

Week 4

Synthesis Questions

The Neuron

- Recall the main parts of a neuron and list their functions
 - **Dendrites** - receive signals from other neurons
 - **Cell body** - contains the nucleus and other organelles
 - **Axon** - carries signals away from the cell body
 - **Axon terminal** - releases neurotransmitters into the synapse
 - **Myelin sheath** - a insulation layer of tissue
- An action potential travels from the direction of the **dendrites** along the **axon** before reaching the **axon terminal**.

The Brain

- What distinguishes the forebrain, midbrain, and hindbrain?
 - The forebrain is the largest part of the brain and is responsible for higher cognitive functions such as memory and language.
 - The midbrain is the middle part of the brain and is responsible for motor control and visual processing.
 - The hindbrain is the smallest part of the brain and is responsible for basic functions such as breathing and heart rate.
- What are several parts of the midbrain and what are their functions?
 - Pons - responsible for breathing and sleep-wake cycle
 - Medulla oblongata - responsible for heartbeat and blood pressure

Neuroanatomy

- What are the four major parts of the brain?
 - The frontal, parietal, occipital, and temporal lobes
- Summarize the main functions of each of the four major components above, or jot down some details about each.
 - Frontal lobe - responsible for motor control, language, and memory
 - Parietal lobe - responsible for sensory processing
 - Occipital lobe - responsible for visual processing
 - Temporal lobe - responsible for auditory processing
- What is a receptive field?
 - Receptive fields are the areas of the visual field that a neuron responds to
- Describe characteristics of a cortical area. Find your favorite cortical area described in the lecture and describe some things that make it interesting.
 - Regions of the cerebral cortex that are responsible for specific functions