9.01 Introduction to Neuroscience
Fall 2007

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Neurophysiology

• Use to observe and measure electrical characteristics of neurons
  – Intracellular recording
  – Voltage clamp
• Also, can stimulate individual neurons or brain areas and observe effects
Neurochemistry

• Assays to determine chemical composition of neurons and identity/behavior of compounds released by neurons
  – Immunocytochemistry
  – Microdialysis
  – Microionophoresis
Pharmacology

• Use drugs!
  – Drug or receptor **agonists** mimic the effects of a drug or activate a receptor
  – **Antagonists** block a receptor
Lesions

- One of the most important experiments in neuroscience
- Experimentally ablate (lesion) brain structures or pathways and observe effects on behavior
Behavioral studies

- Observe subject performance/behavior when asked or trained to complete a specific task
  - Combine with lesions/pharmacology in order to investigate neural basis of performance
Scans/Imagery

• Use scans to visualize brain structures and/or activity
  – Stationary imagery: CT, MRI
  – Activity-based imagery: fMRI, PET, MEG
  – Net activity: EEG