Internal Anatomy of the Central Nervous System

Chapter 3

Cranial Nerves

(not part of CNS)

"On Old Olympic Towering Tops
A Finn And German Viewed
Some Hops"

Cranial Nerves

• I. Olfactory (S)
• II. Optic (S)
• III. Oculomotor (M)
• IV. Trochlear (M)
• V. Trigeminal* (B)
• VI. Abducens (M)
• VII. Facial* (B)
• VIII. Vestibulocochlear (S)
• IX. Glossopharyngeal* (R)
• X. Vagus* (B)
• XI. Accessory (M)
• XII. Hypoglossal* (M)

* Oral Musculature Nerves
Cranial Nerves (cont.)

CN V - Trigeminal Nerve

- Mixed
- Three divisions
  - Ophthalmic - sensory
  - Maxillary - sensory
    - Plus nasopharynx
  - Mandibular - mixed
    - Sensory
    - Motor - muscles of mastication
CN VII - Facial Nerve

- Mixed
  - Motor
    - Upper facial muscles receive bilateral innervation, lower unilateral
  - Sensory
    - Taste - ant. 2/3 of tongue

CN VIII - Vestibulocochlear

- Sensory
  - Acoustic branch -
    - largely contralateral
    - Sound sensitivity
  - Vestibular branch -
    - acceleration and position in space

CN IX - Glossopharyngeal

- Sensory - (gag) Taste, touch, pain, temperature to the posterior 1/3 of tongue, fauces pillars, upper pharynx and Eustachian tube
- Motor - side and upward pharyngeal movement and upward laryngeal (swallowing)
CN X - Vagus Nerve

- Motor - intestines, pancreas, stomach, esophagus, trachea, kidneys, liver, heart, larynx, pharynx and palate
- Sensory - pain, touch, temperature from ear drum and ear, lower pharynx, larynx, thoracic and abdominal viscera, esophagus, bronchi, (heart beat, blood pressure, respiration)

CN X - Vagus Nerve (cont.)

- 1. Auricular branch -
  - Sensory information from ear
- 2. Recurrent laryngeal branch -
  - Motor to intrinsic laryngeal muscles and inferior laryngeal constrictor
  - Sensory to laryngeal mucosa
- 3. Pharyngeal branch -
  - Sensory of taste and sensation to base of tongue and upper pharynx
  - Motor to soft palate muscles
- 4. Superior laryngeal branch
  - Sensory from larynx
  - Motor to cricothyroid muscle

CN XI - Accessory Nerve

- Motor
- Turning head and shrugging shoulders
- 1. Cranial root
  - Receives corticobulbar fibers from both hemispheres
- 2. Spinal root
  - Nucleus in anterior grey column of spinal cord
CN XII - Hypoglossal Nerve

- Motor - tongue
  - All intrinsic and extrinsic muscle (except the palatoglossus (XI))
  - Serves primarily contralateral side