

Department of Neurology and Neurosurgery & Neuropathology Clinical Research Fellowship  
ONE YEAR FELLOWSHIP

Type of Fellowship: Neuromuscular Pathology

Name of the Fellowship Supervisors: Dr. Erin O’Ferrall

Fellowship Information:

- Number of fellowship positions requested: 1
- Duration: 1 year
- Hospitals involved in training: Mainly MNH with optional participation at the MGH, RVH/MCH (Glen site)

Funding:

Funding is not provided as part of this fellowship and should be sought from external sources

**Description of Fellowship**

The Neuromuscular group at McGill University was originally established by the late Dr George Karpati, a world recognized expert in Neuromuscular Disease. Today the Neuromuscular group, also called the Rare Neurological Diseases Group, at the Montreal Neurological Institute (MNI) and Hospital (MNH) is co-directed by Dr. B. Brais and Dr. E. Shoubridge and continues to be an integrated clinical and basic science environment for research and clinical training in Neuromuscular Diseases. The Neuromuscular clinic and EMG laboratory at the MNH, the Neuropathy and Myasthenia Clinics at the Montreal General Hospital and the Neuromuscular Clinic and EMG laboratory at the Montreal Children’s Hospital are provincial referral centers for neuromuscular patients and provide excellent exposure to patients with neuromuscular diseases. The Neuropathology laboratory at the MNH was originally established by Dr. George Karpati (a world-recognized Myologist) and has a long history of excellence in Neuromuscular pathology. The Neuropathology lab at the MNI is the dedicated lab for muscle and nerve tissue processing for the entire McGill University Hospital system and processes approximately 130 muscle biopsies and 15 nerve biopsies per year. The MNI also receives and provides evaluations of histological slides performed at outside hospitals.

The Neuromuscular Pathology Fellowship provides the trainee with exposure to patients with diseases of the nerve and muscle and will be under the supervision of Drs. O’Ferrall and Karamchandani. Dr. O’Ferrall is a neuromuscular neurologist with a focus on muscle disease. She performs the muscle biopsy procedure and provides consultation in EMG and Neuromuscular clinics. Her areas of interest include genetically-determined myopathies and inflammatory muscle diseases. Dr. Karamchandani is a neuropathologist with interest in neuromuscular diseases. He is interested in exploiting informatics combined with new genetic techniques, including RNA sequencing, to improve diagnostic resolution. The Neuromuscular group also consists of other clinicians including: Drs. Brais, Chalk, Gendron, Massie, Oskoui, Poulin, Rouleau and Genge. Dr. Bernard Brais is a Neurogeneticist with expertise in the clinical and genetic aspects of neuromuscular diseases. Dr. Colin Chalk is the director of the Neuropathy and Myasthenia clinics at the Montreal General Hospital. Dr. Rami Massie is a neuromuscular specialist with a special interest in neuropathy and pathological interpretation of nerve biopsies. Dr. Guy Rouleau works on genetic diseases and has special interests in ALS and motor neuropathies. Drs. Oskoui and Poulin are Pediatric Neurologists with expertise in Neuromuscular Disorders. They offer a monthly multidisciplinary Pediatric Neuromuscular Clinic. Dr. Poulin also performs EMG evaluations for pediatric patients. The neuropathology group at the MNI also includes

Drs. Steffen Albrecht (pediatric neuropathology) and Marie-Christine Guiot (adult neuropathology). The MNI is in the process of recruiting a fourth neuropathologist at this time.

### Academic Facilities

Within the environment of the Neuromuscular Group/Rare Neurological Disease Group at the MNI/MNH, there are excellent opportunities for participating in basic science research on neuromuscular diseases. The Montreal Neurological Hospital, the Montreal General Hospital and McGill University host a number of excellent clinical and basic science researchers who may collaborate with the fellow. The Neuromuscular Group/Rare Neurological Disease Group at the MNI is co-directed by Drs. B Brais and E. Shoubridge and includes the following researchers: H. McBride, H. Tsuda, H. Durham, K. Hastings, G. Rouleau and E O'Ferrall. Please see the following website for a more detailed list of the scientists and their respective areas of interest:

<https://www.mcgill.ca/neuro/research/groups/rare-neurological-diseases-0>

At the MNI there is also a clinical research unit directed by Dr. Angela Genge. This unit is responsible for the organization and implementation of many clinical trails, including those implicating patients with neuromuscular disease.

### Fellow Duties and Responsibilities

The fellow will design, implement and complete a research project relevant to Neuromuscular Pathology. He/she is expected to submit a manuscript for publication and, if possible, to present his/her findings at a scientific meeting. The fellow is expected to attend Neuromuscular Pathology Rounds, Neuromuscular Academic Half Day and Neuromuscular Journal Club meetings. The fellow is also encouraged to participate in the pre-operative muscle biopsy evaluations and may receive instruction on the muscle biopsy procedure, if desired. Attendance at city-wide Neuromuscular Pathology rounds is also strongly encouraged.

The fellow may also choose to attend Neuromuscular, Neurogenetics, Neuropathy, EMG and Myasthenia Gravis Clinics. There are no on-call or in-patient duties.

### Curriculum

The fellow will spend most of his/her time on the neuromuscular pathology research project. The fellow will be exposed to all muscle and nerve biopsy cases during the fellowship year and may contribute to the preparation of the reports at the discretion of the Neuropathologist. The fellow is expected to attend the Neuromuscular Academic Half Day on Friday mornings. The Neuromuscular half days consist of presentations given by the fellows or consultants on topics relevant to Neuromuscular Diseases. These occur at a frequency of approximately twice per month or more. The fellow will also be expected to organize the weekly Neuromuscular Pathology Rounds. He /She is encouraged to also attend or give presentations at the other academic rounds including the regular neuromuscular journal club and city-wide Neuromuscular Pathology Rounds.

If the fellow chooses to attend clinic, the fellow will evaluate 2-4 patients per half day of clinic. The patient population will vary depending on the clinic. In the Neuromuscular Clinic approximately 50% of the patients have muscle or neuromuscular junction disorders and 50% of the patients have primary nerve disorders. In the Neurogenetics clinic the fellow will learn to use genetic testing and other genetic technologies for the diagnosis, genetic counselling and gene discovery of neuromuscular diseases. In the pre-biopsy assessment clinic one or two patients are evaluated on the same day as their planned biopsies. Attendance at the muscle or nerve biopsy procedure is optional.

## Evaluation

The fellow will be given regular feedback (both in person and in writing) every 3 months. There is no final examination but the fellow may wish to obtain certification in EMG through the Canadian Neurological Sciences Federation.