For your Information

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-apoptosia molecule SUIVIN in malignant gliomas
- Management of spinal cord injury
- Hydrocephalus Research.

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 16:30 - QA/Research / Proton and Journal Club
  - Friday Morning - Academic Half-Day - 07:30-12:00
- 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 courses.

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

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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.

**Academic Sites**
- University of Alberta Hospital
- Royal Alexandra Hospital

**Selection Criteria**
Selection criteria in this program are as follows:
- Strong interest and dedication in the field of neuroscience and interest in neurosurgical research endeavors.
- An elective in neurosurgery is strongly encouraged.

**Program at a Glance**

**PGY–1**
The PGY-1 year is part of the Surgical Foundations Program at the University of Alberta. In Neurosurgery the PGY-1 rotations are:
- 1 28-day block of CCU
- 1 28-day block of Emergency Medicine
- 2 28-day blocks of General Surgery
- 1 28-day block of Anesthesia
- 6 28-day blocks of Neurosurgery
- 1 28-day block of Pediatric Neurosurgery
- 1 28-day 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 28-day blocks of Intensive Care
- 2 28-day blocks of Neuroradiology
- 8 28-day 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. In this phase of training, each candidate is expected to demonstrate progressive development in examining, diagnosing and treating patients with common neurological diseases. In the informative years, special emphasis is placed on the diagnosis and management of head, spinal and multiple system injuries. Special technical skills such as insertion of external ventricular drains (for monitoring and treatment of intracranial hypertension), and application of skull tongs or halo jackets for the treatment of unstable cervical spine fractures are taught. In a graded fashion, each resident develops increasing surgical skills such as performing burr holes, craniectomies, craniotomies and spinal procedures.

As residents graduate into their senior years, responsibilities will include running the team at the University site, presenting cases at Q&A and case presentation rounds, organizing schedules and running the Neurosurgery Intensive Care Unit with the Neuro-Intensivist.