Nitz Lab
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Systems Neuroscience

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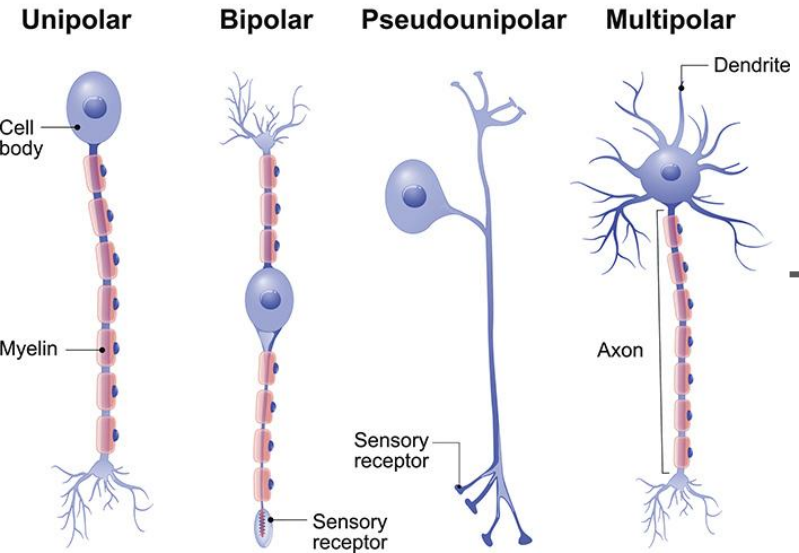
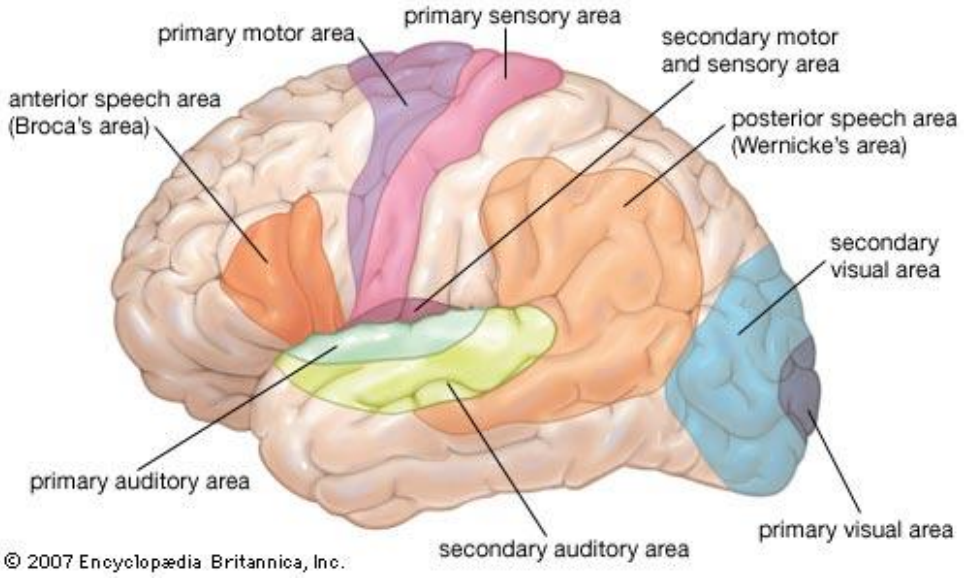
systems neuroscience

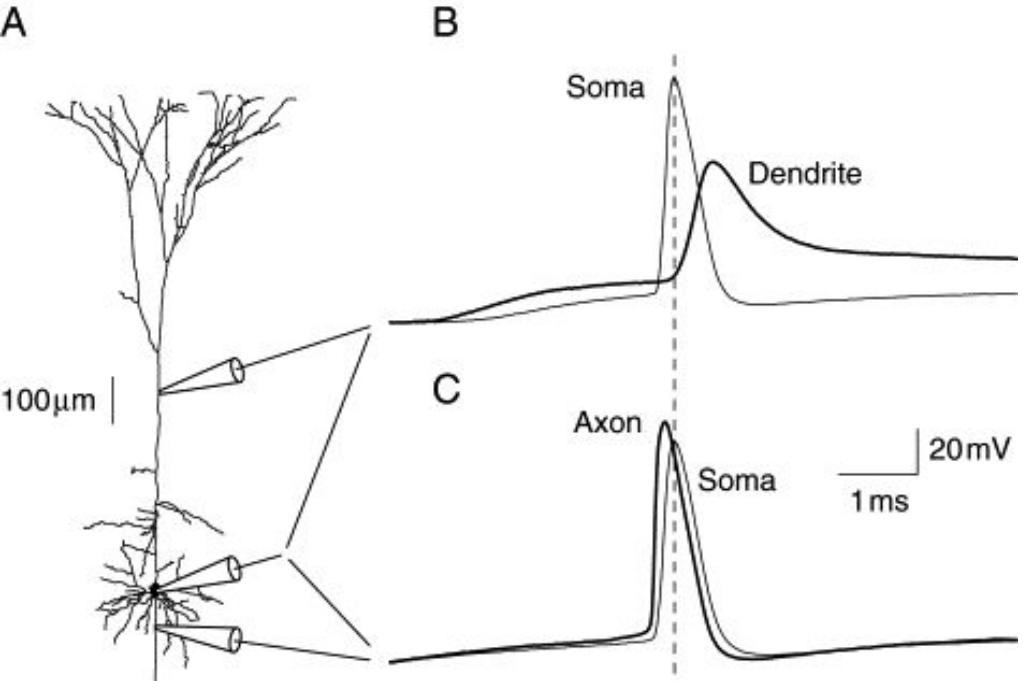
- The brain is a complex connection of individual neurons
- Neurons in the same region tend to perform similar functions
- Information enters the brain system through sensory regions
- Information leaves the brain system through motor regions

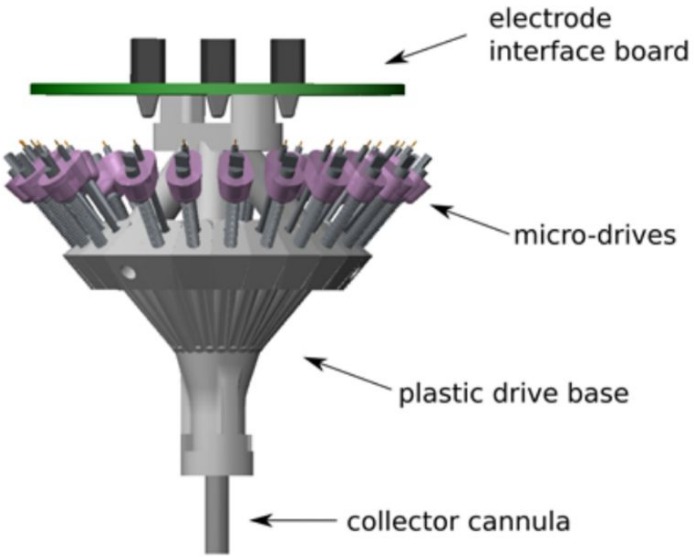




electrophysiology

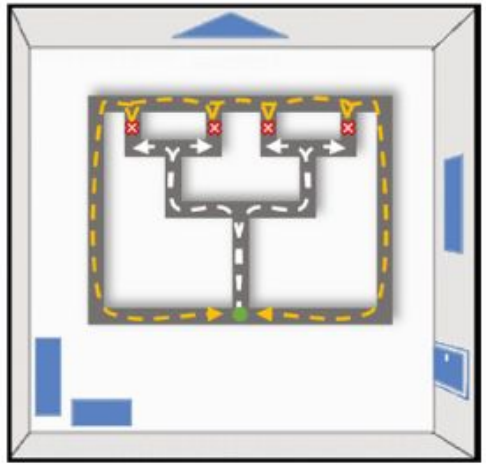
- Neurons increase action potential ‘firing’ in response to *something* in the world
- When a neuron ‘fires’ an action potential a small amount of electricity is generated
- We can put very small wires into the brain and listen to the action potentials

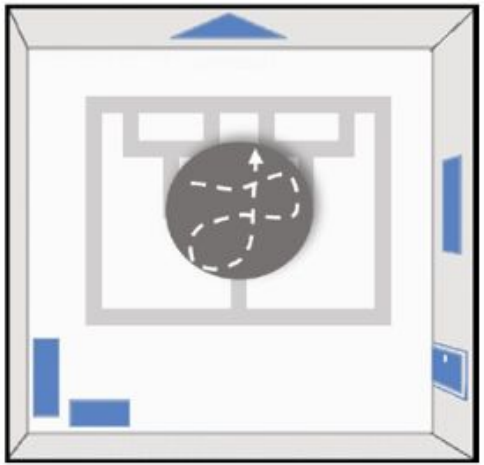


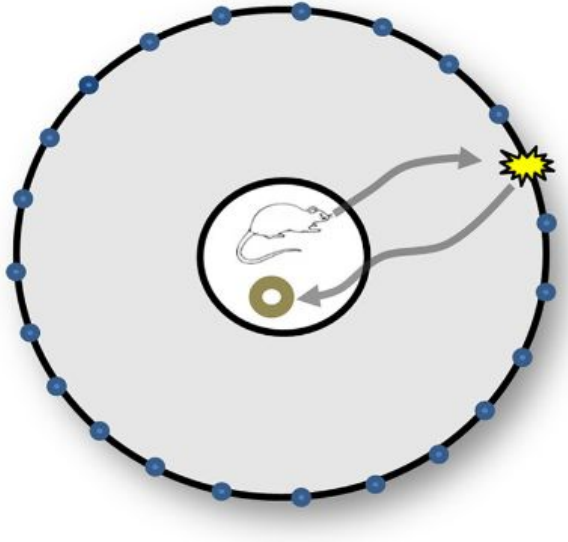


behavior in neuroscience

- The rat has more-or-less the same types of regions in its brain as we do
- We can train rats to perform complicated and elaborate behaviors
  - Complicated Mazes
  - Chase a laser
  - Poke nose into a hole
- Different behaviors and goals cause different activity in the brain







histology

- Histology is the study of biological tissue
- We need to verify which region of the brain we were listening to
- Modern techniques allow for more specific visualizations