Lecture 3 – Spinal Cord Neuroanatomy and Reflexes

I. Basic structure

A. General Considerations

- 31 pairs in human beings
  - 8 cervical
  - 12 Thoracic
  - 5 lumbar
  - 5 sacral
  - 1 coccyx

  Spinal nerves have segmental regions of innervation within the body (below the neck)

- Pairs of spinal nerves at different level innervate circumscribed regions of the skin or muscle

- Cross section  Central grey and surrounding white matter. Two halves are separated by septums and fissures. Grey matter is divided into columns while the white matter is divided into funiculi.

B. Gray Matter

- Posterior Grey
  - Substantia gelatinosa  Receives pain and temperature fibers; extend through spinal cord
  - Dorsal funicular grey  Receives tactile and proprioceptive input
  - Dorsal nucleus  Posterior spinocerebellar tract originates here.

- Lateral Grey
  - Gives rise to preganglionic sympathetic fibers at levels T1-L3 and the parasympathetic cell column at S2-S4.

- Anterior Grey
  - Output to muscles, contains alpha motor neurons; there are three visions that relate to innervation of muscle; proximal, intermedial or distal.