

AIP Nervous 2- Ion Channels

1. (Page 1.) At synapses, ions move across cell membranes through chemically-gated channels. The gates are opened or closed by _____.
- a. synapses b. neurotransmitters c. synaptic potentials
3. (Page 3.) Passive channels are responsible for establishing the _____.
- a. action potentials b. synaptic potentials c. resting membrane potentials
5. (Page 3.) Chemically-gated channels are responsible for producing _____.
- a. action potentials b. synaptic potentials c. resting membrane potentials
7. (Page 3.) Voltage-gated channels are responsible for generation and propagation of the _____.
- a. action potentials b. synaptic potentials c. resting membrane potentials
8. (Page 4.) Binding neurotransmitter to a receptor on the postsynaptic cell causes a change in the shape of the receptor. This can _____, or in some cases _____, the ion channel.
- a. open, close b. depolarize, repolarize
9. (Page 4.) Neurotransmitters that bind to ion channels are said to act directly. They cause a brief, rapid change in the membrane potential of the _____.
- a. presynaptic cell b. postsynaptic cell
10. (Page 4.) Directly-acting neurotransmitters include _____, _____, _____, and _____.
- a. acetylcholine, glutamate, GABA, and glycine
b. acetylcholine, glutamate, GABA, and serotonin
c. acetylcholine, norepinephrine, epinephrine, and dopamine
12. (Page 5.) An _____, or _____, is produced when the movement of ions makes the inside of the cell more positive.
- a. excitatory postsynaptic potential, EPSP b. inhibitory postsynaptic potential, IPSP
14. (Page 5.) Notice that more sodium moves _____ than potassium moves out.
- a. into the cell b. out of the cell
15. (Page 5.) Excitatory postsynaptic potentials _____ neurons.
- a. hyperpolarize b. depolarize

17. (Page 6.) An _____, or _____, is produced when the movement of ions makes the inside of the cell more negative.
 a. inhibitory postsynaptic potential, IPSP b. excitatory postsynaptic potential, EPSP
26. (Page 7.) In the resting neuron, movement of _____ out of the cell acts to hyperpolarize the cell.
 a. sodium b. chloride c. potassium
27. (Page 7.) Closing these channels results in the membrane potential becoming _____ and _____ the cell.
 a. less negative and depolarizing b. more negative and hyperpolarizing
28. (Page 7.) _____ of the cell by the indirect method is time consuming. The resulting _____ is slow in onset, and long in duration.
 a. Depolarization, depolarization b. Hyperpolarization, hyperpolarization
29. (Page 7.) Besides excitation, indirectly-acting neurotransmitters can also produce slow inhibition. The neurotransmitters _____, _____, _____, and _____ can act indirectly as well as directly, depending on the receptor to which they bind.
 a. acetyl choline, norepinephrine, epinephrine, and dopamine
 b. acetylcholine, glutamate, GABA, and serotonin
30. (Page 7.) The catecholamines (_____, _____, and _____) and peptide neurotransmitters only act indirectly.
 a. norepinephrine, epinephrine, and dopamine b. glutamate, GABA, and serotonin

31. Choose the correct order of these reactions:

