

Conceptual Biology

Chapter 12: The Nervous System

Parts of the Brain

Match parts of the brain responsible for their body functions.
 Note that some parts have more than one function.



Brainstem d

Cerebellum b, k

Cerebrum a, c, e, f, i

Thalamus g

Hypothalamus h, i

- a. Deals with visual information (what we see)
- b. Controls balance, posture, and coordination
- c. Deals with sensory information about temperature, touch, and pain
- d. Controls basic involuntary activities such as heartbeat, respiration, and digestion
- e. Allows us to understand spoken language
- f. Controls our voluntary movements
- g. Sorts and filters information and then passes it to the cerebrum
- h. Responsible for emotions such as pleasure and rage
- i. Controls our speech
- j. Controls hunger, thirst, and sex drive
- k. Controls the fine movements we use in activities that we perform “without thinking”



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The Nervous System

1. The two main parts of the nervous system are the central nervous system _____ and peripheral nervous system _____.

The central nervous system consists of the brain _____ and spinal cord _____.

2. The three types of neurons are sensory neurons _____, interneurons _____, and motor neurons _____.

Messages from the senses to the central nervous are carried by

sensory neurons _____. Neurons that connect one neuron to another neuron are

interneurons _____. Messages are carried from the central nervous system

to muscle cells or to other responsive organs by motor neurons _____.

3. Motor neurons are further divided into two groups, the somatic nervous system _____,

which controls voluntary actions and stimulates our voluntary muscles,

and the autonomic nervous system _____

which controls involuntary actions and stimulates involuntary muscles

and other internal organs.



The autonomic nervous system, includes a sympathetic division _____

that promotes a “fight or flight” response and a parasympathetic division _____

that operates in times of relaxation.

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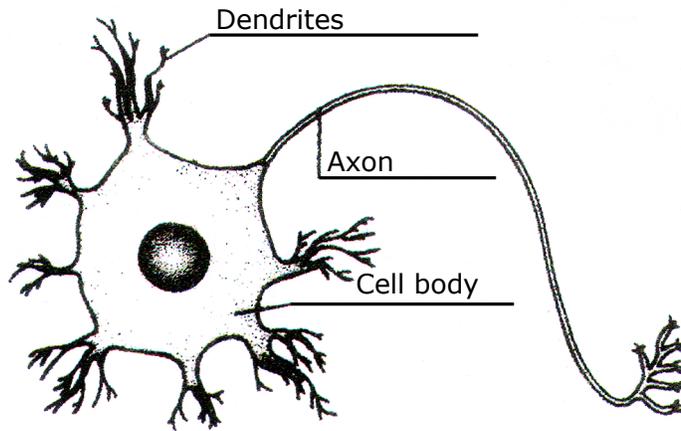
Parts of a Neuron

1. a. Label the parts of the neuron in the diagram.

Dendrites

Cell body

Axon



b. Explain the function of each part of a neuron.

<u>Part of a neuron</u>	<u>Function</u>
Dendrites	Receive information from other cells. _____
Cell body	Holds the neuron's nucleus and organelles. _____
Axon	Transmits information to other cells. _____

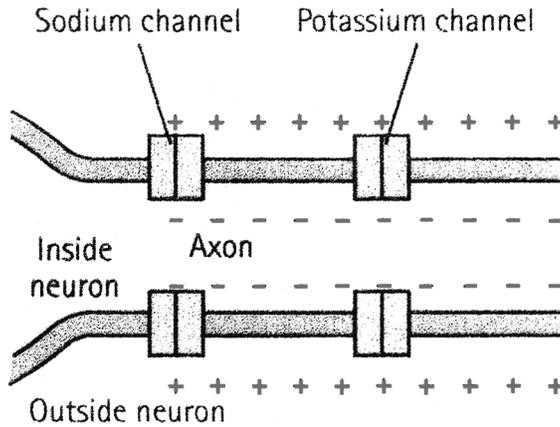


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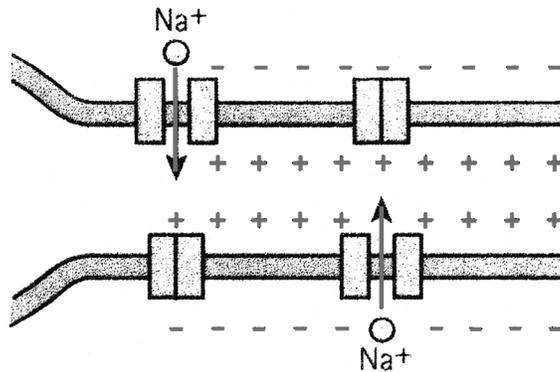
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Action Potentials

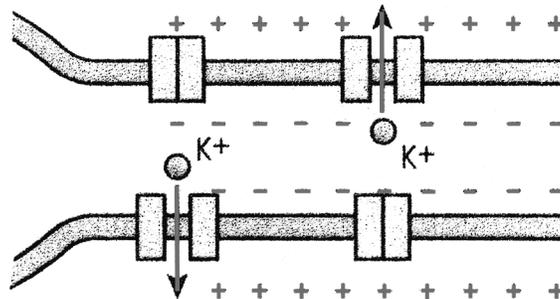
- This is a neuron at rest. The neuron is at its resting potential. Draw a + sign on the side of the membrane that is positively charged. Draw a - sign on the side of the membrane that is negatively charged.



- Now the neuron fires! There is an action potential. The sodium channels open. Use arrows to show how the sodium ions move. Draw a + sign on the side of the membrane that is positively charged. Draw a - sign on the side of the membrane that is negatively charged.



- Now the sodium channels close, and the potassium channels open. Use arrows to show how the potassium ions move. Draw a + sign on the side of the membrane that is positively charged. Draw a - sign on the side of the membrane that is negatively charged. The action potential is over.



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Senses

1. The light-sensitive cells are found in the part of the eye called the retina.

The two types of light-sensitive cells are rods and cones.



2. State whether the following describes rods or cones.

- a. Vision at night or in dim light rods
- b. Let us see color cones
- c. Detect only black, white, and shades of gray rods
- d. Not very good at making out fine details rods
- e. Nonfunctioning version of these causes colorblindness cones

Number from 1 to 4:

3. The ear consists of 3 parts: the outer, middle, and inner ear. Sound moves through the air in the following order:

- 3 middle ear bones
- 1 pinna
- 4 cochlea
- 2 eardrum



4. List the five basic tastes.

- sweet salty sour
- bitter umami