

PowerPoint Lecture Outlines
to accompany

**Hole's Human
Anatomy and Physiology**
Tenth Edition

Shier ♦ Butler ♦ Lewis

**Chapter 11
Peripheral Nervous System**

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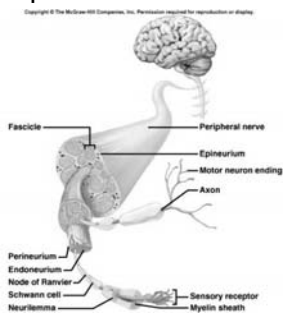
Peripheral Nervous System

1. nerves that branch from the CNS
 - A. Cranial nerves
 - B. Spinal nerves

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Structure of a Peripheral Nerve

1. bundles of nerve fibers



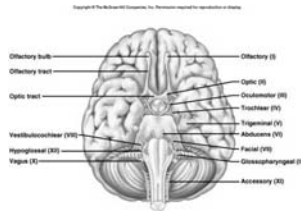
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NERVE FIBER CLASSIFICATION

1. Mixed Nerves
 - A.
 - B.
 - C.
2. Sensory (afferent) Nerves
 - A.
 - B.
3. Motor (efferent) Nerves
 - A.
 - B.

Cranial Nerves

1. There are 12 pairs of cranial nerves.
 - A. 2 pairs to/from forebrain,
 - B. 10 pairs to/from brain stem;



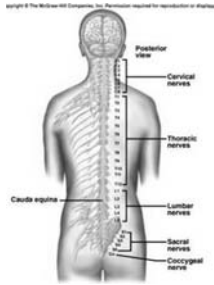
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Cranial Nerves

- I. **Olfactory** = sense of smell; sensory only.
- II. **Optic** = sense of vision; sensory only.
- III. **Oculomotor** = innervates eye muscles; motor only.
- IV. **Trochlear** = innervates eye muscles; motor only.
- V. **Trigeminal** = largest; sensory from face; motor to chewing muscles; mixed.
- VI. **Abducens** = innervates eye muscles; motor only.
- VII. **Facial** = innervates muscles of facial expression; sensory taste; mixed.
- VIII. **Vestibulocochlear** = sense of hearing and equilibrium; sensory only.
- IX. **Glossopharyngeal** = moves tongue and pharynx muscles; mixed.
- X. **Vagus** = innervates visceral smooth muscle; mixed;
- XI. **Accessory** = innervates neck muscles; motor only.
- XII. **Hypoglossal** = moves tongue; motor only.

Spinal Nerves

1. Spinal nerves innervate most areas of the body.
2. 31 pairs of mixed nerves
 - A. 8 cervical (C1 to C8)
 - B. 12 thoracic (T1 to T12)
 - C. 5 lumbar (L1 to L5)
 - D. 5 sacral (S1 to S5)
 - E. 1 coccygeal (Co)



Divisions of the PNS

classification on the basis of function

1. Somatic nervous system
 - A.
 - B.
 - C. acetylcholine (Ach)
 - D.

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Divisions of the PNS

2. Autonomic nervous system
 - A.

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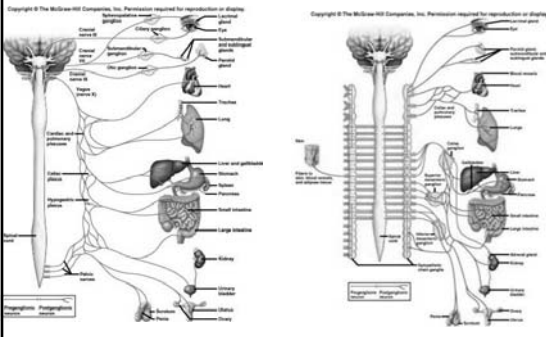
Autonomic Nervous System

1. Two Divisions
 - A. sympathetic
 - a.
 - b. "fight-flight" response.
 - B. parasympathetic
 - a.
 - b.

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Parasympathetic Division

Sympathetic Division



Control of Autonomic Activity

1. largely controlled by the brain and spinal cord.
2. Medulla oblongata regulates cardiac, vasomotor and respiratory activities
3. Hypothalamus regulates visceral functions
4. The limbic system and cerebral cortex control the autonomic nervous system during emotional stress.

Life-Span Changes

1. Apoptosis
2. By age thirty, the die-off accelerates.
3. the brain shrinks about 10%.
4. Most cell death occurs in temporal lobes
5. By age 90, frontal lobe has lost half its neurons

Life-Span Changes

1. Slower neurotransmission.
2. Dendritic branches decrease
3. Decreased levels of neurotransmitters
4. Fading memory and slowed responses and reflexes.
5. Risk of falling as balance decreases
6. Transient drops in blood pressure.
7. Changes in sleep patterns

Clinical Application: Cerebral Injuries and Abnormalities

1. Concussion
 - A.
 - B.
 - C.
 - D.
 - E.
 - F.

Cerebral Injuries and Abnormalities

2. Cerebrovascular Accident

- A. stroke
- B.
- C.

Cerebral Injuries and Abnormalities

3. Cerebral Palsy

- A.
- B.
- C.
- D.
