
PGY 1 & PGY 2 RESEARCH ORIENTATION

AND

SSTP MEET AND GREET

Tuesday October 29, 2019

5:30 - 7:30 pm

Peter Gilgan Centre for Research and Learning (PGCRL)

CRL Gallery (2-9300) - 686 Bay Street

Overview of research in Department of Surgery and Surgeon Scientist Training Program (SSTP)

- ▶ Michael Fehlings, Vice Chair Research
- ▶ Andras Kapus (Associate Vice Chair Research)
- ▶ Albert Yee (Orthopaedic Vice Chair Research)

Translational Research ▶ Marc Jeschke, Marcelo Cypel

IMS Overview ▶ Mingyao Liu, Director

Basic Science Research ▶ Rebecca Gladdy

Clinician Investigator Program (CIP) Overview ▶ Nicola Jones, Director

IBBME Overview ▶ Warren Chan, Director

Clinical Epidemiology Research ▶ Girish Kulkarni

Surgical Education ▶ Carol-Anne Moulton

IHPME Overview ▶ Geoffrey M. Anderson

Bioengineering Research ▶ James Drake

Recent SSTP Graduate

- ▶ Keith Lawson – Urology
- ▶ Omar Selim – Vascular Surgery
- ▶ Kevin Zuo – Plastic & Reconstructive Surgery

Current SSTP Research Committee Reps

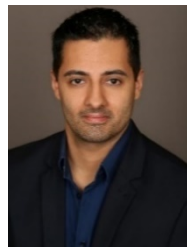
- ▶ Chris Ahuja – Neurosurgery
- ▶ Douglas Cheung – Urology

Q & A Session



MICHAEL G. FEHLINGS, MD, PhD, FRSC, FACS, FCAHS, FRSC

Dr. Michael Fehlings is Head of the Spinal Program at the Toronto Western Hospital. At the University of Toronto, he is Vice Chair Research for the Department of Surgery, Co-Director of the Spine Program and a Professor of Neurosurgery. He holds the Halbert Chair in Neural Repair and Regeneration, is a Senior Scientist in the Division of Genetics and Development at the Toronto Western Research Institute, a Scientist at the McEwen Centre for Regenerative Medicine and a McLaughlin Scholar in Molecular Medicine. He combines an active clinical practice in complex spinal surgery with a translationally-oriented research program focused on discovering novel treatments for the injured brain and spinal cord. He has published over 750 peer-reviewed journal publications in neuroscience chiefly in the area of spinal cord injury and complex spinal surgery. In addition, he is a Principal Investigator in the Christopher and Dana Reeve Foundation North American Clinical Trials Network, Chair of the internationally renowned AOSpine North America network and leads several international clinical research trials.



CHRISTOPHER AHUJA, MD

Dr. Christopher Ahuja is a PGY-4 Neurosurgery trainee in the SSTP and PhD student in Dr. Michael Fehlings' lab at Toronto Western Hospital, University Health Network. His work focuses on bioengineered strategies to optimize human induced pluripotent stem cell-derived neural stem cells for regeneration of the central nervous system. 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 encourages 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.



GEOFFREY M. ANDERSON, MD, MSc, PhD

Dr. Geoffrey Anderson is Professor in the Institute of Health Policy, Management and Evaluation, University of Toronto. He is the principal investigator of Ontario's Better Access and Care for Complex Needs (BeACCoN) network <https://www.beacon.ca/>.

He has written extensively about health care system performance measurement and the impacts of health care interventions.

<https://scholar.google.ca/citations?hl=en&user=tzZZQdoAAAAJ>

He developed and lectures in the M.Sc. in System Leadership and Innovation at the University of Toronto. <https://ihpme.utoronto.ca/academics/rd/system-leadership-and-innovation/>



WARREN CHAN, PhD

Dr. Warren Chan is the Director and Distinguished Professor in the Institute of Biomaterials and Biomedical Engineering at the University of Toronto. Dr. Chan received his B.S. degree from the University of Illinois in 1996, PhD degree from Indiana University in 2001, and post-doctoral training at the University of California (San Diego). He moved to Toronto in 2002 to lead the Integrated Nanotechnology/ Biomedical Sciences Laboratory. His research interest is in the development and translation of nanotechnology for diagnosing and treating cancer and infectious diseases. He has received NSERC E.W.R. Memorial Steacie Fellowship, Kabiller Young Investigator Award in Nanomedicine, the BF Goodrich Young Inventors Award, Lord Rank Prize Fund award in Optoelectronics (England), and Dennis Gabor Award (Hungary). He is currently an Associate Editor of ACS Nano. Finally, he is also affiliated with a number of different departments at the University of Toronto: Department of Materials Science and Engineering, the Terrence Donnelly Center for Cellular and Biomolecular Research Chemistry, Chemistry and Chemical Engineering.

**DOUGLAS CHEUNG, MD**

Dr. Douglas Cheung is a PGY-3 Urology trainee in SSTP and a MSc student in Drs. Antonio Finelli & Murray Krahn's lab at Toronto General Hospital, University Health Network. His research interests are exploring healthcare economics within uro-oncology and early detection to better understand how healthcare outcomes can be delivered in a cost effective, patient centric manner. SSTP is a unique opportunity to conduct clinical and basic science research in an environment supported by excellent mentors across every discipline. He strongly feels that interested residents speak with potential supervisors to explore their interests, and consider the SSTP experience as a backbone to launch their future academic career.

**MARCELO CYPEL, MD, MSc, FRCSC**

Canada Research Chair in Lung Transplantation (Tier 2)

Surgical Director ECLS Program UHN

Thoracic Surgeon, University Health Network

Associate Professor of Surgery, Division of Thoracic Surgery, University of Toronto

Dr. Marcelo Cypel is a Staff Thoracic Surgeon at University Health Network (UHN) and an Associate Professor of Surgery at the University of Toronto. He is the Surgical Director of the Artificial Lung Program at UHN. He 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 (EVLP). This method is now used clinically in Toronto and in many other centers, and has significantly increased the number of transplantable lungs. He subsequently performed a 3 year fellowship in thoracic oncology, cardiac surgery, and lung transplantation at the University of Toronto. During his training, he has received 13 awards, including the McMurrich Award given for the best fundamental science work by any level trainee in the Department of Surgery and the 1st Annual Zane Cohen Clinical Fellowship Achievement Award from the Canadian Society of Transplantation. He also achieved a large number of 1st and senior author peer review publications including high impact journals such as Science Translational Medicine, The New England Journal of Medicine and The Lancet. His main clinical interests are in artificial lung devices, Ex vivo and In vivo Lung Perfusion and lung transplantation. He has secured over 2 million in peer review funding over the last 5 years including CIHR grants. His international leadership is also evident by chairing the DCD registry within the International Society of Heart and Lung Transplantation. Dr. Cypel currently holds the prestigious Canada Research Chair in Lung Transplantation from the Government of Canada and he is the principal investigator in very innovative clinical trials, such as the use of uncontrolled donation after cardio-circulatory death for lung transplantation and in vivo lung perfusion with chemotherapy to treat patients with lung metastases. He is a Member of the American Association for Thoracic Surgery (AATS) and a Fellow from the Royal College of Physicians and Surgeons of Canada (FRCSC).

**JAMES DRAKE, MD**

James Drake is Surgeon-in-Chief at The Hospital for Sick Children. He also holds the Harold J. Hoffman/Shoppers Drug Mart Chair in Pediatric Neurosurgery, Hospital for Sick Children. Born in London, Ontario, and educated at Princeton University (1969-1974), Royal College of Surgeons in Ireland (1974), University of Toronto (1986-1987), and Royal College of Surgeons of Canada (1987). Training included a research fellowship funded by the Medical Research Council of Canada (1986-1987) in Hydrocephalus. Dr. Drake assumed his appointment in the Division of Neurosurgery, Department of Surgery in 1988, and has been on the surgical staff at The Hospital for Sick Children in the Division of Paediatric Neurosurgery since then. Primary research and clinical interests relate to the science and surgery of hydrocephalus. Laboratory interests lie in the applications of engineering science to developing novel techniques for diagnosing and treating hydrocephalus, and image guided surgery. Clinical research includes clinical trials in hydrocephalus and management of complex spinal disorders. Works include over 80 peer reviewed publications, and a co-authored a book on cerebrospinal fluid shunts. A member of the editorial board of Computer Assisted Surgery, and the Medical Advisory Board for the Hydrocephalus Association in San Francisco, California. Dr. Drake is Full Professor at the University of Toronto.



REBECCA A. GLADDY, MD, PhD

Dr. Rebecca Gladdy is a Surgeon Scientist and Associate Professor at the University of Toronto who joined the faculty in 2008 after completing a Surgical Oncology Fellowship at Memorial Sloan-Kettering Cancer Center in New York. Her independent research program at the Lunenfeld-Tanenbaum Research Institute is focused on developing functional genomics platforms to inform the development of much needed effective therapies for sarcoma patients. Her clinical expertise is in the surgical management of soft tissue sarcoma. Dr. Gladdy is a member of the Sarcoma Program, which is the Centre of Excellence for Sarcoma Care in Canada and is affiliated with Princess Margaret Cancer Centre, Mount Sinai Hospital (MSH), and the Hospital for Sick Children. In addition to having a translational research lab, she is the Director of the GI Sarcoma Clinical Research Group at MSH, which is dedicated to advancing clinical care through engaging in clinical trials and improving quality of life for sarcoma



MARC JESCHKE, MD PhD FACS, FCCM, FRCS(C)

Professor, University of Toronto

Department of Surgery, Division of Plastic Surgery, Department of Immunology

Director Ross Tilley Burn Centre, Sunnybrook Health Sciences Centre

Chair in Burn Research; Senior Scientist, Sunnybrook Research Institute

In 1994, **Dr. Marc Jeschke** completed his medical school. He trained in Germany and the United States and in 2004 at the University Texas Medical Branch and Shriners Hospital for Children in 2004 and was made Burn Attending and Coordinator of Research. In May of 2010, Dr. Jeschke was appointed Director of the Ross Tilley Burn Centre at Sunnybrook Health Sciences Centre. He was also appointed as a Professor in the Department of Surgery and Plastic Surgery, Department of Immunology and the Institute of Medical Science at University of Toronto. He holds the Chair of Burn Research and is a Senior Scientist at Sunnybrook Research Institute. The overarching description of his work is translational research with prospective randomized clinical trial but the integration of basic research. He is a sought after speaker and has lectured around the world. He has authored over 350 publications and several books on burn care and he has received numerous awards for his teaching and research. His research is supported by Grants from the NIH, CIHR, PSI and CFI, as well as by generous donations. Dr. Jeschke is also Director of the Translational Research Committee in the Department of Surgery, University of Toronto.



NICOLA L. JONES, MD, FRCPC, PhD

Dr. Nicola Jones is a Professor of Paediatrics and Physiology at the University of Toronto; Senior Scientist in the Cell Biology Program, and staff physician in the Division of GI/Heptology and Nutrition at Sick Kids. She was recently appointed as Director of the Integrated Physician Scientist Training Program at the University of Toronto. She completed her medical degree at the University of Toronto, pediatric residency and GI fellowship at Sick Kids Hospital and a PhD in Molecular and Medical genetics at the University of Toronto. As a clinician scientist and pediatric gastroenterologist, her research focuses on understanding the mechanisms responsible for gastrointestinal inflammatory diseases including *Helicobacter pylori* and inflammatory bowel disease. Her lab is funded by operating grants from the Canadian Institute of Health Research, Canadian Crohn's and Colitis Foundation, and NASPGHAN Foundation. She is passionate about supporting and developing the careers of clinician scientists through various roles including as the principal investigator for the Canadian Child Health Clinician Scientist Program. She is currently serving as the President of the Canadian Association of Gastroenterology (CAG).



ANDRAS KAPUS, MD, PhD

Dr. Andras Kapus obtained his MD (1986) and PhD (1990) from cell physiology at the Semmelweis University, Budapest Hungary. He performed a postdoctoral training at the Division of Cell Biology in the Hospital for Sick Children (1992-1995) in Toronto, and was recruited as a basic scientist to the Toronto General Hospital Research Institute and Dept. Surgery in 1997. He was an MRC Scholar (1999-2004). Since 2005 he works at the St. Michael's Hospital/Keenan Research Centre (KRC) for Biomedical Research. He is a full professor (Department of Surgery and Department of Biochemistry), Associate Vice Chair of Research at the Department of Surgery, Head of Research Training Centre, and Director the Critical Care/Trauma/Inflammation Research Platform at KRC. His research area is basic cell (patho) physiology and cell biology, specifically cellular stress signaling, volume and pH regulation, cytoskeleton remodeling and the role of the cytoskeleton in gene expression, epithelial-mesenchymal transition, cell plasticity and the pathobiology of organ (kidney) fibrosis. His current focus is the exploration of molecular mechanisms whereby the cytoskeleton regulates nuclear traffic of transcription factors and thereby cell fate and phenotype. He has published 131 peer-reviewed papers (H-index: 54), and have been continuously supported by CIHR, Kidney Foundation of Canada and NSERC. He has been involved in the graduate training of >50 students. He was the recipient of the Elsie Winifred Crann Memorial Trust Award for Medical Research Scholar of the Medical Research, the Premier's Research Excellence Award, Mel Silverman Mentorship Award and the James Waddell Mentorship Award.



GIRISH KULKARNI, MD, PhD

Dr. Girish Kulkarni is a urologic surgeon in the Department of Surgical Oncology at the Princess Margaret Cancer Centre, University Health Network. He is also a surgeon-scientist who is affiliated with the Department of Surgery, Faculty of Medicine at the University of Toronto. At the University of Toronto, he is an Associate Professor in the Department of Surgery, as well as in the Institute of Health Policy, Management and Education (IHPME). Dr. Kulkarni's primary research interests revolve around the epidemiology of genitourinary malignancies, particularly prostate and bladder cancer. His investigations are dedicated towards the understanding of population-level quality of care from urologic malignancies, quality of life and the health economics associated with urologic malignancies, as well as determining the efficacy of clinical evaluation and treatment towards prostate and bladder cancer.



KEITH LAWSON, MD, PhD

Dr. Keith Lawson is a PGY 3 Urology Resident at the University of Toronto. He completed his medical degree at the University of Calgary, during which time he obtained his MSc specializing in Cancer Biology. He was enrolled in the Surgeon-Scientist Training Program at the University of Toronto conducting a Doctor of Philosophy in Molecular Genetics, supervised by Drs. Jason Moffat and Laurie Ailes. His research was focused on the development of novel functional genomics approaches for understanding genetic interactions as well as mechanisms of cancer immunotherapy resistance. He was awarded 1st prize for the 2019 Gallie Bateman Oral Presentation.



MINGYAO LIU, MD, MSc

Dr. Mingyao Liu is Director of the Institute of Medical Science and Professor of Surgery, Medicine and Physiology at the Faculty of Medicine, University of Toronto. He is James and Mary Davie Chair in Lung Injury, Repair and Regeneration and Head of Respiratory and Critical Care Research at the Toronto General Hospital Research Institute, University Health Network. University of Toronto Lung Transplantation Program and Latner Thoracic Surgery Research Laboratories are one of the leading groups in clinical practice and translational research in lung transplantation worldwide. Dr. Liu is a co-founder of the Latner Labs. His major research is to study the cellular and molecular mechanisms of acute lung injury, especially in lung transplantation. He has developed a drug discovery/delivery pipeline, including cell culture for screening for therapeutic targets, rat lung transplant models for in vivo testing, and pig lung transplant and ex vivo lung perfusion system for pre-clinical trials. Dr. Liu has taken several academic administrative roles in the University of Toronto, including Graduate Coordinator, Associate Director/Interim Director at the Institute of Medical Science, Associate Dean of Life Sciences of the School of Graduate Studies, and

Director of International Research Relations, at the Faculty of Medicine. He has received a number of research awards, including Queen Elizabeth II Diamond Jubilee Medal.



CAROL-ANNE MOULTON, MD, PhD, MEd

Dr. Carol-Anne Moulton is an Associate Professor in the Department of Surgery, University of Toronto and Staff Surgeon with the Division of General Surgery, University Health Network. She is currently the Medical Director of the Operating Room at Toronto General Hospital and Princess Margaret Hospital, and a Scientist in the Wilson Centre. Dr. Moulton's research program focuses on understanding the complexity of surgical judgment, the development of surgical expertise, and underlying causes of surgeon error.



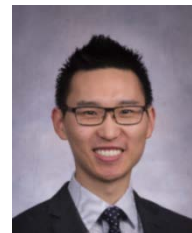
OMAR SELIM, MD, MSc

Dr. Omar Selim is a PGY-4 Vascular Surgery trainee who just completed his MSc through the SSTP, supervised by Drs. Allan Okrainec and Andrew Dueck. His work focuses on assessment in medical education, psychometrics and competency based medical education. He recently won the Royal College Karen Mann Catalyst Grant in Medical Education for his work. He credits the SSTP with allowing him to broaden his horizons from a research perspective and expose him to research methodologies that he otherwise wouldn't have been able to access.



ALBERT YEE, MD, MSc, FRCSC, FACS

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.



KEVIN ZUO, MD, MASc

Dr. Kevin Zuo is a PGY3 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 a graduate of the Surgeon Scientist Training Program (SSTP) as of June 2019 having completed a Masters of Applied Science (MASc) in the Institute of Biomaterials and Biomedical Engineering (IBBME). His research was conducted under the supervision of Dr. Gregory Borschel and involved investigating electrical stimulation and local drug delivery to enhance peripheral nerve regeneration.