

Module 7: Organ Systems and Homeostasis

Topic 3 Content: Parts of a Neuron Notes

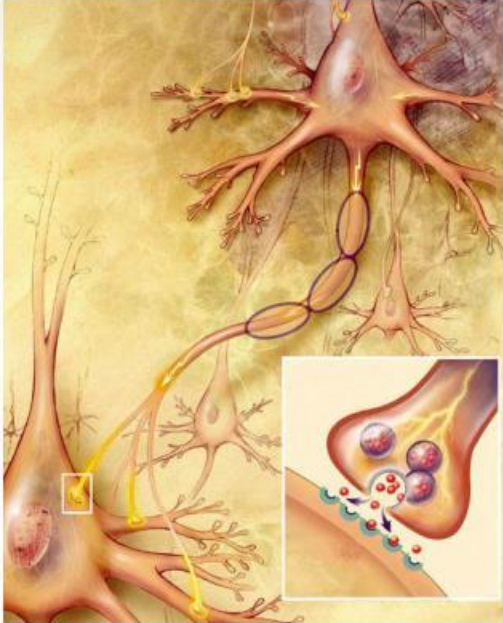
Introduction

Parts of a Neuron

Introduction

The study of the nervous system begins with its smallest unit, the neuron. Billions of these cells make up the entire nervous system, and although they come in many varieties, neurons function similarly.

In this interactivity, click the next and previous buttons on the bottom of the player to learn more about the different features of the neuron.

An anatomical illustration of a neuron. The main image shows a multipolar neuron with a central cell body (soma) containing a nucleus, surrounded by branching dendrites and a long axon. The axon is covered by a myelin sheath. An inset image in the bottom right corner shows a close-up of a synapse, where a presynaptic terminal contains vesicles of neurotransmitters (represented by red and blue spheres) and a postsynaptic terminal with receptors.

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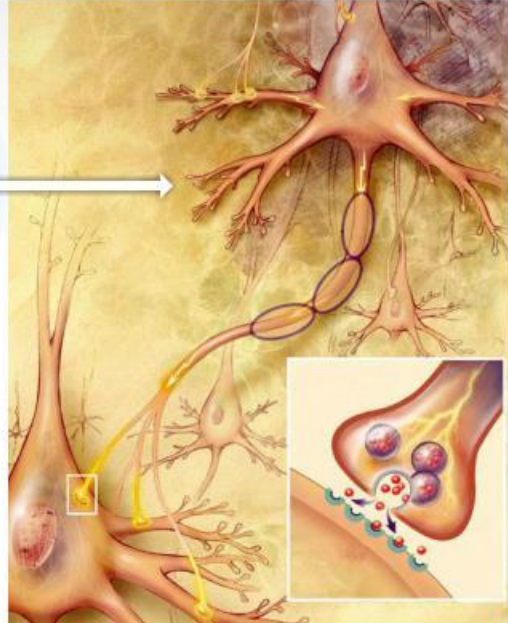
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Dendrite

Parts of a Neuron

Dendrite

Dendrites are branch-like fibers that extend from the cell body. Their job is to receive the messages from surrounding neurons and conduct the impulse to the cell body.



The diagram illustrates a neuron with its various parts. The cell body (soma) is the central part, and it is surrounded by a network of branching fibers called dendrites. A long, thin fiber called the axon extends from the cell body. An inset shows a close-up of a synapse, where the axon terminal of one neuron meets the dendrite of another neuron, and neurotransmitters are released into the synaptic cleft.

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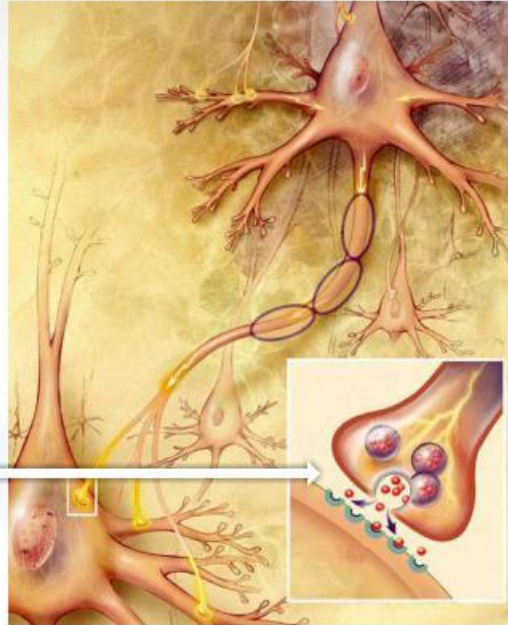
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Synapse

Parts of a Neuron

Synapse

A synapse is the gap or junction between the end of one neuron and the dendrite of a neighboring neuron.



The diagram illustrates a synapse between two neurons. The main image shows a large multipolar neuron with its cell body (soma) and several dendrites. One of its axons is shown extending and terminating at a synapse with the dendrite of another neuron. A yellow line highlights the path of the axon. An inset in the bottom right corner provides a magnified view of the synapse, showing the axon terminal of the first neuron containing several purple spherical vesicles. These vesicles are releasing their contents into the synaptic cleft, which is the narrow gap between the axon terminal and the dendrite of the second neuron. The dendrite of the second neuron is shown with small receptors on its surface that are interacting with the released substances.

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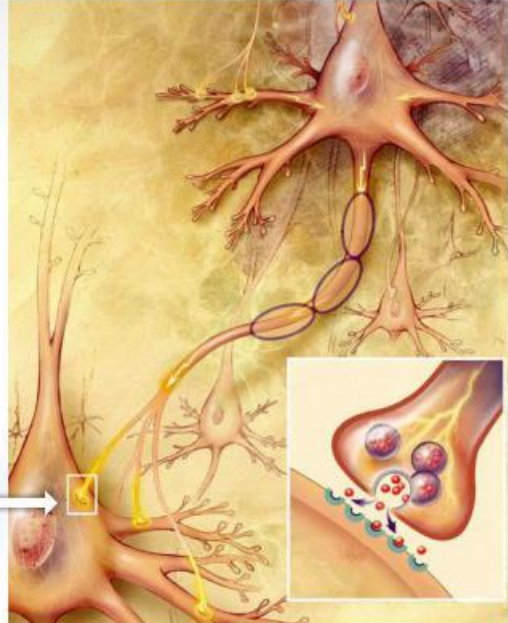
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Axon Terminals

Parts of a Neuron

Axon Terminals

Axon terminals are small fibers that form the end of the neuron and contain chemical messengers. Depending on the message, certain messengers get released in a gap at the end of the neuron.



The diagram illustrates a neuron with its cell body, dendrites, and a long axon. The axon is covered by a myelin sheath. At the end of the axon, there are several small, bulbous structures called axon terminals. An inset shows a close-up of a synaptic terminal, where a vesicle containing a chemical messenger is releasing its contents into a synaptic cleft.

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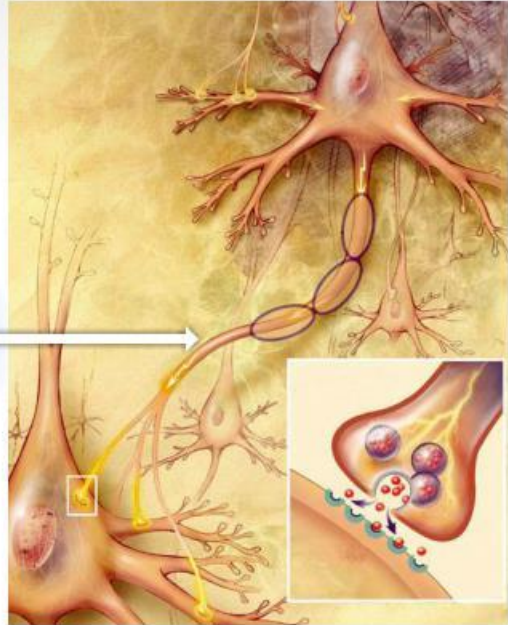
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Axon

Parts of a Neuron

Axon

An axon is the thin extension that transmits an electrical signal or impulse down the length of the neuron.



The diagram illustrates a neuron with its cell body (soma) and branching processes. A long, thin axon extends from the cell body, highlighted in yellow. An inset shows a close-up of the axon terminal, where it meets another neuron, showing the release of neurotransmitters into a synaptic cleft. A white arrow points from the text to the axon in the main diagram.

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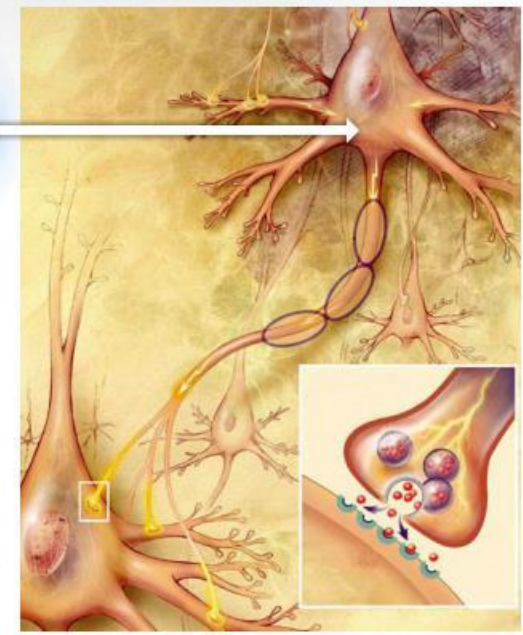
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Cell Body

Parts of a Neuron

Cell Body

This is the body of the cell. Like other cells, neurons have a cell body with a nucleus that produces energy for the cell's activity.

The diagram illustrates a multipolar neuron. The cell body (soma) is the central, rounded part containing the nucleus. It is surrounded by branching processes called dendrites. A long, thin projection called an axon extends from the cell body, covered by a myelin sheath. An inset shows a cross-section of the axon, revealing the internal structure including the nucleus and other organelles. A white arrow points from the text to the cell body of the neuron.

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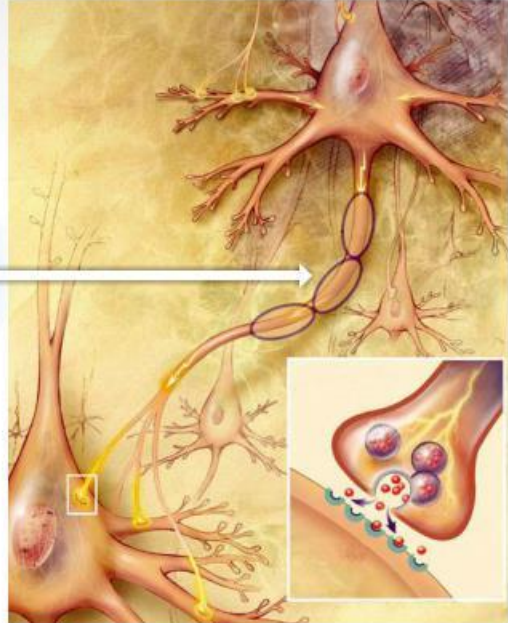
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Myelin Sheath

Parts of a Neuron

Myelin Sheath

The myelin sheath is the fatty substance that coats and protects the axon. It helps the electrical signal move quickly.



The diagram illustrates the structure of a neuron and the formation of a myelin sheath. The top part shows a neuron with its cell body, dendrites, and axon. The axon is covered by a yellow myelin sheath. An inset image shows a close-up of the myelin sheath, highlighting the fatty substance and the electrical signal moving through it.

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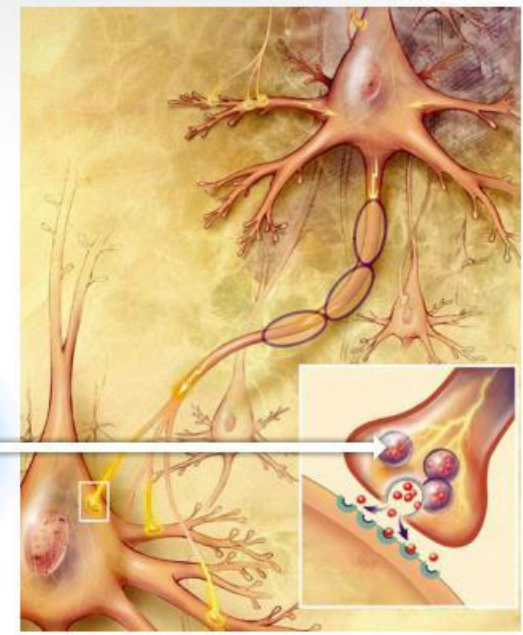
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Neurotransmitters

Parts of a Neuron

Neurotransmitters

Neurotransmitters are the chemical messengers held in the axon terminals. The message being sent determines which neurotransmitter will be released into the synapse.



The diagram illustrates the structure of a neuron. It shows a central cell body (soma) with branching dendrites that receive signals. A long axon extends from the cell body, covered by a myelin sheath. The axon ends in axon terminals. An inset provides a detailed view of an axon terminal, showing vesicles containing neurotransmitters. An arrow indicates the release of these neurotransmitters into the synaptic cleft, where they can bind to receptors on the postsynaptic cell.

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