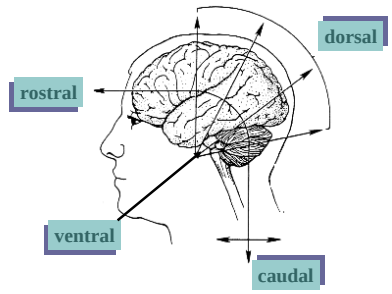
Spinal Cord

Medical Neuroscience
Dr. Wiegand

Directions

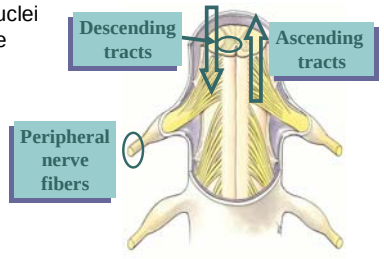


Terms

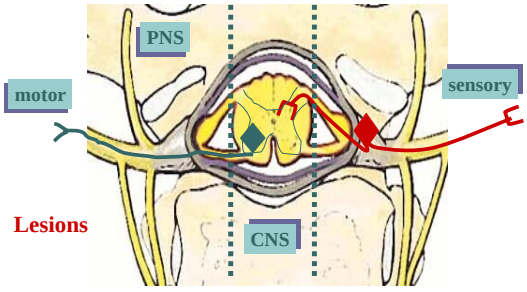
- rostral - toward the “beak”
- caudal - toward the “tail”
- ventral - toward the front (anterior)
- dorsal - toward the back (posterior)
- superior - above
- inferior - below

Spinal Cord

- Central gray nuclei and outer white matter (tracts)

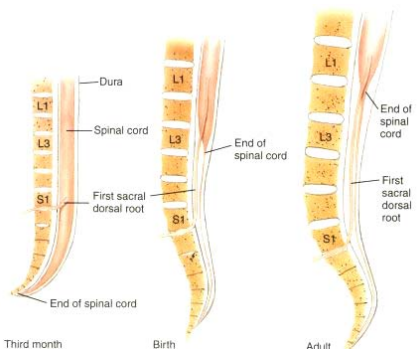


Peripheral and Central Nervous System



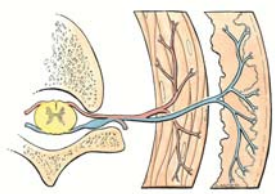
Spinal nerves & cord

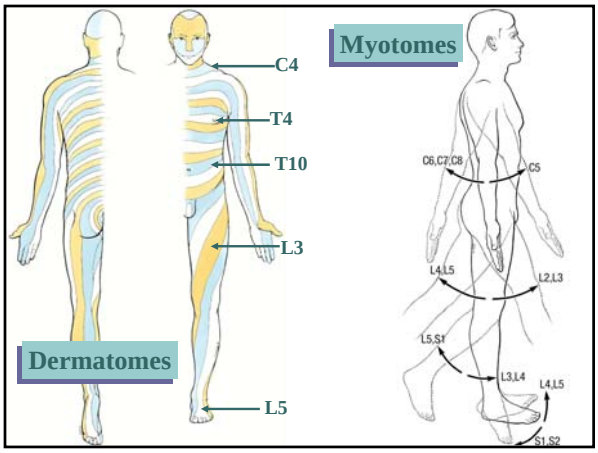
- 31 pairs with anterior and posterior root
- C1 often doesn't have posterior root
- Spinal cord enlarged in C5 – T1 and L2 – S3 levels
- Spinal cord ends at L1 vertebral level



Dermatomes & Myotomes

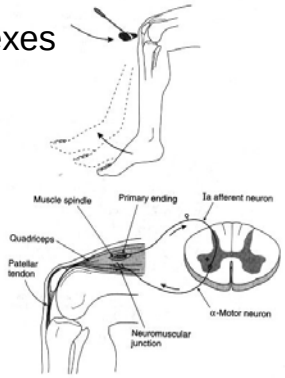
- Dermatome – an area of skin innervated by a single posterior root
- Myotome – a group of muscles innervated by a single anterior root



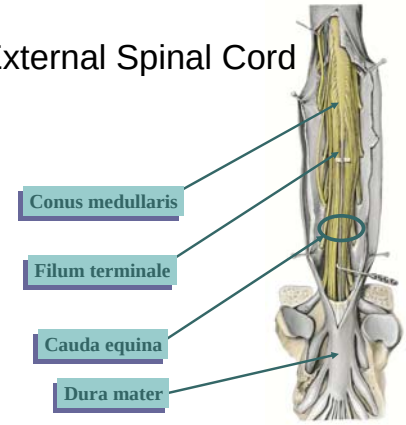


Stretch Reflexes

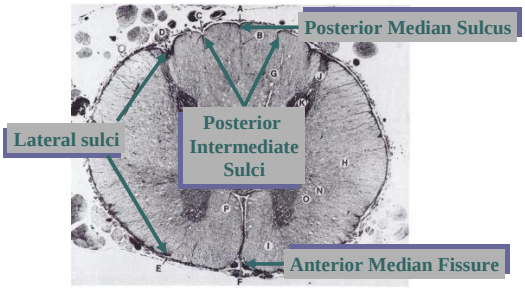
- Examples:
  - C**5**-6 = biceps tendon
  - C**6** = brachioradialis
  - C**7**-8 = triceps tendon
  - L2-**4** = patellar tendon
  - S**1**-2 = Achilles tendon



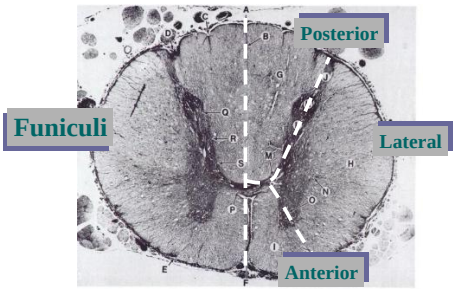
External Spinal Cord



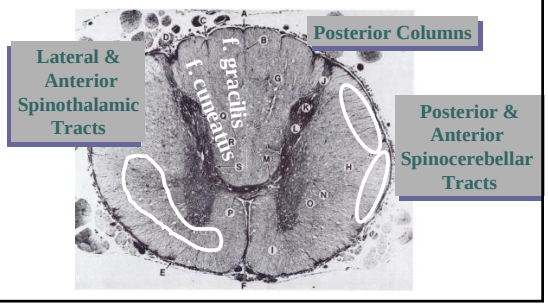
External Structure – Spinal Cord



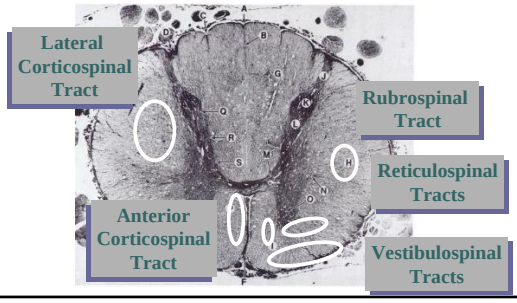
Internal Structure – White Matter



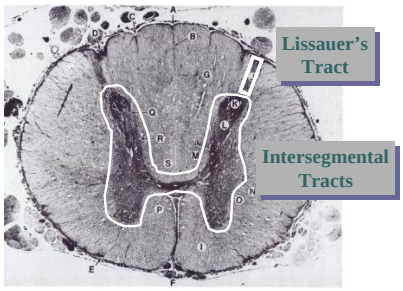
White Matter Organization: Ascending Pathways

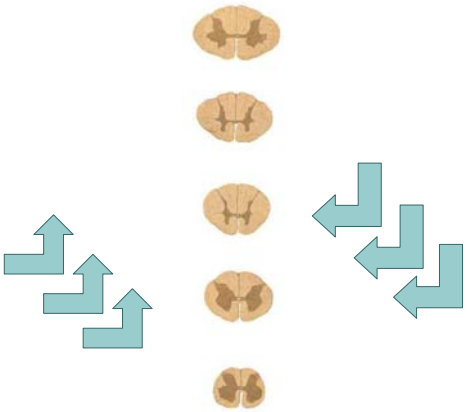


White Matter Organization: Descending Pathways

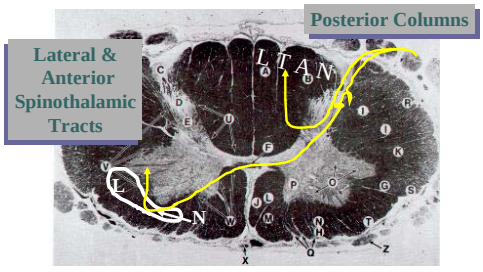


White Matter Organization: Intersegmental Pathways

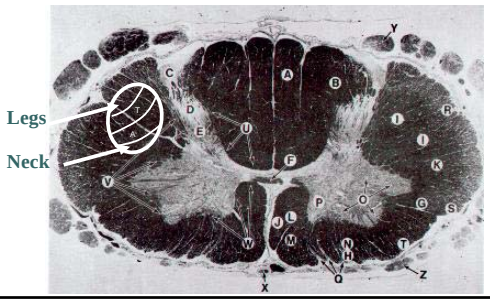




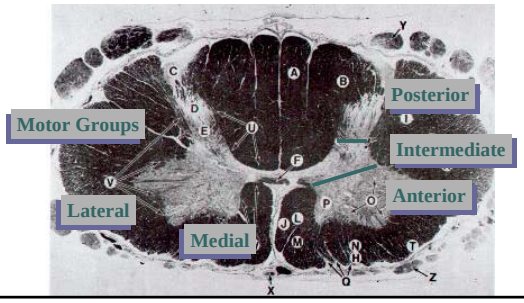
White Matter Organization: Ascending Pathways



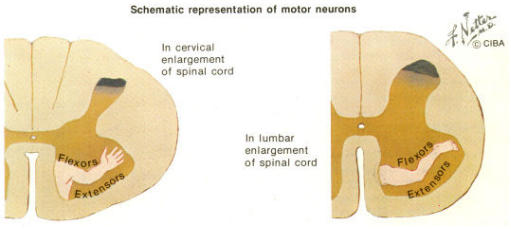
White Matter Organization: Descending Pathways



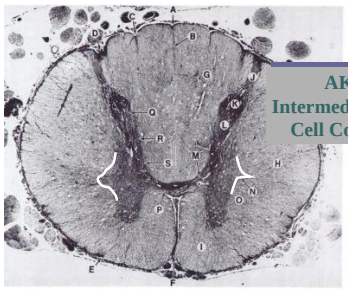
Grey Matter Organization



Grey Matter Organization: Anterior Cell Columns

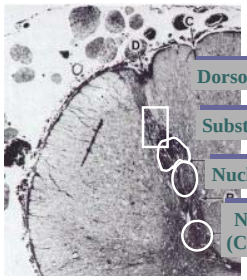


Grey Matter Organization: Lateral Grey Horns: T1 – L2/3



AKA Intermediolateral Cell Column

Grey Matter Organization: Posterior Cell Column

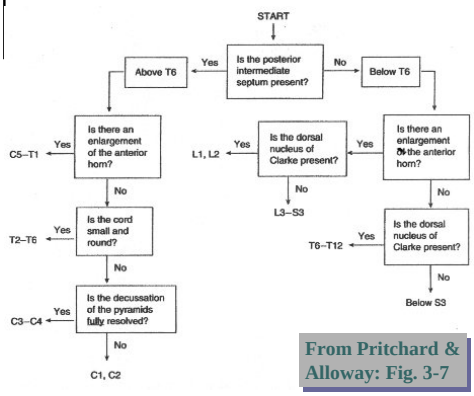


Dorsomarginal nucleus

Substantia gelatinosa

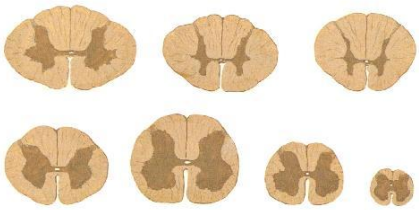
Nucleus proprius

Nucleus dorsalis (Clarke's column)

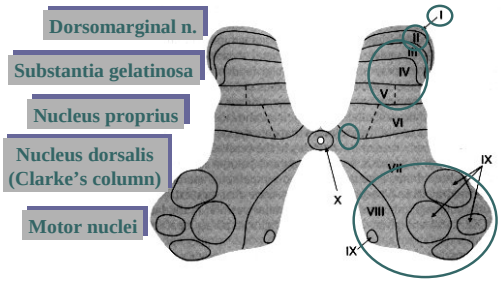


From Pritchard & Alloway: Fig. 3-7

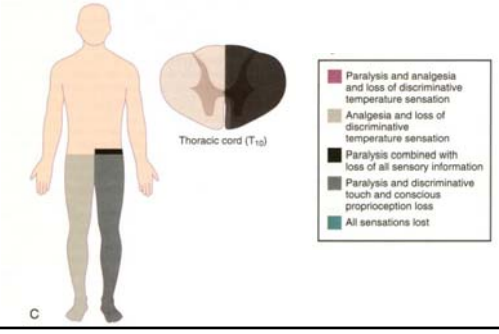
http://lansing.bellarmine.edu/pt/atlas/cover.html



Rexed Lamina



Brown-Sequard Syndrome



"Mr. Osborne, may I be excused?
My brain is full."