

University of British Columbia Department of Surgery

# Division of Neurosurgery

## Annual Report 2021/2022

*For year ended July 31, 2022*

*Prepared by Dr. Christopher Honey, UBC Division Head*



THE UNIVERSITY OF BRITISH COLUMBIA

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# Division Overview

## Message from the Head

Our division is built upon the three pillars of clinical excellence, education and research. Over the last year, we have made strides forward in each of these areas. Dr. Mostafa Fatehi has joined the clinical faculty at Vancouver General Hospital and will spearhead the epilepsy surgery program. Dr. Michael Tso has joined the clinical faculty at Kelowna General Hospital and will be providing endovascular support as well as neurosurgical care. The division has continued its work teaching undergraduate medical students, surgical residents and neurosurgical fellows. Each year the Canadian Neurological Sciences Federation offers four awards to neurosurgery residents across all the programs in Canada. This year, UBC won 2 out of the 4 awards amongst over 100 neurosurgical residents. Our Chief Resident scored the highest mark in the country in the preparatory fellowship examination. Outstanding. These objective evaluations of our residents reflect the dedication of our teaching and demonstrate the learning environment at UBC is excellent. This year we published 61 peer-reviewed publications including a multicentre trial led by Dr. Steinbok that appeared in the New England Journal of Medicine. It is my hope that our research productivity will benefit from improving the infrastructure to support clinical research. We now have three research assistants in the adult neurosurgery program. They will provide support for the functional, neurovascular, neuro-oncology and hydrocephalus programs as well as any resident project. The neurosurgical spine group and the pediatric neurosurgery team already have this type of research support in place and their strong productivity reflects their passion for research and the appropriate structure to support their work. Our Division has continued its work through the COVID pandemic thanks to the unflagging support of our nurses, office staff and allied health workers. The following is a brief summary of what we have accomplished over the last year.

## Mission

To provide excellence in patient care, teaching and research and to respect and serve our patients welfare.

## Vision

To be a world class academic institution in the field of neurological surgery, through the pursuit of teaching, research and innovative patient care.

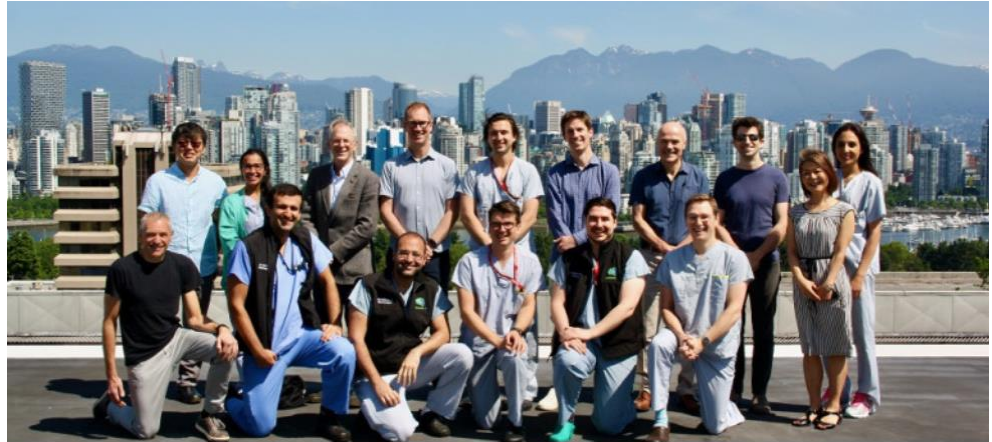
## Values

- To value our patients' rights, individuality and cultural diversity.
- To act in the best interests of our patients & to value our colleagues and fellow workers.
- To respect and value all members of our multidisciplinary team.
- To encourage creativity and innovation among ourselves and our colleagues.
- To pursue the practice of evidence-based medicine & to maintain and advance life long learning.
- To assess continuously the effectiveness and efficiencies of our therapies.
- To share unstintingly our knowledge with our colleagues and students, the care providers of the present and the future & to be sensitive to the needs of our community.
- To value and support our family, friends, and each other.

# UBC Division of Neurosurgery Members

## Vancouver General Hospital

Gary Redekop  
Ryojo Akagami  
Sunny Khangura\*  
Mohamad Sadr (R)  
Christopher Honey  
Mostaf Fatehi  
Scott Paquette  
Alex Rebchuk (R)  
Serge Makarenko  
Peter Gooderham  
Michael Rizzuto (R)  
Thomas Zwimpfer  
Oliver Ayling (R)  
Tamir Ailon  
Sachiyo Kaneko\*  
Ranbir Atwal\*  
Nicolas Dea\*\*  
Charles Haw\*\*



## Victoria General Hospital

Stephen Hentschel  
Daniel Warren  
Richard Reid  
Evan Frangou  
John Sun  
Ian Fleetwood



## Royal Inland Hospital

Richard Brownlee  
Reena Baweja\*  
Fred (Ferdinand) Matanaj\*\*  
Jean-François Chevalier\*\*



## Royal Columbian Hospital

Andrew Lee  
Zurab Ivanishvili  
Michael Nikolakis  
Mark Bigder  
Navraj Heran  
Zulfiqar Kaderali\*  
Mark Matishak\*\*



## Lions Gate Hospital

Abdu Mutat\*  
Ryan Janicki  
Danny Mendelsohn  
Ramesh Sahjpaul  
Sahid Gul





## Kelowna General Hospital

Michael Tso  
Daniel Yavin\*  
Kim Lefevre  
Preneshlin Govender  
Gary Goplen\*  
David Omahen\*\*



## BC Children's Hospital

Faizal Haji  
Mandeep Tamber  
Ash Singhal  
Paul Steinbok



## Associated Members of the Division

Charles Dong  
Wolfram Tetzlaff  
Navjot Chaudhary  
David Fairholm\*\*



\* = not in the Division  
\*\*=not in picture  
R=resident

## New Members

### Dr. Mostafa Fatehi



Mostafa obtained his medical degree and MSc in molecular genetics at the University of Toronto. Early research and clinical exposure to epilepsy surgery and neurosurgical oncology significantly influenced his career aspirations. Upon completing his neurosurgery residency at UBC, Mostafa spent a year with Dr. Walter Hader at the University of Calgary to gain further experience in adult and pediatric epilepsy surgery.

Dr. Fatehi recently joined the Division of Neurosurgery and the epilepsy program at Vancouver General Hospital. His surgical focus includes performing invasive diagnostic studies, various resective cases and the implantation of vagal nerve stimulators. He also focuses on the resection of primary brain tumors and brain metastases. Dr. Fatehi is hoping to expand the available surgical options for patients with brain tumors or epilepsy with interstitial thermal therapy and neuromodulation. He will also look to build an active research group with particular focus on technology development and artificial intelligence-assisted brain image analysis.

### Dr. Michael Tso



Michael was born in Calgary but grew up in Victoria, BC. After graduating from Queen's University in 2005 with a BSch degree in Life Sciences, he obtained his MD in 2009 at UBC. He then proceeded with residency training in neurosurgery at the University of Calgary, while also completing an in-folded PhD degree in Medical Science at the University of Toronto. He successfully defended his PhD thesis – "Identifying New Therapeutics in Experimental SAH," supervised by Dr. Loch Macdonald. After residency, he completed a 2 year neurovascular fellowship in Buffalo.

He has since returned to BC in 2020, working in Kelowna. With stroke neurology and interventional radiology, he has helped establish the stroke thrombectomy program at Kelowna General Hospital. His clinical interests include general neurosurgery as well as neurovascular complex cases.

## Research Coordinators

### Ru Guo



Ru has helped our residents with their research projects over the last few years and has been responsible for collecting data for the hydrocephalus clinic. He has recently left this position and started medical school at UBC. Good luck, Ru!

### Danielle Pietramala



Danielle obtained a Bachelor of Science from the University of British Columbia in 2021 and is the Clinical Research Coordinator for the functional neurosurgery team. She is coordinating a series of clinical trials and recently helped host the 3<sup>rd</sup> World Congress on MVD surgery held in July at UBC.

### Hannah Schoenroth



Hannah has recently started working with the Division of Neurosurgery. Similar to what Ru Guo was doing, Hannah is a Clinical Research Coordinator working alongside Dr. Thomas Zwimpfer in the hydrocephalus clinic as well as Drs. Akagami, Redekop and William Gibson.



## David Chen



David has recently started working with the Division of Neurosurgery as a Clinical Research Coordinator. He is working primarily with Drs. Gooderham and Makarenko. He is developing a prospective registry for patients with vascular and oncology pathologies.

## Isabella Watson



Isabella completed a B.Sc in Neuroscience and Physiology at the University of Toronto. She is the Neurosurgery Research Coordinator at BC Children's Hospital where she works closely with Drs. Singhal, Tamber and Haji. She is responsible for ethics applications, patient recruitment, and data collection for all pediatric neurosurgery research projects.

## Senior Administrative Assistant

Sachiyo Kaneko provides exemplary administrative assistance for the entire Division. She was recently recognized by the Department of Surgery with the Nicky Dorken Award for Excellence in Service.



# Cinical Activities

## Vancouver General Hospital (cranial) – 2021/2022

Procedure	Total
Burr Hole	91
Craniectomy	0
Craniotomy	406
EC-IC bypass	13
Epilepsy procedure	49
ICP Monitoring & EVD	82
Interventional radiology	117
Other procedures by neurosurgeons	39
Peripheral nerve	24
Reconstructive	20
Shunts/reservoirs	100
Skull base	84
Skull base – craniotomy	79
Spinal	8
Stereotactic & related functional procedure	184
	1296

## Vancouver General Hospital (spine) – 2021/2022

Procedure	Total
Spinal intradural	55
Discectomies	50
Laminectomies	50
Spinal Neuromodulation Cases	15
Spinal fusions	200
Other	40
	410

The Division of Neurosurgery at the Vancouver General Hospital (VGH) is the major adult neurosurgical service in the Vancouver Coastal Health Authority. Members of the Division of Neurosurgery care for more than 1,800 patients at Vancouver General Hospital annually. There are approximately 5,000 ambulatory patient visits to the Neurosurgery Clinic at the Gordon and Leslie Diamond Health Care Centre and the Neuro-oncology Clinic at the BC Cancer Agency. The neurosurgical spine service cares for complex spinal conditions and work in collaboration with their orthopedic spine colleagues. This is a unique team collaboration and together they operate on approximately 900 spine cases. The functional neurosurgery program (mainly deep

brain stimulation) is located at the UBC Hospital on campus. Clinical advancements have included introduction of directional DBS electrodes which our team has shown can improve the quality of life in patients with advanced tremor.

## Royal Columbian Hospital

The Division of Neurosurgery at Royal Columbian Hospital is the primary neurosurgical centre in the Fraser Health Authority. The neurosurgical group within Fraser Health Authority operates primarily from the Royal Columbian Hospital with additional elective spinal procedures conducted at the Eagle Ridge Hospital site. Currently the group has 6 full-time adult neurosurgeons. Their subspecialty interests include:

Dr. Mark Bigder (general neurosurgery, pituitary/anterior skull base)  
Dr. Navraj Heran (general neurosurgery, vascular/endovascular)  
Dr. Zurab Ivanishvili (general neurosurgery, trauma, functional neurosurgery)  
Dr. Zul Kaderali (general neurosurgery, vascular/endovascular neurosurgery)  
Dr. Andrew Lee (general neurosurgery, stereotactic radiosurgery, oncology/BC Cancer liaison)  
Dr. Michael Nikolakis (general neurosurgery, complex spinal neurosurgery)

Senior members who are no longer in full active practice include:

Dr. Winston Gittens, retired head of Neurosurgery, retired Site Medical Director for RCH  
Dr. Richard Chan  
Dr. Mark Matishak, former Head of Surgery, RCH

Dr. Kaderali joined the group in the Fall of 2021 from Winnipeg, Manitoba. He has brought his expertise in endovascular neurosurgery as well as his experiences of being involved in the development of a stroke intervention program in Manitoba.

Dr. Andrew Lee continues to be involved in the BC Stereotactic radiation program with BC Cancer. Advancements in these fields have included introducing frameless stereotactic radiosurgery/radiotherapy, as well as developing competencies with stereotactic radiation planning amongst newer radiation oncologists. The majority of these treatments can be conducted locally for the patient at their regional centre rather than needing to be centralized through the Vancouver Cancer Centre.

In the period from April 2021 to March 2022 (the Fraser Health fiscal year):

- 1227 neurosurgical procedures were conducted in the operating room – including scheduled, unscheduled and emergent cases for both cranial and spinal.
  - Operative case volume includes a large number of brain tumor procedures, including primary brain tumors, metastatic disease and extra-axial tumors.
  - Trauma, both cranial and spinal, form a large part of the surgical practice including spinal instrumentation/stabilization, cement stabilization (kyphoplasty) and decompressive surgery.
  - Dr. Bigder started endoscopic transsphenoidal surgery for pituitary tumors in collaboration with Dr. Andrew Thamboo (endoscopic sinus surgery) in 2021.

- 209 neuro-endovascular procedures were conducted in the interventional suite by Drs. Heran and Kaderali. These included the treatment of ruptured/unruptured aneurysms, vascular malformations and dural AV fistulas as well as carotid stenting.
- 45 percutaneous burr hole procedures were performed at the bedside under local anesthetic for chronic subdural hematomas. This has become a common practice for suitable cases to avoid delays in OR access and to decongest the operating room.

The primary focus of the neurosurgical group has been on clinical neurosurgical care within Fraser Health. The group also participates in postgraduate medical education, primarily at the PGY-1 (non-neurosurgeon) level.

## **Kelowna General Hospital**

The Division of Neurosurgery in Kelowna, BC has 5 active members: Dr. Preneshlin Govender (Division Head), Dr. Kim Lefevre, Dr. David Omahen, Dr. Daniel Yavin, and Dr. Michael Tso. All members have a general neurosurgery practice with some subspecialty focus: Dr. Govender has an interest in spine surgery; Dr. Omahen has interests in neuro-oncology/skull base tumours; Dr. Yavin has interests in neuro-oncology and endoscopic intraventricular procedures; Dr. Tso has interests in open cerebrovascular and endovascular procedures.

In 2022, they celebrated 50 years of neurosurgery in Kelowna. Dr. Gary Goplen retired in June 2021 after a distinguished career spanning decades in Kelowna. As a group, they performed approximately 1400+ neurosurgical procedures in 2021-2022.

## **Victoria General Hospital**

The Victoria General Hospital Division of Neurosurgery provides a wide range of clinical neurosurgery. The case volume is about 1000 cases per year, 40% of which are cranial, 55% spine and 5% peripheral nerve and miscellaneous. The service manages all surgical cranial disorders as well as 95% of the spinal problems for the whole of Vancouver Island. The residents training in Victoria become particularly familiar with the management of patients with spinal trauma, including operative indications. They are also exposed to minimally invasive surgery for discectomy, fusion and fracture as well as kyphoplasty.

The facility is a tertiary care, housing the only Neuroscience service for the entire Vancouver Island. Adjunctive technologies in the operating room include frame-based (CRW) and frameless stereotaxy (Stealth, fluoronav), neuro monitoring (MEP, EMG), and intraoperative fluorescence angiography.



## **Lions Gate Hospital**

The neurosurgical service at Lions Gate Hospital manages a wide variety of spinal, cranial and peripheral nerve disorders. The team of neurosurgeons includes Drs. Mutat, Sahjpal, Gul (Head of the Division), Janicki and Mendelsohn and focus on providing excellent clinical neurosurgical care to their patients. They are actively involved in medical student and resident neurosurgical education.

The clinical mix and volume comprises approximately 1000 cases per year, 25% of which are Cranial, 65% Spine with 20 – 30 intradural spine cases per year and 10% Peripheral Nerve and miscellaneous procedures. Spinal surgery includes complex instrumentation and minimally invasive procedures. It has the largest kyphoplasty program in BC. It operates 9 full OR rooms per week. The facility has state-of-the-art operating rooms with BrainLab integration, 3D C-arm technology married to BrainLab for image-guided spinal procedures and will soon be taking delivery of a new intraop neurophysiological monitoring setup with SSEP/BAERs/MEP capability.

Outpatient Clinics include a rapid access spine clinic, which sees 50 new patients a week. There are monthly neuroscience rounds discussing cases with radiology/clinical/pathology presentation.

## **BC Children's Hospital**

The Division of Pediatric Neurosurgery has established itself as one of the foremost pediatric neurosurgical units in Canada and is acclaimed internationally as a leader in pediatric neurosurgery. The Division comprises three full-time neurosurgeons: Dr. Ash Singhal who is Head of the Division, Dr. Mandeep Tamber, Dr. Faizal Haji, and Dr. Paul Steinbok. All four neurosurgeons are fully trained in pediatric neurosurgery and have limited their practices to the care of children with pediatric neurosurgical conditions.

The Division of Pediatric Neurosurgery is located at B.C. Children's Hospital, a part of Children's and Women's Health Centre. This is a tertiary care children's hospital with the full range of support services and the most modern equipment available for the management of neurosurgical disorders in children. The pediatric neurosurgeons are supported by a team of pediatric neurologists, intensivists, pediatric neuro-radiologists, pediatric neuro-pathologists, pediatric electrophysiologists and nurses, physiotherapists occupational therapists and social workers specifically trained in the management of neurological diseases in children. There are a number of well-established, multidisciplinary programs including a spina bifida program, spasticity and motor disorders program, an epilepsy surgery program, a neuro-oncology program, and cranio-facial program.

The Division performs approximately 300 neurosurgical operations yearly, and addresses the full range of neurosurgical conditions in children. These include surgeries for brain and spinal tumors, Chiari malformations, Moya Moya disease, syringomyelia, craniosynostosis, hydrocephalus, spina bifida, epilepsy, head injuries and cerebral palsy, among others. The neurosurgeons are experienced with neuroendoscopic and image guided neurosurgery.

The neurosurgeons at BC Children's Hospital have developed a team approach to the management of patients. Difficult clinical cases are routinely discussed among the four

neurosurgeons and are often discussed as part of a multidisciplinary conference. All oncology cases, for example, are discussed at a multidisciplinary conference that includes not only neurosurgeons, but oncologists, neuro-oncologists, radiation oncologists, neuro-pathologists and radiologists. A similar approach is used to guide the management of patients with complex congenital malformations of the spinal cord. In order to develop the best expertise to ensure optimal management of complex conditions, particularly those that are less common, individual neurosurgeons have developed special expertise in the treatment of specific disorders.

The Division of Pediatric Neurosurgery has an ongoing quality assurance program, with regular assessments of complications, mortalities and outcomes. The Division has consistently had among the shortest postoperative stays in Canada for a variety of neurosurgical conditions, including major craniotomies and shunt procedures, attesting to the low rate of postoperative complications. They also have one of the lowest rates of pediatric neurosurgical operations per unit population in North America, and this in part reflects the careful thoughtful approach of the neurosurgeons to the management of neurosurgical conditions and the ability of the neurosurgical team to achieve enduring results. They have achieved the lowest rates of blood transfusion in the world for open procedures to correct various types of craniosynostosis.

The Division of Pediatric Neurosurgery is part of the Division of Neurosurgery at the University of British Columbia. The neurosurgeons have a major role in the education of medical students and residents in the Neurosurgical training program at UBC. In addition to residency training, the Division provides a 1 year fellowship for fully trained neurosurgeons, who wish special additional training in pediatric neurosurgery. This fellowship has been accredited by the Accreditation Council for Pediatric Neurosurgery in the United States of America. Up to this time, the Division has trained fellows and students from North America, Sweden, Brazil and Northern Ireland

# Teaching

## Undergraduate

### Program Directors

Dr. Zwimpfer  
Dr. Makarenko

### Formal Teaching

UBC MD Year 1

Neuroscience Clinical Skills teaching 10.5 hours

UBC MD Year 2

Neuroscience Clinical Skills teaching 70 hours

lectures Brain & Behaviour 2 hours

UBC MD Year 3

Dept of Surgery academic half day Neurosurgery seminars 8 hours

Trauma Day Simulation of Head and Spinal Injuries: 12 hours

Undergraduate Curriculum Committee meetings: 3 hours

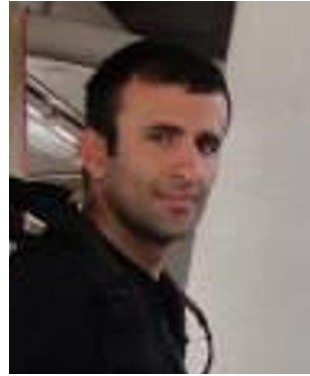
## Post-Graduate (Residents)

### Program Director Residents

Dr. Gooderham  
Dr. Singhal

Dr. Oliver Ayling  
Dr. Mike Craig  
Dr. Stephano Chang  
Dr. Mo Sadr  
Dr. Michael Rizzuto  
Dr. Alex Rebchuk  
Dr. Hetsfree Joshi  
Dr. Celine Hounjet





## Resident Spotlight



### **Dr. Oliver Ayling**

The quality of resident teaching can be reflected in the caliber of graduating residents. We believe our recent graduate, Dr. Oliver Ayling, may be the best neurosurgical resident in the country. In the only test that directly measures academics amongst all the residents in Canada, Dr. Ayling scored the top mark in the country on the Findlay Exam. His neurosurgical experience in open vascular cases is a log-order magnitude greater than any other Canadian resident. He has completed 20 publications including 9 first authorships. He has accepted a fellowship at the University of Miami where he will study spinal neurosurgery.

Our residents received 2 of Canada's 4 Dr. K.G. McKenzie Awards from the CCNS (Drs. Redchuk and Chang) and Dr. Chang was awarded a CSCI/CHIR Resident Research Manuscript Prize. He also received the Resident Award at our local Department of Sugary Research Day. Together the residents have published 23 peer-reviewed papers.



They have also been involved in teaching and CME courses for the benefit of medical students who may be interested in neurosurgery.

**UBC NEUROSURGERY**  
**CASE OF THE MONTH**  
**REVIEW OF NEUROTRAUMA**  
Thursday, May 26<sup>th</sup>  
6:00-7:30 PM, PDT  
Join us via Zoom!  
Registration: [bit.ly/camsign-ubcnsx4](https://bit.ly/camsign-ubcnsx4)

**INTRODUCTION TO NEUROVASCULAR SURGICAL ANATOMY**  
Tuesday, June 7<sup>th</sup> | 5:30-7:00 PM, PDT  
Join us live via Zoom!  
Register here: [bit.ly/camsign-neuroanatomy](https://bit.ly/camsign-neuroanatomy)

The residents have access to a huge volume of clinical cases. At Vancouver General Hospital they have the opportunity to be directly involved with 1300 cranial and 900 spinal surgical cases. Residents also have the opportunity to learn at several very busy community based hospitals each with approximately 1000 cases per year.

## Fellowships

### Functional Neurosurgery



Dr. Aisha Alkubaisi joined us in February 2021 and trained with our team for 16 months. She plans to return to Qatar to start their functional neurosurgery program.

### Pediatric Neurosurgery

Dr. Christina Schaurich focused on epilepsy surgery and is now completing a PhD at UBC in neuroanatomy.

Dr. Ruth Mitchell completed a one-year fellowship and is now working at Sydney Children's Hospital in Australia.

# Research

## Grants (N=8)

### National Spasmodic Dysphonia Association

- “DBS for spasmodic dysphonia” (\$US 70,000)
- PI: Christopher Honey. Co-I: Amanda Hu

### Canadian Association for Medical Education (CAME) Wooster Family Grant

- “Understanding learner and instructor perspectives on engagement in healthcare simulation” (\$5,000)
- PI: Faizal Haji. Co-I: Heather Braund, Nancy Dalgarno

### Southeastern Academic Medical Organization Endowed Scholarship and Education Fund

- “Exploring the Integration and Assessment of the CanMEDS Roles During Virtual Care Encounters.” (\$14,997)
- PI: Ramana Apireddy; Co-I: Faizal Haji, Wiley Chung, Boris Zevin, Steve Mann, Nancy Dalgarno, Heather Braund

### Southeastern Academic Medical Organization Endowed Scholarship and Education Fund

- “Untangling the equity, diversity, and inclusion (EDI) dimensions of the 2015 CanMEDS competency framework: Implications for medical teaching, learning, and practice.” (\$14,486)
- PI: Amanda Collier; Co-I: Faizal Haji, Nazik Hammad, Mala Joneja, Nancy Dalgarno, Klodiana Kolomitro, Nicholas Cofie

### Southeastern Academic Medical Organization Global Health Project Development Fund

- “Collaborative development of a competency-based surgical oncology fellowship program in West Africa” (\$48,200)
- PI: Sulaiman Nanji; Co-I: Faizal Haji, Shaila Merchant, Christopher Doiron, Nazik Hammad, Scott Berry, Serigne Magueye Gueye, Emmanuel R. Ezeome

### UBC Department of Surgery Seed Grant

- “Improving assessment and training in craniosynostosis: the role of interactive 3D models and multimodal e-learning” (\$12,500)
- PI: Faizal Haji. Co-I: Erika Henkleman, Doug Courtemanche, Saossen Salhi, Ashutosh Singhal, Mandeep Tamber, John Jacobs

### BCCHRI Investigator Establishment Award

- Dr. Faizal Haji (\$150,000)

### Grant

- Dr. Nicolas Dea (\$ 50,000)

## Peer-reviewed Publications (N=61)

Abebe M, Khan R, Mekasha A, Sokladaris S, Haji F. Neurosurgery training in a low-income country: an evaluation of neurosurgical residents' and graduates' perspectives following completion of an international partnership.

Canadian Journal of Surgery 2022; 65(4 Suppl 1). doi: 10.1503.cjs.007622

Ayling OG, Ailon T, Craig M, Dea N, McIntosh G, Abraham E, Jacobs WB, Johnson MG, Paquet J, Yee A, Hall H, Bailey C, Manson N, Rampersaud YR, Thomas K, Fisher CG. Patient-Reported Outcomes Following Surgery for Lumbar Disc Herniation: Comparison of a Universal and Multitier Health Care System.

Global Spine J. 2021 Sep 25:21925682211046961. doi: 10.1177/21925682211046961.

Ayling OGS, Charest-Morin R, Eagles ME, Ailon T, Street JT, Dea N, McIntosh G, Christie SD, Abraham E, Jacobs WB, Bailey CS, Johnson MG, Attabib N, Jarzem P, Weber M, Paquet J, Finkelstein J, Stratton A, Hall H, Manson N, Rampersaud YR, Thomas K, Fisher CG. National adverse event profile after lumbar spine surgery for lumbar degenerative disorders and comparison of complication rates between hospitals: a CSORN registry study.

J Neurosurg Spine. 2021 Aug 20;35(6):698-703. doi: 10.3171/2021.2.SPINE202150.

Ayling OGS, Rampersaud YR, Dandurand C, Yuan PHS, Ailon T, Dea N, McIntosh G, Christie SD, Abraham E, Bailey CS, Johnson MG, Bouchard J, Weber MH, Paquet J, Finkelstein J, Stratton A, Hall H, Manson N, Thomas K, Fisher CG. Surgical outcomes of patients who fail to reach minimal clinically important differences: comparison of minimally invasive versus open transforaminal lumbar interbody fusion.

J Neurosurg Spine. 2022 Apr 15:1-8. doi: 10.3171/2022.2.SPINE211210.

Banaszek D, McIntosh G, Charest-Morin R, Abraham E, Manson N, Johnson MG, Bailey CS, Rampersaud YR, Glennie RA, Paquet J, Nataraj A, Weber MH, Christie S, Attabib N, Soroceanu A, Kelly A, Hall H, Thomas K, Fisher C, Dea N. Practice Variation between Salaried and Fee-for-Service Surgeons for Lumbar Surgery.

Can J Neurol Sci. 2022 Jun 16:1-8. doi: 10.1017/cjn.2022.259.

Beauchamp-Chalifour P, Flexman AM, Street JT, Fisher CG, Ailon T, Dvorak MF, Kwon BK, Paquette SJ, Dea N, Charest-Morin R. The impact of frailty on patient-reported outcomes after elective thoracolumbar degenerative spine surgery.

J Neurosurg Spine. 2021 Aug 6:1-9. doi: 10.3171/2021.2.SPINE201879.

Chang SJ, Haw CS, Redekop GJ. Commentary: Stereotactic Radiosurgery for Dural Arteriovenous Fistulas: A Systematic Review and Meta-Analysis and International Stereotactic Radiosurgery Society Practice Guidelines.

Neurosurgery. 2022 Jul 1;91(1):e1-e2. doi: 10.1227/neu.0000000000001972.

Chang SJ, Mitchell R, Hukin J, Singhal A. Treatment-responsive Holmes tremor in a child with low-pressure hydrocephalus: video case report and systematic review of the literature.

J Neurosurg Pediatr. 2022 Feb 11:1-8. doi: 10.3171/2021.12.PEDS21539.

Chang S, Opris I, Guest, JD, Noga BR. (2021). Neuromodulation for Gait Disorders. In: Opris I, Lebedev M, Casanova M (eds). Modern Approaches to Augmentation of Brain Function. Contemporary Clinical Neuroscience. Springer, Cham. doi: 10.1007/978-3-030-54564-2\_23.

Chang SJ, Rebchuk AD, Teal P, Honey CR, Field TS. COVID-19-Associated Cerebral Developmental Venous Anomaly Thrombosis With Hemorrhagic Transformation. Stroke. 2022 Jul;53(7):e255-e256. doi: 10.1161/STROKEAHA.122.039534.

Charest-Morin R, Bailey CS, McIntosh G, Rampersaud YR, Jacobs WB, Cadotte DW, Paquet J, Hall H, Weber MH, Johnson MG, Nataraj A, Attabib N, Manson N, Phan P, Christie SD, Thomas KC, Fisher CG, Dea N. Does extending a posterior cervical fusion construct into the upper thoracic spine impact patient-reported outcomes as long as 2 years after surgery in patients with degenerative cervical myelopathy? J Neurosurg Spine. 2022 May 6:1-9. doi: 10.3171/2022.3.SPINE211529.

Charlotte D, Mathew NH, Tamir A, Michael B, Raphaële CM, Nicolas D, Marcel D, Charles F, Brian KK, Scott P, John S. Variations in LOS and its main determinants overtime at an academic spinal care center from 2006-2019. Eur Spine J. 2022 Mar;31(3):702-709. doi: 10.1007/s00586-021-07086-7.

Craig M, Chopra A, Lasry O, Dea N, Charest-Morin R, Street J, Paquette S, Dvorak M, Kwon B, Fisher CG, Ailon T. Telehealth for Outpatient Spine consultation: What do the Patients Think? Interdisciplinary Neurosurgery: Advanced Techniques and Case Management. 2022. doi:10.1016/j.inat.2021.101462.

Cushnie D, Soroceanu A, Stratton A, Dea N, Finkelstein J, Bailey CS, Weber MH, Paquet J, Glennie A, Hall H, Rampersaud R, Ahn H, Kelly A, Christie S, Nataraj A, Johnson M, Abraham E, Attabib N, Fisher C, Manson N, Thomas K. Outcome of spine surgery in patients with depressed mental states: a Canadian spine outcome research network study. Spine J. 2022 Jun 6:S1529-9430(22)00237-6. doi: 10.1016/j.spinee.2022.05.012.

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J Neurosurg Spine. 2021 Sep 24;1-9. doi: 10.3171/2021.2.SPINE202051.

Steinbok P, Cheong A, Dix DB, Bhatia S, Handler MH, Limbrick DD Jr, Niazi T, Price AV, Ragheb J, Souweidane M, Tamber MS, Sandberg DI. Nonoperative Management of Childhood Calvarial Langerhans-Cell Histiocytosis.

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## Chapters (N=2)

Simon MV, Dong CC, Jacobs MJ, and Mess WH. Neuromonitoring during descending aorta procedures. In: Nuwer and MacDonald, ed. Intraoperative Neuromonitoring, vol 186, Elsevier (2022) 407-431.

Tu A, Hsu J, Steinbok P: Epidural Abscess and Subdural Empyema. In Alexiou G and Prodromou N (Eds): Pediatric Neurosurgery for Clinicians. Springer, Switzerland, 2022 pp 693-711.

## Presentations (N=70)

Abebe M, Khan R, Mekasha A, Sokladaris S, Haji F. Neurosurgery training in a low-income country: an evaluation of neurosurgical residents' and graduates' perspectives following completion of an international partnership.

Decolonizing Global Surgery Bethune Round Table 2022 Conference on Global Surgery, Vancouver, BC, June 16-18, 2022.

Akagami R. Acromegaly patient journey - surgical prospective  
Western Canada Endocrinology Meeting, Sept 2021, invited lecture

Akagami R. Acoustic neuroma, other schwannomas, and paragangliomas.  
Ottawa review course, Feb 2022

Akagami R. Acoustic Neuromas.  
UBC Neurology resident half day, Apr 2022

Akagami R. CPA & Petrous apex lesions and approaches to the skull base.  
UBC ENT resident half day, Oct 2021

Braund H, Haji F. Unpacking novice learners' experiences with cognitive load during simulation-based training.  
13th International Cognitive Load Theory Conference, Kingston, September 20-22, 2021.

Chang S. Neuromodulation of midbrain and spinal locomotor circuits for gait ignition.  
Golden Scalpel Competition. October 1, 2021.

Chang S. MR Tractography-Based Targeting and Physiological Identification of the Cuneiform Nucleus for Directional DBS in a Parkinson's Disease Patient with Levodopa-Resistant Freezing of Gait.

Chung Research Day Presentation. November 1, 2021.

Chang S. Spatiotemporal Mapping and Decoding of Oculomotion in the Pediatric Frontal Eye Field.

CNSF Congress, Montreal, Oral presentation. June 29, 2022.

Chang S. Spinal neuromodulation: back to the future.

UBC Neurosurgery Grand Rounds, June 30, 2022.

Dea, N. Metastatic spine disease: Should patients with short life expectancy be denied surgical care?

CNS, Austin, October 2021

Dea, N. Return to work following surgery for lumbar disc herniation: Comparison of a universal and multitier health care system.

NASS, Chicago, September 2021

Dea, N. Effectiveness of Surgical Decompression in Patients with Degenerative Cervical Myelopathy.

Global Spine Conference, Paris, November 2021

Dea, N. Knowledge Forum Tumor Symposium: Remove the cause and adverse effect.

Global Spine Conference, Paris, November 2021

Dea, N. Metastatic spine disease: Should patients with short life expectancy be denied surgical care?

DSPN AANS/CSN Joint section meeting, Las Vegas, February 2022

Dea, N. Symposium on spinal tumor: Practical tips for treating epidural cord compression.

DSPN AANS/CSN Joint section meeting, Las Vegas, February 2022

Dea, N. Economic consequences of waiting for lumbar disc herniation surgery.

DSPN AANS/CSN Joint section meeting, Las Vegas, February 2022

Dea, N. Economic consequences of waiting for lumbar disc herniation surgery.

Canadian Spine Society, online meeting, April 20 2022

Dea, N. Evidence based management approaches for patients with spinal metastases: Who needs surgery?

Evidence-Based Spine Surgery Resident course, Online, December 2021

Dea, N. Evidence based management approaches for patients with spinal metastases

Evidence based spine surgery course for residents and fellows, Toronto, May 2022

Dea, N. Management of cervical trauma

Evidence based spine surgery course for residents and fellows, Toronto, May 2022

Dea, N. Case review session

Evidence based spine surgery course for residents and fellows, Toronto, May 2022

Dea, N. Metastatic spine disease: Should patients with short life expectancy be denied surgical care?

Canadian Spine Society, online meeting, April 20, 2022

Dea, N. Symposium on adverse event in spinal tumor care: chair

Global Spine Conference 2022, Las Vegas, June 2022

Dea, N. Symposium talk: Well organized teamwork is crucial to implement the surgical plan

Global Spine Conference 2022, Las Vegas, June 2022

Dea, N. Symposium talk: Should Surgery be denied based on life expectancy?

Global Spine Conference 2022, Las Vegas, June 2022

Dea, N. Metastatic spine disease: Should patients with short life expectancy be denied surgical care?

Global Spine Conference 2022, Las Vegas, June 2022

Dea, N. Moderator, Spine section

Canadian Orthopaedic Association, Quebec City, June 2022

Dea, N. Symposium on Management of spinal tumor chair.

CNSF, Montreal, June 2022

Dea, N. Management of spinal metastasis.

CNSF, Montreal, June 2022

Dong, CC. Intraoperative cranial nerve EMG monitoring: Do and Don't.

Annual Meeting of the American Society of Neurophysiological Monitoring (ASNM), 2021

Gariscsak P, Braund H, Haji F. Does Sequence Matter? Effect of Simulated Environment Complexity on Cognitive Load and Learning.

13th International Cognitive Load Theory Conference, Kingston, September 20-22, 2021.

Gariscsak P, Braund H, Haji F. Investigation of Simulation-Based Lumbar Puncture Teaching Paradigms for Novice Learners.

Canadian Neurological Sciences Federation 2021 Congress, October 25-28, 2021.

Haji F, Dharsee N, Giuliani M. Curriculum: Context, Change, and Development.

Faculty Development Workshop at the 13th AORTIC International Conference on Cancer in Africa, November 5, 2021.

Haji F. Cognitive Load Theory: A Primer.

Clinical Educator Fellowship Academic Half Day Presentation, November 23, 2022.

Haji F. Rethinking global surgery partnerships: the ETV/CPC story.  
OPSEI rounds, January 4, 2022.

Haji F. Endoscopic vs. Shunt Treatment of Hydrocephalus in Infants NICU (ESTHI).  
Research and Quality Rounds, February 4, 2022.

Haji F. Capacity building for pediatric epilepsy surgery in Vietnam: a model for international collaboration.  
Canadian Global Surgery Trainee's Alliance, February 10, 2022.

Haji F. Opportunities and challenges in (neuro) surgical simulation research.  
UBC Neurosurgery Grand Rounds Presentation, October 7, 2021.

Honey CR. Emerging Indications for DBS: spasmodic dysphonia.  
AANS 2021 Annual Meeting, Virtual Presentation, August 24, 2021.

Honey CR. RCT of DBS for spasmodic dysphonia.  
13<sup>th</sup> Canadian Neuromodulation Society meeting, Kelowna, Sept 24-26, 2021.

Honey CR. Selection of Parkinson's patients for DBS.  
Webinar by Paladin Labs, Oct 2021.

Honey CR. The cutting edge or on the fringe  
UBC Neurosurgery Grand Rounds, Vancouver, Feb 10, 2022.

Honey CR. Microvascular decompression  
OHSU Functional Neurosurgery Course, Portland, April 6-8, 2022.

Honey CR. Cadaver demonstration of microvascular decompression  
OHSU Functional Neurosurgery Course, Portland, April 6-8, 2022.

Honey CR. Introduction to HELPS and VANCOUVER syndrome  
BC Otolaryngology annual meeting, Whistler, April 10, 2022.

Honey CR. DBS for spasmodic dysphonia  
National Spasmodic Dysphonia Association seminar, virtual, April 30, 2022.

Honey CR. What we can do for our patients and how they can help us  
Boston Scientific National Meeting, Vancouver, May 12, 2022.

Honey, C. The vagal rhizopathies.  
The 3<sup>rd</sup> World Congress for Microvascular Decompression and Cranial Nerve Disorders,  
Vancouver, July 2022

Makarenko S. Optimizing surgical management in treatment of acoustic neuromas.  
Acoustic Neuroma Association of Canada annual meeting, keynote address

McQueen S, Haji FA, Lucar Figueroa E, Sallam Y, Ang LC, Duggal N. Intradural-extramedullary spinal cavernoma with nerve root association: a case report and review of the literature.  
Canadian Neurological Sciences Federation 2022 Congress, June 24, 2022.

Megyesi J, Rizzuto M, Kameda-Smith M. Neurosurgery Resident Course in Neuro-oncology  
CNSF Congress, June 2022

Osborn J, Sahjpaal R, Varshney V, Paquette S. Spinal Cord Stimulation for Refractory Angina.  
International Neuromodulation Society 2022, Barcelona, Spain. Poster Presentation.

Rebchuk A. impact of including brain invasion as a diagnostic criteria for grade 2 meningiomas.  
CNSF Congress, Montreal, Grand Plenary talk

Rebchuk A. Experience with adjuvant radiotherapy for grade 2 meningiomas.  
North American Skull Base Society meeting, Phoenix, oral presentation

Rizzuto MA, Ayling O, Craig M. Intracranial Aneurysms  
UBC Neurosurgery Case of the Month Series in collaboration with CaMSIGN (Canadian Medical Student Interest Group in Neurosurgery), Aug 2021

Rizzuto MA, Ayling O, Craig M. Neuro-oncology  
UBC Neurosurgery Case of the Month Series in collaboration with CaMSIGN, Oct 14, 2021

Rizzuto MA, Ayling O, Craig M. Spine Trauma  
UBC Neurosurgery Case of the Month Series in collaboration with CaMSIGN, Jan 2022

Rizzuto MA, Ayling O, Craig M. TBI  
UBC Neurosurgery Case of the Month Series in collaboration with CaMSIGN, May 26, 2022

Rizzuto MA. Neurosurgery Hot Seat: Neurotrauma  
UBC Surgical Education Club, April 19, 2022

Rizzuto MA, Warren D. Minimally Invasive Lateral Approaches to the Spine: Advances in managing degenerative disease and spinal deformity  
UBC Neurosurgery Grand Rounds, April 7, 2022

Sahjpaal R, Varshney V, Osborn J. Efficacy of Dorsal Root Ganglion Stimulation for Post-Surgical Neuropathic Pain.  
Canadian Neurological Sciences Federation 2022, Montreal QC. Poster Presentation.

Santyr B, Abbass M, Chalil A, Krivosheya D, Denning L, Mattingly T., . . . Lownie S. High-Fidelity Simulation-Based Microsurgical Training for Neurosurgical Residents.  
Canadian Neurological Sciences Federation 2021 Congress, October 25-28, 2021.



Santyr B, Abbass M, Chalil A Vivekanandan A, Krivosheya D, Denning LM, Mattingly TA, Haji FA, Lownie SP. High-fidelity simulation-based microsurgical training for neurosurgical residents. Canadian Neurological Sciences Federation 2022 Congress, June 24, 2022.

Sidhu K, Varshney V, Sahjpaul R, Osborn J. Dorsal Root Ganglion Stimulation as Salvage Therapy for Chronic Neuropathic Pain After Failed Spinal Cord Stimulation: A Case Series. International Neuromodulation Society 2022, Barcelona, Spain. Oral Presentation.

Steinbok P. Occult tethered cord syndrome – fact or fancy. ISPN annual virtual meeting, Nov 7, 2021, invited faculty,

Steinbok P, Cheong A, Dix D, Sandberg DI. Non-operative management of suspected calvarial Langerhans Cell Histiocytosis in children – a prospective multicenter study. ISPN annual virtual meeting, Nov 7, 2021

Varshney V, Sahjpaul R, Paquette S, Osborn J. Outcomes of Workers' Compensation Patients Undergoing Neuromodulation for Persistent Neuropathic Pain Conditions. Canadian Neuromodulation Society 2022, St. John's Newfoundland. Oral Presentation.

Varshney V, Sahjpaul R, Paquette S, Osborn J. Profiles and Outcomes of Worker's Compensation Patients Undergoing Spinal Cord Stimulation for Persistent Post-Surgical Pain. Canadian Spine Society 2022, Virtual Meeting. Poster Presentation.

Varshney V, Sahjpaul R, Osborn J. Modifying Parameters of a Targeted Energy Dosing Protocol for Treatment of Posterior Flank Pain. North American Neuromodulation Society 2021. Poster Presentation and Abstract.

# In Memoriam of Dr. Gordon Bruce Thompson

Dr. Gordon Bruce Thompson, MD, FRCSC  
Feb 6, 1925 – Sept. 24, 2022  
Professor and Head Emeritus, Division of Neurosurgery  
Department of Surgery, University of British Columbia



Gordon & Sally Thompson with Felix Durity – February 2022

*By Dr. Felix Durity*

It is with deep remorse that the Department of Surgery announces the death of Dr. Gordon Thompson, who, after a short illness, passed away peacefully at the Royal Jubilee Hospital on September 24, 2022 at the age of 97 years. He was surrounded in his last hours by his loving family: his wife Sally of 62 years of marriage and by his daughters: Tracey and Meg and three grandsons: Oliver and Ethan Spratt and Calvin Cotton.

Gordon was born in Humboldt, Saskatchewan. After his undergraduate degree at the University of Manitoba and his medical degree at McGill, he undertook neurosurgical training at the world-leading Montreal Neurological Institute under the influence of Dr. Wilder Penfield and Dr. William Vernon Cone, with whom he forged a special bond as his tutor and mentor. In 1960 he joined the neurosurgical staff at UBC and the Vancouver General Hospital under the leadership of Dr. Frank Turnbull whom he succeeded as Head in 1966. Until his retirement, Gordon served as Head for an amazing 24 years (1966 – 1990). During his tenure he established the first neurosurgical training program at UBC in 1966, whence he trained a myriad of successful duly-certified neurosurgical trainees and recruited several colleagues to join and enlarge the Division's expertise in functional, spinal, tumour and neurovascular subspecialties. That legacy continues within the Division to this day.

Gordon himself excelled in complex spinal degenerative diseases and in the field of Epilepsy Surgery and with the help of epileptologist, Dr. Juhn Wada, he humbly achieved results comparable to the best world centres in the area of temporal lobe epilepsy.

Outside of the operating theatre, he served his specialty in the important roles of Chief of the Royal College Neurosurgical Exam Committee for ten years, as Head of the Canadian Neurosurgical Society for two years and as President of the Western Neurosurgical and North Pacific Neurosurgical societies.

He was a generous and caring leader who treated his colleagues, his trainee residents and nursing and neuro-rehabilitation staff with respect and support, sometimes even financial. He also loved entertaining them at his home in joyful parties.

Nonetheless his greatest joy was his loving family: his wife Sally and their three daughters – Tracey (Thompson-Franson), Wendy (predeceased) and Meg Thompson), their husbands and his three grandsons. On retirement, Gordon moved from Vancouver to Parksville for 18 years for the “quiet”, community-involved life but moved to Victoria 4 years ago to be close to his immediate family. Our dear colleague, friend and mentor lived a long, full and productive life. A man of faith, may he rest peacefully. His legacy to us will be enduring and he will be missed by those who knew him.