The Nervous System II: Ion Channels

1. List four neurotransmitters that bind to ion channels, these neurotransmitters are called _____-acting neurotransmitters.

   a.

   b.

   c.

   d.

2. a. The binding of ACh opens ion channels in the dendrites or cell body that permits both _____ and _____ to move through them.

   b. Which ion would move into the cell? _____ out of the cell?

   _____

   c. Which ion has the greatest electrochemical gradient? _____

   d. The net movement of these two ions would do what to the cell?

   _____

   e. This would be called an _____ postsynaptic potential, or _____.

3. a. An inhibitory postsynaptic potential (IPSP) causes a neuron to _____.

   b. An example of a neurotransmitter that causes an IPSP is _____.

   c. What type of ions move into the cell in response to this neurotransmitter?

   _____.

4. a. Norepinephrine binds to a receptor that is separate from the ion channel.

This is known as a/an _____ - acting

neurotransmitter.

b. Norepinephrine is known as the _____ messenger.

c. The receptor is coupled to the ion channel by a _____.

5. a. This activates an enzyme which induces the production of a

_____ messenger.

b. An intracellular enzyme is activated and _____ the ion channel.

c. As a result of this sequence of events, what channels are closed?

_____

d. What does this do to the neuron? _____

6. Name three neurotransmitters that can only act indirectly.

a.

b.

c.

7. Which of the four neurotransmitters mentioned in question 1 can also act indirectly?

a.

b.

c.

8. Which one of the four neurotransmitters mentioned in question 1 can

only act directly? _____