

FALL FY09 AWARDS ROSTER
RESEARCH & TRAINING FELLOWSHIPS FOR CLINICIANS

\$100,000 award for two years

Name: Kathryn Davis, M.D.
Institution: The Trustees of the University of Pennsylvania
Project: Does high frequency intracranial EEG improve seizure localization?
Preceptor: Brian Litt, M.D.
Lay Summary: Currently, pre-surgical evaluation of epilepsy patients typically involves intracranial electrode recording with macroelectrodes at a band width of .1 to 70 Hz. There is data to suggest that broadening the band width to higher frequency ranges may allow more precise seizure localization and earlier detection. This higher frequency activity has been implicated in important aspects of seizure generation, both at seizure onset and between seizures. This proposal aims to determine if higher bandwidth recording can improve localization of seizures and outcome from epilepsy surgery, and improve the accuracy of implantable devices to treat epilepsy.

Name: Ethan Goldberg, M.D., Ph.D.
Institution: The Children's Hospital of Philadelphia
Project: Cellular and circuit analysis of chronic temporal lobe epilepsy
Preceptor: Douglas A. Coulter, Ph.D.
Lay Summary: Epilepsy is a neurological disorder defined by recurrent seizures, affecting approximately 1% of adults in the United States. Temporal lobe epilepsy (TLE) is the single most common type of adult epilepsy, yet 30% of adults with TLE are refractory to even the latest advances in medical treatment, indicating that further research is required. This project investigates the function of the hippocampal synaptic circuit under normal conditions and in a rodent model of chronic TLE using a broad array of techniques including electrical recordings of ionic currents and single-cell activity as well as the large-scale imaging of neuronal activity. By combining these various techniques, we aim to bridge the gap between cellular-, synaptic-, and network-level analyses and thereby attempt dissect out mechanisms of epileptogenesis in TLE.

\$50,000 awards for one year

Name: Mackenzie Cervenka, M.D.
Institution: Johns Hopkins University, School of Medicine
Project: Electrographic language mapping versus electrocortical stimulation
Preceptor: Nathan E. Crone, M.D.
Lay Summary: When patients with uncontrolled temporal lobe epilepsy have surgery, it is important to spare brain areas responsible for language function. To map these areas prior to surgery, doctors may implant electrodes on the surface of the brain and then stimulate the brain with an electrical current to see if it interferes with speech. However, this can sometimes produce pain or seizures. We have been

developing a safer method for mapping language that measures changes in the electrical activity of the brain (EEG) during speech. This research project will improve the method of measuring EEG changes during speech, will develop an improved battery of language test, and will test the accuracy of mapping language areas with EEG.

Name: Zulfi Haneef, M.D.
Institution: The Regents of the University of California, Los Angeles
Project: fMRI Identification of the Epileptic Network
Preceptor: Jerome Engel, Jr., M.D., Ph.D.
Lay Summary: This project studies the anatomy of epileptic networks with an aim to improve the results of brain surgery for epilepsy treatment. The epileptic network will be identified by using functional MRI (fMRI) to detect brain areas with activity that is similar to a known part of the network. This technique has previously identified brain networks for memory, language and movement. The visual images of the network will be more anatomically complete than those that are created using electrical signal changes.