

PGY 1 & PGY 2 RESEARCH ORIENTATION TOWNHALL MEETING SYNOPSIS

DEPARTMENT OF SURGERY, UNIVERSITY OF TORONTO
MONDAY, SEPTEMBER 18, 2017 – 5:30 – 7:30 pm

Over 40 residents, Surgeon Scientist Training Program (SSTP) residents, former SSTP residents and staff attended the Orientation. **Dr. Michael Fehlings** welcomed everyone and asked each individual to introduce themselves. The residents were also asked to state why they were attending. He indicated that the evening will encompass motivating short talks from staff and residents who have been in the Surgeon Scientist Training Program or who are still in the Program. It is hoped that their overview of their personal experience will enlighten the residents who have thoughts of entering the SSTP or who will be starting the SSTP as of July 2017. Dr. Fehlings stated that he entered the University of Toronto Neurosurgical Training Program in 1984. During his residency, he was advised to pursue his PhD through the SSTP. He was in the SSTP from 1985 – 1988 under the supervision of Dr. Charles Tator. He received his PhD in March 1989 from the Institute of Medical Sciences for his work on experimental spinal cord injury. Dr. Fehlings informed the residents that the SSTP is the best Program worldwide for residents to pursue a degree in their 3rd or 4th year in residency. It is a 2–4 year break in clinical training to concentrate on a research topic which is of interest to them. Dr. Fehlings accredited the Ministry of Health salary & benefits support of most residents in their first year in the SSTP. There are, however, four divisions that MOH does not support (Orthopaedics, Plastic & Reconstructive Surgery, Urology, Vascular Surgery). Division Heads for these Divisions have introduced internal independent programs within their division to assist residents interested in the SSTP to apply for salary support. The Clinician Investigator Program (CIP) has been optimal in supporting a few of our SSTP residents in their first or second year in the SSTP. The Department of Surgery continues to be very committed to the SSTP.

Dr. James Rutka began by stating that the Department of Surgery SSTP was established in 1984 by Dr. Bernard Langer when he was Chair of the Department. The Program was started with just 3 surgery residents, which he was one. He started in July 1984 and worked towards his PhD in 1987. The Program's status in the Department grew over the next decade with the gradual involvement of other specialties to 49 trainees at present in the Program. During the same time there was a gradual change in the culture in the Department where research accomplishments developed the same respect as clinical expertise. This is the only Program worldwide that is available for residents to continue to be paid their PGY level salary and to take a break from clinical duties to focus on research with a degree in the end of their research endeavour.

Dr. Christopher Ahuja is a PGY-4 Neurosurgery SSTP, pursuing a PhD. Research focus is on human stem cell research for traumatic spinal cord injury with Dr. Michael Fehlings at Toronto Western Hospital, University Health Network. He indicated that the SSTP provides residents with an invaluable safeguard to undertake graduate training and aids in developing a rich network of mentors. He would encourage upcoming surgeon-scientist trainees to explore fields they are passionate about, engage a supervisor early on, apply broadly to funding opportunities, and strongly consider the unique resources offered by the SSTP. Chris discussed his motivation to join the SSTP and the highly positive experiences thus far. He also highlighted the importance of keeping all options open as you choose your career path. Chris is co-representative of the SSTP residents on the Department of Surgery Research Committee.

Dr. Joseph Catapano is a PGY-3 resident in the Division of Plastic and Reconstructive Surgery. He recently defended his PhD which he completed through the Institute of Medical Science as part of the Surgeon Scientist Training Program (SSTP) at the University of Toronto. Under the supervision of Dr. Gregory Borschel, his research investigated a novel surgical procedure to prevent vision loss in patients with neurotrophic keratopathy. After completing residency and fellowship training, his goal is to continue translational laboratory research as a Surgeon-Scientist in the future.

Dr. Marcelo Cypel is a staff thoracic surgeon at University Health Network (UHN) and Associate Professor of Surgery at the University of Toronto. He is the Surgical Director of the Artificial Lung Program at UHN and Director of the Extra-Corporeal Lung Support (ECLS) Program at UHN. Dr. Cypel received his MD in 1999 and completed his general surgery and thoracic surgery residency program in 2004. In 2005 he started his Post-Doctoral research fellowship at the Latner Thoracic Surgery Laboratory. During this time, he developed a new method of lung preservation and donor lung repair called Ex Vivo Lung Perfusion (EVLV). Dr. Cypel highly recommended research in thoracic surgery as a very viable connection to remarkable research. There is a team of academic surgeons and researchers in Thoracic Surgery who have accepted trainees in the SSTP with outstanding outcomes.

Dr. Elisa Greco is a staff vascular surgeon at St. Michael's Hospital. She is assistant professor and surgeon teacher in the Division of Vascular Surgery, Department of Surgery, University of Toronto. Dr. Greco completed her residency in General Surgery, followed by a residency and fellowship in Vascular Surgery through the University of Toronto. During this time, she completed a research fellowship at The Wilson Centre for Research Education, while also obtaining a Master's Degree in Education (MEd) through the Ontario Institute for Studies in Education, in the SSTP. She also completed the Stepping Stones program from the Centre for Faculty Development. She was fortunate enough to have shown interest in medical education when Dr. Richard Reznick was her clinical supervisor during residency. He was the co-founder with Glenn Regehr of the Wilson Centre at Toronto General Hospital. Drs. Reznick, Glenn Regehr and Allan Okrainec agreed to be her supervisors during her Masters. Her research focus was with surgical simulation. The study was a mixed methods, qualitative, and quantitative, looking at common errors or problems trainees have with learning laparoscopic surgery and whether or not a commercially available laparoscopic simulator was able to identify and highlight these errors. She did her research through the Ontario Institute for Studies in Education (OISE). OISE is the largest, most research-intensive institution of education in Canada. OISE is recognized as one of the leading centres of graduate studies, scholarship and continuing professional learning in education in the world. OISE offers a wide range of programs in education and human development. This extends a meticulous foundation for a career in professional practice, research, policy and community development. Dr. Greco was in the SSTP from 2008 – 2010.

Dr. Marc Jeschke is the new Translational Research Chair, and Director of Ross Tilley Burn Centre at Sunnybrook Health Sciences Centre, started his presentation by stating that translational research applies findings from basic science to enhance human health and well-being. In a medical research context, it aims to "translate" findings in fundamental research into medical and nursing practice and meaningful health outcomes. The uniqueness of the surgical specialties is that as surgeons, they have access to tissue from patients and they can therefore study real human processes on a molecular level. Tissue banks are a unique and valuable system to study patients, take lab data and compare them to real human diseases and processes. Tissue sampling is now being recognized as a crucial step forward. The beauty of translational research is the validation of basic science data and moving forward in the process of improvising outcomes of patients. As an example, Ross Tilley Burn Centre (RTBC) has approximately 800 patient samples for burn patients that they can study for tissue responses and outcomes. They therefore can determine trajectories of outcomes not only at a system level but also on a molecular and cell organelle level. There are however several other investigators within our Department that established tissue banks and move the field forward. Marc personally believes that translational science and research is one of the research branches that can affect and change outcomes. The results of translational studies are usually confirmed in large RCT trials or epidemiology studies.

Dr. Andras Kapus is Associate Vice Chair Research in the Department of Surgery, University of Toronto. Dr. Kapus is a senior scientist at St. Michael's Hospital. Dr. Kapus reiterated that the SSTP started as a concept by Dr. Bernard Langer in 1984 and expanded to being the great Program it is today. He spoke about the unmatched opportunities that the SSTP offers both in researchable topics and the availability potential supervisors, within the Department of Surgery (including > 170 surgeon scientists, surgeon investigators and 44 basic scientists) and at U of T in general. The purpose of the SSTP is to provide excellent research training for surgical residents who wish to pursue a career in academic surgery. The focus is on excellent research training, not on a specific discipline or project, or on specific course work. Out of over 350 SSTP trainees since 1983, over 150 have received their MSc, 90 PhD, 20 MEd, and more than 10 other degrees such as MASc. This is an incredible and unique opportunity to define your future niche as an academic surgeon. A large variety of topics encompass basic research (e.g., cellular and molecular biology, pathology, pathophysiology, neuroscience, bioengineering), clinical research, clinical epidemiology, medical bioethics, or health services research. The "psychology" of being a successful SSTP trainee, calls attention to challenges of the transition from a very structured to a predominantly self-motivated and organized lifestyle, and the most effective strategies that minimize the stress and sense of incompetence, and maximize the creativity and productivity of the trainees. Dr. Kapus encouraged future SSPT trainees to consider and capitalize on working with one of the more than 40 basic scientists at the Department of Surgery. This is the largest cohort of scientists associated with any clinical department.

Dr. Adam Katchky is a recent SSTP graduate and current Fellow in Lower Extremity Reconstruction at Mount Sinai Hospital. He completed his undergraduate and medical degrees at the University of Western Ontario, as part of the Mechanical Engineering with Medicine concurrent degree program. He subsequently completed residency training in Orthopaedic Surgery at the University of Toronto, during which he completed a Master of Science degree, with a focus on knee biomechanics, through the Surgeon Scientist Training Program and Clinician Investigator Program, under the supervision of Dr.

Geoff Fernie. Dr. Katchky has completed fellowship training in low extremity reconstruction, sports injury management and arthroscopic surgery in Brisbane and Melbourne, Australia. He recently returned to Toronto to further his fellowship training, and remains active in clinical and translational orthopaedic research as well as quality improvement. Dr. Katchky shared his exceptional experience at the Toronto Rehab Institute with Dr. Geoff Fernie. He was awarded his MSc in June 2017.

Dr. Karineh Kazazian is a PGY4 General Surgery Resident who completed the Surgeon Scientist Training Program to obtain a PhD through the Institute of Medical Science, University of Toronto, under the supervision of Dr. Carol Swallow. Her research focus is in identifying and functionally characterizing genes that contribute to tumour progression, specifically on the role of Polo-like kinase 4 in cancer invasion and metastasis. Her goal is to complete clinical fellowship training as a Surgical Oncologist and to pursue basic science laboratory research as a Surgeon Scientist. Her positive involvement in the SSTP was confirmed by the other residents attending the orientation. She was in the SSTP from July 2011 until June 2016. She was awarded her PhD in June 2017.

Dr. Avery Nathens is currently the Chief of Surgery and Trauma Medical Director at Sunnybrook Health Sciences Centre, Canada's largest Level 1 trauma centre, and Professor of Surgery at the University of Toronto. He is an attending trauma surgeon and epidemiologist with a focus on trauma system design. He is co-chair of the Ontario Trauma Advisory Committee and Medical Director of Trauma Quality Programs, American College of Surgeons. His research interests include trauma system effectiveness and quality of trauma care. He holds the DeSouza Chair in Trauma Research and has published over 350 peer-reviewed manuscripts including many landmark works on trauma care in *Lancet*, *NEJM* and *JAMA*. He has been the recipient of several million dollars of research funding from the NIH, Canadian Institutes of Health Research and many other agencies. Dr. Nathens was in the Surgeon Scientist Training Program from 1993 – 1996, working with Drs. John Marshall and Ori D. Rotstein toward his PhD. Dr. Nathens spoke of his time in the SSTP and the unique experience it provided for him.

Dr. Carol Swallow is the Bernard and Ryna Langer Chair of the Division of General Surgery at the University of Toronto. She is a surgical oncologist at Mount Sinai Hospital/Princess Margaret Cancer Centre in Toronto. Dr. Swallow is a graduate of the University of Toronto Medical School, and trained in the General Surgery residency program at the University of Toronto as a member of the Surgical Scientist Training Program. She attained a PhD in cell biology and surgical sepsis in 1993, under the supervision of Dr. Ori Rotstein. She was in the SSTP from 1987 – 1993. After this she completed clinical fellowship training in Surgical Oncology at Memorial Sloan Kettering Cancer Center. She is currently a Professor in the Department of Surgery and Institute of Medical Science at the University of Toronto. Her areas of clinical expertise include retroperitoneal sarcoma, gastrointestinal stromal tumour, gastric cancer, and rectal cancer. Her laboratory research is focused on cell cycle regulation and carcinogenesis. Dr. Swallow is currently the Head of the Division of General Surgery at Mount Sinai Hospital and Chair of the Grants and Awards Committee of the Society of Surgical Oncology, and was previously the Director of the University of Toronto General Surgical Oncology Fellowship Program, the Chair of the Royal College General Surgical Oncology Specialty Committee, and the President of the Canadian Society of Surgical Oncology. She has supervised many residents in the SSTP with exceptional outcomes.

Dr. Victor Yang earned a Master's degree in Electrical & Computer Engineering at the University of Toronto in 1998 and completed the MD-PhD (Medical Biophysics) program at the University of Toronto in 2006, for which he was recognized by a Governor General's Gold Medal award for highest academic standing at the University in Sciences and Engineering. He then entered the Neurosurgery residency program at the University of Toronto while continuing his engineering focus at Ryerson University, where he managed a very productive laboratory focusing on ultrasound imaging, endovascular Doppler optical coherence tomography and medical devices design. In 2007, he was appointed as an Assistant Professor of Electrical & Computer Engineering at Ryerson, where he was awarded a Tier 2 Canada Research Chair in Bioengineering and Biophotonics the following year. Dr. Yang completed his neurosurgical residency training in June 2012 with an in-folded clinical fellowship at St. Michael's Hospital. He became a Fellow of the Royal College of Physicians and Surgeons of Canada in 2012, as well as completing the European Examination in Neurosurgery with an Outstanding Performance Prize. In 2013, he was recruited to the Division of Neurosurgery with a staff appointment at Sunnybrook Hospital. He is currently an Associate Professor of Electrical & Computer Engineering at the University of Toronto and at Ryerson University. His interests lie in high-resolution neurosurgical navigation, multimodality intraoperative imaging guidance, endovascular imaging and minimally invasive therapeutics for carotid disease, ischemic and hemorrhagic stroke.

Dr. Albert Yee is the Holland Musculoskeletal Program Chief and Head of the Division of Orthopaedic Surgery at Sunnybrook Health Sciences Centre (SHSC), where he holds the Marvin Tile Chair in Orthopaedic Surgery. Dr Yee is an Orthopaedic Spine Surgeon at SHSC, Associate Scientist (Physical Sciences Platform) at Sunnybrook Research Institute and a Consultant in Surgical Oncology, Bone

Metastasis Clinic, Odette Cancer Centre. He is Full Professor at the University of Toronto in the Institute of Medical Sciences with a cross appointment in the Institute of Biomaterials and Biomedical Engineering. He is the Vice Chair of Research in the Division of Orthopaedics and Co-Director of the Department of Surgery Spine Program, University of Toronto. Dr. Yee is the current president of the Canadian Orthopaedic Research Society, an Executive Member of the Canadian Spine Society and Co-Chair of Bone & Joint Canada. He is also the Canadian Lead for the Young Investigators Initiative of Bone & Joint Canada and the US Bone & Joint Initiative, a grant mentoring and career development program. Dr. Yee has over 100 peer reviewed publications and has received academic honours including the Canadian Orthopaedic Foundation J. Edouard Samson Award (2011), Canadian Orthopaedic Research Society Founders' Medal (2011), Charles H. Tator Surgeon-Scientist Mentoring Award (2012) and the American British Canadian (ABC) International Travelling Fellowship, American Orthopaedic Association/Canadian Orthopaedic Association (2013). Dr. Yee's lab focuses on translational spine and orthopaedic research - pre-clinical models of surgery evaluate novel therapies (e.g. photodynamic therapy, radiofrequency ablation) for the minimally invasive surgical treatment of vertebral metastasis. His work has led to the first in human clinical trials and FDA approval and commercialization of new minimally invasive spinal technology. His work also focuses on understanding mechanisms of disease in cancer invasiveness in bone with an aim towards targeting potential new promising therapeutics. Dr. Yee was in the Surgeon Scientist Training Program from 1994 – 1996, working with Drs. Rod Davey and Earl Bogoch toward his MSc. Dr. Yee emphasized that there are continual advances in surgical practice. He stressed that what and how you practice by mid-career likely will be different than what was considered 'gold' standard of care during your surgical residency. These changes in practice occur directly due to research discoveries (either directly in the field or indirectly in line with new knowledge outside the field). Fast-forward from his time as resident to young investigator to his present role, the SSTP was one of the major stepping stones in his career. Keeping current is important - medicine is a life long process. There is a tremendous opportunity to be involved in academic surgery; keep an open mind. The SSTP is a Department of Surgery gem not to be missed during surgical residency.

Dr. Kevin Zuo is a resident in the Division of Plastic & Reconstructive Surgery. He grew up in Edmonton, AB where he completed his undergraduate and medical degrees at the University of Alberta and moved to Toronto in 2015 to start his post-graduate training. He is currently in the Surgeon Scientist Training Program (SSTP) working towards a Masters of Applied Science (MASc) in the Institute of Biomaterials and Biomedical Engineering (IBBME) at SickKids Research Institute under the supervision of Dr. Gregory Borschel. Kevin is investigating novel strategies to reconstruct peripheral nerve defects with acellular nerve allografts and local drug delivery to support and enhance axon regeneration. Kevin is co-representative of the SSTP residents in the Department of Surgery Research Committee.