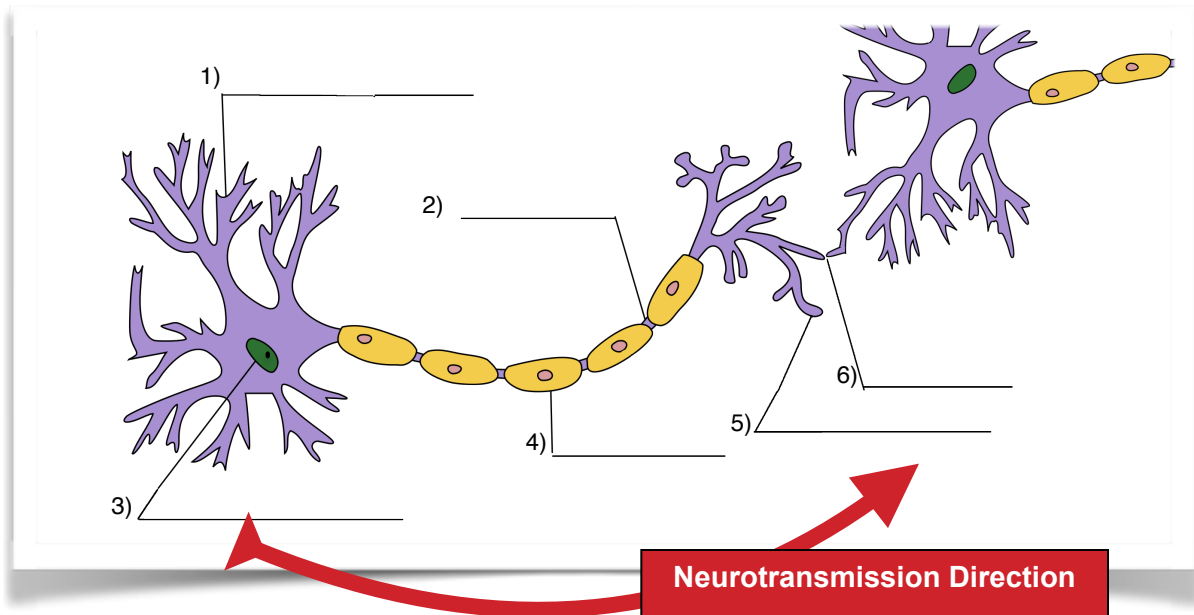


**NEURONS** are nerve cells that provide communication throughout the body. Read the statements below and label the neuron using clues from the statements

- The **cell body** is in charge of the neuron. It fuels the neuron's activities and contains the nucleus, but not the axons or dendrites.
- **Nucleus** is located in the cell body and contains genetic material in the form of chromosomes.
- **Axon** carries the messages away from the cell body.
- **Myelin Sheath** covers the axon to protect it and help messages travel faster and easier.
- **Dendrites** receive messages from other neurons and conducts them to the cell body.
- The **synapse** is the junction between the axon terminals of one neuron and the dendrites of another neuron.
- **Axon Terminals** fibers at the end of the axon that transmits neurotransmitters to the dendrites of another neuron.



## NEURON Review

Nerve cells, called <sup>(7)</sup> \_\_\_\_\_, run through our entire bodies and communicate with to each other.

### A. Components of a Neuron

- <sup>(8)</sup> \_\_\_\_\_ receives information from other neurons and pass the message through the cell body.
- <sup>(9)</sup> \_\_\_\_\_ carries messages away.
- What purpose does the cell body play?<sup>(10)</sup> \_\_\_\_\_
- What purpose does the fatty myelin play?<sup>(11)</sup> \_\_\_\_\_

### B. Communication Process

In order for a message to be sent from one neuron to another neuron, it must cross the <sup>(12)</sup> \_\_\_\_\_. This is a junction between the axon terminals of one neuron and the dendrites of another neuron. (It's a small gap, less than a millionth of an inch wide.)



Neurons send messages across synapses through the release of neurotransmitters. **Neurotransmitters** are chemicals that are stored in sacs in the axon terminals. A neuron fires, or sends its message, by releasing neurotransmitters. This happens hundreds of times a second. There are several types of neurotransmitters. Each has their own specific function. Below is a list of the most common neurotransmitters and their functions.

Neurotransmitter	Function
Acetylcholine (ACh)	Enables muscle action, learning, and memory.
Dopamine	Influences movement, learning, emotion, arousal, and pleasure.
Serotonin	Affects feelings of well being and happiness. Also hunger and sleep.
Norepinephrine	Helps control alertness and arousal. Associated with fight or flight.
GABA (gamma- aminobutyric acid)	A major inhibitory neurotransmitter - it calms firing nerves. GABA is important in producing sleep, reducing anxiety, thus increasing tranquility.
Glutamate	A major excitatory neurotransmitter; involved in learning and memory.
Endorphins	Pleasurable sensations, euphoria, relaxation and control of pain



Neurotransmitters are responsible for many different functions in the body. Imbalances of a neurotransmitter can cause problems.

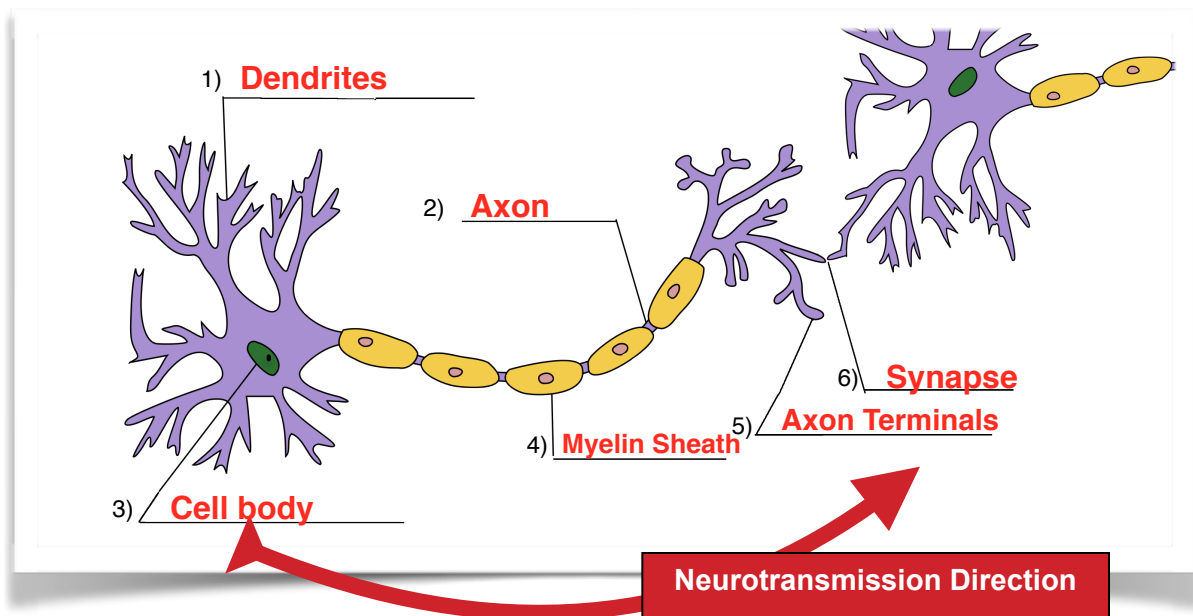
**Directions:** Using the chart from above, match each statement in the left column with the correct neurotransmitter from the right column. Write the letter of the term in the space provided.

- |  |                   |
|--|-------------------|
| ___ 13. This neurotransmitter is released naturally while eating, and during sex and unnaturally as with drug addiction.         | a. Acetylcholine  |
| ___ 14. Low levels of this neurotransmitter is linked to depression. Antidepressants increase levels of this neurotransmitter    | b. Dopamine       |
| ___ 15. After a stroke, too much of this neurotransmitter is produced and a patient has problems with learning and memory        | c. Serotonin      |
| ___ 16. This neurotransmitter helped increase blood flow in Burt B's blood vessels, so he could run faster after seeing a mouse. | d. Norepinephrine |
| ___ 17. An imbalance with this neurotransmitter is linked to muscular disorders and alzheimer's disease.                         | e. GABA           |
| ___ 18. This neurotransmitter is responsible for Burt B's 'runner's high' and has been called our bodies 'natural pain killers.  | f. Glutamate      |
| ___ 19. An imbalance of this neurotransmitter can cause anxiety and is even linked to epilepsy.                                  | g. Endorphins     |
| 20. <input type="radio"/> Of the seven neurotransmitters listed above, which three are involved in <b>Love?</b>                  |                   |

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## NEURON Review

Nerve cells, called <sup>(7)</sup> **Neuron**, run through our entire bodies and communicate with to each other.

### A. Components of a Neuron

- <sup>(8)</sup> **dendrites** receives information from other neurons and pass the message through the cell body.
- <sup>(9)</sup> **axon** carries messages away.
- What purpose does the cell body play?<sup>(10)</sup> **produces energy for the cell, directs the cell**
- What purpose does the fatty myelin play?<sup>(11)</sup> **protects axon and helps messages travel faster-easier**

### B. Communication Process

In order for a message to be sent from one neuron to another neuron, it must cross the <sup>(12)</sup> **synapse or synaptic gap**. This is a junction between the axon terminals of one neuron and the dendrites of another neuron. (It's a small gap, less than a millionth of an inch wide.)



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| 20. Of the seven neurotransmitters listed above, which three are involved in <b>Love?</b>   |                   |
| <u>Dopamine, Serotonin, Endorphins</u>  |                   |