Research

The Division of Neurosurgery has been active in clinical and basic scientific research, offering Masters and Doctoral programs. Our research endeavors currently include the study of:

- Aneurysmal subarachnoid hemorrhage
- Dendritic cell immunotherapy for malignant gliomas
- Expression of manose-6-phosphate receptor in human gliomas
- Carotid endarterectomy
- Spinal cord regeneration
- Induction and Intracellular regulation of tumor necrosis factor-related apoptosis inducing ligand (TRAIL) mediated apoptosis in human malignant gliomas cells.
- Effect of radiation on cytokine and cytokine receptor m-RNA profiles in p53 wild and mutated human Glioglastoma cell lines
- Biolistic and liposomal mediated gene transfer (GM-CSF, B7-2) into human gliomas
- Expression of the Anti-apoptosis molecule SUIVIN in malignant gliomas
- Management of spinal cord injury
- Hydrocephalus Research.

MSc (1-2 year) or PhD (3 year) programs are available to interested residents. The basic science laboratories are housed in the Heritage Medical Research Building.

Quick Facts

- Residents are exposed to a robust and diverse clinical experience at three sites: University Hospital, Royal Alexandra Hospital and the Stollery Children's Hospital. (Over 2500 clinical operative cases are done annually).
- The University of Alberta Neurosurgical Residency Program offers a unique PGY-4 experience. Residents are able to explore research interests, pre-fellowship interests and/or further clinical experience (academic or community) during this year.
- A formal academic schedule exists for neurosurgery residents:
  - Weekly Neuroscience Rounds
  - Wednesday Rounds
  - QA/Research/Proton and Journal Club
  - Friday Morning Academic Half-Day
- Residents gain experience in all aspects of subspecialty neurosurgery and new innovative neurosurgical equipment. (Complex spine, neuro-endoscopy, deep brain stimulation, endovascular neurosurgery, functional neurosurgery). Residents receive expense coverage for meetings, microneurosurgical symposiums and review...
The primary objective of the Neurosurgical program at the University of Alberta is to develop within a six-year time frame, graduates of excellent moral and ethical character who possess the factual knowledge, surgical technical skills and motivation required to successfully practice Neurosurgery in Canada or elsewhere. Candidates are selected and trained with a view to careers in academic neurosurgery and are made aware that this initial formal period of training represents only one phase of the evolution of a profession characterized by continuing self-evaluation and self-education.

### Program at a Glance

**PGY–1**
The PGY-1 year is part of the Surgical Foundations Program at the University of Alberta. In July 2018, the Program will be starting the Royal College’s Competence by Design initiative.

In Neurosurgery the PGY-1 rotations are:
- 6 blocks of Neurosurgery
- 2 blocks of General Surgery
- 1 block of Coronary Care Unit
- 1 block of Emergency Medicine
- 1 block of Anesthesia
- 1 block of Pediatric Neurosurgery
- 1 block of Vacation

**PGY–2**
The PGY-2 year is a component of the 2-year Surgical Foundations Program with modifications for each specific discipline. A typical rotation in second year would be:
- 3 blocks of Intensive Care
- 2 blocks of Neuroradiology
- 8 blocks of Neurosurgery

**PGY–3 to 6**
Each new Neurosurgical trainee is required to spend 42 months in the Clinical Neurosurgical Service at the University of Alberta Hospital and the Royal Alexandra Hospital.

This contact with clinical neurosurgery provides the opportunity for close observation of the trainee with respect to interpersonal relationships, clinical skills, judgment and general academic knowledge.