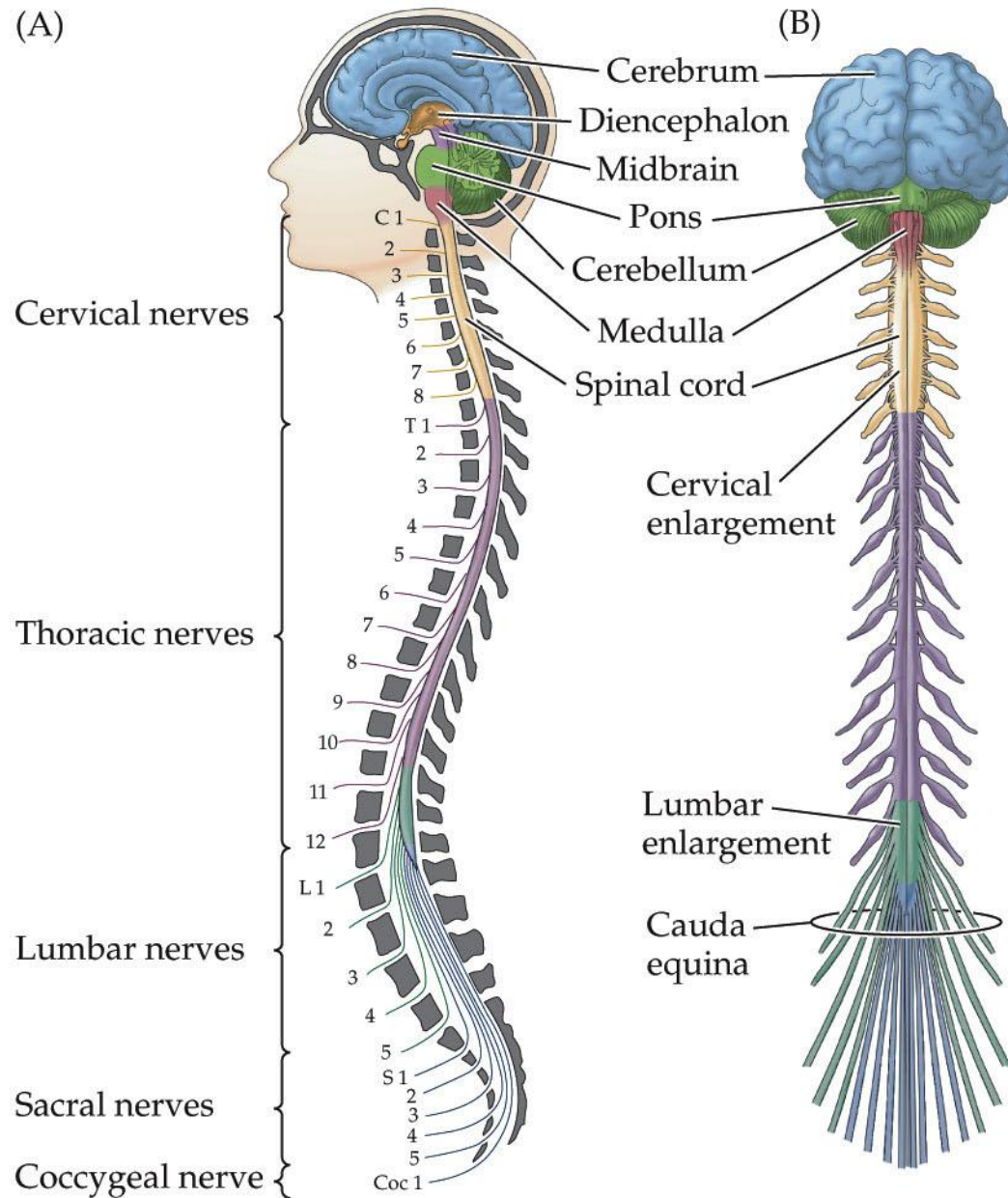
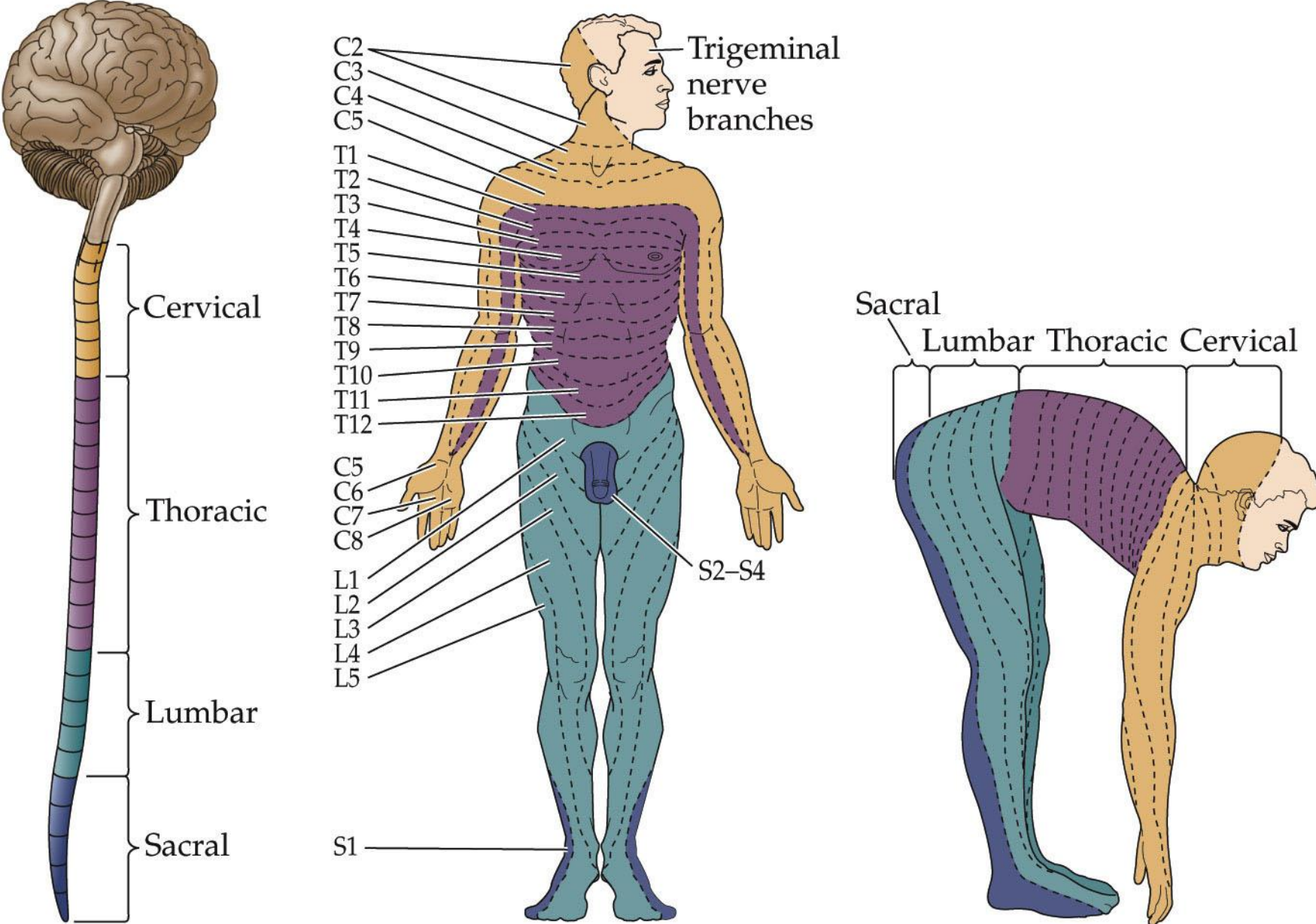
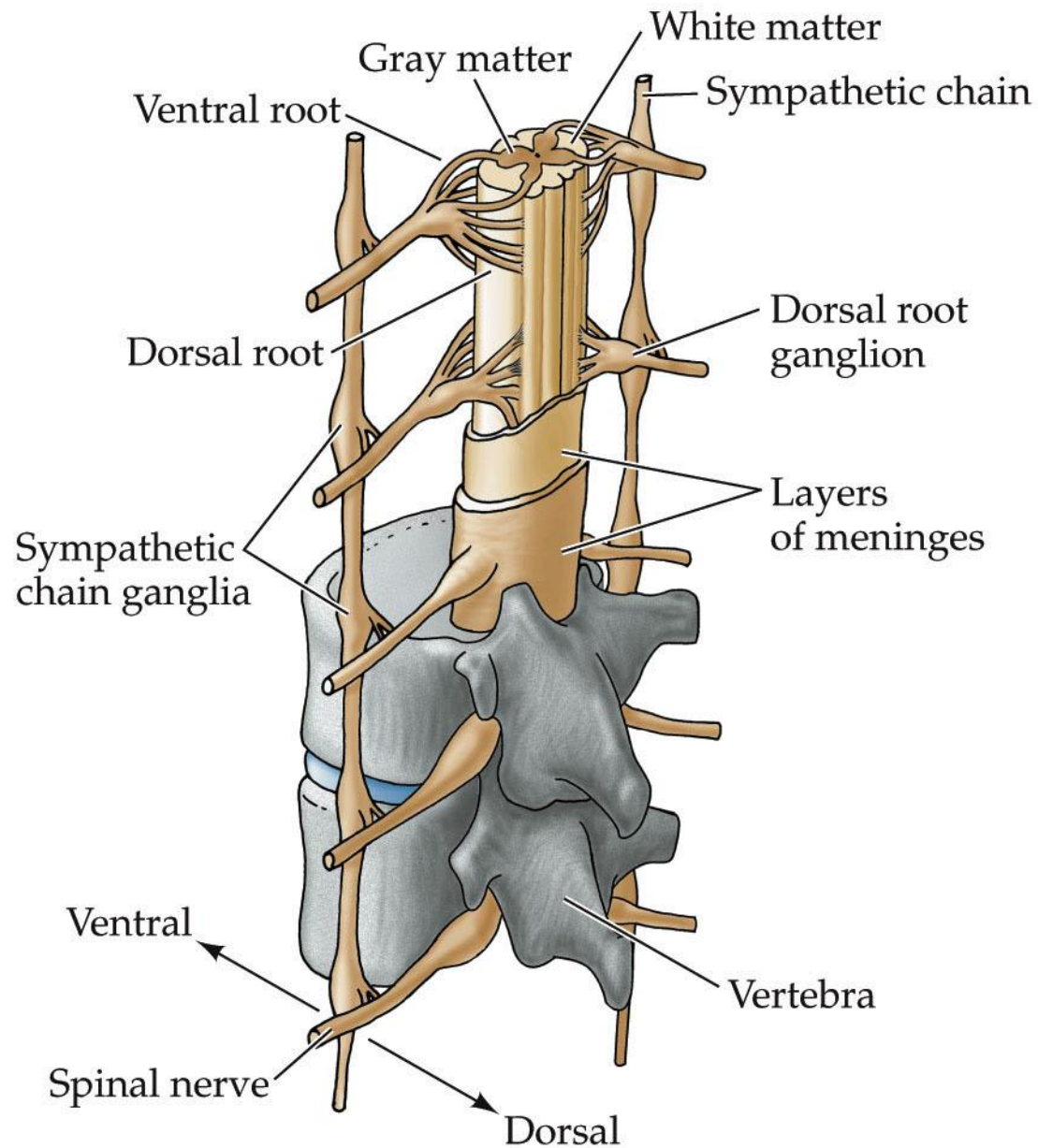


Spinal Cord Anatomy

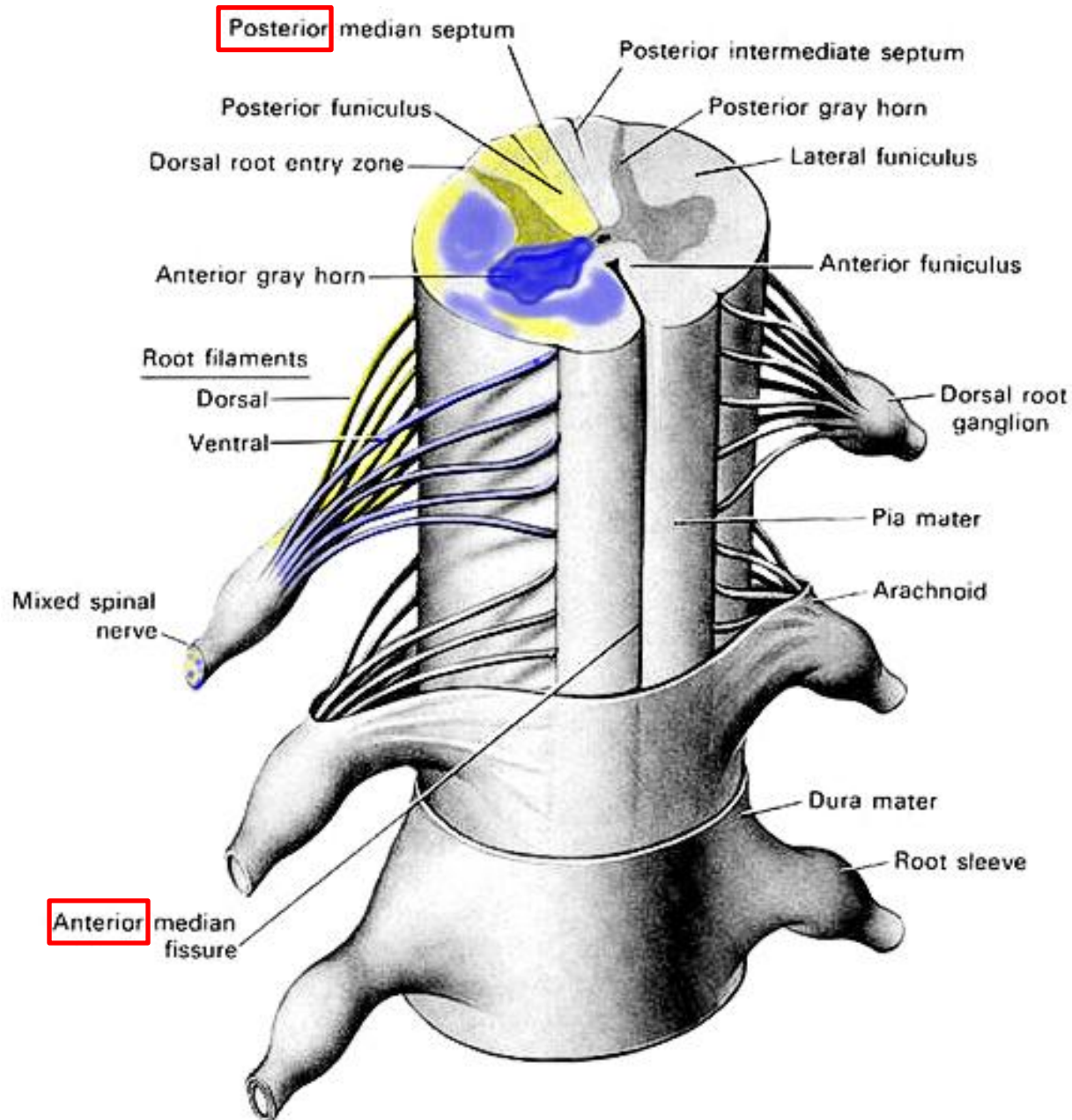
N.Zecevic



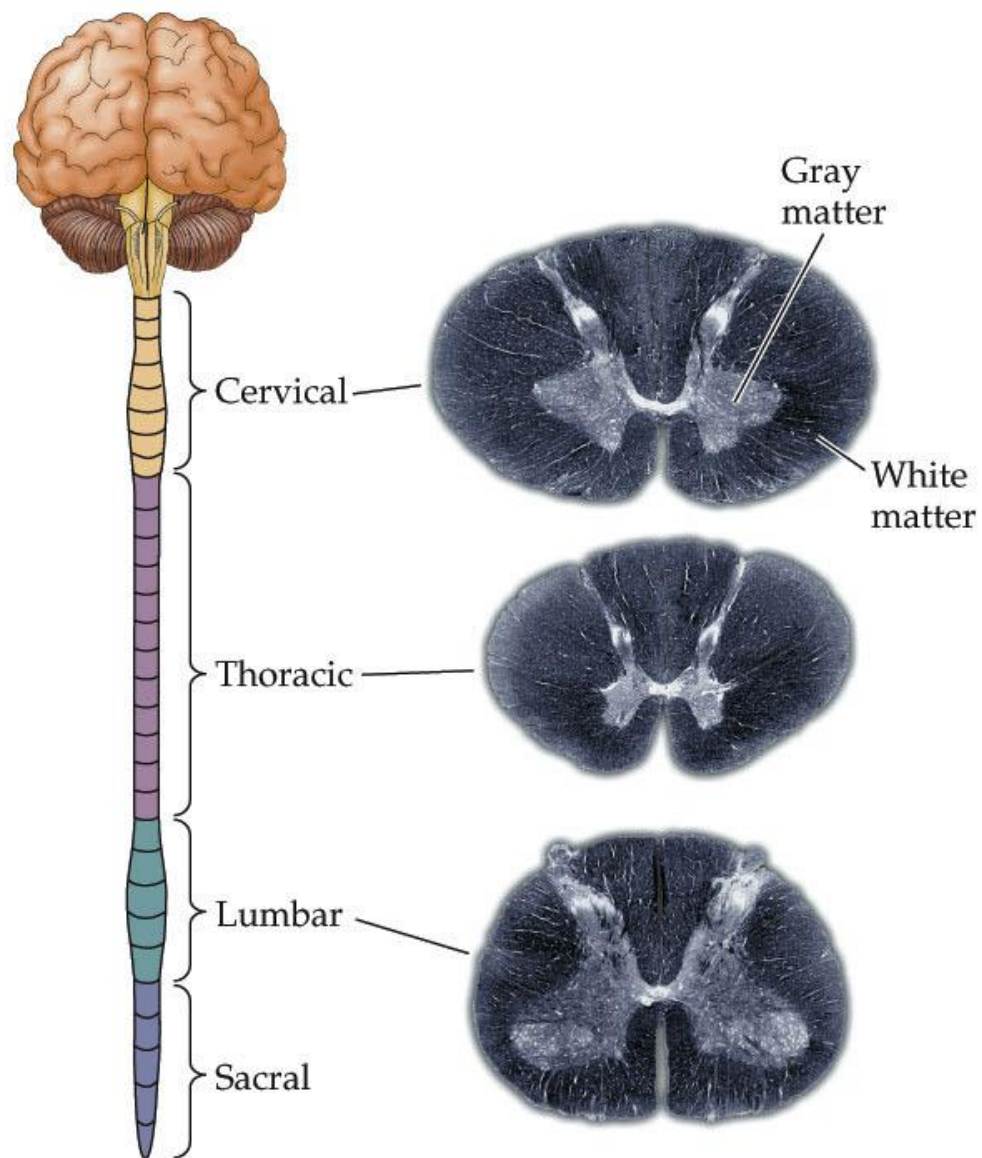




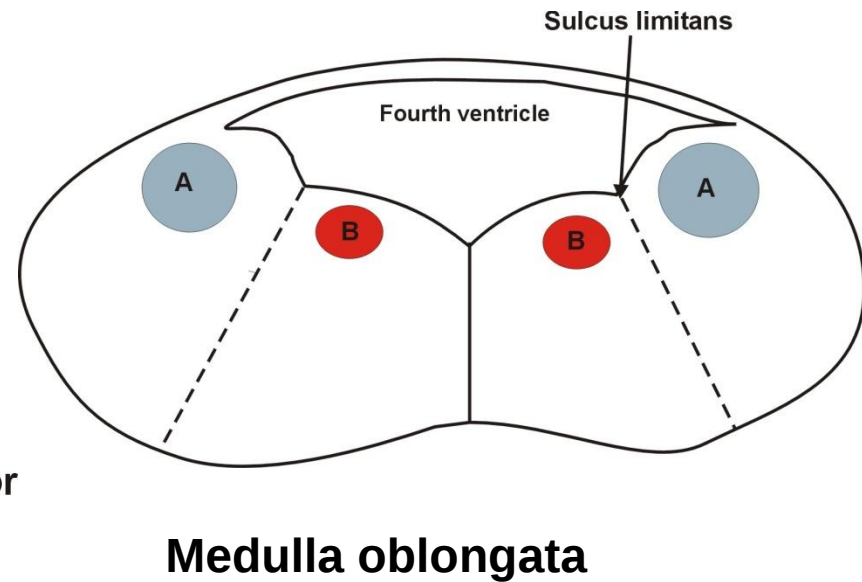
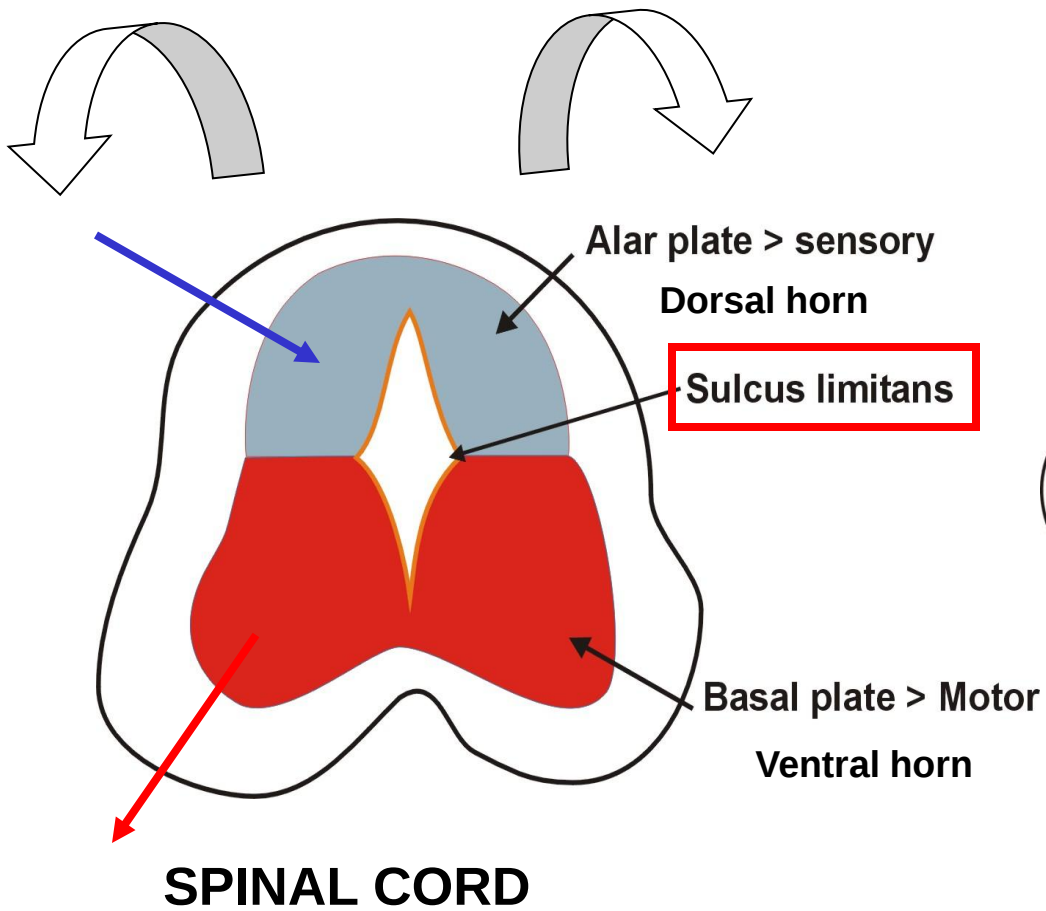
Surface Features: Spinal Cord



(A)



Alar and Basal Plate

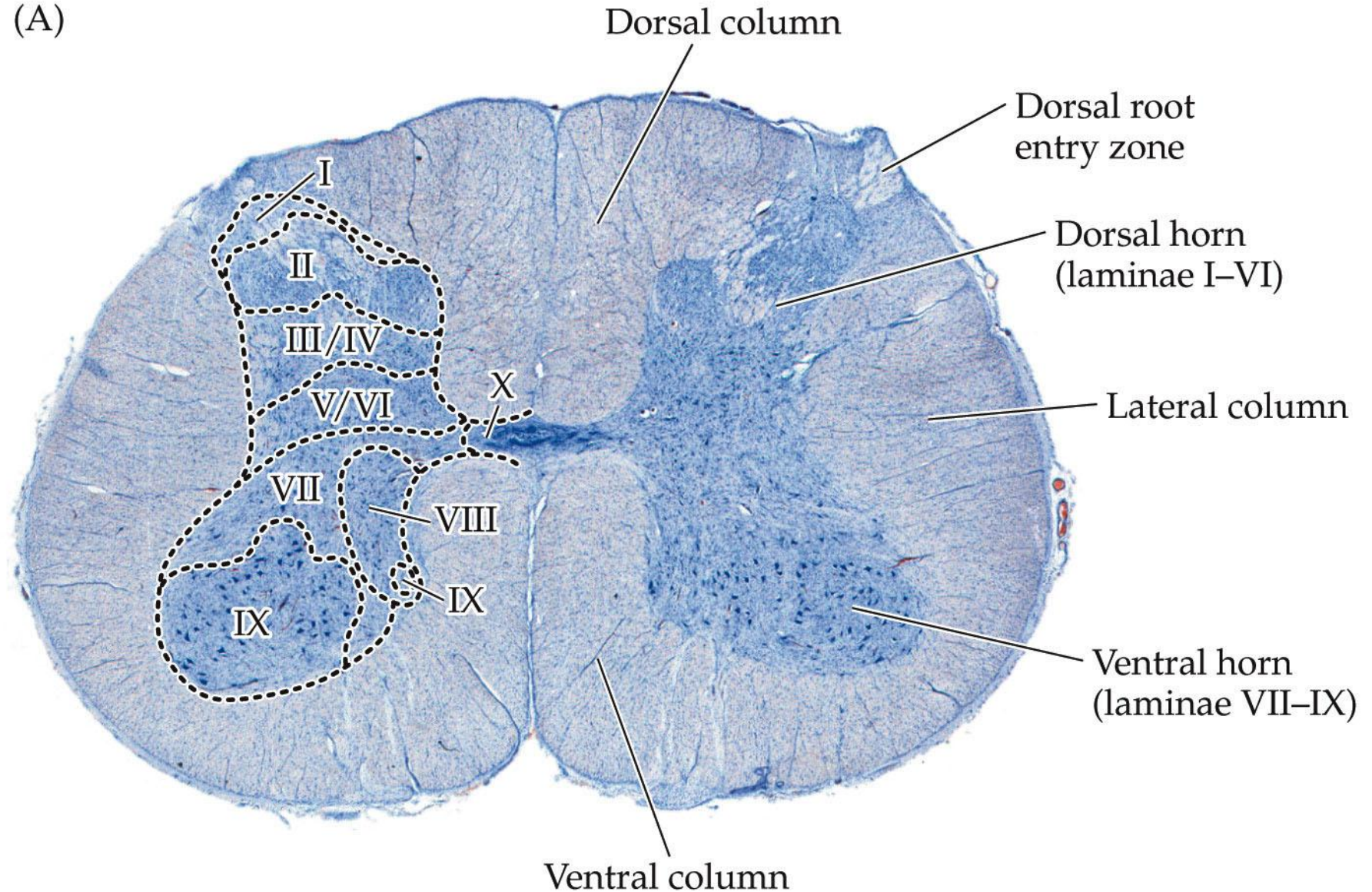


Where are the sensory and motor nuclei?

- Alar plate- sensory

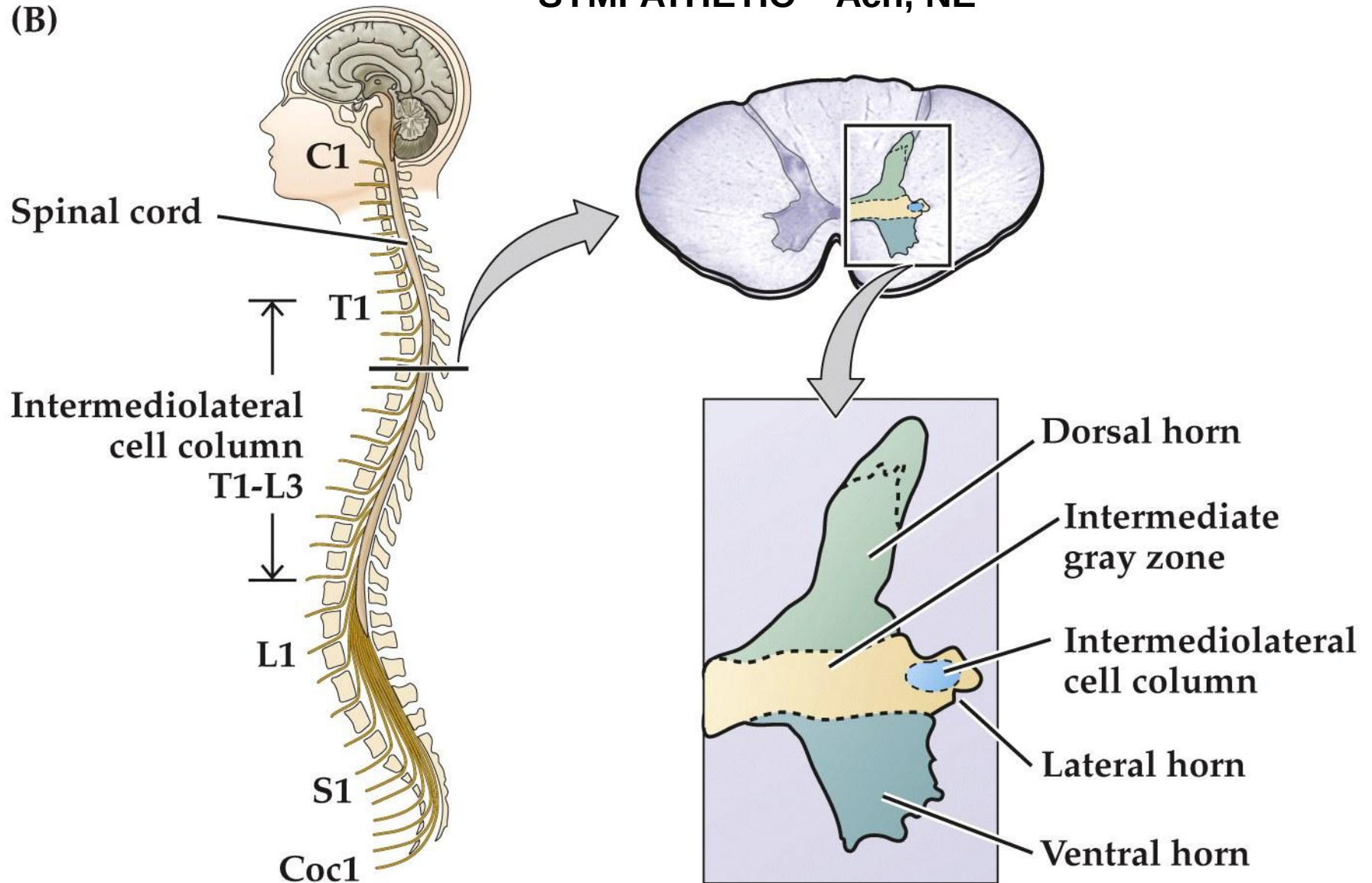


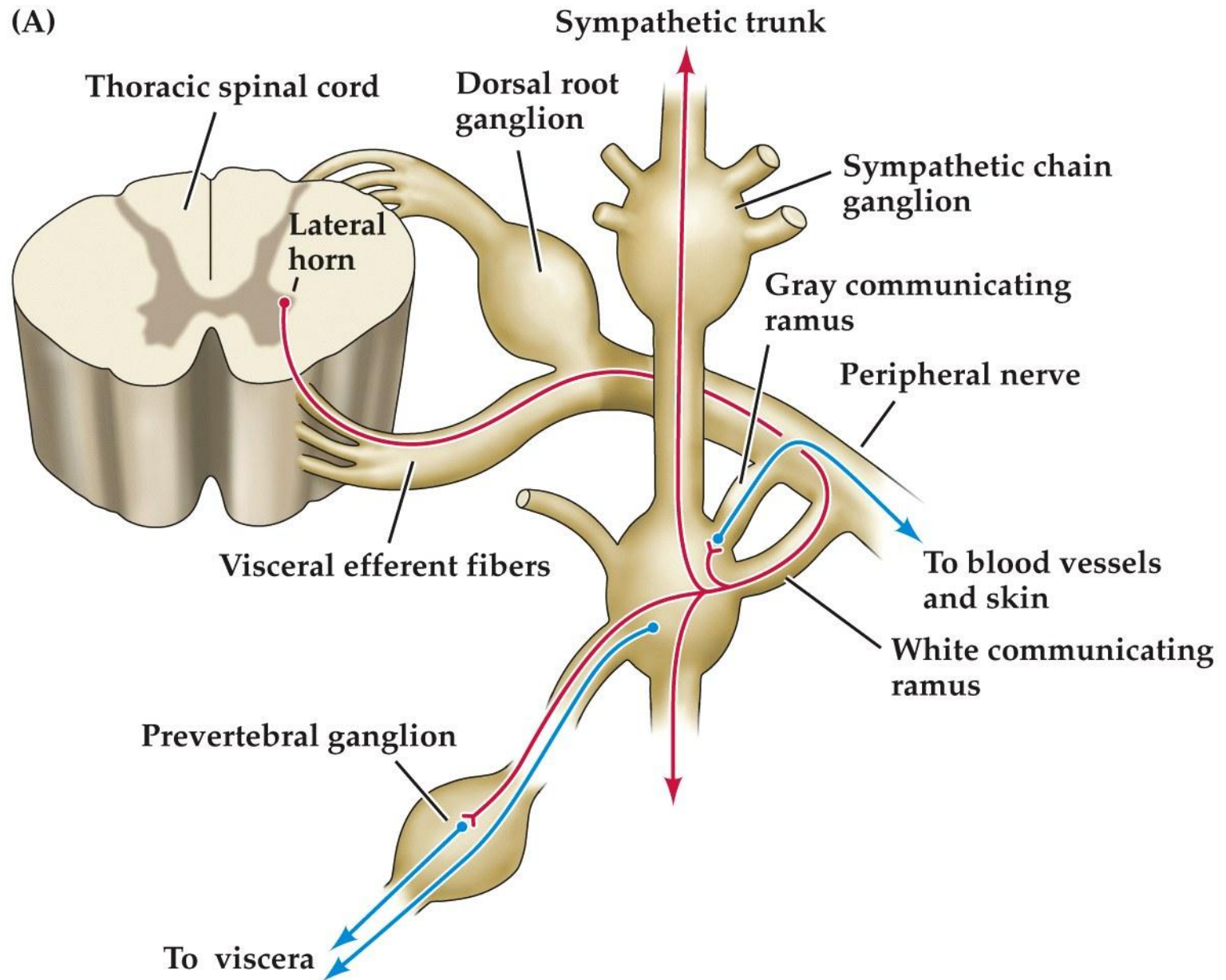
- Basal plate – motor



SYMPATHETIC – Ach, NE

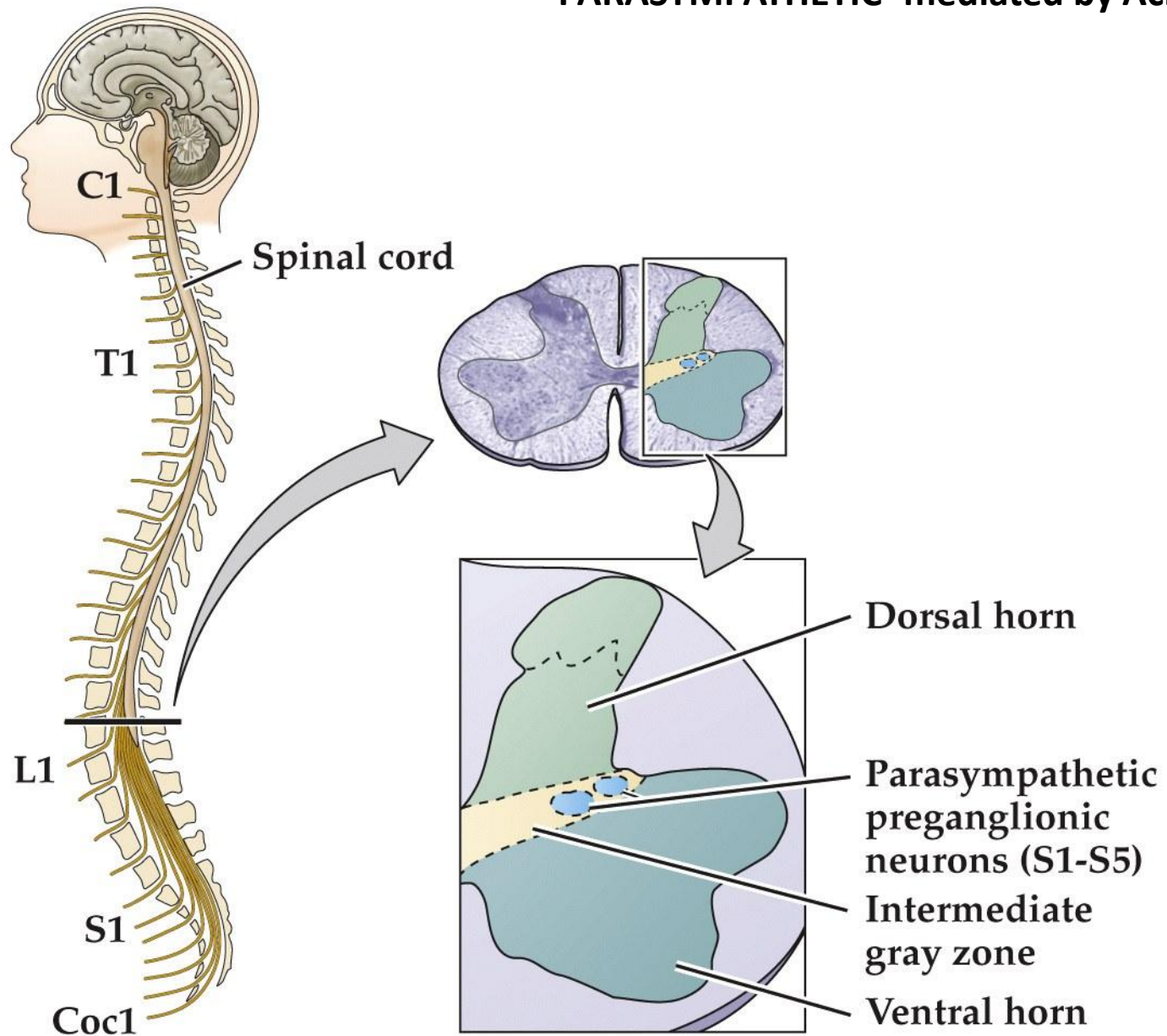
(B)



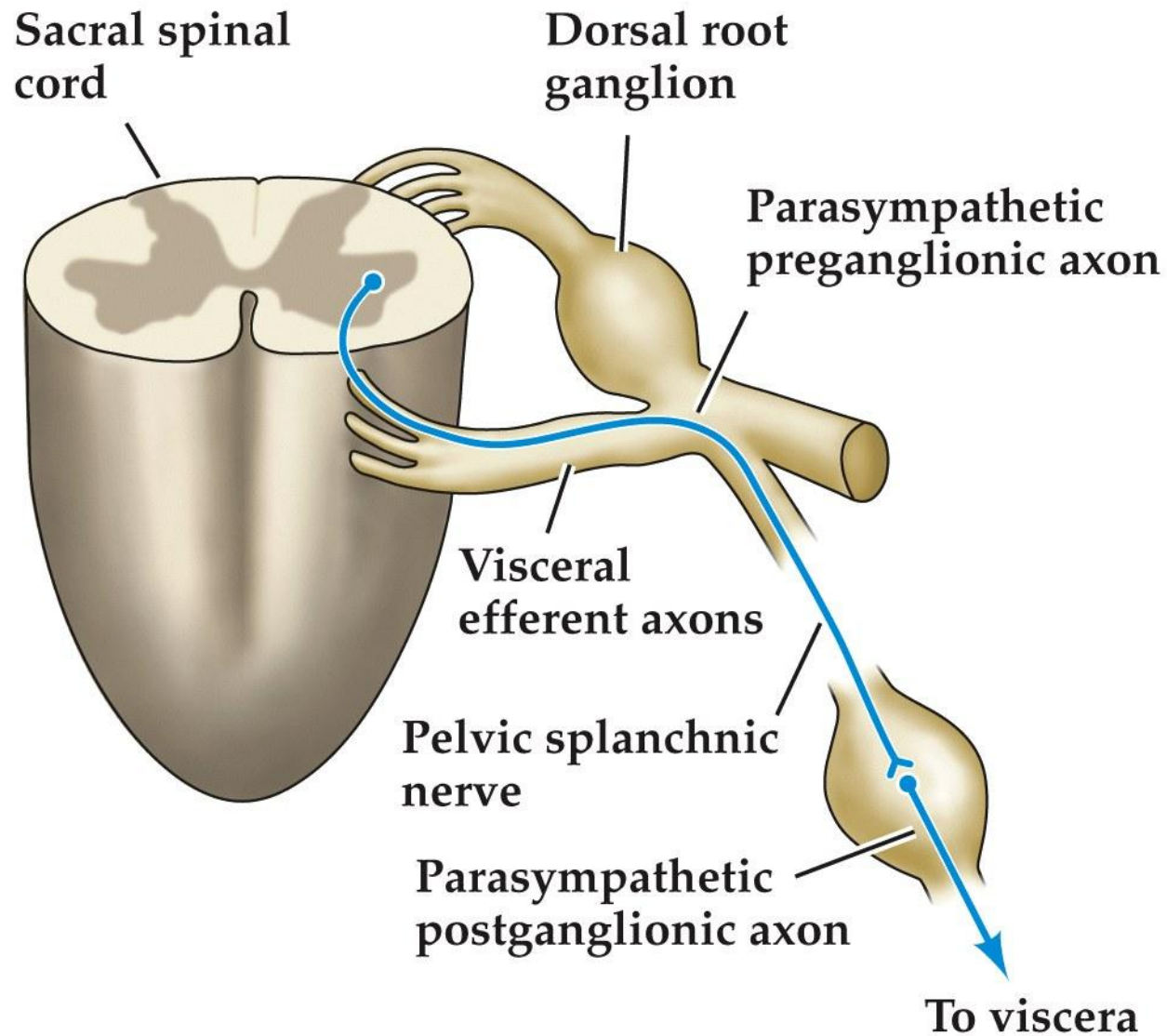


(D)

PARASYMPATHETIC- mediated by Ach



(C)



**MOTOR
FUNCTION**

Cortico-spinal tract

α motor neurons

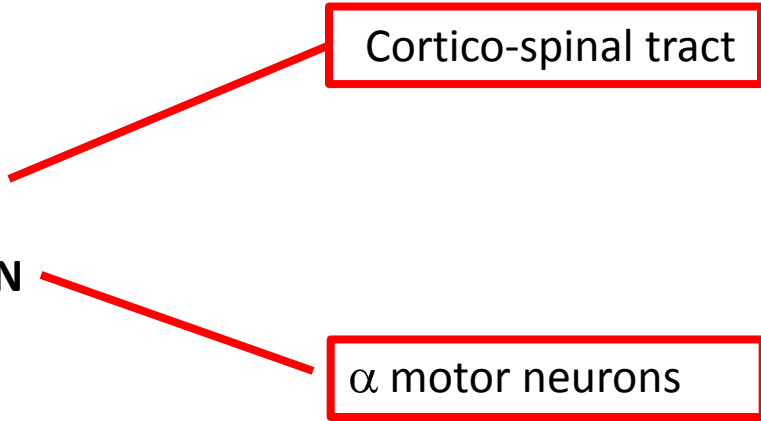
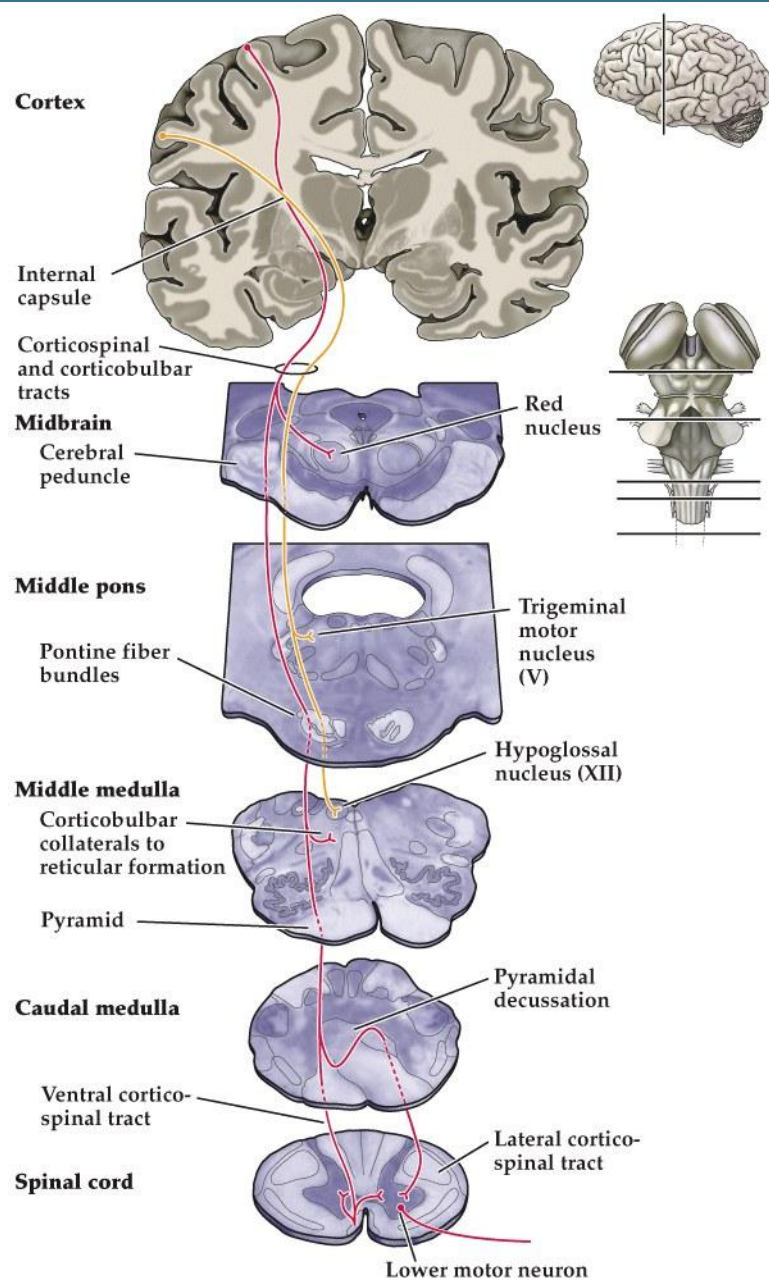


Figure 17.4 The corticospinal and corticobulbar tracts



NEUROSCIENCE 5e, Figure 17.4

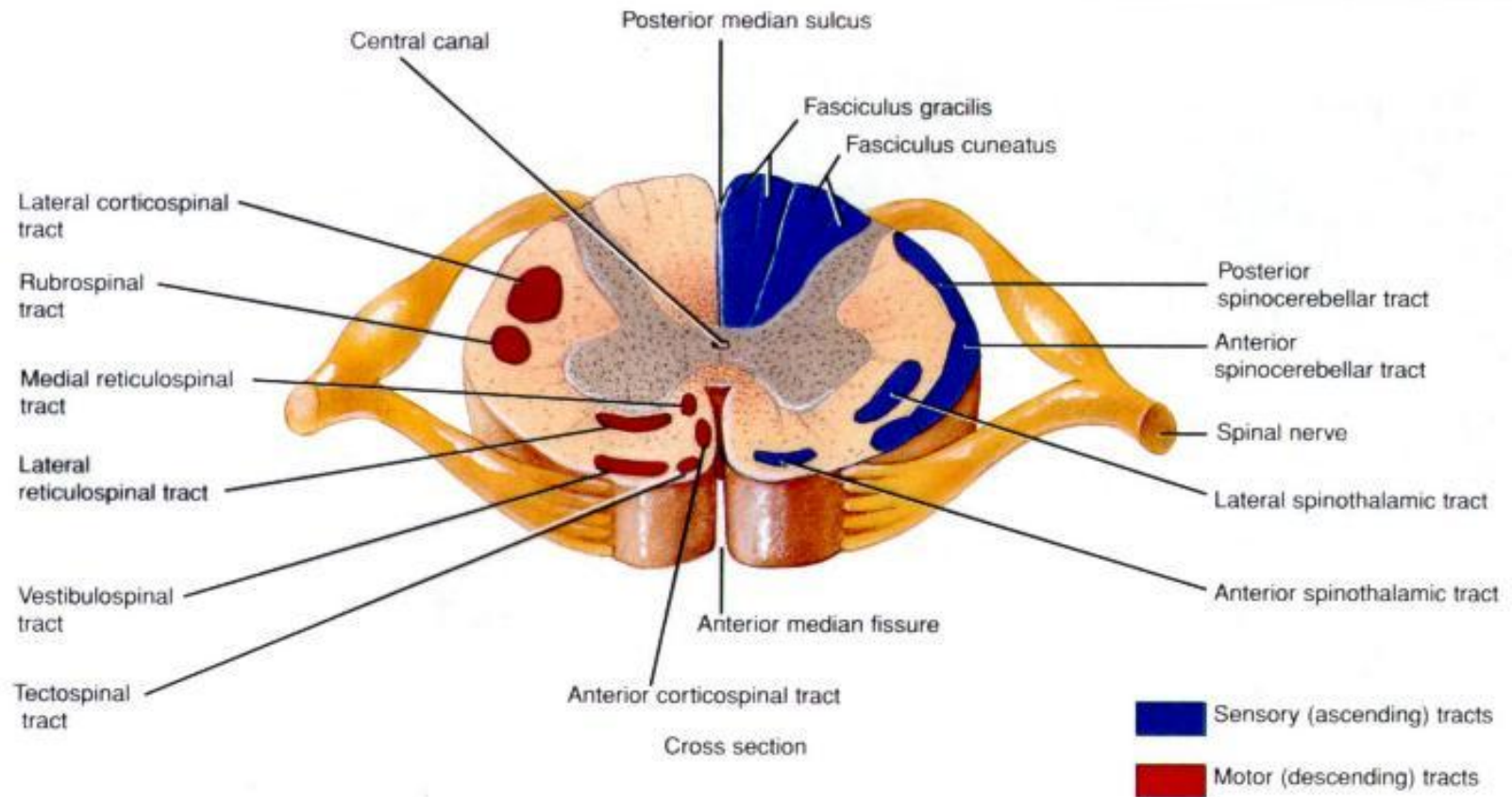
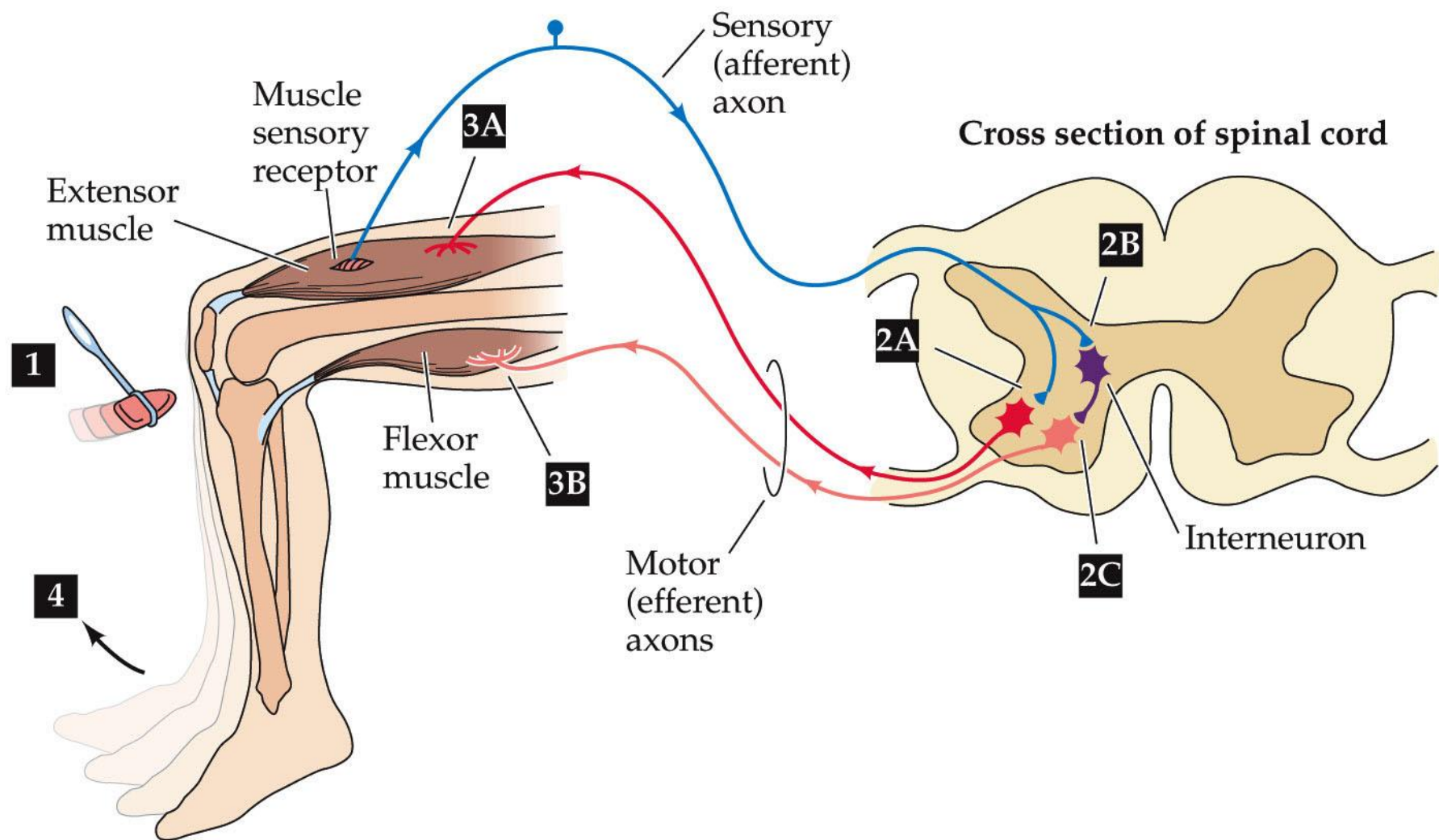


Figure 1.7 A simple reflex circuit, the knee-jerk response (Part 1)



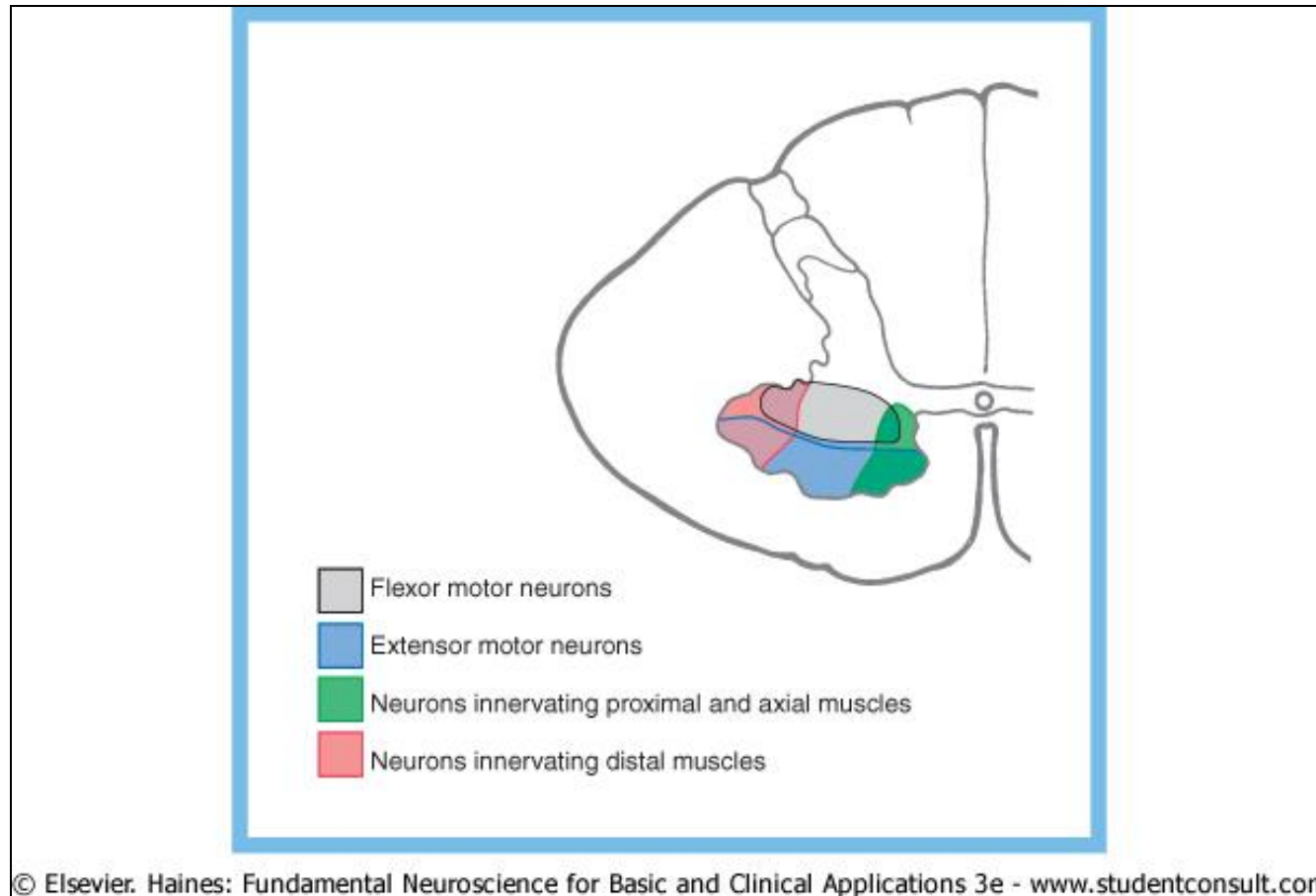
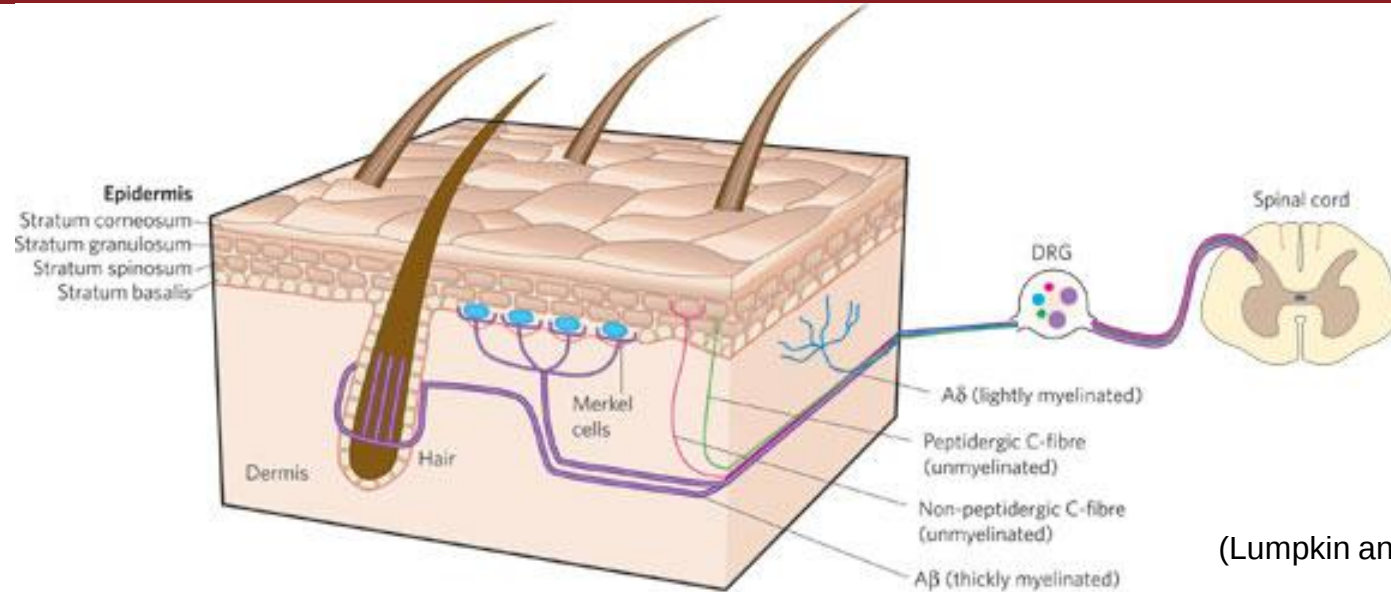


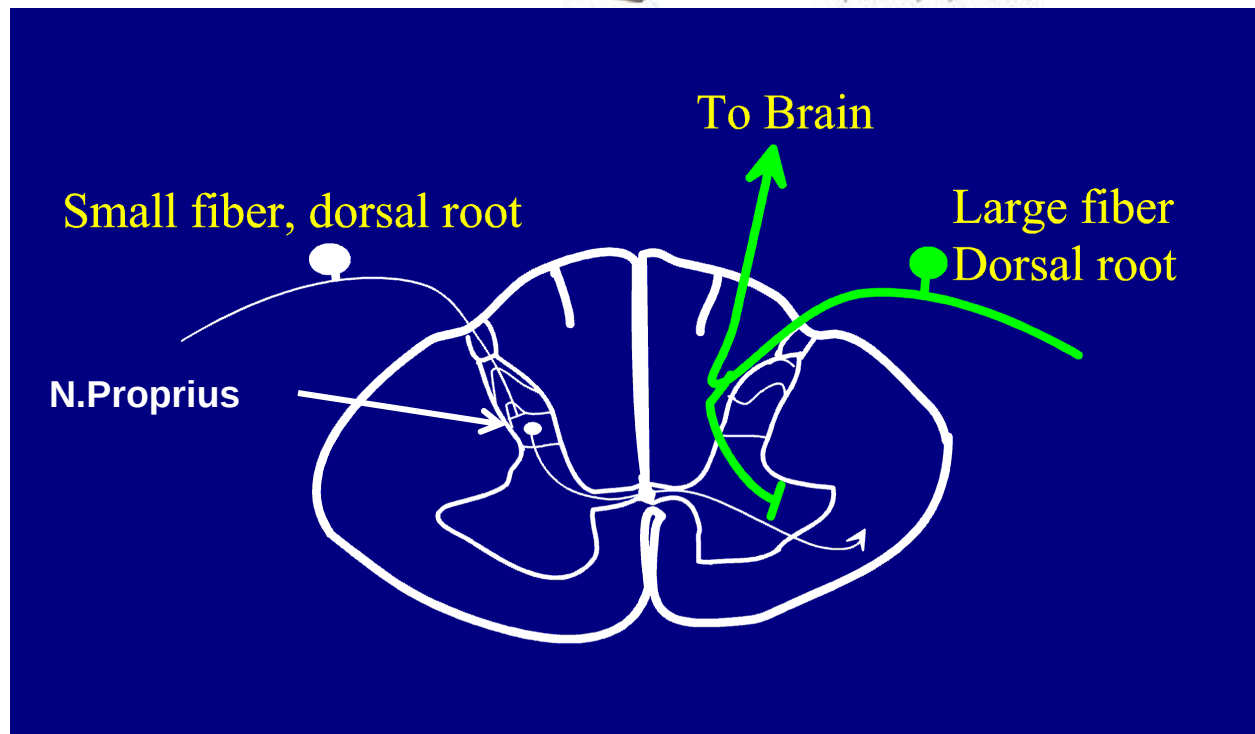
Figure 9-8 Representation of the general organization of motor neurons in the anterior horn.

Pain and temperature

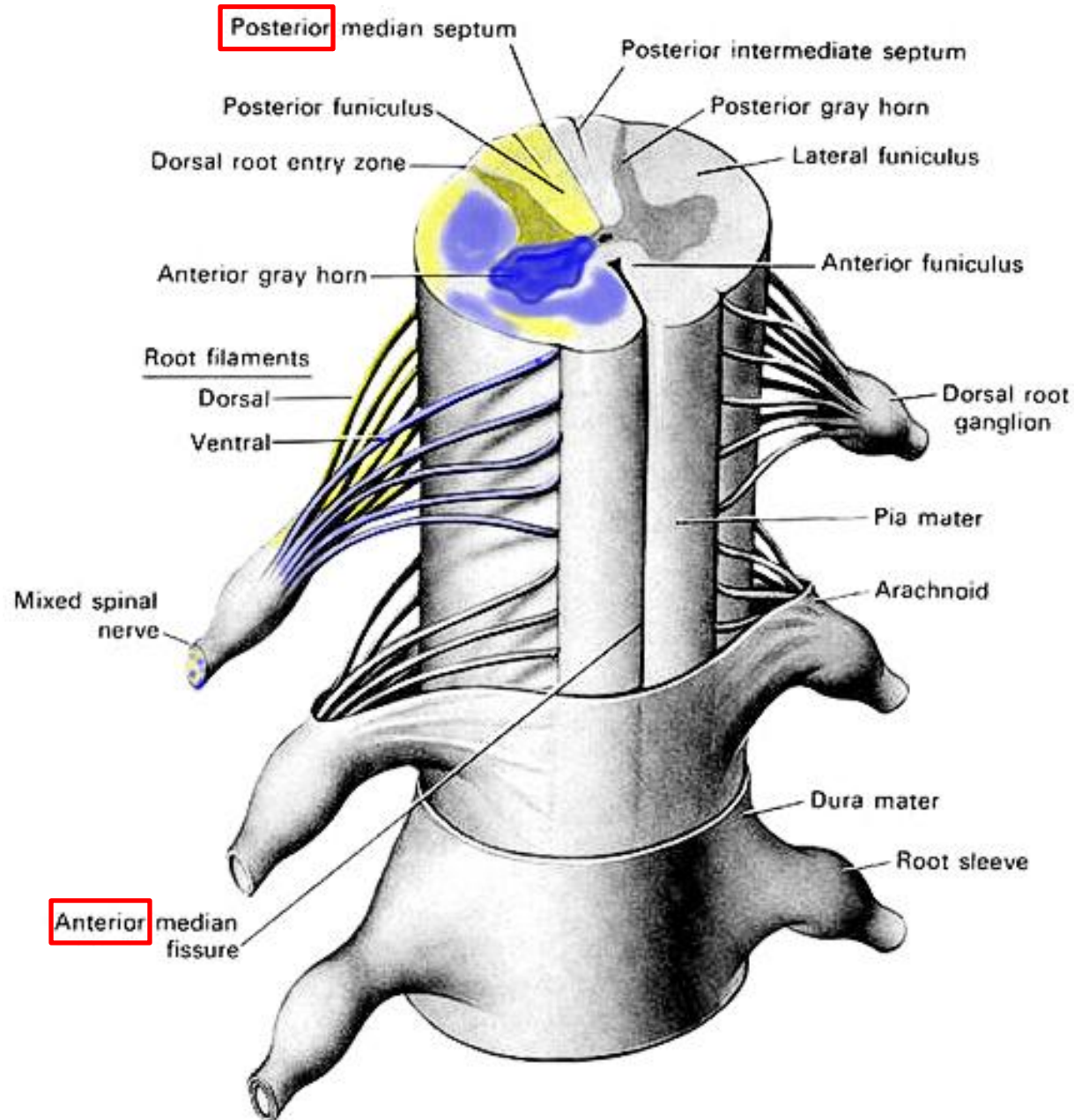
Receptors in skin are innervated by dorsal root ganglia neurons that project to the spinal cord



(Lumpkin and Caterina, 2007)



Surface Features: Spinal Cord



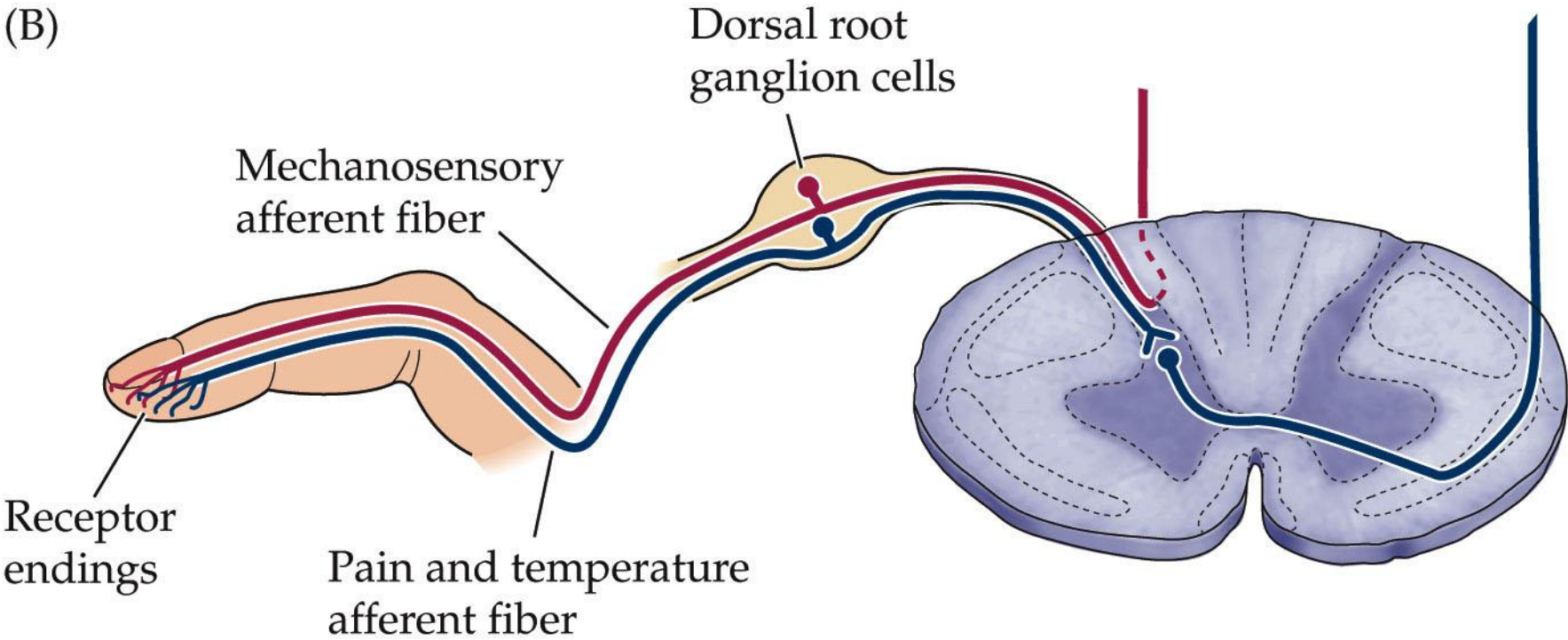
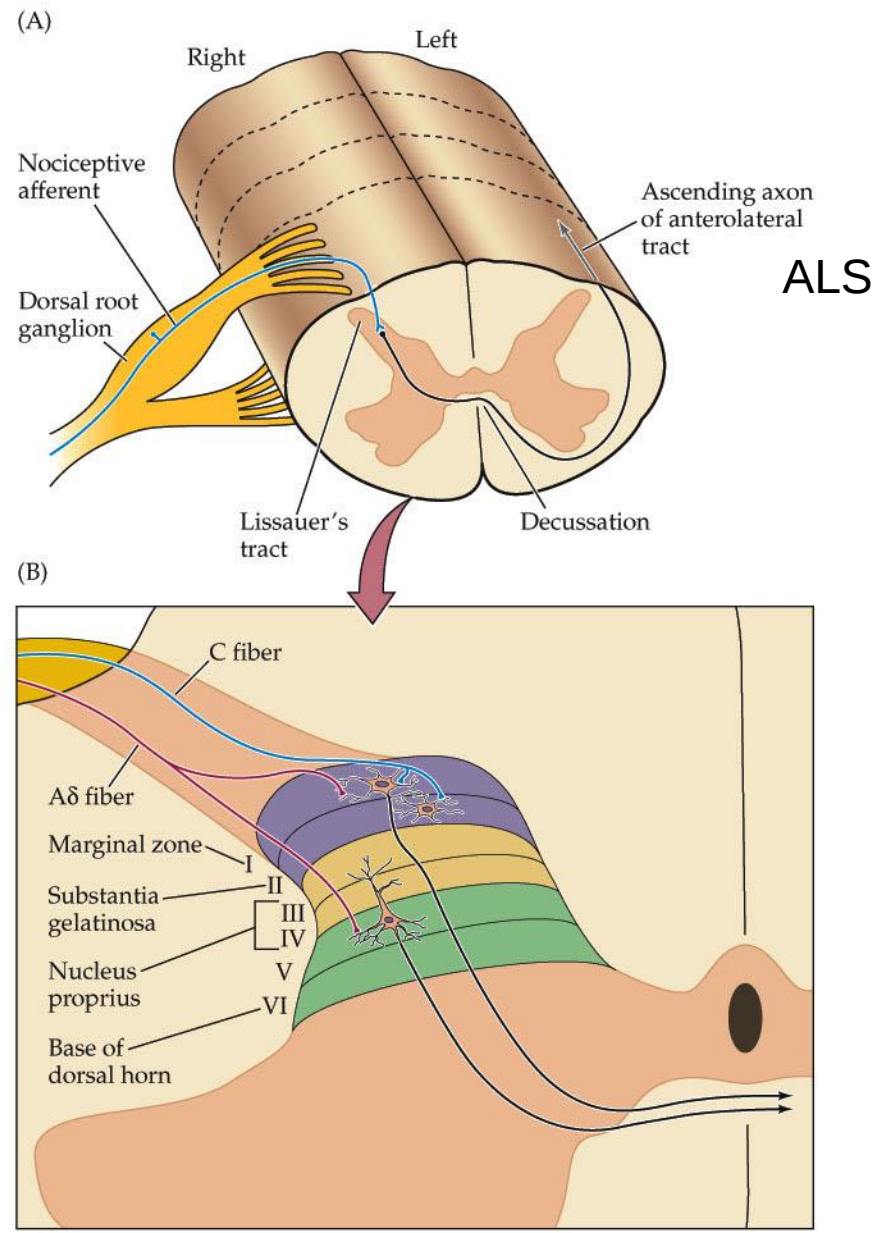


Figure 10.3 The anterolateral system



Fast pain- A δ fibers

Slow pain- long lasting pain- C fibers

Antero-lateral system contains:

-Fibers for sharp pain, well delineated,
Integrated, deep layers of dorsal horn >cross to form **ALS** >>
To VPL > Somatosensory Cx

-Affective-motivational aspect of pain-
Superficial dorsal horn (I/II layers) > cross to ALS > Midline TH >
Anterior cingulate and Insular Cx (anguish)

.

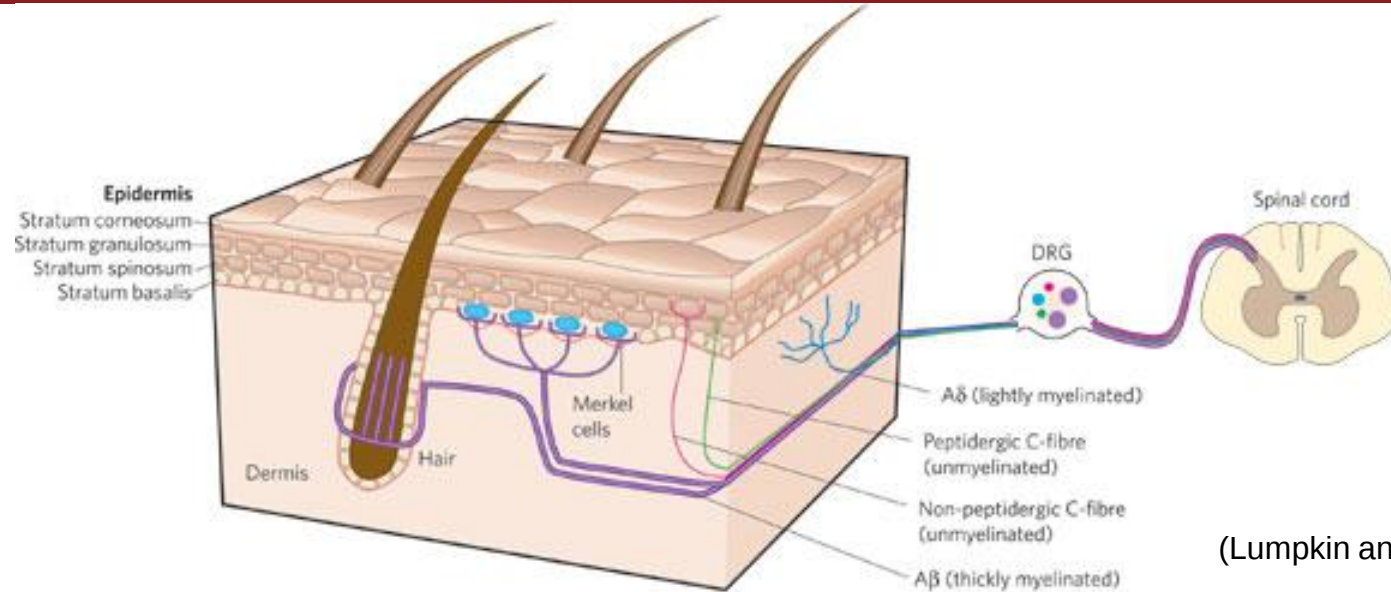
- **Dorsal Column - Sensory system**

Crude Touch

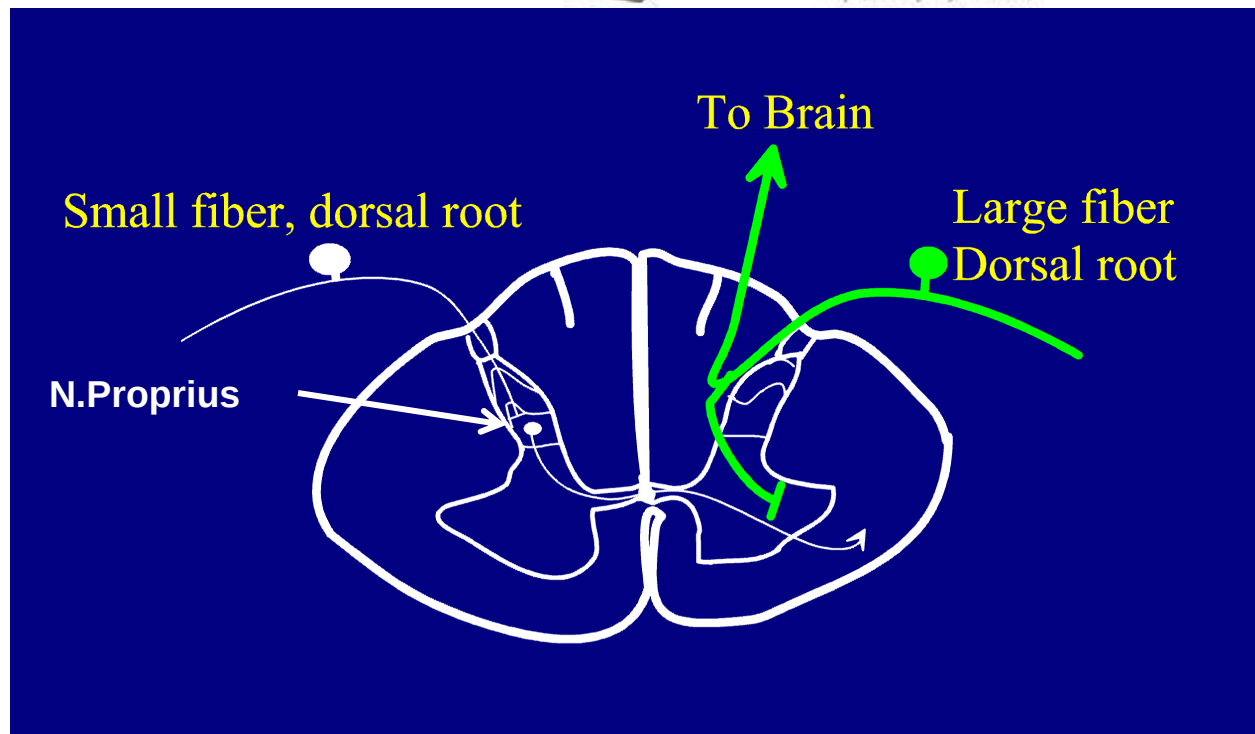
Two point discrimination

Vibration

Receptors in skin are innervated by dorsal root ganglia neurons that project to the spinal cord



(Lumpkin and Caterina, 2007)



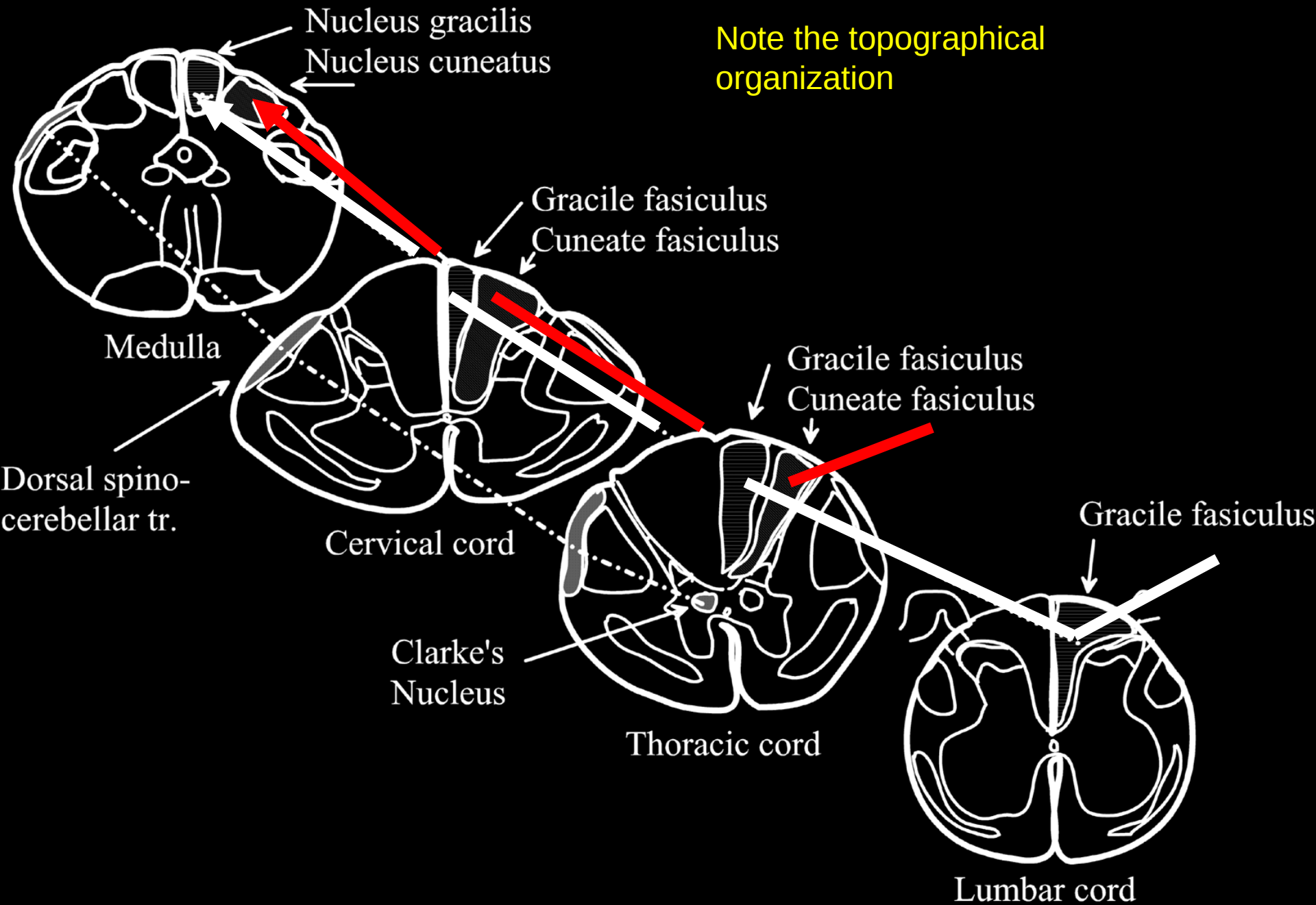
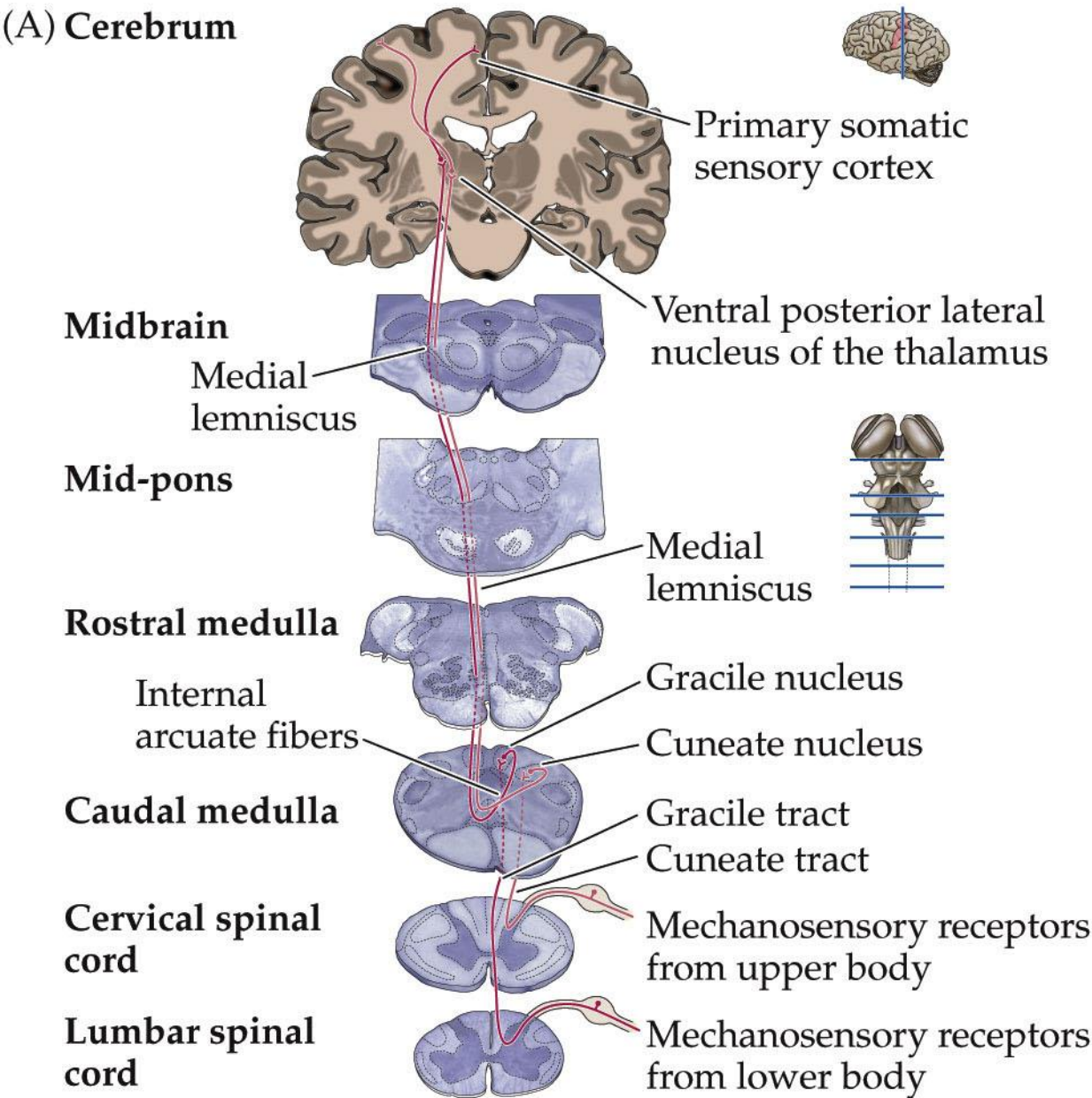
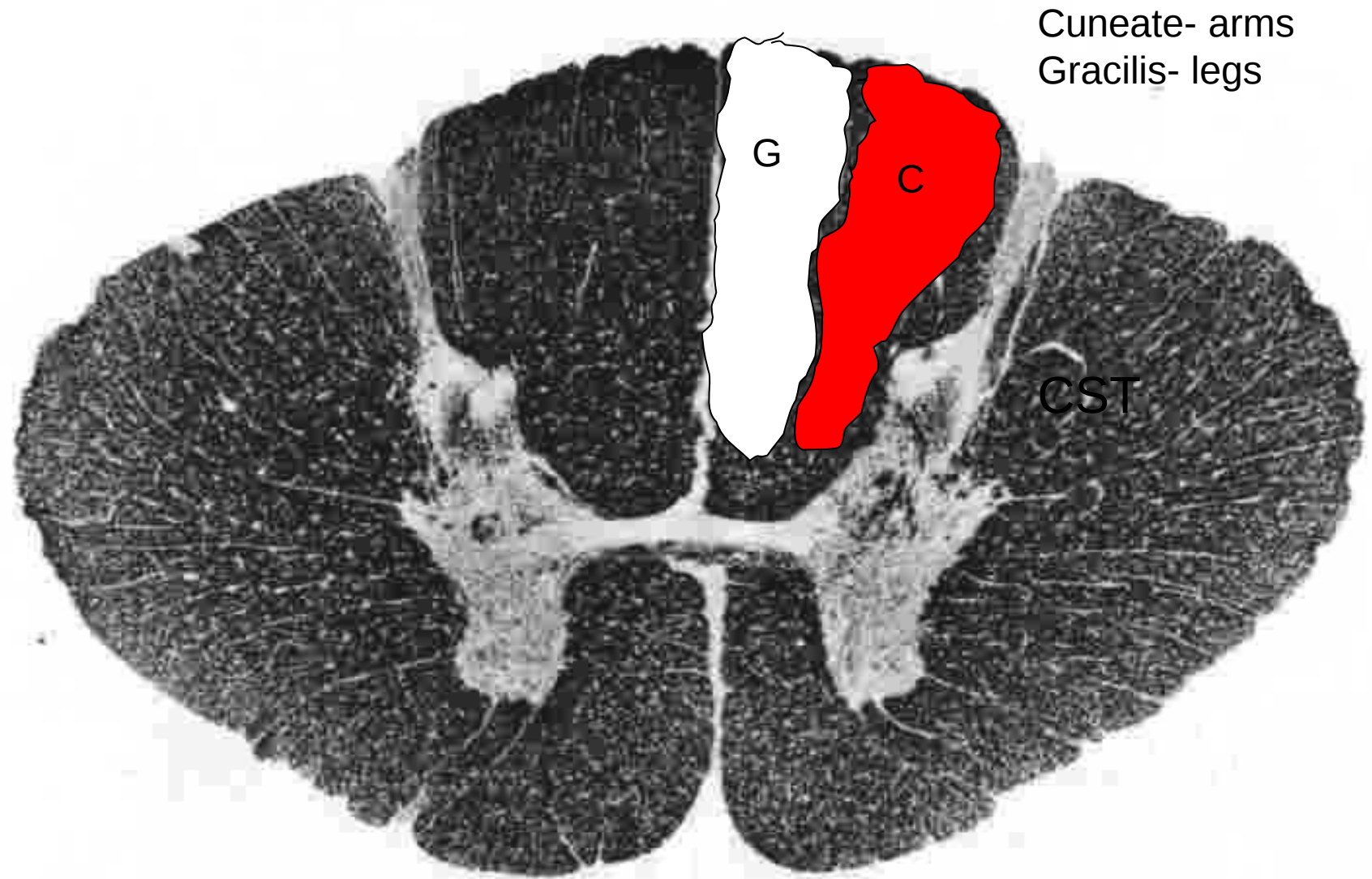


Figure 9.8 Schematic representation of the main mechanosensory pathways (Part 1)

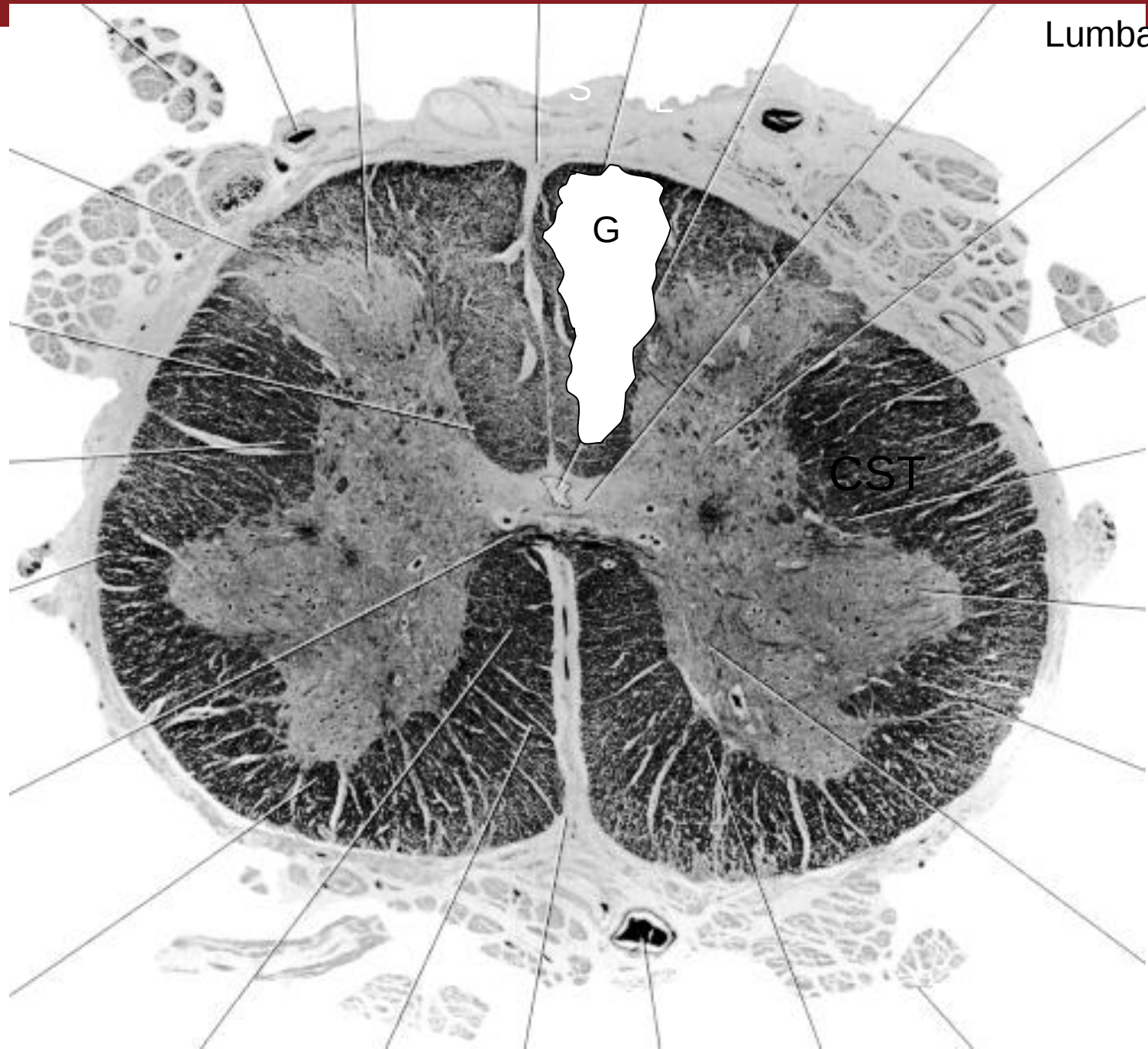


- Cuneate and Gracilis fibers- SC
- Nuclei Cuneate and Gracilis- Medulla
- Crossing in medulla > Medial Lemniscus
- VPL- Thalamus
- Somato-sensory Cortex



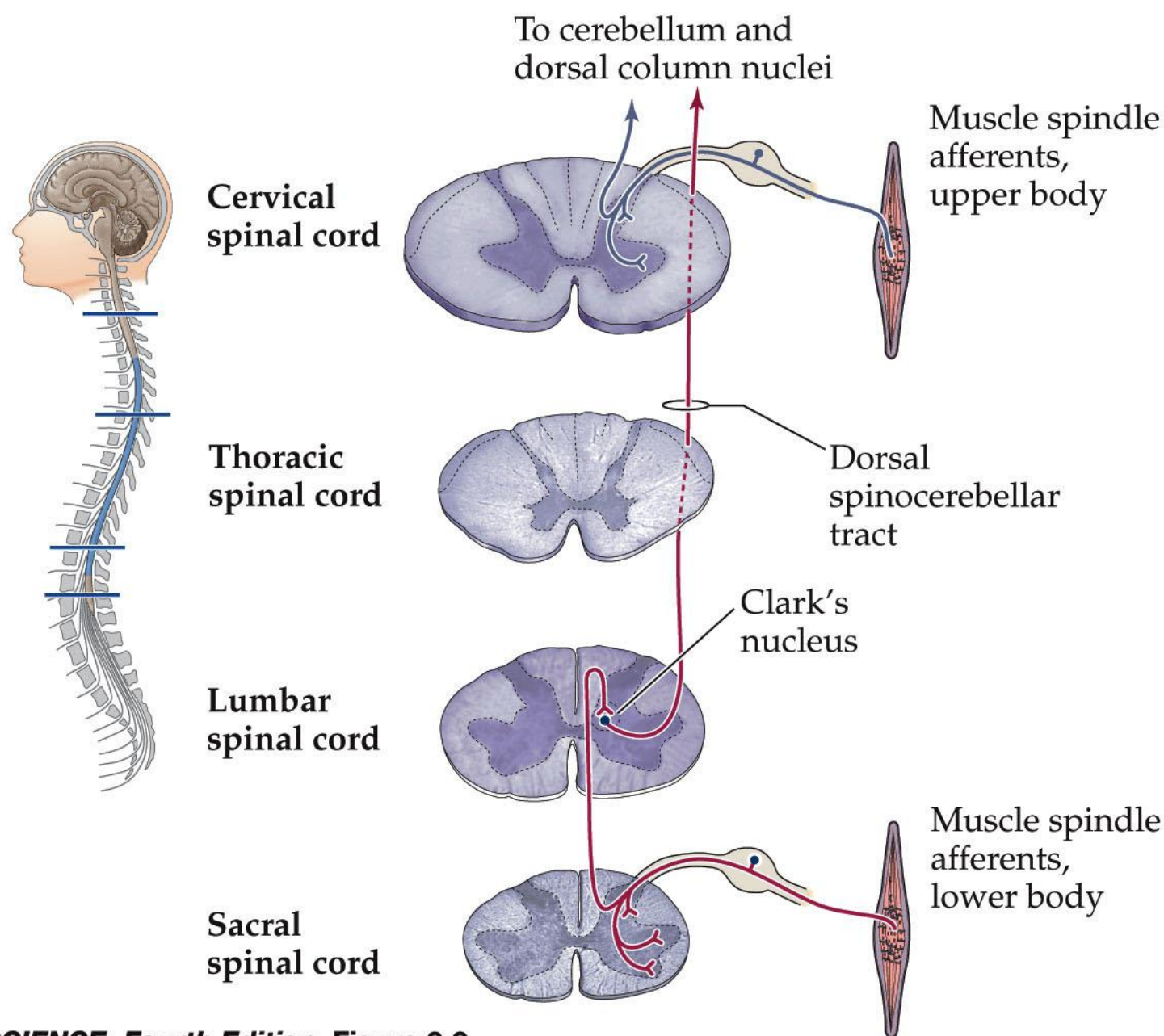
Cuneate- arms
Gracilis- legs

Lumbar

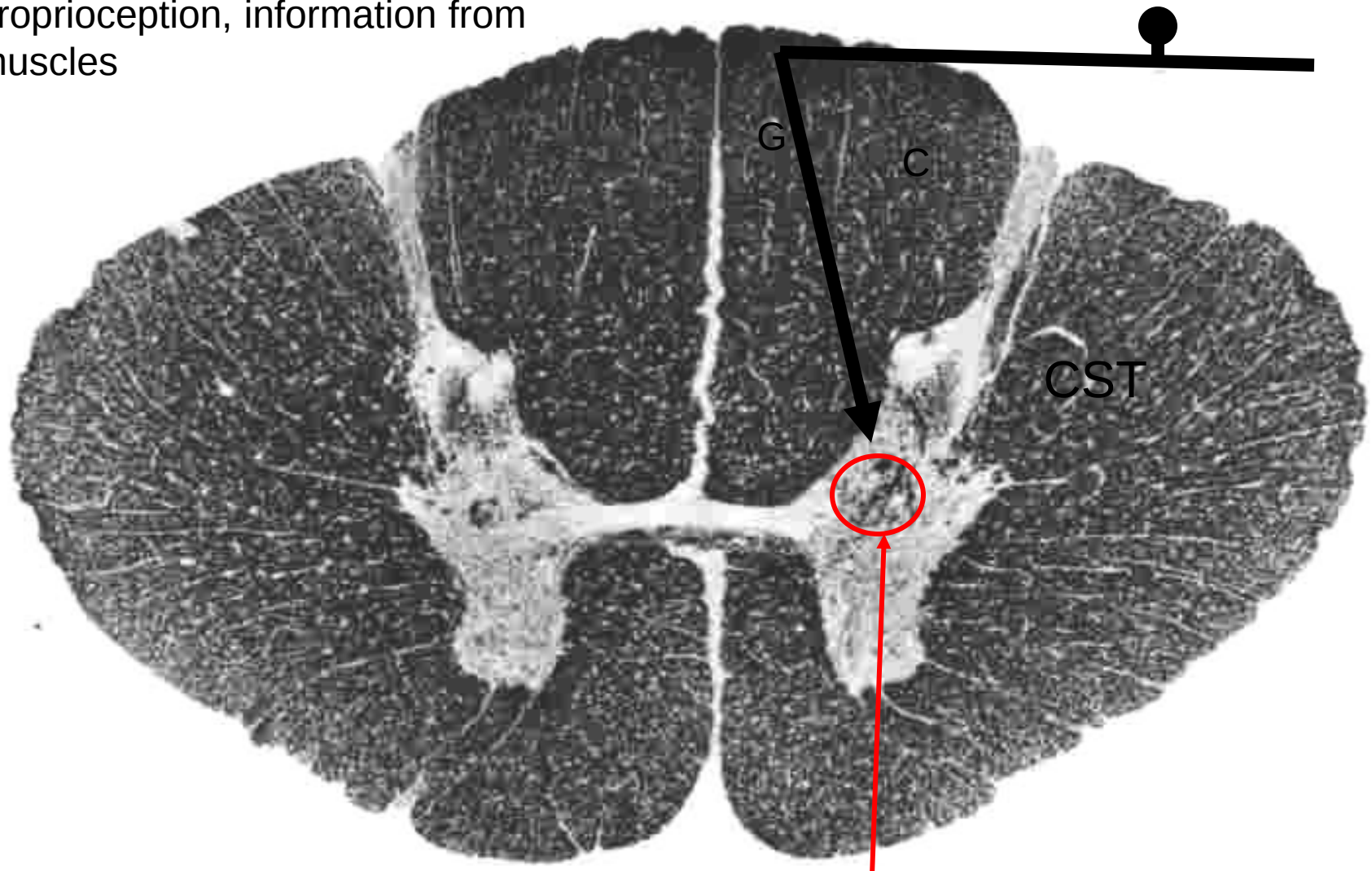


Spino-cerebellar tract

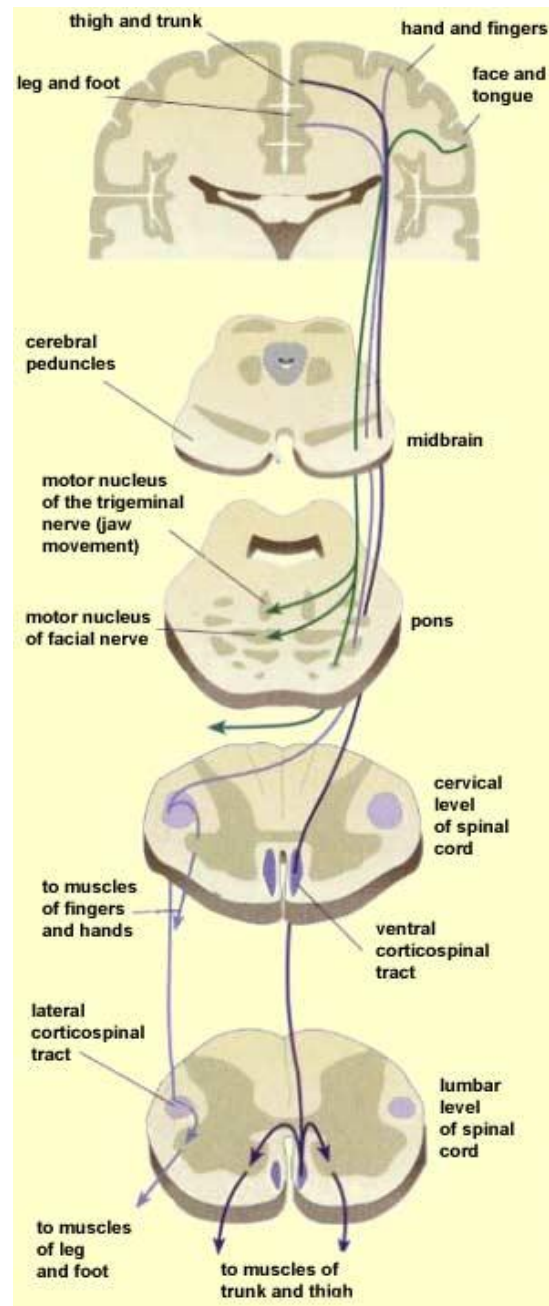
Figure 9.9 Proprioceptive pathways for the upper and lower body



Dorsal Spino-cerebellar tract-
proprioception, information from
muscles



Ia and Ib DRG fibers terminate in Clarke's column, T1-L2



Pyramidal
crossing

- Grey and white matter
- White matter ascending (sensory) and descending (motor) fiber tracts.

Ascending: 

- Dorsal column
- Spino-thalamic tr.(ALS)
spinal tr.
- Spino-cerebellar tr.

Descending: 

pyramidal
(cortico-spinal)

Rubro-