

How is the Nervous System Organized?

Chapter 3-Neuroscience: The brain and behavior

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Class Objectives:

- Ψ Identify and define the structures of the neuron
- Ψ Identify and discuss the role of neurotransmitters on behavior

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The Neuron

- Ⓢ The neuron is the _____

- They are often grouped in bundles called nerves.

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4 parts of the neuron

1. Dendrites are specialized to receive signals from neighboring neurons and carry them back to the cell body

⊙ _____

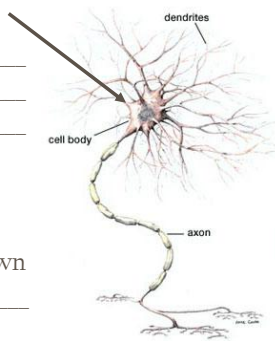
- ⊙ Relays the information into the cell body

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The Neuron

2. The Cell body

- ⊙ The cell body relays the information down to the _____



The structure of a neuron

3. Axon: A thin, long structure that

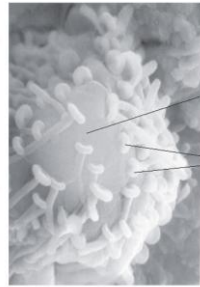
4. _____ is the last step for the relay of information inside the neuron.





Figure 2.17
A Cell Body Normally Covered With Axon Terminals.
From © Science/PhotoDisc.com/Getty Images

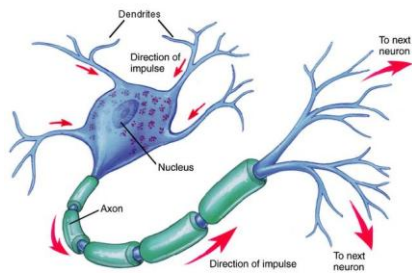
Cell body covered with Axon Terminals



Receiving neuron (cell body)

Sending neurons (axon terminals)

Once the information hits the terminal, _____
_____,
_____ which reside in the axon terminal.



The information shoots from one end of the neuron to the other.

How do neurons communicate?



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Electrical Communication

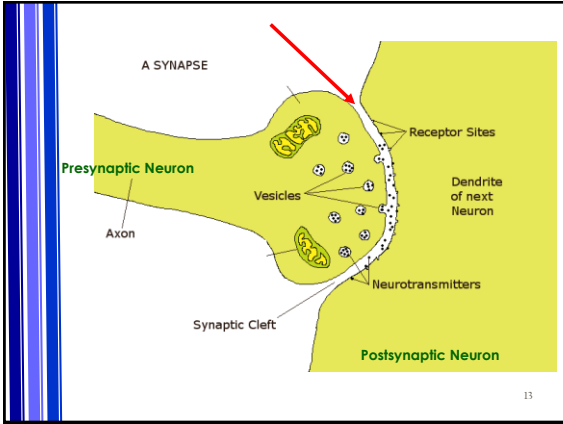
- ⊙ _____ is an electrical current sent down the axon.
- ⊙ The activity within the neurons is _____
This current causes the neuron to _____
 - This is an _____
- ⊙ When an action potential moves down the axon, it _____

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Synaptic transmission

- ⊙ The _____ is the space between neurons
- ⊙ _____
_____ via the *neurotransmitters*.
- ⊙ This is an _____

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Neurotransmitters

- Ⓢ Neurotransmitters are chemical substances that reside in the axon terminals
- Ⓢ They communicate to other neurons by

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Chemical Communication

- Ⓢ The communication between neurons is chemical
- Ⓢ Neurotransmitter are either neutralized by an enzyme or taken back up by the neuron that released it in reuptake.
- Ⓢ At least 50 different types of neurotransmitters have been identified

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Examples of Neurotransmitters

- ⦿ Gamma-aminobutyric acid (GABA) is involved in experiences of _____

- ⦿ Serotonin is involved in _____

(appetite for carbohydrates)

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Dopamine

- ⦿ Involved in movement, thought processes,

- ⦿ Implicated in _____

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Norepinephrine

- ⦿ Involved in arousal reactions (increasing heart rate, respiration, sweating, and dilation of pupils)

- ⦿ _____

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How do drugs effect behavior?



Psychopharmacology

- Ⓢ Psychopharmacology is the study of _____

- Ⓢ Research has shown that many common drugs alter the amount of _____

- Ⓢ Drugs can have either an “agonistic” or an “antagonistic” effect on the system

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How do chemical effect behavior?

- Ⓢ Agonistic drugs _____

- When present act as though a neurotransmitter has been released



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How do Chemicals Effect Behavior?

⊙ Antagonistic drugs _____

- When present the receptor cells are blocked and neurotransmitter cannot have its usual effect.



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Did you get it?

Is information communicated inside the neuron through an electrical or chemical process?

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Next Class...

- ⊙ How do the neuron work together?
 - The Central Nervous System
 - The Peripheral Nervous System

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