MD/PhD Program—University of Toronto

Pair O Docs

Volume 20 Spring 2015

An Interview with Dr. Rick Swartz

Interview by Kirill Zaslavsky

Dr. Swartz completed his undergraduate training in Pure and Applied Science at York University before joining the University of Toronto's MD/PhD program in 1998. Captivated by neuroscience, he joined Dr. Sandra Black's lab at Sunnybrook to study small vessel disease, stroke, and dementia, a topic in relative infancy at the time. He continued on to residency in neurology in 2004 at the University of Toronto. Never straying far from research during residency, he continued to work on neurovascular imaging with the group of Dr. Mikulis at Toronto Western. Now a busy stroke neurologist and scientist at Sunnybrook, he features as a Co-Investigator on multiple grants and is a Principal Investigator on grants funded by CIHR and the Heart & Stroke Foundation. He is leading the development of the "DOC" utility, a screening and treatment paradigm to identify stroke patients at high risk for depression, obstructive sleep apnea and depression. His other projects range from developing a smartphone app for stroke patients to intense research into small vessel disease, vascular dementia, and stroke in the young.

Q: What made you gravitate toward combined clinical and science training rather either separately?

RS: I came into medicine from a neuroscience perspective. I wanted to study neuroscience in people and operate clinically, so it was a good fit. In undergrad, I studied *Drosophila melanogaster*, but decided I wanted to move up the phylogenetic tree and have a more direct impact on people. The combined clinical and research training offered by University of Toronto's MD/PhD program was very appealing.

Q: Why choose the MD/PhD over the CIP?

RS: This is personal, as I know CIP works for a lot of people because it can ground and focus their research. For myself, I was concerned that if I did MD and residency first I wouldn't want to stop to do several years of graduate training. It is a long process, and knowing myself, as well as the challenges and lifestyle associated with graduate school, I decided it was best to do the PhD earlier in my training.

Of course, there are risks with the MD/PhD route. By the time you finish your clinical training, your research training could be dated. If it's basic science, it's likely the field has moved on. It's also possible that your research would not easily fit with your clinical focus.

Dr. Rick Swartz

For example, if you do a detailed neuroscience PhD and then want to become an orthopaedic surgeon, your PhD will be distant from the day-to-day practice or from the clinical research in the field. This doesn't mean it was a waste of training. Good graduate training gives you a skillset that is highly transferable – thinking critically, presenting and promoting your work, writing papers, networking, collaborating.

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MD/PhD Graduates of 2014

Pair O Docs would like to congratulate the graduating Class of 2014 and wish them the best on their future academic endeavours!

Janine Hutson (Obstetrics and Gynecology, UWO)

Dilan Dissanayake (Pediatrics, U of T)

Marko Skrtic (Internal Medicine, U of T)

Laura Erdman (Pediatrics, U of T)

Grace Lam (Internal Medicine, Edmonton)

Laura Donaldson (Ophthalmology, McMaster)

Introducing the Incoming MD/PhD Students of 2014

Michael Atkins

I was raised in Ottawa and completed my undergraduate degree in Biochemistry at Carleton University in 2014. I had the opportunity to participate in different research programs during my undergraduate studies and thoroughly enjoyed my experiences. Initially, I examined the molecular mechanisms that regulate cell fate in the developing retina with Dr. Valerie Wallace (Ottawa Hospital Research Institute). Later, I investigated the response of the cancer cell lipidome to oncolytic virotherapy by mass spectrometry with Dr. Jeff Smith (Carleton University). During this time, I became interested in the translation of basic science knowledge to improve patient care. Moreover, I am interested in applying the lessons from the clinic to inform experimental design. This led me to the decision to pursue a career in science and medicine. I was drawn to the MD/PhD Program at U of T because of the breadth of high impact research at the university and the hospital research institutes - in both clinical medicine and basic science. The structure of the MD/PhD will teach me the tools that I need in order to become a clinician-scientist and allow me to carry out research that will enhance patient care. Outside of my studies, I enjoy playing intramural sports, spending time with family and friends and exploring all that Toronto has to offer.

During my PhD studies, I will be working in Dr. Gordon Keller's group (Medical Biophysics). Dr. Keller's exciting research program examines the lineage-specific differentiation of human pluripotent stem cells. The details of my project have not been finalized, but I am particularly interested in using patient-derived cells to model human disease. I am confident that the MD/PhD program will help me determine where my interests lie within medicine and science as I move forward in my career.

Alainna Jamal

Toronto is the city I call home, having been born, raised, and educated here (I completed my undergraduate degree at the University of Toronto in Biochemistry and Cell/Molecular Biology). During my time as an undergraduate, I was fortunate to have conducted research with two physician-scientists within the Multi-Organ Transplant Program at the University Health Network. This was where I gained exposure to and developed a passion for both clinical medicine and medical research. I chose the MD/PhD program at the University of Toronto to obtain high quality training for what I feel will be a rewarding career – one that involves serving individual patients as a physician while still solving important clinical problems and improving patient care more broadly as a scientist. In my spare time, I enjoy exercise, music, and murder mysteries.

My previous research experiences have left me fascinated with infectious diseases, which I plan to explore further during my PhD. I am also interested in medical education and patient advocacy, and look forward to learning more about how to integrate them into my career.

Nicholas Light

Originally hailing from London, England I moved to the States at age 10, growing up primarily in the western suburbs of Chicago. During high school I developed an interest in biology, and in particular the rapidly evolving field of genomics. For university, I moved to Canada, the country of my parents' birth, to complete a BSc in Biology, and MSc in Human Genetics at McGill University in Montreal. During my MSc, I worked with Dr. Tomi Pastinen, investigating the role of *cis*-regulatory mechanisms in complex genetic disease through allele-specific genomic assays of gene regulation and chromatin state.

While genetics research is a major passion of mine, I have also long felt a calling towards medicine, and the care of today's patients. Over time, I came to realize the unique opportunity an MD/PhD program would afford me. With an understanding of clinical problems and the ability to apply cutting edge research tools to meet these problems, I aim to be a link between basic science and bedside practice. What drew me to U of T's MD/PhD program in particular, is its world-class teaching hospitals, hub of research excellence covering all fields of biomedicine, the lively urban metropolis of downtown Toronto, and not least, the close proximity of family.

Now in the midst of first-year medical school, my fascination and appreciation for clinical medicine has only grown, while I anticipate the start of my PhD program this fall. Outside of academics, I enjoy travelling and the great outdoors, and play a range of sports. I am currently enjoying exploring and getting to know Toronto, a city which has quickly become home.

Christopher McFaul

I did my Bachelor of Sciences at McGill University in the Physiology and Physics program. Stemming from my joint program, some of my hobbies include building electronics projects with Arduinos, programming and 3D printing. I chose the MD/PhD program at U of T because of the breadth of research that is being done in the engineering/medical physics fields and so that I could apply my skills to the field of medicine.

My research interests include developing and applying novel imaging/surgical assist technologies to improve patient outcomes. My PhD project will be focused on improving existing neurosurgery microscopy technology. The goals of the project will be to increase low light sensitivity during procedures like photodynamic therapy and to improve surgeon-microscope interactions.

Swapna Mylabathula

Born and raised in Etobicoke, I completed my undergraduate degree with a double major in Human Biology and Nutritional Sciences at the University of Toronto, and a year of electives in Kinesiology. I am very excited to be a part of the MD/PhD program at U of T, and my goal is to become a clinician scientist practicing sports medicine and actively participating in research that will benefit patients and their families, as well as in education. I am also avidly interested in sport, including hockey, lacrosse, and pretty much all other sports. I enjoy playing the violin and sitar, the culinary arts [both creation and consumption], travel, and participating in civic engagement projects and initiatives. I am an eternally hopeful Leafs fan.

I have begun working toward a PhD on concussion policy. My interest in concussions stems from my passion for sport, and I have become fascinated in various aspects of the field, including prevention, diagnosis, and management. Policy is an interesting lens through which to explore all of these areas in sport and beyond, and I look forward to developing my project on this in this phase of my training.

Tim Rappon

Born and raised in Thunder Bay, I'd never thought I'd end up living in a big city. I transitioned myself into big city life via London, Ontario, graduating with a bachelors of medical science in cell biology and scholar's electives from Western. While there, I worked four years (and three summers) with Dr. Rob Cumming investigating the role of metabolism in Alzheimer's disease. The interdisciplinary nature of the

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Introducing the Incoming MD/PhD Students of 2014—*continued from page 2*

scholar's electives program led me to take many courses outside of my field of specialization: everything from poetics, to medical anthropology, to computer science and the history of the modern Middle East. During my undergrad, I came to the realization that science and medicine already have the tools to alleviate a considerable amount of suffering on a global scale, but we fall far short of doing so not because we lack the basic knowledge but because of issues of social justice, economics and the distribution of resources. I haven't yet found a supervisor for my PhD, but I am in the process of building bridges with social science departments and Rotman, which as far as I know haven't yet had an MD/PhD candidate here at U of T.

Outside of school, I am a fur dad to two cats and enjoy helping out my fiancée with our small telecom business. I also captain one of medicine's inner tube water polo teams. If I had to tell you the number one reason that I picked U of T, it would be the incredible concentration of scientists, social scientists, humanities scholars and clinician-teachers all within a few blocks of the St. George campus. It is an amazing venue for collaboration, surely the best of its kind in Canada.

Ayesh Senevirantne

My path to the MD/PhD program at the University of Toronto has been an interesting one. I was born in Winnipeg, before moving to Sri Lanka after my father completed his PhD and my mother her Master's at the University of Manitoba. In Sri Lanka I attended St. Thomas' college, a school that placed heavy emphasis on the values of discipline, and perseverance. It was only after grade 10 of my studies that I came to Mississauga, to finish my last two years of high school before making my way to Western University, where I completed a Bachelor's in physiology, followed by a Master's in regenerative medicine, under the supervision of Dr. David Hess. During my undergraduate training, I was very fortunate to be mentored by Dr. Aaron Schimmer, an academic physician at the University of Toronto. Here I was a part of a team that was focused on developing novel therapeutic strategies for the treatment of leukemia. It was incredible to be a part of the early drug discovery process, and rewarding to see a number of drugs from the Schimmer lab making it to clinical trials. Seeing the impact translational research can have on patient care cemented my ambitions of becoming a clinician-scientist. Outside of my academic life, I enjoy watching sports, sampling various cuisines, working-out, and playing cricket.

Siraj Zahr

I completed my undergraduate degree in Honors Biochemistry at McGill before joining the MD/PhD program at the University of Toronto. As an undergraduate, I conducted research in a structural biology lab that studied large multimodular enzymes called non-ribosomal peptide synthetases via X-ray crystallography. I have also been involved in cancer biology research, investigating the molecular events that allow gastric cancer cells to proliferate and often circumvent targeted therapies. My research experience showed me that a mechanistic understanding of disease is not only important from a scientific perspective, but clinically, through the identification of drug targets. I believe the combined MD/PhD program at UofT will provide me with both the medical and scientific training to effectively tackle clinically relevant questions that emerge in the future. Outside of science and medicine, I enjoy watching movies, reading, and try to remain physically active (gym, soccer, kickboxing). Most importantly, I enjoy hanging out with friends and family.

My research interests revolve around neural stem cells and neurogenesis during embryonic development and the adult brain. During my PhD under the supervision of Dr. Freda Miller, I would like to explore how intrinsic and environmental mechanisms interact to ensure appropriate genesis of neurons from neural precursors, and how disrupting such pathways may lead to pathological states

From left to right:

Michael Aitkins

Tim Rappon

Swapna Mylabathula

Ayesh Senevirantne

Nicholas Light

Saraj Zahr

Chistopher McFaul

Alainna Jamal

Academic Leave – An Opportunity to Ponder the Nature of the Clinician Scientist Career

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

In past editions of Pair O' Docs, I have written about the physician scientist pathway, specifically focusing on the work of the University of Toronto Physician Scientist Education Taskforce and its daughter subsequent Integrated Physician Scientist Pathway Implementation Project. I have highlighted issues of integration, customization, and innovation in the context of undergraduate, postgraduate and graduate education.

Here, I focus on a unique aspect of professional identity, namely, professional identity formation for the physician scientist. Why? My interest in this issue was sparked by our findings during a qualitative inquiry of the Canadian Child Health Clinician Scientist (CCHCSP), which I led for ten years as Principal Investigator. Graduates of the CCHCSP described a process which was interpreted as a transition from a health professional identity to a new identity as a clinician scientist with a unique role combining clinical and research disciplines (Parker et al, *Academic Medicine,* 2011). The results of this study provoked me to ask: Does such a transition to a unique professional identity really exist? If so, what is its nature? How does the transition occur? What are the implications for formal and informal curriculum during training and career development?

During the past year, I was able to begin to address these and related questions during a six-month sabbatical leave granted to me upon completion of my first five-year term as Associate Dean, Physician Scientist Training. Sabbatical is a time for renewal, an opportunity to think about and act on professional issues free of the myriad of daily concerns that mark a busy and full professional life. That, in and of itself, is a luxury experience not to be missed.

Where to undertake a sabbatical focused largely on the education of physician scientist education? I chose an academic location quite different than our own and one in which the education of physician scientists occurs via pathways both similar and different to those across North America. This served as a way to look at training in a fresh way and to learn as well as to act in a visiting professor role interacting with both students and faculty. The site was University Centre Utrecht with Dr. Olle ten Cate, a world-renowned medical educator, as my host. With Dr. ten Cate, I was confident that I would be immersed in an intellectually vigorous atmosphere that nurtures and values scholarly inquiry.

A career as a physician scientist is an interface between two disciplines – medicine and science. While these disciplines share certain values and ways of being, they are also rather distinct. Yet, physician scientists are expected to lead at the interface of these disciplines and to provide return on

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PhD's Completed 2014

Graeme Schwindt, Institute of Medical Science (Sandra Black, supervisor) Towards Functional Imaging Biomarkers of Alzheimer's Disease. August 20, 2014.

Susan Armstrong, Institute of Medical Science (Warren Lee, supervisor) The Regulation and Perturbation of Vascular Endothelial Permeability. August 19, 2014.

Patrick McVeigh, Medical Biophysics (Brian Wilson, supervisor)Development of a platform for surface enhanced Raman scattering endoscopy. July 22, 2014.

MD/PhD Graduates - Class of 2015

Brian Ballios, Institute of Medical Science (Derek Van der Kooy and Molly Shoichet, supervisors) New approaches to the transplantation of stem cells and their progeny for the treatment of retinal degeneration.

Michal Bohdanowicz, Institute of Medical Science (Sergio Grinstein, supervisor) The role of phosphatidylinositol 4 5-bisphosphate metabolism during phagocytosis.

Greg Costain, Institute of Medical Science (A. Basset, supervisor) On the clinical applicability and translation of genetic discoveries in schizophrenia.

David Tsui, Institute of Medical Science (Freda Miller, supervisor) Molecular Mechanisms Regulating Mammalian Forebrain Development.

Jacob Rullo, Laboratory Medicine and Pathobiology (Myron Cybulsky, supervisor) Leukocyte Structural Adaptations in Response to Hemodynamic-Derived Forces: Tension Transmitted Through VLA-4 Activates Upstream Rap1, PI3K, and Rac-Dependent Actin Polymerization.

Graeme Schwindt, Institute of Medical Science (Sandra Black, supervisor) Towards Functional Imaging Biomarkers of Alzheimer's Disease.

MD/PhD Graduating Class of 2015—*continued from page 4*

Brian Ballios

I'm very excited to be closing this chapter in my physician scientist training. My experiences in the MD/PhD Program have been both challenging and immensely rewarding. At this point, I am more motivated than ever to pursue a physician scientist career path. I am entering residency in ophthalmology in Toronto, and look forward to combining my passion for regenerative medicine in vision science with rigorous training in clinical and surgical ophthalmology. I have been fortunate to find excellent scientific and clinical mentors who have helped to guide me along this journey. This is a true advantage of our Toronto program: faculty that represent both the breadth and depth of academic medicine. I have also found great reward in the areas of program development and advocacy, both within our program specifically, as well as in those areas that interface with my research and clinical work. I look forward to applying my training to the new directions and opportunities that residency training will bring.

Any advice I would give junior trainees would include remaining creative and flexible in your thinking, and seizing the opportunities to take on exciting new projects outside of your comfort zone. These years are a chance to grow your scientific and clinical acumen, and to explore the ability to balance those interests. But one of the most important things is to remain close with your fellow MD/PhD trainees. They are the continuum, and on such a long and challenging journey, you should look to them for both academic and social support. These are your future colleagues: make strong and lasting friendships. Many of my favourite moments and greatest support during the last eight years come from times shared with these people. I look forward to hearing about everyone's future successes.

Mike Bohdanowicz

I matched to dermatology at Toronto. I want to pursue basic science research in dermatopathology after completing a postdoc and subspecialty training. The MD/PhD program has undergone several positive changes during my stretch. It's exciting to see the growth and enthusiasm of the current cohort. I don't have any words of wisdom for junior trainees because it's difficult to generalize our experiences. My most memorable MD/PhD moment was when a summer student accidentally set a garbage can on fire, on his first day, right after our annual lab clean up. The poor guy felt so guilty he ended up doing his PhD in our lab and is now an accomplished scientist.

Greg Costain

I am grateful for the many opportunities provided by the MD/PhD Program. These include the 'critical mass' of trainees, the supportive environment and administrators, and funding from the McLaughlin Centre and the CIHR. One of the advantages of doing research and clinical training in this model is that we have the option of continuing on with our research in clerkship and residency. This is a special opportunity to practice balancing clinical and research obligations, and to build a strong track record of success in research. The delay in finishing medical school is softened by the realization that many of the students with whom one starts medical school ultimately want or feel compelled to undertake graduate studies in residency. For me, another advantage of the Program was the delay in needing to choose a clinical specialty, which was ultimately influenced by my research experiences.

David Tsui

My eight years of training in the MD/PhD program has been both an enjoyable and fruitful learning experience. During this time, I learned the skills to resolve diagnostic dilemmas and participate in comprehensive management planning in patient care, while at the same time I learned how to think like a scientist, perform laboratory techniques and effectively communicate scientific ideas.

As advice for junior trainees, I think this is a unique time during your academic career to maximize your creativity and I would encourage you to take this opportunity to expand your horizon and not be afraid of failures. At the same time, you should also devote time to develop your extracurricular interests whether it be music, sports or traveling, and most importantly spend time with your family and friends as you will only be taking on more and more obligations in the career ahead.

Coming July I will be heading to Edmonton for training in the Internal Medicine program. I look forward to the new journey ahead as I will continue my medical education and seek opportunities to fulfill my passion for research.

Finally I would like to thank Dr. Norman Rosenblum, Sandy McGugan and my PhD supervisor Dr. Freda Miller for their continuous support throughout my training.

Jacob Rullo

I am very excited to be heading to Queen's University to pursue training in Ophthalmology. Here, I will have the opportunity to pursue my passion as an ophthalmic surgeon and future clinician scientist. I am very interested in age-related macular degeneration and the interplay between the immune system and blood vessels. Formal training in a clinician investigator program is something I am actively considering in order to achieve these goals. The support I have received has been tremendous and I feel this is critical for my future success.

On the personal side of things, I will be heading to Kingston with my wife, Amanda, where we will start our family. I will have the opportunity at Kingston to explore the vast forests and discover the delicious varieties of wild mushrooms.

As I reflect on the past 9 years, I remember the ups and downs of my life. The moments of joy and the moments of misery. This was a time in my life where the extremes of my character were tested on a weekly basis. The personal development is something I could have never anticipated when I first started the program, but I must say this is what will allow me to succeed in the future. In my 9 years of training at the University of Toronto I had the opportunity to teach, create ideas, mentor, discover and find happiness. I am grateful for the opportunity I was given and will NEVER forget my training.

Probably the most important factor for success as a junior trainee is to have support. Support comes in many shapes and sizes. Supervisory support is critical for research success. Support from family and friends is necessary for sanity

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MD/PhD Graduating Class of 2014—*continued from page 5*

and remembering that life does move on outside of the lab. Support from a mentor will be important for your future success. Mentors come from multiple areas, but in medicine it is important that you have someone that will guide you through clerkship and into residency. My most memorable MD/PhD moment was my thesis advisory committee meeting where the collective group deliberated on my future… I could return to medicine!

CaRMS—Pearls of Wisdom

Every year, several of us go through the anxiety-ridden process of applying to residency programs. Uncertainty and doubt figure prominently in our thoughts. We've collected a couple of reflections from MD/PhD students who matched this year (spoiler: they all got their first choice!):

Greg Costain:

The initial online component of the CARMS application was comparable to applying to medical school or graduate school, or for funding awards. As in those cases, I will remember for the rest of my career the physicians who took the time to write me reference letters. The three-week interview period was a great opportunity to visit other centres, which I had unfortunately not done during the electives period. I interviewed at a total of seven programs, across two disciplines and five cities. My PhD training seemed to be seen as an asset at every interview, and was a welcome source of confidence throughout this otherwise stressful process. At no point did I feel that I needed to downplay the fact that I aspire to be a physician scientist. I also appreciated the efforts made at different schools to connect me with some of their established researchers during my visit. Every program had something unique to offer, and seemed keen to support the continuation of my physician scientist training. Personal ties to Toronto, and my firsthand knowledge of the clinical and research opportunities available in the city, had a major influence on my rank order decision. Until the night before match day, I was generally able to push any anxiety about the match to the back of my mind. I logged into the CARMS website just after noon on March 4th, in between seeing patients in a paediatric subspecialty clinic, and discovered that I had matched to the Medical Genetics training program at the University of Toronto. I texted my family the news, sent a three word e-mail ("Medical Genetics Toronto") to my PhD supervisor, and tried (with some success) to refocus on work.

Mike Bohdanowicz:

I found it helpful to shadow as much as I could before clerkship. Those exposures narrowed my focus and taught me about fields that get a bit neglected during our training. You have time to make your decision, but the elective selection period creeps up quickly and it's better to have narrowed your decision to a few fields so you have a better chance of getting the electives you want. My referees were central to my success. I would have failed without their care, consideration and guidance. Having colleagues throughout Canada - especially from the MD/PhD program - made the elective process and CaRMS tour much easier. Electives and interviews are great learning experiences, but it would have been very isolating to visit cities without seeing any friends.

MD/PhD: A tradition of leadership

Kirill Zaslavsky

Completing a combined MD/PhD degree is a long and challenging journey. It is a training path that attracts keen students that are deeply involved in their communities as leaders. After surveying our class about their extracurricular involvement, we found this affinity for leadership continues to flourish throughout the 8-9 years of the program. The extended tenure of an MD/PhD student can allow them to spearhead challenging, multi-year projects, and many members of our program have led some of the biggest student initiatives at the University of Toronto.

For example, a recent graduate from our program, Sagar Dugani, founded IMAGINE, a free student-run clinic for disadvantaged populations. Other students have major leadership roles in organizations focused on advocating for refugee healthcare (IREACH), global health (BABU), as well as healthcare advocacy initiatives.

Students in the program organize large conferences and symposia. Jon Fuller was the lead in organizing a large, first-of-its-kind conference about the history of healthcare in Toronto. Recently, several students have established a tradition of holding MD/PhD mentorship symposia that bring together trainees and established clinician scientists. Each year, students from our program work together with students in the MD stream to organize the Medical Student Research Day, a full-day conference showcasing research performed by medical student at UofT. For several years in a row, MD/PhD students chaired the Massey Grand Rounds, a yearly symposium focused on current issues in healthcare. Several of us are also involved with the Clinician Investigator Trainee Association of Canada (CITAC), from the President (see Kevin Wang's editorial on page 10) to those who organize the CITAC annual general meeting, a conference of nearly 200 clinical research trainees and faculty.

The UofT medical student body is an undisputed global leader among its peers in scholarly communication and knowledge translation, and MD/PhD students have been a big part of that. UofT students have routinely done what no other student body has done: produce revenue-generating publications that greatly benefit the student body and broader community. MD/PhD students continue to be heavily involved in the production of Toronto Notes, a publication that sells multiple thousands of copies worldwide each year, with the proceeds going towards funding community organizations and student initiatives. Students also produce the Essentials of Clinical Examination Handbook, now in its 7th edition. In addition to being multi-year projects with teams numbering in the 100s of people including Faculty, these initiatives result in valuable collaborations internationally. Gord McSheffrey, who has made a significant impact on both of the above publications, was also part of a team that involved MD/PhD students from University of Cincinnati to produce Pharmacology You See, a reference and study

Interview with Dr. Rick Swartz—*continued from page 1*

Passion for neuroscience carried me through the whole thing, and the fact that I ended up in neurology helped accelerate the process for me in the end.

Q: How did you choose your PhD project?

RS: Coming out of undergrad, I knew I wanted to do graduate work in neuroscience, either in the context of a PhD or an MD/PhD. During the application process, I spent time reading through different Faculty members' papers, lab descriptions, and phoning and talking to grad students. I found a few labs whose work I found interesting and set up meetings with them during the first year of med school.

I really clicked with Dr. Black. I worked with her in the summer between 1st and 2nd year MD and found that she was great to work with, so I joined her group for the PhD. I spent that summer writing a review paper on what I thought was going to be my PhD project. However, through the process of writing, I realized that it would end up being too logistically challenging to pull off, so I chose a different topic.

Q: What are some highlights from your PhD?

RS: I focused on the connection between brain cell loss (atrophy) and small vessel disease (SVD), a novel concept at the time. It turned out that few people had pure vascular dementia - most have a combination of both AD and vascular disease. Whatever diagnosis the patients received was less important than the imaging. In 2002, we submitted the paper and it was rejected. I had gone back to clerkship and residency and didn't get back to the paper until 2008. In 2008, we resubmitted it, unchanged. It was accepted with no revisions and one of the comments was "Bravo". Sometimes, the field isn't quite ready for what you are doing. It sat for 6 years.

Q: How did you feel during that 6 year period about the paper?

RS: I got busy with clerkship, residency and family. I had some other projects. I wasn't too concerned with it. Only in the 4th year of residency did I start paying more attention to it. I wasn't burned out or upset. I just let it sit, and it turned out to be a great thing to do.

In the meantime, I published on other things that became apparent after reviewing the imaging data. For example, I found that lesions in the thalamus due to SVD had disproportionate and significant effects on function. We noticed a lot of patients with changes in the external capsule, which was recently shown to have some cholinergic fibers passing through it. In the end, we were able to show that SVD that disrupted these cholinergic pathways had specific functional correlates depending on the location of the lesion. This wasn't something we set out to do; it just fell out of the data.

Q: Any advice for those embarking on the MD/PhD journey?

RS: Pick your lab and supervisor well. Find someone whose grad students have been happy and successful. More often than not when students are unhappy, the fit won't be good. Every thesis is fraught with challenges and frustrations and if you have a supervisor you click with, things will be much easier.

It is also important to have a good support system – do not forget about friends, family, and stable relationships. They are important regardless of what you do, and the prolonged nature of the program makes them all the more important. Several people I've trained with are now Faculty: Lorraine Kalia, Victor Yang. We still meet to catch up. Make good friendships with the people in your program.

People say it will be worth it when you're done. While that is true, it is not about when you're done (you can't spend 8 years of your life hoping it will be good). You have to enjoy the process. I would encourage everyone to maximize the opportunities that you have now. The great thing about UofT is that it is large enough to have a critical mass of trainees and clinician scientists.

Q: What should one avoid?

RS: If you're struggling, at bad phase in the PhD, burdened with lab politics, have no results, do not suffer through it alone. Talk to your supervisor, the MD/PhD program, colleagues. Find a mentor outside of the lab. Everyone has ups and downs – that's normal. Where people run into trouble, they can end up beating their heads against the wall. At UofT, there is a lot of support.

In general, for your PhD, you have to have an overarching "so what" to your research. Do not forget that there will be a patient at the end of the work somewhere. The point of the program is to train people to think with this goal in mind with the research skills to ask questions and with clinical skills to be able to have impact on patients some day.

Q: How was reintegrating back with into medical school after the PhD?

RS: I started ASCM in July but wasn't going to join the class until December because of the thesis. So, I decided to take an extra year for the thesis and have it written and defended. That was useful for me to do, as it made integration to clerkship smoother because I could allow myself to completely focus on it.

Q: How did you structure your electives?

RS: I focused on neurology with a lot of pediatric neurology. Got a paper during one of the electives which came out of a conversation with a supervisor. First week, I saw the patient. The second, I figured out which papers to look at. By the third, I had the meta-analysis complete.

Q: How did you keep research going through residency?

RS: At first, I just published papers from the thesis. At the end of clerkship, I was dealing with just adjusting. I had a newborn in the 2nd year, so for a couple of years, I gave myself permission to not be a scientist. This was the time to become a clinician. Not until 4th year of neurology residency when I could do electives, and I got my head around medicine and being a father did I start thinking about research again. When you're on call every 4th day, your head should be completely there. In later years, when you have the clinical skills, you will be able to figure out how to incorporate research.

Q: What was it like being a parent during residency?

RS: I wanted to start a family and decided it was the right time to start it during residency. My first was born in 2nd year and my second was born during the fifth year. Nothing I ever do in the future will be harder than that year. Finishing residency, being the chief resident and having a baby was tremendously involved. It taught me a lot about work-life balance. Work hard during the day and then go home and be with the kids. I learned how to prioritize things in life – I couldn't go to every talk or have multiple evening study sessions. Time with family makes me a better person.

Reflections on training in Boston: An update from a travelling MD/PhD student

Jennie Pouget (incoming class of 2011)

September 2014 marked the start of my fourth year in the MD/PhD program at the University of Toronto. But instead of experiencing the familiar energy of fall semester at UofT, I found myself sitting in orientation sessions at Brigham and Women's Hospital, Harvard Medical School, and the Broad Institute in Boston Massachusetts. I had started a research fellowship abroad, generously funded by the Weston Foundation and Fulbright Canada.

Training at an institution outside of Toronto was an idea my supervisor Jo Knight and I had tossed around early on in my PhD training. Her statistical genetics research group at the Centre for Addiction and Mental Health (CAMH) was still in its early stages of growth, and time spent at a well-established program would help me develop my skills, expand collaborations, and get new perspectives on the infrastructure required to maintain a successful and productive lab.

One of the biggest challenges in the work I do, trying to understand the genetic risk factors for schizophrenia, is clinical heterogeneity. Not every patient with schizophrenia I study has the same symptoms, or likely even the same underlying cause of disease, but my genetic analyses treat them all the same. Like other geneticists, I have struggled against this challenge during committee meetings, talks, and reviewer comments. Shortly after starting the second year of my PhD, I saw a post-doctoral fellow from Harvard Medical School give a talk on methods he was developing to address the clinical heterogeneity problem in rheumatoid arthritis. I explained my interest in applying his approaches to schizophrenia. He was enthusiastic and, even more importantly, thought it was feasible for me to extend his work to schizophrenia. I pitched the idea to my committee and they were on board, so I applied for funding and -- long story short -- here I am spending the third year of my PhD working in the Harvard lab developing these methods.

Like any new experience, there are benefits and drawbacks to doing part of your PhD training abroad. Below is a quick pro-con list, compiled from my own experiences and those of other travelling PhD students I know.

Despite the Great Snow of 2015, I have enjoyed my training in Boston immensely. The major factors that contributed to this being a positive experience were 1) travel funding to alleviate the financial stress, 2) supportive attitudes of my PhD supervisors, committee, and home institutions (UofT and CAMH) towards my time abroad, 3) positive work environment within the Harvard lab I am working with, who immediately welcomed me as part of their team.

If you are considering going away for part of your PhD training, my best advice is to make sure these factors are in place. Seek out funding opportunities and contacts with the people you want to work with early on, at least a year in advance. Try to schedule your time abroad so that you will be back for at least 6 months prior to completing your PhD, to avoid administrative issues surrounding your defense and medical school re-entry. Set up realistic expectations with your PhD supervisor and committee regarding how much you will communicate and how often you will come back to your home institution during your time abroad. Most importantly, be patient with the process and keep an open mind along the journey.

Pros	*Cons*
A break from the dreaded, "How much longer until you graduate?" I'm not sure if it's because they have a new-found respect for my career path now that I am an international scholar, or if it's because they have finally given up hope that I will ever get a real job, but either way not a single person has asked me the dreaded question since I left Toronto. Instead they ask me "How's Boston?" – a much less anxiety-provoking question.	**Lots of extra administrative work** It sounds trivial, but it's not to be underestimated. Between departmental approval, visas, housing, taxes, and health care coverage, the administrative stuff sucks up a lot of time and energy.
International experience	**Expensive** The cost of living in major American and European cities is 30-50% greater than in Toronto. You will probably end up coming back to Toronto more often than you planned, for work or family, and travel costs really add up. Turn all the extra expenses into a win, get a credit card with good perks!
Change of scenery	**Longer time to degree completion?!** This is a major concern for many trainees, and for good reason. Depending on the nature of your research and your planning, spending time abroad might prolong your PhD. In my case, most of my research is computational, so I am able to continue working on projects I was running in Toronto while I am away. Additionally, the methods I am learning at Harvard address the major challenges that I was facing in my research in Toronto. As a result, my time abroad has probably accelerated my degree completion.
Builds your network	**Overlooked at your home institution?!** This concern is usually raised by trainees who go abroad later in their training, e.g. during residency, and it may apply to those who go away during their PhD as well. My experience thus far has actually been the opposite. Since leaving Toronto I have been invited to be on more grants and speak at more events by my home institution because the hospital and my mentors are excited to have one of their trainees building collaborations abroad.
Expands your skills	**Distance from your support network**
Gives you a new perspective	
Shows you are independent	
Challenges you	

MD/PhD: A tradition of leadership—*continued from page 6*

guide that is still managed by MD/PhD students. Last but definitely not least, students in our program routinely serve as editors-in-chief of the University of Toronto Medical Journal, the oldest student-run medical journal in North America.

Space limitations prevent us from highlighting the complete range of initiatives that MD/PhD students engage in, which is immense. The culture of leadership and camaraderie among our students greatly enhances the long years we spend in training. Senior students actively mentor the juniors and several of us have worked to establish the MD/PhD Longitudinal Mentorship program, which continues to benefit the student body to this day. As members of the class, Ilya and I are extremely proud to train alongside such a distinguished group.

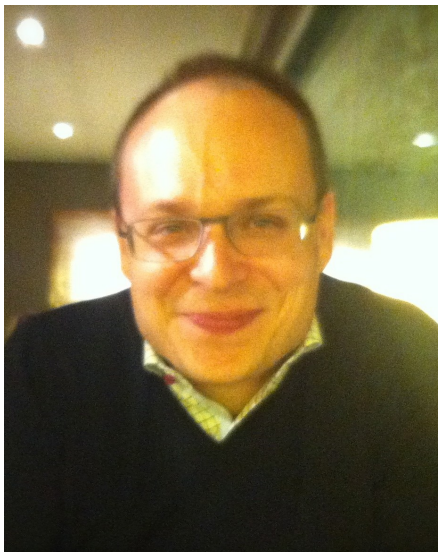
Graduate in Focus: Dr. Sam Saibil

Dr. Sam Saibil graduated from the MD/PhD program in 2010. He is now completing his residency training in Internal Medicine at the University of Toronto as well as his postdoctoral fellowship through the Eliot Phillipson Clinician Scientist Program and the Clinician Investigator Program. In July, he will be starting his Medical Oncology Residency.

Dr. Saibil enrolled in the MD/PhD program in 2000 having completed an undergraduate degree in microbiology and immunology at McGill University from 1996-2000. During his undergraduate years he was fortunate to have the opportunity to work as a summer student in the laboratory of Dr. Robert Kerbel. These summers in Dr. Kerbel's lab were at a very exciting time in oncology research as it was at the start of the anti-angiogenesis therapy revolution. This early exposure cemented for Sam his interest in cancer research and the potential and excitement of translating scientific discoveries from animal models into the clinic. It was also these summers in Dr. Kerbel's lab that motivated Sam to apply to the MD/PhD program.

Dr. Saibil first joined the laboratory of Dr. Pamela S. Ohashi as a summer student, where he assisted doctoral student Sanjeev Mariathasan in studying the role of ERK signaling in thymocyte selection. Having enjoyed his experience as a summer student, Dr. Saibil decided to stay in Dr. Pamela S. Ohashi's lab at the Campbell Family Cancer Research Institute at Princess Margaret Hospital for his PhD training. "Having the opportunity to spend a summer in the laboratory in which I thought I wanted to my PhD was a great opportunity, "Sam recalls, "I am not sure I generated that much data but I really got to know the other members of the lab as well as Pam. Those summer months proved to me that spending upwards of 6 years in Dr. Ohashi's lab would be a tremendous learning experience for me, and it was."

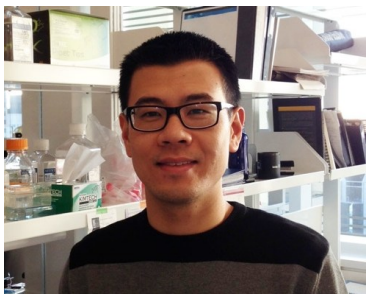
Dr. Saibil completed his PhD training from 2002-2008, his thesis entitled, "The role of Protein Kinase B (PKB) signaling in T cell survival and tolerance". During his doctoral studies, Sam mapped a novel signaling pathway downstream of PKB linking it to the control of Cbl-b protein expression, a master regulator of T cell tolerance. This finding led Sam to become very interested in tumor immunology and harnessing the power of the T cell immune response to fight cancer; work by Dr. Josef Penniginer and other groups had previously demonstrated that T cells with reduced expression of Cbl-b displayed enhanced anti-tumor activity. Additionally, just as Sam was completing his PhD, Dr. Ohashi began to organise the first Canadian trials of Adoptive T cell Therapy (ACT) for the treatment of melanoma. ACT is a therapy that has demonstrated tremendous promise for the treatment of melanoma in the metastatic setting. Current ACT treatment protocols involve the re-infusion of autologous tumor infiltrating lymphocytes that have been expanded in interleukin-2. It was the opportunity to be involved in these trials of ACT that convinced Sam to return to work with Dr. Ohashi's group for his postdoctoral research. Sam's current research focuses upon investigating ways to improve the efficacy of ACT. Specifically, he is investigating ways to alter $CD8^+$ T cell metabolism to improve their anti-tumor capabilities.



Dr. Sam Saibil

"Returning to the same group for postdoctoral studies where you have already done your PhD is frowned upon, particularly by funding agencies," Dr. Saibil cautions. "That being said, the opportunity to be involved in tremendously promising translational research during my residency was too good to pass up. Additionally, mentorship and career development opportunities always have to be considered when planning the next phase of your training. Combining my postdoctoral research with my clinical training has allowed me to expand my circle of mentors to include clinician-scientists, such as Dr. Marcus Butler and Dr. Anthony Joshua, and to be exposed to the clinical side of translational research as I am actually seeing patients in clinic who are on trials. These are experiences that I did not get during my PhD and is long term where I hope my career takes me."

"Momentum: Forward", why do we need representation?



Kevin Wang, CITAC President

In my daily life, I frequently get asked this question, "Why on earth are you doing the MD/PhD program?" For a select few, such as friends, colleagues, parents, this question comes from a place of genuine concern for my wellbeing, but for the vast majority of people, they are completely baffled by this choice; a choice that significantly increases my length of training, chance of a "normal" social life, and ultimately a reduction in my earning potential. Sure, my answer is normally along the lines of an affinity for masochism, but at the heart of every MD/PhD student, there is a drive, a "fire-in-the-belly" if you will, to discover something new and potentially impact clinical care. As the adage goes, "it takes a village to raise an MD/PhD trainee", this journey, so critically few of us have decided to pursue, requires guidance, mentorship, and representation. What is worse is that clinician investigators in this country are on the decline. As trainees and future medical researchers, the path forward remains uncertain and treacherous. Funding agencies continue to experience declines in grants and job opportunities remain scarce and competitive. Our numbers are few and our collective voice remains scattered. The Clinician Investigator Trainee Association of Canada (CITAC) arose from this call for much needed action.

Almost four years ago now, I attended my first CITAC meeting. I still remember the feeling of awe and admiration towards my more senior colleagues and all that has been accomplished with CITAC to improve the training environment for future clinician scientists. Today, I serve as the president for this organization, striving to continue to strive for that lofty goal. Part of the mandate of CITAC is to be recognized as a stakeholder in clinician scientist education. We have to date published four impactful publications on the topic of MD/PhD training in Canada. The first of which reported on the demographics of trainees and identified the lack of mentorship and funding disparities as potential challenges facing trainees [1, 3]. We followed this with a comprehensive guideline on how to choose a supervisor [4] and improve the mentor-trainee experience [2]. With evidence in hand, we strive to be an advocate for trainees across the nation whether you are from a well established program such as University of Toronto or a brand new one such as Queens.

From speaking with several colleagues, one of the major challenges of pursuing a combined degree is the isolation. Given the highly specialized nature of this program, finding a common ground for scientific discourse can be challenging. Since CITAC's inception, we have held an annual general meeting bringing trainees from MD+ and CIP programs under one roof to network. This past year saw the first meeting being held in Toronto featuring several engaging speakers with a focus on career development. This meeting has perennially been very well received and I hope to continue to improve the content at this year's meeting. If you are interested in getting involved, please take a look at our website at www.citac-accfc.org. I will end by saying that fostering the next generation of clinician scientists requires a national voice and that CITAC has evolved to fill that role. I look forward to working with you to improve how clinician scientists are trained in Canada.

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Academic Leave – An Opportunity to Ponder the Nature of the Clinician Scientist Career—*continued from page 4*

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

investment to society for its investment in health research and the education of health researchers. The academic community is concerned about the sustainability of the physician scientist pipeline. Attention is sharply focused on career sustainability including the prolonged and inflexible nature of the training path, the role of physician researchers in the evolving academic health science centre, the economic viability of this career path, and research funding. Despite the adversity experienced in this career path, experience shows that many physician scientists persevere, indeed thrive. Is there a fundamental quality in these individuals that trumps all the bumps in the road? Do we understand these qualities? Do we purposely nurture and support development and sustainment of these qualities? The study of CCHCSP graduates, referenced above, suggests that development of a strong and secure professional identity may be key. The 2010 Carnegie Report on Educating Physicians suggests that development of professional identity is one of four priorities for future development within medical education. The Carnegie Report argues that a state of readiness for entry and sustainability within a career is best defined by professional identity, defined as a composite of values, beliefs, sense of affiliation, aspirations and synchrony with the norms of the medical profession. Not surprisingly, professional identity develops in tandem with personal development and needs to align; the literature on personal development is vast. In contrast, the literature on professional development is rather limited. In medicine, it is only beginning to be developed. The literature on professional development in individuals who combine two distinct disciplines to create a unique interface is practically nonexistent. Review of this literature and discussion with students and faculty during my sabbatical reinforced my 'hunch' that professional identity is an important, but poorly investigated issue, relevant to the education and career development of physician scientists.

Having returned to my post as Associate Dean, with renewed energy, I look forward to studying this issue in concert with colleagues in Utrecht and Toronto and determining ways to productively address this issue within the physician scientist curriculum.

CITAC Annual General Meeting 2014 Overview

Jieun Kim and Nardin Samuel, 2014-2015 CITAC Representatives

We were honored to host the CITAC/CSCI Annual General Meeting (CITAC-AGM) for the first time in Toronto in November last year. The meeting was an overwhelming success with 172 attendees from MD/PhD and Clinician-Investigator Programs (CIPs) across the country. From University of Toronto, there were 37 MD/PhD trainees and 61 CIP trainees.

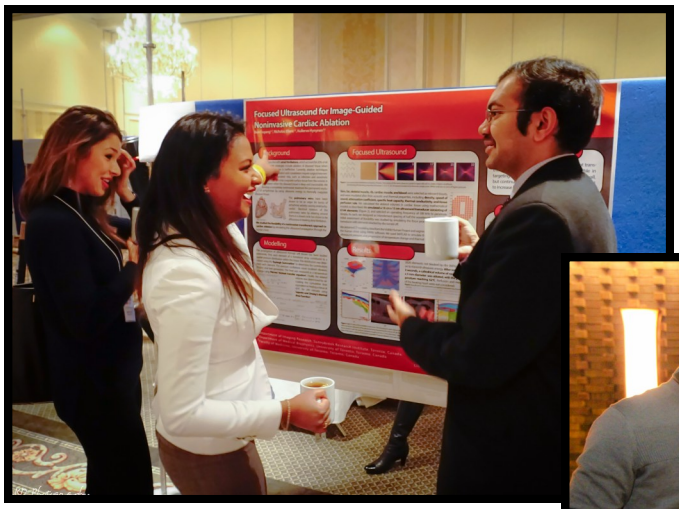
The conference began with a joint CITAC-CSCI evening meeting for all registrants, followed up by a kick-off social event, hosted by CITAC. The formal program commenced on the following day with an extremely well-received opening session aimed at tackling the core endeavors of clinician scientist trainees, entitled "Trip Advisor for the Young Clinician-Scientist: Navigating Your Journey to a Fulfilling Career". Guest speakers, Drs. Sheila Singh, Chaim Bell and Ken Croitoru, discussed their own personal career journeys and gave honest and candid advice. These speakers, along with Drs. Astrid Guttman and Ravi Retnakaran participated in a lunchtime panel discussion and fielded numerous questions from the attendees, ranging from the usual topic of work-life balance to strategies for making yourself marketable in the later stages of one's training.

Trainees had the opportunity to showcase their research through one of two poster sessions at the meeting and 6 abstracts were also selected for brief oral presentations. The latter was inauspiciously interrupted by a fire-alarm, although the speaker resumed his presentation and speculated that the fire alarm went off because his talk "was on fire".

Concurrent break-out sessions, led by clinician-scientists, took place throughout the course of the meeting, with small group discussions regarding networking, presentation skills and the use of social media.

CITAC has been focusing on how to help facilitate and standardize the training experience for everyone, as there are inevitable hurdles and challenges that each trainee needs to navigate through their training program, the current president-elect, Kevin Wang, from UofT, pointed out. The primary focus from now on for CITAC would be to become a key stakeholder that advocates for clinician scientist trainees at an institutional, provincial, and the national level.

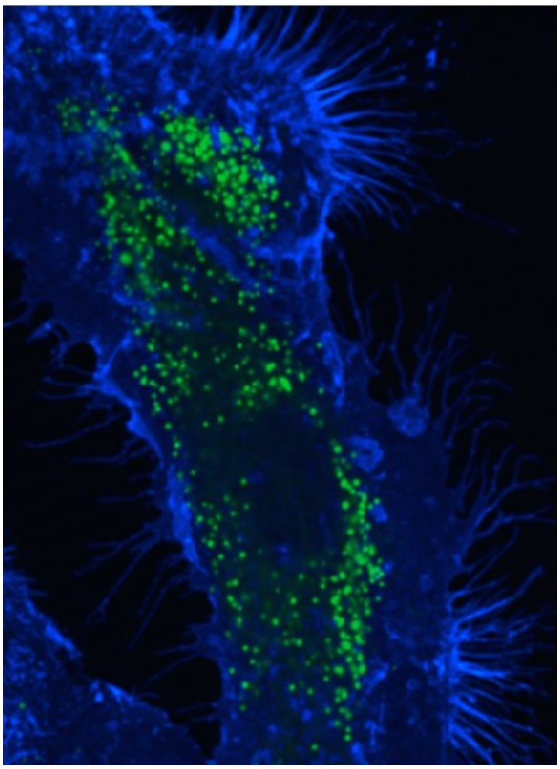
The recent CITAC-AGM was a great success, fostering a sense of community across the country for each and every attending trainee. We are looking forward to seeing what the future CITAC-AGMs have in store, and seeing you at the next meeting!



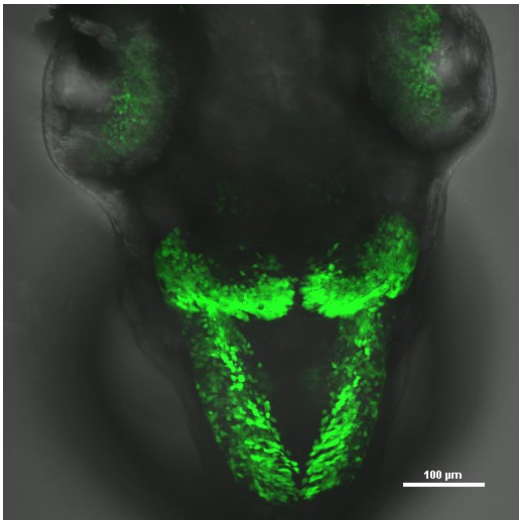
Second Annual Dramatic Data Showcase

We have asked students to submit the most exciting images and art generated during the sweat-and-tears PhD phase of the program. These are intended for the covers of the very top scientific journals, but you get to see them here first!

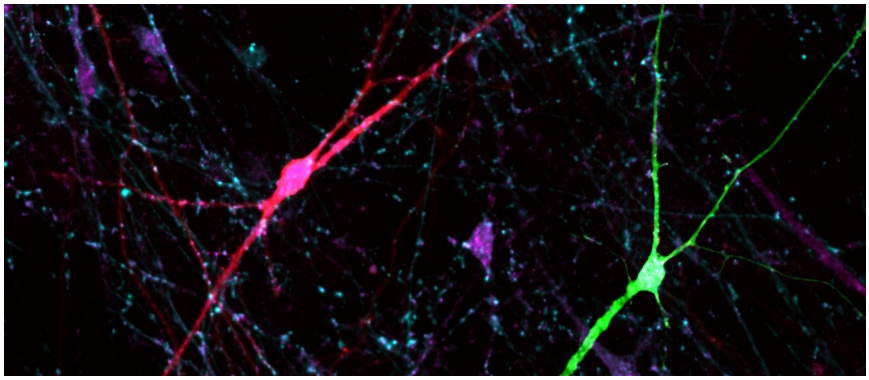
Amy Khan: I designed and fabricated a simulated stomach "phantom" for surgical education. On the left, I am testing the phantom using the da Vinci Surgical System, which is a minimally invasive surgical robotic device. On the right, you can see the endoscopic view of inside the phantom.



Ilya Mukovozov: Human macrophages fed oxidized low density lipoprotein and labeled with neutral lipid probe BODIPY 497/503 showing lipid droplets in green. Blue: membrane marker.



Kevin Wang: This ominous figure is that of a Day 3 zebrafish expressing GFP under the ptf1a promoter. The image is composed of a merged confocal Z-stack along the coronal plane. The ptf1a promoter marks cerebellar progenitors that are purported to be the cell of origin for a rare pediatric brain tumour: medulloblastoma.

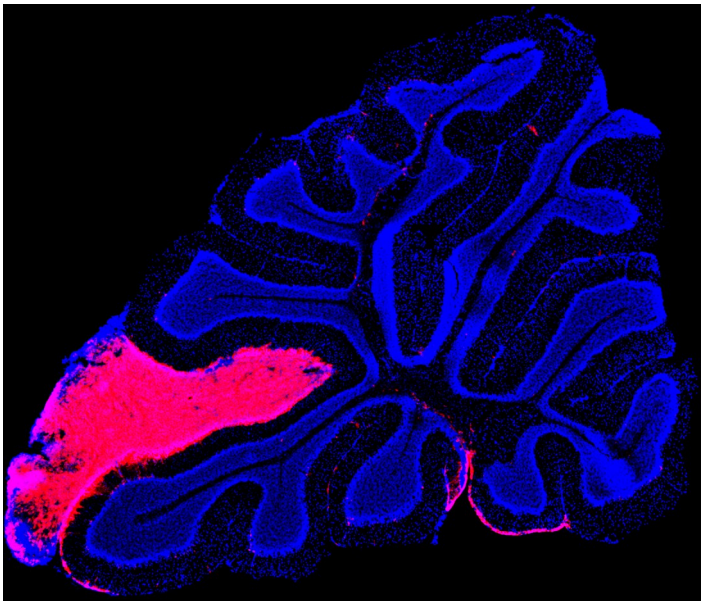


Kirill Zaslavksy: Red vs. Green

Human stem-cell derived neuron from an autistic child (green) and one from a control individual (red) are co-cultured with unlabeled control neurons to compare their ability to integrate into the neuronal network formed by control neurons in the culture dish. Cyan: Synapsin I (presynaptic marker). Magenta: SHANK2 (excitatory postsynaptic marker). Overlap of cyan and magenta identifies excitatory synapses.

Jieun Kim: Transliteration of stem cell dialogues

The unknowns of the complex interactions between different cell types, extracellular matrix, receptors, and ligands throughout stem cell maintenance and differentiation, are visualized by different colour splatters. The splatters were generated by dropping water balloons filled with acrylic paints on a canvas. Cells in top left and bottom right corners were painted by water balloons filled with acrylic paints, using different water dilutions and canvas elevations to create different visualizations to represent varying morphologies of different cells.



The missing puzzle pieces represent key findings that will allow scientists to make sense of the complexity involved in intercellular and intracellular stem cell signaling pathways. White acrylic paint, a colour produced by the combination of all colours, was chosen to create the missing puzzle pieces and lines connecting them. These were the only parts of the work created with a brush and a ruler, to symbolize human endeavours to understand the nature of stem cell communications.

This work was conceived by Jieun Kim with the help of Nika Shakiba, Curtis Woodford, Wendy Qiao, Nimalan Thavandiran, Petra Lücker, Serena Tedesco, Shreya Shukula, Joel Östblom, and Mukul Tewary of Zandstra Lab in September 2014.

Rob Vanner: Lineage tracing from Sox2^{+}cells reveals their contribution to *Ptch1*$^{+/-}$ mouse medulloblastoma growth.

MD/PhD Class Council Update

Rob Vanner (President), Ashish Deshwar (President-Elect)

The MD/PhD Program Class Council has had a productive and exciting year. In June of 2014 we thanked Brian Ballios for his two years of service as Class Council co-President and welcomed Ashish Deshwar as the President-Elect. Brian devoted many years to the Class Council in a variety of roles, during which time he helped spearhead a number of initiatives such as the Mentorship Program and Town Hall Meeting. We thank him for his efforts. Over the past year, Ashish and I have worked to focus the council's efforts on building solidarity within the program through mentorship and social activities.

Our efforts have been concentrated on planning the first MD/PhD Program Retreat to be held on October 3-4, 2015 at the YMCA Cedar Glen. We are excited to be hosting this event early in the academic year to welcome new students to the program and give current students the opportunity for socializing, mentorship and professional development. The retreat program will include the annual Town Hall Meeting, followed by workshops, debates and a guest speaker to be followed by dinner and entertainment. Significant interest has been generated in the planning stages and we expect a good turnout from all years of the program.

Last fall, we met with Dr. Rosenblum to discuss student feedback from the 2014 Town Hall, including student concerns surrounding stipends, travel funding, MD/PhD Program structure, and the MD/PhD Mentorship Program. We are pleased to report that the feedback was well received with progress made on a number of fronts. Key to incorporation of this feedback is Dr. Rosenblum's initiative to create an Integrated Physician Scientist Training Program at U of T, with input coming from many MD/PhD students and physician scientists and educators from around Toronto.

The MD/PhD Mentorship Program is now well in to its second year of pairing students with a physician scientist as part of a longitudinal mentorship opportunity. The kick-off event was held in October with support from Morgan Tilley at the Office of Advancement and was well attended. Susan Armstrong (re-entered to medical class of 1T7) and her mentor Dr. Neil Goldenberg (Anesthesia PGY4 CIP trainee) shared their experiences from the previous year and offered student/mentor pairs advice on how to create a productive relationship. We are looking forward to a program wrap-up event in May and expect many mentor-mentee pairs to continue to meet in to the future.

In other mentorship news, we have made a slight modification to the format of the monthly MD/PhD Student Seminar Series by shortening the student talk to 20 minutes plus 10 minutes for questions and adding a 30 minute professional development talk. On most nights we welcome an established physician scientist from Toronto to come and share their research with our group while providing some insight in to their training path and advice for the future. Alternatively, one month we welcomed a number of MD/PhD Alumni to return and share their experiences doing research during residency. Many of these sessions have generated stimulating discussions that have spilled over in to the monthly program dinners. The Class Council has continued to host its traditional 'Transition' mentorship events including an Orientation Week Welcome, Transition to MD and Transition to PhD nights.

With the help of our fantastic SALT reps, Amanda Kahn and Robin Elphinstone, a number of MD/PhD social events were added to the calendar including a Medieval Times Night, Paint Night, and Bowling Night with more to come in the future.

As the current academic year comes to a close, we would like to thank everyone on council for their hard work and are looking forward to a great year to come!

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Awards

Brian Ballios is the 2014 recipient of the Ankle Award, awarded to a medical student who has completed a project that represents creative, or "outside the box" thinking with an outcome or outcomes related to improved health systems, patient care, research results or new ways of completing tasks that enhance medical practice.

Brian Ballios has been selected as a recipient of the 2015 Gordon Cressy Student Leadership Award.

Greg Costain was selected as recipient of the Lap-Chee Tsui Publication Award – 1012 (Clinical/Health Services & Policy/Population Health Research) for his publication, Evaluating genetic counseling for family members of individuals with schizophrenia in the molecular age, Schizophrenia Bulletin; October 27, 2012.

Ashish Deshwar received a CIHR Vanier Award in 2012 for his project —Characterization of the pro-cardiac activity conferred by Gata5 and Smarcd3b in the zebrafish embryo: an approach to identify novel regulators of cardiac progenitor development

Dilan Dissanayake won the Dr. Yumin Li Access to Excellence in Paediatric Research Award at convocation in June, 2014.

Laura Donaldson received the Dr. Kelly Gollish 5T7 Memorial Award and the Medical Alumni Associate Scholarship at graduation in June, 2014.

Robyn Elphinstone received a 2014 CIHR Vanier Award for her research "'Pharmed' Red Blood Cells as Novel Therapeutics for Life Threatening-Infections".

Laura Erdman was the Cody Silver Medal award winner for placing second in her graduating class, and in addition received the Joseph Aiken 3T3 Award in Medicine and the Dr. Arthur V. Brown Endowment Fund awards.

Natasha Lane is a 2014 CIHR Vanier Award recipient for her research "How should family physicians be paid to reduce socioeconomic disparities in heart failure outcomes?"

Nardin Samuel received a 2014 CIHR Vanier Award for her research "Epigenetic analysis of Li -Fraumeni Syndrome cancers for identification of novel mechanisms of tumorigenesis in cancer susceptibility"

Shrey Sindhwani is a 2014 CIHR Vanier Award recipient for his research "Nanomaterial based enrichment of blood proteins for cancer detection and monitoring"

Curtis Woodford received a Frederick Banting and Charles Best Canada Graduate Scholarship from CIHR for his project —Enhancing human pluripotent stem cell differentiation to pancreatic progenitors by control of endogenous cell signalling‖

You (Richard) Wu received a 2014 CIHR Vanier Award for his research "Characterizing the effects of human milk oligosaccharides and prebiotics on the intestinal epithelial barrier in the setting of Necrotizing Enterocolitis"

Pair O Docs is the newsletter of the MD/PhD Program at the University of Toronto. It is produced by the students in the program and is published once a year.

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