Caroline Cutter

January 10, 2022

NSCI 1230

**HW1: Guided Reading**

* **Neuron:** a neuron is a type of cell in the nervous system that uses electrical impulses to transmit and communicate information throughout the body.
* **Axon:** An axon is the part of the neurons that carry the electrical signal from the input of the neuron (dendrites) to the output of the neuron (synapse). Some axons can span the whole-body length.
* **Dendrite:** Dendrites are the part of the neuron that receive input from other neurons and generate an electrical signal within its own neuron. Dendrites of a neuron can be highly branched to receive inputs from many of other neurons through synaptic connections.
* **Soma:** The soma is the cell body of a neuron which contains the nucleus.
* **Membrane Potential:** Membrane potential is the difference in electrical potential between the inside and outside of the neuron. Neurons typically have a membrane potential of -70 mV, which means the cell is polarize at resting potential.
* **Hyperpolarization:** Hyperpolarization is when positive ions flow out of the cell or negative ions flow into the cell, making the membrane potential more negative.
* **Depolarization:** Depolarization is when negative ions flow out of the cell or positive ions flow into the cell, making the membrane potential more positive.
* **Action Potential:** action potentials are spikes in membrane potential which can propagate over large distances through neuron axons. For an action potential to occur, the membrane potential must reach a specific threshold which allows for voltage gated ion channels to open, allowing positive ions to flow into the cell and depolarize the cell (which is the action potential).
* **Synapse:** A synapse is the area between the axon terminal of a presynaptic neuron and the dendrites of a postsynaptic neuron. Typically, the presynaptic neuron releases neurotransmitters into the synapse where they bind to receptors on the post synaptic neuron causing either an excitatory (depolarizing) or inhibitory (hyperpolarizing) effect
* **Spike Train:** a spike train is a type of recording where only the time at which the neuron fires an action potential is recorded. The resulting graph is a sequence of marks that shows the activity / frequency of the firing neuron.