

# 20170109 COGS 107b Lecture Notes

Cabinet COGS107b Lecture Notes

## The Neuron doctrine & The law of dynamic polarization

## The knee-jerk reflex - a neuro "system"

"The little man in your head is in the posterior parietal cortex"

## Structure and Dynamics

### Structure

(micro)synapses -> neurons -> nuclei -> regions(macro)

### dynamics

synaptic & action potentials (micro) -> field potentials / EEG -> fMRI (macro)

## Neurons Shapes and Sizes

Purkinje cells vs Pyramidal Cells

## Purkinje

Heavily arborized  
Only in 2 dimensions

## Pyramidal

Less arborized  
branches in 3 dimensions

## Cajal's 'neuron doctrine'

The neuron as the basic structural and functional unit of the brain

## Cajal's 'law of dynamic polarization':

Neural/electrical transmission proceeds in one direction

## Properties of Ion channels

- Ion Selectivity
- Gating
- Kinetics
- State
- Distribution