LECTURE 18: NERVOUS SYSTEM: INTRODUCTION

A. Identify the main structures and functions of the nervous system and summarize the relationships between sensory input, integration, and motor output.

STRUCTURES

1) Define *nerve;* describe the structural components of nerves. Explain why a nerve is also an organ.
2) Distinguish between neuron, nerve fiber, nerve tract, ganglion, and brain nucleus.
3) List six types of supporting cells (astrocytes, ependymal cells, microglia, oligodendrocytes, Schwann cells, satellite cells) in nervous tissue; distinguish supporting cells in terms of location, shape, and function.

STRUCTURE: NEURON:

4) Define *neuron*. Identify the structural features of the cell body and cell processes; describe their functional roles.
5) Define *synapse;* explain the structural components and describe how a synapse functions.
6) Draw and label a simplified illustration of a synapse.
7) Define *myelin sheath* and describe its structure and functions; distinguish between development in the CNS and PNS.
8) Classify neurons by structure (unipolar, bipolar, multipolar); relate the structure (shape) of the neurons to their functional classifications (motor, sensory, interneurons).

NERVOUS SYSTEM ORGINIZATION

9) Name the basic divisions of the nervous system and list the basic structural components of the CNS and PNS.
10) Describe the functional organization of the PNS. For the sensory (afferent) division, compare somatic sensory and visceral sensory subdivisions; for the motor (efferent) division, compare somatic motor and visceral motor subdivisions.
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INFORMATION FLOW:

11) Identify the main functions of the nervous system and summarize the relationships between sensory input, integration, and motor output.
12) Distinguish functionally between the terms afferent and efferent.
13) Explain why a nerve can contain both afferent and efferent messages, and why a neuron cannot.