all, thank you for believing in my abilities, and giving me the opportunity to be surrounded by inspiring philanthropists, surgeons, doctors, scientists and artists, who continue to show me how much more there is to experience, learn, read and do – if only there were more hours in a day.

Both excited and afraid, I hope to be well equipped with the drive and gumption of James Barry, Jessie Gray and Mary Walker to start building an ever-exciting career full of learning, discovery, teaching, research and fun. I look forward to facing the new challenges and responsibilities of a surgical residency, and to being part of a team interested in developing higher standards of illness prevention and health care.

It has been a year full of many decisions, including the commitment to continue an already wonderful and loving relationship with my tortured thesis editor and best friend, Eric Tam, who has supported most of my nonsensical ambitions and projects, and will be there when I face old age and illness, as I will for him. What more could I ask for? Universal kindness and compassion, or perhaps just more frequent access to the mountains of the North Shore, the reefs and beaches of the Perhentian and Hawaii's Big Islands, and the kitchens in PoCo, Bellevue, Gurney Drive and the Mission.

[1]Chaston, A and Kingstone, A. Time estimation: the effect of cortically mediated attention. (2004) Brain Cogn.; 55(2):286-289.

Paul Yong, MD/PhD

I will be doing a residency in Obstetrics & Gynaecology at UBC. It is an honour to be able to pursue this specialty here in Vancouver, and I hope to contribute in some small way to the health of women and their children and families in British Columbia and also worldwide. Some future clinical and research interests include: pregnancy complications related to abnormal development of the placenta (e.g. in pre-eclampsia), Down syndrome, and international health. I owe many thanks to family, friends, and mentors in research and medicine; to the Canadian people for their investment in health care and health research; and to the MD/PhD Program, the UBC Faculty of Medicine and Faculty of Graduate Studies, the Michael Smith Foundation for Health Research (MSFHR), and the Canadian Institutes of Health Research (CIHR), for making my career possible.

MD/PhD Award Winners

Congratulations go to **Paul Yong** and **Aaron Joe** for winning the Subspecialty Awards at the annual Western Student Medical Research Forum meeting in Carmel, CA, 1-4 February 2006. Paul and Aaron are among 21 subspecialty winners based on abstracts submitted by nearly 360 graduate students, medical students and residents representing 18 western Medical Schools.

PROTEIN KINASE EXPRESSION PROFILING IN HUMAN TRISOMY: GENE DOSAGE AND AMPLIFIED INSTABILITY

PJ Yong[1,4], DE McFadden[2], CD MacCalman[3], WP Robinson[4]
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[4]Department of Medical Genetics, University of British Columbia, Vancouver, BC

INTRODUCTION: Trisomy is the cause of Down syndrome (trisomy 21), and is present in one in four spontaneous abortions (SAs), the most frequent (5-10%) being trisomy 16. In the gene dosage hypothesis, the trisomic phenotype is due to overexpression of specific genes on the trisomic chromosome, such that different trisomies will have different patterns of gene expression. In the amplified instability hypothesis, the trisomic phenotype is due to the extra chromosome disrupting cellular homeostasis non-specifically (i.e. regardless of chromosome type), which causes an amplified sensitivity to inter-individual environmental and genetic variation, such that trisomy will show increased inter-individual variability in gene expression. METHODS: Protein kinases (n = 75), fundamental components of signal transduction, were profiled in placental chorionic villus cultures from 1st-trimester SAs: trisomy 16 (T16) (n = 3), trisomy 15 (T15) (n = 3), and euploid (Eu) (n = 4). Protein and RNA expression were profiled with a 2D Western blot and 14,000 oligonucleotide array. Immunochemistry showed all cultures consisted of fibroblasts. Maternal decidual contamination was ruled out by microsatellite PCR. RESULTS: At the protein level, 7 kinases had significantly different expression ($p < 0.05$) in T16 vs. Eu (CDK1, CDK7, PKC-ε, PKG1, ERK1, S6K p70, IKK-α), of which 2 were also different in T15 vs. Eu (S6K p70, IKK-α). Seven kinases were only different in T15 vs. Eu (CK1-ε, SRC, CDK9, DNAPK, MEK2, PKC-z, PKC-β). Interestingly, 13 of these total 16 differences involved lower expression in the trisomy (Sign test, $p = 0.021$). For the kinases with genes on chromosome 16 or 15, only ERK1 (16p11) was significantly overexpressed (at both the RNA and protein levels) in the trisomic state. In addition, the coefficient of variation (V) was used to quantify inter-individual variability in gene expression. At the protein level, V was significantly higher in T16 ($V = 0.49$) and T15 ($V = 0.52$) compared to Eu ($V = 0.28$) (both $p < 0.001$); but at the RNA level, V was lower in T16 ($V = 0.19$) and T15 ($V = 0.25$) compared to Eu ($V = 0.32$) ($p < 0.001$, $p = 0.02$). CONCLUSIONS: The differential expression pattern between T16 and Eu, distinct from the pattern between T15 and Eu, as well as the dose-related increase in ERK1 expression in T16, support the gene dosage hypothesis. The high V for both trisomies at the protein level supports the amplified instability hypothesis, although it was not initiated at the RNA level, suggesting a (post)-translational origin. This study provides evidence that the mechanisms of gene dosage and amplified instability can operate simultaneously in human trisomy.

A CLONAL, HIGH-THROUGHPUT ASSAY FOR THE OPTIMIZATION AND CHARACTERIZATION OF MESENCHYMAL STEM CELLS

A Joe[1, 2], F Rossi[2]
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[2]Biomedical Research Centre, University of British Columbia, Vancouver, BC

INTRODUCTION: Mesenchymal stem cells (MSCs) can be derived from adult bone marrow and have been shown to differentiate into cells of connective tissues such as ligament, tendon and bone. Characterization of mesenchymal stem cells (MSCs) has proven difficult because there is little consensus regarding MSC phenotype. In addition, current MSCs are derived from methods that result in heterogeneous MSC populations, making the study of their basic biology difficult. Furthermore, it is unclear whether currently-isolated MSCs can provide sustained regeneration and remodelling in vivo. We aim to address these issues in an effort to isolate the ideal MSC for potential clinical use. Specifically, we propose the following: 1) to optimize methods for MSC harvest and expansion; and 2) to develop a clonal assay to determine the multipotentiality and expandability of MSC populations in vitro. We aim to develop a high-throughput screen using small volumes in 96- or 384-well plates that will allow direct comparison between various differentiating cells. This project constitutes an important component of an interdisciplinary collaboration that aims to produce a MSC-driven, biomaterials-based, regenerative therapy for revision total hip replacement surgery with severe osteolysis. METHODS: We will develop protocols to enrich for MSCs from primary tissue culture and will assess the clonogenicity of each cell population. Single cells will be isolated, and those that form colonies will be further assessed for mesenchymal multipotentiality by culture in various differentiation media. Cell differentiation will be analyzed by histology, and RT-PCR and western blot analysis of lineage-specific gene products. PRELIMINARY RESULTS: We have isolated and characterized bulk MSC cultures and have assessed their multipotentiality using an RT-PCR-based differentiation assay. We are currently developing a method for MSC enrichment using cell surface markers, and are in the midst of assessing single-cell derived colonies for self-renewal, proliferation and differentiation along the mesenchymal lineage.

MD/PhD Award Winners

Congratulations go to **Suze Berkhout**, **Liam Brunham** and **Kathryn Potter** for winning the Michael Smith Foundation for Health Research (MSFHR) Doctoral Trainee Incentive Award. These awards provide top-up for our students who also hold concurrent CIHR MD/PhD Studentship Awards.

MD/PhD Student	Supervisor	Research Project Title
Suze Berkhout	Dr. Mark Tyndall	Life at the margins: understanding social determinants of HIV/AIDS on women's health through multidisciplinary translational research
Liam Brunham	Dr. Michael Hayden	Tissue specific functions of ABCA1
Kathryn Potter	Dr. Bruce Verchere	Role of amyloid in failure of transplanted human islets


Suze Berkhout


Liam Brunham


Kathryn Potter


Clara Tan

Kathryn Potter won a CIHR-Rx&D MD/PhD Studentship award. She will receive an annual stipend of $21,000, and a yearly research and travel allowance of $1,000. The award is for six years, beginning 1 July 2006. Congratulations!!

Clara Tan won a UBC Faculty of Medicine Travel Award $1000. This award is to assist outstanding MD undergraduates with expenses related to an attendance at an official conference or symposium at which the student presents a paper or poster. Congratulations!!

★ ☆ Liam Brunham ☆ ★

Liam Brunham has his first cover!

One of Liam's recent first-authored publications was chosen as the cover article in the Journal of Clinical Investigation, April 2006 issue.

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.

Congratulations, Liam! That is an awesome cover, the article is also brilliant.

Lipoprotein biogenesis

★ ☆ Bryan Coburn ☆ ★

Congratulations go to **Bryan Coburn**, who successfully passed his PhD thesis defense on Wednesday, 31 May 2006, with flying colors! Bryan made a beautiful presentation and answered all questions well; his written thesis was outstanding and overall received a category "1". Not only did the external examiner give the thesis a serious thumb up, as did the entire examination committee. Is it an outstanding thesis, it turned dogma on its head, and has profound implications in rethinking the field.

Bryan is one of our senior students; he has always been an excellent role model for the more junior students in the Program. Bryan joined the MD/PhD Program in 2001. His PhD research supervisor is Dr. Brett Finlay, in the Department of Microbiology & Immunology. During academic year 2005-2006, Bryan served as the MD/PhD student representative on the MD/PhD Advisory Committee. His unfailing effort in supporting the Program and the students is highly appreciated.

We are very proud to share Bryan's research interest with everyone. Great work, Bryan!!

CONGRATULATIONS!!

Bryan Coburn – PhD Thesis

"Novel Overlapping Roles of Salmonella Pathogenicity Islands 1 and 2 in Intestinal Salmonellosis"

ABSTRACT

Non-typhoidal Salmonella species are a significant cause of human diarrheal disease, incurring worldwide morbidity and mortality. The prevailing dogma arising from animal models of Salmonella enteropathogenesis is that the virulence associated genomic regions, Salmonella pathogenicity island (SPI) -1 and SPI-2, are essential for intracellular invasion/intestinal disease and intracellular survival/systemic disease, respectively. This paradigm partly reflects limitations of animal models currently used to study in vivo pathogenesis. In this thesis, a new model of murine Salmonella enteropathogenesis is presented which allows a novel examination of this theoretical dichotomy. Using this model, SPI-2 was shown to be required for complete enteropathogenesis in Salmonella enterica serovar Typhimurium infection. In addition, murine and bovine intestinal inflammation was identified in the absence of SPI-1, previously thought to be essential for intestinal disease. These findings are corroborated in human disease by the identification of a SPI-1 deficient human clinical diarrheal Salmonella enterica isolate. These strains were isolated from patients affected with severe diarrheal disease in Shenzhen, China. These are the first findings that demonstrate that SPI-2 is required for intestinal pathogenesis early in murine infection, and that SPI-1 is dispensible for enteropathogenesis in animal and human infections with S. enterica. These observations indicate that disease models, diagnostic and therapeutic approaches predicated on the requirement for SPI-1 in intestinal disease do not accurately describe intestinal salmonellosis.

PhD Candidacy

Inna Sekirov and **Aaron Joe** passed their PhD Comprehensive Examination in April and June 2006, respectively, and have been admitted to PhD candidacy. Congratulations!!

The basic requirements for a doctoral student to be admitted to candidacy are:

- all required course work has been successfully completed;
- the comprehensive examination has been passed ;
- the research supervisory committee has certified that the thesis proposal has been approved.

Inna's research proposal is entitled:
The role of the intestinal microbiota in host response to enteric pathogens.

Aaron's research proposal is entitled:
The developmental hierarchy of mesenchymal progenitors in skeletal muscle.

Claire Heslop

Claire Heslop is our MD/PhD student representative at the Faculty of Medicine meetings (2005-2006). Claire serves as a voting member at the meetings. She is invited to the full faculty meetings during the academic year and is eligible to vote in the annual standing committee selections. Thanks, Claire.

Aaron Joe

Aaron Joe is the new Western Student Medical Research Forum (WSMRF) UBC MD and MD/PhD student representative, effective 2006. Thanks, Aaron.

Thanks go to **Clara Tan** who served as the student representative at the forum over the past few years.

Rural Practice

Liam Brunham and **Bryan Coburn** will be participating in the Rural and Underserved Community Family Practice Program (4 week practicum in rural communities) in the summer of 2006. Bryan will be working with Dr. Stephen Burns in Powell River in June. Liam will be going to Gibson's to work with Dr. Andrea Stinson in August. Both of them will get immersed back into clinical medicine before starting clerkships in the end of August 2006.

Research Trip to Chicago

Four MD/PhD students presented their outstanding research projects at the American Physician Scientists Association (2nd Annual Meeting), Chicago, in April 2006.

Liam Brunham	Critical role of ATP-binding cassette transporter A1 (ABCA1) in Beta cell function
Bryan Coburn	Severe human diarrhea caused by Salmonella pathogenicity island-1 deficient Salmonella enterica
Claire Heslop	Association between inflammatory gene haplotypes and mortality in patients with coronary artery disease
Inna Sekirov	The role of intestinal microbiota in host response to enteric pathogens

MD/PhD Students - Kudos

Liam Brunham, **Kathryn Potter** and **Fiona Young** performed at the Spring Gala on Sunday, 2 April 2006, at the UBC Chan Centre. The Gala is a fund raising event and a night of performance arts by the UBC Medical and Dental students. Our MD/PhD students have been actively participating in this annual event.

Liam played his classical guitar and sang a song "Recuerdos de la Alhambra" (photo: left).
Kathryn sang in the Med Choir. She is second from the left in the top row (photo: centre).
Fiona was in the group that she played Violin accompaniment with. The group played Bach's Double Violin Concerto in D Minor and Fiona was second Violin there (photo: right).

BRAVO!!

The Medical Overseas Research and Electives (M.O.R.E.) group at UBC's medical school hosted a conference entitled "Toward Equity in Global Health: The Status of Women's Health, Beijing + 10" on 3 & 4 March 2006.

For the past four years M.O.R.E.s' has hosted an annual, 'Towards Equity in Global Health,' Conference addressing issues such as: indigenous health, conflict, poverty, pharmaceutical industry influences, and human rights. The 2006 M.O.R.E. conference focused on women's health, critically evaluating the social, cultural and institutional obstacles which result in women being disproportionately vulnerable to worse health outcomes.

As members of the conference organizing committee, MD/PhD students **Liam Brunham** and **Suze Berkhout**, helped to make sure the conference was a success. Suze Berkhout stepped out of her role as a student and into a role of a different sort during this year's second year play. As Max Blake, the intolerably cute (albeit somewhat dim) "nurse," in the hilarious farce, "Playing Doctor," Suze aided and abetted the various antics of the other cast members and even got herself into some sticky situations. Thanks, Liam and Suze.

Claire Heslop, **Suze Berkhout** and **Fiona Young** are active members of the UBC Medical Students for Choice. They worked hard this year to put on the first annual "Art, Wine, Chocolate and Choice" (19 April 2006).

This fundraising event proved to be an outstanding evening of wine, discussion, and fun The evening's highlight was a talk by UBC's own Dr. Dorothy Shaw, Senior Associate Dean, Faculty Affairs, Faculty of Medicine. Thanks go out to the Jacana Art Gallery for use of their beautiful space, and to all those who came out to support strengthen and maintain women's choice in their reproductive health. The students raised almost $1,000.

Meet Our Incoming Students

My name is **Arezoo Astanehe**. As far back as I remember I wanted to be a medical doctor. However, I became extremely interested in scientific research while I was a graduate student in Dr. Nelly Auersperg's lab researching on ovarian cancer. I obtained a M.Sc. degree just prior to starting first year of medicine in fall of 2005. I'm glad to be a part of the MD/PhD Program, continuing my research on ovarian cancer.

Ovarian cancer is the fifth most common cause of death from cancer among Canadian women, and the leading cause of death from gynaecological malignancies. The etiology and early events in epithelial ovarian carcinogenesis are among the least understood of all major human malignancies. More than 75% of ovarian cancers are discovered in late stages when disease is spread beyond the pelvis, mainly due to lack of early detection methods. Introduction of cisplatin and paclitaxel therapy has made some improvements in the duration of survival; however, success in the treatment of women with advanced, recurrent, or persistent ovarian cancer has remained largely unchanged. These statistics make research in ovarian cancer necessary in order to improve the outcome of patients with this devastating disease. Knowledge about the processes that lead to initiation and progression of ovarian cancer will hopefully aid in the development of effective therapies and earlier detection methods, which are key to improving the outcome of patients with ovarian cancer. This is the field that I am particularly interested in, and will pursue as part of the integrated MD/PhD Program.

My name is **Mike Kozoriz** and I am one of the newest trainees of the MD/PhD Program at UBC. My interest in research started as an undergraduate student in the Life Science Program at Queen's University. In my last year at Queen's I completed a research project that examined the role of various drugs in preventing cell death during stroke. I became fascinated by biomedical research and became interested in merging scientific discovery with patient care. Because of my interest in neuroprotection I joined the Pittman laboratory in the Department of Neuroscience at the University of Calgary and completed a MSc degree. The area of the brain that I worked with, the supraoptic nucleus, is quite resistant to cell death and my research focused on the mechanisms by which these neurons protect themselves. In particular, I studied how excitatory neurotransmission (an important contributor to cell death during stroke) is inhibited by neuropeptides.

After graduating from the U of C I moved to Cambridge, England and was immersed in applied healthcare. I worked as a care aide for the elderly and disabled, bicycling home-to-home, seeing up to eighteen patients a day. I worked with patients with a range of medical problems, such as Alzheimer's, cancer, multiple sclerosis, Parkinson's, stroke and morbid obesity. Every time I met a patient and heard about their particular history, I wanted to better understand the medical pathologies and treatments. This clinical exposure also highlighted the ongoing need for advancements in clinical prevention and treatment strategies. In addition to my care work, I also had a part time position in a biotech company that made therapeutic antibodies for arthritis. After seeing the dedication and drive that this company had, I became even more interested in the process of novel therapeutic development.

I decided to get back into an academic environment and started applying to MD/PhD Programs. I moved to Vancouver to work in the Naus lab in the department of Cellular and Physiological Sciences at UBC and this past year I started a PhD. The Naus lab works on gap junctions and has a focus on cancer and stroke research. Our lab has shown, using both in vivo and in vitro approaches, that a certain gap junction protein, connexin43 (Cx43), is neuroprotective during stroke.

Gap junctions provide cytoplasmic connections between adjacent cells, and this provides an exchange route for small molecules. In the brain Cx43 is predominately found in astrocytes. Although, Cx43 is known to be protective, the exact mechanism of action remains to be determined. Gap junction intracellular communication may mediate neuroprotection during stroke by allowing required metabolites (e.g. ATP, glucose) to move into areas of high energy demand while also buffering cytotoxic levels of excitatory amino acids and ions. The Cx43 channel is believed gated by its C-terminal and various ions and proteins play a role in opening and closing the gate. We are interested in determining the importance of the C-terminal as a therapeutic target. In addition to its role in intracellular communication Cx43 has also been found in mitochondria, the significance of which is not understood. Part of my research thus far has focused on studying the role of mitochondrial Cx43 in astrocytes and how it may be protective.

When I'm not working in the lab, you can find me at the hockey rink playing for the Mutants or playing soccer and softball for the Cellular and Physiological sciences team. I also enjoy travelling, mountain biking, skiing, and I occasionally perform my stand-up comedy act at the Laughing Bean.

The UBC MD/PhD Program staff and students express their sincere thanks to *the **Child & Family Research Institute**, the **St. Paul's Hospital**, and the **Vancouver Coastal Health Research Institute**, for their continued funding support to the Program. The three funding organizations kindly provided an annual donation of $5,000.00 to support the operational requirements of the MD/PhD Program. The donation received was also used to sponsor research presentations by MD/PhD trainees at national and international research meetings. The staff and students are deeply indebted to the three organizations for their unfailing support of the MD/PhD Program over the past few years, particularly since the MD/PhD Program does not receive budgeted operational funding from any other sources. **THANK YOU**.*

Upcoming Events

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

UBC will be very well represented at this year's Canadian Society for Clinical Investigation (CSCI) Young Investigators Forum, on Thursday 28 September 2006, in Ottawa. Nine current MD/PhD students have been selected to present their outstanding research projects!

Arezoo Astanehe	p53 Regulates *PIK3CA* Transcription and PI3K Activity in Benign and Malignant Ovarian Surface Epithelial Cells
Suze Berkhout	Beyond Informed Consent: Ethical Challenges in North American HIV Preventive Vaccine Trials
Brennan Eadie	Voluntary Exercise Alters the Cytoarchitecture of the Adult Dentate Gyrus by Increasing Cellular Proliferation, Dendritic Complexity, and Spine Density
Heather Heine	Effect of Exercise on Endothelial Progenitor Cell Mobilization and Vascular Seeding in Diabetes Mellitus
Claire Heslop	CRP Gene Polymorphism Predicts Mortality in Patients with Coronary Artery Disease
Aaron Joe	Prospective Isolation of Mesenchymal Progenitors from Adult Skeletal Muscle
Kathryn Potter	Islet Amyloid as a Contributor to Graft Failure in Pancreatic Islet Transplantation
Inna Sekirov	The Role of the Intestinal Microbiota in Host Response to Enteric Pathogens
Fiona Young	Studying the Role of Palmitoylation in the Pathogenesis of Huntington Disease

❋ Open House and Student Research Forum

The seventh annual UBC MD/PhD Student Research Forum and Open House has been scheduled for Monday, 11 September 2006, at the UBC Brain Research Centre. We will have presentations from guest speakers and our students. Please check out our webpage for detailed information. ALL ARE WELCOME!

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, D452 - Heather Pavilion East, 2733 Heather Street, VHHSC, Vancouver, BC Canada V5Z 3J5. Phone: 1-604-875-5063. Fax: 1-604-875-4013.
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