

The Nervous System: The Action Potential

1.
 - a. The action potential changes the membrane potential from _____ mV (resting) to _____ mV and back again to the resting membrane potential.
 - b. This results from a change in membrane permeability first to _____ then to _____ due to the opening of what type of ion channels?

2.
 - a. Where is the density of voltage-gated Na^+ channels the greatest?

 - b. What areas of the neuron generate signals that open these voltage-gated channels? _____
 - c. Opening of these channels causes the membrane to _____ (voltage change).
3.
 - a. If the membrane reaches the trigger point, known as _____, what electrical potential will be generated?

 - b. During the depolarization phase, voltage-gated _____ channels open and _____ enters the cell.
4. What are the two processes that stop the potential from rising above +30 mV?
 - a.
 - b.
5.
 - a. The opening of voltage-gated K^+ channels cause the membrane to _____.

b. Does K^+ move into or out of the cell? _____

c. If the membrane potential becomes more negative than -70 mV, this is called _____.

d. This potential is caused by what characteristic of K^+ permeability?

6. a. After an action potential, the neuron cannot generate another action potential because _____ channels are inactivated. This period is called the _____ period.

b. During the _____ period, the cell can generate another action potential but only if the membrane is _____ (more or less) depolarized.

7. a. Conduction velocity along the axon is increased by what two characteristics?

1. _____

2. _____

b. Conduction along a myelinated axon is called

_____ conduction.

8. a. Name the disease whose symptoms include loss of vision and increasing muscle weakness: _____(from the quiz section)

b. What does this disease destroy? _____

c. How does this stop an action potential?