



Division of Endocrinology Department of Neurology

Nanocourse Announcement

Applications of Optogenetic and Chemogenetic Tools

Wednesday, April 20th, 2016

1:30 pm - 5:00 pm

*Harvard Medical School, Gordon Hall 106,
Waterhouse Room*

Eleftheria Maratos-Flier, MD

Elda Arrigoni, PhD

Melissa Chee, MD

Patrick Fuller, PhD

Optogenetics and chemogenetics are invaluable technologies for neuroscience to study how specific cell types contribute to brain function. Light-sensitive probes (optogenetics) or synthetic receptors (chemogenetics) can be expressed in specific neuronal populations in order to explore neuronal activity in both ex vivo brain preparations and freely behaving animals. This is accomplished through the delivery of viruses that are activated in neurons of interest by genetic targeting, such as by using the cre lox system. This permits researchers to associate causal relationships between neural activity with behavioral and physiological consequences. In optogenetic studies, the delivery of light pulses activates the light-sensitive opsins (ion channels or pumps) to control their electrical activity. In comparison, chemogenetic systems use modified metabotropic or ionotropic receptors that respond to synthetic, pharmacologically inert ligands to control neuronal activity. Collectively, these methods for examining behavior and physiology are powerful tools for understanding brain function.

All are welcome. No registration is required.

See nanosandothercourses.hms.harvard.edu for a complete nanocourse schedule.