

# PAIR DOCS

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## Creating Synergy Between Research and Clinical Training for the Post-graduate MD/PhD

Editorial by Dr. Norman Rosenblum, Director of the MD/PhD Program

During the past months, undergraduate medical students have been focused on choosing a clinical postgraduate 'destination' and submitting the necessary applications. By the time this newsletter goes to press, match day will have occurred. The choice of a postgraduate program is likely to define the clinical platform on which a career in medicine will be developed over many years. What are the ways that this 'clinical choice' can synergize with a career as a physician scientist?

The choice of a clinical specialty and subspecialty arises from experience in the clinical setting. Which clinical area appeals to me? Which age group of patients appeals to me? What types of illnesses and disease processes do I find most interesting? What types of colleagues and collegial groups fit best with my personality and who I am? These are some of the important questions that all medical students need to address.

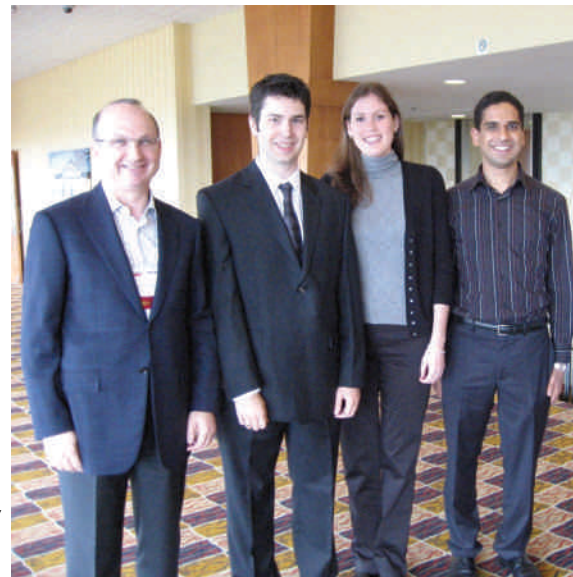
Planning for postgraduate residency education is a step of critical importance during the MD/PhD Program. The MD/PhD Program is the setting in which expertise and productivity will set the stage for future career development. It is during the postgraduate phase of training that the 'layer' of clinical training needed to establish a career track will be added. As progress in the MD/PhD ensues and time draws closer to the CaRMS Match, MD/PhD students are compelled to ask themselves additional questions: Which field offers me the balance of clinical practice and research that I seek? Could I develop a career as a physician scientist in a particular clinical specialty? How well can one create a

Dr. Norman Rosenblum (far left), with trainees (left to right) Brian Ballios, Janine Hutson, Sagar Dugani.

synergy between clinical activity and research in a particular specialty? Does there exist critical mass of physician scientists who are thriving in a particular specialty?

In the University of Toronto MD/PhD Program, we encourage our students to ask these types of questions as their scientific identity takes shape and as they experience the clinical setting. Students participate in a series of career development seminars that focus on physician scientist career options in different specialties. Students meet in small groups with Department Chairs, Residency Program Directors and MD/PhD Program graduates who are currently engaged in postgraduate training. Faculty and postgraduate trainees across a breadth of specialties make presentations, which provide a basis for interactive discussions.

A key question is how postgraduate clinical training can be blended with continued research. General concern exists that a prolonged gap between the end of the MD/PhD Program and post-



doctoral research training, a gap that can be as long as 4-6 years in length, fails to facilitate a choice to continue the pursuit of a physician scientist career. Moreover, a strict separation of clinical and research training does not promote integrative thinking as trainees who already have considerable expertise in research develop ideas on how to pursue a career that creates synergies between clinical focus and research.

Therein lies a challenge, not only for trainees, but also for postgraduate training programs, which must be dedicated to the development of the next generation of

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## Introducing the New MD/PhD Program Website

We are pleased to announce the launch of the brand new MD/PhD Program website [www.mdphd.utoronto.ca](http://www.mdphd.utoronto.ca). This website is the result of one year of contributions by faculty members, Program administrators, and students. In addition to reviewing the history of the Program and curriculum, the website is designed to increase accessibility for prospective students. This includes an outline of Graduate Departments of interest to students pursuing the PhD phase of their studies, and updated information on admissions and student funding/financial support. Addressing social aspects of the Program, the website features information on Life in Toronto including helpful information for students curious

on where to live in close proximity to campus, and how to access athletic and extracurricular facilities. Featuring an enhanced student biographies section, the website gives a snapshot into the backgrounds, research interests and motivations that each of our trainees brings to the Program. Up-to-date announcements of student awards and publications are available. Every few months, a Program student is featured on the home page, with an article summarizing their recent accomplishments and interests. Our alumni directory provides information on the current research and academic status of Program

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physician scientists. Sustainability of our health system is dependent on the development of new knowledge – who is better positioned to develop a body of the knowledge needed than the MD/PhD graduate? It is incumbent upon Postgraduate Training Programs to design educational programs that address the unique preparation and emerging identity of the MD/PhD graduate in a manner that facilitates future success as physician scientist.

The Clinician Investigator Program (CIP) of the Royal College of Physicians and Surgeons of Canada (RCPSC) provides an enticing programmatic vehicle for MD/PhD graduates to continue research in the context of postgraduate clinical training. Almost all CIP trainees, since the CIP was founded in 1995, have engaged in research training in the Continuous Training Pathway, which mandates a minimum of 24 months of research training during or after the completion of 'core' or subspecialty clinical training. While providing a strong basis for research training, CT makes a clear separation between clinical and re-

search training. In contrast, the CIP Distributive Curriculum Training (DCT) track was designed for residents with a prior graduate degree. It allows for distribution of 27 months of research over the PGY3, PGY4, and PGY5 years of clinical training after completion of the PGY1 and PGY2 core clinical years. Typically consisting of 3 months of clinical work and 9 months of research, the DCT provides a potentially strong platform for MD/PhD graduates to create a bridge between clinical training and translational research, thereby engaging in research earlier and continuously during postgraduate training.

Will the DCT enhance the engagement of MD/PhD graduates in research after postgraduate training? The experiment is yet to be performed. To date, there is one postgraduate trainee, a University of Toronto MD/PhD graduate, enrolled in DCT in Canada (at the University of Toronto). I believe that DCT is an important opportunity for MD/PhD students. But this opportunity will take hold if postgraduate training programs engage internally within Departments to create the funding and curriculum needed for DCT and actively engage medical graduates in this program.

## MD/PhD Class Council Update

Andrew Perrin, Sagar Dugani (Presidents); Laura Erdman and David Tsui (SALT); Jared Wilcox (Mentorship); Rob Vanner (CITAC)

The MD/PhD Council is comprised of students who work on various aspects of student life. Following the success of our student council in championing issues last year, the outgoing class presidents held elections to appoint member to the 2010-2011 Council. Sagar Dugani remained class president for a second year, while Andrew Perrin was elected as incoming co-president. The Class Presidents attend monthly Medical Society and Class Presidents Meetings. There, they update other class councils on MD/PhD Council initiatives and communicate the achievements of our students to the medical curriculum administrators and student body.

### SALT Update

The Student Affairs Liaison Team (SALT) is a committee of students from the MD and MD/PhD programs that aims to promote student wellness by communicating student needs to the Office of Student Affairs and providing academic, personal, and career support through events and initiatives. The 2010-11 MD/PhD SALT representatives are working on a number of projects.

In recent years, there has been an increase in the availability of resources for students as they traverse different stages of the program and transition between them. We are compiling these resources and additional materials to create a more comprehensive and accessible MD/PhD handbook that will be available on the website. We have solicited "words of wisdom" and practical tips from students in the program and established a committee to develop and write the content. We will ask for more feedback once we have a draft, so that this handbook will be as useful as possible for MD/PhD students.

As in previous years, we have been organiz-

ing review sessions prior to first-year medicine exams. Volunteer tutors from the MD/PhD program and second-year medicine generously offer their time and expertise, reviewing difficult concepts and questions with first-year students. This year, we are working on formalizing the structure of the program and improving the tutorials based on student feedback. Also, for the first time, we held anatomy tutorials in the anatomy labs, with MD/PhD students at the helm. A big thank you to all of the volunteer tutors!

### MD/PhD Student Mentorship

A unique mentorship initiative linking trainees to clinician-scientist mentors across Canada has been designed in collaboration between SALT, CITAC Institutional Reps and the CITAC Mentorship Committee. The previous attempts at a mentorship program in the past comprised contact lists. The new U of T Mentorship Initiative (UMI) incorporates several improvements.

The foundation of the UMI involves a new approach for selection of mentors. Mentors will first be nominated by 15 Deans and Associate Deans of Research representing the Faculties of Medicine and MD/PhD Programs from across Canada. This nomination-selection will then be supported with comprehensive metrics on the mentor's clinical specialty, research views, mentorship style and teaching philosophy.

For ease-of-use, a bimodal delivery system will be used where students can either contact potential mentors directly, or the UMI will facilitate introductions. A national teleconference scheme is underway where students and mentors can interact without regional or institutional restrictions.

We hope that combining a strong founda-

tion of mentors with personalization and user friendliness will allow our students to achieve the incredibly fulfilling mentor-mentee relationship that MD/PhD students desire.

### CITAC Update

The Clinician Investigator Trainee Association of Canada (CITAC) has aimed at increasing service to its members with the extensive overhaul of the CITAC website, and several initiatives including a project survey of MD+ programs across Canada.

U of T students were well recognized at the 2010 CSCI-CITAC Annual Conference was held in Ottawa, September 20-22. This was especially true at the Young Investigators Sessions with Janine Hutson, Gord McSheffrey, and Sagar Dugani winning awards for poster presentations, and Brian Ballios delivering an oral presentation.

The program included inspiring talks by prominent Canadian clinician investigators and a series of career development workshops spanning topics from 'Maximizing the Benefits of Being in a Combined Program' (Dr. Norm Rosenblum, U of T) to 'Negotiating a First Faculty Position' (Dr. Jim Lewis, UWO).

The 2011 CSCI-CITAC Annual Conference will be held Sept 12-14 at the Crowne Plaza Hotel, Ottawa, and is an excellent opportunity for students to survey the national landscape of training and practicing physician-investigators.

This has been a productive year, which started with welcoming new MD/PhD students to the program. For a list of current class council and their contacts, please visit the Program website. We look forward to receiving your comments.

## Program Website Continued

alumni as they pursue their careers as clinician-scientists. In addition to showcasing the breadth of talent and exceptional productivity of the Program trainees and alumni, we hope that prospective students may identify commonality with their own passion for research and academic medicine.

More than serving as a medium for communication with prospective students, the website was designed with the current trainee in mind.

Program Documents feature helpful information, garnered from trainee and faculty input, on organizing transitions between the MD and PhD phases of training, as well as a checklist for post-graduate training applications. Announcements and a calendar of monthly trainee seminars and information sessions are posted and updated regularly. In this way, the new website will serve as a dynamic medium of communication with the student body and an interface with the public.

## Creating an MD/PhD Mentorship Symposium

Jared Wilcox

We may look like a confident group, but each and every MD/PhD student has at one point or another questioned their decision or worried about what lies ahead. One way to alleviate the concern is to have many opportunities to connect with those who are already “living the dream” that we all aspire to.

With this in mind, and receipt of a successful application to Alumni Affairs for financial assistance, comes a half day event to be held this coming fall. The MD/PhD Mentorship Symposium will bring current students and graduate physician-scientists together to build confidence,

foster mentorship and provide guidance.

Planned for the first week in September, the formal proceedings will begin with a lunch, to be followed by a relaxed series of focused talks, and will include opportunities for round-table discussions. Three individuals have been invited to speak, who represent and will discuss three major stages post-graduation: completing residency training while maintaining an active research focus; the first academic appointment and starting up a research lab; and coordinating a fully established lab with a successful clinical practice. The event will culminate with a reception to

follow the closing remarks. Tentatively planned for the Faculty Club, the reception will be a perfect setting for candid discussion and creation of meaningful connections.

The goal of this event is to provide an opportunity for MD/PhD students to make new connections with a cadre of successful established clinician scientists. From formal talks to casual conversation, the day is designed to shed light on the black box of post-graduation. If things go as planned, this inaugural event will give not just a glimpse of the path to come, but a guide to keeping the way lit as well.

## Graduate In Focus: Dr. Isabella Tai Leads Discovery of Novel Treatments for Gastrointestinal Cancers



Since graduating from the MD/PhD program in 1995, Dr. Isabella Tai has cultivated a successful career as a clinician-scientist. Dr. Tai is currently an assistant professor in the Division of Gastroenterology, Department of Medicine at the University of British Columbia (UBC) and a Senior Scientist at the BC Cancer Agency. She is the recent recipient of a CIHR New Investigator Salary Award and currently holds four operating grants through CIHR and NCIC. She is currently active in teaching at UBC's medical school and has already supervised over 25 research students. Dr. Tai's post-graduate training included a clinical fellowship in gastroenterology, as well as a post-doctoral research fellowship, at Harvard Medical School.

Dr. Tai's research program aims to understand the mechanisms of chemotherapy resistance, metastasis and tumour progression in gastrointestinal cancers using genomics and proteomics approaches. In colorectal cancer, Dr. Tai's lab has identified a signature profile of genes that are differentially expressed in chemotherapy resistance. Specifically, the gene SPARC (Secreted Protein Acidic and Rich in Cysteine) was identified as a putative resistance-reversal-gene. Overexpression of SPARC in tumour xenografts was able to restore radio-sensitivity and sensitivity to 5-fluorouracil and CPT-11. This finding suggests that SPARC-based gene or protein therapy may ameliorate the emergence of resistant

clones during chemotherapy and also eradicate existing refractory clones (*J Clin Invest* 2005;115:1492-502). In addition to investigating chemotherapy resistance, Dr. Tai's lab is pioneering the development of easy-to-administer tests that will identify individuals with gastrointestinal cancers at the earliest, most curable stages of the disease. Her lab is using state-of-the-art genomic techniques to identify and validate a set of genetic markers that will identify high and low-risk individuals for frequent and infrequent screening, respectively.

Dr. Tai cites the U of T MD/PhD Program as providing a wonderful opportunity to explore biomedical research in the midst of pursuing a medical career. She was one of few trainees in the MD/PhD Program who integrated her PhD studies with medical school and even began her PhD studies during the first year of medicine. This experience helped to prepare Dr. Tai for the numerous time demands that are required of the clinician-scientist. When asked if she has any advice for current trainees, her recommendation is to enjoy this time and not to feel rushed and offered the following: “As you progress through training and encounter some bumps along the way, it is important to remember the excitement you felt upon receiving that letter of admission to the MD/PhD program and the reasons for having made the decision to pursue this career path. The training of a clinician-scientist may seem ‘never ending’ ...and may push you to feel a sense of urgency. A few years from now, you will realize that the long years of training are necessary in order to provide you with the best chances for success. You will be able to look back...and realize that this is a great career choice – it is so rewarding, to be able to care for patients while bringing intriguing questions from the bedside to the bench, and to be given the opportunity to contribute to the training of the next generation of medical students/residents and scientists! This is a truly fulfilling and rewarding career ... so enjoy the journey towards becoming a clinician-scientist!”



## Graduate In Focus: Dr. Simon Fisher Explores the Brain for the Pathogenic Origins of Diabetes

Dr. Fisher, a graduate of the Toronto MD/PhD Program in 1997, is currently an Assistant Professor of Medicine, Cell Biology and Physiology at Washington University School of Medicine in St. Louis. His post-graduate training included medical internship, residency, and clinical fellowship in endocrinology, at Harvard Medical School, as well as a post-doctoral research fellowship at the Joslin Diabetes Center. He is the recipient of numerous fellowships and research awards, including a post-doctoral fellowship and Career Development Award from the Juvenile Diabetes Research Foundation, election to the American Society of Clinical Investigation, and is listed in *Best Doctors in America*. His research program is also supported by competitive funding from the NIH. Dr. Fisher is active in clinical teaching of medical student, interns and residents, he instructs endocrinology fellows about diabetes management, and he supervises the research training of undergraduates, graduate students and post-doctoral fellows. He believes in paying it forward and is particularly proud to have had his first MD/PhD student graduate from PhD training in his laboratory.

Through his research, Dr. Fisher is unraveling the effects of insulin action on target tissues not classically considered in the spectrum of diabetes pathology. In particular, he studies the mechanisms of how insulin acts in the central nervous system to regulate metabolism. He and his students are investigating areas of the hypothalamus that regulate blood sugar levels in response to insulin signaling. By extension, he studies how cross-talk between the brain and other body structures may lead to the development of obesity, insulin resistance and diabetes. He draws on the strength of his training in physiology during his graduate studies in Dr. Vranic's laboratory at the University of Toronto to tease out the intricacies of these complex metabolic regulatory pathways. Dr. Fisher's laboratory uses diverse techniques which span the fields of molecular biology, physiology, biochemistry, pharmacology, neuroscience and genetics in the design and characterization of tissue-specific animal knockout models.

Dr. Fisher commends the Toronto MD/PhD Program for preparing him for the challenges of practice as a clinician-scientist by providing "rigorous medical training and in-depth research opportunities". He explains that his PhD experience opened doors to "amazing research opportunities" for post-doctoral fellowship and beyond. His best advice to potential MD/PhD students is "if research captivates you, capitalize on research training".



## MD/PhD Graduates 2010

Congratulations to this year's graduates - **Martin Hyrcza** (Pathology, University of British Columbia), **James Kennedy** (Internal Medicine, U of T), **Fiona Lovegrove** (Dermatology, U of T), **Sam Saibil** (Internal Medicine, U of T), **Varinder Randhawa** (Internal Medicine, U of T) and **Tony Yeung** (Pathology, Harvard).

## PhDs Completed

**Andrew Perrin**, Department of Molecular Genetics (Brent Derry, supervisor) DNA Damage-dependent Regulation and Function of *akt-1* in *Caenorhabditis elegans*. January 5, 2011.

**Rachel Vanderlaan**, Institute of Medical Science (Tony Pawson, supervisor) The role of ShcAphosphotyrosine signaling in the myocardium. October 15, 2010.

**Larissa Liontos**, Institute of Medical Science (Jane McGlade, supervisor) The Role of the Src-like Adaptor Proteins, SLAP and SLAP-2 in Dendritic Cell development and signaling. August 15, 2010.

**Amparo Wolf**, Institute of Medical Science (Ab Guha, supervisor) Hexokinase 2 is a key mediator of aerobic glycolysis promoting tumour growth in Glioblastoma Multiforme. July 15, 2010.

**Sagar Dugani**, Institute of Medical Science (Freda Miller, supervisor) Death Shapes Life: Characterizing the role of p63 and p73 during neural development and aging. May 4, 2010.

**Amy Lin**, Medical Biophysics (TakMak, supervisor) Investigations into the biological roles of the E3 ligase Ariadne 2. April 15, 2010.

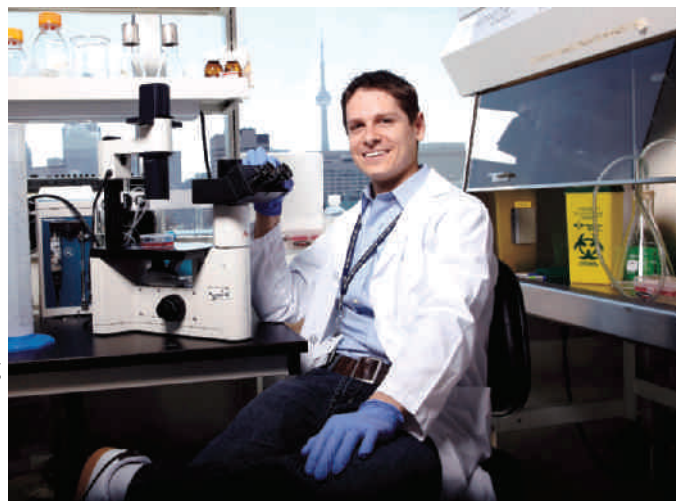


Dr. Norman Rosenblum (far right), with recent MD/PhD graduates (left to right) James Kennedy, Varinder Randhawa, Sam Saibil.

## Student In Focus: Adam Durbin

Adam Durbin completed his PhD studies in 2010 under the supervision of Dr. David Malkin in the Department of Medical Biophysics. Adam's research has focused on how proteins can have both pro or anti-tumorigenic functions and what this means for developing novel chemotherapeutic agents. Specifically, Adam has focused on integrin-linked kinase (ILK), a protein that is generally considered to be oncogenic. However, in the lethal pediatric tumor rhabdomyosarcoma, ILK can function as a tumor suppressor. Adam went on to show that in multiple cell lines derived from different types of cancer, that the oncogenic or tumor suppression properties of ILK are dependent on cellular expression of JNK1. With elevated levels of JNK1, ILK switched function to become a tumor suppressor. This finding suggests that JNK1 may be a useful biomarker for ILK neoplastic activity and also supports the development of chemotherapies involving ILK and JNK signaling pathways. Adam's research culminated in several publications in high impact journals such as the *Journal of Clinical Investigation*, *Cell Cycle*, and *Cancer Research*. His research productivity as well as his contributions to the research environment were recently acknowledged by the Sickkids Research Institute by awarding Adam the Outstanding Trainee Award.

Adam is very active in extracurricular activities for both the MD and MD/PhD classes - he has organized medical student research day twice and the joint Clinician-Investigators Trainees Association of Canada (CITAC)/Canadian Society for Clinical Investigation (CSCI) Annual Conference. He is also a two-term past co-president of the MD/PhD student council. Adam is currently in the clerkship phase of the 3rd year MD curriculum, and is excited to continue experiencing the different areas of medicine before deciding which specialty to enter. We wish him continued success and the best in his future pursuits.



## Introducing the Incoming MD/PhD Students of 2010

### Jonathan Fuller

After growing up in Toronto, I completed an undergraduate degree at Western in physiology. Research projects in neuroscience under Drs. Lique Coolen and Arthur Brown, and in the history of medicine under Dr. Paul Potter, sparked my interest in academic medicine. I had always been deeply fascinated by scientific inquiry, the history of science, and philosophy, but passionate about pursuing a career in medicine. It is only more recently that I came to realize that history and philosophy are not isolated from medicine and that they impact the latter in significant ways. Now, as a Toronto MD/PhD student, I hope to break from traditional PhD training in biomedical sciences by pursuing my doctoral studies in the history and philosophy of medicine. I was drawn to the program by the strength of research in these fields and the tremendous mentorship offered by MD/PhD students and faculty members. I am broadly interested in the history of pathology; philosophy of mind in psychiatry, neurology and neurosurgery; and epistemic issues in the philosophy of medicine. Fittingly, I enjoy reading, pondering and speculating in my spare time, as well as teaching and golf.

### Kevin Wang

My family immigrated to Canada when I was very young. Most of my childhood was spent exploring suburban Mississauga. From as far as I can remember, I have always been intrigued by scientific discoveries that transformed our lives; Banting and Best, Alexander Fleming, Watson and Crick, just to name a few. This fascination led me to complete a BHSc degree at McMaster University in Hamilton. My first exposure to the world of research was in high school where I worked on a project looking into the antioxidative effects of flavonoids in disease prevention. In undergrad, after having witnessed a loved one's experience battling cancer, I became interested in cancer research. Under the mentorship of neurosurgeon-scientist Dr. Sheila Singh, my first project in the lab was designed to elucidate the role of Bmi1 in neural stem cell self-renewal. This led me towards a project investigating the potential roles of cancer stem cells in initiating tumour formation, and thus the very root of cancer. What I gained most from these experiences has been the insight into research from a clinician's point of view. For my doctoral research, I will be using functional genomics to unravel the mysteries of tumorigenesis in pediatric brain tumours. In my spare time, an all too unfamiliar concept, I enjoy the company of family and friends. You might also find me on the

squash court, in the pool, or on the slopes.

### Kirill Zaslavsky

I grew up in Moscow, Russia and immigrated to Toronto in 1999 at the age of eleven. For much of the next ten years, I lived in Richmond Hill and attended Bayview Secondary School. My interest in medicine was born out of my interest in science. When I began my undergraduate studies in 2006 at U of T, I wasted no time in joining Paul Frankland's neurobiology laboratory. Beginning with basic data collection (cell counting and analysis), I eventually completed work on three separate projects by the time I left in 2010. I was very fortunate to have assisted Dr. Scellig Stone, a neurosurgery resident enrolled in U of T's surgeon scientist program. He was working to determine whether deep brain stimulation could enhance the genesis of functional neurons in the adult hippocampus, a brain structure crucial for memory. It was through this project that I was able to appreciate a link between medicine and basic research and decided I wanted to be a clinician scientist. Since then, my interest has shifted from basic neuroscience to basic molecular biology, as I look forward to study the functional arrangement of genetic networks for my PhD in Charlie Boone's group. Outside of school, I enjoy playing the piano, reading, and tinkering with technology.

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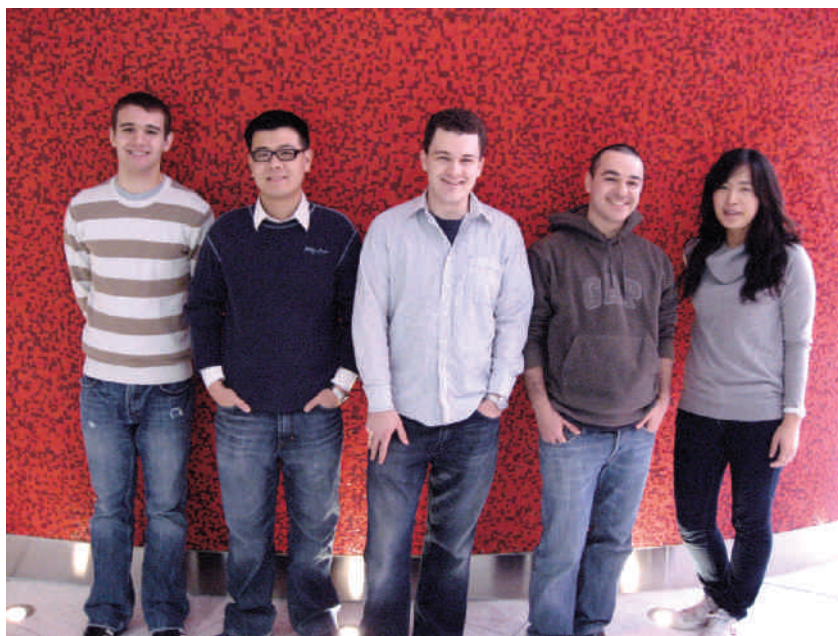
## Incoming MD/PhD Student Bios Continued

### Ilya Mukovozov

I was born in the former Soviet Union in the city of Kiev. After a number of years, my family moved to Haifa, Israel, where we lived for the next 5 years. We then moved to Toronto, which I've called home ever since. I received an undergraduate degree in Health Sciences from McMaster University in Hamilton. I moved back to Toronto to complete a Master of Science degree in the Institute of Medical Science at U of T, working under the mentorship of Dr. Lisa Robinson. I am pursuing a combined MD/PhD program because I am excited to engage in both clinical practice and scientific discovery. I hope that the knowledge and skills I develop can be applied to improving the treatment of disease and patient quality of life. I chose the MD/PhD program at U of T because of its outstanding reputation, the benefits associated with living in Toronto, and the prospect of extending the research I began during my Masters training. My research interests included the molecular signals that regulate leukocyte adhesion and chemotaxis under inflammatory conditions. Our lab showed that Slit2 was able to inhibit the chemotaxis of several leukocyte subtypes, including primary human neutrophils and human monocytic THP-1 cells. In addition, we have shown that Slit2 can decrease the adhesion of monocytes on activated endothelial monolayers. I hope to continue these studies, by investigating the effects of Slit2 on the adhesion of leukocytes under conditions of shear flow. These studies have potentially widespread applications for Slit2 or Slit2-like compounds in local inhibition of inflammation and cell trafficking. I enjoy spending my free time with family and friends.

### Jieun Kim

Born in South Korea, I came to Canada when I was 14 years old. After attending high school in Toronto, I studied Developmental Biology at McGill University. Starting as a lab assistant then moving on as an undergraduate research student, I was simply fascinated by how basic science research provides tools to understand the intricate networks and systems of human biology. After university years, the vastness of research opportunities and proactive collaborations at University of Toronto attracted me back to the city where my family was, to continue my research career. During my MSc study in mammalian cardiovascular development under the supervision of Dr Hui at U of T, I became deeply interested in the functional and molecular aspects of cardiovascular system. I decided that



U of T MD/PhD Program was the best way to gain the experience I need to make a career as a clinician-scientist fruitful. My experiences will ensure that my research can have an impact on improving patients' quality of life. During my MD/PhD training, I would like to delve into the field of cardiovascular biology, focusing on stem cell engineering that can be applied to clinical and therapeutic settings. Outside of medicine, I enjoy playing soccer, participating in Ontario University Taekwondo Competitive League as a U of T competitor, and international travel.

### Miliana Vojvodic

I hail from Mississauga and stayed in southern Ontario to complete a honours B.Sc. degree at the University of Guelph majoring in Molecular Biology and Genetics. My fantastic undergraduate research experiences in bacterial capsule biogenesis and *in vivo* bioassay development have been very influential in shaping my continuing interest in translational molecular research. I subsequently completed a M.Sc. at the University of Toronto in the Department of Molecular Genetics where I obtained interdisciplinary training in mass spectrometry and cell biology under Dr. M. Moran and Dr. D. Kaplan. I chose to pursue the MD/PhD program at U of T because it has a longstanding history of excellence in medical education and is affiliated with renowned research centers that foster collaborative, translational and most importantly, innovative science. I am interested in studying cellular signaling pathways and their manipulation in health and malignant states. Aside from academics, I enjoy choral singing, fine arts and immersing myself in

Left to right. Jonathan Fuller, Kevin Wang, Kirill Zaslavsky, Ilya Mukovozov, Jieun Kim (absent: Miliana Vojvodic, Sean Nestor)

the U of T student life through various activities including kids mentoring and editing.

### Sean Nestor

I spent most of my early life in Richmond Hill and decided to pursue an undergraduate degree in Health Sciences at UWO. Thereafter, I spent a year in London as a research assistant investigating brain and behaviour relationships in Alzheimer disease. I was inspired by the creativity and autonomy that was offered through a career in medical research. This compelled me to complete a master's degree in medical biophysics at UWO under the supervision of Dr. Robert Bartha at the Robarts Research Institute. My thesis work involved helping to design a novel region-growing software tool that could measure ventricular volume from structural MRI. I used this technique to measure Alzheimer disease progression *in vivo* from >2000 MRI patients. Now that I have completed first year medicine at U of T, I am looking forward to working in Dr. Sandra Black's lab for my PhD. I plan to use neuroimaging (PET and MRI) to investigate the role of cerebrovascular disease on cognitive decline in persons with Alzheimer disease. I am currently developing a non-linear registration-based measurement technique to evaluate hippocampal shape changes derived from MRI in persons with Alzheimer's and small vessel disease. I spend my free time commuting to Sunnybrook, traveling, scuba diving, golfing, skiing/snowboarding, and I recently conquered the super-pipe at Mammoth Mountain California.

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## Awards

**Susan Armstrong** won the best basic science poster award at the Critical Care Research Day, Interdepartmental Division of Critical Care, University of Toronto

**Brian Ballios** received the Society for Neuroscience Southern Ontario Neuroscience Association (SONA) Chapter Award to attend the annual meeting in San Diego, CA.

**Laura Clarke** won best poster at Medical Student Research Day 2010 (MD/PhD category) for her work, "The adult mouse dentate gyrus contains a population of progenitor cells which is distinct from subependymal zone stem cells".

**Greg Costain** is a co-investigator (with Dr. Anne Bassett, Dr. Mary Jane Esplen, Dr. Vinod Joshi, and Dr. Kathleen Hodgkinson) and project leader on a grant received from Mindcare New Brunswick, Inc. titled "Evaluating Genetic Counseling for Schizophrenia" (\$16,000); received an Institute of Medical Science Entry Award; and received the Award for the Coordinators of Undergraduate Psychiatric Education (COUPE) Best Paper Competition for the paper titled "The genetics of schizophrenia: A guide for mental health-care providers, patients, and relatives".

**Dilan Dissanayake** received a Canadian Society of Immunology's International Congress of Immunology 2010 Travel Award

**Sagar Dugani** received the Kiyoharu and Kiyooki Momose Memorial Scholarship, Faculty of Medicine University of Toronto; a Young Investigators Forum Poster Award, Canadian Society for Clinical Investigation (CSCI), Ottawa; the June

Callwood Outstanding Achievement Award for Volunteering, Government of Ontario; the inaugural Student Leadership Award, Canadian Federation of Medical Students; a Research Scholarship from the Keenan Research Centre, St. Michael's, Toronto; an Ontario Medical Association Travel Award; and the Top Presentation Award (Public Health Category) for IMAGINE at the 21st European Students Conference, Berlin, Germany.

**Sagar Dugani** and **Jared Wilcox** received a Pillar Program Award (TD Insurance Meloche Monnex) for their project: MD/PhD Alumni Day: Symposium for Mentorship and Professional Development.

**Adam Durbin** received first place in Basic/Translational Research (MD/PhD category) at the Canadian National Medical Student Research Symposium in Winnipeg, June 2010.

**Laura Erdman** received a travel award to attend the American Society of Tropical Medicine and Hygiene annual meeting in Atlanta, November 2010.

**Janine Hutson** received a CIHR Vanier Canada Graduate Scholarship; a Young Investigators Forum Poster Award, Canadian Society for Clinical Investigation (CSCI), Ottawa; and a 2010 Fetal Alcohol Spectrum Disorder Study Group Travel Award to give an oral presentation at the annual meeting in San Antonio, Texas; was a finalist in the Laidlaw Manuscript Competition at IMS Scientific Day (2010).

**Grace Lam** received a CIHR Canada

Graduate Scholarship Doctoral Award.

**Gord McSheffrey** received a Young Investigators Forum Poster Award, Canadian Society for Clinical Investigation (CSCI), Ottawa; and an International Pathogenic Neisseria Conference Trainee Travel Award from CIHR.

**Patrick McVeigh** received a CIHR Vanier Canada Graduate Scholarship.

**Andrew Perrin** won the Best MD/PhD Poster award at the U of T Medical Student Research Day 2011.

**Graeme Schwindt** won the Best Poster Award at the 2010 Program in Neuroscience Research Day, U of T.

**Marko Skrtic** placed 2nd in Basic/Translational Research (MD/PhD category), Canadian National Medical Student Research Symposium, Winnipeg, MB, June 2010; won the Alan Wu Poster Competition (Clinical sciences), IMS Research Day (2010); won the Best MD/PhD Abstract award at the U of T Medical Student Research Day 2011; and received a CIHR Frederick Banting and Charles Best Canada Graduate Scholarship Doctoral Award.

**Dave Tsui** received a Michael Smith Award for Research in Schizophrenia in conjunction with a CIHR Canada Graduate Scholarship Doctoral Award.

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**Editors: Brian Ballios & Janine Hutson** (brian.ballios@utoronto.ca; j.hutson@utoronto.ca)

**Editorial Advisors: Norman Rosenblum & Sandy McGugan**

Please visit the Program website for more information: [www.mdphd.utoronto.ca](http://www.mdphd.utoronto.ca)

Any comments or suggestions can be forwarded to:

## MD/PHD PROGRAM

Medical Sciences Building, Room 7205

Toronto, Ontario, M5S 1A8

Email: [mdphd.program@utoronto.ca](mailto:mdphd.program@utoronto.ca)

Fax: (416) 971 2132