G03: Overview of the CNS/PNS

Central Nervous System (CNS)

Peripheral Nervous System (PNS)
Neurons -
Functional unit of the nervous system

Central Nervous System (CNS)

Peripheral Nervous System (PNS)

Sensory

Motor

Motor neuron

Sensory neuron

Axon (fiber) - Conducts impulses towards another neuron, muscle fiber, or gland cell

Sensory - receive signals and conduct nerve impulses to brain

Neurons -
Functional unit of the nervous system

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CNS

PNS

Sensory

Motor

(afferent)

(efferent)

Central Nervous System (CNS)

Peripheral Nervous System (PNS)

Somatic

Autonomic Nervous System (ANS)

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CNS – Meninges

- Dura mater
- Arachnoid mater
- Pia mater
CNS – Spinal Cord

Pg. 19

CNS – Spinal Cord

Pg. 19
CNS – Spinal Cord

GAFS Fig. 2.80

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CNS – Spinal Cord cont …

The Spinal Cord

GAFS Fig. 2.59

Cross-section of human spinal cord
(= ca. 12 mm)

White matter
Posterior horn
Lateral horn
Anterior horn
Central canal

GAFS Fig. 2.59
Spinal Roots and Spinal Nerves

Nerve vs. Neuron

PNS- Spinal Nerves

<table>
<thead>
<tr>
<th>Regions of the Spinal Cord and Vertebral Column</th>
<th>Number of Spinal Nerves</th>
<th>Number of Vertebrae</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Thoracic</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Lumbar</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Sacral</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Coccygeal</td>
<td>1</td>
<td>4</td>
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</tbody>
</table>
Rami

At each spinal cord level:
- Roots join to become spinal nerves
- Spinal nerves divide into rami
  - Posterior rami – back
  - Anterior rami – neck, thorax, abdomen, pelvis, perineum, limbs

Vertebral level
Spinal cord level
Spinal nerve level

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PNS – Sensory neurons

Conduct sensory information from the tissues of the body to the CNS (via dorsal roots)

Dorsal root = Posterior root

Pg. 23

PNS – Motor neurons

Conduct motor information from the CNS to the tissues of the body (via ventral roots)

Ventral root = Anterior root

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PNS – Dermatomes

Spinal nerves are segmentally arranged

Anterior rami

GAFS Fig. 3.32
Anterior rami

- Cervical plexus
- Brachial plexus
- Thoracic nn.
- Lumbar plexus
- Sacral plexus

NS Overview

Central Nervous System (CNS)

Peripheral Nervous System (PNS)

Sensory

Motor

Somatic

Autonomic Nervous System (ANS)

Sympathetic

Parasympathetic
THANK-YOU