

## Department of Neurology and Neurosurgery Clinical and Research

### *Clinical/Research Fellowship in Epileptology and EEG*

**Type of Fellowship:** 2-year clinical and research fellowship in Epileptology and EEG.

**Name of Fellowship Supervisor:** Eliane Kobayashi, MD, PhD

**Number of positions:** 1-2 per year

#### **Fellowship Information**

This fellowship training program aims to provide advanced knowledge in clinical epileptology and EEG, and to allow the trainee to develop basic skills in clinical research. At the end of this fellowship, it is expected that the trainee will be able to act as an independent epileptologist in an academic environment.

Eligible candidates will need to apply for funding. Sources of funding include: the Frederick Andermann epilepsy fund, provincial or federal grant agencies such as CIHR and FRQS, the MNI fellowships (Preston Robb and Jeanne Timmins), the Savoy Foundation for Epilepsy fellowship, Epilepsy Canada Fellowship and the Canadian League Against epilepsy fellowship.

The fellowship includes rotations in the Epilepsy Unit, outpatient epilepsy clinics and EEG laboratory at the Montreal Neurological Hospital, an adult care center. There will be a possibility of 1-2 months rotation in pediatric EEG at the Montreal Children Hospital.

The trainee is expected to know the mechanisms and classification of the epilepsies and seizures, etiologies, differential diagnosis, management, medical treatment and indications for surgical therapy. She/he will develop expertise in pre-surgical evaluation and will learn about alternative treatments for drug-resistant patients who are not surgical candidates. She/he will acquire experience in principles of the pharmacotherapy of epileptic seizures, including optimal polytherapy and drug management through lifespan and special situations, such as in the elderly and in the pregnant woman. She/he will obtain further expertise in neurophysiology and neuroanatomy of EEG, with training in the acquisition and interpretation of EEG signals in normal and pathological conditions. At the end of the rotations, the trainee should have learned EEG abnormalities not only in epilepsy but also in other neurological conditions, EEG in the neurointensive care unit for critically-ill patients including status epilepticus, and EEG in the operating room (electrocorticogram). She/he will also have the opportunity to learn about indications, planning and interpretation of intracranial EEG. Finally, the fellow will further benefit from an exposure to magnetoencephalography and magnetic source imaging, Near Infra-Red Spectroscopy, high-resolution and post-processing MR imaging, neuropsychological evaluation and clinical genetics in the context of their application to the investigation of our epilepsy patients.

During the second year of training, the fellow will be involved in the preparation and development of a research project, under the guidance of one of the faculty members in the Epilepsy group. The goal is to become familiar with clinical research from research design/conceptualization, ethics considerations and protocol approval, data acquisition and analysis, scientific presentations in conferences and manuscript preparation.

Epilepsy research faculty members' profiles can be found through the links in the MNI webpage: <https://www.mcgill.ca/neuro/research/groups/epilepsy>

## **Teaching Faculties**

The Montreal Neurological Institute and Hospital provides a unique environment for trainees, with experts in clinical and basic neurosciences touching a large spectrum of interests and working together for patient care and advancement of epilepsy research. The MNI Epilepsy Group faculty has a broad range of experience in clinical epileptology, EEG and continuous EEG monitoring, simultaneous EEG/fMRI, intracranial EEG monitoring, magnetoencephalography, intra-operative EEG monitoring, high-resolution MR imaging and functional imaging, genetic and in basic neurophysiology. Their roles in clinical care, teaching and research cover a broad area of clinical and basic neurophysiology, epilepsy, epilepsy surgery, ICU monitoring, genetics and neuropsychology.

## **Academic Facilities**

This fellowship training program ties in with the EEG service and neurology and neurosurgery training programs, with weekly academic half day activities, neurology and neurosurgery rounds, epilepsy conferences, and with research group lab meetings. In addition to bedside teaching, specific teaching sessions include EEG & Epilepsy seminars (the official teaching activities in this fellowship) and journal clubs dedicated to relevant clinical literature.

The EEG & Epilepsy seminars are scheduled weekly and cover a broad range of clinical, research and position papers and chapters, aiming to provide a comprehensive and active discussion of important knowledge necessary to become an independent epileptologist and EEG reader. In particular, we review the literature recommendations for the EEG examination and ILAE guidelines and protocols in a friendly setting. During the seminars, the fellows also have the chance to critically appraise the literature and develop teaching and speaker's skills, while contributing to their own training.

There is an active research program offering resources for fellowship trainees to develop and pursue a clinical research project related to epilepsy. Library access and materials relevant to fellowship training are available 7-days/week.

The Brain Imaging Center fosters state of the art MRI scanners, PET scanners and a MEG system, where our research program acquisitions and analyses take place.

## **Fellow's Duties and Responsibilities**

*Clinical Responsibilities:* The fellow participates in the Epilepsy Monitoring Unit (EMU) activities and is responsible for the management of patients admitted at the EMU and of patients with seizures seen in consultation in neurology and neurosurgery wards, including NeuroICU. The fellow will also be involved in the interpretation and reading on continuous EEGs performed daily at the EMU, including intracranial EEG. They may be on-call requirements during this fellowship and this will be discussed with the fellowship program director.

The fellows will help supervising residents rotating at the EMU and EEG laboratory, usually from 3<sup>rd</sup> or 4<sup>th</sup> neurology or neurosurgery programs, when they should learn basics of clinical epileptology or EEG. The fellow will actively participate in our weekly epilepsy conference (case presentation, EEG review and roundtable discussion). She/he will prepare a clinical summary of all patients admitted at the EMU for the weekly epilepsy rounds. The fellow will work closely with the EEG technicians particularly together with those in charge of the EMU. Together with the attending epileptologist, she/he will participate to the decision-making process for patients at the EMU and NeuroICU. Fellow will also respond to calls for peri-operative electrocorticograms performed during elective epilepsy surgery.

*Research responsibilities:* The fellow will be involved in a research project, to be specified together with the faculty to act as research supervisor. During the first year, this can start in parallel to the clinical duties. The fellow will participate in various research meetings, conferences or courses. She/he will write a project to be developed for the second year of training, which should be submitted to funding agencies in order to obtain scholarship support. At the end of the research year, she/he is expected to fully perform data collection/analysis, to critically analyze and interpret results from the project and to write a scientific paper to be submitted for publication. In view of these aims, the program director will assist in ensuring that the research component of the fellowship takes place timely and feasibly.

### **Evaluation**

The fellow will be evaluated on a regular basis and given feedback as he/she learns with various staff members. We use the 3-month evaluation system from the neurology program and face-to-face meetings once or twice a month to ensure training exposure meets training expectations and program. A final evaluation will be provided at the end of each year of training.

*Eliane Kobayashi, MD, PhD*

*Assistant Professor, Department of Neurology and Neurosurgery, McGill University*

*October 2016*