

Neuro-acupuncture

Upper Extremities

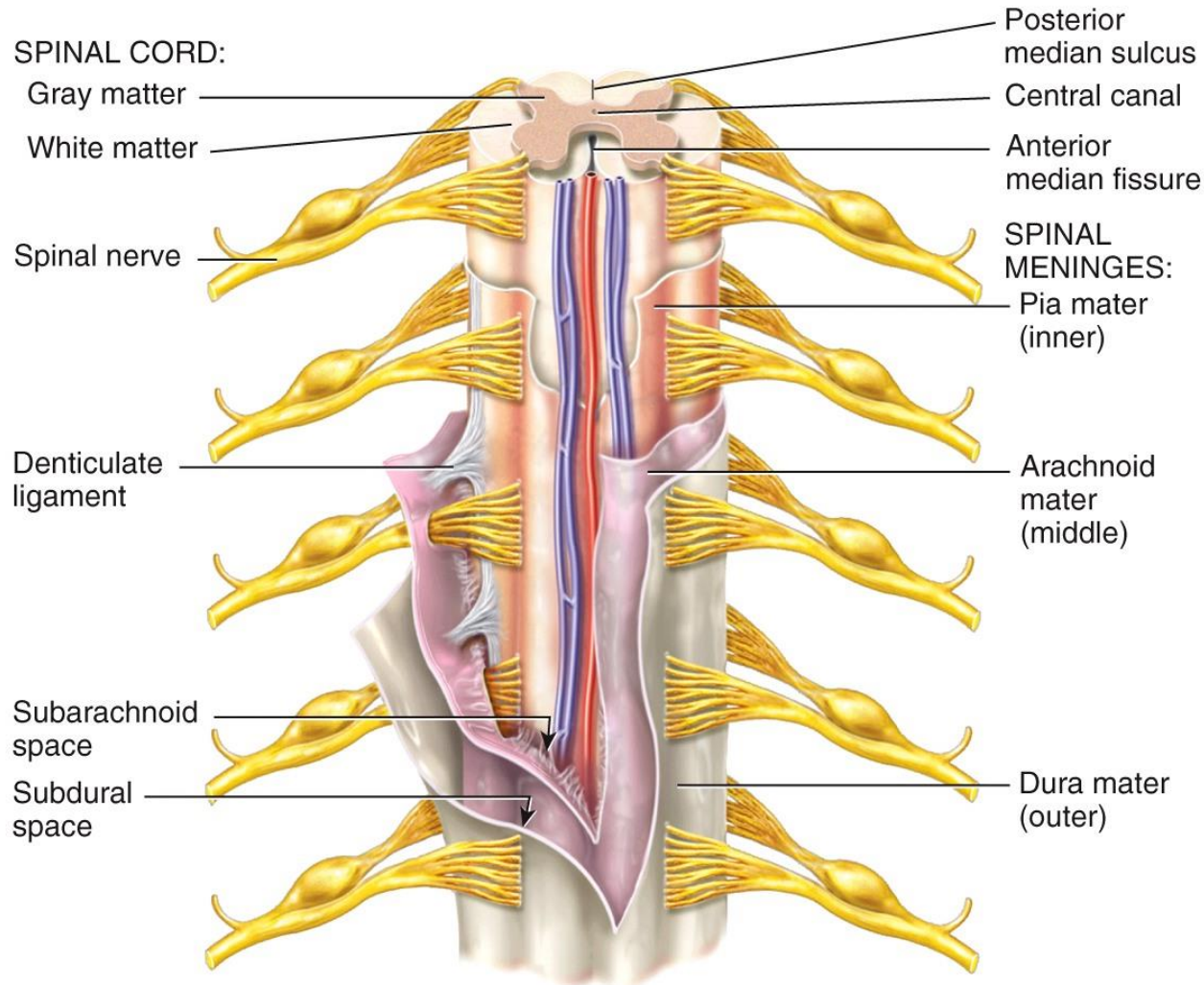
Introduction

- The spinal cord
 - Contains neural circuits that control some of your quickest reactions to environmental changes
 - Is the site for integration of neuronal stimulation
 - Relays sensory nerve impulses
 - Is continuous with the brain and together they constitute the central nervous system (CNS)

Protective Structures

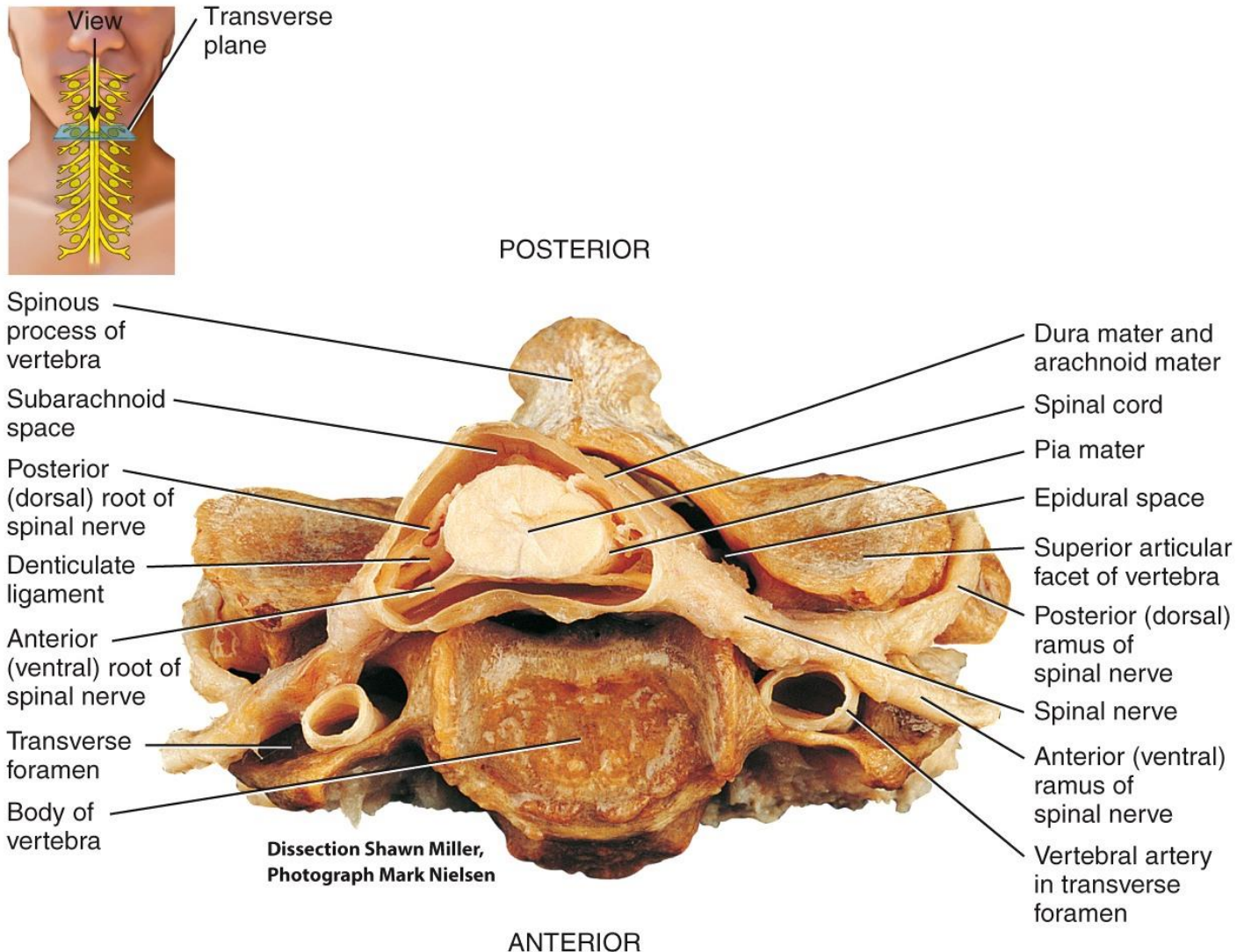
- Vertebral column
- Meninges:
 - Dura mater
 - Arachnoid mater
 - Pia mater

Gross Anatomy of the Spinal Cord



(a) Anterior view and transverse section through spinal cord

Gross Anatomy of the Spinal Cord

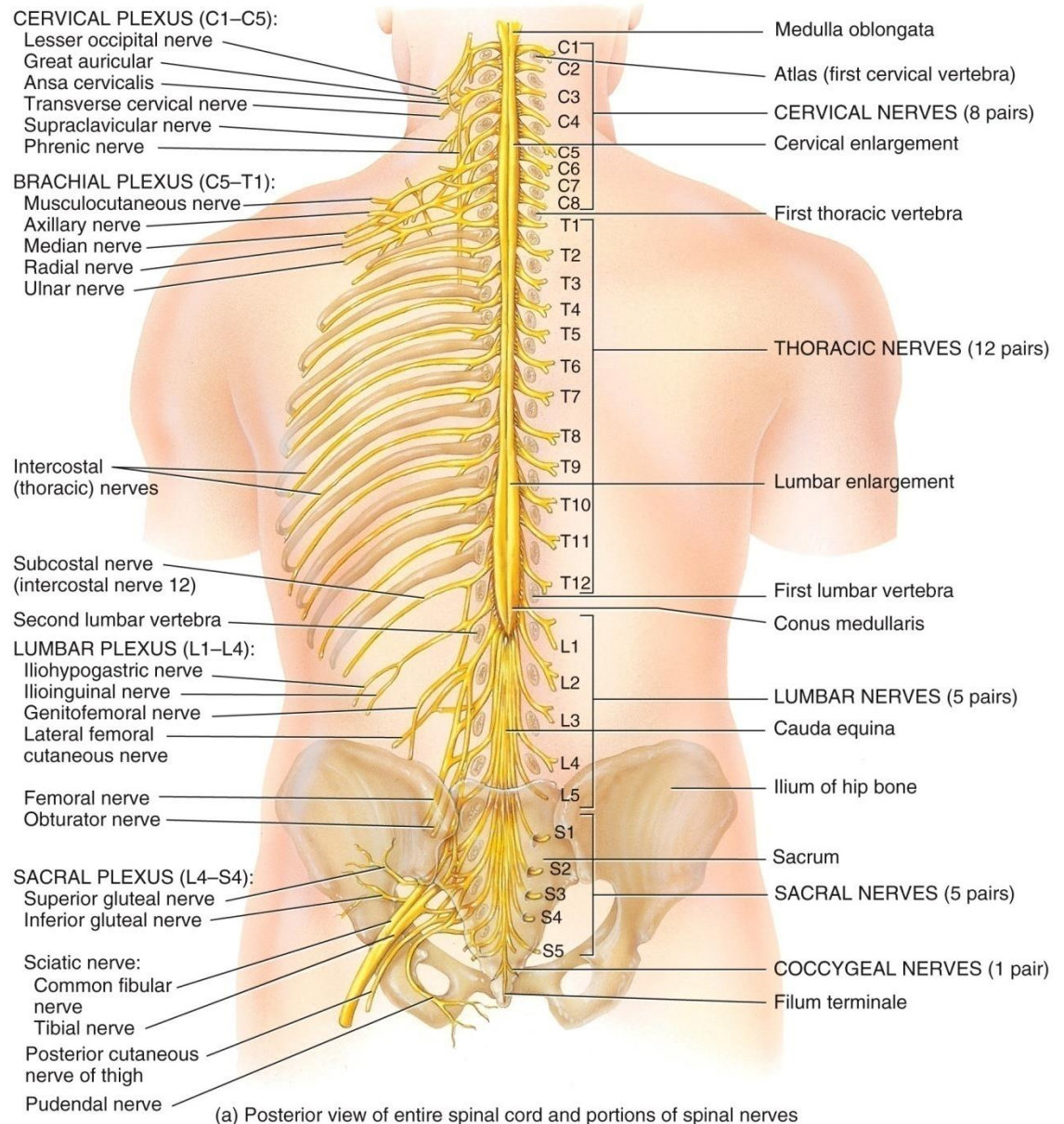


(b) Transverse section of the spinal cord within a cervical vertebra

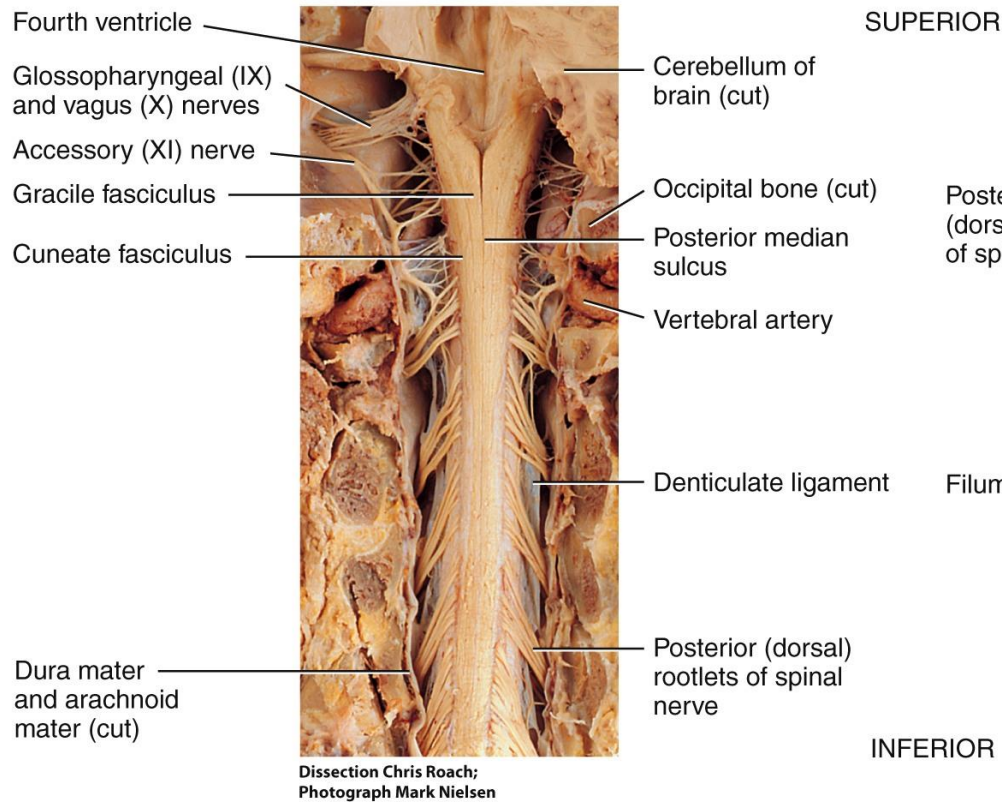
External Anatomy of the Spinal Cord

- The length of the adult spinal cord is 42–45 cm (16–18 in.).
- Its maximum diameter is about 1.5 cm (0.6 in.) in the lower cervical region and smaller in the thoracic region.
- Cervical enlargement
- Lumbar enlargement
- Conus medullaris
- Filum terminale

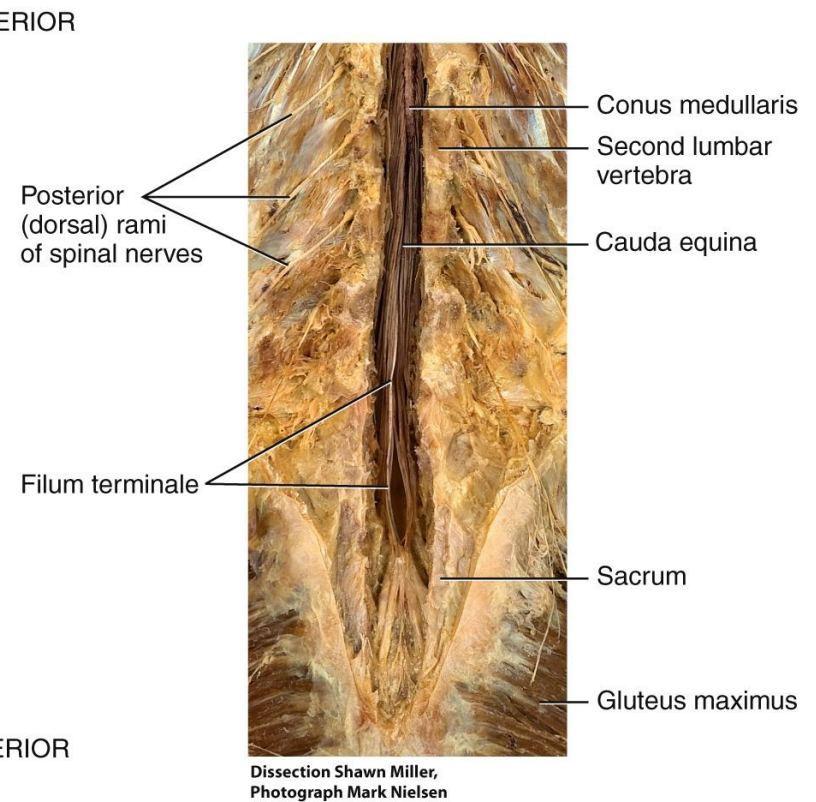
External Anatomy of the Spinal Cord and the Spinal Nerves



External Anatomy of the Spinal Cord and the Spinal Nerves



(b) Posterior view of cervical region of spinal cord

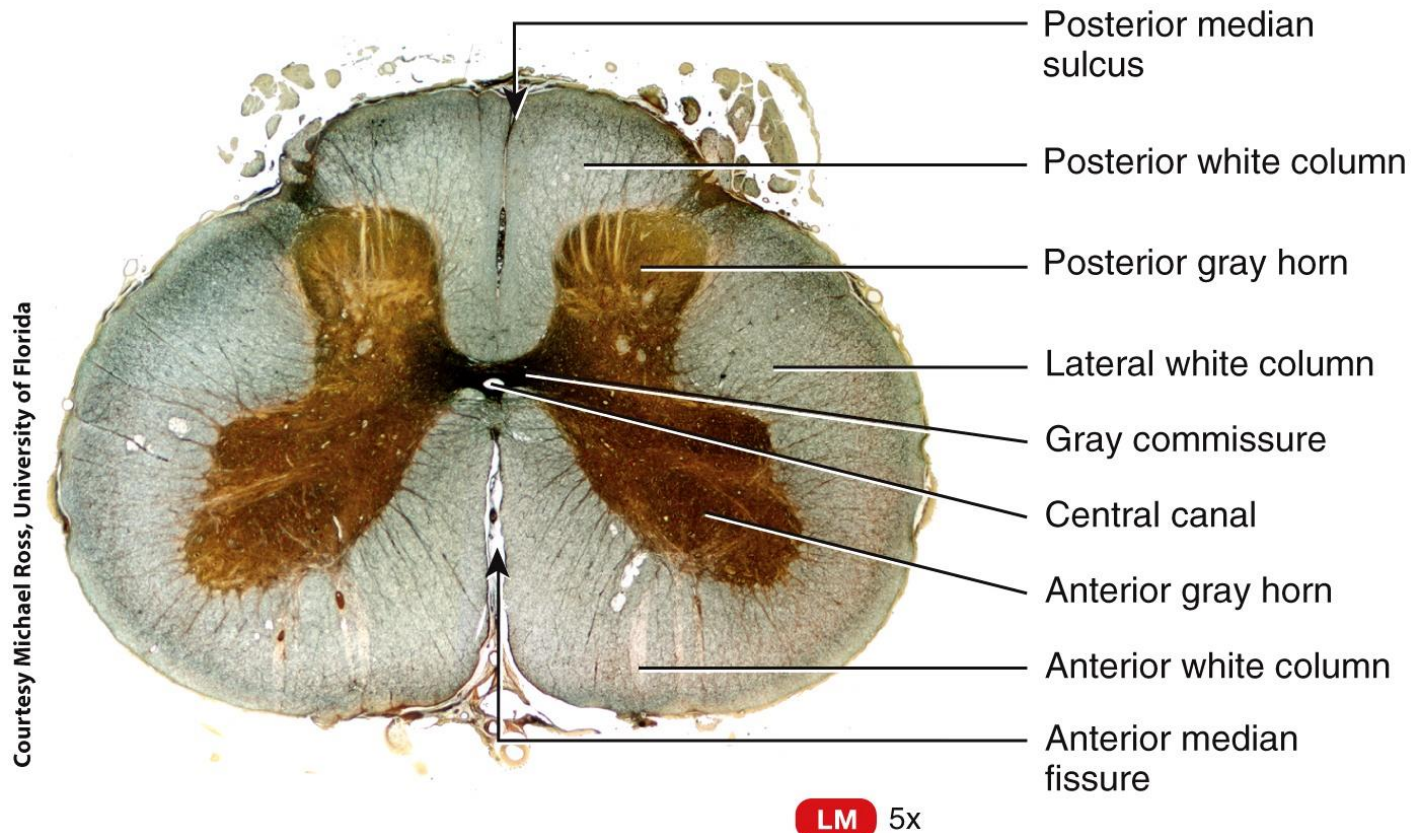


(c) Posterior view of inferior portion of spinal cord

Internal Anatomy of the Spinal Cord

- Anterior median fissure
- Posterior median sulcus
- Gray commissure
- Central canal
- Anterior (ventral) white commissure
- Horns
 - Anterior (ventral) gray horns
 - Posterior (dorsal) gray horns
 - Lateral gray horns

Internal Anatomy of the Spinal Cord: The Organization of Gray Matter and White Matter

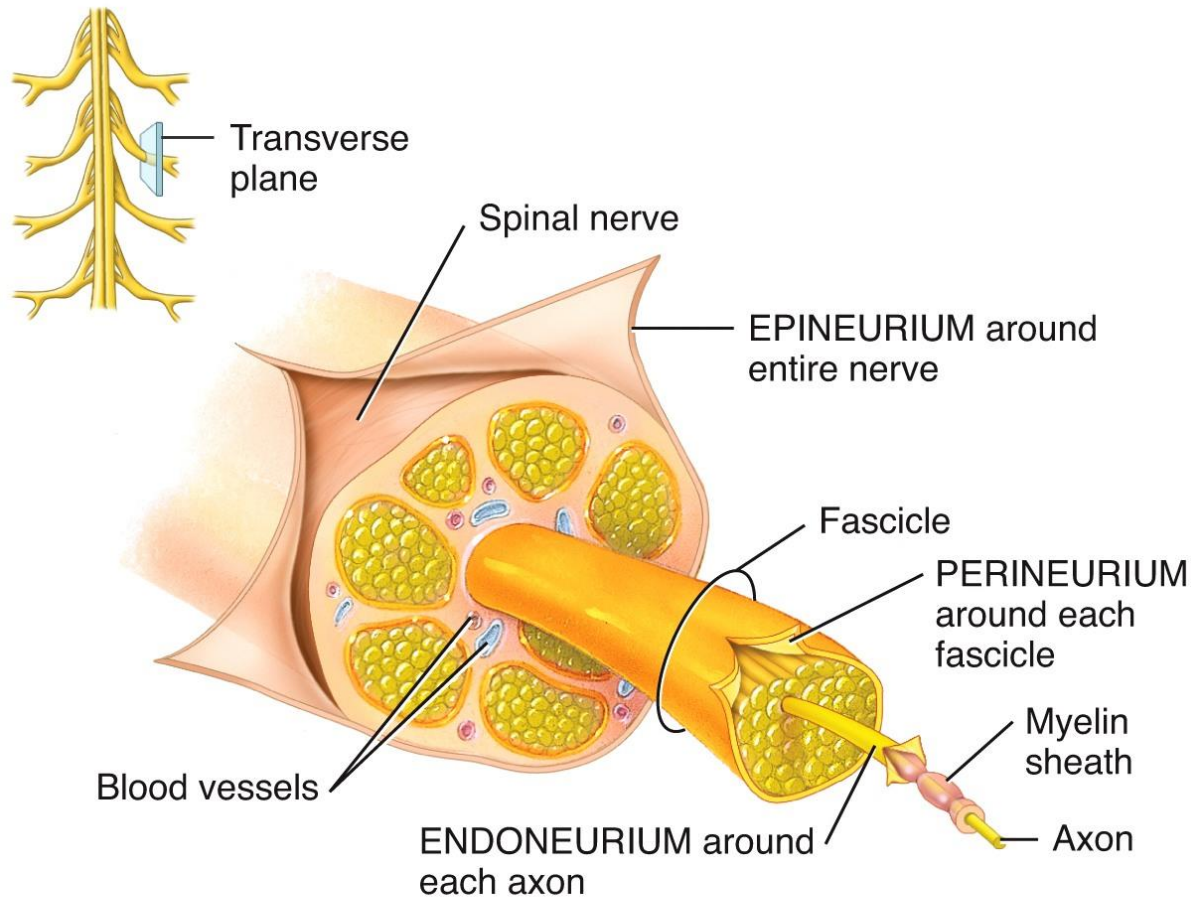


(b) Transverse section of lumbar spinal cord

Spinal Nerves

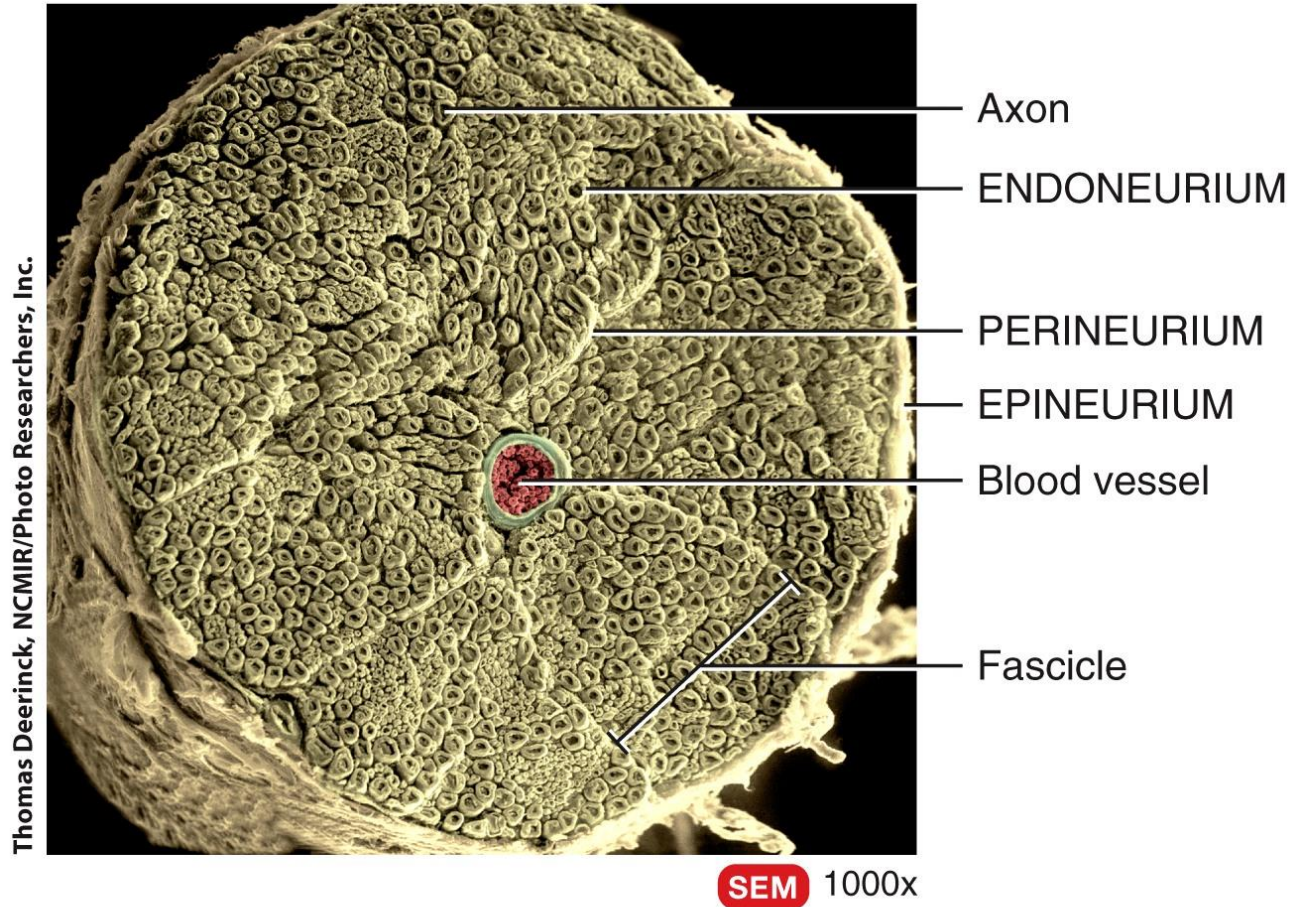
- Spinal nerves and the nerves that branch from them are part of the peripheral nervous system (PNS).
- They connect the CNS to sensory receptors, muscles, and glands in all parts of the body.

Organization and Connective Tissue Coverings of a Spinal Nerve



(a) Transverse section showing the coverings of a spinal nerve

Organization and Connective Tissue Coverings of a Spinal Nerve



(b) Transverse section of several nerve fascicles

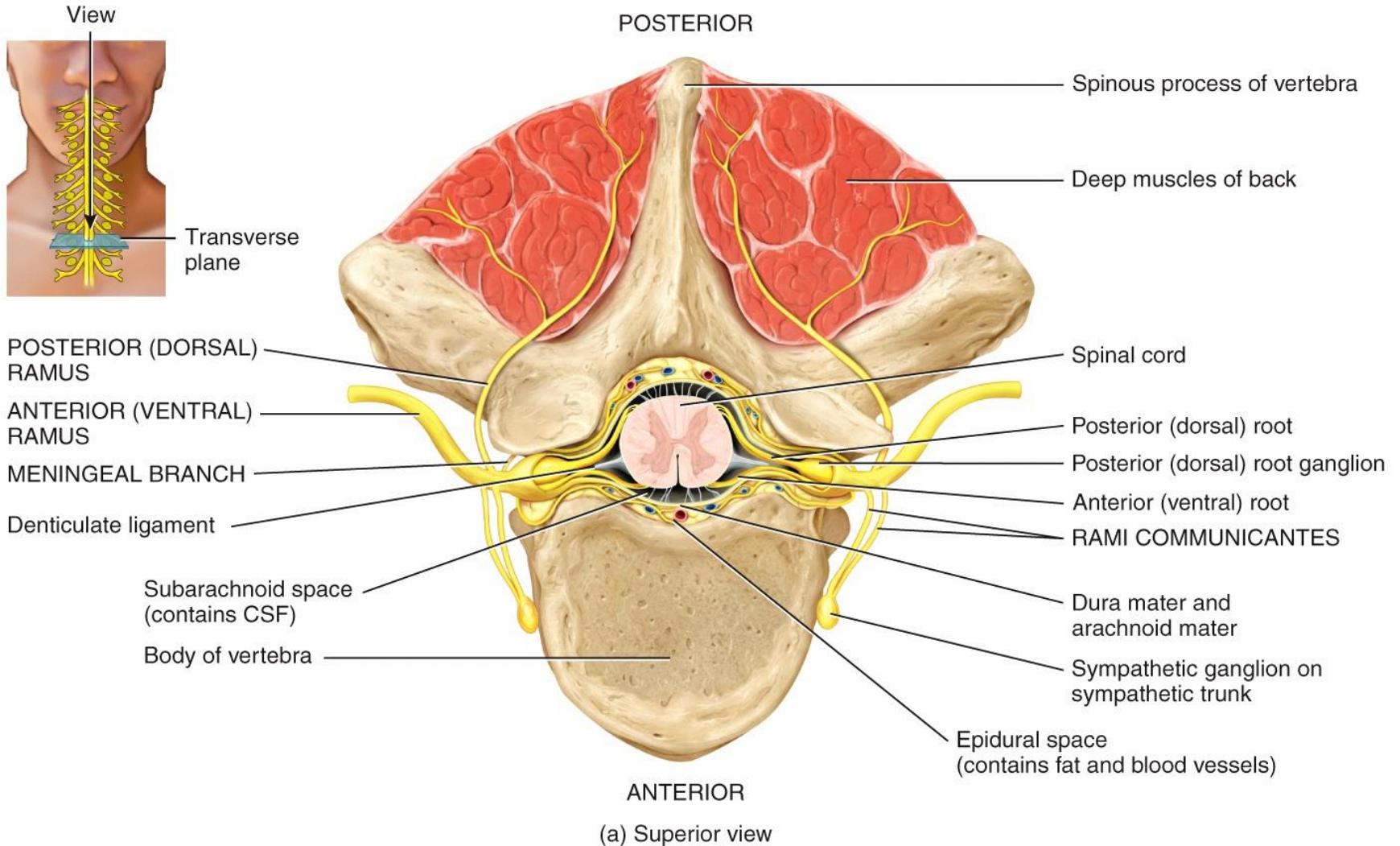
Organization of Spinal Nerves

- Rootlets
- Anterior (ventral) roots
- Posterior (dorsal) roots
- Posterior (dorsal) root ganglion
- Spinal nerve trunk

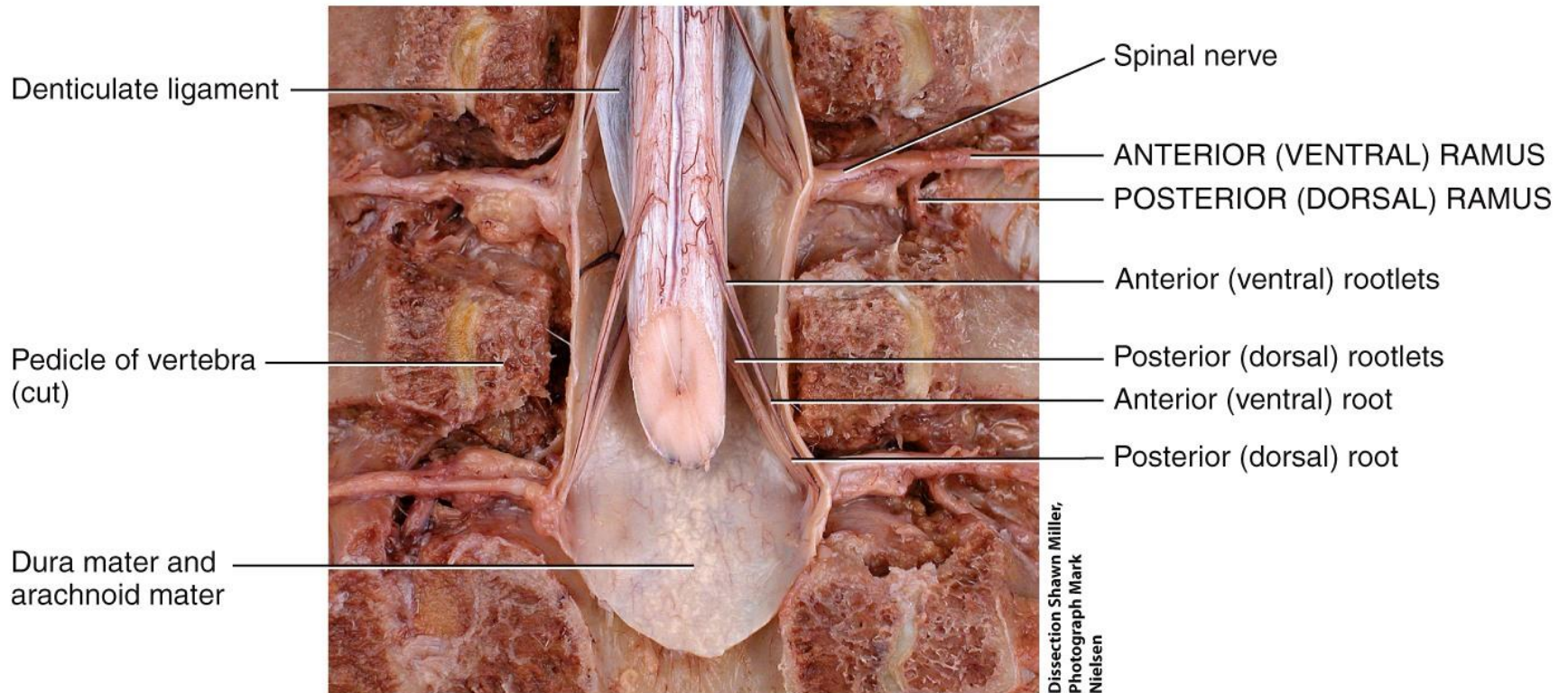
Branches of the Spinal Nerves

- Rami (singular = ramus)
- Posterior (dorsal) ramus = SENSORY
- Anterior (ventral) ramus = MOTOR
- Meningeal branch
- Rami communicantes

Branches of a Typical Spinal Nerve

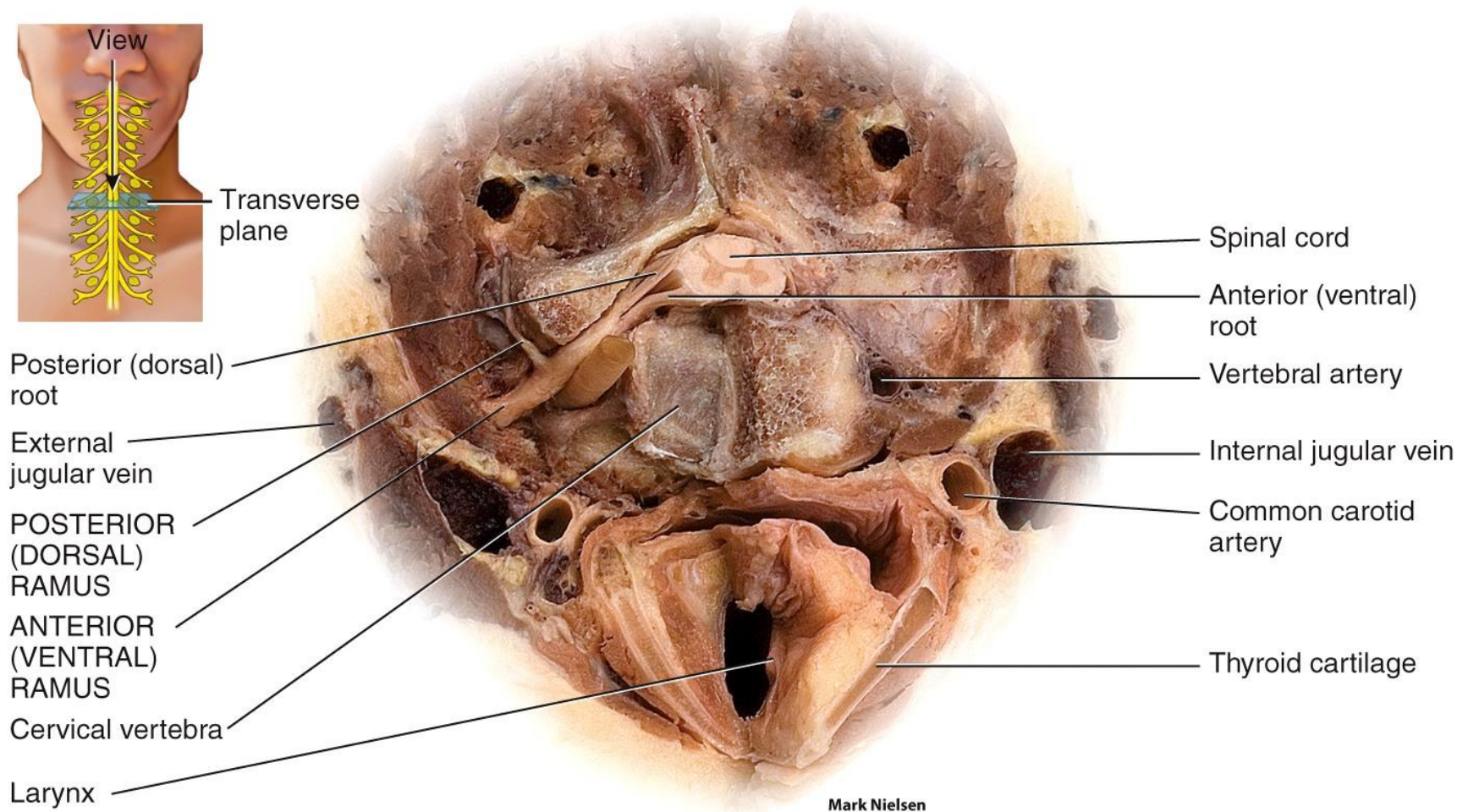


Branches of a Typical Spinal Nerve



(b) Anterior view and oblique section of spinal cord

Branches of a Typical Spinal Nerve

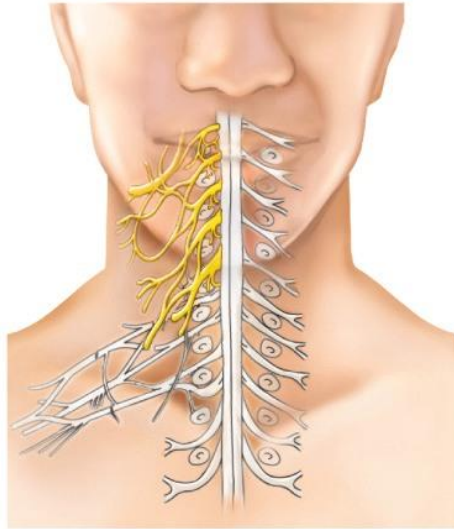


(c) Superolateral view of transverse section of neck

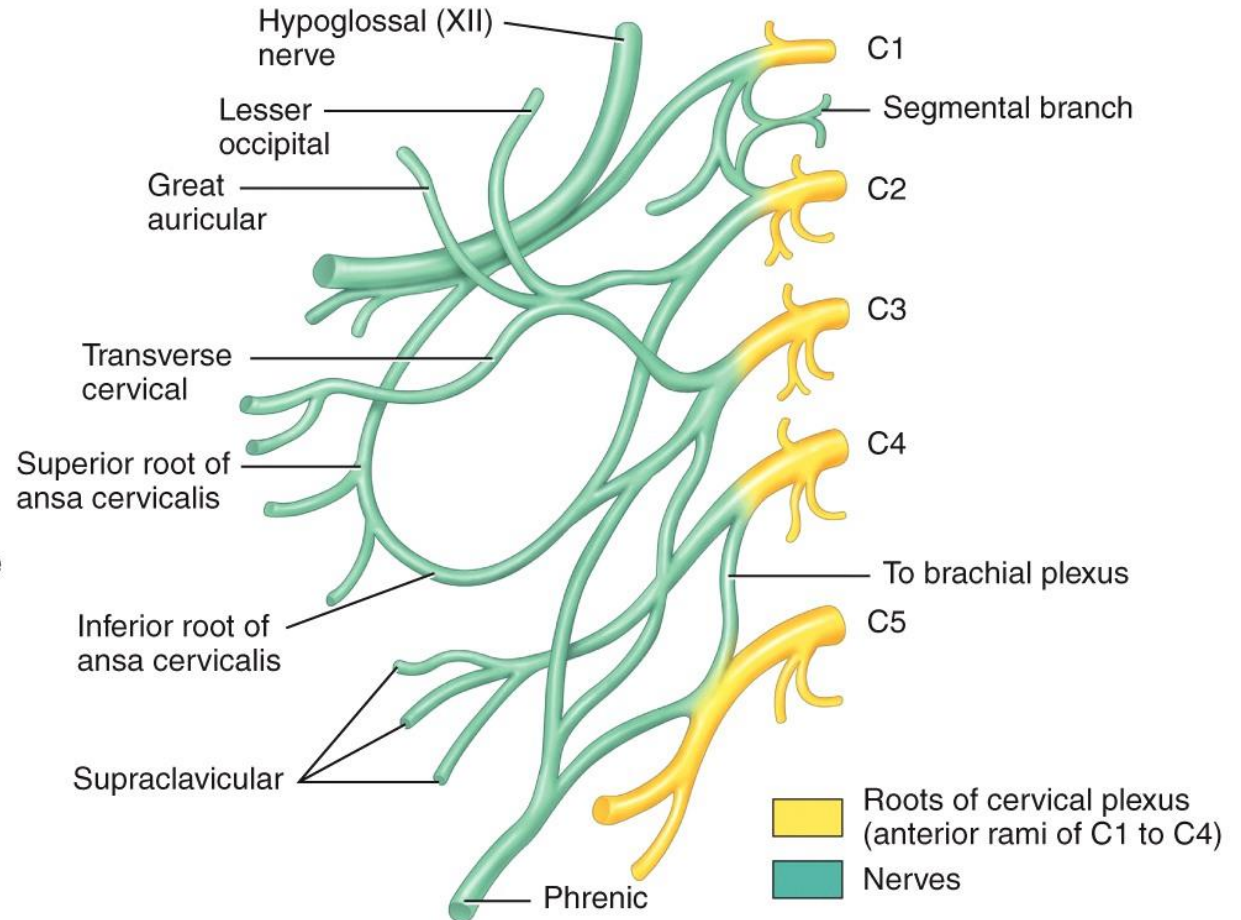
Plexuses

- Axons from the anterior rami of spinal nerves, except for thoracic nerves T2–T12, form networks on both left and right sides of the body. Each network is called a plexus.
- The principal plexuses are the cervical plexus, brachial plexus, lumbar plexus, and sacral plexus.
- A smaller coccygeal plexus is also present.
- Groups of nerves emerge from the plexuses.

Cervical Plexus in Anterior View



Cervical plexus projected to surface



(a) Origin of cervical plexus