



## Strengthening Medical Research Training within the MD curriculum

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

The beginning of a new calendar year is marked by the release of the *Future of Medical Education in Canada (FMEC) Report* by the Association of Faculties of Medicine of Canada. The 'Report', co-authored by Dr. Jay Rosenfield, Vice-Dean Undergraduate Medical Education, University of Toronto, makes 10 recommendations that are likely to influence undergraduate medical curricula into the future (Busing N et al. *Acad Med* 2010;85:340–348). The entire body of these recommendations is important; the state of our profession and the aggregate contributions of physicians to society are important to each of us.

Several FMEC recommendations have the potential to strongly influence the nature of physician scientist training going forward. Here, I will focus on two recommendations and comment on actions being taken within our faculty in response.

**Recommendation 3: "Build on the Scientific Basis of Medicine.** . . . . medicine is rooted in fundamental scientific principles, . . . . In addition, as scientific inquiry provides the basis for advancing healthcare, research interests and skills must be developed to foster a new generation of health researchers."

This recommendation highlights scientific inquiry and innovation for the sake of improved human health as core values in our educational agenda. MD-PhD education is a major pathway towards generating the 'new generation of health researchers' referred to in this recommendation. In this light, the University of Toronto Faculty of

Dr. Norman Rosenblum (far right), with recent PhD graduates (left to right) Ben Steinberg, Chris Franco, Neil Goldenberg.



Medicine has committed to the doubling of our MD-PhD student cohort over the next 5 years with a goal of 80 students in the MD-PhD Program by 2015. A larger program will serve to enrich the environment for our MD-PhD students and will make a greater contribution to the workforce of physician scientists prepared to lead discovery and innovation in Canada. Moreover, this 'new generation' of MD-PhD graduates, combined with graduates of the Postgraduate Clinician Investigator Program will be positioned to mentor future students and lead educational endeavors within academic medicine, thus taking the implementation of this recommendation into the future.

The new generation of health researchers is being educated within programs other than the MD-PhD Program. At the University of Toronto, a large number of students take part in our Comprehensive Research Experience for Medical Students (CREMS) Program. The development of research interest among these students is an important part of the strategy aimed at 'fostering a new generation

of health researchers'. In the near future, we look forward to the development of strategies in our medical school to enhance the interaction between students in all research-intensive pathways as a means of enhancing science-based curriculum, mentorship and career development.

**Recommendation 9: "Adopt a Competency-Based Approach.** Physicians must be able to put knowledge, skills and professional values into practice. . . . In addition to predefined curriculum requirements, MD Education must also provide flexible opportunities for students to pursue individual scholarly interests in medicine."

This recommendation has far-reaching implications as to the organization and content of our

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## Graeme Schwindt Ranks First in the Inaugural Vanier Canada Graduate Scholarship Competition

We wish to congratulate MD/PhD student Graeme Schwindt for not only receiving a 2009 Vanier Canada Graduate Scholarship, but also for ranking 1<sup>st</sup> out of 673 applicants in the clinical research (CIHR) category. Graeme is working on his thesis research under the supervision of Dr. Sandra Black at Sunnybrook Hospital. Graeme's research is focused on using functional neuroimaging (such as MRI) to investigate the activity of extrastriate visual areas in Alzheimer's Disease (AD). Specifically, he is focused on an area of the fusiform gyrus, which responds to the visual presentation of faces. This area may show specific disease- and treatment-related functional changes in AD, and could

prove useful as a biomarker of treatment-response and disease tracking. By collecting imaging data in patients before and after treatment, Graeme hopes to learn how activation patterns predict clinical response. Furthermore, Graeme is also collecting structural and perfusion MRI modalities to investigate the complex relationship between functional MRI patterns, resting blood flow, and structural degeneration in AD. Ultimately, this data may lead to the use of functional imaging as a clinical tool in predicting and tracking dementia. Congratulations Graeme!

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medical school curriculum. Science-interested medical students are but one example of student cohorts that will need to develop particular types of knowledge with deep expertise in order to fulfill their professional goals. For MD-PhD students and other research-interested students, we can envisage a core curriculum aimed at developing core competencies common to all physician-trainees and other competencies critical to future physician scientists. This year, I will launch a taskforce on the MD-PhD curriculum. This Taskforce will be charged with making recommendations as to the content and format of curriculum for research-interested students in the 'pre-clerkship', 'clerkship', and 'graduate student' phases of education with a goal of supporting the educa-

tion of our future physician scientists and supporting their future success in a highly competitive interdisciplinary research environment.

The Report on the Future of Medical Education in Canada serves as a strong foundation for our expansion of the MD-PhD Program, further development of our CREMS Program, the development of a coherent 'research pathway' for research-interested medical students, and the formulation of curriculum that supports the education of future clinician scientists. These initiatives are among our highest priorities in 2010.

**CONGRATULATIONS** to Dr. Norman Rosenblum for being awarded the 2010 Maureen Andrew Mentor Award from the Society for Pediatric Research. This award acknowledges individuals who serve as exemplary mentors for trainees and junior faculty working in child health research. His commitment to the training of future health researchers is also reflected in the initiatives he has spearheaded within the MD/PhD program. These include career development seminars and enhanced student-faculty interface. Dr. Rosenblum will receive this award at the 2010 Pediatric Academic Societies' Annual Meeting happening from May 1 to 4 in Vancouver, B.C.

## Message from the MD/PhD Class Presidents

Adam Durbin and Sagar Dugani

Following the success of last year's student council in championing issues relevant to MD/PhD students, the outgoing class presidents held elections to appoint members to the 2009-2010 Council. Adam Durbin remained class president for a second term, while Sagar Dugani was elected the incoming co-president. This has been a productive year thus far, with several further endeavours planned. We will continue to play an integral part in defining policies that will shape the evolving pre-clerkship and clerkship curricula.

In our capacity as Class Presidents, we worked with the Class Council to create a checklist to aid in the transition into the PhD phase of the program. In collaboration with the Office of the Registrar, Faculty of Medicine, we created a checklist addressing the unique requirements of the MD/PhD applicant in the CaRMS residency match. Finally, in November, we traveled with Dr. Norman Rosenblum to McMaster University to engage a motivated group of undergraduate and graduate students interested in the MD/PhD Program at the University of Toronto. Our pro-

gram was well represented at the joint Clinician Investigators Trainees Association of Canada (CITAC)-Canadian Society for Clinical Investigation (CSCI) meeting in Ottawa, in September 2009.

We look forward to another exciting year as we embark on initiatives aimed at enhancing the academic and non-academic experience of students. We look forward to your comments and feedback:

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Adam Durbin and Sagar Dugani.

The 2009-2010 Class Council is:

**Student Affairs Liaison Team (SALT)**

Laura Erdman, Varinder Randhawa, and Jonathan So

**Medical Student Research Day Coordinator**

Greg Costain

**MD/PhD Representative to Class of 2012 Council**

Rachel Vanderlaan

**MD/PhD Newsletter Editors**

Brian Ballios and Janine Hutson

**Student Curriculum Evaluation Committee Representatives**

Ashish Deshwar and Martin Hyrcza

**Clinician Investigator Trainee Association of Canada (CITAC) Representatives**

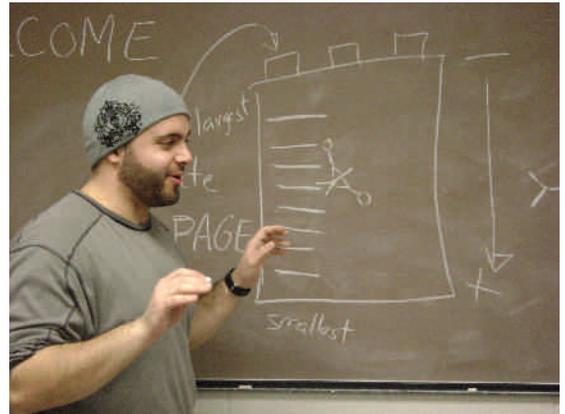
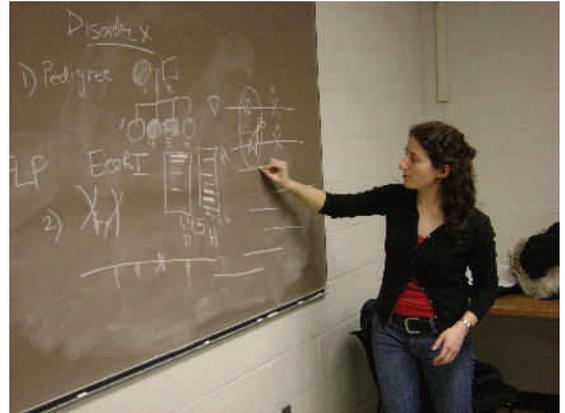
Grace Lam and Jared Wilcox

## Update from the Student Affairs Liaison Team (SALT)

Laura Erdman, Varinder Randhawa and Jon So

This year, we are happy to reprise our role as the MD/PhD representatives on SALT. We have mainly focused on expanding an initiative from last year: working with staff from the Office of Student Affairs, we organize a peer-tutored review session for first-year medical students prior to each exam. Volunteer tutors from second-year medicine and the MD/PhD program generously offer their time and knowledge, and spend a couple of hours on a week-day night answering specific questions, reviewing past exams, or giving chalk-talks about particular topics. This year, we held three tutoring sessions, and have received very positive feedback from first-year students attending them. We are currently striving to improve the sessions with input from students, tutors, and course professors. Aside from providing academic assistance to first-year medical students, these sessions foster connections and mentoring relationships between MD and MD/PhD students – not to mention serving as a useful curriculum review for MD/PhDs during the research phase!

We are always open to comments and suggestions from MD/PhD students about how Student Affairs can better address our needs. Feel free to contact us at any time!



(right) MD/PhD students Laura Erdman (top) and Gord McSheffrey (bottom) demonstrate principles of molecular biology; (left) Laura Erdman helps first year MD students prepare for exams.

## Creating a 'Trainee Section' in the journal *Clinical and Investigative Medicine*

Sagar Dugani (University of Toronto) and Stephan Ong Tone (McGill University)

The Clinician Investigator Trainee Association of Canada – Association des cliniciens-chercheurs en formation du Canada (CITAC-ACCFC) is a national organization of MD+ trainees enrolled in MD/MSc, MD/PhD, and Clinician Investigator Programs (CIP) across Canada. The idea to create an organization emerged several years ago, and in the past three years, over 200 members have become part of the organization. CITAC-ACCFC aims to create and promote activities and opportunities that will enhance the trainee experience. Importantly, CITAC-ACCFC has relied on the Canadian Society for Clinical Investigation (CSCI) for mentorship and guidance. The evolving relationship between CITAC-ACCFC and CSCI has allowed for the creation of a new collaboration- the establish-

ment of a *Trainee Section* in the journal *Clinical and Investigative Medicine* (CIM).

The *Trainee Section* will focus on topics of relevance to MD+ trainees: mentorship, academic training, financial planning, and career development, among other topics. This section will include contributions from MD+ trainees, their supervisors, MD+ Program Directors, and faculty members, with the aim of creating a forum to discuss wide-ranging issues relevant to trainees. As trainees will be responsible for overseeing the editorial and peer-review process of the *Trainee Section*, we will ensure that articles are reviewed promptly, recognizing the importance of publishing articles in a timely manner. The inaugural issue of the *Trainee Section* has been published (Dugani and Ong Tone. *Clin Invest Med*

2010;33:E1-2). We look forward to receiving articles from trainees, working with the editorial board, and to publishing future issues of the *Trainee Section*.

Additional information can be obtained at: <http://www.citac-accfc.org/portal/>, or by contacting Sagar Dugani at: [sagar.dugani@utoronto.ca](mailto:sagar.dugani@utoronto.ca)

Sagar Dugani is an MD/PhD student at the University of Toronto and the Chair of the CIM Trainee Committee. Stephan Ong Tone is an MD/PhD student at McGill University, Montreal, and is the Past-Chair of the CIM Trainee Committee.

## Graduate In Focus: Dr. Taufik Valiante Searches for Mechanistic Underpinnings of Memory Storage

Dr. Taufik Valiante has combined his training as a clinician-scientist with a successful practice as a neurosurgeon at the Toronto Western Hospital (TWH). His PhD was completed under the supervision of Dr. Peter Carlen, a world expert in the pathobiology of epilepsy. It was here that his passion for the surgical management of neurological diseases was sparked. He went on to complete his residency in neurosurgery at the University of Toronto and spent his fellowship year at the University of Washington, Seattle with Dr. George Ojemann. Here, he learned the surgical treatment of epilepsy. He brought his expertise in cutting-edge electrophysiological techniques in surgical management back to Toronto to help him understand the cellular basis of memory and language representation in the brain. He is now the Co-Director of the Epilepsy Program at TWH.

With his research program, Dr. Valiante has been working to further advancements in our understanding of the clinical and basic science of epilepsy, a common neurological disease affecting millions worldwide. His work involves the use of electrophysiological measurements from awake patients during surgery to pinpoint down to 1/1000<sup>th</sup> of a second the areas of the brain that are working to store and retrieve memories. He combines these measurements from live imaging of brain function obtained using functional Magnetic Resonance Imaging (fMRI) to understand both the “where” and “when” of memory activity. In addition to his research work, he has taken a strong position on the advancement of care for people living with epilepsy. He pioneered the creation of an Epilepsy Monitoring Unit at TWH, as well as guidelines for epilepsy care that have been adopted by the Canadian League Against Epilepsy as part of their national strategy. He has received numerous teaching awards from the Department of Surgery including the 2006 Alan R. Hudson

Teaching Award and 2006 Ross Fleming Surgical Educator Award, as well as the 2008 Helping People with Epilepsy (HOPE) Award for service to the epilepsy community.

Dr. Valiante cites the MD/PhD Program as contextualizing a longstanding interest in epilepsy within the framework of medicine, and showing him that he could not find a rewarding career in medicine without research. He explains that having a clinical practice feeds a basic science interest, and vice-versa, and that trainees should try to create as much overlap as possible. Also, he stresses the importance of taking “a collaborative approach” in the increasingly interdisciplinary nature of biomedical research. In residency, the time to focus on PhD level research is quite limited and having the PhD experience during his medical school training was perfectly timed with his scientific awakening. Dr. Valiante states “research became a need, not a want, and that is thanks to the MD/PhD Program”.



## Graduate In Focus: Dr. Ally-Khan Somani Explores Interventional Therapies to Prevent Skin Cancer



Dr. Ally-Khan Somani recently accepted a position at the Indiana University School of Medicine as an Assistant Professor and Director of Dermatologic Surgery and Cutaneous Oncology Division. Here, his research is investigating the protective effects of dermal rejuvenation on photocarcinogenesis. This project aims to further our understanding of the roles of insulin-like growth factor-1 (IGF-1) and its receptor following UV irradiation in human subjects *in vivo* and in intact skin model systems. Furthermore, it will test the interventional ability of fractional laser resurfacing to upregulate dermal growth factors and protect against abnormal pro-carcinogenic UVB response found in intrinsically aged skin. Dr. Somani has embraced the role of a clinician-scientist and splits his time between dermatological surgery and his research program. He finds his clinical role in treating patients’ skin cancers very rewarding and also has access to surgical tissues. This combination allows him to combine his passion for clinical care with his deep-rooted interest in basic scientific research in an area where there are very few physician-scientists.

Dr. Somani cites the U of T MD/PhD Program as being pivotal in forging the path that has led him to achieving his career goals. Completing his PhD under the supervision of Dr. Katherine Siminovitch in the area of lymphocyte signaling cascades provided him with a strong research background. The important ‘bench-bedside’ paradigm ingrained in his MD/PhD training has been very powerful in his career by leading him to always question clinical observations or treatments and then later use these questions to shape or reshape research ideas. Dr. Somani recently received the Clinical Career Development Award in Dermatologic Surgery from the Dermatology Foundation. In the early stages of his career, he received a Patient Directed Investigation Research Grant from the Dermatology Foundation and a Translational Research Award during his academic-track residency-training at Case Western Reserve University.

When asked if Dr. Somani has any advice for current trainees, he recommended using residency/fellowship training time to pursue research interests and collaborations. During this time, it is important to continue to publish and it is also beneficial to become an ad-hoc reviewer for journals that publish papers in your field. MD/PhD trainees are unique and the training provides one with a distinctive perspective and approach to clinical medicine. He believes that one key to a balanced and successful career lies in choosing a specialty that provides tremendous personal satisfaction - so choose wisely! Dr. Somani is happy with his choice of specialty and outside of work, enjoys time with his nine-month-old son (on the verge of walking) and with his wife, Dr. Najwa Somani, who is also a U of T medicine graduate and on faculty at Indiana School of Medicine.

## Student In Focus: Chris Franco

We are pleased to announce that Chris Franco is the 2009 recipient of the Stuart Allan Hoffman Award, presented by the Department of Laboratory Medicine and Pathobiology to the graduating doctoral student who has demonstrated excellence in research ability and strong character throughout their years in the graduate program. Chris recently completed his PhD under the supervision of Dr. Michelle Bendeck and his thesis work focused on the role of collagens and their ability to influence the behaviour of cells that promote atherosclerotic plaque development. He determined that deletion of the discoidin domain receptor 1 (DDR1), a collagen receptor tyrosine kinase, in mice resulted in a substantial reduction in atherosclerotic disease burden by independently decreasing inflammation and promoting collagen deposition – both features associated with greater plaque stability in humans. This work has identified a previously unknown molecular target that could be manipulated in the treatment of atherosclerosis. Chris' research was even featured on the cover of the journal *Circulation Research* for the May 22, 2008 issue.

During his PhD research, Chris was the recipient of a CIHR Canada Graduate Scholarship Doctoral Award and the Doctoral Research Award from the Heart and Stroke Foundation of Canada. Chris is also very active in extracurricular activities for both the MD and MD/PhD classes - he is a past co-president of the MD/PhD student council and has been very active in the medical class' production of Daffydil. Chris is currently in the third year clerkship phase of the MD curriculum and is interested in extending his interest in vascular biology into a career in internal medicine or obstetrics.



## Student In Focus: Benjamin Steinberg



Benjamin Steinberg completed his PhD studies in 2009 under the supervision of Dr. Sergio Grinstein at the Research Institute of the Hospital for Sick Children. His research project focused on the interaction of the body's immune cells with invading microorganisms, such as bacteria. Specifically, he studied the mechanisms by which white blood cells engage and destroy pathogens. Highlights of his research include the development of new assays to monitor various biophysical properties of organelles in live cells by measuring organellar membrane potential. These techniques have furthered the understanding of the microscopic biophysical mechanisms behind debilitating diseases such as cystic fibrosis and intracellular bacterial infection. They are also applicable to other models of cellular physiology and pathobiology, as well as broadening our understanding of peptide translocation across biological membranes – a growing focus of clinical drug discovery research. Benjamin's research culminated in several publications in high impact journals such as PNAS and Science STKE. The interdisciplinary application of his research has led to a recent publication with fellow MD/PhD student Neil Goldenberg in *Cancer Research* on the important signaling properties of surface charge in cancer biology.

Benjamin is currently in the clerkship phase of the 3rd year MD curriculum. He hopes to continue his clinical training as a clinician-scientist in critical care or infectious disease medicine. We wish him continued success and the best in his future pursuits.

## MD/PhD Graduates 2009

Congratulations to last year's graduates and their first choice residency position placements. **Billie Au** matched to Medical Genetics at the University of Calgary, and **Henry Becker** to Pathology at the University of Toronto.

## PhDs Completed

**Michael Ward**, Institute of Medical Science (Duncan Stewart, supervisor) Gene Therapy for Endothelial Progenitor Cell Dysfunction. June 18, 2009.

**Martin Hycza**, Laboratory Medicine and Pathobiology (Mario Ostrowski, supervisor) Gene expression changes in immune cells during human immunodeficiency virus 1 (HIV-1) infection. July 15, 2009.

**Adam Durbin**, Institute of Medical Science (David Malkin, supervisor) Studies on signal trans-

duction mechanisms in rhabdomyosarcoma. Nov. 10, 2009.

**Alvin Lin**, Institute of Medical Science (Ben Alman, supervisor) Modulating hedgehog signaling can attenuate the severity of osteoarthritis. Jan. 12, 2010.

**Pedias Diamandis**, Molecular Genetics (Michael Tyers, supervisor) Chemical genetic interrogation of neural stem cells: phenotype and function of neurotransmitter pathways in normal and brain tumor initiating neural precursor cells. Jan. 15, 2010.

## Introducing the Incoming MD/PhD Students of 2009

### Enoch Ng

People fascinate me. I want to understand why people are the way they are and they change. What makes some people vulnerable to neuropsychiatric disorders while others seem so resilient? The theme of my U of T undergraduate degree was the integration of neuroscience and psychology to understand the developmental origins of health and disease. In first year, I wrote a CIHR-style grant proposal on psychosocial risk factors for chronic low back pain development in children. In second and third year, I soaked up the fundamentals of neuroscience, psychology and cognitive science courses. In third and fourth year, I worked in Dr. Stephen Matthew's lab on several projects, including the effects of chronic maternal stress and transgenerational effects of prenatal synthetic glucocorticoids on the hypothalamic-pituitary-adrenal axis. I am writing a theoretical paper with Dr. John Vervaeke proposing specific testable cognitive and neurological mechanisms for mindfulness meditation. I am excited to be a U of T MD/PhD with its history of excellence in training clinician-scientists. In my PhD, I hope to continue integrating psychological and physiological perspectives to explore how genetic, epigenetic and environmental factors affect neurodevelopment.

### Rob Vanner

After spending most of my life in Kingston, I went west after high school to pursue a university education at UBC. I graduated in 2009 with an HBCSc, specializing in cell and developmental biology. During the summers after first and second year I worked in a cell physiology laboratory at Queen's University. Following my third year, I began working in a molecular neuroscience laboratory at UBC. Here I conducted research for my honours thesis on the alternative splicing of a low-voltage activated calcium channel. I have always been heavily involved in sports, and was a member of the UBC varsity rowing team during my time in Vancouver. While I won't be rowing in Toronto, I have begun training with the U of T Triathlon Club. My plan to begin competing in the summer of 2010 is contingent upon a drastic improvement in my swimming. I hope to continue working in the field of molecular biology for my doctoral research, and am particularly

interested in the mechanisms of cellular reprogramming and the determinants of cell fate. I was attracted to U of T for the critical mass of clinicians and scientists working towards solving the health problems of the future.

### Curtis Woodford

I graduated from the University of Waterloo with a BSc in chemical engineering in 2009. I went to Waterloo from my hometown of Liverpool, NS in large part because of the co-operative education program there. During my first co-op work term at Imperial Oil in Sarnia, ON, my interest in research was sparked, but I could only take one term of investigating the viscosities of engine oils. In the following years, I studied the melting properties of toners at Xerox Canada in Mississauga, and did a considerable amount of research in improving the delivery of radiation therapy at the London Regional Cancer Program under the supervision of Dr. Slav Yartsev. In Dr. Eric Jervis' lab at Waterloo I worked on creating decellularized heart tissue for tissue engineering and surface-enhanced Raman microscopy for nanoparticle labels. In the MD/PhD program I hope to apply my diverse research background to an unsolved bioengineering problem. I spend my spare time playing squash for the U of T Varsity Blues, reading, and biking.

### Ashish Deshwar

I was born in Regina, SK but moved west to Calgary with my family when I was 9 years old. After high school, I stayed in Calgary for my undergraduate studies and completed an Honours degree in Zoology at the University of Calgary. During this time, I worked in several research labs using a wide range of animal models. I spent one summer in neuroscience working with pond snails, another in vertebrate anatomy working with geckos and a little over a year studying the developmental genetics of the fruit fly. It was over this time that I discovered a passion for developmental biology. My current research interests are focused on understanding the genetics behind embryonic morphogenesis. Despite many lucrative job offers from zoo's across the country, I decided to join the MD/PhD program



Left to right. Enoch Ng, Rob Vanner, Curtis Woodford, Ashish Deshwar. (absent: Florence Wu)

here in Toronto for the strength and size of the faculty in my area of interest, as well as the quality of the scientific community. Outside of school, I spend time either watching sports or playing my guitar. I am a huge Toronto Blue Jays fan and hope that they can return to the playoffs!

### Florence T.H. Wu

While pursuing a BSc in Engineering Science at the U of T, I spent several research assistantships exploring the fascinating discipline of biomedical engineering. In the research lab of Dr. Christopher Hogue, I was introduced to bioinformatics and protein structure modeling. Under the mentorship of Dr. Cari Whyne, I developed histogram-based methods to characterize spinal metastases through CT imaging analyses. Under the guidance of Drs. Nancy McKee & Anne Agur, I used software to reconstruct aponeurotic structures in models of musculoskeletal anatomy. In 2006, I pursued an MSE in Biomedical Engineering at Johns Hopkins University. Under the mentorship of Dr. Aleksander Popel, I studied computationally the role of soluble VEGF receptor-1 within the molecular systems biology of angiogenesis, in the context of health and peripheral arterial disease. Interactions with collaborating clinicians have led me to appreciate the importance of a clinical perspective in guiding problem identification and formulation, and in ensuring clinical translatability of biotechnologies. I feel privileged to be part of the incoming class and look forward to transitioning into my PhD. I hope to acquire experimental research skills to complement my background in computational modeling.

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## Chapters & Textbooks

### *Essentials of Clinical Examination Handbook*

Lincoln MR, **McSheffrey GG**, Tran C, Wong D. (2010 Eds.), *Essentials of Clinical Examination Handbook*, 6th Ed. The Medical Society, Toronto, Canada.

Bremer K, **Randhawa V**. *The Lymphatic System and Lymph Nodes*. p. 131-139.

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Cheng A, **Hutson J**. *The Essentials of Clinical Pharmacology*. p. 373-384.

**Bohdanowicz M**, Chew D. *The Essentials of Fluids, Electrolytes and Acid-Base Disturbances*. p. 427-440.

**Lam G, Lovegrove F**. *The Essentials of Infectious Diseases*. p. 447-476.

Hojilla C, **Kennedy J**. *The Essentials of Oncology*. p. 507-514.

### *Toronto Notes 2010*

Baxter SD and **McSheffrey GG** (2010 Eds), *Toronto Notes 2010: Comprehensive Medical Reference & Review for MCCQE I & USMLE II*. The Toronto Notes for Medical Students Inc., Toronto, Canada.

**Kennedy J**, Li D, Tseng E. *Hematology*.

Jha S, Lee LH, **Randhawa V**. *Clinical Pharmacology*.

## Awards

**Susan Armstrong**: 2009 endMS Summer Studentship Award from the endMS Research and Training Network.

**Brian Ballios**: Association for Research in Vision and Ophthalmology – International Travel Grant to attend the annual meeting in Ft Lauderdale, Florida.

**Phedias Diamandis** placed third in the McMurrich competition at the 2009 Department of Surgery Gallie Bateman Day for his work "Heterogeneous and equilibrating lineage primed states coordinate asynchronous gene activation in neural stem cells pools".

**Dilan Dissanayake**: best oral presentation award at the Young Investigators Forum during the 2009 CITAC/CSCI meeting in Ottawa.

**Adam Durbin**: best poster MD/PhD Category at the 2009 Ontario Medical Student Research Day; 2009 George Brown Scholarship for demonstrated excellence in medical research from the Faculty of Medicine, U of T; best poster MD/PhD Category at the 2009 Department of Pediatric Laboratory Medicine Symposium/Laurence E. Becker Symposium, Hospital for Sick Children, Toronto; Outstanding Trainee Award in the Genetics and Genome Biology Program at the 2009 Sickkids Research Institute Retreat, Toronto.

**Chris Franco**: 2009 Stuart Allan Hoffman Award from the Department of Laboratory Medicine & Pathobiology, U of T for excellence in graduate-level research; a 2009 Trainee Travel Award from the Canadian Society for Atherosclerosis, Thrombosis and Vascular Biology to present his work at the NAVBO Matrix Biology Workshop in Whistler, BC; and second prize in the Basic/Translational Research, MD/PhD Category at the 1st Annual (2009) Canadian National Medical Student Research Symposium in Winnipeg MB.

**Janine Hutson** is a co-investigator with Dr. Bhushan Kapur and Dr. Peter Carlen on a successful grant from the Canadian Foundation on Fetal Alcohol Research for the project "Placental transfer of formic acid in the presence and absence of folic acid".

**James Kennedy**: 2009 Merck Sharpe and Dohme Award from the Faculty of Medicine, U of T awarded to a student with high academic standing and has shown promise in the field of therapeutics; and the Dr. Carl Witus Prize in Paediatrics awarded to a student with high academic standing and interest in paediatrics.

**Alvin Lin** placed first for the McMurrich Award, at the 2009 Gallie-Bateman Research Day, Dept. Surgery, U of T for his poster,

"Modulating hedgehog signaling can attenuate the severity of osteoarthritis".

**Andrew Perrin**: best poster presentation award at the Young Investigators Forum during the 2009 CITAC/CSCI meeting in Ottawa.

**Jacob Rullo**: CIHR Canada Graduate Scholarship for demonstrating exceptionally high potential for future research achievement and productivity.

**Graeme Schwindt**: 2009 CIHR Institute of Aging Special Recognition Prize in Doctoral Research, which recognizes highly talented emerging scholars working in aging related research.

**Marko Skrtic**: 2009 Trainee Research Award from the American Society of Hematology given to students pursuing research in the area of hematology.

**Ben Steinberg**: 2009 Dr C.S. Wainwright Memorial Scholarship for high academic standing from the Faculty of Medicine, U of T.

**Michael Ward**: 2008 Robert and Francine Ruggles Family Graduate Fellowship for academic excellence from the Faculty of Medicine, U of T; the Judah Folkman Award for the best scientific research abstract in the Field of Angiogenesis at the 2009 Cardiovascular Research Technologies Meeting in Washington, D.C.

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Any comments or suggestions can be forwarded to:

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