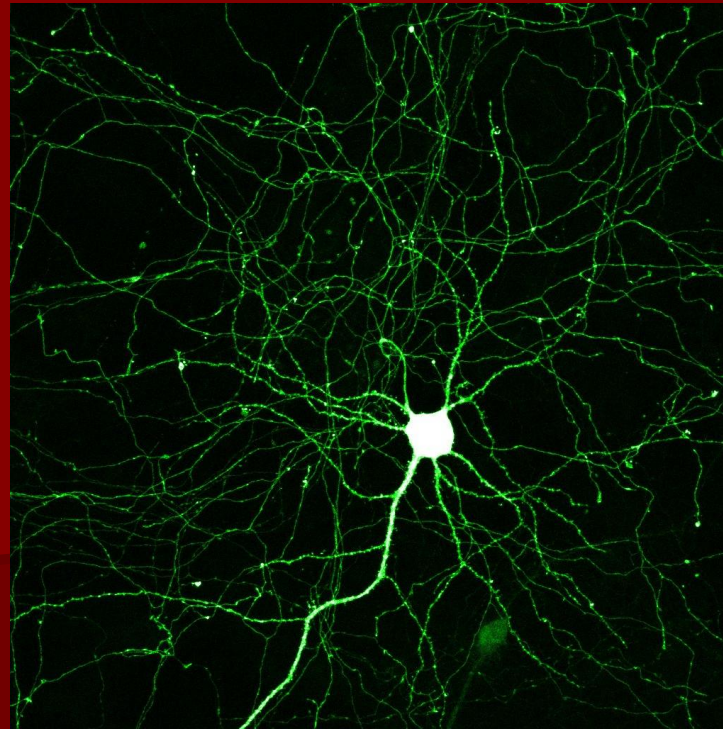


# Nervous System



# Terminology

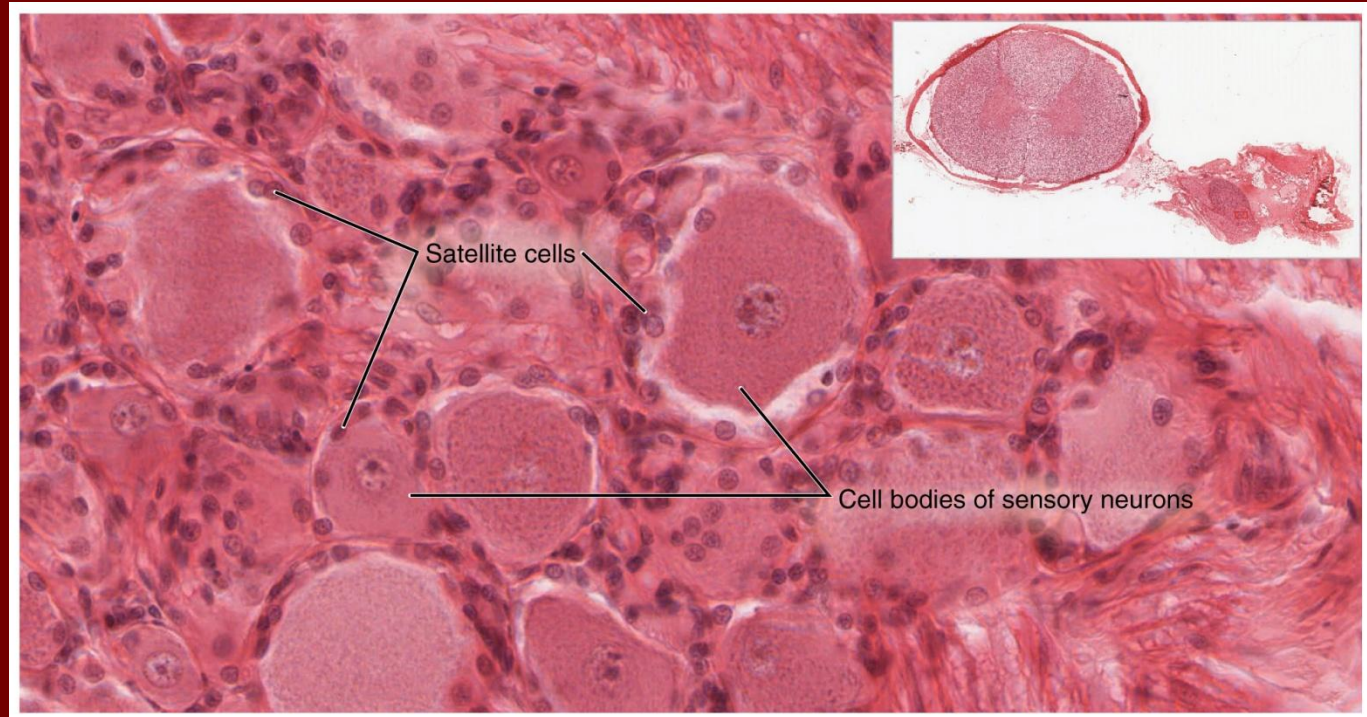
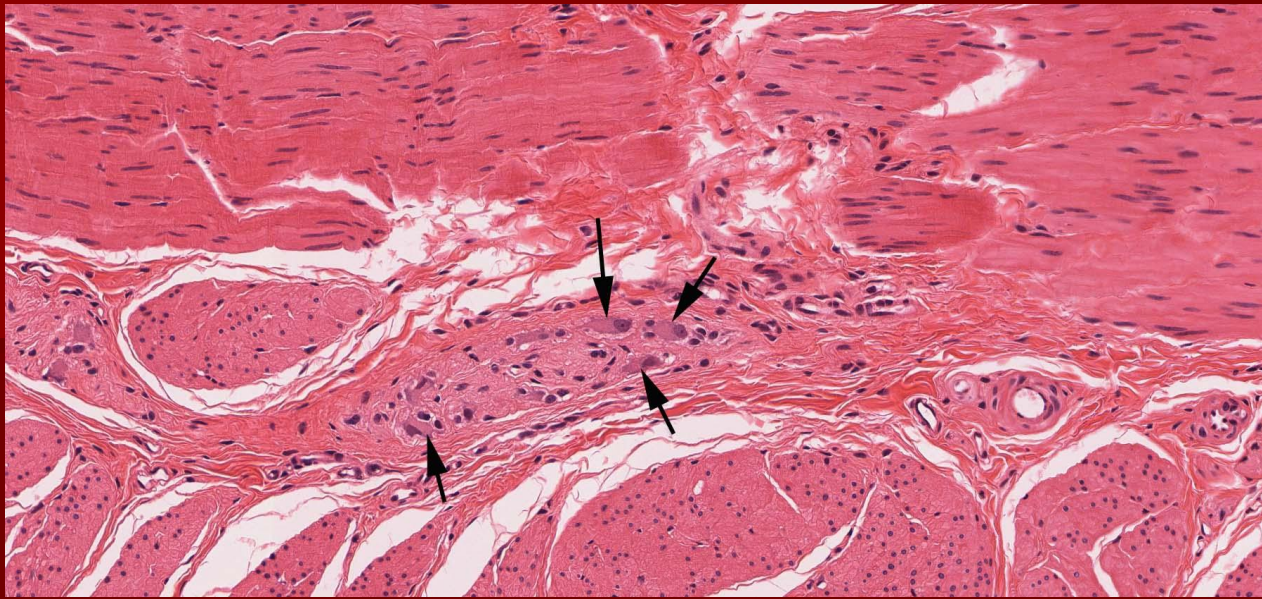
## CNS

- Cell Bodies (clusters)  
= nuclei
- Nerve Fibers  
= tracts

## PNS

- Cell Bodies (clusters)  
= ganglia
- Nerve Fibers  
= nerves



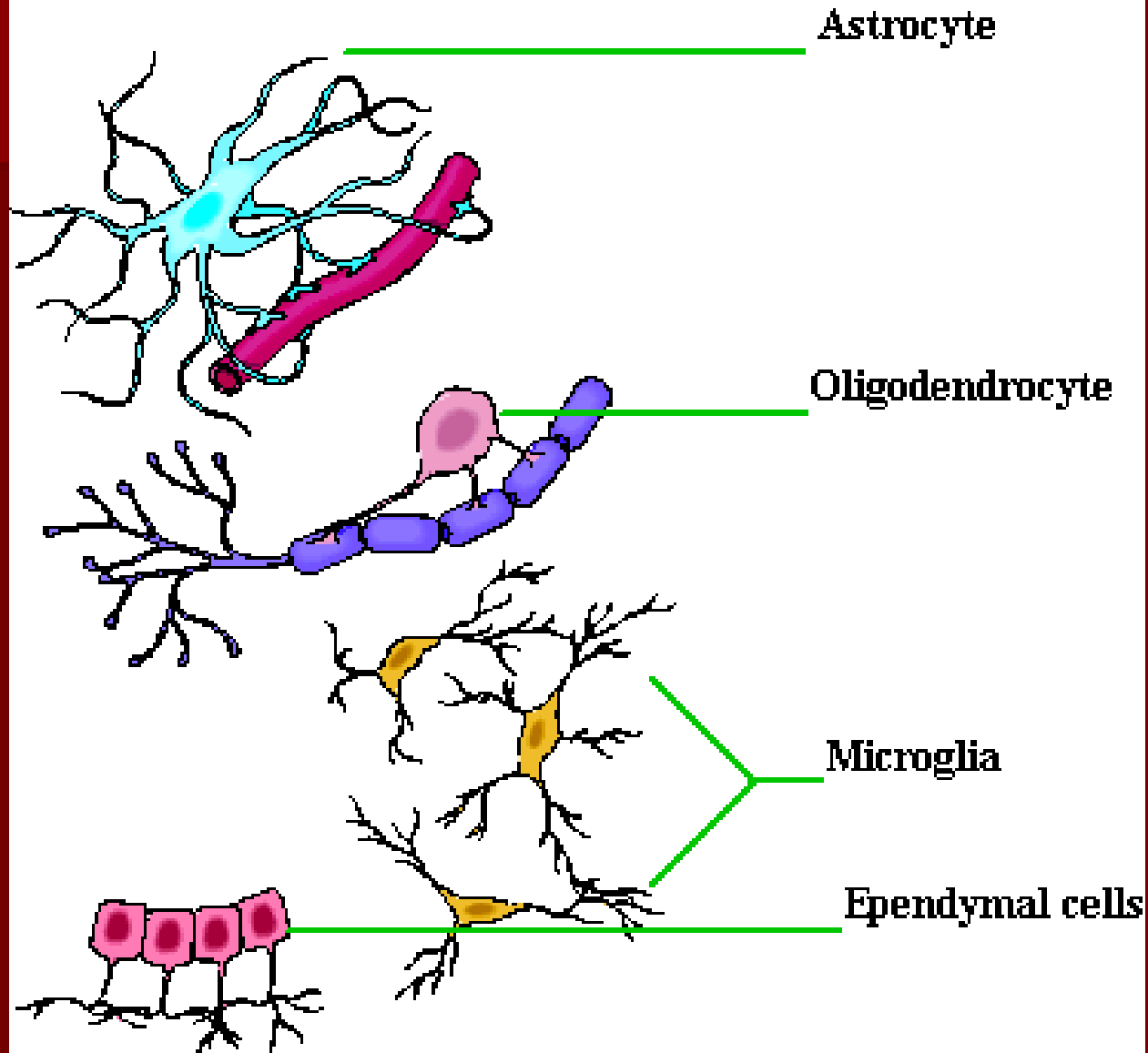


# Supporting Cells

## ■ CNS

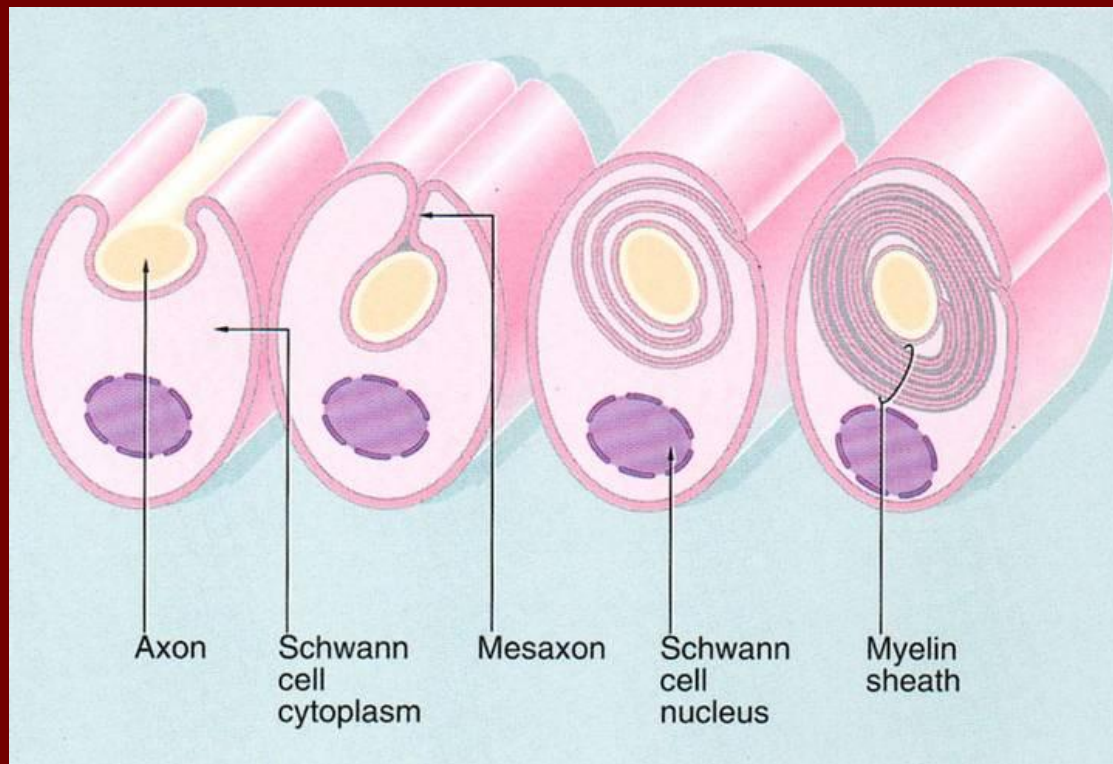
- Microglial cells – cleans up bacteria and cell debris; spiderlike
- Oligodendrocytes – protection; wrapped around neuron
- Astrocytes - supplies nutrients to neurons; star shaped
- Ependymal cells – moves cerebral spinal fluid; have cilia

# Neuroglial Cells of the CNS



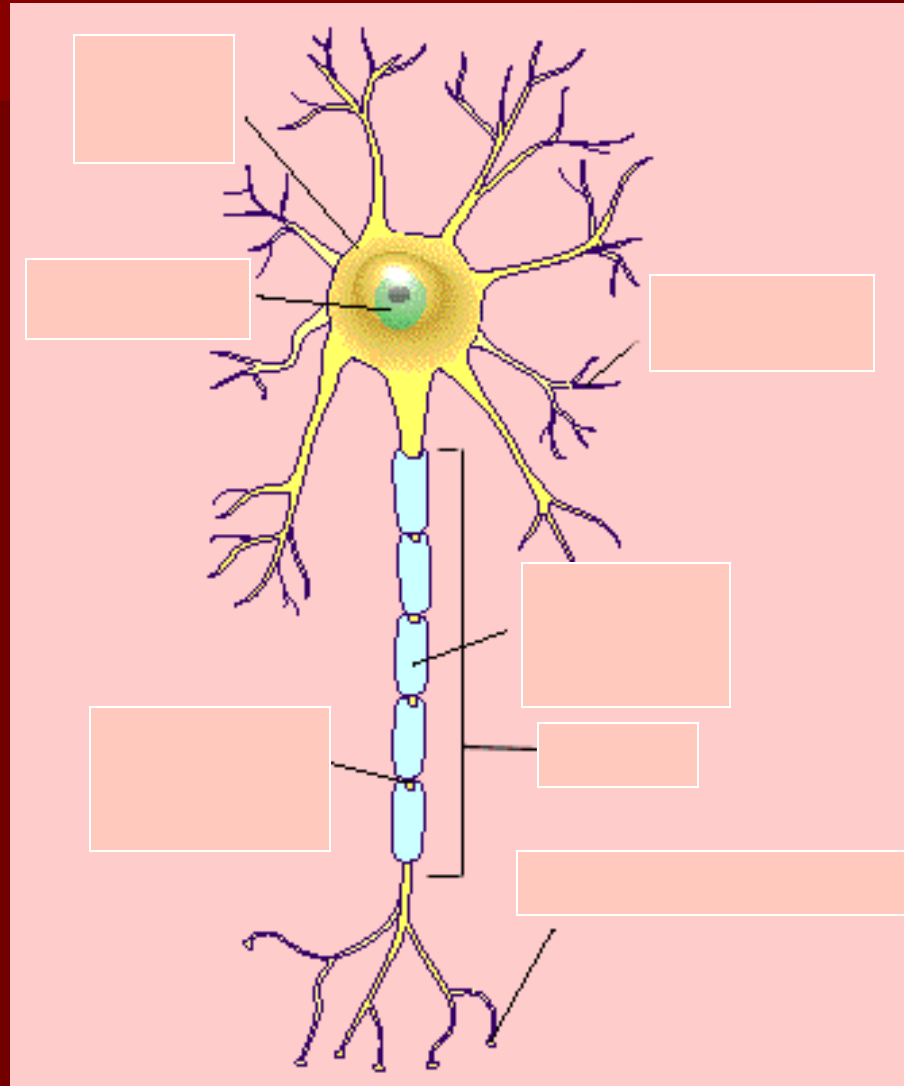
## ■ PNS

- Schwann cells – protects; wrapped around neuron



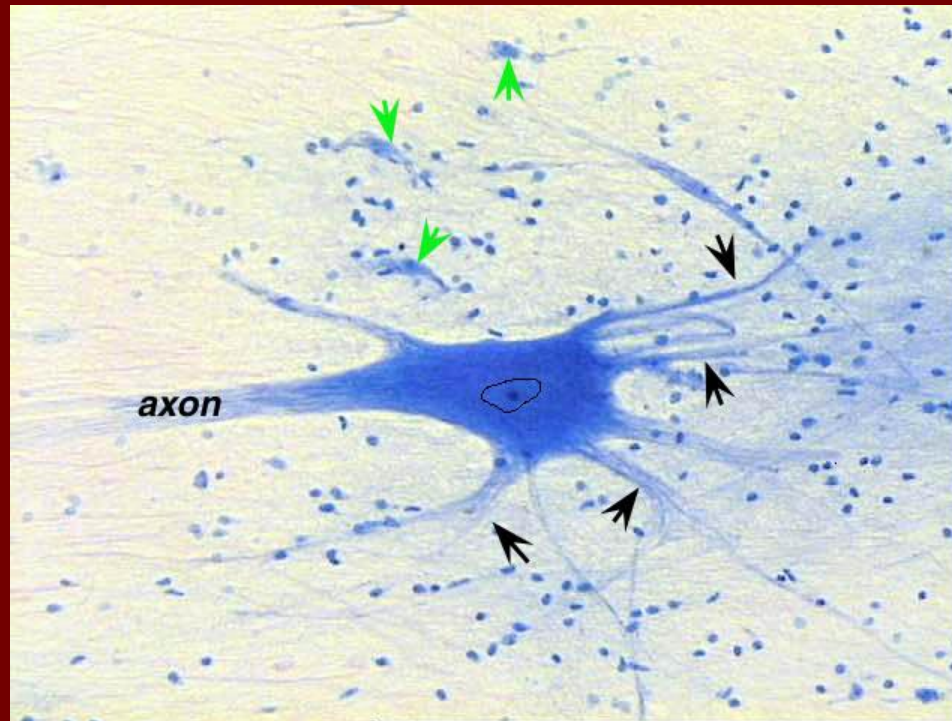


# Neuron



# Neurons – Structural Classification

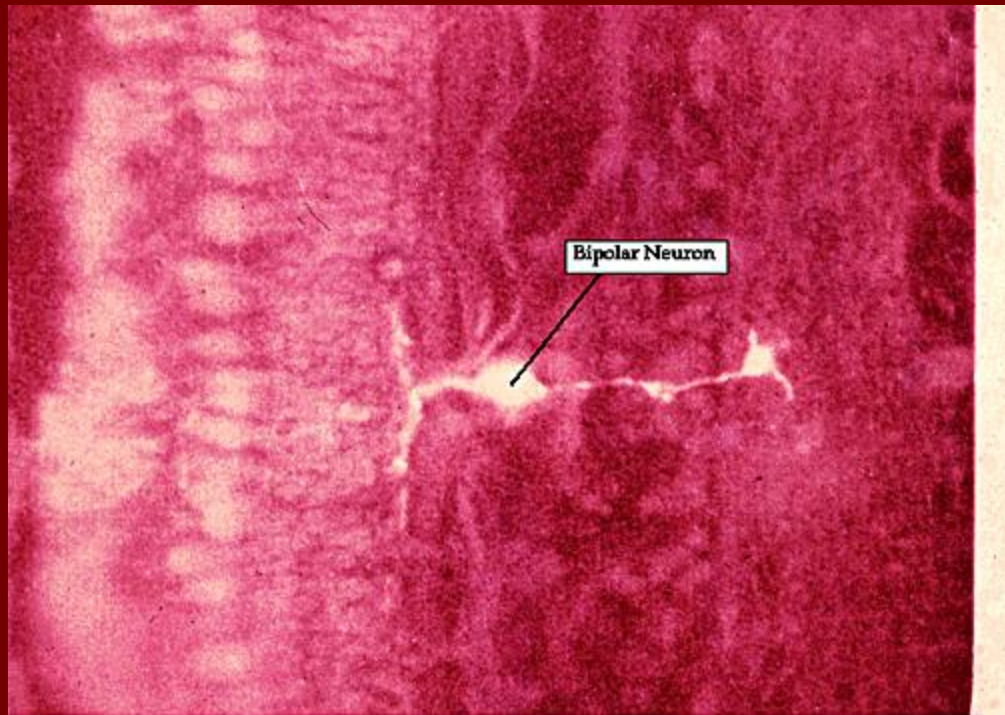
- Multipolar neuron = multiple processes off cell body
  - All motor neurons; most common type





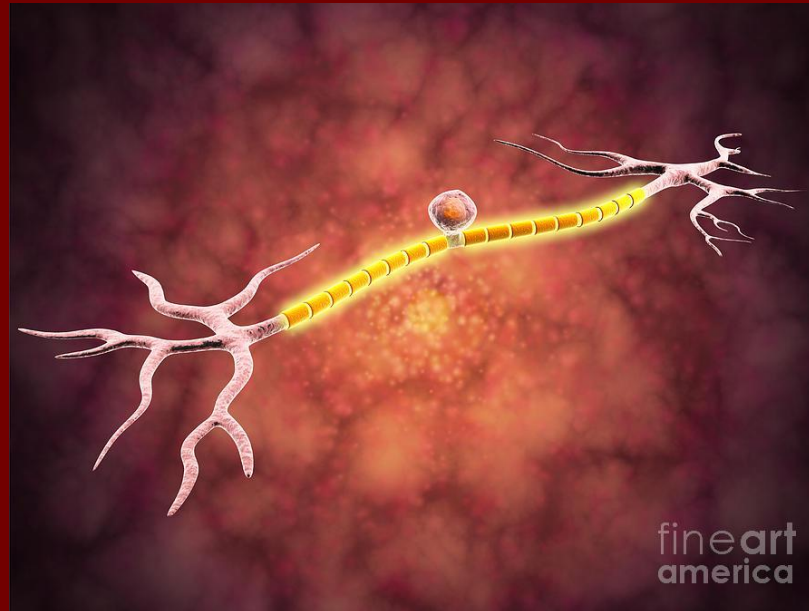
# Neurons – Structural Classification

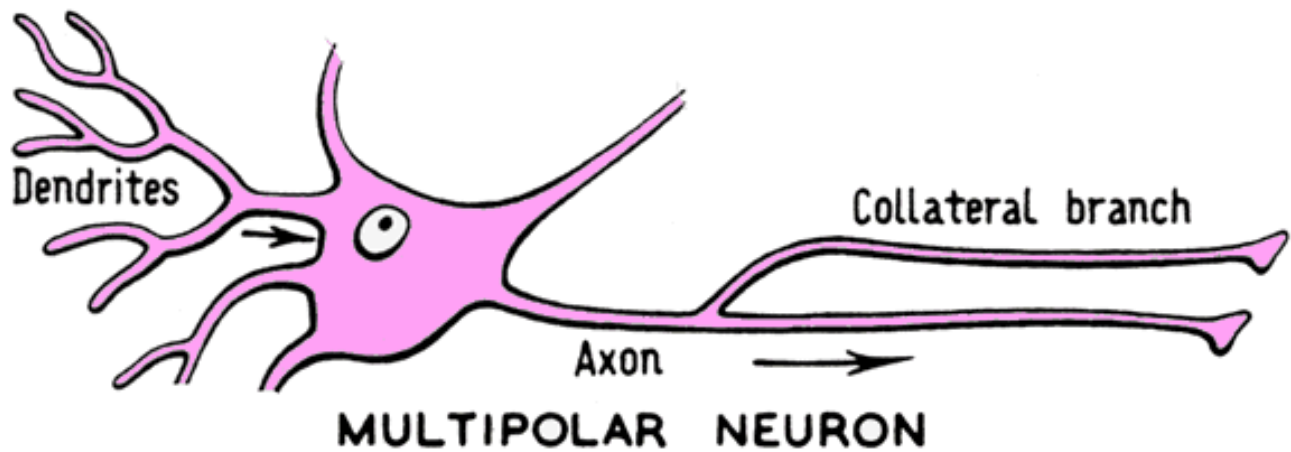
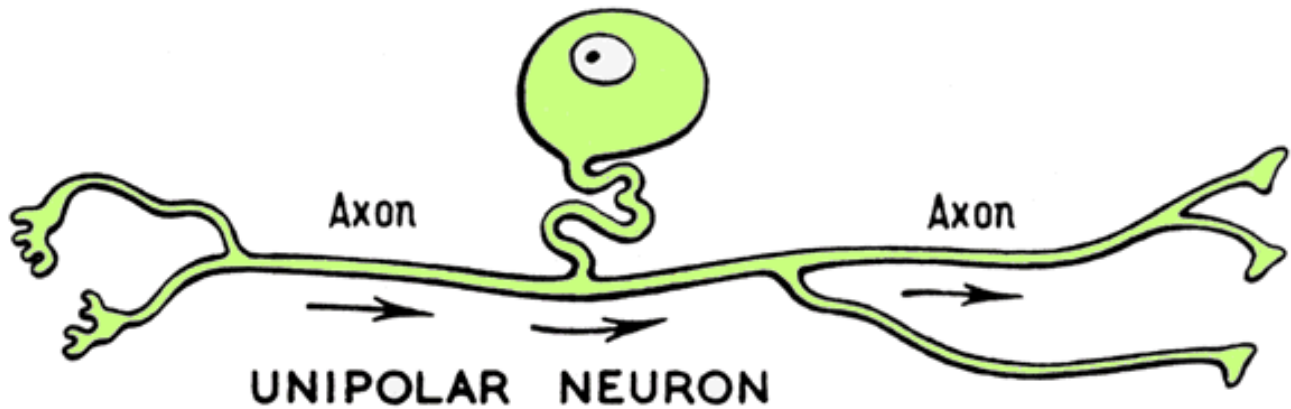
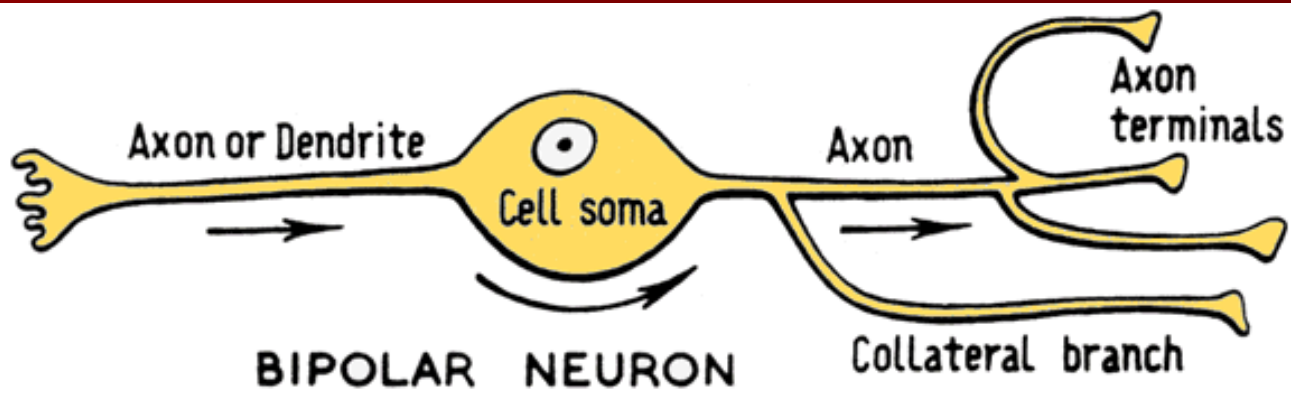
- Bipolar neuron = two processes off cell body
  - Rare (eye/ear); act as sensory receptor cells



# Neurons – Structural Classification

- Unipolar neuron = one process off cell body
  - Sensory neurons in PNS ganglia; can send signal in both directions





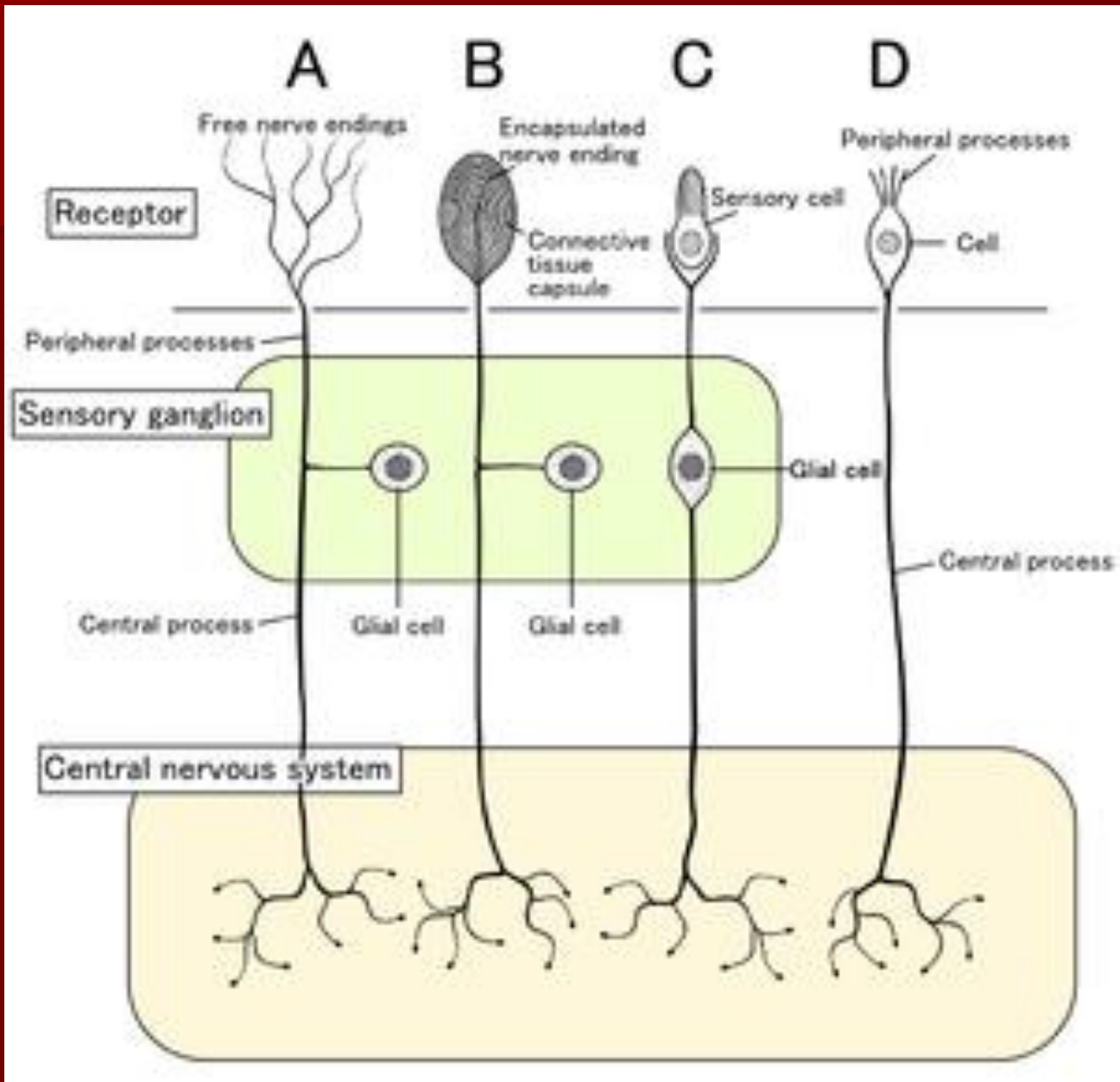
# Neurons – Functional Classification

- Sensory (afferent) neurons – towards CNS
  - Cell bodies found in ganglia outside CNS
- Motor (efferent) neurons – from CNS
  - Cell bodies found within CNS
- Interneurons (association) – connect motor and sensory neurons



# Receptors

- Receptors – specialized cell or nerve ending that is activated by specific stimuli
  - Proprioceptors (touch)
  - Nociceptors (pain)
  - Thermoreceptors (heat)
  - Photoreceptors (light)
  - Mechanoreceptors (pressure)



# Reflex Arc

- Reflex – rapid, predictable, and involuntary response to stimuli
  - Can be spinal reflexes (no brain involvement)
  - Can involve brain
- Reflex Arc – reflexes occurring in certain neural pathways

# Components of Reflex Arc

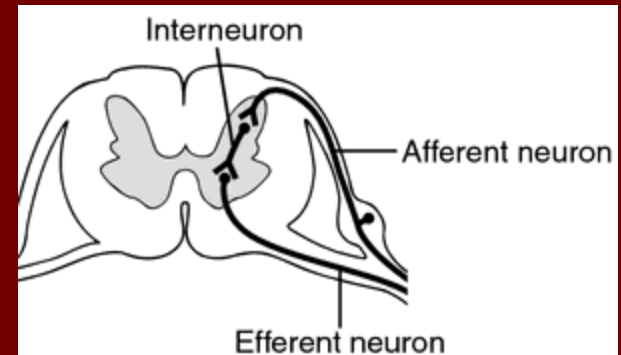
1) Receptor

2) Sensory (Afferent) neuron

3) Interneuron

4) Motor (Efferent) neuron

5) Effector organ (muscle or gland)



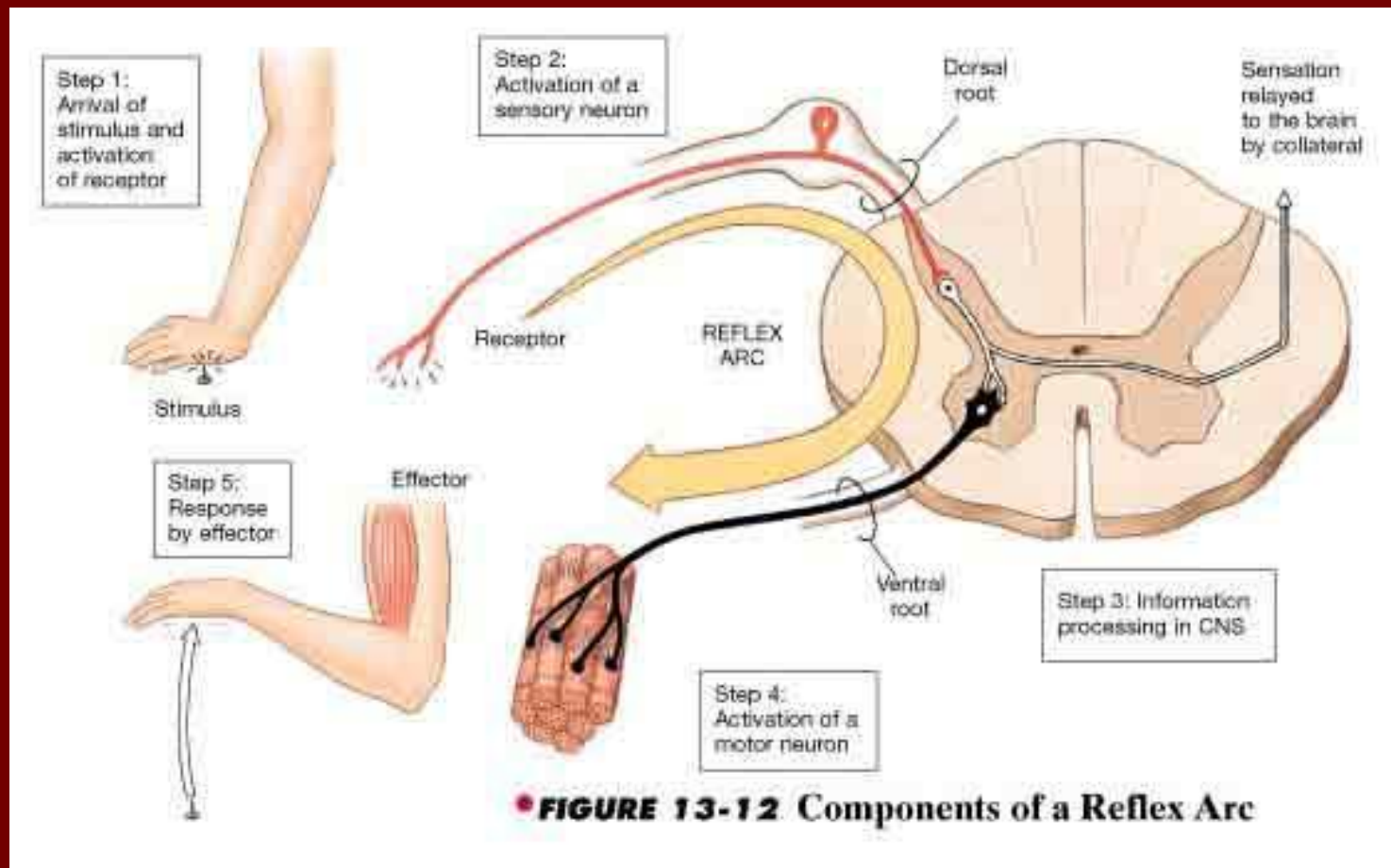


# Autonomic Reflexes

- Regulate activity of smooth muscle, heart, and glands
- Regulate digestion, elimination, blood pressure, and sweating
- Ex) saliva production or pupils moving

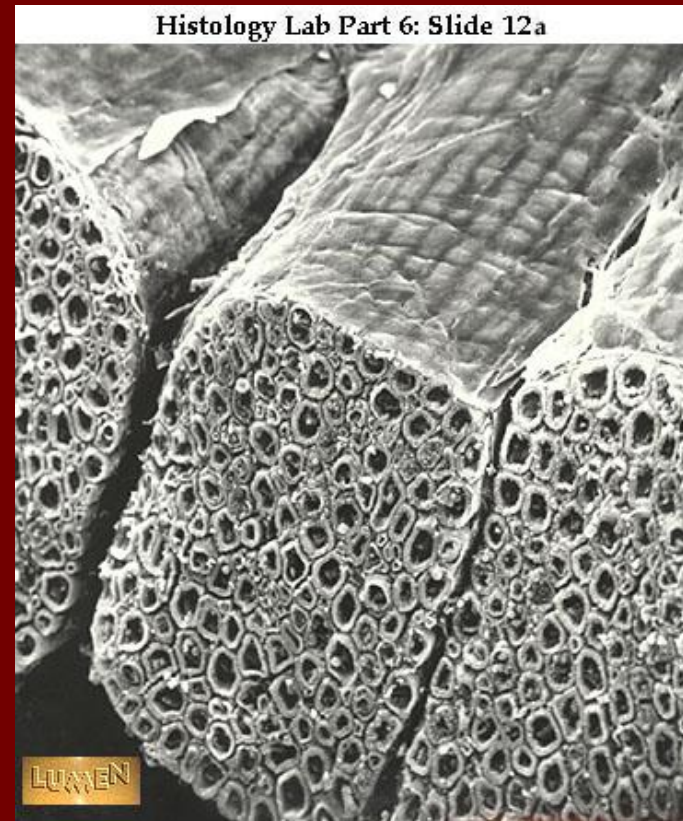
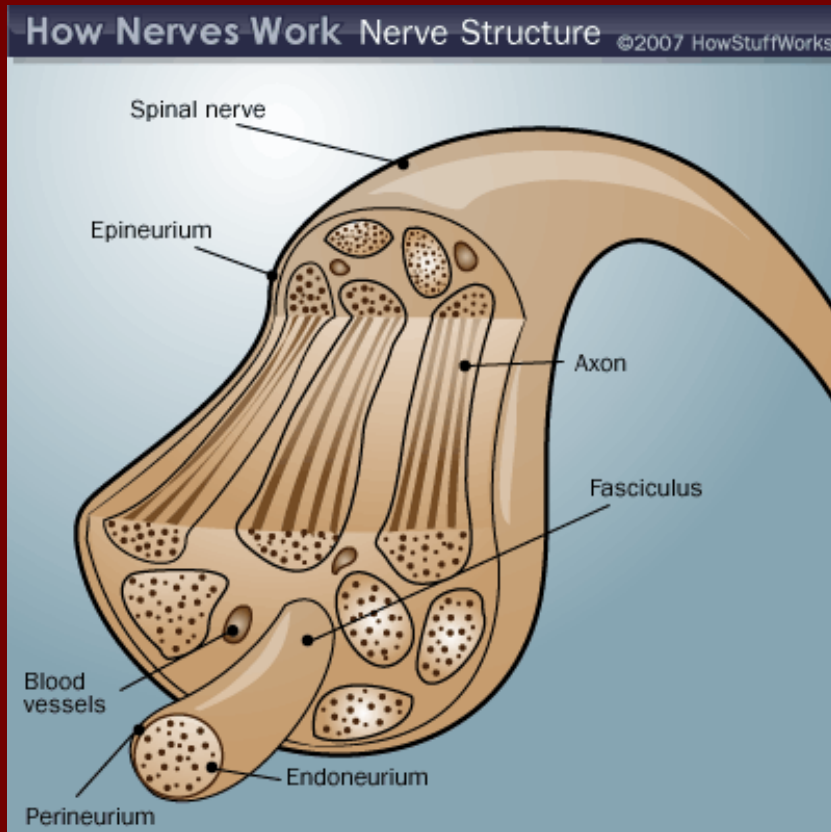
# Somatic Reflexes

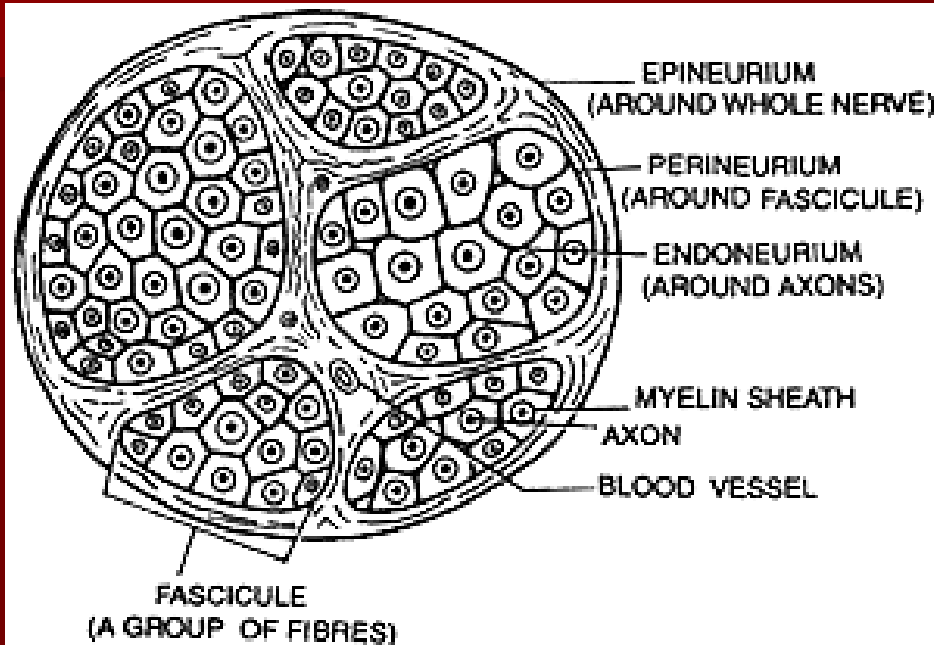
- Reflexes that stimulate skeletal muscles



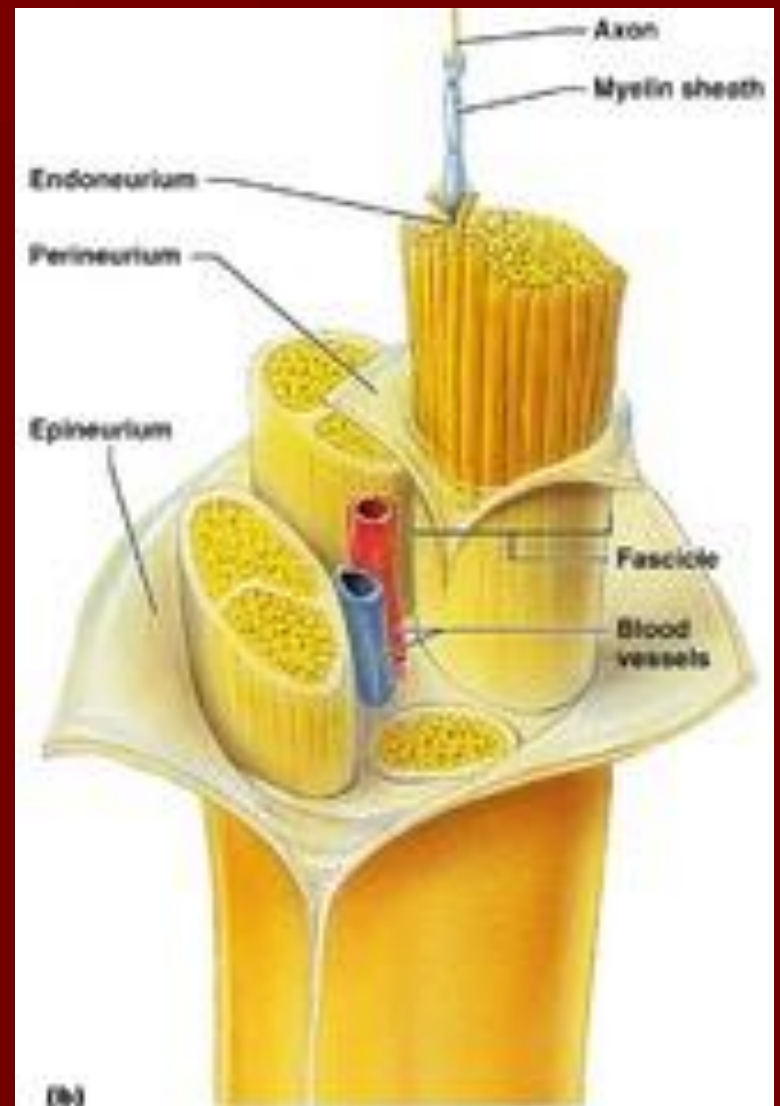
# Nerves

- Bundle of nerve fibers (neuron or nerve cell found outside CNS)





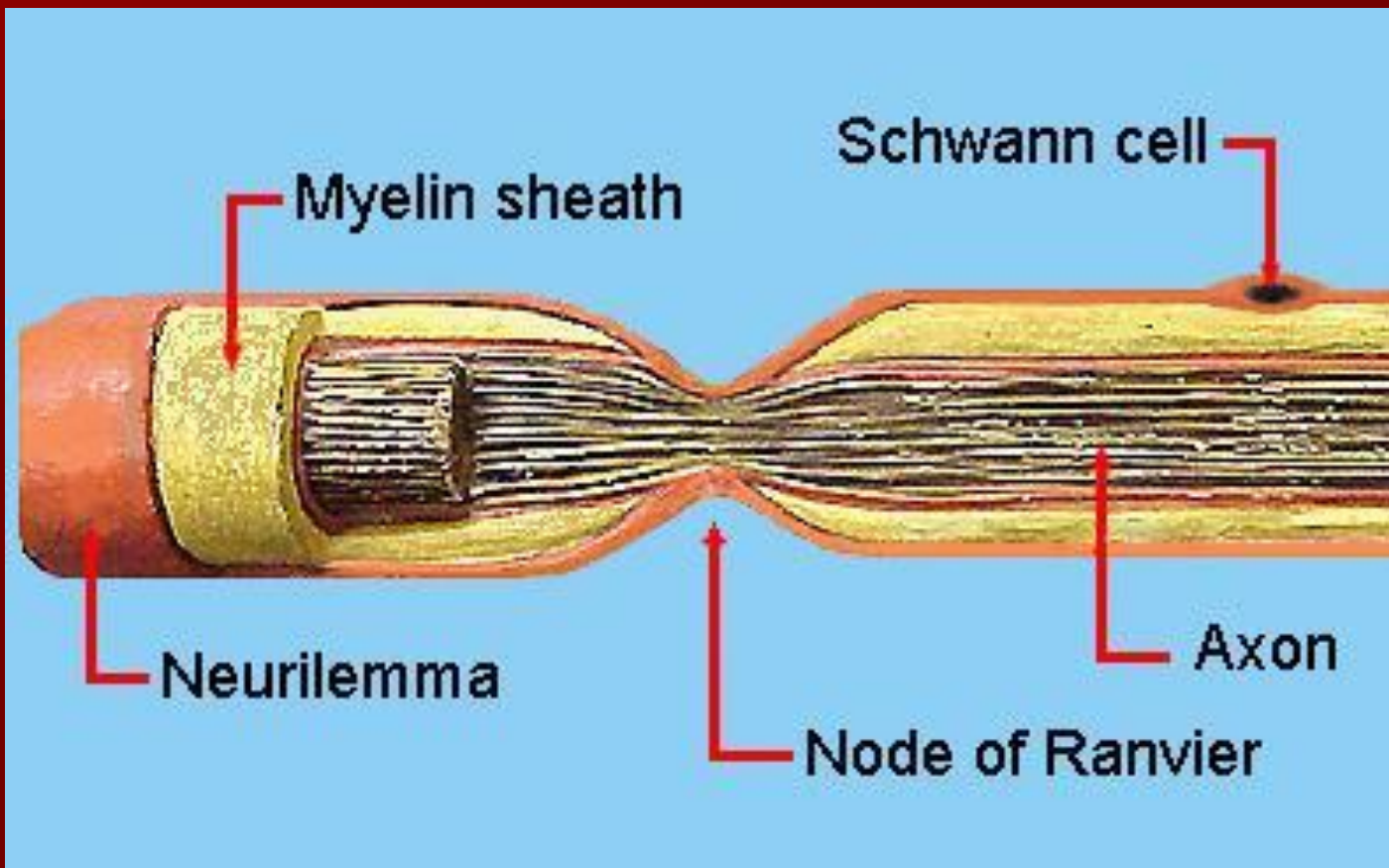
T.S. of a nerve





# ■ Parts:

- 1) Nerve – wrapped in the Epineurium
- 2) Fascicle (bundle of nerve cells) – wrapped in the Perineurium
- 3) Nerve fiber – wrapped in the Endoneurium
- 4) Neurolemma (thin membrane around Schwann cell and axolemma – cell membrane)
- 5) Axon of neuron



# Review

- What division of the nervous system controls the fight or flight response?
  - Sympathetic
- What division of the nervous system is referred to as the voluntary control?
  - Somatic
- What division of the nervous system contains the brain and spinal cord?
  - Central

The End