9.01 Introduction to Neuroscience
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Neuroscience Experiments

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9.01 Review

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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