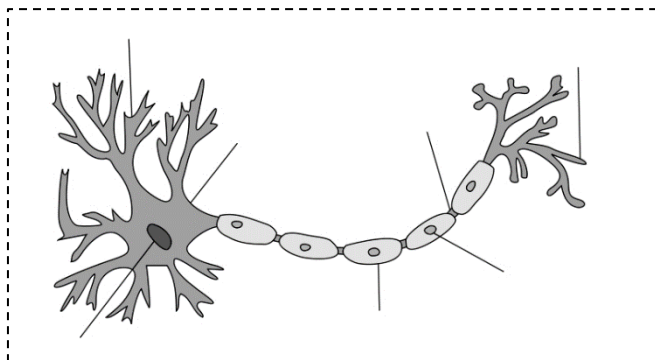


Practice 11

Nerve tissue

1. Identify and describe the key morphological structures of a neuron. Use the scheme of the PNS neuron below or any slide showing the large neurons available in the online Atlas of Histology (e.g. pyramidal cells of cerebral cortex, somatomotoric neurons in spinal cord), or draw your own scheme.
2. Graphically or in a tabular form classify the neurons according to a) their morphology (number of processes), b) length of the axon, c) position and function in the neuronal network, d) type of the neurotransmitter.
3. Provide the examples of anatomical occurrence of individual types of neurons classified according to 2a.
4. What cytoskeletal structure provides the axonal transport and why it is so important to consider it in case of administration of cytotoxic compounds targeting mitotic spindle to a cancer patient?
5. What chromatin state is typical for neurons? What is the general rate of proteosynthesis in neurons?
6. Graphically schematize the position of the Nissl substance and determine what intercellular structure it represents.
7. Using the slide of spinal cord characterize and graphically schematize the grey and white matter, and highlight the principal structural differences.
8. Classify the glial cells in CNS and PNS and describe their functions in detail.
9. Graphically schematize the process of myelination by the Schwann cell. What does the term "mesaxon" mean? What is the structural and functional principle of nodes of Ranvier?
10. Graphically schematize the chemical synapsis and determine the key structures that constitute such type of intercellular junction.
11. Describe and graphically schematize the structure of the blood-brain (hematoencephalic) barrier. Is it more permeable than placental barrier?



Recommended study materials:
Presentations from practices and lectures, Atlas of Histology (online), Atlas of Cytology and Embryology (online), Junqueira's basic histology.