McGill UNIVERSITY

Research Booklet

2022

McGill GENERAL SURGERY CHIRURGIE GÉNÉRALE

15th Annual Research Night

Information booklet

Foreword by

Steven Paraskevas MD PhD FRCSC FACS
Associate Professor of Surgery
Director – Pancreas and Islet Transplantation Research
Director of Research – Division of General Surgery

Dear Residents and Students,

As with clinical care and teaching, research continues to recover and adapt to the consequences of the COVID-19 pandemic, not only in the Division of General Surgery, but across the university and around the world. Two short years ago, 80% of on-site research activity ground to a halt[1], and the effects of that shut-down are still being felt. With that in mind, this evening represents a defining moment in your training. If the last two years have shown us anything, it is that research is not just exciting, or good for your resumé, and it's not just an experience to be had. It's actually essential for our survival.

Surgery, and surgical research, continue to be heavily impacted, but a closer examination reveals more to this story. Surgical care is not a collateral damage of the pandemic, and surgeons are no mere bystanders. Surgeons have adapted, learned, and reshaped the way we practice. As we re-examine how surgery is performed, so too do we illustrate how teaching and research can continue to thrive even with the ongoing burdens posed by COVID-19[2]. The leadership role of surgeons in weathering the pandemic, and planning for a 'return to normal' is well illustrated by the extensive information disseminated under the **#COVID19surgery** hashtag.

The research you may choose to do is part of this great effort. While we present the work of individual staff or lab groups here, remember that none of us functions in isolation. Almost certainly, your research will be an important part of larger collaborative efforts of the kind that are common today, and have the potential to generate rapid and significant change. In the wide array of interests pursued by the members of our division, we hope you will find something that sparks your interest, or even defines a career-long question. Take the time you need to find out what our PI's are up to, how they see the months and years ahead, and which lab or research group might be the right fit for you. While the last two years have brought unique challenges, this need not be a negative. Centuries before it became a productivity catchphrase, Epictetus wrote, "every obstacle in life presents us with an opportunity…" Welcome to your moment of opportunity!

Steven Paraskevas, MD, PhD Jeongyoon Moon, MD, MSc

[1]NS Wigginton, et al. Moving academic research forward during COVID-19, Science, 2020;368(6496):1190.
[2]SR Markar, et al. Changing the paradigm of surgical research during a pandemic, Ann Surg, 2020;272(2):e170.

Brief History of the Annual Research Night

The McGill General Surgery Research Night was founded in 2008 by the McGill General Surgery Resident Committee (MGSRC). This is a resident organised and staff funded event.

It gives residents & students interested in pursuing research as part of their training at McGill an opportunity to explore the vast research opportunities available to them. The different research areas in General Surgery include research in epidemiology, public health, surgical education and innovation as well as cutting edge basic science lab work. These are all available at your disposal.

This booklet includes most of the research laboratories available to you along with the interests of each lab and its supervisor. Once you have discovered the group that interests you the most, you can approach the supervisor and ask them questions pertaining to joining their group at the Research Night, which is highly encourage. You can always contact the staff via email that is provided in the booklet as well.

5.....Dr. Sinziana Dumitra
6.....Dr. Mark Basik
7.....JGH Colorectal Surgery group (Dr. Marylise Boutros)
14.....Upper GI Cancer lab (Dr. Lorenzo Ferri)
16.....Dr. Jonathan Cools-Latirgue and Dr. Veena Sangwan
17.....Thoracic Surgery lab (Dr. Jonathan Spicer)
18.....Dr. Swneke Bailey
19.....Dr. Carmen Mueller
21.....Dr. Ari Meguerditchian
25.....Dr. Sarkis Meterissian
28.....Endocrine Surgical Oncology lab (Dr. Elliot Mitmaker)
30.....MUHC Surgical Outcomes lab (Dr. Liane Feldman, Dr. Lawrence Lee, Dr. Julio Fiore Jr)
34.....Bariatric Surgery lab (Dr. Amin Andalib)
35.....Pediatric Surgery (Dr. Sherif Emil)
38.....Dr. Peter Metrakos
41.....Dr. Jeff Barkun
43.....Transplantation and Immunology lab (Dr. Steven Paraskevas, Dr. Jean Tchervenkov)
45.....Dr. George Zogopoulos
46.....Trauma and Acute Care Surgery
50.....Global Surgery (Dr. Tarek Razek, Dr. Dan Deckelbaum)
53.....McGill Molson Virtual Patients (Dr. David Fleiszer)
54.....McGill Breast Outcomes Research Group (Dr. I Prakash, Dr. S Wong)
57.....Surgical Robotics Center (Dr. Amir Hooshiar)

Sinziana Dumitra
MD, MSc(Epi), FRCSC

Surgical Oncology
Royal Victoria Hospital, MUHC
Jewish General Hospital
sinziana.dumitra@mcgill.ca

I am a Surgical Oncologist with a Masters of Epidemiology. Our Lab focuses on building an exciting research program for Retroperitoneal Sarcoma exploring all aspect of care at the populational as well as the patient level. We are also working on aspects of delivery of care for other malignancies such as melanoma and GIST. We offer a very strong methodological background to our trainees, a highly sought-after, portable skillset applicable to all specialties and sub-specialties. We have international collaborations and access to large datasets essential in undertaking research on rare diseases.

We offer a mentorship and variety of supervision and co-supervision from students undertaking a Masters of Epidemiology/ Experimental Surgery to completion of individual projects throughout your time at McGill University.

Weekly lab meetings in conjunction with Dr Sarkis Meterissian's lab will allow you to present your work and receive feedback in a timely fashion. Funding for travelling at national and international meetings to present our work is available.

- Quality of Life after Retroperitoneal Sarcoma Resection: A Systematic Review
- Developing a tool to assess quality of life after Retroperitoneal Sarcoma Resection
- Systematic Review of Access to Care in Retroperitoneal Sarcoma based on distance to tertiary care center
- Impact of time to radiation therapy and surgery on oncologic outcomes in retroperitoneal sarcoma
- Impact of time from neo-adjuvant radiation to resection on post-operative complications in RPS
- Morbidity and Mortality after Retroperitoneal Sarcoma Resection: a Systematic review
- Oncologic outcomes of R1 resection in well-differentiated vs poorly differentiated liposarcomas
- Access to supportive care in non resectable and metastatic sarcoma
- Management of Pelvic Sarcoma: A systematic review
- Adoption of MSLT-2 trail results in Melanoma
- CKIT mutations and targeted therapy in melanoma: a systematic review
- Pelvic Sarcoma: A systematic review

Current trainees:
Elena Parvez, MD
Dominique Morency, MD
Giuseppe Frenda, MD

- MUHC Foundation 25,000/year x 3yrs
- Girls Scouts for Breast Cancer 20,000$
- Cedars Cancer Foundation 20,000$

Mark Basik, MD

Jewish General Hospital

mark.basik@mcgill.ca

Primary focus : Breast & Colon Cancer

1. *The development of novel blood biomarkers involving the measurement of circulating tumor DNA in the plasma of patients with early and advanced breast cancer. Based on the DNA sequence of breast tumors, we are now able to quantify the amount of tumor-specific DNA in the blood of breast cancer patients. The persistence of circulating tumor DNA in the blood of patients after surgery has the potential to be a powerful novel biomarker that can predict the presence of micro-metastases and thus the prognosis of patients with early breast cancer.*

2. *Mechanisms of resistance and response to chemotherapy and targeted anti-drugs such as anti-angiogenic drugs, and tamoxifen. We are investigating gene alterations occurring during the acquisition of acquired resistance to these drugs. We are also testing potential biomarkers of treatment response in clinical samples of breast tumors, hoping to be able to use these to better select patients for these therapies.*

3. *Investigating gene expression and DNA changes in breast and colon cancers. Using modern microarray technology, we are investigating the relationship between DNA copy number changes and gene expression across the genome in both cell lines and primary tumors. One goal is to find genes that are overexpressed as well as amplified in these cancers. These genes will then be candidate targets for novel anti-cancer therapies.*

4. *Stromal-epithelial interactions active in breast tumor biology. It is clear that the tumor microenvironment affects tumor biology and response to treatment. We are characterizing fibroblasts found in the tumor stroma, and using gene expression profiling, we are dissecting the interactions between these fibroblasts and tumor cells. Specifically we are studying how these tumor fibroblasts affect drug response in breast tumors, and thus can be used a predictive biomarkers, as well as therapeutic targets.*

1. Cavallone L, Al-Damry M, Lafleur J, Lan C, Gonzalez-Ginestet P, Aguilar-Mahecha A, **Basik M**. A study of pre-analytical variables and optimization of extraction method for circulating tumor DNA measurements by digital droplet PCR. Cancer Epidemiol Biomarkers Prev. 2019 Mar 1. doi: 10.1158/1055-9965.EPI-18-0586. [Epub ahead of print] PMID: 30824523

2. Darini C, Ghaddar N, Chabot C, Assaker G, Sabri S, Wang S, Krishnamoorthy J, Buchanan M, Aguilar-Mahecha A, Abdulkarim B, Deschenes J, Torres J, Ursini-Siegel J, **Basik M**, Koromilas AE. An integrated stress response via PKR suppresses HER2+ cancers and improves trastuzumab therapy. Nat Commun. 2019 May 13;10(1):2139.

3. Aguilar-Mahecha A, Joseph S, Cavallone L, Buchanan M, Krzemien U, Batist G, **Basik M**. Precision Medicine Tools to Guide Therapy and Monitor Response to Treatment in a HER-2+ Gastric Cancer Patient: Case Report. Front Oncol. 2019 Aug 6;9:698.

4. Gui Y, Aguilar-Mahecha A, Krzemien U, Hosein A, Buchanan M, Lafleur J, Pollak MN, Ferrario C, **Basik M**. Metastatic breast carcinoma-associated fibroblasts have enhanced pro-tumorigenic properties related to increased IGF2 expression. Clin Cancer Res. 2019 Dec 1;25(23):7229-7242. doi: 10.1158/1078-0432.CCR-19-1268. PMID:31515454

5. Sirois I, Aguilar-Mahecha A, Lafleur J, Fowler E, Vu V, Scriver M, Buchanan M, Chabot C, Ramanathan A, Balachandran B, Légaré S, Przybytkowski E, Lan C, Krzemien U, Cavallone L, Aleynikova O, Ferrario C, Guilbert MC, Benlimame N, Saad A, Alaoui-Jamali M, Saragovi HU, Josephy S, O'Flanagan C, Hursting SD, Richard VR, Zahedi RP, Borchers CH, Bareke E, Nabavi S, Tonellato P, Roy JA, Robidoux A, Marcus EA, Mihalcioiu C, Majewski J, **Basik M**. A Unique Morphological Phenotype in Chemoresistant Triple-Negative Breast Cancer Reveals Metabolic Reprogramming and PLIN4 Expression as a Molecular Vulnerability. Mol Cancer Res. 2019 Dec;17(12):2492-2507.

6. Cavallone L, Aguilar-Mahecha A, et al. Prognostic and predictive value of circulating tumor DNA during neoadjuvant chemotherapy for triple negative breast cancer. In Press, Scientific Reports 2020.

A complete list of recent publications can be provided upon request.

In Honor of
Philip Gordon, MD, FRCSC, FACS
Founder of Colorectal Surgery at McGill, Master Surgeon, Generational Leader, Academic, Mentor and Friend

Marylise Boutros, MD, FRCSC
mboutros@jgh.mcgill.ca

Gabriela Ghitulescu, MD, FRCSC
gabriela.ghitulescu@mcgill.ca

Julio Faria, MD, FRCSC
julio.faria@mcgill.ca

Nancy Morin, MD, FRCSC, FACS
nancy.morin@mcgill.ca

Carol-Ann Vasilevsky, MD, FRCSC, FACS
carol-ann.vasilevsky@mcgill.ca

Allison Pang, MD, FRCSC
allison.pang@mail.mcgill.ca

Marie Demian, MSc, Research Associate
mdemian@jgh.mcgill.ca

Sarah Faris, Research Associate
sarah.samfaris@gmail.com

Georgia Rigas, Research Administrator
grigas@jgh.mcgill.ca

Our vision for the JGH Colorectal Surgery Outcomes Research lab is to make it a venue for productive outcomes research focused on improving morbidity and mortality of colorectal surgery (CRS) through assessment of innovative interventions.
Our aim is to provide a strong framework wherein trainees can participate in research to further their personal growth and have the opportunity to contribute to our knowledge in the field of colorectal surgery. As mentors, our goal is to facilitate your research endeavors, provide support and guidance, and help you achieve your career goals, all while having a good time.
Our primary interest is to address clinical problems witnessed in our daily practice with the aim of improving the lives of patients with colorectal diseases. Using large, administrative, and prospectively maintained databases, we investigate CRS outcomes, and employ prospective study designs including randomized controlled trials and cohort studies to assess innovative strategies to reduce morbidity.

Examples of Ongoing Prospective Clinical Trials:

1. Extended mesenteric excision in ileocolic resections for Crohn's disease: A multicenter prospective cohort study
2. Transanal irrigation for the management of LARS: A multi-center RCT.
3. Assessing current survivorship care needs of rectal cancer patients
4. LARS Peer Support RCT
5. Early closure of diverting loop ileostomy after restorative protectomy for rectal cancer: A multi-center RCT.
1. Does bowel stimulation before loop ileostomy closure reduce postoperative ileus? A multicenter randomized controlled trial
2. Impact of a patient-centered program for low anterior resection syndrome: A multicenter: A randomized controlled trial
3. An Online Application for Patients with Low Anterior Resection Syndrome A Pilot Study

Examples of Ongoing Qualitative and Survey Studies:

1. Patient Activation, Quality of Life, and Bowel Function in Rectal Cancer Survivors: A cross-sectional survey study
2. Patient Preferences and Perceptions on Surgery for Recurrent Diverticulitis: A cross-sectional survey study
3. Sexual Dysfunction in patients with LARS: Patient Perspectives
4. Qualitative review on Inuit patient's experience in our healthcare system and with screening colonoscopy.

Examples of Ongoing Observational Cohort Studies:

1. Emergency Department Admissions for Uncomplicated Diverticulitis: A Nationwide Study.
2. Would Lowering the Age for Screening Colonoscopy Really Help? Understanding the Burden of Adenomas in Patients <50 Years of Age Who Underwent Colonoscopy.
3. The Fate of Sphincteroplasty in the Post Sacral Nerve Stimulation Era: A National Inpatient Sample Database Analysis.
4. Prevalence and factors associated with mental health disorders in rectal cancer patients post-restorative proctectomy.
5. In-patient colonoscopy for colorectal cancer: Who are we failing?
6. Is the Hartmann's Procedure for Diverticulitis Obsolete? National Trends in Colectomy for Diverticulitis in the Emergency Setting from 1993-2015.

1. Holland J, Cwintal M, Rigas G, Pang AJ, Vasilevsky CA, Morin N, Ghitulescu G, Faria J, **Boutros M**. The impact of delaying colonoscopies during the COVID-19 pandemic on colorectal cancer detection and prevention. Surg Endosc. 2022 Apr 15:1–10. doi: 10.1007/s00464-022-09211-z. Epub ahead of print. PMID: 35428894; PMCID: PMC9012515.
2. Salama E, Holland J, **Boutros M**. Surgical Principles of Rectal Cancer. Surg Oncol Clin N Am. 2022 Apr;31(2):239-253. doi: 10.1016/j.soc.2021.11.005. Epub 2022 Mar 9. PMID: 35351275.
3. COVIDSurg Collaborative. The impact of surgical delay on resectability of colorectal cancer: An international prospective cohort study. Colorectal Dis. 2022 Mar 14. doi: 10.1111/codi.16117. Epub ahead of print. PMID: 35286766.
4. *Moon J, Pang A, Ghitulescu G, Faria J, Morin N, Vasilevsky CA, **Boutros M**. Early discharge after colorectal cancer resection: trends and impact on patient outcomes. Surg Endosc. 2022 Jan 6. doi: 10.1007/s00464-021-08923-y. Epub ahead of print. PMID: 34988738.
5. Balvardi S, Cipolla J, Touma N, Vallipuram T, Barone N, Sivarajan R, Kaneva P, Demyttenaere S, **Boutros M**, Lee L, Feldman LS, Fiore JF Jr. Impact of the Covid-19 pandemic on rates of emergency department utilization and hospital admission due to general surgery conditions. Surg Endosc. 2022 Jan 3:1–9. doi: 10.1007/s00464-021-08956-3. Epub ahead of print. PMID: 34981226; PMCID: PMC8722748.
6. Pang A.J., Marinescu D, Morin N, Vasilevsky C.A., **Boutros M**. Segmental resection of splenic flexure colon cancers provides an adequate lymph node harvest and is a safe operative approach - an analysis of the ACS-NSQIP database. Surg Endosc. 2022 Jan 1. doi: 10.1007/s00464-021-08926-9. Epub ahead of print. PMID: 34973078.
7. Pang AJ., Harra Z., Chen L., Morin N., Faria J., Ghitulescu G., **Boutros M.,** Vasilevsky C.A. Understanding the Burden of Colorectal Adenomas in Patients Younger Than 50 Years of Age: A Large Single-Center Retrospective Cohort Study. Dis Colon Rectum. 2021 Dec 9. doi: 10.1097/DCR.0000000000002069. Epub ahead of print. PMID: 34897208.
8. *Garfinkle R, Dell'Aniello S, Bhatnagar S, Morin N, Ghitulescu G, Faria J, Vasilevsky CA, Brassard P, **Boutros M**. Assessment of long-term bowel dysfunction after restorative proctectomy for neoplastic disease: A population-based cohort study.2021 Nov 27:S0039-6060(21)01110-7. doi: 10.1016/j.surg.2021.10.068. Epub ahead of print. PMID: 34848073.
9. *Garfinkle R, **Boutros M**. Low Anterior Resection Syndrome: Predisposing Factors and Treatment. Surg Oncol. 2021 Nov 25:101691. doi: 10.1016/j.suronc.2021.101691. Epub ahead of print. PMID: 34863592.
10. COVIDSurg Collaborative. Effect of COVID-19 pandemic lockdowns on planned cancer surgery for 15 tumour types in 61 countries: an international, prospective, cohort study. Lancet Oncol. 2021 Nov;22(11):1507-1517. doi: 10.1016/S1470-2045(21)00493-9. Epub 2021 Oct 5. PMID: 34624250; PMCID: PMC8492020.
11. BJS Commission Team. BJS commission on surgery and perioperative care post-COVID-19. Br J Surg. 2021 Oct 23;108(10):1162-1180. doi: 10.1093/bjs/znab307. PMID: 34624081.
12. *Alnaki A, Garfinkle R, Almalki T, Pelsser V, Bonaffini P, Reinhold C, Morin N, Vasilevsky CA, Liberman AS, **Boutros M**. Long-term Implications of Persistent Diverticulitis: A Retrospective Cohort Study of 915 Patients. Dis Colon Rectum. 2021 Sep 1;64(9):1112-1119. doi: 10.1097/DCR.0000000000001969. PMID: 34397559.
13. *Garfinkle R, Salama E, Amar-Zifkin A, Morin N, Ghitulescu G, Faria J, Vasilevsky CA, **Boutros M**. Observational versus antibiotic therapy for acute uncomplicated diverticulitis: A non-inferiority meta-analysis based on a Delphi consensus. Surgery. 2022 Feb;171(2):328-335. doi: 10.1016/j.surg.2021.07.012. Epub 2021 Jul 31. PMID: 34344525.
14. *Garfinkle R, Ky A, Singh A, Morin N, Ghitulescu G, Faria J, Vasilevsky CA, **Boutros M.** Financial and occupational impact of low anterior resection syndrome in rectal cancer survivors. Colorectal Dis. 2021 Jul;23(7):1777-1784. doi: 10.1111/codi.15633. Epub 2021 Apr 14. PMID: 33724620.
39. Poylin V, Hawkins AT, Bhama AR, Boutros M, Lightner AL, Khanna S, Paquette IM, Feingold DL; Prepared by the Clinical Practice Guidelines Committee of The American Society of Colon and Rectal Surgeons. The American Society of Colon and Rectal Surgeons Clinical Practice Guidelines for the Management of Clostridioides difficile Infection. Dis Colon Rectum. 2021 Jun 1;64(6):650-668. doi:
40. *Moon J, Monton O, Smith A, Garfinkle R, Zhao K, Zelkowitz P, Loiselle CG, Fiore JF Jr, Sender Liberman A, Morin N, Faria J, Ghitulescu G, Vasilevsky CA, Bhatnagar SR, **Boutros M**. Interactive online informational and peer support application for patients with low anterior resection syndrome: patient survey and protocol for a multicentre randomized controlled trial. Colorectal Dis. 2021 May;23(5):1248-1257. doi: 10.1111/codi.15602. Epub 2021 Apr 2. PMID: 33638278
41. *Caminsky NG, Hamad D, He BH, Zhao K, Al Mahroos M, Feldman LS, Lee L, **Boutros M**, Fiore JF Jr. Optimizing discharge decision-making in colorectal surgery: a prospective cohort study of discharge practices in a recently implemented enhanced recovery pathway. Colorectal Dis. 2021 Jun;23(6):1507-1514. doi: 10.1111/codi.15525. Epub 2021 Feb 9. PMID: 33423346.
42. GlobalSurg Collaborative and National Institute for Health Research Global Health Research Unit on Global Surgery. Global variation in postoperative mortality and complications after cancer surgery: a multicentre, prospective cohort study in 82 countries. Lancet. 2021 Jan 30;397(10272):387-397. doi: 10.1016/S0140-6736(21)00001-5. Epub 2021 Jan 21. PMID: 33485461; PMCID: PMC7846817.
43. *Brissette V, Alnaki A, Garfinkle R, Lloyd M, Demian M, Vasilevsky CA, Morin N, Boutros M. The quality, suitability, content and readability of online health-related information regarding sexual dysfunction after rectal cancer surgery. Colorectal Dis. 2021 Feb;23(2):376-383. doi: 10.1111/codi.15514. Epub 2021 Jan 28. PMID: 33404140.
44. *Garfinkle R, Sabboobeh S, Demian M, Barkun A, Boutros M. Patient and Physician Preferences for Antibiotics in Acute Uncomplicated Diverticulitis: A Delphi Consensus Process to Generate Noninferiority Margins. Dis Colon Rectum. 2021 Jan;64(1):119-127. doi: 10.1097/DCR.0000000000001815. PubMed PMID: 33093297.
45. Garant A, Kavan P, Martin AG, Azoulay L, Vendrely V, Lavoie C, Vasilevsky CA, **Boutros M**, Faria J, Nguyen TN, Ferland E, Des Groseilliers S, Cloutier AS, Diec H, Drolet S, Richard C, Batist G, Vuong T. Optimizing treatment sequencing of chemotherapy for patients with rectal cancer: The KIR randomized phase II trial. Radiother Oncol. 2021 Feb;155:237-245. doi: 10.1016/j.radonc.2020.11.008. Epub 2020 Nov 19. PMID: 33220397.
46. *Garfinkle R, Abou-Khalil M, Salama E, Marinescu D, Pang A, Morin N, Demyttenaere S, Liberman AS, Vasilevsky CA, **Boutros M**. Development and Validation of a Clinical Risk Score for Intensive Care Resource Utilization After Colon Cancer Surgery: a Practical Guide to the Selection of Patients During COVID-19. J Gastrointest Surg. 2021 Jan;25(1):252-259. doi: 10.1007/s11605-020-04665-9. Epub 2020 Jun 3. PMID: 32495141; PMCID: PMC7269615.
47. Glasbey JC, Nepogodiev D, Simoes JFF, Omar O, Li E, Venn ML, Pgdme, Abou Chaar MK, Capizzi V, Chaudhry D, Desai A, Edwards JG, Evans JP, Fiore M, Videria JF, Ford SJ, Ganly I, Griffiths EA, Gujjuri RR, Kolias AG, Kaafarani HMA, Minaya-Bravo A, McKay SC, Mohan HM, Roberts KJ, San Miguel-Méndez C, Pockney P, Shaw R, Smart NJ, Stewart GD, Sundar Mrcog S, Vidya R, Bhangu AA; COVIDSurg Collaborative. Elective Cancer Surgery in COVID-19-Free Surgical Pathways During the SARS-CoV-2 Pandemic: An International, Multicenter, Comparative Cohort Study. J Clin Oncol. 2021 Jan 1;39(1):66-78. doi: 10.1200/JCO.20.01933. Epub 2020 Oct 6. PMID: 33021869.
48. Gillis C, Fenton TR, Gramlich L, Sajobi TT, Culos-Reed SN, Bousquet-Dion G, Elsherbini N, Fiore JF Jr, Minnella EM, Awasthi R, Liberman AS, **Boutros M**, Carli F. Older frail prehabilitated patients who cannot attain a 400 m 6-min walking distance before colorectal surgery suffer more postoperative complications. Eur J Surg Oncol. 2021 Apr;47(4):874-881. doi: 10.1016/j.ejso.2020.09.041. Epub 2020 Oct 5. PMID: 33041092.

25. *Abou-Khalil M, Garfinkle R, Alqahtani M, Morin N, Vasilevsky CA, **Boutros M.** Diverting loop ileostomy versus total abdominal colectomy for clostridioides difficile colitis: outcomes beyond the index admission. Surg Endosc. 2021 Jun;35(6):3147-3153. doi: 10.1007/s00464-020-07755-6. Epub 2020 Jun 29. PMID: 32601762.
26. COVIDSurg Collaborative. Outcomes from elective colorectal cancer surgery during the SARS-CoV-2 pandemic. Colorectal Dis. 2020 Nov 15:10.1111/codi.15431. doi: 10.1111/codi.15431. Epub ahead of print. PMID: 33191669; PMCID: PMC7753519.
27. COVIDSurg Collaborative. Delaying surgery for patients with a previous SARS-CoV-2 infection. Br J Surg. 2020 Nov;107(12):e601-e602. doi: 10.1002/bjs.12050. Epub 2020 Sep 25. PMID: 32974904; PMCID: PMC7537063.
28. *Garfinkle R, Azoulay L, **Boutros M**. Survival and Outcomes After Noncompletion of Treatment for Anal Cancer. JAMA Oncol. 2020 Dec 1;6(12):1976-1977. doi: 10.1001/jamaoncol.2020.3949. PMID: 33001137.
29. *Garfinkle R, Almalki T, Pelsser V, Bonaffini P, Reinhold C, Morin N, Vasilevsky CA, Liberman AS, **Boutros M.** Conditional risk of diverticulitis after non-operative management. Br J Surg. 2020 Dec;107(13):1838-1845. doi: 10.1002/bjs.11836. Epub 2020 Sep 2. PMID: 32876945
30. *Ni A, Al-Qahtani M, Salama E, Marinescu D, Khalil MA, Faria J, Morin N, Ghitulescu G, Vasilevsky CA, **Boutros M.** Trends in Colectomies for Colorectal Neoplasms in Ulcerative Colitis: a National Inpatient Sample Database Analysis over Two Decades. J Gastrointest Surg. 2020 Aug;24(8):1721-1728. doi: 10.1007/s11605-020-04666-8. Epub 2020 Jun 15. PMID: 32557016.
31. *Garfinkle R, Loiselle CG, Park J, Fiore JF Jr, Bordeianou LG, Liberman AS, Morin N, Faria J, Ghitulescu G, Vasilevsky CA, Bhatnagar SR, **Boutros M.** Development and evaluation of a patient-centred program for low anterior resection syndrome: protocol for a randomized controlled trial. BMJ Open. 2020 May 30;10(5):e035587. doi: 10.1136/bmjopen-2019-035587. PMID: 32474427; PMCID: PMC7264642.
32. *Garfinkle R, **Boutros M**. Evaluation of Nationwide Surgical Trends Using American College of Surgeons NSQIP: A Word of Caution. J Am Coll Surg. 2020 May;230(5):840. doi: 10.1016/j.jamcollsurg.2020.02.018. PMID: 32334744.
33. *Almalki T, Garfinkle R, Kmiotek E, Pelsser V, Bonaffini P, Reinhold C, Yousef P, Morin N, Vasilevsky CA, Liberman AS, **Boutros M.** Family History Is Associated With Recurrent Diverticulitis After an Episode of Diverticulitis Managed Nonoperatively. Dis Colon Rectum. 2020 Jul;63(7):944-954. doi: 10.1097/DCR.0000000000001656. PMID: 32217858.
34. *Zuckerman J, Garfinkle R, Vasilevksy CA, Ghitulescu G, Faria J, Morin N, **Boutros M.** Short- and Long-Term Outcomes of Right-Sided Diverticulitis: Over 15 Years of North American Experience. World J Surg. 2020 Jun;44(6):1994-2001. doi: 10.1007/s00268-020-05431-3. PubMed PMID: 32100064.
35. *Garfinkle R, Vasilevsky CA, Ghitulescu G, Morin N, Faria J, **Boutros M.** Compliance With Preoperative Elements of the American Society of Colon and Rectal Surgeons Rectal Cancer Surgery Checklist Improves Pathologic and Postoperative Outcomes. Dis Colon Rectum. 2020 Jan;63(1):30-38. doi: 10.1097/DCR.0000000000001511. PubMed PMID: 31804269.
36. Bordeianou LG, Anger JT, **Boutros M**, Birnbaum E, Carmichael JC, Connell KA, De EJB, Mellgren A, Staller K, Vogler SA, Weinstein MM, Yafi FA, Hull TL; MEMBERS OF THE PELVIC FLOOR DISORDERS CONSORTIUM WORKING GROUPS ON PATIENT-REPORTED OUTCOMES. Measuring Pelvic Floor Disorder Symptoms Using Patient-Reported Instruments: Proceedings of the Consensus Meeting of the Pelvic Floor Consortium of the American Society of Colon and Rectal Surgeons, the International Continence Society, the American Urogynecologic Society, and the Society of Urodynamics, Female Pelvic Medicine and Urogenital Reconstruction. Dis Colon Rectum. 2020 Jan;63(1):6-23. doi: 10.1097/DCR.0000000000001529. PMID: 31804265.
37. *Al-Masrouri S, Garfinkle R, Al-Rashid F, Zhao K, Morin N, Ghitulescu GA, Vasilevsky CA, **Boutros M**. Readmission for Treatment Failure After Nonoperative Management of Acute Diverticulitis: A Nationwide Readmissions Database Analysis. Dis Colon Rectum. 2020 Feb;63(2):217-225. doi: 10.1097/DCR.0000000000001542. PubMed PMID: 31914114
38. Carli F., Bousquet-Dion G., Awasthi R., Elsherbini N., Liberman S., **Boutros M.,** Stein B., Charlebois P., Ghitulescu G., Morin N., Jagoe T., Scheede-Bergdahl C., Minnella E.M., Fiore J.F. Jr. Effect of Multimodal Prehabilitation vs Postoperative Rehabilitation on 30-Day Postoperative Complications for Frail Patients Undergoing Resection of Colorectal Cancer: A Randomized Clinical Trial JAMA Surg. 2020 Mar 22;155(3):233-242. doi: 10.1001/jamasurg.2019.5474. Online ahead of print.PMID: 31968063
39. *St-Louis E, Shaheen M, Mukhtar F, Adessky R, Meterissian S, **Boutros M**. Towards Development of an Open Surgery Competency Assessment for Residents (OSCAR) Tool - A Systematic Review of the Literature and Delphi Consensus. J Surg Educ. 2020 Mar-Apr;77(2):438-453. doi: 10.1016/j.jsurg.2019.10.006. Epub 2019 Dec 27. PMID: 31889689
40. *Garfinkle R, Al-Rashid F, Morin N, Ghitulescu G, Faria J, Vasilevsky CA, **Boutros M**. Are right-sided colectomies for neoplastic disease at increased risk of primary postoperative ileus compared to left-sided colectomies? A coarsened exact matched analysis. Surg Endosc. 2020 Dec;34(12):5304-5311. doi: 10.1007/s00464-019-07318-4. Epub 2019 Dec 11. PMID: 31828500.
41. *Alqahtani M, Garfinkle R, Zhao K, Vasilevsky CA, Morin N, Ghitulescu G, Faria J, **Boutros M**. Can we better predict readmission for dehydration following creation of a diverting loop ileostomy: development and validation of a prediction model and web-based risk calculator. Surg Endosc. 2020 Jul;34(7):3118-3125. doi: 10.1007/s00464-019-07069-2. Epub 2019 Aug 26. PMID: 31451920.
42. Garant A, Magnan S, Devic S, Martin AG, **Boutros M**, Vasilevsky CA, Ferland S, Bujold A, DesGroseilliers S, Sebajang H, Richard C, Vuong T. Image Guided Adaptive Endorectal Brachytherapy in the Nonoperative Management of Patients With Rectal Cancer. Int J Radiat Oncol Biol Phys. 2019 Dec 1;105(5):1005-1011. doi: 10.1016/j.ijrobp.2019.08.042. Epub 2019 Aug 30. PMID: 31476417.
43. *Garfinkle R, Savage P, **Boutros M**, Landry T, Reynier P, Morin N, Vasilevsky CA, Filion KB. Incidence and predictors of postoperative ileus after loop ileostomy closure: a systematic review and meta-analysis. Surg Endosc. 2019 Aug;33(8):2430-2443. doi: 10.1007/s00464-019-06794-y. Epub 2019 Apr 17. PMID: 31020433.
44. *Abou Khalil M, Bhatnagar SR, Feldman L, Longtin Y, Vasilevsky CA, Carignan A, Morin N, **Boutros M**. Development and validation of a clinical risk calculator for mortality after colectomy for fulminant Clostridium difficile colitis. J Trauma Acute Care Surg. 2019 Oct;87(4):856-864. doi: 10.1097/TA.0000000000002412. PMID: 31233446.
45. *Garfinkle R., Lee L., **Boutros M.,** Cardin M.J., Spatz A., Morin N. Tumor Budding Predicts Increased Recurrence after Curative Resection for T2No Colorectal Cancer. Can J Surg 2019;62(5):334-339. DOI:10.1503/CJS.019017
46. *Garfinkle R, Filion KB, Bhatnagar S, Sigler G, Banks A, Letarte F, Liberman S, Brown CJ, **Boutros M.** Prediction model and web-based risk calculator for postoperative ileus after loop ileostomy closure. Br J Surg. 2019 Nov;106(12):1676-1684. doi: 10.1002/bjs.11235. Epub 2019 Jul 17. PMID: 31313828.
47. Francis N.K., Sylla P., Abou-Khalil M., Arolfo S., Berler D., Curtis N.J., Dolejs S.C., Garfinkle R., Gorter-Stam M., Hashimoto D.A., Hassinger T.E., Molenaar C., Pucher P.H., Schuermans V., Arezzo A., Agresta F., Antoniou S.A, Arulampalam T, **Boutros M**, Bouvy N, Campbell K, Francone T, Haggerty SP, Hedrick TL, Stefanidis D, Truitt MS, Kelly J, Ket H, Dunkin BJ, Pietrabissa A. EAES and SAGES 2018 Consensus Conference on Acute Diverticulitis Management: Evidence-Based Recommendations for Clinical Practice Surg Endosc. 2019 Sep;33(9):2726-2741. doi: 10.1007/s00464-019-06882-z. Epub 2019 Jun 27
48. *Garfinkle R and **Boutros M.** Duration of Fecal Diversion and Bowel Function in Rectal Cancer Patients. British Journal of Surgery 2019 in press doi 10.1002/bjs.11229

49. *Khalil M.A., Abou-Khalil J., Motter J., Vasilevsky C.A., Morin N., Ghitulescu G., **Boutros M**. Immunosuppressed Patients with Crohn's Disease Are at Increased Risk of Postoperative Complications: Results from the ACS-NSQIP Database. J Gastrointest Surg. 2019 Jun;23(6):1188-1197. doi: 10.1007/s11605-019-04186-0. PMID: 30887300
50. *Garfinkle R., Lachance S., Vuong T., Mikhail A., Pelsser V., Gologan A., Morin N., Vasilevsky C.A., **Boutros M**. Is the Pathologic Response of T3 Rectal Cancer to High-Dose-Rate Endorectal Brachytherapy Comparable to External Beam Radiotherapy? Dis Colon Rectum. 2019 Mar;62(3):294-301. doi: 10.1097/DCR.0000000000001220
51. *Garfinkle R., Wong-Chong N., Petrucci A., Sylla P., Wexner S., Bhatnagar S., Morin N., **Boutros M.** Assessing the Readability, Quality and Accuracy of Online Health Information for Rectal Cancer Survivors with Low Anterior Resection Syndrome. Colorectal Dis. 2019 May;21(5):523-531. doi: 10.1111/codi.14594. PMID: 30609222
52. *Garfinkle R, Abou-Khalil M, Bhatnagar S, Wong-Chong N, Azoulay L, Morin N, Vasilevsky CA, **Boutros M**. A Comparison of Pathologic Outcomes of Open, Laparoscopic, and Robotic Resections for Rectal Cancer Using the ACS-NSQIP Proctectomy-Targeted Database: a Propensity Score Analysis. J Gastrointest Surg. 2019 Feb;23(2):348-356. doi: 10.1007/s11605-018-3974-8. Epub 2018 Sep 27. PMID: 30264386.
53. *Abou Khalil M, **Boutros M**, Nedjar H, Morin N, Ghitulescu G, Vasilevsky CA, Gordon P, Rahme E. Incidence Rates and Predictors of Colectomy for Ulcerative Colitis in the Era of Biologics: Results from a Provincial Database. J Gastrointest Surg. 2018 Jan;22(1):124-132. doi: 10.1007/s11605-017-3530-y. Epub 2017 Aug 14. PMID: 28808892.
54. *Lachance S, Abou-Khalil M, Vasilevsky CA, Ghitulescu G, Morin N, Faria J, **Boutros M.** Outcomes of Ileal Pouch Excision: an American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) Analysis. J Gastrointest Surg. 2018 Dec;22(12):2142-2149. doi: 10.1007/s11605-018-3844-4. Epub 2018 Jul 31. PMID: 30066066
55. *Garfinkle R, **Boutros M**, Ghitulescu G, Vasilevsky CA, Charlebois P, Liberman S, Stein B, Feldman LS, Lee L. Clinical and Economic Impact of an Enhanced Recovery Pathway for Open and Laparoscopic Rectal Surgery. J Laparoendosc Adv Surg Tech A. 2018 Jul;28(7):811-818. doi: 10.1089/lap.2017.0677. Epub 2018 Feb 16. PMID: 29451415.
56. *Garfinkle R, Morin N, Ghitulescu G, Vasilevsky CA, **Boutros M.** From Endoscopic Detorsion to Sigmoid Colectomy-The Art of Managing Patients with Sigmoid Volvulus: A Survey of the Members of the American Society of Colon and Rectal Surgeons. Am Surg. 2018 Sep 1;84(9):1518-1525. PMID: 30268187.
57. *Garfinkle R., **Boutros M.,** "Author Reply - Bowel Prep and Oral Antibiotics in Colorectal Surgery" Dis Colon Rectum. 2017 Dec;60(12):e641.doi:10.1097
58. Carmichael J., Keller D., Baldini G., Bordeianou L., Weiss E., Lee L., **Boutros M.**, McClaine J., Feldman L., Steele S. Clinical Practice Guidelines for Enhanced Recovery after Colon and Rectal Surgery from the American Society of Colon and Rectal Surgeons and Society of American Gastrointestinal and Endoscopic Surgeons. Dis Colon Rectum. 2017 Aug;60(8):761-784.
59. Lee L, Abou-Khalil M, Liberman S, **Boutros M**, Fried GM, Feldman LS. Incidence of incisional hernia in the specimen extraction site for laparoscopic colorectal surgery: systematic review and meta-analysis. Surg Endosc. 2017;31(12):5083-5093. doi:10.1007/s00464-017-5573-2
60. *Dan A., **Boutros M.,** Nedjar H., Kopylov U., Afif W, Abou Khalil M., Rahme E. Cost of ulcerative colitis in Quebec, Canada: a retrospective cohort study. Inflammatory Bowel Diseases. 2017 Aug;23(8) 1262-1271
61. *Garfinkle R., Abou-Khalil J., Morin N., Ghitulescu G., Vasilevsky C.A., Gordon P., Demian M., **Boutros M**. Is there a Role for Oral Antibiotic Preparation Alone before Colorectal Surgery? An ACS-NSQIP Analysis by Coarsened Exact Matching. Diseases of the colon and Rectum. 2017 Jul; 60(7)729-737
62. *Garfinkle R, Trabulsi N, Morin N, Phang T, Liberman S, Feldman L, Fried G, **Boutros M.** Study protocol evaluating the use of bowel stimulation before loop ileostomy closure to reduce postoperative ileus: a multicenter randomized controlled trial. Colorectal Dis. 2017 Nov;19(11):1024-1029.

Members

Colorectal Surgery Outcomes Research Lab: A-551

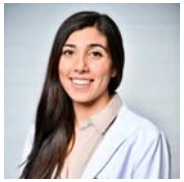
Presentations at National and International meetings by Trainees 2012-2020
International Colorectal Disease Symposium, American College of Surgeons (ACS), American Society Colon and Rectal Surgeons (ASCRS), Digestive Disease Week (DDW), Tripartite Colorectal Meeting, Society of American Gastrointestinal and Endoscopic Surgeons (SAGES), Canadian Association of General Surgeons (CAGS), American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP), Association Quebecoise de Chirurgie Generale (AQC), ISUCRS Biennial Congress, IRR-Experimental Surgery Joint Research Day, American College of Surgeons-NSQIP National Conference, Scientific Forum Clinical Congress

1. *Early ileostomy closure following restorative proctectomy for rectal cancer patients: A North American multicenter randomized-controlled trial (RCT). Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) 2022 ($30,000) Role: Principal Investigator. **Awarded to Natasha Caminsky**
2. *Early ileostomy closure following restorative proctectomy for rectal cancer patients: A North American multicenter randomized-controlled trial (RCT), Rossy Cancer Network Research Grant 2021-2023 Amount $96,215. Role: Principal Investigator. **Awarded to Natasha Caminsky**

3. *Transanal Irrigation for the Management of Low Anterior Resection Syndrome (LARS): A Multicenter Randomized Controlled Trial. American Society of Colon and Rectal Surgeons Medical Student Grant (ASCRS) 2022 ($30,000) Role: Principal Investigator. **Awarded to Jessica Holland**
4. *Transanal Irrigation for the Management of Low Anterior Resection Syndrome (LARS): A Multicenter Randomized Controlled Trial. Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) 2022 ($30,000) Role: Principal Investigator. **Awarded to Jessica Holland**
5. *Transanal Irrigation for the Management of Low Anterior Resection Syndrome (LARS): A Multicenter Randomized Controlled Trial. Canadian Society of Colon and Rectal Surgeons Research Grant 2021. Amount $10,000. Role: Principal Investigator. **Awarded to Jessica Holland**

6. Interactive Online Informational and Peer Support Application for Patients with Low Anterior Resection Syndrome: A Multicenter Randomized Controlled Trial. Society of American Gastrointestinal and Endoscopic Surgeons 2020 Role: Principal Investigator. **Awarded to Jeongyoon Moon**
7. Interactive Online Informational and Peer Support Application for Patients with Low Anterior Resection Syndrome: A Multicenter Randomized Controlled Trial. Canadian Society of Colon and Rectal Surgeons (CSCRS) Research Grant 2020. Amount $10,000 awarded by 2020 CSCRS research grant competition. Role:Principal Investigator. **Awarded to Jeongyoon Moon**
8. Utilisation d'une application mobile informative de soutien par les paris pour les patients avec syndrome de résection antérieure du rectum : un essai randomisé contrôlé multicentrique. Programme de bourses de formation en recherche pour les médecins résidents - Ministère de la Santé et des Services sociaux (MSSS), Fonds de Recherche Sante Québec (FRSQ). Principal Investigator. **Awarded to Jeongyoon Moon**

9. SAGES Researcher in Training Award. **(Richard Garfinkle 2021)**
10. Impact of a Patient-Centered Program for Low Anterior Resection Syndrome: a Multicenter Randomized Controlled Trial. Rossy Cancer Network Research Grant 2018. Awarded to **Richard Garfinkle**
11. Patient activation for low anterior resection syndrome: A multicenter randomized controlled trial. Canadian Society of Colon and Rectal Surgeons 2018. Awarded to **Richard Garfinkle**



12. *Canada Graduate Scholarship-Master's (CGS M), Canadian Institutes of Health Research (CIHR). **Awarded to Richard Garfinkle**. Role: Supervisor of grant recipient. ($17,500)
13. Does Bowel Stimulation Before Loop Ileostomy Closure Reduce Postoperative Ileus? A Multicenter Randomized Clinical Trial. Canadian Surgical Research Fund Award 2015 ($10,000) Role: Principal Investigator. **Awarded to Richard Garfinkle.**
14. *Does Bowel Stimulation Before Loop Ileostomy Closure Reduce Postoperative Ileus? A Multicenter Randomized Clinical Trial. Society of American Gastrointestinal and Endoscopic Surgeons Research Grant 2016 ($40,000) Role: Principal Investigator. **Awarded to Richard Garfinkle**
15. Diverticular Abscess Managed with Long-Term Definitive Non-Operative Intent is Safe. ASCRS Medical Student Grant- $4000 (**Richard Garfinkle 2014**)
16. Operative management of fulminant Clostridium difficile colitis: minimally Clinical Fellowship in Medicine 2017. Awarded to **Maria Abou Khalil**
17. Less May be More: Loop Ileostomy with Colonic Lavage for Fulminant *Clostridium difficile* Colitis - A Prospective National Multicenter Cohort Study. American Society of Colon and Rectal Surgeons Resident Research Grant 2017 **Awarded to Maria Abou Khalil.**
18. Less May be More: Loop Ileostomy with Colonic Lavage for Fulminant *Clostridium difficile* Colitis - A Prospective National Multicenter Cohort Study. (Canadian Surgery Research Fund Award 2014 $10,000) **Awarded to Maria Abou Khalil.**

Awards

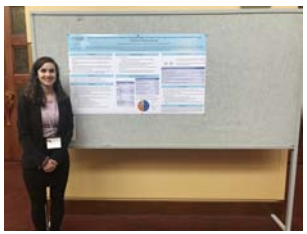
1) Society of American Gastrointestinal and Endoscopic Surgeons Best Podium Award **(Richard Garfinkle 2022)**
2) Fraser Gurd Clinical Science Award **(Jenny Moon 2021)**
3) SAGES Researcher in Training award **(Richard Garfinkle 2021)**
4) Sir Edward W. Beatty Memorial Scholarship - Winter Research Bursary - $2000 **(Vincent Brissette 2020)**
5) Smith International Surgical Scholarship - $3000 US **(Jenny Moon and Nathasha Caminsky 2020)**
6) Sir Edward W. Beatty Memorial Scholarship -$3125 **(Yossef Levin 2020)**
7) Class of Medicine 1960 Research Bursary Award -$3125 **(Rachel Szwimer 2020)**
8) Rising Star Award Graduate Excellence Fellowship Fund. $915.00 (**Richard Garfinkle** 2020)
9) Dr. Clarke K. McLeod Memorial Scholarship – Summer Research Bursary -$3125 **(Vincent Brissette 2019)**
10) Julius Gordon Traveling Award, in recognition of research excellence, from the Division of General Surgery at McGill University **(Richard Garfinkle 2019)**
11) CSF E-Poster, Treatment Failure after Conservative Management of Acute Diverticulitis: A Nationwide Readmission Database Analysis. **(Safiya Masrouri 2019)**
12) Compliance with Preoperative Elements of the American Society of Colon and Rectal Surgeons Rectal Cancer Surgery Checklist Improves Pathologic and Postoperative Outcomes. People's Choice Award Best Presenter at the 17th annual L.D. Maclean McGill General Surgery Research Day **(Richard Garfinkle 2019)**
13) ACS Resident Member Scholarship Award October 2019. **Awarded to Richard Garfinkle 2019**
14) Does time to closure of loop ileostomy increase the risk of postoperative ileus? A large, single-institution review. Best Clinical Science Presentation Award – LD Maclean **(Richard Garfinkle 2018**)
15) Acute diverticulitis with microperforation is a subset of uncomplicated diverticulitis. **(Turki Al-Malki 2018)**
16) Right-sided Colectomies for Diverticulitis Have Worse Outcomes Compared to Left-sided Colectomies for Diverticulitis: An ACS NSQIP analysis of Predictors and Outcomes. Canadian Society of Colon and Rectal Surgeons Best Poster Award **(Nathalie Wong-Chong 2017)**

Supervision

- **Current Residents/Fellows/Graduate Students**
  - Maria Aboukhalil, MSc, PhD Candidate (2014-to date)
  - Richard Garfinkle, MSc, PhD Candidate (2013-to date)
  - Jenny Moon MSc Candidate (2019 to date)
  - Natasha Caminsky (2018 to date)
  - Mohammed Shafic Abdulkarim (2019-to date)
  - Hatim AlSulaim (2019 to date)
  - Abrar Alhashemi (2020 to date)
  - Michelle Cwintal MSc Candidate (2020 to date)
  - Olivia Monton (2020 to date)
  - Jessica Holland (2020 to date)
  - Hussein Alibrahim (2021 to date)
  - Alon Wachtel (2021 to date)
  - Hafssah Alnajem (2022 to date)
- **Current Undergraduate/Medical students**
  - Vincent Brisette (2019 to date)
  - Noah Oiknine (2019 to date)
  - Hegagi, Mehdi (2019-to date)
  - Yossef Levin (2019-to date)
  - Jiachen Liang (2020-to date)
  - Rachel Szwimer (2020-to date)
  - Alexa Ehlebracht 2020-to date)
  - Veronica Youssef (2021-to date)
- **Past Fellows**
  - Sebastien Lachance (2016-2018)
  - Fawaz Abdulraheem (2020 to 2021)
  - Nathalie Wong Chong, MSc Candidate (2016- 2018)
  - Noura Alhassan (2014-2016)
  - Johnny Chau (2017-2018)
  - Allison Pang (2019-2020)
  - Marjolaine Bourque (2019-to 2021)
- **Past Residents/Graduate Students**
  - Mohammed Al Ajhar MSc Candidate (2018-to 2020)
  - Safiya Masrouri (2018-2019)
  - Faisal Al-Rashid (2018-2019)
  - Ali Alnaki (2019-to 2021)
  - Najla Al-Ghaiti (2019-to 2021)
  - Oleksandra Kostenko (2019-2020)
  - Maryam Al Farsi (2018 to 2021)
  - Ebram Salama MBA (2015-to 2021)
  - Turki Almaki MSc (2017-2019)
  - Alexandre Gosselin-Tardif (2013-2018)
  - Tanya Castelino (2014-2015)
  - Nora Trabulsi (2014-2016)
  - Nahar Alselaim (2015-2016)
  - Andrea Petrucci (2013-2015)
  - Adulaziz Saleem (2012-2015)
  - Alen Antoun (2014-2018)
  - Jad Aboukhalil (2014-2016)
  - Ahmed Al-Khamis (2014-2016)
  - Mohammed Shaheen (2014-2016)
  - Etienne St. Louis (2014-2016)
  - Ali Farsi (2014)
- **Past IMG Residents**
  - Elizabeth Kmiotek (2016 - 2017)
- **Past Undergraduate/Medical Students**
  - Alexander Banks (2018-2019)
  - Olivia Monton (2018-2020)
  - Alex Ni (2018-2020)
  - Allister Smith (2018-2020)
  - Zineb Harra (2019-to 2021)
  - Jiachen Liang (2020-to 2021)
  - Michael Frohlich (2014-2016)
  - Paul Savage (02-2018/07-2018)
  - Maxime Robert-Halabi (2016-2017)
  - Ryan Adessky (2014-2016)
  - Aaron Kugler (2014-2016)
  - Ala Bdira (2016-2017)
  - Alexandre Mikhail (2016-2017)
  - Jesse Zuckerman (2016-2017)
  - Edgard Medawar (2017-2018
  - Melanie Bernstein (2012-2014)
  - Caitlin Cahill (2012-2014)
  - Alastair Fung (2013-2015)
  - Avigyle Grunbaum (2012-2014)
  - Rebecca Hazan (2013-2014)
  - Samuel Jessula(2013-2014)
  - Ariella Kleiman (2013-2015)
  - Sabrina Piedimonte (2014)
  - Benoit Bichara (2016)
  - Uri Bender (2014-2016)
  - Maude Trepanier (2015-2016)
  - Petro Youssef (2015-2017)
  - Gregory Sigler (2016-April 2018)
  - Andrei Dan (2014-2018)
  - Corrado DeMarco (2014-2018)
  - Jessica Lie (2015-2018)
  - Doulia Hamad (2016-2018)
  - Billy He (2018-2019)







Lorenzo Ferri MD PhD FRCSC FACS

Montreal General Hospital, L8-505

Phone (514) 934-1934 ext. 44327

Fax (514) 934 4432

Lorenzo.ferri@mcgill.ca

http://thoracicsurgery.lab.mcgill.ca/

The Ferri Lab is dedicated to improving our understanding of upper GI malignancies through carefully coordinated basic science, clinical, and translational research. Degrees at the Masters and Doctoral level are offered in Experimental Surgery and Clinical Epidemiology.

Bench Research

The overriding theme in the basic science lab centers on the short and long term effects of post-operative complications and carries the hypothesis that "post-operative systemic inflammation increases cancer metastasis". Through this theme the trainees learn and perform numerous techniques common to most cancer laboratories including western blot, PCR, transfection, cell culture, animal metastasis models, ELISA, spectrophotemtry. The strength of the lab, however, resides in the advanced single cell imaging techniques such as confocal microscopy and intravital microscopy.

Current research projects in this theme include:

a. Lipolysaccharide-TLR-4 interactions in cancer metastasis
b. CEACAM family in cancer progression
c. Acute bacterial pneumonia promotes cancer metastasis
d. The role of activated neutrophils in metastasis

Clinical Epidemiology/Outcomes Research

Residents choosing this theme approach the investigation of surgical complications, and the consequences thereof, through standard clinical epidemiological approaches using both in-house, prospectively-generated, databases as well as population-based administrated databases.

Current research projects in this theme include:

a. The role of post-operative pneumonia on survival after lung cancer surgery
b. Identifying predictors of Barrett's Esophagus progression
c. Establishing criteria for endoscopic resection of early esophageal adenocarcinoma
d. The utility and accuracy of intra-operative margin assessment in upper GI cancers.
e. Predictors of anastomotic leak after esophagectomy
f. The management of dysphagia in metastatic esophageal cancer
g. Predicting the rate of lymph node metastasis in early esophageal cancer
h. The influence of surgical approach on quality of life after resection of upper GI cancers

Translational Research

Trainees undertaking translational research bridge the two entities of clinical outcomes and benchwork. Research is primarily centered on accessing the vast tumor and tissue bank from patients with gastric and esophageal cancer at all stages and employs the following techniques: laser capture microdissection, RNA isolation and amplification, whole genome cDNA microarrays and anaylsis, Tissue Microarray construction, immunohistochemistry, FISH. Data is then correlated to disease outcome garnered from a comprehensive clinical database.

The following projects are underway in this theme:

a. Identifying the molecular signature profile of lymph node metastasis in gastro-esophageal
cancer
b. Identifying novel soluble biomarkers in esophageal cancer
c. The role of Toll like receptor tumour expression on survival after esophagectomy in patients
with and without post-operative infectious complications.
d. Molecular determinants of peritoneal metastasis in resected gastric cancer

Past supervision 2008-2018

- Postdoctoral Fellows
  - Carlos Chan (2009 – 2012)
  - Atuhani Burnett (2016 – 2018)
- Graduate Students/Residents
  - Mathieu Rousseau – Experimental Surgery – MSc(2008 –2012)
  - Rich Hsu – Experimental Surgery – MSc (2008 – 2010)
  - Rushika Perera – Experimental Surgery – M.Sc. (2009 – 2011)
  - Simon Chow – Experimental Surgery – MSc (2010 – 2012)
  - Amin Andalib – Clinical Epidemiology – MSc (2010 – 2012)
  - Saleh Al Nasser – Experimental Surgery – MSc (2010 – 2012)
  - Jonathan Cools-Lartuigue – PhD (2011-2016)
  - Stephen Gowing – PhD candidate (2012-present)
  - Ugo Mancini – MSc (2012-2015)
  - Etienne St-Louis – MSc (2014-2015)
  - Phil Vourtzoumis – MSc candidate (2015-2017)
  - Arielle Leone – MSc candidate (2015-2017)
  - Vivian Stavrakos – MSc candidate (2015-2017)
  - Chantelle Janeiro – MSc candidate (2017-present)
  - Ramin Rohanizadeh – PhD candidate (2017-present)
- Undergraduate/Medical Students
  - Phillip Guervrement – Medicine – Summer Research Bursary 2008
  - Suzan Ergun – Medicine – Summer Research Bursary 2008
  - Phil Levine – Medicine – Summer Research Bursary 2009
  - Marcel Edwards – Summer Research Bursary – 2010
  - Hee Won – Summer Research Bursary 2012
  - Crystal Chen – (2012-2014)
  - Jack Mouhanna – Undergraduate student volunteer (2013-2016)
  - Cyril Boulila (2017-present)
  - Charles Rajadurai (2017-present)
  - Phil Bouchard (2017-present)
  - Alexander Gosselin-Tardif (2017-present)

Meetings Presented by Trainees 2010-2018

American College of Surgeons; American Association for Cancer Research; Keystone Symposia; Digestive Diseases Week; Society of American Gastrointestinal and Endoscopic Surgeons; American Society for Clinical Oncology – Gastrointestinal Cancers Symposium; American Association of Thoracic Surgeons; American Thoracic Society; Canadian Surgery Forum

Laboratory Funding PRESENT

1 "La formation des metastases du cancer de l'oesophage facilitee par l'inflammation; le role de L'axe selectin-ligand selectin". Fond de la Recherche en Sante Quebec (FRSQ) – $40,000 - 2008-2012 -

2 "The Role of Systemic Inflammation in Esophageal Cancer Metastasis: Exploring Neutrophil Dependent and Independent Mechanisms" Canadian Cancer Society Research Institute (formerly National Cancer Institute of Canada) $276,000 – 2009-2012 –

3 "Acute bacterial infection promotes cancer metastasis through toll like receptor signal transduction" Canadian Institutes of Health Research 2011-2015 $497,572 –

4 "Acute bacterial infection promotes cancer metastasis through toll like receptor signal transduction" Canadian Association of General Surgeons $ 10,000- 2011-2012 –

Salary Support of Residents in the Lab

1. L'investigation de la transduction du signal des recepteurs de type Toll dans les metastases du poumon - Fond des Reserche en Sante Quebec – $66,721 2012-2014 – Stephen Gowing
2. Les pneumonies bactériennes facilitent le développement de metastases cancéreuses chez les patients atteints du cancer du poumon. Formation de maîtrise pour les détenteurs d'un diplôme professionnel - Fond des Reserche en Sante Quebec – $66,721 2011-2013 – Jonathan Cools
3. "Acute bacterial infection promotes cancer metastasis through toll like receptor signal transduction" - Master's Award: Frederick Banting and Charles Best Canada Graduate Scholarships - Canadian Institutes of Health Research 2011-2012 $17,500 – Jonathan Cools
4. L'Influence des Complications Infectieuses Post-Opératoire sur la Survie à Long-Terme dans les Patients Atteints du Cancer des Poumons. Formation de maîtrise pour les détenteurs d'un diplôme professionnel - Fond des Reserche en Sante Quebec – $66,721 2011-2013 – Amin Andalib

Veena Sangwan PhD

New Evelyn and Lawrence Vatch Esophageal Cancer Scientist
Wajcer-Vatch Family Laboratory in Esophageal Diseases
Montreal General Hospital
Phone (514) 934-1934 ext. 44327
Fax (514) 934 4432
Veena.sangwan@mcgill.ca
http://thoracicsurgery.lab.mcgill.ca/

Jonathan Cools-Lartigue MD, PhD

New investigator
Montreal General Hospital, L8-505
Phone (514) 934-1934 ext. 44327
Fax (514) 934 4432
jonathan.cools-lartigue@mcgill.ca
http://thoracicsurgery.lab.mcgill.ca/

Jonathan Spicer MD PhD FRCSC

Montreal General Hospital, L8-505
Phone (514) 934-1934 ext. 44327
Fax (514) 934 4432
Jonathan.spicer@mcgill.ca
http://thoracicsurgery.lab.mcgill.ca/

The Spicer lab is primarily committed to exploring the intimate link between innate immunity and cancer progression as a therapeutic target in the management of thoracic malignancies. Specifically, we are focused on the interplay between neutrophils and circulating tumor cells during the metastatic process. Our laboratory has been a pioneer in this area and one of the first to establish a clear link between neutrophil function and metastatic spread. Our work in the area of Neutrophil Extracellular Traps (NETs) as they pertain to cancer metastasis has been highlighted as one of the top 10 cancer research discoveries in 2013 and continues to be a major focus of our investigations. Projects are currently available at the Masters and PhD level in the Department of Experimental Surgery. Due to the broad scope resulting from research in innate immunity and cancer, such projects are widely applicable for resident surgeons contemplating careers in a diverse range of specialties including thoracic surgery, surgical oncology, hepatopancreaticobiliary surgery, cardiovascular surgery as well as trauma and acute care surgery.

In addition to our basic and translational science projects, the Spicer lab is exploring a number of large animal models to investigate novel therapies for complex thoracic surgical problems. These projects fuse innovative, ultra-modern techniques with a throwback to "old-school" surgical research and form an excellent subject for a Master's or PhD:

Firstly, we are developing novel models of airway reconstruction in collaboration with industry (Harvard Apparatus). This particular project has a major focus in regenerative medicine. Our goal is to develop practical airway replacement devices, aided by stem-cell seeding to re-establish airway structure and function in patients with tracheobronchial malignancies and complex benign airway disorders. This project involves close collaboration with industry as well as surgical work on pig models to test these new airway devices.

Secondly, we have developed the world's largest network of institutions tracking outcomes for esophageal perforation. Currently, we are in the process of amalgamating over 500 patients with esophageal perforation from over 20 institutions across North America and Europe into a common database. The first portion of this two-part project is focused on mining this database for high-quality clinical outcomes projects on esophageal perforation – a rare but highly complex problem with rapidly evolving management strategies. The second component of this research project is focused on developing a large animal model of esophageal perforation to test the effectiveness of a variety of therapeutic strategies. These therapies range from endoscopic stents and closure devices to stem cell based esophageal replacement conduits, again in collaboration with our industry partners at Harvard Apparatus.

Overall, your experience in the Spicer lab will be a FUN and highly productive one. Our laboratory works closely with the Ferri lab, both located at the new state of the art Research Institute at the Glen site. As such, trainees are exposed to excellent supervision and mentorship with the objective to become elite surgeon scientists and obtain placement in the most prestigious fellowship/faculty positions available. We share weekly lab meetings with a common goal to establish ourselves as one of the world's premier thoracic surgery research labs.

Roni Rayes, PhD – Research Associate
France Bourdeau – Animal Health Technician
Simon Milette – PhD Candidate
Jessica Mancuso – MSc candidate
Megan De Meo – Undergraduate honors thesis
Harika Dasari – Research volunteer
Claire Wang – MSc candidate (2016-2018)
Christina Kalos – Undergraduate student volunteer (2015-2016)
Alexandra Tinfow – Undergraduate student volunteer (2016-2017)
Jack Mouhanna – Undergraduate Honors Thesis (2016-2017)
Julie Breau – Research volunteer (2016-2018)
Carson Wong – Undergraduate Student volunteer (2017-2018)
Rebecca Falutz – Undergraduate student volunteer (Summer 2018)

McGill University Health Center Research Institute Foundation; 2018 – 2021 - $50,000(CAD)/year x 3 years
Fonds de Recherche Québec – Santé Clinician Scientist Award Junior 1; 2017-2021
Salary support for 50% research activity and $15,000 (CAD)/year x 4 years
Cancer Research Society Operating Grant; 2018-2020 $60,000(CAD)/year x 2 years

Swneke Bailey, PhD

McGill University Health Center – Research Institute
Phone (514) 934-1934 ext. 76126
Fax (514) 934 4432
swneke.bailey@mail.mcgill.ca
http://thoracicsurgery.lab.mcgill.ca/

Current strategies to treat cancer are often specific to the tissue-type and anatomical location of the tumour. However, individual cancers arise from a unique set of genomic alterations and, as a result, individual tumours may not respond well to the current one-size-fits-all treatment strategies. Precision cancer medicine aims to treat cancers based on specific molecular alterations found within individual tumours regardless of their tissue of origin. Although, molecular classification and precision medicine have proven successful the paucity of actionable molecular events is hindering the development of novel therapies and treatment strategies. Detecting new actionable molecular alterations and the specific genes that drive cancer development and progression is vital to the continued success of precision cancer medicine.

We are a computational genomics lab interested in identifying novel cancer/metastasis genes and actionable biomarkers, such as genetic alterations, for oesophageal and gastric cancers. We are primarily focused on leveraging molecular alterations found in non-coding regulatory regions of the genome, an area that remains poorly explored, to elucidate new cancer and metastasis driver genes.

Current areas of interest include: (1) identification molecular biomarkers predicting progression to metastases from oesophageal and gastric cancers, (2) The role of non-coding regulatory elements in driving cancer development and progression to metastases and (3) Computational approaches to assess the impact of non-coding somatic alterations.

Bailey, S. D., Virtanen, C., Haibe-Kains, B., & Lupien, M. (2015). ABC: a tool to identify SNVs causing allele-specific transcription factor binding from ChIP-Seq experiments. *Bioinformatics*. doi:10.1093/bioinformatics/btv321

Carmen L Mueller, BSc(H) MD MEd FRCSC FACS

Associate Professor of Surgery

Montreal General Hospital
L8-512
P: 514-934-4484
F: 514-934-4432
carmen.mueller@mcgill.ca

Numerous projects are ongoing and available in both Surgical Education and Clinical Outcomes, with grant funding in place to support research activities and travel for presentations. Weekly structured lab meetings in collaboration with the Surgical Outcomes and UGI Surgery groups and support from research coordinators ensure productivity. Possible projects include:

Surgical Education

- Evaluating AI computer vision technology for video-based performance assessments in surgery
- Development and implementation of peer coaching programs for continuous practice improvement in surgery
- Development and validation formative feedback tools in surgery
- Using virtual assessments to determine proficiency in surgical procedures

Clinical Outcomes

- Role of palliative resection in gastric cancer
- Role of anemia and peri-operative transfusions in UGI surgical and oncologic outcomes
- Role of patient remoteness from hospital and oncologic outcomes for gastroesophageal cancers
- Hospital and provider volume-outcome relationships in gastric cancer Surgical approachs to cancers of the gastreoesophageal junction
- Long-term outcomes after redo-paraesophageal hernia repair
- Role of immunofluorescence imaging in reducing leaks after esophagectomy
- Impact of pre-operative nutritional status on surgical and oncologic outcomes in gastroesophageal cancer patients

McGill University & RI start-up funds: $90,000 CAD
SSAT Faculty Development Award: $40,000 USD
RCPSC Medical Education Research Grant: $50,000 CAD
MGH Foundation Support: $25,000 CAD

Previous Graduate Students (completion date):

- Dr. Rafik Sorial - MSc Experimental Surgery – Outcomes (2019)
- Dr. Anitha Kammili - MSc Experimental Surgery – Outcomes (2019)

Current Graduate Students

- Dr. Anitha Kammili – PhD Experimental Surgery (Education)
- Dr. Sofia Valanci - PhD Experimental Surgery (Education)
- Dr. Alen Antoun - MSc Experimental Surgery (Education)
- Dr. Hamzeh Naghawi – MSc Experimental Surgery (Education)

Past and Current Project Supervision

- Dr. Maude Trepanier (Outcomes)
- Dr. Johnny Chau (Education)
- Dr. Dominique Morency (Outcomes)
- Dr. Araz Kouyoumdjian (Outcomes)
- Dr. Alex Gosselin-Tardiff (Outcomes)
- Dr. Juan-Carlos Molina (Outcomes)

- Working space at Montreal General Hospital with computer access
- Structured research meetings
- Research assistant support for IRB, statistical analysis, project organization, literature searches, etc
- Funding for travel to all meetings where work will be presented

Denotes students under my supervision

*****Valanci S, Wong K, Fiore J, Lee L, Feldman LE, Fried GM, **Mueller CL.** (2020) *Identifying Optimal Program Structure, Motivations for and Barriers to Peer Coaching Participation for Surgeons in Practice – a Qualitative Synthesis.* Accepted by Surgical Endoscopy, July 26, 2020.

*Kammili A, Cools-Lartigue J, Mulder D, Feldman LS, Ferri LE, **Mueller CL.** (2020) Transition from open to minimally invasive en bloc esophagectomy can be achieved without compromising surgical quality. Surgical Endoscopy. ePub doi: 10.1007/s00464-020-07696-0.

*Gosselin-Tardif A, Abou-Khalil M, Mata J, Guigui A, Cools-Lartigue J, Ferri LE, Lee L, **Mueller CL**. (2020) *Cost-effectiveness analysis of laparoscopic vs. open subtotal gastrectomy for gastric adenocarcinoma.* British Journal of Surgery (Open). Accepted June, 2020.

*Valanci AS, Alhassan N, Feldman LS, Landry T, Mastropietro V, Fiore Jr J, Lee L, Fried GM, **Mueller CL**. (2020) *Implementation and Effectiveness of Coaching for Surgeons in Practice - A Mixed Studies Systematic Review*. J Surg Ed. 77(4);837-853.

*****Sorial RK, Ali M, Kaneva P, Fiore Jr J, Vassiliou M, Fried GM, Feldman LS, Ferri LE, Lee L, **Mueller CL**. (2020) *Modern Era Surgical Outcomes of Elective and Emergency Paraesophageal Hernia Repair at a High-Volume Referral Center*. Surgical Endoscopy. 34(1);284-289.

Dumitra T, Alam R, Fiore Jr JF, Mata J, Fried GM, Vassiliou M, **Mueller CL**, Lee L, Feldman LS. (2020) *Is There A Gender Bias In The Advancement To Sages Leadership?* Surgical Endoscopy. 34(1);458-463.

Dumitra TC, Trepanier M, Lee L, Fried GM, **Mueller CL**, Jones DB, Feldman LS. (2019) *Gender distribution of speakers on panels at the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) annual meeting*. Surgical Endoscopy. (ePub doi: 10.1007/s00464-019-07182-2).

*****Trepanier M, Sorial R, Siblini A, Vassiliou M, Fried GM, Feldman LS, Ferri LE, Lee L, **Mueller CL.** (2019) *Comparison of Dor and Nissen Fundoplication Following Laparoscopic Paraesophageal Hernia Repair.* Surgery. 166(4);540-546.

Bouchard P, Molina JC, Cools-Lartigue J, Spicer J, **Mueller CL,** Ferri LE. (2019) Endoscopic Submucosal Dissection for Esophageal Adenocarcinoma: A North American Perspective. J Gastrointestinal Surg. 23(6); 1087-1094.

Mueller CL, Braun J, Sorial R, Siblini A, Ferri LE. (2019) *Sentinel Lymph Node Mapping for Early Gastric Cancer - Preliminary Results of a North American Prospective Study.* J Gastrointest Surg. 23(6); 1113-1121.

St Louis E, Gowing S, Mossallanejad P, Leimanis ML, **Mueller CL,** Ferri LE. (2018) *Outcomes after completion total gastrectomy for gastric remnant cancer: experience from a Canadian tertiary center.* Can J Surg. Aug; 61(4):270-277.

*****Molina, JC., Al-Hinai, A., Gosseling-Tardif, A., Bouchard, P., Spicer, J., Mulder, D., **Mueller, CL.,** Ferri, LE. (2018) *Multivisceral Resection for Locally Advanced Gastric and Gastro-Esophageal Junction Cancers – 11-year Experience at a High Volume North American Center.* J Gastrointest Surg. 23;43-50.

*****Gosselin-Tardif A, Lie J, Nicolau I, Cools-Lartigue J, Feldman LS, Spicer J, **Mueller CL,** Ferri LE. (2018) *Gastrectomy with Extended Lymphadenectomy: A North American Perspective.* J Gastrointest Surg.Mar 22(3):414-420.

*****Molina, JC., Misariu, AM, Nicolau I., Spicer, J.**,** Ferri, L. **Mueller, CL.** (2018) *Same day discharge for benign laparoscopic hiatal surgery: a feasibility analysis.* Surgical Endoscopy. Feb;32(2):937-944.

*****McKendy K, Li MYL, Bilgic E, Li J and **Mueller CL.** (2017) *Understanding surgical resident motivation in the era of duty hour restrictions.* J Med Ed and Training. Sept 26; 1:022.

Mueller, CL, Cyr, G et al (2017) *The Steinberg Centre for Simulation and Interactive Learning at McGill University.* J Surg Ed. Nov-Dec; 74(6): 1135-1141.

Mueller CL, Braun J, Leimanis ML, Mouhanna J, Feldman LS, Ferri LE. (2016) *Application of an Individualized Operative Approach For Wedge Resection Of Gastric Gastrointestinal Stromal Tumours: Effectiveness For Tumours In Difficult Locations.* Surgery. 160(4); 1038-1048.

Najmeh S, Cools-Lartigue J, **Mueller C**, Ferri LE. (2016) *Comparing Laparoscopic to Endoscopic Resections for Early Gastric Cancer in a High Volume North American Center.* J Gastrointest Surg. 20(9); 1547-1553.

Mueller CL and Ferri LE. (2016) *Endoluminal Therapies for Barrett's Esophagus*. Obesity Surgery. 26(4); 721-726.

Mueller CL, Kaneva P, Fried GM, Mellinger JD, Marks JM, Dunkin BJ, van Sickle K, Vassiliou MC**.** (2016) *Validity Evidence For A New Portable, Lower Cost Platform For The Fundamentals Of Endoscopic Surgery Skills Test. Surgical Endoscopy,* 30(3); 1107-1112.

Ari Meguerditchian MD, MSc, FRCS, FACS

Associate Professor of Surgery and Oncology
Surgical Oncologist, McGill University Health Centre
Program Lead, Cancer Quality & Innovation, Rossy Cancer Network
Member, Clinical and Health Informatics Research Group
1001 Décarie Boulevard, Room D2-7016
Montreal, QC, Canada H4A 3J1
Tel: (514) 934-1934 ext. 34081
Fax: (514) 843-1633

The goal of my research program is to **understand the mechanisms that lead to sub-optimal cancer care.**

Over a third of cancer patients experience challenges with the quality of care they receive. Problems such as delays, adverse events and inappropriate treatment decisions have a major impact on cancer recurrence, patient experience and health care costs. Our multi-disciplinary group brings together experts from surgery, medicine, nursing, pharmacy, evaluative sciences and industry to develop knowledge on how to optimize cancer care.

Residents joining my lab will have an opportunity to learn about:

- Personalizing risk profiles for adverse events in cancer care;
- Improving our ability to monitor cancer care delivery in comprehensive, continuous and real-time fashion, through the systematic application of quality metrics;
- Identifying factors related to patient, physician, disease and treatment type that are associated with a higher risk of sub- optimal care;
- Developing health informatics applications that enable real-time, patient-specific clinical decision support tools that promote better, safer care;
- Knowledge synthesis and transfer strategies, to promote a clinical practice driven by evidence;
- Assessing the impact of internet / social media in treatment decision-making.

OPTIMUM: A novel e-health approach in optimizing cancer care

This multi-site clinical trial is evaluating the impact of embedding real-time alerts of irregularities in cancer care directly in daily clinical processes. OPTIMUM provides a unique opportunity to access administrative databases such as RAMQ in real-time and connect them with clinical data. It also offers an opportunity to understand challenges of IT update by health care professionals.

McGill Breast Cancer Care Quality Initiative:

This longitudinal study brings together McGill experts from Surgery, Epidemiology, Nursing and Computer Sciences to assess the quality of province-wide breast cancer care. Using the prospective cohort of all new breast cancer cases in Quebec from 1998 to 2018 and accessing RAMQ administrative health data, the study evaluates quality along the comprehensive cancer trajectory.

Node surgery in cancer: good, better, best

This recently-approved study will provide a comprehensive assessment of nodal surgery in cancer with a particular focus on melanoma and sarcoma. Recent publications have highlighted the need for a re-centering of its role in surgical oncology. We need to optimize evidence-driven surgical approaches, and validate their impact through real-world evidence.

CUR-IT: Emerging Teams in Improving Patient Safety and Chronic Disease Management

This network project is evaluating informatics-enabled patient safety optimization strategies in collaboration with The Ottawa Hospital and Partners Health (Harvard University).

RightRX: McGill University's medication reconciliation software

This recently completed multisite clinical trial is evaluating the impact of informatics-enabled medication reconciliation at admission & discharge processes with an opportunity to correlate clinical course to health administrative datasets.

RUBY: Reducing the Burden of Breast Cancer in Young Women

This pan-Canadian collaboration focuses on young women with breast cancer including prospective clinical databasing, tissue and blood sampling, patient-reported outcomes collection and development of practice enhancement tools.

The Sherman Initiative: understanding Merkel Cell cancer

This prospective longitudinal study of a cohort of patients with Merkel Cell cancer will enable: 1) understanding health service utilization 2) characterizing the impact of adverse events on disease outcomes; 3) clinical correlation with biological profiling.

Montreal Cancer Consortium: melanoma research network

This Montreal-wide collaboration recently funded by the Terry fox Research Institute aims to develop a molecular understanding of the impact of targeted therapy and immune checkpoint inhibitors in melanoma.

****A variety of other single-institution prospective or retrospective smaller, chart-based studies are also available.***

Trainees

Nina Morena, PhD candidate, Communication Studies
Ania Syrowatka, PhD Epidemiology & Biostatistics
David Henault, Resident General Surgery (UdeM)
Nora Almana, Resident
Nora Trabulsi, Masters' Clinical Epidemiology
Mohammed Nassif, Masters' in Experimental Surgery
Aliya Ramjun, Masters' in Clinical Epidemiology
Monisha Sudarshan, Resident General Surgery
Calvin Young, Resident General Surgery (Yale)
François Khazoom, Resident General Surgery (UdeM)

Opportunities are available for Masters trainees (experimental surgery or clinical Epidemiology) as well as 6-month research rotations.

The following resources are provided to trainees working in our group:

- Full time research assistant offering support for IRB/ethics approval processes, data collection and maintenance, statistical analysis, literature review and manuscript editing;
- Clinical implementation coordinator for support with implementation, training and consenting of health informatic applications at clinical sites
- Multiple large population-based datasets such as RAMQ health administrative data (province-wide medical, pharmacy and hospital care), MED-Echo, Provincial tumor registry, clinical databases, patient-reported outcomes data;
- Computer tools (desk top, lap top) including all necessary software and research applications;
- Software programmer for health informatic application development
- Graphic designer support
- Dedicated research space (off-site work also possible via remote access to secure servers)
- Funding for conferences and presentations
- Possibility of embedded collaboration with the Institut national d'excellence en santé et services sociaux (INESSS).

In addition, regular journal clubs, progress meetings and peer-review groups allow for trainees to develop their own network of collaborations.

- Moldoveanu D, Pravongviengkham V, Best G, Martínez C, Hijal T, **Meguerditchian AN**, Lajoie M, Dumitra S, Watson I, Meterissian S. Dynamic Neutrophil-to-Lymphocyte Ratio: A Novel Prognosis Measure for Triple-Negative Breast Cancer. Ann Surg Oncol. 2020 Apr 20.
- Parvez E, Martel K, Morency D, Dumitra S, **Meguerditchian AN**, Dionisopoulos T, Meterissian S, Basik M, Boileau JF. Surgical and Oncologic Outcomes of Nipple-Sparing Mastectomy for a Cohort of Breast Cancer Patients, Including Cases with High-Risk Features. Clin Breast Cancer. 2020 Mar 8:S1526-8209(20)30048-3.
- R. Tamblyn, DL. Buckeridge, M. Bustillo, AJ. Forster, B. Habib, J. Hanley, A. Huang, S. Kurteva, T. Lee, **AN. Meguerditchian,** T. Moraga, A. Motulsky, D. Weir, N. Winslade. The Impact of an Electronic Medication Reconciliation Intervention on Medication Discrepancies, Adverse Drug Events, Emergency Department Visits and Re-admission: A Cluster Randomized Trial. JAMA Network Open. 2019 Sep 4;2(9):e1910756..
- Syrowatka A, Hanley JA, Weir DL, Dixon WG, **Meguerditchian AN**, Tamblyn R. Ability to predict new-onset psychological distress using routinely collected health data: A cohort study of breast cancer patients. Journal of the National Comprehensive Cancer Network 2018 Sep;16(9):1065-1073.
- Henault D, Westley T, Dumitra S, Chang SL, Kremer R, Tamblyn R, Mayo N, **Meguerditchian AN**. Osteoporosis Screening in Older Breast Cancer Patients Treated with Anti-Estrogen Therapy: A Population-Based Cohort Study. Bone 2018 Nov;116:94-102.
- Tamblyn R, Winslade N, Lee CT, Motulisky A, **Meguerditchian AN**, Bustillo M, Elsayed S, Buckeridge D, Couture I, Qian CJ, Moraga T, Huang A. Improving Patient Safety and Efficiency of Medication Reconciliation Through the Development and Adoption of a Computer-assisted Tool with Automated Electronic Integration of Population-based Community Drug Data. The Right Rx Project. Journal of the American Medical Informatics Association 2018 May 1; 25(5): 482-495.
- Westley T, Syrowatka A, Henault D, Rho, YS, Khazoom F, Chang SL, Tamblyn R, Mayo N, **Meguerditchian AN**. Patterns and Predictors of Emergency Department Visits among Older Patients after Breast Cancer Surgery: A Population-Based Cohort Study. Journal of Geriatric Oncology 2018 May 9(3): 204-213.
- Syrowatka A, Motulsky A, Kurteva S, Hanley J, Dixon WG, **Meguerditchian AN**, Tamblyn R. Predictors of Distress in Female Breast Cancer Survivors: A

Systematic Review. Breast Cancer Research and Treatment. Breast Cancer Research and Treatment 2017 Sep 165(2): 229-245.

- Syrowatka A, Chang SL, Tamblyn R, Mayo N, **Meguerditchian AN**. Psychotropic and Narcotic Drug Use in Older Breast Cancer Patients across the Care Trajectory: A Population-Based Cohort Study. Journal of the National Comprehensive Cancer Network 2016 Nov 14(11): 1412-1419.
- **Meguerditchian AN**, Tamblyn R, Meterissian S, Law S, Prchal J, Winslade N, Stern D. Adjuvant Endocrine Therapy in Breast Cancer: A Novel E-Health Approach in Optimizing Treatment for Seniors (OPTIMUM Study): A two-group controlled comparison pilot study. Journal of Medical Internet Research - Research Protocols 2016 Nov 7;5(4):e199.
- Syrowatka A, Kroemker D, **Meguerditchian AN**, Tamblyn R. Features that Can Be Integrated into Computer-Based Decision Aids: A Systematic Review, Thematic Synthesis and Meta-Analysis. Journal of Medical Internet Research 2016 Jan 18(1): 1-19.
- Ramjaun A, Sudarshan M, Patakfalvi L, Tamblyn R, **Meguerditchian AN**. Educating medical trainees on medication reconciliation: A systematic review. BMC Medical Education 2015 March 15:33.

POSTERS

- Kurteva, S. Tamblyn R, **Meguerditchian AN**. Opioid prescription characteristics associated with frequent emergency department use among hospitalized cancer patients: a comparative cohort study. AACR Annual Meeting, San Diego (CA) April 2020
- Tchuente V, Stern D, Prchal J, Martin J, Winslade N, Tamblyn R, **Meguerditchian AN**. Primary non-adherence to adjuvant endocrine therapy in older women with breast cancer. The Canadian Cancer Research Conference (CCRA), Ottawa November 2019.
- Tchuente V, Stern D, Prchal J, Martin J, Winslade N, Tamblyn R, **Meguerditchian AN**. Primary non-adherence to adjuvant endocrine therapy in older women with breast cancer. 19th Conference of the Société international d'oncologie gériatrique. Geneva (Switzerland) November 2019.
- Tchuente V, Stern D, Prchal J, Martin J, Tamblyn R, **Meguerditchian AN**. Primary Non-adherence to Adjuvant Endocrine Therapy in Older Women with Breast Cancer. ASCO Quality Care Symposium, San Diego, September 2019.

- Kurteva S, Tamblyn R, **Meguerditchian AN**. Opioid use among cancer patients undergoing surgery and their associated risk of re-admissions and emergency department visits in the one-year post-surgical period. Canadian Surgical Forum, Montreal September 2019.
- Parvez E, Shaul J, Dumitra T, Morency D, Martel K, **Meguerditchian AN**, Tremblay F, Meterissian S, Dumitra S. Life After MSLT II: Adoption of Nodal Basin Observation for Melanoma Patients with Sentinel Lymph Node Metastases. SSO Annual Symposium, San Diego, March 2019.
- Parvez E, Morency D, **Meguerditchian AN,** Dumitra S, Basik M, Meterissian S, Martel K, Boileau JF. Therapeutic nipple sparing mastectomy: practice patterns and surgical outcomes for high-risk cases at two academic cancer centers. SSO Annual Symposium, San Diego, March 2019.
- Kurteva S, Tamblyn R, **Meguerditchian AN**. Opioid use among cancer patients undergoing surgery and their associated risk of re-admissions and emergency department visits in the one-year post-surgical period. NCCN Annual Conference: Improving the Quality Effectiveness, and Efficiency of Cancer Care, Orlando, March 2019.
- Vigano A, Raskovic G, Arboleda MF, Aprikian S, Christodoulopoulos R, Thomas D, Bacis V, Aubin N, **Meguerditchian AN**, Borod M. Integrating Medical Cannabis Within a Quaternary Oncology Center: The Cannabis Pilot Project at the McGill University Centre. CannMed 2018, Los Angeles (USA), October 2018.
- Kavan P, Fox R, Raskovic G, Barrera I, Sateren W, Batist G, Palumbo M, Muanza T, Johnson N, Mamo A, Alcindor T, Turcotte R, **Meguerditchian AN**. A patient-centered approach to the re-development of supportive care services for oncology adolescent and young adult (AYA) patients across McGill University hospitals. ESMO, Madrid (Spain), September 2017.
- Syrowatka A, Chang S-L, Mayo N, Tamblyn R, **Meguerditchian AN.** Psychotropic and narcotic drug use in older women diagnosed with breast cancer across the cancer care trajectory. 2016 Epidemiology Congress of the Americas, Miami, June 2016.
- Henault D, Dumitra C, Chang SL, Kremer R, Mayo N, **Meguerditchian AN**. Adherence to osteoporosis screening guidelines in seniors with breast cancer treated with anti-estrogen therapy: A population-based study. 2016 Congress, Quebec Surgical Association, Quebec City, QC May 2016.

- Henault D, Dumitra C, Chang SL, Kremer R, Mayo N, **Meguerditchian AN**. Adherence to osteoporosis screening guidelines in seniors with breast cancer treated with anti-estrogen therapy: A population-based study. 2015 Breast Cancer Symposium, ASCO, San Francisco, CA September 2015. Tchuente V, Stern D, Prchal J, Martin J, Winslade N, Tamblyn R, **Meguerditchian AN**. Primary non-adherence to adjuvant endocrine therapy in older women with breast cancer. SIOG 19th Conference, Geneva, November 2019.

ORAL COMMUNICATIONS

- Vigano A, Raskovic G, Gamaoun R, Kasvis P, Arboleda MF, Aprikian S, Thomas D, Aubin VN, Christodoulopoulos R, **Meguerditchian AN**, Borod M. Integrating Medical Cannabis within a Quaternary Oncology Center: The Cannabis Pilot Project, McGill University Health Centre. MASCC / ISOO Annual Meeting, San Francisco (CA), June 2019.
- Moldoveanu D, Best G, Pravongviengkham, **Meguerditchian AN**, Dumitra S, Meterissian S. Dynamic Neutrophil to Lymphocyte Ratio: A Novel Prognosis Measure for Triple Negative Breast Cancer. Society of Surgical Oncology Annual Symposium, San Diego (CA), March 2019.
- Tamblyn R, Huang A, Motulsky A, **Meguerditchian AN**, Winslade N, Buckeridge D, Forster A, Lee T, Bonnici A, Couture I. The RightRx Medication reconciliation Trial: Impact on Potential Adverse Drug Events. 34th International Conference on Pharmacoepidemiology and Therapeutic Risk Management. Prague (Czech Republic), August 2018.
- **Meguerditchian AN**. Palliative Surgery: A Time and Place for Everything. McGill University National Palliative Care Week, Montreal (May 2018).
- **Meguerditchian AN**. Optimum: Optimizing Cancer Care Through Health Informatics Innovations. McGill University Health Centre Department of Onology Grand Rounds, Montreal (November 27th 2017).
- **Meguerditchian AN.** Building on excellence: a perspective on the way forard for Cancer Research. Cancer Care Manitoba, Winnipeg (October 2017).
- **Meguerditchian AN**, Panelist "What are the five things we can do now to immediately improve cancer care in Canada?" Innovative Approaches to Optimal Cancer Care in Canada, Canadian Partnership Against Cancer, Toronto (April 2017).
- Chang S-L, Syrowatka A, Mayo N, Tamblyn R, **Meguerditchian AN**. Psychotropic and narcotic drug use in older women diagnosed with breast cancer across the cancer care trajectory. 21st International Congress on Palliative Care, Montreal (October 2016).

- Chang S-L, Syrowatka A, Mayo N, Tamblyn R, **Meguerditchian AN**. Psychotropic and narcotic drug use in older women diagnosed with breast cancer across the cancer care trajectory. 21st International Congress on Palliative Care, Montreal (October 2016).
- Henault D, Rho Y, Khazoom F, Syrowatka A, Chang SL, Wesley T, **Meguerditchian AN**. Evaluation of Emergency Department visits and associated predictors among seniors after breast cancer surgery. Canadian Surgical Forum, Toronto (September 2016).
- Syrowatka A, **Meguerditchian AN**, Tamblyn R. Features of Computer-Based Patient Decision Aids: Systematic Review, Thematic Synthesis, and Meta-Analyses. 2nd International Meeting on Well-being and Performance in Clinical Practice, Greece (May 2016).

Sarkis Meterissian, MD, FRCS
McGill University Health Centre

sarkis.meterissian@mcgill.ca

I am involved in clinical and basic science research projects in these areas:

A. Basic research:

Breast Cancer:

For those interested in a career in Surgical Oncology and,in particular, in establishing a laboratory I can help you find a project with two investigators that I actively collaborate with. Dr. Morag Park works on both the molecular and the immunologic aspects of triple-negative breast cancer. She is at the Goodman Cancer Center and has been an excellent supervisor for a number of surgical residents over the years.

Canadian Cancer Society Grant: I have a grant with Dr. Luke McCaffrey. He also works at the Goodman Cancer Center and he is interested in early breast cancer particularly DCIS and its causes. He is an excellent supervisor and I believe surgical residents would really enjoy working with this young investigator. I would co-supervise you on this research. I enjoy fruitful collaborations with both of them and look forward to co-supervising you with them for either a Masters or, preferably, a PhD.

B. Clinical Research:

1) Breast

For residents interested in completing a Masters in Epidemiology or a Masters in Public Health I have available large databases that you can work with. We have of course the Breast Tumor Registry which is complete and up-to-date and has over 3000 breast cancer cases. We also have the Breast Center Database which includes over 2000 cases of breast biopsies, both benign and malignant, done at the Breast Center. These databases can be used during your Masters as projects to fulfill the requirements. We can ask a myriad of questions and I have a number of research questions that are available. Also I invite all residents embarking on a 6-month research period to think of completing their research with me since these databases will allow you to complete at least 2 research projects in the 6-month period. I have an excellent track record of publication of abstracts and manuscripts and will make sure that you are able to present at national and international meetings.

2) NSERC Grant

In breast cancer, 20-40% of all breast conserving surgery procedures result in margins with residual disease. Since cancer left at the margins is associated with an increased risk of recurrence, patients with positive margins always require a second operation. This high percentage of re-excision procedures leads to additional costs, patient anxiety and an increased risk of post-surgical complications. This project will lead to the development of a label-free (no need to inject a contrast agent), light-based technique to detect cancer during breast surgery. The intraoperative instrument will combine a new method called quatitative Raman and fluorescence spectroscopy with diffuse reflectance spatial-frequency domain imaging to provide tissue biomarkers able to detect the tissue signature associated with cancer cells based on morphological and biochemical properties. These developments will leverage recent advances in the Laboratory for Radiological Optics at Polytechnique Montreal and will set the stage for ODS Medical (the industry partner) to initiate commercialization of an instrument helping breast surgeons ensure completeness of tumour excision during lumpectomy procedures. The project will include the development of a cancer detection model based on machine learning techniques using data to be acquired in patients at the McGill University Health Center (MUHC). While there is a crucial need for the new label-free rapid imaging technology in breast cancer surgery, it can also find applications in a wide range of surgical oncology procedures, including neurosurgery, prostate and skin cancer surgery. You will be working with me to validate this instrument and determine its reliability and sensitivity.

My goal for residents working with me is to maximize the number of abstracts and manuscripts published to help you secure a competitive fellowship. I also want to make sure that you complete, on-time, your Masters or PhD degrees.

1. **Dumitra S**., Wong S.M., Meterissian S., Featherstone R., Barkun J. and Fata P. 2015 The operative dictation: a review of how this skill is taught and assessed in surgical residency programs. J. Surg. Educ 72:321-9
2. Boileau J.F., Poirier B., Basik M., Holloway C.M., Gaboury L., Sideris L., Meterissian S**.,** Arnaout A., Brackstone M., McCready D.R., Karp S.E., Trop I., Lisbona A., Wright F.C., Younan R.J., Provencher L., Patocskai E., Omeroglu A. and Robidoux A. 2015 Sentinel node biopsy after neoadjuvant chemotherapy in biopsy-proven node-positive breast cancer: the SN FNAC Study. J. Clin Oncol. 33:258-64
3. **Mandilaras V**., Bouganim N., Spayne J., Dent R., Arnaout A., Boileau J.F., Brackstone M., Meterissian S. and Clemons M. 2015 Concurrent chenoreadiotherapy for locally advanced breast cancer-time for a new paradigm? Curr. Oncol. 22: 25-32
4. Minter R.M., Amos K.D., Bentz M.L., Blair P.G., Brandt C., D'Cunha J., Davis E., Delman K.A., Deutsch E.S., Divino C., Kingsley D., Klingensmith M., Meterissian S**.,** Sachdeva A.K., Terhune K., Termuhlen P.M. and Mullan P.B. 2015 Transition to Surgical Residency: A multi-instituional study of perceived intern preparedness and the effect of a formal residency preparatory course in the fourth year of medical school Acad Med. 90: 1116-1124
5. Coroiu, A., Körner, A., Burke, S., Meterissian, S., & Sabiston, C. M. 2015 Stress and Post-traumatic Growth Among Survivors of Breast Cancer: A Test of Curvilinear Effects. International Journal of Stress Management Epub ahead of print May 2015
6. **Parsyan A**., Moldoveanu D., Balram B., Wong S., Zhang D.D., Svadzian A., Allard-Coutu A., Delisle M., Mesurolle B. and Meterissian S. 2016 Influence of pre-operative magnetic resonance imaging on the surgical management of breast cancer patients. Am. J. Surgery 211:1089-94
7. **Mahdanian A.A**., Looper K.J., Bacon S.L., Mesurolle B., Meterissian S.H. and Rej S. 2015 Serotonergic antidepressants and increased bleeding risk in patients undergoing breast biopsy Ther Adv Psychopharmacol 5:332-338
8. **Proulx F**., Correa J.A., Ferre R., Omeroglu A., Aldis A., Meterissian S., and Mesurolle B. 2016 Value of pre-operative breast MRI for the size assessment of ductal carcinoma in situ Br. J. Radiol 89: 201-205
9. Meguerditchian A, Tamblyn R, Meterissian S, Law S, Prchal J, Winslade N, Stern D. 2016 Adjuvant Endocrine Therapy in Breast Cancer: A Novel e-Health Approach in Optimizing Treatment for Seniors (OPTIMUM): A Two-Group Controlled Comparison Pilot Study. JMIR Res Protoc. 5(4):e199
10. **Sivakumaran L**., Ayinde T., Hamadini F., Meterissian S**.,** Razek T., Puckrin R., Munoz J., O'Hearn S. and Deckelbaum D. 2016 Support infrastructure available to Canadian residents completing post-graduate global health electives: current state and future directions. Canadian Medical Education Journal 7(3), Special Issue: E41-E50
11. Gagnon J, Lévesque E, Borduas F, Chiquette J, Diorio C, Duchesne N, Dumais M, Eloy L, Foulkes W, Gervais N, Lalonde L, L'Espérance B, Meterissian S, Provencher L, Richard J, Savard C, Trop I, Wong N, Knoppers BM, Simard J. 2016 Recommendations on breast cancer screening and prevention in the context of implementing risk stratification: impending changes to current policies. Curr Oncol. 23:e615-e625
12. **Marcil G**, Wong S, Trabulsi N, Allard-Coutu A, Parsyan A, Omeroglu A, Atinel G, Mesurolle B, Meterissian S. 2017 Fibroepithelial breast lesions diagnosed by core needle biopsy demonstrate a moderate rate of upstaging to phyllodes tumors Am J Surg. 214:318-322
13. **Halaoui R**., Rejon C., Chatterjee S.J., Szymborski J., Meterissian S., Muller W.J., Omeroglu A. and McCaffrey L. 2017 Progressive polarity loss and luminal collapse disrupt tissue organization in carcinoma Genes Dev. 31:1573-1587
14. **Savage P**, Blanchet-Cohen A, Revil T, Badescu D, Saleh SMI, Wang YC, Zuo D, Liu L, Bertos NR, Munoz-Ramos V, Basik M, Petrecca K, Asselah J, Meterissian S, Guiot MC, Omeroglu A, Kleinman CL, Park M, Ragoussis J. 2017 A Targetable EGFR-Dependent Tumor-Initiating Program in Breast Cancer. Cell Rep. 21:1140-1149
15. Marta GN, Poortmans P, de Barros AC, Filassi JR, Freitas Junior R, Audisio RA, Mano MS, Meterissian S, DeSnyder SM, Buchholz TA, Hijal T. 2017 Multidisciplinary international survey of post-operative radiation therapy practices after nipple-sparing or skin-sparing mastectomy. Eur J Surg Oncol. 43:2036-2043
16. Marta GN, Poortmans P, de Barros AC, Filassi JR, Freitas-Junior R, Audisio RA, Mano MS, **Meterissian S**, DeSnyder SM, Buchholz TA, Hijal T. 2018 Reply to: Mastectomy skin flap thickness Eur. J. Surg. Oncol. April 27th (Epub ahead of print)
17. **Wong SM**, Prakash I, Trabulsi N, Parsyan A, Moldoveanu D, Zhang D, Mesurolle B, Omeroglu A, Aldis A, Meterissian S. 2018 Evaluating the Impact of Breast Density on Preoperative MRI in Invasive Lobular Carcinoma. J Am Coll Surg. 226:925-932
18. Lubarsky S, Dory V, **Meterissian S**, Lambert C, Gagnon R. 2018 Examining the effects of gaming and guessing on script concordance test scores.Perspect Med Educ. 7:174-181.

19. Sabiston CM, Wrosch C, Fong AJ, Brunet J, Gaudreau P, O'Loughlin J, Meterissian S. 218. Life after breast cancer: moving on, sitting down or standing still? A prospective study of Canadian breast cancer survivors. BMJ Open. 8:e021770
20. Yu N, Leung VWY, **Meterissian S.** 2019 MRI Performance in Detecting pCR after Neoadjuvant Chemotherapy by Molecular Subtype of Breast Cancer. World J. Surg. 2019. 43:2254-2261.
21. Savage P, Yu N, Dumitra S, **Meterissian S**. 2019. The effect of the American Joint Committee on Cancer eight edition on brast cancer staging and prognostication. Eur J Surg Oncol. S0748-7983:30355-5.
22. Gruosso T, Gigoux M, Manem VSK, Bertos N, Zuo D, Perlitch I, Saleh SMI, Zhao H, Souleinmanova M, Johnson RM, Monette A, Ramos VM, Hallett MT, Stagg J, Lapointe R, Omeroglu A, **Meterissian S,** Buisseret L, Van den Eynden G, Salgado R, Guiot MC, Haibe-Kains B, Park M. 2019. Spatially distinct tumor immune microenvironments stratify triple-negative breast cancers. J Clin Invest. 1;129:1785-180.
23. Li X, Gruosso, T, Zuo D, Omeroglu A, **Meterissian S**, Guiot MC, Salazar A, Park M, Levine H. 2019. Infiltration of CD8+ T cells into tumor cell clusters in truple-netaive breast cancer. Proc Natl Acad Sci USA. 116:3678-3687.
24. Yip CH, Evans DG, Agarwal G, Buccimazza I, Kwong A, Morant R, Prakash I, Song CY, Taib NA, Tausch C, Ung O, **Meterissian S**. 2019. Global disparaties in breast cancer genetics testing, counselling and management. World J Surg. 43:1264-1270.
25. Morency D, Dumitra S, Parvez E, Martel K, Basik M, Robidoux A, Poirier B, Holloway CMB, Gaboury L, Sideris L, **Meterissian S**, Boileau JF. 2019. Axillary lymph node ultrasound following neadjuvant chemotherapy in biopsy-proven node-positive breast cancer: results from the SN FNAC study. Ann Surg Oncol. 26:4337-4345.
26. Lagacé F, Ghawazi FM, Le M, Rahme E, Savin E, Zubarev A, Alakel A, Sasseville D, Morau L, **Meterissian S**, Litvinov IV. 2019. Analysis of incidence, mortality trends and geographic distribution of breast cancer patients in Canada. Breast Cancer Res Treat. 178:683-691.
27. Sabiston CM, Fong AJ, O'Loughlin EK, **Meterissian S**. 2019. A mixed-methods evaluation of a community physical activity program for breast cancer survivors. J Transl Med. 19;206.
28. St-Louis E, Shaheen M, Muhktar F, Adessky R, **Meterissian S** and Boutros M. 2020. Towards development of an open surgery competency assessment for residents (OSCAR) tool: a systematic review of the literature and Delphi consensus. J Surg Edc. 77:438-453.
29. Parvez E, Martel K, Morency D, Dumitra S, Meguerditchian AN, Dionisopoulos T, **Meterissian S**, Basik M, Boileau JF. 2020. Surgical and oncologic outcomes fo nipple-sparing mastectomy for a cohort of breast cancer patients, including cases with high-risk features. Clin Breast Cancer. S1526-8209(20)30048-3.
30. Moldoveanu D, Pravongviengkham V, Best G, Martinez C, Hijal T, Meguerditchian AN, Lajoie M, Dumitra S, Watson I and **Meterissian S.** 2020. Dynamic neutrophil-to-lymphocyte ratio: a novel prognosis measure for triple-negative breast cancer. Ann. Surg. Oncol. Online ahead of print.
31. Savage P, Pacis A, Kuasne H, Liu L, Lai D, Wan A, Dankner M, Martinez C, Munoz-Ramos V, Pilon V, Monast A, Zhao H, Souleimanova M, Annis MG, Aguilar-Mahecha A, Lafleur J, Bertos NR, Asselah J, Bouganim N, Petrecca K, Siegel PM, Omeroglu A, Shah SP, Aparicio S, Basik M, **Meterissian S** and Park M. 2020. Chemogenomic profiling of breast cancer patient-derived xenografts reveals targetable vulnerabilities for difficult-to-treat tumors. Commun Biol. 16;3:310.

Eliott Mitmaker, MD, FRCS, FACS
elliot.mitmaker@mcgill.ca

Roger Tabah, MD
roger.tabah@mcgill.ca

Mark Trifiro, MD
mark.trifiro@mcgill.ca

Mission Statement *Understanding the mechanisms involved in the initiation and progression of endocrine-related cancers and using this knowledge to improve the care of patients afflicted with these malignancies.*

Clinical Epidemiology / Outcomes Research

1. **The influence of solid organ transplantation on the rate and aggressiveness of de novo thyroid cancer**
2. **The influence of diuretics on the positive predictive value of sestamibi scans in patients with hyperparathyroidism**

Bench / Translational Research

1 **Identifying a unique metastatic gene expression profile in papillary thyroid cancer (PTC) with loco-regional metastasis**

a. Tissue microarrays will be used for high-throughput analysis of single gene or protein biomarkers that are biologically significant for PTC tumor progression. Hierarchical clustering analysis using both molecular and clinicopathological data will be performed to prognostically classify tumor specimens.
b. Determine a molecular gene expression profile by analyzing a known panel of genetic and epigenetic markers for tumor metastases. Bioinformatics and high-throughput technologies will be used to determine a unique genomic biomarker profile aimed at characterizing the evolving nature of thyroid cancer aggressiveness. Validating the identified genes prospectively will be necessary to determine a PTC metastatic gene profile.
c. Thyroglobulin represents a key biomarker for recurrent PTC. Yet, thyroglobulin produced by metastatic or recurrent thyroid follicular cells undergoes posttranslational modifications affecting glycosylation, phosphorylation and iodination. Using mass spectrometry, structural changes in the thyroglobulin molecule during PTC progression and dedifferentiation will be identified.

2 **Characterizing Gene Expression Profiles in Resected Adrenal Metastases – A Seed vs. Soil Phenomenon**

3 **The Biologic Relevance of mtDNA Damage in Hurthle Cell Neoplasms: A 3-Dimensional Molecular Model**

Past supervision

- 1 Post-Doctoral fellow
- 2 PhD students
- 3 MSc students
- 7 (Surgery/Endocrinology fellows, technicians & research assistants/associates)

Resources / Facilities

Our laboratory, located at the **Lady Davis Institute-Segal Cancer Centre**, has the basic equipment needed for molecular and cellular biology experiments, including apparatus for DNA/protein electrophoresis, balances, fridges (4°C), freezers (-20°C and -80°C), heating blocks, a 37°C incubator for growing bacteria, magnetic stirrers, microcentrifuges, pipetters, PCR machines, laser capture microdissection, platform shakers, a pH meter, a refrigerated centrifuge, a vacuum dryer, water baths, and computers with Internet access.

A tissue culture room which contains a laminar flow hood and 37°C CO_2 incubators, allowing for propagation of a variety of mammalian cells. Additional equipment in this room includes centrifuges, fridges, a microscope for examining cells and a laminar flow hood for preparing PCR reactions.

In addition, the Lady Davis Institute for Medical Research (LDI), SMBD-Jewish General Hospital, has fully equipped core facilities that are provided for all researchers including cold (4°C and -20°C) and warm (27°C and 37°C) rooms, dark rooms with X-ray film developers, and equipment such as bacterial shakers, hybridization ovens, plate readers, scintillation counters, sonicators, ultracentrifuges, UV spectrophotometers, etc. All research laboratories have access to imaging systems (confocal, electron microscopy) and a fluorescent-activated cell sorting (FACS) facility. The LDI has its own in-house animal quarters with a staff of animal care technicians.

1. **Canadian Institutes of Health Research (CIHR)**
2. **National Cancer Institute of Canada (NCIC)**
3. **Natural Sciences and Engineering Research Council of Canada (NSERC)**
4. **Fonds Québécois de la Recherche sur la Nature et les Technologies (FQRNT)**
5. **Prostate Cancer Research Foundation of Canada**
6. **Boehringer Ingelheim (Canada) Ltd**
7. **Networks of Centres of Excellence (NCE)**
8. **Sir Mortimer B. Davis-Jewish General Hospital Foundation**

A complete list of recent publications can be provided upon request.

Collective Lab Accomplishments over past 5 years

- 21 publications (published/in press)
- 8 book chapters (published/in press)
- 54 abstracts
- 14 presentations

Liane Feldman, MD, FRCSC, FACS
Montreal General Hospital, L9-313
liane.feldman@mcgill.ca

Lawrence Lee, MD, FRCSC, FACS MSc, PhD
Montreal General Hospital, D16-116
larry.lee @mcgill.ca

Julio Fiore Jr, PT, MSc, PhD
Montreal General Hospital, R02-104
julio.fiorejunior@mcgill.ca

The Steinberg-Bernstein Centre for MINIMALLY INVASIVE SURGERY at McGill University

Patients undergoing surgery invariably experience a rapid health decline postoperatively, which is followed by a gradual return towards baseline (preoperative) health. Length of postoperative recovery (i.e. the time to return to preoperative health or 'normal') varies depending on patient characteristics, extension of surgery and occurrence of postoperative complications. Prolonged or incomplete postoperative recovery not only increases healthcare costs but is also associated with substantial burden to patients and caregivers (e.g. time away from work, leisure, family and social activities). Several perioperative interventions are proposed to improve recovery for patients, but for these to be adopted, they should increase the value of surgery – defined as health outcomes achieved relative to the cost of achieving those outcomes.

Our research program focusses on:

(1) Developing and investigating novel and creative interventions to improve postoperative recovery and increase the value of surgery. This includes reorganization of perioperative care into pathways, novel surgical techniques, new pharmacological therapies, pre- and post-operative exercise interventions.

(2) Creating innovative measurement strategies to value the process of postoperative recovery through patient-reported (e.g. self-report questionnaires), clinician-reported (e.g. readiness for hospital discharge) and performance-based (e.g. functional exercise tests) outcomes.

(3) Assessing the economic aspects of surgical recovery, cost-effectiveness of interventions aimed to improve recovery and impact on healthcare and societal costs.

(4) Comparative-effectiveness research and health technology assessment of surgical technologies, in particular those pertaining to MIS and colorectal surgery

(5) Behavioral economics, in particular studying how patients make treatment decisions

(6) Digital health technologies to improve postoperative outcomes

(7) Measurement and improvement of intraoperative performance

- Development of a novel patient-reported outcome measure to assess recovery after abdominal surgery.
- Effect of video-based guided self-reflection on intraoperative performance: a pilot randomized controlled trial
- Impact of the Covid-19 pandemic on rates emergency department utilization due to general surgery conditions.
- Opioid-free analgesia after outpatient surgery: A pilot randomized controlled trial.
- Opioid versus opioid-free analgesia after postoperative discharge: a systematic review and meta-analysis.
- General surgeons' attitudes and beliefs regarding the prescription of opioids after postoperative hospital discharge: A qualitative study.
- A prospective evaluation of opioid prescription and consumption after hospital discharge following colorectal surgery.
- Systematic review of the impact of enhanced recovery pathways on patient-reported outcomes after abdominal surgery.
- Functional outcomes after rectal cancer surgery –laparoscopic versus transanal approach to total mesorectal excision
- Perioperative probiotics in ERAS colorectal: a randomized trial
- Mobile app technology to reduce unnecessary ER visits and unplanned readmissions after elective colorectal surgery
- Transanal surgery skills assessment
- Development of web-based video library
- Defining expertise in laparoscopic cholecystectomy
- Functional trajectories after rectal cancer surgery
- What bothers patients the most after rectal cancer surgery? A mixed-methods study
- Creation of a shared decision making tool for rectal cancer
- Association of patient activation/engagement with surgical outcomes

- (2021) Canadian Association of General Surgeons (CAGS) Operating Grant: "Enhanced Recovery 2.0 – A multicentre prospective cohort study for same-day discharge after laparoscopic colectomy" - $35,000 CAD (Lee)
- (2020) Central Surgical Association (CSA) Turcotte Award: "Use of mobile health technology to improve postoperative outcomes after GI surgery" - $20,000 USD (Lee)
- (2020) American Society of Colon and Rectal Surgeons (ASCRS) grant : "Helping patients choose – improving decision making in rectal cancer" - $150,000 USD (Lee)
- (2019) FRQS operating grant: "Improving the value of colorectal surgery" - $75,000 CAD (Lee)
- (2019) CIHR Project Grant: "Opioid versus opioid-free analgesia after surgical discharge: a systematic review and meta-analysis - $80,325 CAD
- (2019) Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) Grant: "Opioid-free analgesia after outpatient surgery: A pilot randomized controlled trial" - 40,248 CAD (Fiore, Feldman)
- (2019) Theator Educational Grant – 30,000 CAD (Feldman)
- (2018) Johnson & Johnson Grant: "Use of a Mobile App (CareSense) to Improve Patient-Physician Communication, Patient Engagement & Health Outcomes in Digestive Diseases" - $110,000 (Lee, Feldman)
- (2018) CIHR Opioid Crisis Knowledge Synthesis Grant: "Preventing opioid prescription after major surgery: A scoping literature review on opioid-free postoperative analgesia" - $59,866 CAD (Fiore, Feldman)
- (2018) Mitacs Accelerate Program: "Value-based care in abdominal surgery: Measuring recovery outcomes that matter to patients" 2018 - $120,000 CAD (Fiore, Feldman)
- (2017) Merck Investigator Studies Program Grant: " Value-based care in abdominal surgery: Measuring recovery outcomes that matter to patients " - $313,729 CAD (Fiore, Feldman)
- (2017) FRQS Établissement de jeunes chercheurs. Grant, Operating - 60,000 CAD

Office space for students and research staff is provided at the Centre for Health Outcomes Research (CORE) and the Steinberg-Bernstein Centre, located at the Montreal General Hospital. Our group comprises faculty, graduate students, general surgery residents and fellows. A full-time research coordinator (Ms Pepa Keneva) is available to facilitate administrative and research related work. We have a weekly research meeting to brainstorm ideas and discuss ongoing projects. We work closely with faculty member from the Division of Clinical Epidemiology (Dr. Nancy Mayo) and Biostatistics (Dr. Nandini Dendukuri) who are available to provide methodological and statistical advice as needed. We also work in collaboration with an expert Medical Librarian (Mr Alex Amar) who provide ongoing support for literature reviews. Funding is available for students to present their work in national and international meetings.

Current graduate students

(2018-present) Teodora Dumitra PhD Experimental Surgery

(2018- present) Ghadeer Olleik. PhD in Experimental Surgery

(2018- present) Bernardo Verdolin. MSc in Experimental Surgery

(2019- present) Charbel El Kefraoui. MSc in Experimental Surgery

(2019- present) Yuen Do. MSc in Experimental Surgery

(2020- present) Makena Pook. MSc in Experimental Surgery

(2020- present) Saba Balvardi. MSc in Epidemiology

(2021- present) Stephan Robitaille. MSc in Epidemiology

(2022- present) Tiffany Paradis. MSc in Epidemiology

Past graduate students (past 5 years)

(2019- 2021) Brent Hopkins. MSc in Epidemiology

(2019- 2021) Jules Eustache. MSc in Epidemiology

(2018- 2019) Maude Trepanier. MSc in Epidemiology

(2017- 2019) Roshni Alam, Masters in Experimental Surgery

(2017-2018) Teodora Dumitra, Masters in Epidemiology

(2016-2019) Juan Mata, Masters in Experimental Surgery

(2014-2019) Negar Karimian, PhD Experimental Surgery

(2015-2018) Nicolo Pecorelli, Masters in Experimental Surgery

(2015-2017) Philippe Paci, Masters in Epidemiology

(2012-2016) Jimmy Bejjani. Masters in Experimental Surgery

(2014-2016) Tanya Castelino Masters in Experimental Surgery

(2012-2014) Lawrence Lee, PhD in Experimental Surgery

- ***Lee L**, Eustache J, Tran-McCaslin M, Basam M, Baldini G, Rudikoff A, Liberman AS, Feldman LS, McLemore EC. S105 – North American Multicentre Evaluation of a Same-Day Discharge Protocol for Minimally Invasive Colorectal Surgery using mHealth or Telephone Remote Post-Discharge Monitoring. *Surg Endosc* 2022 (epub 2022 Apr 13)
- ***Lee L**, Eustache J, Baldini G, Liberman AS, Charlebois P, Stein B, Fiore Jr JF, Feldman LS. Enhanced Recovery 2.0 – Same Day Discharge With Mobile App Follow-Up After Minimally Invasive Colorectal Surgery. *Ann Surg* 2021 (epub 2021 June 2)
- *Eustache J**,** Kaneva P, Liberman S, Charlebois P, Stein B, Fiore Jr JF, Feldman LS, Latimer E, **Lee** L. A mobile app improves patient-physician communication and reduces emergency department visits after colorectal surgery. *Dis Colon Rectum* 2021 (DOI 10.1097/DCR.0000000000002187)
- *Al Rashid F, Robitaille S, Liberman AS, Charlebois P, Stein B, Feldman LS, Fiore Jr JF, **Lee L**. Trajectory of Change of Low Anterior Resection Syndrome Over Time After Restorative Proctectomy for Rectal Adenocarcinoma. *Tech Coloproctol* 2022;26:195-203
- Hopkins B, Eustache J, Ganescu O, Cipolla J, Kaneva P, Fiore Jr JF, Feldman LS, **Lee L**. S073 – At least 90-days of follow-up is required to adequately detect wound outcomes after open incisional hernia repair. Surg Endosc 2022 (epub 2022 Mar 7)
- *Hopkins B, Eustache J, Ganescu O, Cipolla J, Kaneva P, Fried GM, Khwaja K, Vassiliou MC, Fata P, **Lee L**, Feldman LS. Impact of incisional negative pressure wound therapy on surgical site infection after complex incisional hernia repair: a retrospective matched cohort study. *Surg Endosc* 2021;35:3949-3960
- **Lee L**, Trepanier M, Renaud J, Liberman S, Charlebois P, Stein B, Fried GM, Fiore Jr J, Feldman LS. Patients' Preferences for Sphincter Preservation Versus Abdominoperineal Resection for Low Rectal Cancer. Surgery 2020
- Balvardi S, Pecorelli N, Castelino T, Niculiseanu P, Alhashemi M, Liberman AS, Charlebois P, Stein B, Carli F, Mayo NE, **Feldman LS, Fiore JF Jr**. Impact of Facilitation of Early Mobilization on Postoperative Pulmonary Outcomes After Colorectal Surgery: A Randomized Controlled Trial. Ann Surg. 2020. Online ahead of print.
- Carli F, Bousquet-Dion G, Awasthi R, Elsherbini N, Liberman S, Boutros M, Stein B, Charlebois P, Ghitilescu G, MD, Morin N, Jagoe T, Scheede-Bergdahl C, Minnella EM, **Fiore JF Jr**. Multimodal Prehabilitation for Frail Patients Undergoing Resection of Colorectal Cancer. A Randomized Controlled Trial. JAMA Surg 2020: 155(3):233-42.
- Karimian N, Kaneva P, Donatelli F, Stein B, Liberman AS, Charlebois P, **Lee L, Fiore JF Jr**, Carli F, **Feldman LS**. Simple versus complex preoperative carbohydrate drink to preserve perioperative insulin sensitivity in laparoscopic colectomy: a randomized controlled trial. Ann Surg 2020; 271(5):819-826.
- Caycedo-Marulanda A, Brown C, Chadi S, Ashamalla S, **Lee L**, Stotland P, Hameed U, Melich G, Ma G, Letarte F, Karimuddin A, Quereshy F, Phang T, Raval M, Vikis E, Liberman AS, Bouchard A, Bouchard P, Drolet S. Canadian tatME Expert Collaboration (CaTaCO) Position Statement. *Surg Endosc* 2020 (epub 2020 June 5)
- *Trépanier M, Valin-Thorburn A, Dumitra T, Alhashemi M, Pecorelli N, Kaneva P, Liberman SA, Charlebois P, Stein B, Feldman LS, **Lee L**. Intracorporeal versus Extracorporeal Anastomosis for Right Colectomy Does Not Affect Gastrointestinal Recovery within an Enhanced Recovery After Surgery Program. *Surg Endosc* 2019 (epub 2019 Oct 23)
- Fiore JF Jr, Carli F, Feldman LS. Simple Versus Complex Preoperative Carbohydrate Drink to Preserve Perioperative Insulin Sensitivity in Laparoscopic Colectomy: A Randomized Controlled Trial. *Ann Surg* 2020;271(5):819-826

- Karimian N, Kaneva P, Donatelli F, Stein B, Liberman AS, Charlebois P, **Lee L**, Fiore JF Jr, Carli F, Feldman LS. Simple Versus Complex Preoperative Carbohydrate Drink to Preserve Perioperative Insulin Sensitivity in Laparoscopic Colectomy: A Randomized Controlled Trial. *Ann Surg* 2020;271(5):819-826.
- Alam R, Montanez J, Law S, **Lee L**, Mayo NE, Feldman LS, Fiore J. Development of a Conceptual Framework of Recovery After Abdominal Surgery. *Surg Endosc* 2020;34(6):2665-2674.
- Albert MR, **Lee L**. Tips and Tricks. *Clin Colon Rectal Surg* 2020; 33:173-179.
- **Lee L**, Kelly J, Nassif GJ, deBeche-Adams TC, Albert MR, Monson JR. Defining the learning curve for transanal total mesorectal excision for rectal adenocarcinoma. *Surg Endosc* 2020;34:1534-1542
- *Trepanier M, Paradis T, Kouyoumdjian A, Dumitra T, Charlebois P, Stein BS, Liberman AS, Schwartzman K, Carli F, Fried GM, Feldman LS, **Lee L**. The Impact of Delays to Definitive Surgical Care on Survival in Colorectal Cancer Patients. *J Gastrointest Surg* 2020;24:115-122
- *Sorial RK, Ali M, Kaneva P, Fiore Jr JF, Vassiliou M, Fried GM, Feldman LS, Ferri LE, **Lee L**, Mueller CM. Modern Era Surgical Outcomes of Elective and Emergency Paraesophageal Hernia Repair at a High-Volume Referral Center. *Surg Endosc* 2020;34:284-289
- Mata J, Pecorelli N, Kaneva P, Moldoveanu D, Gosselin-Tardif Al, Robitaille S, Balvardi S, **Lee L**, Stein B, Liberman AS, Charlebois P, Fiore Jr, JF, Feldman LS. A mobile device application (app) to improve adherence to an enhanced recovery program for colorectal surgery: a randomized controlled trial. *Surg Endosc* 2020;34:742-751
- *Trepanier M, Alhassan N, Sabapathy C, Liberman AS, Charlebois P, Stein B, Feldman LS, **Lee L**. Cost-Effectiveness of Extended Thromboprophylaxis In Patients Undergoing Colorectal Surgery from a Canadian Healthcare System Perspective. *Dis Colon Rectum* 2019;62:1381-1389
- *Trepanier M, Erkan A, Kouyoumdijan A, Nassif G, Albert M, Monson J, **Lee L**. Examining the Relationship Between Lymph Node Harvest and Survival in Patients Undergoing Colectomy for Colon Adenocarcinoma. *Surgery* 2019;166:639-647
- *Trepanier M, Minella EM, Awasthi R, Kaneva P, Schwartzman K, Carli F, Fried GM, Feldman LS, **Lee L**. Improved disease-free survival after prehabilitation for colorectal cancer surgery. *Ann Surg* 2019;270:493-501
- Complete list of publications is available upon request.

Amin Andalib MD, MSc (Epid), FACS, FASMBS, FRCSC
Montreal General Hospital, E16-165A
Tel: (514) 934-1934 x31531
Fax: (514) 843-1693
Email: amin.andalib@mcgill.ca

Clinical Epidemiology / Outcomes Research

- Clinical outcomes & quality of care studies in bariatric surgery using population-level & large multi-centric datasets
    - RAMQ/Med-ECHO
    - ACS-NSQIP

- Evaluation of opioid prescription and consumption after hospital discharge following bariatric surgery *(Prospective cohort study; collab with Dr Fiore's lab; grant application ongoing)*
- Combined bariatric surgery and atrial fibrillation ablation in the reduction of atrial fibrillation recurrence *(BAF study; RCT; collab with EP cardio team at MUHC; grant application ongoing)*
- Clinical outcomes and quality assurance of bariatric surgery in Quebec *(RAMQ data available)*
- Prospective cohort study comparing short- & long-term outcomes of laparoscopic biliopancreatic diversion with duodenal switch (BPD-DS) *NCT02792166)*
- Impact of bariatric surgery in morbidly obese patients who are kidney transplant candidates

- Faculty Research Award - Division of General Surgery: $15,000
- QuEST fund – Patient donation: $45,000

- Philippe Bouchard – MSc Epidemiology (2017-2019; completed)

- ASMBS (ObesityWeek), IFSO, SAGES
- Canadian Association of Bariatric Physicians and Surgeons
- Minimally Invasive Surgery Symposium
- Canadian Transplant Summit

1. Andalib A, *Bouchard P, *Alamri H, Bougie A, Demyttenaere S, Court O. Single Anastomosis Duodeno-ileal Bypass with Sleeve Gastrectomy (SADI-S): Short-term Outcomes from a Prospective Cohort Study. *Surg Obes Relat Dis.* 2021 Feb;17(2):414-424.
2. Hajjar R, Lafrance JP, Tchervenkov J, Gingras S, Boutin L, Elftouh N, **Andalib A**, Pescarus R, Garneau PY, Chan G. Successful Surgical Weight Loss with Sleeve Gastrectomy for Morbid Obesity prior to Kidney Transplantation. *Transp Int.* 2021. DOI: 10/1111/TRI.13855.
3. *Bouchard P, Tchervenkov J, Demyttenaere S, Court O, **Andalib A**. Safety and Efficacy of the Sleeve Gastrectomy as a Strategy towards Kidney Transplantation. *Surg Endosc.* 2020 Jun;34(6):2657-2664.
4. *Bouchard P, Demyttenaere S, Court O, Franco EL, **Andalib A**. Surgeon and Hospital Volume Outcomes in Bariatric Surgery: A Population-level Study. *Surg Obes Relat Dis*. 2020 May;16(5):674-681.
5. **Andalib A**, *Bouchard P, Demyttenaere S, Ferri LE, Court O. Esophageal Cancer after Bariatric Surgery: A Population-based Comparative Cohort Study. *Surg Obes Relat Dis.* 2020. DOI: 10.1016/j.soard.2020.12.011.
6. Andalib A, *Alamri H, *Almuhanna Y, *Bouchard P, Demyttenaere S, Court O. Short-term Outcomes of Revisional Surgery after Sleeve Gastrectomy: A Comparative Analysis of Re-sleeve, Roux en-Y Gastric Bypass, Duodenal Switch (Roux en-Y and Single-Anastomosis). *Surg Endosc.* 2020. DOI: 10.1007/s00464-020-07891-z.

Jean-Martin Laberge
MD, FRCSC
jean-martin.laberge@muhc.mcgill.ca

Sherif Emil
MD, CM, FRCSC, FACS, FAAP
sherif.emil@mcgill.ca

Dan Poenaru
MD PhD, FRCSC, FACS, FAAP, FCSC(ECSA)
dan.poenaru@mcgill.ca

Pramod Puligandla
MD, FRCSC, FACS
pramod.puligandla@mcgill.ca

Kenneth Shaw
MD, FRCSC
kenneth.shaw@mcgill.ca

Maeve O'neill Trudeau
MD, CM, MPH, FRCSC
maeve.trudeau@mcgill.ca

Hussein Wissanji
MD, MPH, FRCSC
hussein.wissanji@mcgill.ca

The **Harvey E. Beardmore Division of Pediatric Surgery** at the Montreal Children's Hospital consists of 7 attending surgeons with a broad range of research interests and activities. More than 200 peer-reviewed papers were generated in the last decade with input from students, residents and fellows, most of which are published in specialty journals. These projects cover the entire spectrum of practice in pediatric surgery through various research methodologies, including randomized controlled trials, prospective and retrospective studies, health services research, case-control studies, database analyses, systematic or scoping reviews, guidelines, position papers, editorials, and case reports.

Our special interests include global pediatric surgery, trauma, public health, and congenital anomalies including congenital diaphragmatic hernia (CDH), chest wall anomalies, appendicitis, & colorectal disorders. Continuing with our existing interests, our current research endeavors include patient- and family-centered care, communication in surgery, shared decision-making, patient-reported outcomes, and implementation of pathways related to enhanced recovery after pediatric surgery.

Our division is leading the **Can**adian **Co**nsortium for **R**esearch in **P**ediatric **S**urgery (**CanCORPS**) in multi-centre research. This consortium consists of 15 pediatric surgical centres across Canada collaborating in research to minimize variability in care and optimize patient outcomes through collaboration and innovation. Furthermore, we are trending towards increasing interdisciplinary and multi-institutional collaborations, thus broadening the scope of future research activities. https://rimuhc.ca/cancorps

The division has secured research funding through private grants, including the *Mirella & Lino Saputo Foundation Chair in Pediatric Surgical Education & Patient- and Family-Centered Care*, CIHR funding, as well as an FRQS-funded research scholar career grant.

Several research fellows and graduate students are now engaged in a number of research projects. A full-time research project manager, Elena Guadagno (elena.guadagno@muhc.mcgill.ca) is available to assist with project conception, conduct, research ethics approval and completion.

A personalized research experience can be provided depending upon a candidate's previous research experience and interests. Each surgeon has a particular research focus within the context of pediatric surgery, although significant collaboration occurs within the division. All research is performed on a strong methodological foundation and in a collaborative environment. The next sections summarize ongoing research activity, with current research residents involved in multiple projects. New research residents are encouraged to identify novel research areas in which they may be interested

Follow us **@BeardmorePS**

Global pediatric surgery is a major focus of the division, including several students, residents, and research fellows at varying levels. Presentations at multiple national and international meetings is expected from trainees, with the listed research graduates presenting on average 2-3 times annually.

Students are actively involved in diverse projects, ranging from pediatric trauma care in low-resource settings, capacity assessment in hospitals providing surgical care to children and indicators of pediatric surgical access and care in LMICs. Research in the development of novel scoring systems and DALYs for pediatric surgical conditions is also underway.

The opportunity also exists to become involved with the Global Initiative for Children's Surgery (GICS), an LMIC-centric collaborative organization dedicated to improving access to safe and timely surgical care for children in under-resourced environments.
The **Jean-Martin Laberge Fellowship in Global Pediatric Surgery** is another unique training program for surgical residents and practitioners interested in global pediatric surgery, offered in conjunction with the Centre for Global Surgery at the McGill University Health Centre. This 1- to 2-year long training program is primarily research-focused, and can lead to a Master's or Doctoral degree in Experimental Surgery (Global Surgery track). Fellows are expected to be active participants in the divisional research team, pursuing projects in various global surgical research areas, including burden of disease, access to surgery, human and material resources for surgery, global surgical training, economic valuations of surgical interventions, and others. Fellows are offered the opportunity to participate in at least one surgical mission trip with an attending surgeon through Mercy Ships. On-the-ground research in low-resource settings is optional, but encouraged. Clinical activity within the division of pediatric surgery is possible, depending on licensing requirements. Global Surgery projects related to LMICs include:

- Screening of Neonatal Congenital Anomalies in LMICs
- Management of Anorectal Malformations in LMICs
- Trauma training in LMICs
- Risk adjusting pediatric surgical outcomes in low-resource settings
- Evaluating laparoscopic procedures in LMICs
- Gender Inequity in Pediatric Surgery in Africa SR
- PedSurg inclusion in NSOAPs

Principal Investigators: Drs. Dan Poenaru, Sherif Emil, Maeve Trudeau

Thanks to the *Mirella & Lino Saputo Foundation Chair in Pediatric Surgical Education & Patient and Family-Centered Care*, the Division is active in patient-centered pediatric surgical care processes, patient-reported outcomes, and enhanced recovery from pediatric surgical procedures. These include:

- ERAS – pediatric chest wall repair pathway, patient education survey and patient surveys and tools for appendicitis…
- Perioperative care in Northern Quebec
- Shared decision-making in pediatric surgery and decisional aid development
- Patient reported outcomes in pediatric surgery

Principal Investigators: Drs. Sherif Emil, Dan Poenaru

Multiple single or multi-institutional research projects have successfully been completed by students and residents working in the Division. These studies typically fall into one of three broad categories:

1. **National Database Inquiries**
   a. Canadian Pediatric Surgery Network (CAPSNet)
      i. Gastroschisis Database
      ii. Congenital Diaphragmatic Hernia Database
   b. Canadian Biliary Atresia Registry (CBAR)
   c. National Trauma Data Bank (NTDB)
   d. Quebec Trauma Registry and Canadian Pediatric Injury database (CHIRPP)
2. **Multi-Institutional Clinical Research**
   a. Transanastomotic feeding tubes & stricture rates in esophageal atresia
   b. Pan-Canadian retrospective studies on female fetal abdominal cysts, congenital airway malformations, appendicitis risk stratification…
   c. Congenital Diaphragmatic Hernia projects
3. **Single-Institution Clinical Research**
   a. Multiple projects related to chest wall anomalies conducted through the Shriners' Chest Wall Anomaly Center, including chest wall and spinal deformities after thoracotomy
   b. Various trauma projects
   c. Various projects related to colorectal malformations

Principal Investigators: Drs. Sherif Emil, Pramod Puligandla, Jean-Martin Laberge, Dan Poenaru, Kenneth Shaw, Maeve Trudeau, Hussein Wissanji

Current Research Fellows

- Zoe Atsaidis (MSc candidate)
- Anne-Sophie Besner (MSc candidate)
- Fabio Botelho (PhD candidate, Brazil)
- Alexandra Dimmer (Msc candidate)
- Julia Ferreira (MSc candidate, Brazil)
- Mahshid Mortazavi (Msc candidate)
- Justina Seyi-Olajide (PhD candidate, Nigeria)
- Felix Oyania (PhD candidate, Uganda)
- Sacha Williams (PhD candidate)
- Naomi Wright (PhD candidate, UK)

Past Research Fellows

- Kathryn LaRusso (PhD candidate)
- Nadia Safa (MSc candidate)
- Yasmine Yousef (PhD candidate)
- Pier-Luc Beaudoin (MSc, UdeM)
- Luc Malemo (MSc)
- Etienne St-Louis (PhD)
- Sabrina Wimmer (MSc, Netherlands)

Current Research Students (partial list)
Anudari Zorigtbaatar, Brent Hopkins, Christian Guindi, Mélyssa Fortin, Arthega Selvarajan, Brandon Arulanandam, Dylan Patel, Joseph Sayegh, Laura Pinkham, Minahil Khan, Rana Gaffar, Rim Elosta, Ruxandra Penta, Ryan Antel, Xiya Ma, Sarah Amirali Karmali, Mohamed Khellaf, Alexander Moise, Zaid Al-Azawii, Beatrice Dupont, Corinne Cécyre-Chartrand, Nooshin Roofigari, David Nassim, Bao-lam Pham, Shadi Hadj-Youssef, Zachary Rehany, Mahdi Hassan, Prachi Kumari Patel, Amanda Bianco, Yseult Gibert, Christopher Zwaagstra, Maira Corinne Claudio, Soukaina Hguig, Olivia Serhan, Marina Broomfield, Navid Zuberi, Mathushan Subasri, Ahmed Mahran, Sarah Amirali, Catherine Zhu, Jenny Wang, Asmaa El Mouden, Zena Agabani

The **CommiSur** (**Comm**unication and Innovation **i**n **Sur**gery) is a patient-centered and patient-partnered research hub dedicated to the exploration and improvement of communication processes in surgical care, both surgical care teams.

Across both of these domains we endeavor to innovate technologically through digital and mobile health, precision medicine, augmented intelligence, and mixed reality.

The CommiSur Lab includes over 6 Masters and PhD students, a research project manager and 2 research coordinators, and dozens of medical and other undergraduate students. The lab has earned over $1.5M in competitive national and provincial grants.

A partial list of projects includes:

- Patient-reported outcomes after congenital pediatric surgery (*PROPS*)
- Child- and family-reported experience measures (PREMs)
- Individualized PROMs in pediatric surgery
- Risk communication preferences between surgeons and families
- Health trajectories and transitions after congenital surgery
- Consenting process in pediatric surgery
- *AI-based clinical prediction of appendicitis perforation grade
- Non-technical skills (NOTS) training for trauma team communication
- *Petit-VR*: VR-based pediatric trauma simulation training
- ***Children's Journey*: an AI-enabled mobile app for communication between families of children and the surgical team

Our Clinical Research Coordinator, **Manoja Chandralingam, is focused on the Children's Journey app and *Waseem Abu-Ashour is primarly working on the AI in appendicitis study.

Principal Investigator: Dr. Dan Poenaru

Machine learning algorithms for rendering risk communication more precise, and virtual and augmented reality for creating low-cost, remotely deliverable immersive simulations for trauma team communication.

Projects include:

- Risk communication preferences between surgeons and families
- Consenting process in pediatric surgery
- Artificial Intelligence in risk communication
- Trauma team communication processes
- VR in trauma simulation training

Principal Investigator: Dr. Dan Poenaru
https://commisurlab.ca

Top publications

1. Arulanandam, Brandon; *Selvarajan, Arthega; Piche, Nelson; Sheldon, Signy; Bloom, Robert; Emil, Sherif; Li, Patricia; Janvier, Annie; Baird, Robert; Sampalis, John; Haggerty, Jeannie; Guadagno, Elena; Daniel, Sam; Poenaru, Dan, Use of a risk communication survey to prioritize family-valued outcomes and communication preferences for children undergoing outpatient surgical procedures, J Ped Surg (2022)
2. Arulanandam B, Dorais M, Li P, Poenaru D, The burden of waiting: wait times for pediatric surgical procedures in Quebec and compliance with national benchmarks, Can J Surg, Volume 64, Issue 1, E14-22 (2021)
3. Canadian Congenital Diaphragmatic Hernia Collaborative, Puligandla PS, Skarsgard ED, Offringa M, Adatia I, Baird R,Bailey M, Brindle M, Chiu P, Cogswell A, Dakshinamurti S, Flageole H, Keijzer R, McMillan D, Oluyomi-Obi T, Pennaforte T, Perreault T, Piedboeuf B, Riley SP, Ryan G, Synnes A, Traynor M.CMAJ. 2018 Jan 29;190(4):E103-E112.PMID: 29378870
4. LaRusso K, Baird R, Keijzer R, Skarsgard E, Puligandla P. Standardizing congenital diaphragmatic hernia care in Canada: Implementing national clinical practice guidelines. J Pediatr Surg. 2020 May;55(5):835-843. Epub 2020 Jan 30. PMID: 32085916.
5. Puligandla PS, Baird R, Skarsgard ED, Emil S, Laberge J-M, CAPSNet. Outcome prediction in gastroschisis–The gastroschisis prognostic score (GPS) revisited. J Pediatr Surg 2017;52:718-721.
6. Safa N, Yanchar N, Puligandla P, Sewitch M, Baird R, Beaunoyer M, Campbell N, Chadha R, Griffiths C, Jones S, Kaur M, Le-Nguyen A, Nasr A, Piché N, Piper H, Prasil P, Romao RLP, VanHouwelingen L, Wales P, Guadagno E, Emil S; Canadian Consortium for Research in Pediatric Surgery (CanCORPS). Treatment and Outcomes of Congenital Ovarian Cysts: A Study by the Canadian Consortium for Research in Pediatric Surgery (CanCORPS). Ann Surg. 2022 Feb 15. Epub ahead of print. PMID: 35166261.
7. Safa N, Wei S, Saran N, Guadagno E, Laberge JM, Emil S. Musculoskeletal deformities after thoracic surgery in children: An observational long-term follow-up study. J Pediatr Surg. 2021 Jan;56(1):136-141. doi: 10.1016/j.jpedsurg.2020.09.024. Epub 2020 Oct 6. PMID: 33168178.
8. Wright NJ, Leather AJM, Ade-Ajayi N, Sevdalis N, Davies J, Poenaru D; et al, Mortality from gastrointestinal congenital anomalies at 264 hospitals in 74 low-income, middle-income, and high-income countries: a multicentre, international, prospective cohort study, Lancet, Volume 398, Issue 10297, 325-339 (2021)
9. Yousef F, Laberge J-M, Baird RJ, Canadian Pediatric Surgery Network (CAPSNet): The correlation between time spent in utero and bowel matting in newborns with gastroschisis. J Pediatr Surg 2015;50:755-759
10. Yousef Y, Youssef F, Dinh T, Pandya K, Stagg H, Homsy M, Baird R, Laberge JM, Poenaru D, Puligandla P, Shaw K, Emil S. Risk stratification in pediatric perforated appendicitis: Prospective correlation with outcomes and resource utilization. J Pediatr Surg. 2018 Feb;53(2):250-255. doi: 10.1016/j.jpedsurg.2017.11.023. Epub 2017 Nov 14. PMID: 29223673.

Peter Metrakos, MD, PhD, FRCSC, FACS

peter.metrakos@mcgill.ca

Mission Statement

The study of cancer progression and metastasis. The study of metabolic syndrome, fatty liver disease, insulin resistance, and perioperative metabolic response and recovery.

Bench research

Fatty Liver Disease and Liver Ischemia/Reperfusion Injury

- Mapping of hepatocyte proteome in NAFLD and NASH: A systems Medicine Approach.
- Ischemia/Reperfusion Injury during Liver Transplantation
- The metabolic effect of insulin therapy on patients with chronic Hepatitis C infection
- The metabolic effect of insulin therapy on the quality of organs from brain-dead organ donors
- The role of ER stress and Unfolded Protein Response (UPR) in the development of Hepatocellular Carcinoma

Cancer progression and metastasis:

- The role of the proprotein convertases in cancer progression
- The effect of lipid metabolism in hepatocellular cancer progression, cell line analysis with augmented and knock-down of the perilipin family of proteins which control lipid droplet storage of TAGs.
- The effect of liver regeneration on the progression of liver metastasis (post portal vein embolization and/or liver resection)
- Co-option mechanism of cancer vascularization
- Histological Growth patterns of liver metastasis and their effect on prognosis and choice of therapy (RNAseq, Genomic analysis)

Clinical Trials

Article I. Outcomes projects on colon cancer liver metastasis, hepatocellular carcinoma, and liver transplant patients
Article II. High dose Insulin therapy for patients undergoing major liver resections
Article III. The effect of portal vein embolization on liver tumor volume
Article IV. The use of DC beads in the treatment of HCC
Article V. Phase II Trial: Combination treatment Sorafenib + Y90 for the treatment of unresectable HCC
Article VI. MRI and CT-Scan texture analysis of patients with liver metastasis to predict their Histological Growth patterns

PhD - Obtained

2007 - 2011 Mazen Hassanain, MD, PhD in Experimental Surgery
"Improving Glycogen Liver Content Will Improve Morbidity and Mortality of Major Liver Resections"

2002 - 2009 Tarek Boutros, M.Sc., PhD. in Anatomy and Cell Biology
"Transcriptional Profiling of human liver during the reperfusion phase of transplantation"

2002 - 2006 Anouk Emadali, M.Sc., PhD. in Anatomy and Cell Biology
"Molecular profiling of ischemia reperfusion in human liver"

Ph. D. In Progress

2013 - present Ayat Salman, B.Sc, MSc., Ph.D. Candidate in Family Medicine
"Bio repository and Primary Health Care"

2012 - present Eve Simoneau, MD, Ph. D. Candidate in Experimental Surgery
"Effect of Portal Vein Embolization on Colorectal Liver Metastases"

2012 - present Hussam Alamri MD, Ph.D. Candidate in Experimental Surgery
"Mapping of proteins and phospholipids in hepatocyte lipid droplets"

Masters – Obtained

2008 - 2015 Jeanne Bouteaud, B.A & B.Sc, Masters in Experimental Surgery
"Combined Treatment of patients with advanced Hepatocellular Carcinoma with Sorafinib and Radio-embolization improves overall survival: A Phase II Trial"

2012 - 2015 Zaher Fadel MD, MSc. Masters in Experimental Surgery
"Carcinoembryonic antigen cell adhesion molecule1 (CEACAM1) in metastatic colorectal cancer"

2012 - 2015 Nouran Molla, M.D., Masters in Experimental Surgery
"Does liver regeneration affect the growth of colorectal cancer micrometastases in the remnant liver?"

2010 - 2015 Mohammed Shaheen, M.D., Masters of Science in Experimental Surgery
"Insulin/Glucose Clamp in Patients with HCV Cirrhosis"

2011 - 2013 Rasha AlShaalan, B.Sc, Masters in Experimental Surgery
"Non-invasive Diagnostic Methods for Non-Alcoholic Fatty Liver Diseases"

2011 - 2013 Ayat Salman, B.Sc, Masters in Experimental Surgery
"Gender Affects Patterns of Muscle Mass Loss in Pancreatic Cancer Patients"

2010 - 2012 Janet Kwan, MD, Masters in Experimental Surgery
"The role of Proprotein Convertases 1 and 2 in Colorectal Cancer Liver Metastasis"

2008 - 2011 Mamatha Bhat, MD, Master in Experimental Medecine
"Expression of PCSK9 in Human Heptaocellular Carcinoma"

2009 - 2012 Murad Aljiffry, MD., Masters in Experimental Surgery
"The effect of high dose insulin therapy in the inflammatory state of brain dead organ donors"

2011 - 2013 Rasha AlShaalan, B.Sc, Masters in Experimental Surgery
"Non-invasive Diagnostic Methods for Non-Alcoholic Fatty Liver Diseases"

2011 - 2013 Ayat Salman, B.Sc, Masters in Experimental Surgery
"Gender Affects Patterns of Muscle Mass Loss in Pancreatic Cancer Patients"

2010 - 2012 Janet Kwan, MD, Masters in Experimental Surgery
"The role of Proprotein Convertases 1 and 2 in Colorectal Cancer Liver Metastasis"

2008 - 2011 Mamatha Bhat, MD, Master in Experimental Medecine
"Expression of PCSK9 in Human Heptaocellular Carcinoma"

2009 - 2012 Murad Aljiffry, MD., Masters in Experimental Surgery
"The effect of high dose insulin therapy in the inflammatory state of brain dead organ donors"

2005 - 2009 Theodora Kandeva, Masters in Experimental Surgery
Co-supervised with Dr. Jean Tchervenkov
"Humoral response to carbohydrate antigens in the context of ABO incompatible transplantation and xenotransplantation."

2005 - 2008 Reza Tavana, MD, MSc Experimental Surgery
Co-supervised with Dr. Jean Tchervenkov
"Increased Expression of IL-21 Receptor on B-lymphocytes of Highly Sensitized Renal Transplant Recipients. A possible target for B-lymphocyte antibody production in sensitized renal recipients."

2004 - 2007 Prosanto Chaudhury, MD, Masters of Public Health, Oxford University, Oxford, England
"The role of preoperative chemotherapy in the management of colorectal cancer liver metastases"

2001 - 2004 George Tzimas, MD, FACS, Masters in Experimental Surgery
"Expression of pro-protein convertases in human colorectal cancer liver metastasis"

1999 - 2002 Michael Tan, M.D., Masters in Experimental Surgery
"The role of endothelial cell activation in an in-vitro model of xeno-islet transplantation"

1996 – 1998 Jonathan Fridell M.D, Masters in Experimental Surgery
"Characterization of pig anti-dog xenoantibodies and target xenoantigens on dog endothelial cells and dog platelets"

2012-2015 PhD Candidate Eve Simoneau, MD
Bourses de Formation de Doctorat
Fonds de la Recherche en Sante du Quebec (FRSQ)
"The Prometheus Effect: The Effect of Liver Regeneration on Established and Potential CRC Metastasis" ($64,000)
2011-2015 Fonds de la Recherche en Sante du Quebec (FRSQ)
One of four Principal Investigators
"Towards the Systems Medicine of Fatty Liver Disease"
$1,400,000 for 4 years
2012 - 2017 CIHR Operating Grant: "CEACAM1 in colon cancer progression and metastasis" co-applicant with Dr. Beauchemin as PI applicant. $200,000/year for 5 years
2014-2016 CCSRI innovation grant: "Host genetic determinants of colon cancer metastasis". *(*2012/2013:$100,000), (2013/2014: $99,376), co-applicant with Dr. Riazalhosseini as PI applicant.
2013 – 2015 CCSRI innovation grant: "Integrated molecular histology and imaging mass spectrometry of lipid signatures: application to human colorectal cancer liver metastasis" *(*2013:$100,000), (2014/2015: $98,100),
2013 – 2015 MSc. Candidate – Evette Yassa
Canadian Liver Foundation Graduate Student Award
"Lipid Droplets and Associated Proteins in Hepatocellular Carcinoma"
($40,000)

Full list is available upon request

JEFFREY BARKUN, MD, MSc (Epi.), FRCS, FACS

jeffrey.barkun@muhc.mcgill.ca

I propose a rotation based on the development of tools to carry out surgical epidemiology-based research.
My background in Epidemiology and international networking in HBP Surgery and Surgical research methodology provide a truly unique experience. In general, I will work with 1 resident per year.
There is also an opportunity to get involved with clinical informatics to improve quality of care through my role as chief clinical officer for technology at the MUHC.

Research Highlights

Goals of research rotation:
-Understand surgical research methodology, including randomized trials.
-Perform supervised statistical analysis
-Acquire presentation skills
-Acquire skills in manuscript writing and critical assessment of literature
-Many residents have taken the full 1.5 years to acquire an MSc in Epidemiology, but this is not a requirement.
Ongoing studies:
Most study topics center around MUHC clinical practice, which involves a combination of bilio-pancreatic surgical
cases and ERCPs. We also have access to the very rich McGill liver transplantation database.
Current topics include:
- Description and validation of a classification of biliary injuries after Orthotopic Liver Transplantation
- Surgery vs. ERCP for biliary strictures after liver transplantation
- Clinical predictors of survival after surgery for pancreatic cancer
- Performance of CA-19-9 to predict pancreatic cancer and prognosis
- Randomized trial of abdominal incision for liver transplantation and resection (pending)
- Validation of the CCI, clinical score replacing the Clavien Dindo classification (in assoc. with PA Clavien)

Past supervision

- Mehdi Tahiri- Ongoing
- Jad Abou Khalil – 2015 (MSc epidemiology)
- Sinziana Dumitra -2014(MSc epidemiology)
- Mohammed Jamal - 2013 (MSc experimental sciences)
- Amy Neville – 2012 (MSc epidemiology)
- Marylise Boutros – 2010 (MSc experimental sciences)

4. Establishing a clinic-based pancreatic cancer and periampullary tumour research registery in Quebec. A.L. Smith bsc, C. Bascuñana msc, A. Hall msc,*†A. Salman msc, A.Z. Andrei bsc, A. Volenik msc,*†§H. Rothenmund msc, D. Ferland ba bscn,*‡D. Lamoussenery bscn, A.S. Kamath md,R. Amre md mbbs, D. Caglar md, Z.H. Gao md phd,D.G. Haegert md, Y. Kanber md,# R.P. Michel bsc mdcm,G. Omeroglu–Altinel md# J. Asselah md, N. Bouganim md,P. Kavan md phd, G. Arena md, *J. Barkun md msc*,P. Chaudhury md msc, S. Gallinger md msc,W.D. Foulkes mbbs phd, A. Omeroglu md,P. Metrakos md, and G. Zogopoulos md phd **Current Oncology** – Volume 22, number 2, April 2015
5. Post-Transplant Liver Function Score as an Early Surrogate marker of Long-Term Outcome, Hassanain M, Simoneau E, Madkhali A, Al-Saati N, Aljiffry M, Tchervenkov *J, Barkun* J, Metrakos P. **Ann Transplant**. 2015 Apr 9;20:198-205. doi: 10.12659/AOT.892414.
6. Recommendations for laparoscopic liver resection: a report from the second international consensus conference held in Morioka. Wakabayashi G, Cherqui D, Geller DA, Buell JF, Kaneko H, Han HS, Asbun H, O'Rourke N, Tanabe M, Koffron AJ, Tsung A, Soubrane O, Machado MA, Gayet B, Troisi RI, Pessaux P, Van Dam RM, Scatton O, Abu Hilal M, Belli G, Kwon CH, Edwin B, Choi GH, Aldrighetti LA, Cai X, Cleary S, Chen KH, Schön MR, Sugioka A, Tang CN, Herman P, Pekolj J, Chen XP, Dagher I, Jarnagin W, Yamamoto M, Strong R, Jagannath P, Lo CM, Clavien PA, Kokudo N, *Barkun J*, Strasberg SM**. Ann Surg**. 2015 Apr;261(4):619-29**.**

7. Consensus conference on laparoscopic liver resection: a jury-based evaluation. Clavien PA, *Barkun J*. **Ann Surg**. 2015 Apr;261(4):630-1. Editorial
8. Hepato-pancreato-biliary surgery workforce in Canada.Edwards JP, Bressan A, Dharampal N, Grondin SC, Datta I, Dixon E, Cleary SP, *Barkun JS*, Butte JM, Ball CG. **Can J Surg**. 2015 Jun;58(3):212-5..
9. Expert Intraoperative Judgment and Decision-Making: Defining the Cognitive Competencies for Safe Laparoscopic Cholecystectomy.Madani A, Watanabe Y, Feldman LS, Vassiliou MC, *Barkun JS*, Fried GM, Aggarwal R. **J Am Coll Surg.** 2015 Aug 5. pii: S1072-7515(15)00955-2. [Epub ahead of print]
10. **Chapter in *Blumgart textbook of HPB.*** Ed: Jarnigin and Blumgart : Percutaneous approaches to gallbladder disease, an introduction that includes a technical note on radiological techniques, followed by indications, complications, and finally management guidelines. Co-Authors Jad Abou Khalil, G Zogpoulos , *J Barkun* 2015
11. **Chapter in *Management of Benign Biliary Stenosis***: A Comprehensive Guide. Ed: Vollmer C, Dixon E and May G. (Springer) Management of Benign Biliary Stenosis: A Comprehensive Guide" . Chapter: Intraoperative Management of Bile Duct Injuries by Non-Biliary Surgeon. Co-authors: Chaudhury, P, *Barkun J* 2015

Steven Paraskevas MD, PhD FRCSC FACS

Email: steven.paraskevas@mcgill.ca
D5.5736
Royal Victoria Hospital
1001 Decarie Blvd.
H4A 3J1

Other information at:
isletlab.org
@s_paraskevas

Jean Tchervenkov MD PhD FRCSC FACS

jean.tchervenkov@mcgill.ca

The Transplant and Immunology Research Lab has several active lines of investigation linked under the theme of organ/cellular injury signalling and their link to innate and adaptive immune mechanisms. Fundamentally, this work is connected to the biological processes involved in organ and cellular transplantation, and the development of donor-specific immune responses. However, the concepts we work on have wider applicability, in the study of tissue injury, inflammation, sepsis and autoimmune diseases. If your interests fall in some of these areas, you may also find our lab a place in which to develop a research project.

Work done in our lab includes fundamental bench research, translational work with human clinical samples from donors or recipients (including the study of ex-vivo preserved organs) as well as database driven studies of the transplant recipient population. Recent projects include:

1. The measurement of extracellular vesicles produced by human islets as carriers of autoantigen and stimuli of autoimmune diabetes.
2. Extracellular vesicles in kidney perfusates as markers of graft injury and immunological risk
3. The function and cytokine expression on T & B lymphocytes in kidney transplant recipients that are highly sensitized
4. Regulatory T-cell functional status and immunological risk in transplant recipients
5. Database analysis and looking at our results with expanded criteria renal transplant donors and immediate renal transplant function recovery and long term allograft survival

The Investigators

Drs. Paraskevas and Tchervenkov have, combined, over 40 years of experience in mentoring research trainees and publishing scientific work.

Team and Environment

The Transplant Research Lab benefits from the full time work of Dr. Sarita Negi, our Research Associate, whose breadth of experience allows her to train and supervise most of our students from the perspective of experimental methodology, troubleshooting and study design and presentation. Sarita is based at the RI-Glen, in our lab space on E2(W). The Islet Lab Manager, Marco Gasparrini, is in charge of the 2200 sq. ft. MUHC Islet Transplant Laboratory, a state-of-the-art facility at 420 Dr. Penfield Avenue in the Genome Building. Marco's expertise includes islet isolation and assessment, biobanking, and SOP design and management.

The Transplant Research Lab benefits from the full time work of Dr. Sarita Negi, our Research Associate, whose breadth of experience allows her to train and supervise most of our students from the perspective of experimental methodology, troubleshooting and study design and presentation. Sarita is based at the RI-Glen, in our lab space on E2(W). The Islet Lab Manager, Marco Gasparrini, is in charge of the 2200 sq. ft MUHC Islet Transplant Laboratory, a state-

of-the-art facility at 420 Dr. Penfield Avenue in the Genome Building. Marco's expertise includes islet isolation and assessment, biobanking, and SOP design and management.

Most of our lab work is performed at the RI-Glen, where we have 2 bays on level E2(W) of the CTB. There, we also have access to a variety of core facilities relevant to our work, including flow cytometry and CytoFlex, cell imaging and small animal surgery. In addition, the Islet Transplant Lab offers a fully equipped clean room for cell purification and culture and additional generic lab space. Trainees wishing to do database research have workspaces available on D5 at the RVH, close to our transplant database manager and the transplant clinic.

Our Network

The investigators are part of the new Centre of Excellence in Translational Immunology, a trans-programmatic research group at the RI-MUHC led by Dr. Ciro Piccirillo. The Centre provides valuable collaborations in our particular field and is a focus for collaborative grants and fundraising, student training and academic presentations.

A. Rutman (Ph.D. enrolled)
C. Hasilo (Ph.D. enrolled)
M-T. Nguyen (Ph.D. enrolled) (FRQS bursary awardee)
E. Fryml (M.Sc. 2015)(FRQS bursary awardee)
T. Kandeeva (M.Sc. 2014)
R. Tavana (M.Sc. 2013)
S. Kalyanasundaram (M.Sc. 2011)
A. Jetha (M.Sc. 2010)
S. Park (M.Sc. 2008)
J. Tector (Ph.D. 2004)
A. DiCarlo (M.Sc. 2004)

Canadian National Transplant Research Program (CIHR) - $200,000, 2013-18
Astellas Pharma-MUHC Transplant Research Program - $90,000, 2016-2019
CIHR Project Grant - Bridge fund - $30,000, 2017-18
We are also funded by collaborative work supported by the following entities:
Juvenile Diabetes Research Foundation
Liana's Dream Foundation

The investigators have authored over 160 publications, of which 40 have been in the last 5 years. About 1/3 of these have been first authored by residents at McGill. Some relevant examples:

1. CP Hasilo, S Negi, I Allaeys, N Cloutier, A Rutman, M Gasparrini, E Bonneil, P Thibault, E Boilard, **S Paraskevas**, Presence of diabetes autoantigens in extracellular vesicles derived from human islets. *Sci Rep,* 2017 Jul 10;7(1):5000.

2. S Wan, M Cantarovich, I Mucsi, D Baran, **S Paraskevas**, J Tchervenkov, Early renal function recovery and long-term graft survival in kidney transplantation. *Transplant Int.* 2016 May; 29(5):619-26.

3. MT Nguyen, E Fryml, SK Sahakian, S Liu, M Cantarovich, M Lipman, JI Tchervenkov, **S Paraskevas,** Pre-transplant recipient circulating CD4+CD127lo/-TNFR2+ Treg: a surrogate of Treg suppressive function and predictor of delayed and slow graft function after kidney transplantation, *Transplantation,* 2016 Feb; 100(2):314-24.

George Zogopoulos, MD, PhD, FRCSC

Associate Professor of Surgery and Oncology

Scientist, the Research Institute of the McGill University Health Centre and the Rosalind and Morris Goodman Cancer Research Centre

Tel. 514 934 1934 ext. 36306
Email: george.zogopoulos@mcgill.ca

PhD/MSc candidate in Experimental Surgery, Experimental Medicine or Human Genetics.

Past Graduate Students:
Zoe Andrei (MSc, Experimental Medicine)
Alyssa Smith (PhD, Experimental Medicine, MD-PhD Program)
Patrick Park (MSc, Experimental Medicine)
Cavin Wong (MSc, Human Genetics)

Current Graduate Students:
Yifan Wang (PhD, Experimental Surgery)
Amanda Tanti (MSc, Experimental Medicine)
Yen-I Chen (MSc, Experimental Medicine)
Madelyn Abraham (PhD, Experimental Medicine)
Tatiana Lenko (MSc, Human Genetics)

I am a clinical research scholar of the Fonds de recherche du Québec studying the genetics and onco-genomics of pancreatic cancer. I established and direct the Québec Pancreas Cancer Study, a familial research registry, which consists of clinical, family history and epidemiologic data as well as biospecimens and patient-derived tumour xenograft models. By integrating the QPCS into the clinical practice unit at the MUHC, we have improved access to genetic counselling and testing for patients in the ambulatory setting. The QPCS infrastructure has facilitated collaborations with individual scientists and participation in multi-centre initiatives and consortia, such as Pancreatic Cancer Genetic Epidemiology Consortium (PACGENE). Together with colleagues from other Canadian centres, we have established the Canadian Pancreatic Oncology Network (PancOne) and the pan-Canadian Pancreatic Cancer Profiling for Individualized Care (EPPIC) study. Over the next 5 years, we will build a knowledge bank of integrated tumour molecular signatures and outcome data from 400 cases with advanced pancreatic cancer from across Canada to classify pancreatic cancer into clinical subtypes. This translational research infrastructure allows for trainees to be integrated into a pan-Canadian research program, including opportunities for research trainees with a clinical background to contribute to the program's monthly multicenter molecular tumour board.

Trainees in my lab undertake projects that are focused on the genetics, onco-genomics and therapeutics of pancreatic cancer. A major research area of our lab is the pancreatic cancer subtype that arises form germline mutations in *BRCA2* and other genes involved in homology directed DNA repair. My lab has also contributed to studies investigating novel therapeutic targets and biomarkers more broadly. We have conducted and contributed to genetic and genomic studies demonstrating the heterogeneity of hereditary pancreatic cancer and the evolution of this disease.

Tarek Razek
MD, FRCSC, FACS
Montreal General Hospital
L9.505
514-934-1934 ext. 43675
tarek.razek@mcgill.ca

Kosar Khwaja, MD, FRCSC
kosar.khwaja@mcgill.ca

Paola Fata MD, FRCSC, FACS
paola.fata@mcgill.ca

Dan Deckelbaum, MD, MPH, FRCSC, FACS
dan.deckelbaum@mcgill.ca

Jeremy Grushka MD, FRCSC
jeremy.grushka@mcgill.ca

Evan Wong, MD, MPH, FRCSC
evan.wong@mcgill.ca

Our research group has a broad range of interests that reflects our expansive scope of practice. We meet biweekly to provide feedback and support to trainees, and to brainstorm novel research ideas. Trainees are mentored throughout the entire research continuum and have access to databases, methodological assistance as well as travel support for conference presentations. Our particular areas of focus include:

- Clinical Epidemiology/Outcomes Research
    - Trauma
    - Acute Care Surgery
    - Critical Care
- Disparities in Access to Surgical and Trauma Care Research
    - Northern Quebec (Nunavik and Cree Territories)
    - Canadian Indigenous Populations
    - Other Vulnerable Populations
- Global Surgery Research
    - Needs Assessments
    - Trauma Registries
- Surgical and Trauma Education Research
    - Formative Evaluations
    - Curriculum Development
    - Trauma Bay Quality Improvement
- Collaborative Multi-Institutional Research
    - Trauma Association of Canada (TAC)
    - Eastern Association for the Surgery of Trauma (EAST)
    - Canadian Collaboration of Urgent Care Surgery (CANUCS)
    - Canadian Critical Care Trials Group (CCCTG)

- Predictors of clinical deterioration and ICU admission in trauma patients transferred from Northern Quebec to a Level 1 Trauma Center: A retrospective cohort study
- Trauma and Acute Surgical Care in Northern Quebec: A patient-centered survey of processes of care
- Improving the quality of Trauma and Acute Surgical Care in Northern Quebec: Quantifying current capacity to target future interventions
- Outcomes Among Trauma Patients with Duodenal Leak Following Primary vs Complex Repair of Duodenal Injuries: An Eastern Association for the Surgery of Trauma Multicenter Trial
- Evaluating nurses' preparedness and training in managing critical incidences: A survey in Quebec
- Utility of repeat imaging in the nonoperative management of high grade solid organ injury: Searching for the rogue pseudoaneurysm
- Beware the left sided hemothorax in penetrating injuries to the cardiac box: Advocating for routine pericardial window
- Managment of retained hemothroax: A national survery of the trauma association of canada (TAC) trauma centres
- Enhanced Recovery Pathway for Trauma Laprotomy

Please e-mail our project manager Steven Di Marco (steven.dimarco@muhc.mcgill.ca) for access to our online list of all current projects.

Montreal General Hospital Foundation
Canadian Red Cross
Grand Challenges Canada
Tomlinson Award
Molson Award

American College of Surgeons (ACS)
American Association for the Surgery of Trauma (AAST)
Trauma Association of Canada (TAC)
Eastern Association for the Surgery of Trauma (EAST)
Canadian Association of General Surgeons (CAGS)
Society of American Gastrointestinal and Endoscopic Surgeons (SAGES)

1. Wu S, Iqbal S, Giroux M, Alam N, Campisi J, Razek T, Deckelbaum D, Grushka J, McKendy K, Wong E, Marcoux J, Khwaja KA. Penn State equation versus indirect calorimetry for nutritional assessment in patients with traumatic brain injury. Can J Surg. 2022 May 11;65(3):E320-E325.
2. Moore L, Bérubé M, Tardif PA, Lauzier F, Turgeon A, Cameron P, Champion H, Yanchar N, Lecky F, Kortbeek J, Evans D, Mercier É, Archambault P, Lamontagne F, Gabbe B, Paquet J, Razek T, Stelfox HT; Low-Value Practices in Trauma Care Expert Consensus Group. Quality Indicators Targeting Low-Value Clinical Practices in Trauma Care. JAMA Surg. 2022 Apr 27:e220812
3. Alnumay A, Caminsky N, Eustache JH, Valenti D, Beckett AN, Deckelbaum D, Fata P, Khwaja K, Razek T, McKendy KM, Wong EG, Grushka JR. Feasibility of intraoperative angioembolization for trauma patients using C-arm digital subtraction angiography. Eur J Trauma Emerg Surg. 2022 Feb;48(1):315-319.
4. Moon J, Pop C, Talaat M, Boulanger N, Perron PA, Deckelbaum D, Grushka J, Wong EG, Razek T. Trauma in northern Quebec, 2005-2014: epidemiologic features, transfers and patient outcomes. Can J Surg. 2021 Sep 1;64(5):E527-E533.
5. Johnstone J, Meade M, Lauzier F, Marshall J, Duan E, Dionne J, et al; Prevention of Severe Pneumonia and Endotracheal Colonization Trial (PROSPECT) Investigators and the Canadian Critical Care Trials Group. Effect of Probiotics on Incident Ventilator-Associated Pneumonia in Critically Ill Patients: A Randomized Clinical Trial. JAMA. 2021 Sep 21;326(11):1024-1033. doi: 10.1001/jama.2021.
6. Ewbank C, Stewart B, Bruns B, Deckelbaum D, Gologorsky R, Groen R, Gupta S, Hadley M, Harris MJ, Godfrey R, Jackson J, Leppäniemi A, Malone DL, Newton C, Traynor MD Jr, Wong EG, Kushner AL. Introduction of the Surgical Providers Assessment and Response to Climate Change (SPARC2) Tool: One Small Step Toward Reducing the Carbon Footprint of Surgical Care. Ann Surg. 2021 Apr 1;273(4):e135-e137.
7. Ewbank C, Stewart B, Bruns B, Deckelbaum D, Gologorsky R, Groen R, Gupta S, Harris MJ, Godfrey R, Leppäniemi A, Malone DL, Newton C, Traynor MD Jr, Wong EG, Kushner AL. The Development of a Surgical Care and Climate Change Matrix: A Tool to Assist With Prioritization and Implementation Strategies. Ann Surg. 2021 Feb 1;273(2):e50-e51.
8. Bekdache O, Paradis T, Bracco D, Elbahrawy A, Khwaja K, Deckelbaum DL, Fata P, Beckett A, Razek T, Grushka J. Intermittent use of resuscitative endovascular balloon occlusion of the aorta in penetrating gunshot wound of the lower extremity. Can J Surg. 2019 Dec 1;62(6):E9-E12
9. Prakash I, Neves O, Cumbe E, Hamadani F, Razek T, Fata P, Beckett A, Khwaja K, Grushka J, Wong EG, Jacobe M, de Costa A, Deckelbaum DL, Yohannan P. The Financial Burden of Road Traffic Injuries in Mozambique: A Hospital-Related Cost-of-Illness Study of Maputo Central Hospital. World J Surg. 2019 Dec;43(12):2959-2966.
10. Wang Y, Alnumay A, Paradis T, Beckett A, Fata P, Khwaja K, Razek T, Grushka J, Deckelbaum DL. Management of Open Abdomen After Trauma Laparotomy: A Comparative Analysis of Dynamic Fascial Traction and Negative Pressure Wound Therapy Systems. World J Surg. 2019 Dec;43(12):3044-3050.
11. Felizaire MR, Paradis T, Beckett A, Fata P, Grushka J, Johnson W, Khwaja K, Meara JG, Ndayisaba G, Prakash I, Razek T, Somprasong T, Wong E, Yohannan P, Deckelbaum DL. Perioperative Mortality Rates as a Health Metric for Acute Abdominal Surgery in Low- and Middle-Income Countries: A Systematic Review and Future Recommendations. World J Surg. 2019 Aug;43(8):1880-1889.
12. Bekdache O, Paradis T, Shen YBH, Elbahrawy A, Grushka J, Deckelbaum D, Khwaja K, Fata P, Razek T, Beckett A. Resuscitative endovascular balloon occlusion of the aorta (REBOA): indications: advantages and challenges of implementation in traumatic non-compressible torso hemorrhage. Trauma Surg Acute Care Open. 2019 Apr 15;4(1):e000262.
13. De Freitas S, Wong EG. Air in the Spleen. N Engl J Med. 2019 Aug 8;381(6):566.

14. Hamadani F, Razek T, Massinga E, Gupta S, Muataco M, Muripiha P, Maguni C, Muripa V, Percina I, Costa A, Yohannan P, Bracco D, Wong E, Harper S, Deckelbaum DL, Neves O. Trauma Surveillance and Registry Development in Mozambique: Results of a 1-Year Study and the First Phase of National Implementation. World J Surg. 2019 Jul;43(7):1628-1635.
15. Bekdache O, Paradis T, Shen YBH, Elbahrawy A, Grushka J, Deckelbaum DL, Khwaja K, Fata P, Razek T, Beckett A. Resuscitative endovascular balloon occlusion of the aorta (REBOA): a scoping review protocol concerning indications-advantages and challenges of implementation in traumatic non-compressible torso haemorrhage. BMJ Open. 2019 Feb 19;9(2):e027572.

Tarek Razek
MD, FRCSC, FACS
Montreal General Hospital
L9.505
514-934-1934 ext. 43675
tarek.razek@mcgill.ca

Dan Deckelbaum, MD, MPH, FRCSC, FACS
dan.deckelbaum@mcgill.ca

Jeremy Grushka MD, FRCSC
jeremy.grushka@mcgill.ca

Kosar Khwaja, MD, FRCSC
Kosar.khwaja@mcgill.ca

Evan Wong, MD, MPH, FRCSC
evan.wong@mcgill.ca

Dr. Dan Deckelbaum - Co-director

Dr. Dan Deckelbaum is assistant professor at the Divisions of Trauma and General Surgery at the McGill University Health Centre (MUHC), associate member of the Department of Epidemiology, biostatistics and occupational health at McGill University, and honorary associate professor of the National University of Rwanda. He obtained his subspecialty training in trauma surgery and critical care at Jackson Memorial Hospital in Miami. During his fellowship he also completed a Masters of Public Health at the University of Miami.

In addition to his passion for clinical practice, he has developed an avid interest in global surgical education and development, as well as disaster preparedness and response, establishing and co-directing the MUHC Centre for Global Surgery. His interest in global health is founded upon on-site clinical experience in government hospitals in East Africa as well as disaster response activities. This clinical experience is the basis for ongoing capacity building programs in resource limited settings across the globe. This includes education programs in resource limited setting.

Dr Tarek Razek - Co-director

Dr. Tarek Razek is the trauma program director and the chief of the division of trauma surgery at the McGill University Health Center (MUHC) since 2004. He completed his postgraduate training in trauma surgery and critical care at the University of Pennsylvania. His interest in global surgical issues began early in his career with participation in the medical educational programs of the Canadian Network for International Surgery (CNIS) in Tanzania and Ethiopia. He has continued to participate in and develop medical educational programs over the past ten years, especially the Trauma Team Training program. He has been the Chair of the Board of the CNIS, which oversees hundreds of surgical, obstetric, and injury prevention programs predominantly in sub-Saharan Africa. Additionally, He has been active in the area of disaster response in the regional, national and international arenas acting as chair of the disaster committee for the Trauma Association of Canada and participating as part of the Canadian federal Disaster response teams deployed to support surgical services at the Vancouver Olympics of 2010. He consulted for the preparations of the Euro 2012 in the Ukraine.

Mission Statement *The divisions of trauma and general surgery at the MUHC have recognized the impact of injury and acute surgical disease, and have been committed to addressing this major problem.*
Our ultimate goal is to reduce injury and acute surgical disease-related morbidity and mortality in low- and middle- income countries through local capacity building involving a multidisciplinary approach.
Specifically, we are currently involved in education programs, research programs, on-site clinical work, exchange programs, and trauma system development in several East African nations and most recently in Haiti.
These programs have been implemented through the development of strong local alliances with universities, hospitals, and governments, in the respective nations, setting the foundation for long-lasting partnerships with a common vision.

Operative interventions performed at Kigali Central University Hospital: Descriptive epidemiology
There is a paucity of literature regarding the operative interventions performed in resource-limited settings. This project will consist of a comprehensive review of all operative procedures performed at CHUK between December 2010 and December 2011 patient demographics and surgical procedure performed (General Surgery, Urology, Neurosurgery, Orthopedic Surgery, Obstetrics and Gynecology or Otorhinolaryngology). Approximately 1,500 cases will be reviewed. This evaluation will have a significant contribution to future capacity building interventions.

Student motivators for choice of postgraduate training in Rwanda
The driving forces in the decision - making for choice of postgraduate physician training in resource limited settings is unknown. A survey of all medical students at the National University of Rwanda will elucidate some of the local factors influencing medical student decision-making in their choice of postgraduate training. This will be compared to medical students at McGill University. Improvements in enrolment and interest in target specialties will be based on the knowledge of such current motivating factors.

Program evaluation in resource limited settings
With the collaborative implementation of one of an academic surgical education programs in Rwanda, a simultaneous program evaluation was instituted. Surgical program evaluations in such settings are rare. These evaluations are multi-faceted and continue to improve program design based on local needs.

Burden of trauma in a resource-limited setting : Dar Es Salaam, Tanzania
The WHO has recently elucidated the contribution of injury to the global burden of disease through the Global Burden of Disease Project. Nonetheless, hospital based trauma registries are still lacking. This is the largest analysis of a hospital based trauma registry implemented in 2006 in resource-limited settings. The pilot study of over 4,500 injured patients is underway revealing crucial information regarding injury epidemiology and forms the basis for registry development and injury prevention strategies.

Trauma Team Training: implementing successful multidisciplinary training programs in resource limited settings. A successful paradigm for local program independence
Using the "train the trainor" model, after the first administration of the Trauma Team Training program, A three day course focusing on the multidisciplinary approach to the injured patient, instructors for the future independent course administration were trained. Since the first course administration eight years ago, the course has been administered by local physicians every three months. A descriptive evaluation of the independent course administration and regional dissemination will now ensue.

Burden of trauma in a resource-limited setting : Haiti
Similar to the Tanzanian study, this project is being implemented.

Burden of trauma in a resource-limited setting : Mozambique
Similar to the Tanzanian study, this project is being implemented. It utilizes a unique electronic trauma registry application tool that will allow for the trauma registry to be scaled up nationally within 1-2 years.

Duty Hour restrictions in Quebec and their impact on resident well being and training.
The duty hour restrictions in Quebec represent a further curtailment to the current 80-hour model in the U.S., which was in effect the model that all Canadian programs was using since the late 90s. We are studying the impact these controversial laws are causing.

Global surgical interventions: history, the present and future
Literature review of all global surgical interventions, paradigms, and patterns with recommendations for future effective surgical capacity- building interventions.

Improving the Quality of Trauma and Acute Surgical Care in Northern Quebec
Delivering trauma care to the population of Northern Quebec presents unique challenges. This multifaceted project aims to quantify and evaluate the current resources in place as well as to describe the epidemiology of trauma and acute surgical diseases in Northern Quebec. This will be done through a prospective database in collaboration with various stakeholders of the Régie régionale de la santé et des services sociaux du Nunavik (RRSSSN).

Wong EG, Gupta S, Deckelbaum DL, Razek T, Kamara TB, Nwomeh BC, Haider AH, Kushner AL. The International Assessment of Capacity for Trauma (INTACT): An index for trauma capacity in low-income countries. Journal of Surgical Research. 2014 Aug;190(2):522-7. doi: 10.1016/j.jss.2014.01.060.

Wong EG, Gupta S, Deckelbaum DL, Razek T, Kushner AL. Prioritizing injury care: A review of trauma capacity in low and middle-income countries. Journal of Surgical Research. 2015 Jan;193(1):217-22. doi: 10.1016/j.jss.2014.08.055.

Wong EG, Razek T, Luhovy A, Mogilevkina I, Prudnikov Y, Klymovitskyy F, Yutovets Y, Khwaja KA, Deckelbaum DL. Preparing for Euro 2012: Developing a hazard risk assessment. Prehospital and Disaster Medicine. 2015 Apr;30(2):187-92. doi: 10.1017/S1049023X15000096.

Wong EG, Razek T, Elsharkawi H, Wren SM, Kushner AL, Giannou C, Khwaja KA, Beckett A, Deckelbaum DL. Promoting quality of care in disaster response: a survey of core surgical competencies. Surgery. 2015 Jul;158(1):78-84. doi: 10.1016/j.surg.2015.02.011.

Wong EG, Deckelbaum DL, Razek T. Global access to surgical care: Moving forward. Lancet Global Health. 2015 3(6): e298-e9. doi: 10.1016/S2214-109X(15)00004-2.

Wong EG, Ntakiyiruta G, Rousseau MC, Ruhungande L, Kushner AL, Liberman AS, Khwaja K, Dakermandji M, Wilson M, Razek T, Kyamanywa P, Deckelbaum DL. Acute care surgery in Rwanda: Operative epidemiology and geographical variations in access to care. Surgery. 2015 Jul;158(1):37-43. doi: 10.1016/j.surg.2015.04.012.

Ntakiyiruta G, Wong EG, Rousseau MC, Ruhungande L, Kushner AL, Liberman AS, Khwaja K, Dakermandji M, Wilson M, Razek T, Kyamanywa P, Deckelbaum DL. Trauma care and referral patterns in Rwanda: Implications for trauma system development. Canadian Journal of Surgery. 2016 Feb;59(1):35-41. doi: 10.1503/cjs.008115.

Hamadani F, Razek T, Massinga E, Gupta S, Muataco M, Muripiha P, Maguni C, Muripa V, Percina I, Costa A, Yohannan P, Bracco D, Wong EG, Harper S, Deckelbaum DL, Neves O. Trauma surveillance and registry development in Mozambique: Results of a 1-year study and the first phase of national implementation. World Journal of Surgery. 2019 April 19 doi: 10.1007/s00268-019-04947-7.

Felizaire MR, Paradis T, Beckett A, Fata P, Grushka J, Johnson W, Khwaja K, Meara JG, Ndayisaba G, Prakash I, Razek T, Somprason T, Wong EG, Yohannan P, Deckelbaum DL. Perioperative mortality rates as a health metric for acute abdominal surgery in low- and middle-income countries: A systematic review and future recommendations. World Journal of Surgery. 2019 April 5. doi: 10.1007/s00268-019-04993-1.

Prakash I, Neves O, Cumbe E, Hamadani F, Razek T, Fata P, Beckett A, Khwaja K, Grushka J, Wong EG, Jacobe M, De Costa A, Deckelbaum DL, Yohannan P. The financial burden of road traffic injuries in Mozambique: A hospital-related cost-of-illness study of Maputo Central Hospital. World Journal of Surgery 2019 Sep 10. doi: 10.1007/s00268-019-05152-2.

Points of Interest:

This is a research project on medical education using virtual online patients with an emphasis on exploring various aspects of clinical reasoning and entrustable professional activities (EPAs). The purpose is to improve clinical teaching in an effective and engaging manner that provides a forum for students at all levels to apply didactic knowledge in a clinical context.

Some details:

Virtual patients (VPs) are an emergent mid-level fidelity simulation technology that are effective decision-based learning strategies. They usually follow lectures and readings and precede Simulation Centre activities and better prepare students for work in the clinical areas. VPs align with McGill's new outcome and competency-based curricula, provide required clinical scenarios for accreditation and provide access to clinical situations not frequently available. They help learners identify and address knowledge gaps, improve clinical analysis and reasoning skills and can support the development of EPAs.

David Fleiszer, MD FRCSC
david.fleiszer@mcgill.ca

Nancy Posel, PhD
nancy.posel@mcgill.ca

At McGill, VPs are used as core curriculum in the clerkship trauma rotation, as part of the 'boot camp' experience for residents, and more recently, as a teaching module on UTIs designed for hospital staff.

Features of Virtual Patients include:

- Active and interactive decision-making
- Opportunities for medical problem-solving associated with realistic outcomes, pattern recognition and internalization of illness scripts
- Multiple assessment features
- Associated with rich databases for tracking student performance, and associated metrics that can be used for assessment and research
- Immediate, continuous and iterative feedback and exemplars of expert practice with rationales
- Access to resources, exercises in evidence-based medicine
- Supportive of collaborative interprofessional strategies

Underlying Pedagogical Frameworks:

- Principles of Adult Learning
- Social Constructivism
- Cognitive apprenticeship
- Experiential learning
- Situated learning
- Just-in-Time Learning
- 4Component/Instructional Design (4C/ID)

Ipshita Prakash
MD, MSc, FRCSC
ipshita.prakash@mcgill.ca

"We have a responsibility to make sure that patients have access to the breast cancer treatment, preventative care and clinical trials they need in a timely manner regardless of their socioeconomic, cultural, or educational background."

Stephanie M. Wong
MD, MPH, FRCSC
sm.wong@mcgill.ca

"It is such a privilege to treat women with breast cancer and take care of those at high risk for developing breast cancer. They are an incredibly strong and courageous patient population."

Breast cancer is the most common cancer in women in Canada and is the most common cause of cancer-related death in women globally. The McGill Breast Outcomes Research Group is dedicated to studying the epidemiology, delivery, and quality of breast cancer care. The vision of our lab is to study the impact of breast cancer through the delivery continuum – from the individual patient to the healthcare system – and to propose tangible solutions to improving oncologic outcomes and patient experience through a patient-centered lens.

This lab was founded by Dr. Prakash and Dr. S. Wong and is led by Dr. Prakash. We also work closely with Dr. Meterissian's and Dr. Meguerditchian's labs making it a true collaboration between the JGH, MUHC and St. Mary's Hospital. Trainees get the advantage of having the widest set of mentors and resources (including all 3 institutional databases) that we can provide. Through this collaborative, you will have access to population-level provincial and U.S. databases to conduct epidemiology research. We also have access to a biostatistician who supports us through the necessary methodologies. Our ultimate aim is to assist you in achieving your own career goals, be that an independent research career or otherwise, and to show you how rewarding (and FUN) a research career can be!

While we may be the new kids on the block, we are a highly productive lab that aims to submit at least 3-4 abstracts to the major oncology conferences each year, including but not limited to the Society of Surgical Oncology (SSO), American Society of Breast Surgeons (ASBrS), American Society of Clinical Oncology (ASCO), European Society of Surgical Oncology (ESSO) annual conferences as well as the San Antonio Breast Cancer Symposium (SABCS). I am pleased to report that since our inception 1.5 years ago, we have already surpassed that target.

Current Research Opportunities

For interested trainees, we have several ongoing projects covering 4 major streams: -

(Please see Dr. Meterissian's and Dr. Meguerditchian's sections for their ongoing and published works.)

Breast Cancer-Related Financial Toxicity Stream

1. Financial toxicity in breast cancer patients publicly funded healthcare systems vs. the U.S.: a scoping review
2. Financial toxicity in early-stage breast cancer patients: understanding its impact on patient experience and addressing a gap in access to care within the Canadian universal healthcare system
3. The longitudinal evolution of financial toxicity through the early-stage breast cancer treatment pathway: a mixed-methods study

Healthcare Disparities/Equity Research Stream

1. Time to breast cancer diagnosis in Canadian refugees and asylum claimants: a retrospective cohort study

High-Risk Breast Cancer Populations Stream

1. Chemotherapy receipt and 21-gene recurrence score in BRCA1/2-associated breast cancer
2. Awareness, candidacy, and factors associated with uptake of endocrine prevention therapy in patients referred to a high-risk breast screening clinic
3. Surgical decision making in genetically high-risk women considering bilateral prophylactic mastectomy: quantifying short- and long-term risks of supplemental surgeries

Breast Surgical Outcomes Stream

1. Significance of intramammary nodal metastases in breast cancer management
2. Management of the axilla in women with early-stage, node-negative breast cancer undergoing mastectomy: a retrospective cohort study
3. Predictors of nodal metastases in early-stage HER2+ breast cancer: deciding on treatment approach with neoadjuvant chemotherapy vs. upfront surgery in clinically node negative patients

***Global Oncology Stream – to be developed (Dr. Prakash is a founding member of the McGill Global Oncology Program and is available to mentor any interested research trainee for a global oncology project. Future investigator-led global oncology projects are in development.)

Please see Dr. Meterissian's and Dr. Meguerditchian's sections for their ongoing and published works.
** Indicates supervised trainees*

1. Moldoveanu D*, Iny E*, Theriault C*, Florea A, **Wong SM**, Meterissian S, Basik M, Boileau JF, Margolese R, **Prakash I**. Margin status and local recurrence in phyllodes tumours of the breast: a Canadian series. [Abstract accepted for poster presentation at SSO 2022; manuscript in preparation].
2. **Wong SM**, Ferroum A*, Apostolova C*, Al Hassan B*, **Prakash I**, Basik M, Boileau JF, Meterissian S, Wong N, Foulkes WD. Incidence of occult breast cancer in BRCA1/2 and other high penetrance mutation carriers undergoing prophylactic mastectomy: when is sentinel lymph node biopsy indicated? [Abstract accepted for poster presentation at SSO 2022; manuscript submitted to *Ann Surg Oncol*].
3. **Prakash I**, Neely NB, Thomas SM, Sammons S, DiLalla GA, Fayanju OM, Hwang ES, Hyslop T, Menendez CS, Plichta JK, Rosenberger LH, Tolnitch L, Greenup RA. Utilization of neoadjuvant chemotherapy in high-risk, node-negative early breast cancer. *Cancer Med*. Jan 2022. doi: 10.1002/cam4.4517.
4. **Prakash I**, Neely NB, Thomas SM, Sammons S, DiLalla GA, Fayanju OM, Hwang ES, Hyslop T, Menendez CS, Plichta JK, Rosenberger LH, Tolnitch L, Greenup RA. Utilization of neoadjuvant chemotherapy in high-risk, node-negative early breast cancer. *Cancer Med*. Jan 2022. doi: 10.1002/cam4.4517.
5. **Tejera D*, Rana M, Basik M, Boileau JF, Margolese R, Prakash I, […] Wong SM. Population-based analysis of non-operative management and treatement patterns in older women with estrogen receptor-positive breast cancer. *Breast Cancer Res Treat*. Sept 2021. Doi:10.1007/s10549-021-06393-3. Epub ahead of print.**
6. **Wong SM, Ajjamada L, Weiss AC, Prakash I, Skamene S, Boileau JF, Pollak MN, Basik M. Clinicopathologic features of breast cancers diagnosed in women treated with prior radiation therapy for Hodgkin lymphoma: Results from a population-based cohort. Cancer. 2021 Dec 17. doi: 10.1002/cncr.34065. Epub ahead of print. PMID: 34919263.**
7. Di Lena E, **Prakash I**, Meterissian S. Axilla: decision-making and planning. In: Breast Cancer Essentials: Perspectives for Surgeons. (2021); pp. 197-208. Switzerland: Springer International Publishing.
8. **Prakash I**, Fayanju OM: Detection and diagnosis of metastatic breast cancer. A Practical Guide to Managing Breast Cancer for Low-Middle Income Countries. Chu QD, Klimberg VS, Anderson BO, Balch CM, Parker CC, Dedey F, Mendez J, Are C (eds.). Chicago: American College of Surgeons, 2021 [in press].
9. Di Lena E*, Hopkins B, **Wong SM,** Meterissian S. Delays in Operative Management of Early-Stage, Estrogen-Receptor Positive Breast Cancer During the COVID-19 Pandemic – A Multi-Institutional Matched Historical Cohort Study. [Accepted, Surgery October 1, 2021]
10. Tejera D*, Rana M, Basik M, Boileau JF, Margolese, R, **Prakash I**, Meguerditchian AN, Muanza T, Monette J, **Wong SM.** Population-Based Analysis of Nonoperative Management and Treatment Patterns in Older Women with Estrogen Receptor-Positive Breast Cancer. Breast Cancer Res Treat 2021 Sep 20. doi: 10.1007/s10549-021-06393-3.
11. **Wong SM,** Basik M, Dumitra S, Margolese R, Ferrario C, Muanza T, Florianova L, Carbonneau A, Boileau JF. Oncologic Safety of Sentinel Lymph Node Biopsy Alone Following Neoadjuvant Chemotherapy for Breast Cancer. Ann Surg Oncol. May 2021;28(5):2621-2629.
12. Greenup RA, **Prakash I**, Sorrenson C. "Choosing Wisely" in breast cancer surgery: drivers of low value care. *Ann Surg Oncol*. May 2020; 27:2577-79.

Funding

- McGill University & Lady Davis Institute start-up funds ($90,000 – Dr. S. Wong and Dr. Prakash)
- Fonds de Recherche Québec – Santé (FRQS): Clinician Scientist Award Junior 1; 2021-2025 (Dr. S. Wong)

Current Lab Members

Fellows
Basmah Al Hassan
Sohayb Faleh

Residents
Dan Moldoveanu

MSc Students
David Tejera
Lucia Patino Melo
Miranda Bassel

Medical Students
Chloé Theriault
Julia Leonard
Devangi Patel
Amina Ferroum
Ericka Iny
Carla Apostolova

Amir Hooshiar, Ph.D. (Mechanical Engineering)
Montreal General Hospital, C9-120
seyed.hooshiarahmedi@mail.mcgill.ca

Research Program: Experimental Surgery
Research Area(s): Surgical robotics, smart and connected wearable devices, surgical innovation, computer modeling and simulation.
Current Projects:

- Fully soft and deployable artificial mitral valve with self-alignment capability
- Robotic system for autonomous intracardiac intervention
- Robotic system for autonomous bone tumor resection
- AI-based system for Xray-free intracardiac vision
- Smart soft-robotic interventional catheters with embedded shape sensing
- Mixed-reality technology for surgical training and intraoperative guidance

1. Hooshiar, Amir, et al. "Magnetostriction-based force feedback for robot-assisted cardiovascular surgery using smart magnetorheological elastomers." *Mechanical Systems and Signal Processing* 161 (2021): 107918.
2. Sayadi, Amir, et al. "Force Estimation on Steerable Catheters through Learning-from-Simulation with ex-vivo Validation." *2021 International Symposium on Medical Robotics (ISMR)*. IEEE, 2021.
3. Jolaei, Mohammad, et al. "Toward task autonomy in robotic cardiac ablation: Learning-based kinematic control of soft tendon-driven catheters." *Soft Robotics* 8.3 (2021): 340-351.
4. Hooshiar, Amir, et al. "Integral-free spatial orientation estimation method and wearable rotation measurement device for robot-assisted catheter intervention." *IEEE/ASME Transactions on Mechatronics* (2021).
5. Alkhalaf, Ali, Amir Hooshiar, and Javad Dargahi. "Composite magnetorheological elastomers for tactile displays: Enhanced MR-effect through bi-layer composition." *Composites Part B: Engineering* 190 (2020): 107888.
6. Hooshiar, Amir, Ali Alkhalaf, and Javad Dargahi. "Development and assessment of a stiffness display system for minimally invasive surgery based on smart magneto-rheological elastomers." *Materials Science and Engineering: C* 108 (2020): 110409.