



Nervous system

Anatomy Department
Beni-Suef University

Intended learning objectives (ILOs)

By the end of this lecture the student will be able to:

1. Describe the gross anatomical features of the spinal cord and the brain.
2. Describe the spinal nerve.
3. Identify the functions of the cranial nerves.
4. Compare the sympathetic and parasympathetic outflow.

- **Anatomically:**

- Central nervous system
- Peripheral nervous system

- **Functionally:**

- Somatic nervous system
- Autonomic nervous system

The central nervous system

- Protected by:

1. Bones

2. Meninges

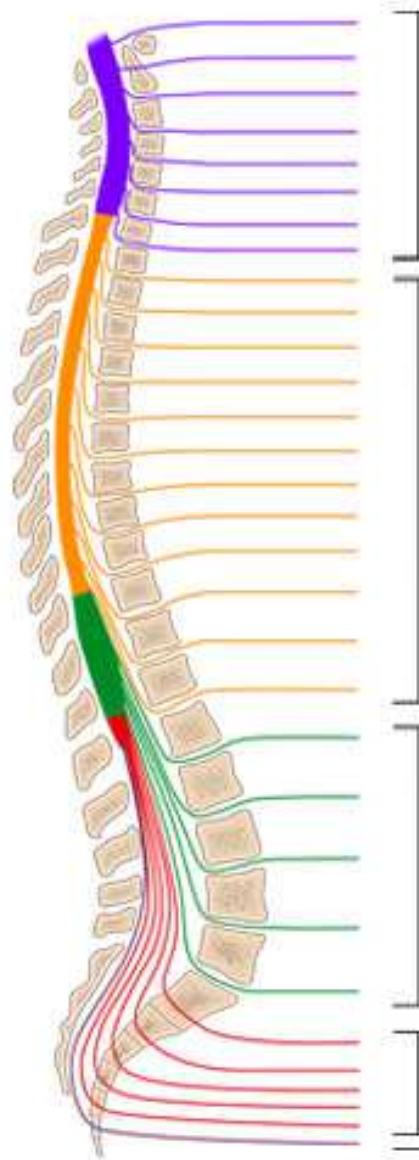
3. CSF

- Brain: 2 hemispheres, irregular & formed of 4 lobes.
- Cerebellum: 2 hemispheres concerned with coordination of muscle contraction & body balance.
- Brain stem: (diencephalon, midbrain, pons and medulla)



Spinal cord

1. Protection
2. Length: 45 cm
3. Extention
4. Conus medullaris
5. Enlargements
6. Segments
7. Types of nerve cells



The Spinal Cord

Cervical
(8 Cervical Nerve Pairs)

Thoracic
(12 Thoracic Nerve Pairs)

Lumbar
(5 Lumbar Nerve Pairs)

Sacrum (5 Sacral Nerve Pairs)

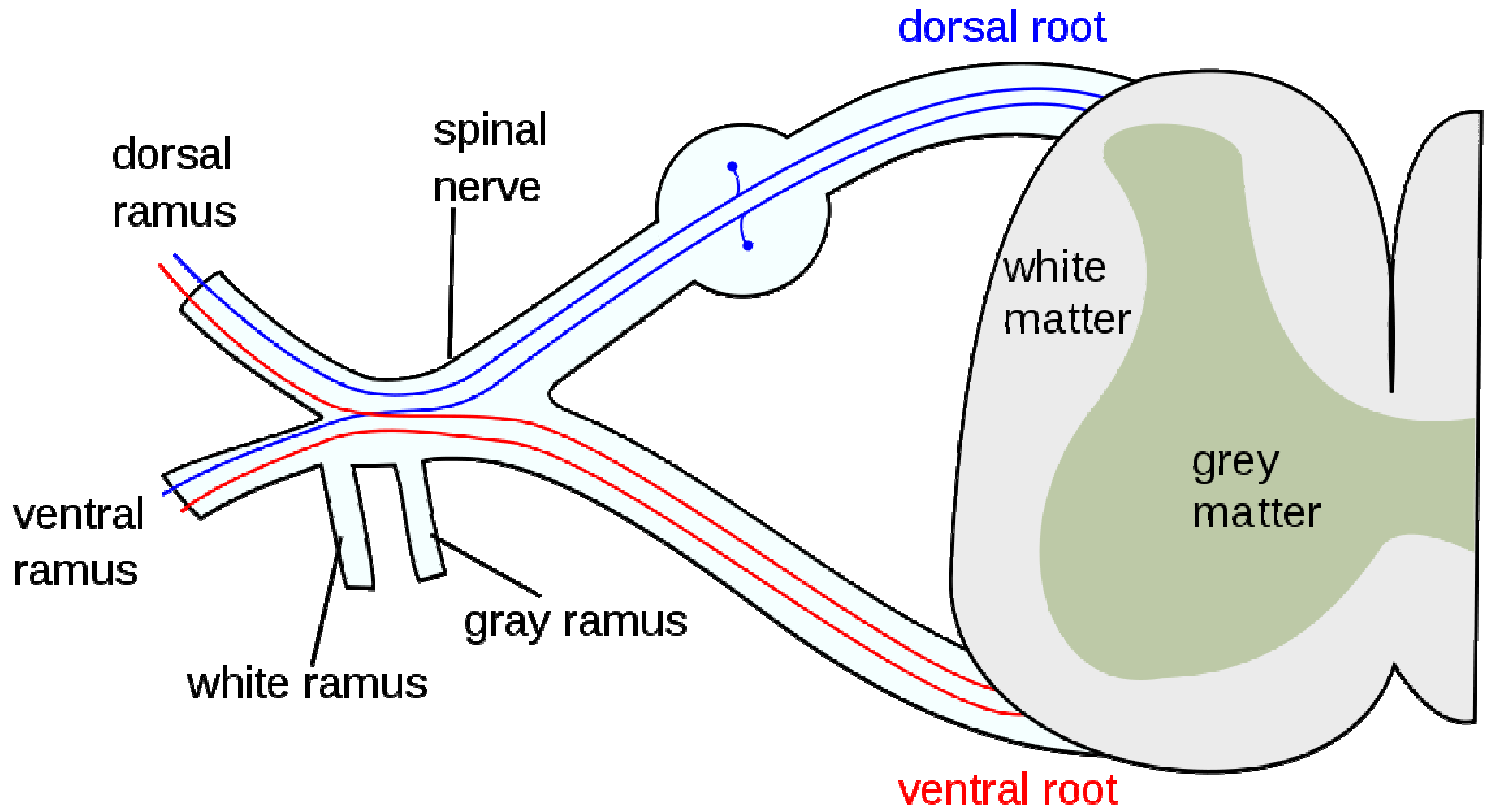
1 Coccygeal Nerve

Peripheral nervous system

- Cranial nerves
- Spinal nerves

Spinal nerve

- Roots
- Dorsal ramus
- Ventral ramus
- Plexuses (cervical, brachial, lumbar, sacral & coccygeal)



Autonomic nervous system

- Sympathetic: catabolic & energy consuming
 - Sympathetic outflow: thoracolumbar
- Parasympathetic: anabolic & energy preserving
 - Parasympathetic outflow: craniosacral
 - cranial: 3,7,9,10
 - sacral: S 2,3,4

Clinical correlations

- Hydrocephalus
- Concussion

Quiz

1. Which of the following lobes contains motor area and centers of emotion and behavior?

a. Parietal lobe.

b. Frontal lobe.

c. The four lobes of the brain.

d. Occipital lobe.

e. Brain stem.

2. Damage to the occipital lobe of the cerebrum would most likely cause:

a.loss of hearing.

b.loss of vision.

c.loss of ability to smell.

d.paralysis.

e.loss of muscle sense.

3. The peripheral nervous system:

a.lies inside the vertebral column.

b.is formed of 31 pairs of spinal nerves.

c.is formed of 12 pairs of cranial nerves.

d.is formed of 31 pairs of spinal nerves and 12 pairs of cranial nerves.

4. One of the following nerves is concerning with hearing

a. Olfactory nerve

b. Optic nerve

c. Trigeminal nerve

d. Vestibulocochlear nerve

Thank you