

# Nervous System

(Select topics)

## Nervous Tissue (Neurology)

### 1. Nervous System

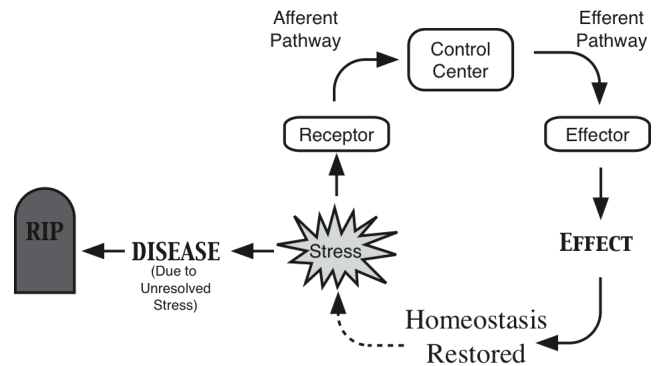
- Neurology

### 2. Functions

- A. Senses environmental and internal changes
- B. Integration of the information
- C. Responds

### 3. Organization

- A. Central Nervous System
- B. Peripheral Nervous System
  - i. Afferent System
  - ii. Efferent System
    - a. Somatic Nervous System
    - b. Autonomic Nervous System
      - Sympathetic Division
      - Parasympathetic Division



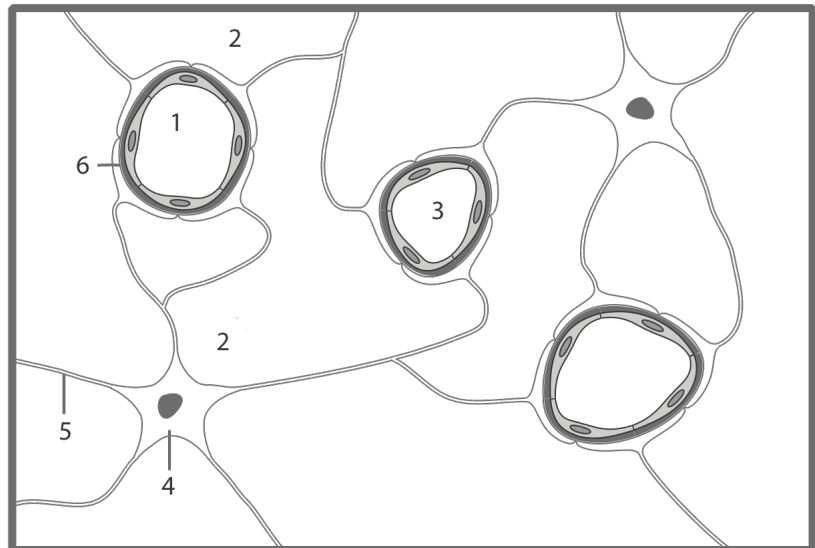
4. Histology

A. Neuroglia

i. Astrocytes

a. Blood Brain Barrier

1. Endothelia
2. Interstitial Fluid
3. Plasma
4. Astrocyte
5. Cytoplasmic Extention
6. Basement Membrane



ii. Microglia

Ependymal Cells

Oligodendrocytes

iii. Schwann Cells

B. Neurons

i. Anatomy of a Neuron

a. Body

b. Dendrites

- c. Axon
  - Axon Hillock
- d. Axoplasm
- e. Axolemma
- f. Axon collaterals
- g. Synaptic End Bulbs
- h. Synaptic Vesicles

5. Nerve Fiber

A. Myelin Sheath

- i. Myelinated
- ii. Unmyelinated
- iii. Neurofibril Nodes

6. Neuron Classification

A. Structural Classification of Neurons

- i. Multipolar Neurons
  - a. Location/Functions
- ii. Bipolar Neurons
  - a. Location/Functions
- iii. Unipolar (pseudounipolar) Neurons
  - a. Location/Functions

7. Functional Classification

- i. Sensory (afferent) neurons
- ii. Interneurons
  - a. Association Neurons
- iii. Motor (efferent) neurons

8. Nerve Processes

A. Types

- i. Nerves
- ii. Fiber Tracts
  - a. Ascending (Sensory) Tracts
  - b. Descending (Motor Tracts)
- iii. Nomenclature

## Spinal Cord and Spinal Nerves

9. Spinal Cord

- A. Medulla Oblongata
- B. Conus Terminalis
- C. Spinal Nerves
  - Intervertebral Foramen

D. Naming of Spinal Nerves

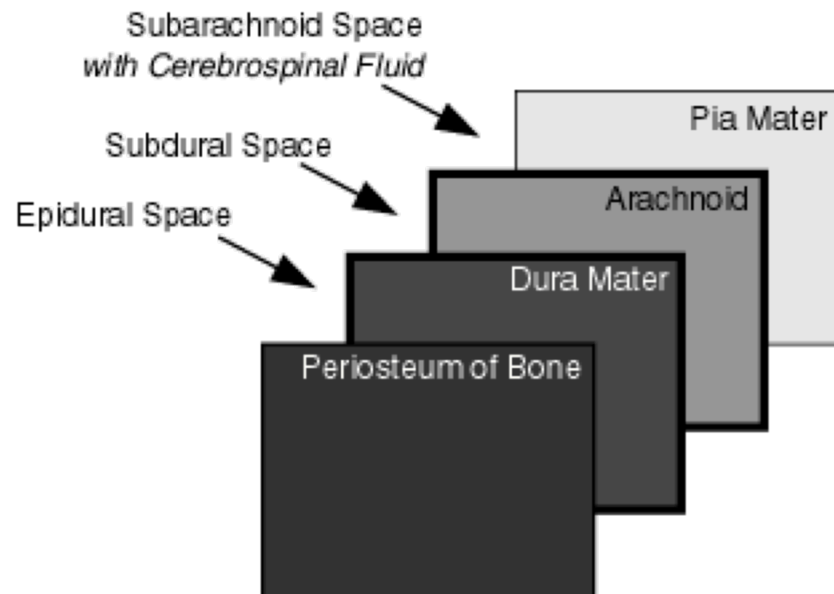
C1 – C8 (not 7); T1 – T12, etc

E. Enlargements

i. Cervical Enlargement

ii. Lumbosacral (Lumbar) Enlargement

10. Spinal Meninges



A. Dura Mater

i. Epidural Space

B. Arachnoid

i. Subdural Space

C. Pia Mater

i. Subarachnoid Space cerebrospinal fluid

\* Cerebrospinal Fluid

11. Cerebrospinal Fluid Production and Flow

A. Ventricles of Brain

i. Two Lateral Ventricles

ii. Third Ventricle

\* Cerebral Aqueduct

iii. Fourth Ventricle

B. Choroid Plexus

C. Two Lateral and One Median Aperture

D. Subarachnoid Space

E. Arachnoid Villi (also called granulations)

F. Superior Sagittal Sinus

12. Overview of Internal Structure

A. Central Canal

B. Anterior Median Fissure

C. Posterior Median Sulcus

D. Gray Matter

E. White Matter

F. Ventral and Dorsal Roots

i. Dorsal Root Ganglion

13. Gray Matter

Gray Commissure

• Central Canal

A. Posterior (Dorsal) Horns

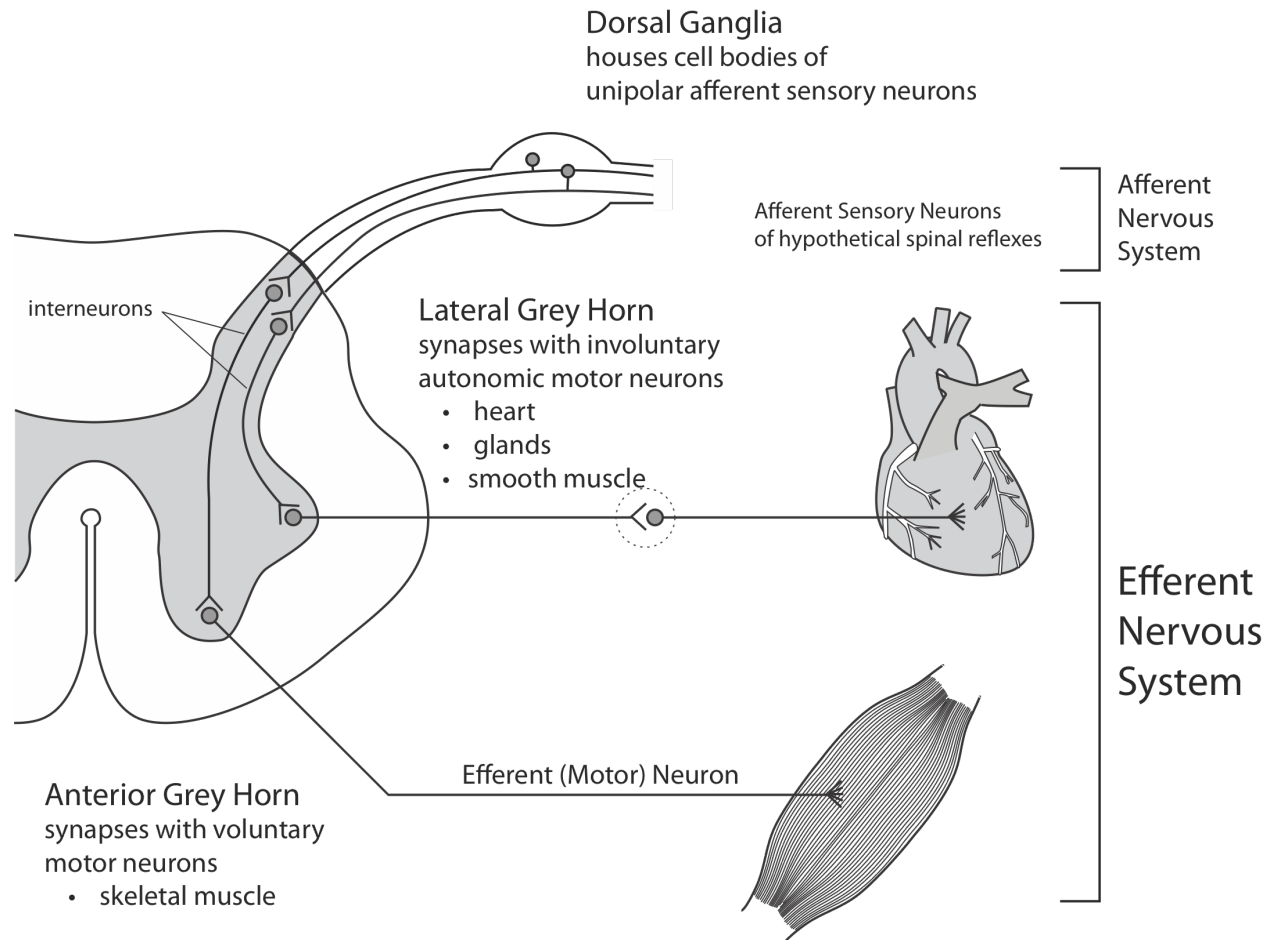
B. Anterior (Ventral) Horns

C. Lateral Horns

D. Dorsal Roots

i. Dorsal Root Ganglion

E. Ventral Roots



## 14. White Matter

- A. White Columns or Funiculi
  - i. Posterior
  - ii. Lateral
  - iii. Anterior Funiculi
- B. Fasciculi (Tracts)
  - i. Ascending Tracts
  - ii. Descending Tracts
- C. Naming of Tracks

## 15. Major Functions of Spinal Cord

- A. Impulse Transmission



B. Reflex Center

- i. Posterior (sensory) Root
- ii. Anterior (motor) Root

C. Reflex Integration

16. Reflex Arc

- Conduction Path

A. Receptor

- Thermoreceptors
- Baroreceptors
- Light receptors
- Stretch receptors
- Chemoreceptors
- Osmoreceptors
- ETC

B. Afferent / Sensory Neuron

- Unipolar

C. Interneurons

- Multipolar
- i. Excitatory Interneurons → EPSP
- ii. Inhibitory Interneurons → IPSP

D. Efferent / Motor Neuron

- Multipolar

E. Effector

i. Muscle

ii. Gland

17. Specific Reflexes (*Pull out your HANDOUT on Reflexes*)

A. General Reflex Arc

B. Stretch Reflex

i. Patellar Reflex

C. Tendon Reflex

D. Flexor Reflex and Crossed Extensor Reflex

18. Dermatomes

19. Autonomic Nervous System

SEE HANDOUT !!!