Notes for Monday September 30, 2002

Outline:

Protective connective tissue coverings:
- Endoneurium wraps each axon
- Fascicles = bundles of axons
- Perineurium wraps each fascicle
- Epineurium wraps all the fascicles to form the nerve; continuous with Dura Mater

Recap S.C. functions
- Convey information from PNS to brain
- Integrate & respond to information = REFLEX

Reflex
- A fast response to a change in internal or external environment.
- Automatic & unconscious
- Maintain homeostasis

Classification of reflexes (see hand out)
- Innate reflexes
- Acquired reflexes
- Somatic reflexes
- Autonomic reflexes
- Spinal Cranial

Reflex Arc (Fig. 13.5)
1. Sensory receptor
2. Sensory/afferent neuron
3. (Interneuron)
4. Motor/efferent neuron
5. Effector neuron
DOES NOT INVOLVE BRAIN
Stretch Reflex (Fig 13.6)
- Two neurons
- One synapse
  (monosynaptic)
- Sensory receptors = muscle spindle
- E.g. knee jerk response
- Ipsilateral

Tendon reflex (Fig. 13.7)
- Polysynaptic
- Sensory receptors = Golgi tendon organs
- Ipsilateral

Flexor/Withdrawal Reflex (Fig. 13.8)
- Three neurons
- Two synapses + more
  (polysynaptic)
- Ipsilateral

Crossed Extensor Reflex (Fig. 13.9)
- Sensory impulse enters on one side of S.C. and motor impulse exits on opposite side
- Polysynaptic
- Contralateral

Nerve & Spinal cord injuries
- Peripheral nerve damage (Fig. 12.17)
  Only if cell body is intact and Schwann cells are functional
• Difference between injury in PNS & CNS – location of neuronal cell bodies

• Total severance of spinal cord = transection
• Paraplegia = paralysis of both lower limbs; transection below cervical region (between T1 – L1)
• Quadriplegia = paralysis of all four limbs; transection in cervical region

Please note regarding Myelin:
• In PNS formed by Schwann cells
• In CNS formed by Oligodendrocytes