The Nervous System

Ch 11 Notes

The 3 overlapping functions of the nervous system are:

1.

2.

3.

The nervous system is divided into 2 parts:

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - consisting of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - consisting of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

This portion of the nervous system is further divided into 2 divisions:

a. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- (sensory) - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- (motor)- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The efferent division is further divided into:

a. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (“body”) - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (“automatic” ANS)- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The autonomic nervous system is further subdivided into the

1) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- prepares for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- prepares for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Nervous tissue is composed of 2 kinds of cells:

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ =

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ =

**Nonconducting Neuroglia of the CNS and PNS**

4 main neuroglia support CNS neurons:

a.

b.

c.

d.

Their job is to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
| Neuroglial Cell | CNS or PNS? | Job | Sketch |
| Astrocyte |  |  |  |
| Microglial |  |  |  |
| Ependymal |  |  |  |
| Oligodendrocyte |  |  |  |
| Satellite Cell |  |  |  |
| Schwann Cell (neurolemmocyte) |  |  |  |

**Conducting Cells – Neurons**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the structural units of the nervous system. They conduct impulses within the body. All have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and one or more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Most neuron cell bodies are located in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Nuclei are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ganglia are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Neuron Processes**

Neuron processes are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ . The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ contains both \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The PNS contains chiefly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Tracts are bundles of neuron processes in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Nerves are bundles of neuron processes in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The 2 types of processes are:

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
| Neuron Part | Function | Sketch & label a neuron |
| Axon |  |  |
| Dendrite |  |
| Cell Body |  |

Structures found in nerve cells:

Cell body contains: Processes:

1. 1.

2. 2.

3.

4.

5.

The path of an impulse through the neuron is always in this direction:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Structure of an axon**

The axon is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ region of the neuron. It generates impulses and transmits them along the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (neuron cell membrane) to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ terminal which secretes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Myelin Sheath**

Composed of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , a whitish, protein-lipid substance that is designed to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ axon as well as increase \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of nerve impulse transmission.

Myelinated fibers have a segmented sheath that surrounds most long or large diameter \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Nonmyelinated fibers do not contain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and conduct impulses more slowly.

Myelin in the PNS is formed by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells. Gaps between adjacent cells are sites where axon \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can emerge. They are formerly known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Nonmyelinated fibers are also surrounded by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells but don’t involve coiling.

Myelin in the CNS is formed by the processes of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, not whole cells. Each cell can wrap \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ axons at once. They also can contain the myelin sheath gap. In the CNS, white matter consists of regions of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with dense collections of myelinated fibers usually arranged in tracts. Gray matter consists mostly of neuron \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ fibers.

**Classification of Neurons**

Neurons can be classified on the basis of their structure:

1.

2.

3.

|  |  |  |  |
| --- | --- | --- | --- |
| Type of neuron | Description | Example | Sketch |
| Multipolar |  |  |  |
| Bipolar |  |  |  |
| Unipolar |  |  |  |

They can also be classified on the function that each performs:

1.

2.

3.

|  |  |  |
| --- | --- | --- |
| Type | Location of Cell Bodies | Pathway |
| Sensory |  |  |
| Motor |  |  |
| Interneurons (Association) |  |  |