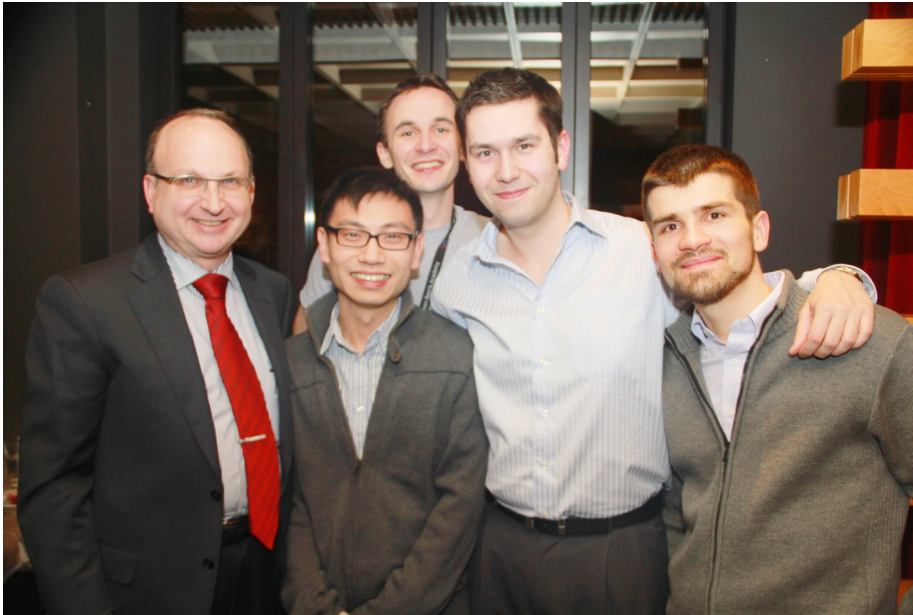


A Time of Reflection for Physician Scientist Training and Career Development in Canada

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



From left to right: Norman Rosenblum, David Tsui, Mike Bohdanowicz, Brian Ballios, and Marko Skrtic.

About one year ago, in this publication, I highlighted the ongoing work of our Faculty's Task Force on Physician Scientist Education (termed the Task Force below). Surveys of MD/PhD students and Clinician Investigator Program (CIP) participants, performed in concert with the Task Force, highlighted the high level of interest our trainees have in a career as a physician scientist. This enthusiasm is not deterred by concerns regarding lack of integration within the MD/PhD curriculum, the length of training to become a physician scientist and the sustainability of this chosen career. Since the publication of the 2012 edition of *Pair O Docs*, the Task Force made a series of recommendations to the Dean of Medicine. In October, 2012, the Task Force report was approved by Faculty Council after a series of presentations to Faculty education, research, and leadership committees.

Here, I highlight some of the Task Force recommendations. Overarching principles that guide the Task Force recommendations are the following cross-cutting pedagogical shifts: (i) integration of curriculum across graduate and medical studies and across undergraduate and postgraduate phases of education, (ii) customization and personalized education, and (iii) competency-based assessment (and resulting potential acceleration of studies). The Task Force recommended that these 'shifts' can be accomplished within an expanded *integrated physician scientist educational pathway* with an enhanced menu of research opportunities drawing from the breadth of our university and that emphasizes integration between levels of training, integration between clinical and research training, and greater customization for research-oriented learners. The context of this *pathway* should be under-

graduate and postgraduate curricula that demonstrate value in research and emphasize the contribution of research to progress in clinical medicine. The Task Force recognized the key roles of mentors and role models in physician scientist education and career development and, thus, recommended that a mentorship program be developed in this context. Further, the Task Force recommended that the Faculty should facilitate the development and alignment of physician scientist career development and retention strategies across the Faculty, its academic departments, hospitals and research institutes. Each of these recommendations requires further work within the Faculty with a goal towards developing models of implementation that will be presented to the Dean of Medicine within 1 year.

Each of the Task Force recommendations are well-aligned with the University's and Faculty's strategic aims and are consistent with recent reports on the future of undergraduate and postgraduate medical education in Canada. Further, our ongoing work occurs at a time when the Canadian Institutes of Health Research is developing the next generation of programs to support training and career development of clinician scientists in the context of the Strategy for Patient-Oriented Research. Many of you are aware of this ongoing work by CIHR and have expressed concern regarding the short-term sustainability of CIHR-based awards for MD/PhD students and MD-research fellows. As Director of both the MD/PhD Program and the CIP, I am assured by the CIHR that the present programs will be maintained until such time as CIHR has developed its new programs and that existing funds for training and career

Continued on page 4

Pair O Docs Special Feature: Transition Periods in the MD/PhD Training

—from a Trainee’s Perspective

This year, Pair O Docs wanted to address the unique aspect of being an MD/PhD trainee, the ability to adapt from MD to PhD training, then back to MD training, and then to residency training. We have asked some of our program trainees at different transition periods to share their experiences. Here are their stories.

The grass is always greener, and other lessons from the MD to PhD transition

By Natasha Lane (incoming class of 2011)

Depending on who is asking, I will tell them that I am a second year MD/PhD student, a doctoral student in Health Services Research, a 1T5 medical student, or (my least favourite) a 1T9 medical student. Such is the difficulty in effectively categorizing the MD/PhD in lay terms, not to mention the related identity crisis faced by MD/PhD trainees. This is all the more troublesome once we have finished our first year of medical school and transitioned into PhD studies. How does one make a smooth jump?

“Leave” medical school – and the time invested therein – for something entirely different? And why, once settled in one, do we seem to long for the other? Sitting on the fence between these two educational experiences, I have occasionally fallen prey to “the grass is always greener” syndrome.

Five weeks into my first term of medical school, I awoke from a nap at a library study carol and felt resentment towards the textbook that had imprinted my forehead. Tired of memorizing, I craved the opportunity to sit and think creatively about a research problem. “Oh, what I wouldn’t do for some quality time with some quality data,” I complained to complaint-weary family mem-

bers. The rosy glow of memory shone bright over my Master’s degree, and I looked forward to the time that I would once again “dictate my own schedule” and have the freedom to study only those topics closest to my intellectual heart. I missed graduate school.

Skip ahead one year. Five weeks into my PhD, I had writer’s block. I had rediscovered the difficulty of thinking creatively on demand and felt overwhelmed by the complexity of the ideas I grappled with every day. Uncertainty over whether I was learning the right things at the right pace loomed. Every day felt like a problem-based learning session from first-year Medicine, except there was no solution set or kindly tutor to guide my thinking. Most of all, I missed interacting with patients in hospital. Despite my firm belief that research has the potential to radically improve patient care, it didn’t provide the immediate gratification of positive clinical encounters. I missed medical school.

I have been a medical student who was fresh out of grad school, and then graduate student who was fresh out of medical

school. Each transition period was characterized by a “why did I ever leave graduate/medical school” phase.

For those who have experienced (or will experience) these swaps: there *is* hope. After the inevitable mourning period, my dismay gave way to a profound sense of optimism and excitement. Both degrees present opportunities to explore science and contribute to positive changes in the world. Having recently been immersed in one serves to reinforce the importance of the other; alternating between them may be one of the most positive aspects of the MD/PhD program. Changing the type of thinking and learning you do is the biggest challenge, but after that it is just the same old hard work. And let’s face it – it will always be hard work.

Perhaps the grass does always *seem* greener on the other side of the fence, but my time in the MD/PhD program has allowed me to see that this is not the case. Instead, I’ve learned that the grass on both sides is in need of some work, but it’s getting greener all the time. ■

Going back to MD and staying involved in research

By Janine Hutson (incoming class of 2007)

After spending several years away from the MD curriculum, I recently transitioned back to rejoin the 1T4 class. Having been back in the MD curriculum now for just over a year, I am four rotations into clerkship and am very settled back into the clinical world. Transitioning back can be stressful; returning back to lectures, returning to a more rigid structure, and creating relationships with a new set of classmates. One thing our returning group to the 1T4 class did to in-

troduce ourselves was to be a host site for the Halloween apartment crawl. It was a great way to meet the majority of the class in one night! Although, be prepared to think of your new classmates by their costumes for a long time to come. By getting to know many people in the class early, transitioning for me went very smoothly.

A priority for me during the transition was ensuring that I could stay involved in

research throughout my final MD years of the program. I knew that I would miss it and I wanted something to keep me up to date with the literature in my field of pharmacology. With my background mostly in basic science, I knew that a lab based project would not be compatible with the demands of clerkship. I took this as an opportunity to become involved with more clinical research. I spent the summer after second year in the

Continued on page 3

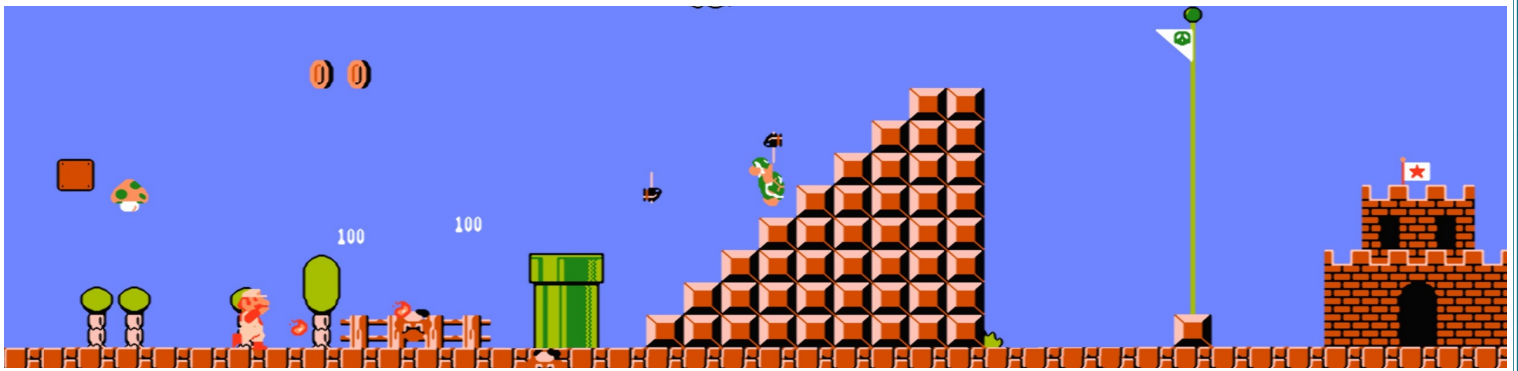
Going back to MD - *continued from page 2*

inaugural Summer Studentship for the Pediatric Research and Clinical Summer (PeRCS) Program through the Hospital for Sick Children and gained experience in clinical research. After this experience, I came up with projects that I could continue to work on during clerkship from home and where my time commitment could be flexible. It has so far allowed me to stay active with publishing while protecting time needed for the demands of clerkship.

Having encouraging and supportive mentors has been vital for this endeavor.

Before my transition back into the MD program, I realized that I had been very focused on finishing my PhD research and other requirements from day one of the combined program. Any vacation time during the first year of the MD curriculum was spent getting a head start on my research. This is true for many of us as there is time pressure to get back to the MD curriculum.

Before embarking back into the MD curriculum and more importantly, clerkship, I wanted to take some time without medicine or research and relax before starting the next chapter. Before transitioning back I took a couple weeks to backpack Europe. Although it was a relatively short backpack trip, I would encourage others to take a bit of time to do something special unrelated to medicine or research before the transition back. ■



Transition to Residency: An MD/PhD perspective

By Larissa Liontos (graduating class of 2012)

It's hard to believe that I'm already halfway through PGY1! Residency has this funny way of speeding up time. If you're in clerkship then you probably have an idea of what I'm talking about. With busy clinic days and overnight calls suddenly six months have come and gone. So how has life changed after beginning residency and ending my time as an MD/PhD student?

First off, I realize that I was somewhat protected as a medical student. Time off was scheduled into the curriculum and with exams and assignments I was often relieved of my clinical duties to prepare for these. As a resident even if there are presentations to do for rounds, I often have little time to prepare and there is no "protected" time to get ready, so after my long days and (sometimes) nights, I'll be working away on those slides. The upside is that these presentations are a great way of solidifying my knowledge and having completed a PhD, putting together powerpoint slides is not a difficult task.

Next a word about responsibility--my first call night as a PGY1 was home call for the hematology service. Nothing quite pre-

pared me for that middle of the night phone call and having to be the expert on a subspecialty service. Asking myself: do I call the staff or not call the staff to discuss this possible case of Thrombotic Thrombocytopenic Purpura? (It didn't end up being TTP) My advice- don't try to do too much on your own. From my experience, most attendings are very nice and they want you to call them if you are unsure about anything. If you have any doubts, ask your staff prior to your call shift about what sort of things they would like to be reached for. I've never heard of a resident getting in trouble for asking questions, but I've heard many stories about those that got into trouble for not asking.

So what about research? Do residents have time to continue on with their PhD projects or start a postdoctoral fellow? First, I think it depends on your residency program and second, I think most residents would agree that it is pretty tough (though not impossible) to try and do both medicine and research in your PGY1 year. Personally, I'm trying to focus this year on gaining a strong foundation of knowledge in my specialty and once I start mastering the basics, I'll move on to developing research questions. I'm also trying to

network and think about which lab I would like to join to do more research. I feel like this transition period is a good opportunity to reflect on what I've done in the past and what I would like to accomplish in the future. Fortunately my program allows for a year of elective time that can be entirely research based. Most programs will usually allow for up to 6 months. Of course, you can add on to that time by applying to the clinician-investigator program or requesting additional time for research. Everyone will have a different approach when it comes to research and I think it's good idea to ask your colleagues how they are managing and find out which program directors are supportive of residents doing research.

If anyone has any questions about my program or residency feel free to contact me at larissa.liontos@gmail.com. My program is Hematological Pathology, it is a four-year program that includes one year of clinical service comprising mostly Hematology rotations with some rotations in Medical Oncology, Pediatrics and Internal Medicine. The next three years are dedicated to laboratory research in hematology primarily at UHN, Sunnybrook and Sick Kids. ■

Transitioning from the Canadian to the US Healthcare System

By Sagar Dugani



PGY1s (referred to as “Interns”) from top US programs. Approximately 50% of our intern class has an additional degree such as a PhD, MPH, JD, or MBA, and all of them bring a wealth of *non-medicine* excellence to the program. During orientation, we were introduced to the new duty-hours, in which interns are not allowed to work more than 16 hours at a time, a significant difference from most Canadian programs, where PGY1s work 24 hour shifts.

Our days start early, usually around 6am, when interns pre-round on their patients, and prepare for team rounds at 8am. After team rounds, bedside teaching, and noon conference, we complete our tasks in the afternoon and sign out between 6 and 8pm. Interns truly are the ‘point person’ for their patients, and the system allows for ‘supervised independence’ in managing patients’ medical, psychological, social, financial, and housing, issues. Over the last several months, I have gained a true appreciation of the bio-psycho-social determinants of a patient’s health and how these factors, albeit at different stages, influences an individual’s overall health. The US healthcare system is in dynamic evolution (Affordable Health Care Act 2010) and more recent sequestration discussions, and the next few months/years will reveal the impact this has on overall health. In Canada, such discussions do not arise frequently given the ‘single-payer’ system for most healthcare costs.

Despite the differences in duty hours, healthcare systems, and insurance plans, the most remarkable aspects about my program

include the people, teaching, and the creativity that is fostered. I have met some of the finest residents who are involved in projects in quality improvement, advocacy, global health, and basic science, and they inspire you on a daily basis to excel and ‘dream big’. Our faculty, including the program leadership, is outstanding. Our Attending Physicians are world leaders in basic science, clinical, and epidemiological research, who have contributed to developing therapies, writing treatment and management guidelines, and improving access of marginalized groups to treatment and interventions. They are always keen to meet with and mentor residents.

On all fronts, intern year has been amazing. The ‘healthcare system’ gives you the license to treat a patient, and as a resident, you appreciate the sanctity of the *physician-patient* relationship; you respect that patients share their most personal health information within 10 minutes of meeting you; you appreciate the significant vulnerability that an illness places on patients and their families, and you will be humbled, on a daily basis, by the brilliance of your outstanding co-residents and faculty members.

When I was exploring residency programs, I met with Norm Rosenblum on several occasions, and I still remember the advice he offered, “*pick a place based on the people you will work with, people you will work for, and people you will serve*”. When you find a residency program that balances these three factors, your residency experience will be truly rewarding. ■

The life of an MD/PhD trainee is marked by several transitions: from pre-clerkship to the research phase and back to pre-clerkship, from pre-clerkship to clerkship, and ultimately from medical student to resident. The latter transition is crucial as it provides a new graduate with responsibilities and the ‘power’ to significantly guide the healthcare of an individual. The last 8-9 months have been an outstanding experience as I transitioned into this new role of being the ‘primary doctor’ for my patients in a new healthcare system that has and continues to undergo significant changes.

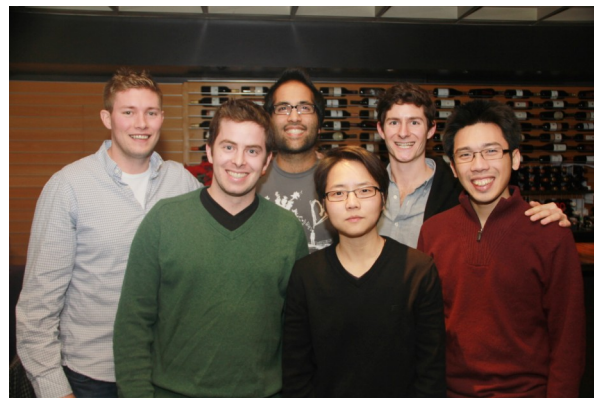
Our *Internal Medicine* orientation started on June 15th, 2012, when I met outstanding

Continued from page 1 development will be applied to new programs.

This is a dynamic and exciting time for physician scientist trainees and for those of us charged to lead physician scientist education programs. Our Faculty Task Force has provided exciting challenges for us. Trainee input will be fundamental to our ongoing efforts to develop the new approaches suggested by the Task Force. At the same time, a national effort is underway to ensure that the cadre of physician scientists equipped to generate discoveries

and move these discoveries to the clinical arena is strong. I look forward to the coming months as a time of creativity and progress! ■

From left to right: Sean Nestor, Curtis Woodford, Ashish Deshwar, Florence Wu, Rob Vanner, and Enoch Ng enjoy the annual Christmas dinner party.



Graduate in Focus: Dr. Rajan Sah and his back to basic approach at Harvard

By Jieun Kim

“Stay in the moment,” he said as we were concluding the teleconference interview. It was a quiet evening in December, and those four simple words lingered with me as I carried on with my rather mundane life as an MD/PhD student.

Dr. Rajan Sah, graduating from University of Toronto MD/PhD program in 2004, already demonstrated his deep passion for basic science research early on in his academic career. Originally from Toronto, he pursued his undergraduate career at University of Toronto. In his first year at Trinity College, he met Dr. Charles Dela Cruz, another alumni of the MD/PhD program a few years ahead of him, who was a residence don at Trinity College. While torn between graduate school and medical school training as his post undergraduate career option, valuable guidance from Dr. Charles Dela Cruz about his options helped Dr. Sah decide to pursue both studies with his MD/PhD training at University of Toronto in 1996. “It was an ideal compromise”. After a year and a half of medical training, Dr. Sah joined Dr. Peter Backx’s laboratory to study cardiac electrophysiology and calcium signaling in the cardiovascular system, where he previously conducted research as a summer undergraduate researcher and a fourth year research project student. The combination of basic cellular electrophysiology and disease-oriented transgenic mouse models attracted him back to the Backx Lab to pursue his PhD training.

Dr. Sah describes his overall experience as an MD/PhD student finding himself on a spectrum, instead of being on two extreme ends. To him, the first part of his MD training felt like a revival of high school with didactic learning and memorization of spoon-fed information. He welcomed transitioning from this early MD training to the more independent and innovative thinking provided by, and required from, a PhD program. However, during the four years of his PhD training, he also admits to encountering the uncertainty, and indeed anxiety, resulting from a program with no defined end-date, in contrast to the fixed four-year MD degree. These sentiments waned once he began to finally publish his

data, and saw the end in sight. He then found himself in the mindset of a post-doctoral fellow, energized by the natural momentum to continue his research training, but instead was required to put his research endeavours on hold and return to a new cohort of junior medical students. This re-entry transition felt un-natural, but this feeling eventually faded away, particularly with the onset of clinical clerkship.

When he was applying for his residency training, Dr. Sah recognized that residency programs in the US were better suited for MD/PhD graduates back then, particularly since the US provided “physician-scientist” research-track training programs that would accelerate re-integration of research into the clinical training period. Accordingly, he pursued his Internal Medicine residency training at Cornell University in New York City, and then, after two years of Internal Medicine at Cornell, he “short-tracked” into the clinical cardiovascular training program at Brigham and Women’s Hospital at Harvard in Boston. He found the research culture for clinicians and residents in Boston very understanding, and he had lots of protected research time.

As a post-doctoral research and clinical cardiology fellow, Dr. Sah has been investigating the cell biology of Transient Receptor Potential (TRP) cation channels in Dr. David Clapham’s laboratory at Boston Children’s Hospital, affiliated with Harvard Medical School. He is particularly interested in the electrophysiological functions of TRPM7 channel-kinase in the cardiovascular system, as well as with other TRP channels, and is funded by the American Heart Association and Boston Children’s Hospital. For the past two years of his post-residency training, he has been able to devote 100% of his time to research to publish his work, and now he is actively looking for a faculty position as a clinician-scientist.

Throughout his academic career, Dr. Sah was exposed to various research environments. During his PhD studies, Dr. Peter Backx, at the time an investigator in the early stages of his career, mentored him. As a



Dr. Rajan Sah

result, Dr. Sah found that, early on, the dynamics with his supervisor were a lot deeper and more personal. In contrast, as he moved on to the next stage of his research career in Boston, the dynamic with his supervisor became a lot more hands-off. While it may also have been due to the fact that he was in a different stage of his research training, Dr. Sah describes that different research environments can result from various factors, such as the size of a lab, the ratio of graduate students to post-doctoral fellows, the career stage of a supervisor, whether a supervisor is a micro-manager or a macro-manager, and ultimately, what you are expecting from your research training. He argues that an ideal research environment is something tailored differently to people in different stages of their training. He has found that young principal investigators who have just started their faculty position tend to be a lot more hands-on in the beginning, and then slowly become more hands-off. He thinks that if you enjoy science and interacting with trainees in your lab, then somewhere in between would be the most ideal place as a principal investigator. He envisions himself as someone who will be doing clinical work on the ward and writing grant proposals and papers in his office, while maintaining an open-door policy with his students and post-doctoral trainees.

Near the end of our teleconference interview, I asked Dr. Sah for his advice for cur-
Continued on page 8

MD/PhD Students in Action: Being Leaders on Campus and in the Community

Currently in their third year of MD/PhD training, Kirill, Ilya, and Jon have been active leaders both on campus and in the community, outside their laboratory. Pair O Docs would like to share their exclusive stories with the world.

Working on University of Toronto Medical Journal as Co-Editors-in-Chief

By Ilya Mukovozov and Kirill Zaslavsky

Among student-run journals, the University of Toronto Medical Journal (UTMJ) stands tall. Now in its 90th year, the UTMJ is the oldest student-run medical journal in North America. Its rich history, good reputation, and generous financial support from the Medical Society, puts it in a great position to play an important role in students' intellectual development. At the most basic level, the journal provides an opportunity for students to improve the scholarly communication of their work and the critical appraisal of other students' work. Beyond this, the journal actively puts students in touch with leading clinicians and experts by providing opportunities to interview them and by hosting guest lectures as part of the UTMJ Lecture Series.

The UTMJ usually focuses on three themes per academic year. For 2012-2013, we have decided on themes which we hoped would generate discussion on very important topics: Healthcare and Finance, Medical Error, and Mental Health. We have published two issues on Healthcare and Finance and are preparing our issue on Medical Error for publication in late March. Notably, this year we are collaborating with the Massey Grand Rounds to host a Massey Grand Rounds Symposium on Sustainability in Healthcare in place of the two lectures for our first theme, Healthcare and Finance.

The above sounds great on paper. In practice, however, the UTMJ faces significant challenges in achieving its full potential every year for one simple reason—the massive loss of trained, knowledgeable personnel from every position in favor of the incoming team. The transition period is crucial and just as important as the work done to publish a journal volume.

As incoming Editors-in-Chief, we were handed the keys to everything sacred for UTMJ in the summer of 2012: The email account, the website, and the banking information. The rest of the summer we spent learning the ropes and setting the agenda for the year: How does the Open Journal Systems, the heart of the UTMJ website, work? What themes are we going to pick? How do the different positions in UTMJ work and how do we train the incoming staff? What is a reasonable timeline to publish an issue of the UTMJ? It was somewhat difficult to appreciate how every aspect of the journal would function until the wheels were set in motion in September.

Unfortunately, with the exception of short descriptions, the UTMJ lacked clear guidelines for what each position entailed. When we began recruiting our team (over 60 people in total)—the managing editors, associate editors, reviewers, lecture coordinators, copy editors—we had to set priorities for each position for the year and train new incoming members. Training sessions and open lines of communication between us and the rest of the team were crucial to getting things going on time.

We received a good number of submissions for our first issue, but some were getting “stuck” in the review process. Whether it was difficulty in finding a faculty reviewer, a reviewer that was taking too long, or an associate editor that was simply not as aggressive at following up—all of these factored into making the first half of the year hectic. It was a bit of trial and error on our part to determine who was reliable and who wasn't. In the end, we had enough content to split the first theme, Healthcare and Finance, into two issues.



Our second theme proved a bit more difficult, as we received very few submissions. This was alarming. It was becoming clear that the UTMJ needed a way to generate its own content. We decided that the best way to do this in the short term was to mobilize a relatively fractionated group of interview editors into a team with a clear set of expectations and a hierarchy. Here, the reputation of the UTMJ and our geographical proximity to leading experts in the field of quality improvement was fundamental in conducting a number of interviews with leading clinicians like Dr. Kaveh Shojania, Dr. Wendy Levinson, and others.

Taken together, this showed that the current model for how UTMJ produces its issues is not the most optimal. Currently, the UTMJ sends out calls for submissions to Canadian medical schools for each theme that we announce. This is problematic for two reasons: Some topics may simply not be amenable to a lot of submissions and the added time pressure to “push” thematic articles through the system in time for

Continued on page 7

UTMJ experience - *continued from page 6*

publication creates a large degree of stress for the team, jeopardizing quality. We believe that a better way to proceed would be through the generation of our own thematic content (interviews, soliciting guest editorials, reviews) while continuously accepting non-thematic research articles to be published alongside when they are ready.

The new Editors-in-Chief for 2013-2014 have already been selected. We hope to take advantage of these early selections over the next few months to craft detailed descriptions for UTMJ positions and establish clear guidelines and protocols for different tasks. For example, we have not yet developed a copy editing and style guide for the

UTMJ, resulting in high variability in the quality of the publications. We hope that through a more involved transition process and the establishment of a clear set of guidelines, next year's team will be off to a running start. ■

A New Conference and New Opportunities for Toronto

By Jonathan Fuller

On November 23 and 24, 2012, the University of Toronto hosted Taking Toronto's Healthcare History, a new symposium dedicated to historical research on Toronto's health professions, institutions and traditions. I was part of the organizing committee, which was struck two years ago upon a meeting between Dr. Pier Bryden, Ethics and Professionalism Lead for UME, and historians from U of T's Institute for the History and Philosophy of Science and Technology (IHPST). Our group grew to include multiple university faculties and institutes, and even the Royal Ontario Museum.

Over two days, students, practitioners, scholars and community members from clinical and historical backgrounds gathered to hear talks and explore a medical artifacts exhibit, organized by the student-run University of Toronto Scientific Instruments Collection. Our exhibit included artifacts dating back to 1898, including a portable ECG that utilizes photographic paper, a hemoglobin scale based on comparison with a colour standard, and a hand-cranked centrifuge. These pieces symbolized the symposium's driving purpose: to preserve and reflect on our history and to extract lessons to guide health care delivery into the future. The symposium was an overwhelming success. It was inspiring to witness the enthusiasm for health care history within our broader communities and to meet individuals who have been a part of that history. On a personal note, I was privileged to help show off our exhibit to the CEO of the ROM, Janet Carding, who has a background in medical history and who



Members of Taking Toronto's Healthcare History organizing committee with the Sanborn Cardiette Portable ECG Machine (1940). From left: Jonathan Fuller (MD/PhD Program), Erich Weidenhammer and Ari Gross (PhD candidates in IHPST).

Photo credit: Toronto Star

tweeted about the conference on behalf of the museum.

A shared thesis united these conference participants from distinct backgrounds: history is an important part of health professions education. There is a literature built around this subject. For medical students, the history of medicine may: contextualize practice, reveal the provisional nature of medical knowledge, illustrate bioethical principles, instill humanity, improve history-taking, improve interpretive skills, promote scholarship, and help create professional identity. Medical history is presently included in the core UME curriculum at about half of Canada's medical schools. Not one of those 50% of schools: the University of Toronto.

The field of the history of medicine creates opportunity to broaden the research agenda in the Faculty of Medicine. Our MD/PhD Program has traditionally been a program

for basic science research trainees. Only recently have some of its students begun to explore research beyond the bench. The University of Toronto has strong institutions for research in the health sciences, including clinical epidemiology, and the humanities, including the history and philosophy of medicine. These fields investigate the very foundations of medical science and practice, and their impact on education is direct and significant. It is time to issue a call to Canadian premedical and medical students, to take up the challenge of contributing to the medical humanities as clinician-investigators. Not all solutions to the challenges of modern health care will have their origins in the lab. Medicine is a practice founded on the traditional medical sciences, but also on other sciences and disciplines. As our program evolves, it should continue to explore new niches in order to stay relevant, and perhaps, to distinguish itself. ■

Graduate In Focus: Dr. Rajan Sah - *continued from page 5*

rent MD/PhD students regarding their unique training process. "Stay in the moment," he said without any hesitation. "When you are in your MD training, try to be as good a medical student as you can. When you are in your PhD training, try to become as good a scientist as you can. It is important

to focus on each stage at each time, and the more rigorous your PhD training, the more valuable it is for you. During clerkship, try to fight off the temptation to go back to the lab and do your experiments, but try to become an excellent doctor. Dr. Thomas Michel, the Dean for Education at Harvard Medical School, and a mentor for many Brigham car-

diology fellows, once told me, "stay as basic as possible for as long as possible." He is right, because if you can do this as a clinician and start your own laboratory, you will have a toolbox to investigate the unknowns that others might not have." ■

MD/PhD Class Council Update

Gord McSheffrey (President), Brian Ballios (President-Elect)



Gord McSheffrey (left) presenting a poster at the Canadian Society for Clinical Investigation Annual Meeting and Brian Ballios (right).

Last summer we completed our new round of class council elections. Andrew Perrin completed his term as President and Brian Ballios joined the executive council as President-Elect. Gord McSheffrey transitioned to the President of the council for 2012-2013.

This year, Gord and Brian have prioritized formal mentorship training as a priority for students in response to the report of the Task Force on Physician Scientist Training. As such, the council is pleased to announce the launch of the new MD/PhD Mentorship Program. This program has been developed in collaboration with Dr. Norm Rosenblum (MD/PhD Program Director), Sandy McGugan (Administrative Director) and Morgan Tilley (Faculty of Medicine, Office of Advancement). The focus is on linking current MD/PhD students with practicing physician scientists in a formalized longitudinal mentorship initiative. Mentors can provide advice on career choices and opportunities, building a strong CV, navigate the residency matching process and maintain work/life balance. Po-

tential mentors and mentees undergo a matching process based on a short application which asks mentees to consider their research and clinical interests, as well as their short- and long-term training goals. The program will launch this June and will take place over approximately 10-12 months. Mentees are encouraged to meet with mentors at least 4-6 times per year. Guidelines for these meetings are provided to help mentors/mentees mark their progress and benefit from the program. The program will follow-up with mentors and mentees throughout the year to get feedback on the program and to assist with difficulties. We encourage the participation of program alumni and students; to get involved please contact Morgan Tilley directly at morgan.tilley@utoronto.ca.

Gord and Brian have continued the Informal Mentorship Events that began last year under Andrew Perrin's leadership. These events allow our students to assist each other with the difficult process of transitioning between the MD and PhD programs and with the transition to clerkship.

Monthly student seminars have long been a centerpiece of the MD/PhD Program curriculum, giving students in the PhD-phase of their training the opportunity to present their research to their peers. These seminars have an environment of openness and

students welcome the diverse perspectives of other trainees researching in parallel or even disparate fields. Recently, we implemented anonymous and confidential feedback forms for the seminar presenter, filled in by students and returned directly to the speaker at the end of the seminar. These feedback forms include evaluation of both the scientific content and presentation of the work. So far, students have been very happy to receive peer feedback, as these seminars are often seen as a forum for practice of talks to be given at national or international conferences.

University of Toronto MD/PhD students continue to be strong supporters of our national student organization, the Clinician Investigator Trainee Association of Canada (CITAC). Our CITAC representatives, Jennie Pouget and Linda Vi have been working closely with fellow U of T MD/PhD student and CITAC President, Jared Wilcox, to advocate for MD/PhD trainees across the country. At the Annual General Meeting in September 2012 in Ottawa, Kevin Wang was elected as the Vice-President, Internal Affairs, Gordon McSheffrey was elected as the Policy Chair and Enoch Ng was elected as Mentorship Chair.

As always, class council has been very productive this year and we are happy to receive your feedback. We look forward to addressing the needs and issues of students in the program, and welcome you to contact the class presidents: gord.mcsheffrey@mail.utoronto.ca; brian.ballios@mail.utoronto.ca. ■

The MD/PhD Incoming Class of 2012



From left to right: Shrey Sindhwani, Richard Wu, Amanda Khan, Teja Voruganti, John Soleas (not pictured, Nardin Samuel, see next page).

Amanda Khan

I immigrated to Canada from the sunny tropical island nation of Trinidad and Tobago. I grew up in Toronto then moved to London, ON to complete my Bachelors in Health Sciences and Masters in Medical Biophysics at the University of Western Ontario. I enjoy eating sushi, snowboarding and trying new wines. My research interests include surgical planning and training of new surgical staff, prosthetic creation and development and image-guided surgical innovation. I'm very interested in how we can use biomaterials in the creation of novel physical surgical models and digital modeling in the rendering of virtual surgical models. I chose to pursue my MD/PhD training at the University of Toronto because of its well-developed program and excellent research opportunities. I don't think there is another university in Canada that can boast the same funding levels, resources and faculty calibre that makes UofT a world-class institute. The MD/PhD program was the right fit for me. I'm excited to further expand my knowledge and skills

during a PhD in a subject I love and then use that training to help focus my choice of residency. I know that my training at UofT will help prepare me to become a competent clinician scientist. ■

John Soleas

Hi everyone, John Soleas here. I chose the MD/PhD program because I want to straddle the line between clinic and lab bench for a career. Having had family in the hospital undergo new procedures based on basic and clinical research inspired me from a young age to train to a level where I can have the same impact one day. I chose U of T in particular because of the impeccable research reputation, access to world class facilities and the diversity of the city; from night life to patient's life stories, Toronto has a breadth that can't be match by many cities in the world. To get here I completed my Bachelor's at The University of Western Ontario (back when it was called the University of Western Ontario, or UWO – Purple and still very Proud) in physiology

where I developed an interest in stem cell and developmental biology. I then went on to complete my Master's here at Toronto, in epithelial tissue engineering with Alison McGuigan and Tom Waddell trying to organize airway epithelium using nanogroove topography. I'm a huge believer in regenerative medicine and see personalized medicine as the way of the coming future. As such, my interests lie in understanding how our mechanical environment affects the way we develop, and in the global processes that organize our entire body plan. For fun, I enjoy eating (wouldn't be much of a Greek if I didn't), running, soccer, volleyball and generally hanging out with friends and family! ■

Shrey Sindhwani

I was born and brought up in New Delhi (India). My family immigrated to Canada after I completed high school. I was fascinated by nanotechnology at that point and the stars aligned as University of Waterloo had just started the Nanotechnology Engineering program at undergraduate level. I completed my undergraduate degree in Nanotechnology Engineering from University of Waterloo in 2011. During my undergraduate education, I was drawn towards the application of nanotechnology to medicine. This led me to research opportunities in the labs of Dr. Omid Farokhzad (Harvard Medical School), Dr. Robert Langer (MIT) and Dr. Jeffery Karp (Harvard-MIT Health Sciences and Technology) in the areas of drug delivery, nanobiosensors and stem cell therapy. In addition to exceptional research training, I was fortunate to witness the synergy of having two unique perspectives – those of a physician and a scientist. I witnessed the importance of considering both patients and clinical compatibility in performing translational research. These experiences motivated me to apply to the University of Toronto's MD/PhD Program. It is the synergy, integration and collaborative opportunities of the Physician Scientist Training Program that gives me the confidence to enable my career vision as a physician-scientist. Outside the class, I am an avid soccer player

and follower. My favourite teams are Arsenal and Barcelona. I also play squash to let off steam!

Going forward, I plan to conduct research at the intersection of nanotechnology, biotechnology and medicine. I am very enthusiastic about areas such as biomaterials, drug delivery, tissue engineering, novel biosensors and engineering stem cells for therapeutics. ■

Teja Voruganti

I completed my undergrad in Biology at McMaster University, and was engaged in research in the areas of neuropharmacology and protein crystallography. During this time I felt that, as with a lot of medical research, the end goal of applying research to improve patient outcomes was always on the horizon but less often tangible. Following my undergrad, I decided to shift my focus to the area of clinical epidemiology and health services research. The MD/PhD program at U of T would be the ideal setting to pursue my goals and become a clinician-scientist.

My research interests are in the study of

quality and outcomes of cancer prevention and treatment. During my PhD, I am planning to explore issues of complex care in oncology, and the use of different cancer care strategies for specific populations. I am also interested in translational research in early drug development and evaluation.

I don't usually have much free time in between golfing, reading and traveling. Although, when I do get a second, you can find me studying. ■

Nardin Samuel

I chose the MD/PhD program in Toronto because it is a well-established clinician-scientist training route and provides the opportunity to work with some of the top researchers in the country. I grew up in Toronto and completed a Bachelor of Science in Pharmacy and Master of Science in Molecular Genetics at the University of Toronto prior to joining the MD/PhD program. With regards to my research interests, I am interested in the clinical applications of genomics and ge-

netics in the context of human cancers. Outside of school I enjoy playing sports, especially squash, running, cooking (but not baking, because I've yet to make a decent brownie), photography, traveling and spending time with family in friends doing any or all of the above! ■



Nardin Samuel in the bamboo garden

Graduating Class of 2012



Congratulations to this year's graduates – Rachel Vanderlaan (Cardiac Surgery, U of T), Ivan Pasic (Internal Medicine, U of T), Adam Durbin (Pediatrics, Harvard), Amy Lin (Internal Medicine, U of T), Larissa Lontos (Hematopathology, U of T) and Amparo Wolf (Neurosurgery, Western), and Sagar Dugani (not pictured, Internal Medicine, Harvard).

Publications

- Armstrong SM**, Wang C, Tigdi J, Si X, Dumpit C, et al. (2012) Influenza Infects Lung Microvascular Endothelium Leading to Microvascular Leak: Role of Apoptosis and Claudin-5. *PLoS ONE*. 7 (10): e47323.
- Clarke L, Ballios BG**, van der Kooy D. Generation and clonal isolation of retinal stem cells from human embryonic stem cells. *European Journal of Neuroscience* 2012; 36(1): 1951-9.
- Ballios BG**, Low S. Ophthalmology. In **Woodford C**, Yao C (2013 Eds.), *The Toronto Notes 2013: Comprehensive Medical Reference & Review for MCCQE I & USMLE II*. Type and Graphics, Toronto, Canada, p.OP1. 2013.
- Ballios BG**, Marigo V, van der Kooy D. Directed differentiation of retinal stem cells into photoreceptors and retinal pigment epithelium. In Kaur N, Vemuri M (Eds.), *Neural Stem Cell Assays*. Wiley-Blackwell, New Jersey, 2013.
- Bohdanowicz M**, Galkin DM, De Camilli P, Grinstein S. Recruitment of OCRL and Inpp5B to phagosomes by Rab5 and APPL1 depletes phosphoinositides and attenuates Akt signaling. *Mol. Biol. Cell* 2012;23:176-187.
- Butcher NJ, Chow EWC, **Costain G**, Karas DJ, Ho A, Bassett AS. Functioning outcomes of adults with 22q11.2 deletion syndrome. *Genetics in Medicine*. 2012;14:836-43.
- Costain G**, Bassett AS. The ever-evolving concept of clinical significance and the potential for sins of omission in genetic research. *American Journal of Bioethics*. 2012;12:22-4.
- Silversides CK*, Lionel AC*, **Costain G**, Merico D, Migita O, Liu B, Yuen T, Rickaby J, Thiruvahindrapuram B, Marshall CR, Scherer SW, Bassett AS. Rare copy number variations in adults with tetralogy of Fallot implicate novel risk gene pathways. *PLoS Genetics*. 2012;8:e1002843.
- Karas DJ, **Costain G**, Chow EWC, Bassett AS. Perceived burden and neuropsychiatric morbidities in adults with 22q11.2 deletion syndrome. *Journal of Intellectual Disability Research*. E-published 29 October 2012.
- Costain G**, Esplen MJ, Toner B, Hodgkinson KA, Bassett AS. Evaluating genetic counselling for family members of individuals with schizophrenia in the molecular age. *Schizophrenia Bulletin*. E-published 27 October 2012.
- Costain G**, Esplen MJ, Toner B, Scherer SW, Meschino W, Hodgkinson KA, Bassett AS. Evaluating genetic counselling for individuals with schizophrenia in the molecular age. *Schizophrenia Bulletin*. E-published 12 December 2012
- Costain G**, Bassett AS. Incomplete knowledge of the clinical context as a barrier to interpreting incidental genetic research findings. *American Journal of Bioethics*. 2013;13:58-60.
- Lionel AC, Vaags AK, Sato D, Gazzellone MJ, Mitchell EB, Chen HY, **Costain G**, Walker S, Egger G, Thiruvahindrapuram B, Merico D, Prasad A, Anagnostou E, Fombonne E, Zwaigenbaum L, Roberts W, Szatmari P, Fernandez BA, Georgieva L, Brzustowicz LM, Rötzer K, Kaschnitz W, Vincent JB, Windpassinger C, Marshall CR, Trifiletti RR, Kirmani S, Kirov G, Pettek E, Hodge JC, Bassett AS, Scherer SW. Rare exonic deletions implicate the synaptic organizer Gephyrin (*GPHN*) in risk for autism, schizophrenia and seizures. *Human Molecular Genetics*. E-published 7 February 2013.
- Sukhai MA, Prabha S, Hurren R, Rutledge AC, Lee AY, Sriskanthadevan S, Sun H, Wang X, Skrtic M, Seneviratne A, Bohzena J, Gronda M, Maclean N, Spagnuolo PA, Sharmeen S, Gebbia M, Urbanus M, Eppert K, **Dissanayake D**, Li X, Datti A, Ohashi PS, Wrana J, Rogers I, Corey SJ, Eaves C, Minden MD, Wang JCY, Dick JE, Nislow C, Giaver G, Schimmer AD. Lysosomal disruption as a therapeutic strategy for acute myeloid leukemia. *Journal of Clinical Investigation* 2013; 123(1):315-328.
- Lin AE, Ebert G, Ow Y, Preston SP, Toe JG, Conney JP, Scott HW, Sasaki M, Saibil SD, **Dissanayake D**, Kim RH, Wakeham D, You-Ten A, Shahinian A, Duncan G, Silvester J, Ohashi PS, Mak TW, Pellegrini M. Ahr2 is essential for embryogenesis and its hemopoietic deficiency causes lethal immune activation. *Nature Immunology* 2012; 14(1):27-33.
- Chatterjee S, Seifried L, Feigin ME, Gibbons DL, Scuoppo C, Lin W, Rizvi ZH, Lind E, **Dissanayake D**, Kurie J, Ohashi P, Muthuswamy SK. Dysregulation of cell polarity proteins synergize with oncogenes or the microenvironment to induce invasive behavior in epithelial cells. *PLoS One*. 2012; 7(4):e34343.
- Hutson JR**, Lubetsky A, Eichhorst J, Hackmon R, Koren G, Kapur BM. Placental transfer of formic acid is rapid and decreases hCG secretion. *Alcohol Alcohol* 2013 (In Press).
- Hutson JR**, Matlow JN, Moretti M, Koren G. The fetal safety of thiopurines for the treatment of inflammatory bowel disease in pregnancy: a meta-analysis. *J Obstet Gynecol* 2013;33(1):1-8.
- Hutson JR**, Stade B, Lehotay DC, Collier CP, Kapur B. Folic acid transport to the human fetus is decreased in pregnancies with chronic alcohol exposure. *PLoS ONE* 2012;7(5):e38057.
- Hutson JR**, Weitzman S, Schechter T, Arceci RJ, Kim RB, Finkelstein Y. Pharmacokinetic and Pharmacogenetic Determinants and Considerations in Chemotherapy Selection and Dosing in Infants. *Expert Opin Drug Metab Toxicol* 2012;8(6):709-22.
- Finkelstein Y, **Hutson JR**, Wax PM, Brent J. Toxicology Surveillance of Infant and Toddler Poisonings in the United States: Use of the Toxicology Investigators Consortium (Toxic) Registry. *J Med Toxicol* 2012 8(3):263-266.
- Zelner I, **Hutson JR**, Kapur BM, Feig D, Koren G. False-positive meconium test results for fatty acid ethyl esters secondary to delayed sample collection. *Alcohol: Clin & Exp Research* 2012;36:1497-1506.
- Hutson JR**, Klieger-Grossmann C, Koren G. *Pharmacokinetics in pregnancy*. In: Ginosar Y, Reynolds F, Halpern S, Weiner CP, editors. *Anesthesia and the Fetus*. Wiley-Blackwell: Oxford, UK; 2013. p. 53-62.
- Byun S, **Mukovozov I**, Farrokhyar F, Thoma A. Complications of browlift techniques: a systematic review. (2013). *Aesthet Surg J*. 33 (2):189-200.
- Noyan-Ashraf MH, Shikatani EA, Schuiki I, **Mukovozov I**, Wu J, Li RK, Volchuk A, Robinson LA, Billia F, Drucker DJ, Husain M. (2012). A glucagon-like peptide-1 analog reverses the molecular pathology and cardiac dysfunction of a mouse model of obesity. *Circulation*. 127(1):74-85.
- Patel S, Huang YW, Rehemani A, Pluthero FG, Chaturvedi S, **Mukovozov IM**, Tole S, Liu GY, Li L, Durocher Y, Ni H, Kahr WH, Robinson LA. (2012). The cell motility modulator Slit2 is a potent inhibitor of platelet function. *Circulation*. 126(11):1385-95.
- Baribeau DA, **Mukovozov I**, Sabljic T, Eva KW, deLottinville CB. (2012). Using an objective structured video exam to identify differential understanding of aspects of communication skills. *Med Teach*. 34(4):e242-50.
- Nestor SM**, Gibson E, Gao FQ, Kiss A, Black SE. A direct morphometric comparison of five labeling protocols for multi-atlas driven automatic segmentation of the hippocampus in Alzheimer's disease. *Neuroimage*. 2012 Nov 7;66C:50-70.
- Gao FQ, Pettersen JA, Bocti C, **Nestor SM**, Kiss A, Black SE. Is encroachment of the carotid termination into the substantia innominata associated with its atrophy and cognition in Alzheimer's disease

Publications - continued from page 11

Neurobiol Aging. 2013 Feb 12. **Samuel N**, Sayad A, Wilson G, Lemire M, Brown KR, Muthuswamy L, Hudson TJ, Moffat J. entitled "Integrated genomic, transcriptomic and RNA-interference analysis of genes in somatic copy number gains in pancreatic ductal adenocarcinoma" *Pancreas* (in press).

Tsui D, Vessey JP, Tomita H, Kaplan DR and Miller FD (2012) FoxP2 Regulates Neurogenesis during Embryonic Cortical Development. *Journal of Neuroscience*. 33(1):244-58.

Satish L, LaFramboise WA, Johnson S, **Vi L**, Njarlangattil A, Raykha C, Krill-Burger JM, O'Gorman DB, Gan BS, Baratz ME, Ehrlich GD, and Kathju S. Fibroblasts from phenotypically normal palmar fascia exhibit molecular profiles highly similar to fibroblasts from active disease in Dupuytren's Contracture. *BMC Medical Genomics*, 2012 May 4;5:15

Vi L, Wu Y, Gan BS, and O'Gorman DB. Primary Dupuytren's Disease cell interactions with the extra-cellular environment: a link to disease progression? *Dupuytren's Disease and Related Hyperproliferative Disorders - Principles, Research, and Clinical Perspectives*,

2012: 151-159 (Book chapter).

Dubuc, A. M., Remke, M., Korshunov, A., Northcott, P. a, Zhan, S. H., Mendez-Lago, M., Kool, M., Jones, D. T. W., Unterberger, A., Morrissy, a S., Shih, D., Peacock, J., Ramaswamy, V., Rolider, A., **Wang, X.**, Witt, H., Hielscher, T., ... Taylor, M. D. (2012). Aberrant patterns of H3K4 and H3K27 histone lysine methylation occur across subgroups in medulloblastoma. *Acta neuropathologica*.

Northcott, P. a, Shih, D. J. H., Peacock, J., Garzia, L., Morrissy, a S., Zichner, T., Stütz, A. M., Korshunov, A., Reimand, J., Schumacher, S. E., Beroukhim, R., Ellison, D. W., Marshall, C. R., Lionel, A. C., Mack, S., Dubuc, A., Yao, Y., Ramaswamy, V., Luu, B., Rolider, A., Cavalli, F. m. g., **Wang, X.**, Remke, M., Wu, X., ... Taylor, M. D. (2012). Subgroup-specific structural variation across 1,000 medulloblastoma genomes. *Nature*, 488(7409), 49-56.

Venugopal, C., Li, N., **Wang, X.**, Manoranjan, B., Hawkins, C., Gunnarsson, T., Hollenberg, R., Klurfán, P., Murty, N., Kwiecien, J., Farrokhyar, F., Provias, J. P., Wynder, C., & Singh, S. K. (2012).

Bmi1 marks intermediate precursors during differentiation of human brain tumor initiating cells. *Stem Cell Research*, 8(2), 141-153.

Harris S, **Wilcox JT**, Fehlings MG. (2013) Clinical Trials in Spinal Cord Injury. In: *Frontiers in Clinical Drug Research: Central Nervous System*, Atta Ur-Rahman (ed). eBook. Bentham Science Publishers, Oak Park, IL, USA

Wilcox JT, Vawda R, Fehlings MG. (2012) Stem cell transplantation strategies after spinal cord injury. In: *Stem Cells and Neurological Disorders*, Lescaudron L (ed), Dunbar and Rossignol (co-ed), Science Publishers, Enbridge Ltd., Enfield, NH, USA.

Wu RY, Pasyk M, Wang B, Forsythe P, Bienenstock J, Mao YK, Sharma P, Stanisz AM, Kunze WA. "Spatiotemporal maps reveal regional differences in the effects on gut motility for *Lactobacillus reuteri* and rhamnosus strains" *Neurogastroenterology and Motility*: Jan 15, 2013 [Epub ahead of print].

Awards

Susan Armstrong received the Canadian Critical Care Forum 2012 Garner King Award, 1st Place - Trainee Oral presentation in October, and award for Best Oral Presentation at the Canadian National Medical Student Research Symposium in June in Winnipeg.

Brian Ballios was awarded first place in the Laidlaw Competition for the Basic Science category at the 2012 Institute of Medical Science Scientific Day. He was also the recipient of the 2012 Ontario Stem Cell Initiative (OSCI) Fall Poster Award, the 2012 (Summer) Ontario Consortium for Regeneration Inducing Therapeutics (OCRiT) Travel Award to attend the Society for Neuroscience (SfN) International Conference in 2012, the 2012 Society for Neuroscience (SfN) Travel Award, and the Southern Ontario Neuroscience Association (SONA) Chapter 2012 (Spring) Ontario Consortium for Regeneration Inducing Therapeutics (OCRiT) Travel Award to attend the International Society for Stem Cell Research (ISSCR) International Conference 2012.

Greg Costain received the Office of Research Trainees (ORT) Conference Travel Award, an Institute of Medical Science Open Fellowship Award, and a CIHR Institute of Gender and Health Conference Scholarship. He was also 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 Smad3b in the zebrafish embryo: an approach to identify novel regulators of cardiac progenitor development. He also won the Roman Pakula Award - Awarded to the best acclaimed all around M.Sc. student registered in the department of Molecular Genetics.

Janine Hutson was awarded an Accelerator Grant in Genomic Medicine from the McLaughlin Centre, University of Toronto, "Identifying Genomic Determinants Associated with Ketamine Neurotoxicity in Young Children: a PAINT (Pediatric Anesthesia-Induced NeuroToxicity) accelerator study" (\$50,000), Co-investigator with Drs. Yaron Finkelstein, Jamie Hutchison, Kathy Boutis, Martin Post, Sulpicio Soriano & Richard B Kim. She also received a 2012 Summer Studentship for the Pediatric Research and Clinical Summer (PeRCS) Program, Department of Pediatrics, Hospital for Sick Children.

Grace Lam was awarded a Keystone Symposia Scholarship to attend the "Angiogenesis: Advances in Basic Science and Therapeutic Applications" meeting in Snowbird, Utah, Jan 2012.

Jennie Pouget has been awarded a Brain Canada Training Award in 2013 for her project entitled "Role of variants of the translocator protein (TSPO) gene in schizophrenia and antipsychotic-induced weight gain".

Nardin Samuel won first place in the Poster Competition, First Year Medicine category at Medical Student Research Day in January for her poster, "Identification of genes in regions of recurrent genomic gain as putative therapeutic targets in pancreatic ductal adenocarci-

noma".

Marko Skrtic received the Department of Medicine Hollenberg Research Award for placing first in the poster competition; first place at the Hematology Research Day; the George Brown Memorial Award for best oral presentation and first place abstract, MD/PhD category at Medical Student Research Day. He was also a finalist in the Laidlaw Manuscript Competition at the Institute of Medical Science Scientific Day, and received a 2012 CIHR Institute of Cancer Research (ICR) Publication Prize.

Linda Vi received a CIHR Doctoral Research Award in 2012; a Mobility, Musculoskeletal Health and Arthritis Summer Studentship - Institute of Aging (CIHR), and an Institute Community Support Award - Institute of Genetics (CIHR) for her project: CITAC - Supporting the next generation of clinical investigators.

Kevin Xin Wang received a CIHR Vanier Award in 2012 for his project, "Identifying driver mutations in childhood medulloblastoma by novel functional genomic approaches"

Jared Wilcox won First prize Oral, Medical Student Research Day, in January 2013, and Second Prize Oral, CITAC-CSCI Annual Meeting, Ottawa, September 2012.

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"

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.

Editors: Jieun Kim & Curtis Woodford (jieuunn.kim@mail.utoronto.ca; curtis.woodford@utoronto.ca)

Editorial Advisors: Norman Rosenblum & Sandy McGugan

Please visit the Program website for contact information: www.mdphd.utoronto.ca