

Crown 85 Winter 2016

Visual Perception: A Window to Brain and Behavior

Lecture 3- Techniques for Studying the Brain

Reading: [Amherst College Course](#)
[Stanford College Course](#)
[12 Ways Scientists Can Study your Brain \(Raptorlab\)](#)
[Neuroimaging Methods \(Slideshare\)](#)
[Scanning the Brain \(PBS\)](#)

Looking: [Optogenetics](#)
[ECoG](#)

Understand the basic principles upon which the following techniques and the kinds of information about neural processing which their application can provide:

1. Anatomical
 - a. Neuron staining
 - b. Electron microscopy
 - c. Pathway tracing
2. Electrophysiological recording of neural activity
 - a. Single cell recording in neurons
 - b. Electroencephalography (EEG)
 - c. Magnetoencephalography (MEG)
 - d. Electrocorticography (ECoG)
3. Imaging
 - a. Positron emission tomography (PET)
 - b. Functional magnetic resonance imaging (fMRI)
 - c. Calcium dyes
 - d. Voltage sensitive dyes
4. Neural activation by external stimulus
 - a. Optogenetics
 - b. Intracranial electrical stimulation
 - c. Transcranial magnetic stimulation (TMS)
5. Psychophysics (and other behavioral techniques)