

# Biological Basis of Behavior: Chapter 3

SUPA Psy 205

# The Week At A Glance

- Monday, Sept. 19<sup>th</sup>:  
"Neurons", pgs.
- Tuesday, Sept. 20<sup>th</sup>: "The  
Brain & Body", pgs. 97-105
- Wednesday, Sept. 21<sup>th</sup>:  
"Research Methods to  
Study the Brain", pgs.  
92-95, 110-116
- Thursday, Sept. 22<sup>th</sup>:  
"Laterality"
- Friday, Sept. 23<sup>th</sup>:  
"Evolutionary Basis of  
Behavior", pgs. 116-121 &  
Quiz - Chapter 3!



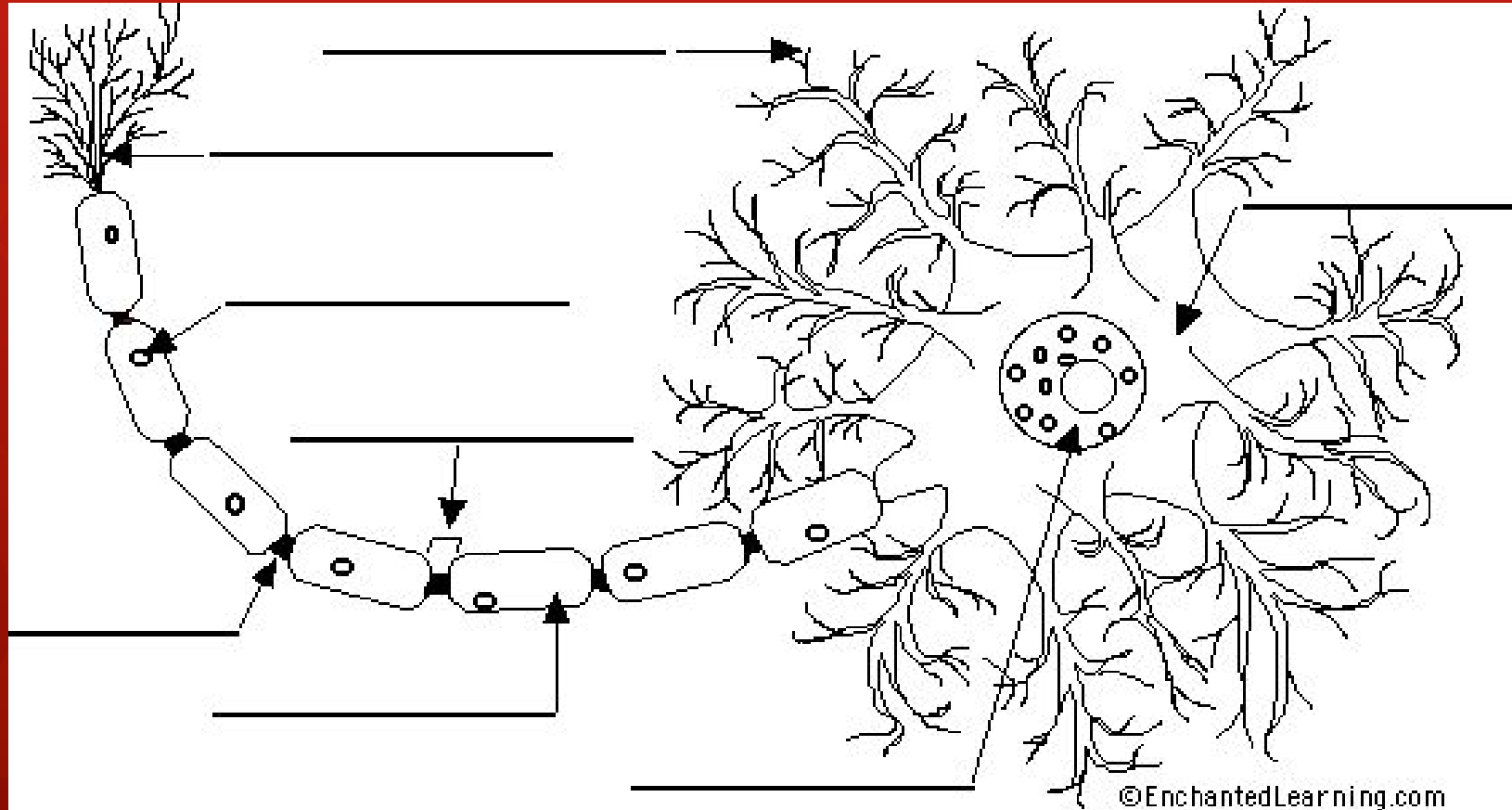
# Housekeeping

- T or F: Psychology is a young science that has undergone few perspective changes
  - Name two perspectives and associated individuals
- T or F: Experimental research is the only method that allows us to explore “cause and effect” relationships
  - Why?
- T or F: Case studies are never more preferable than a true experiment
  - Why?

# Learning Goals

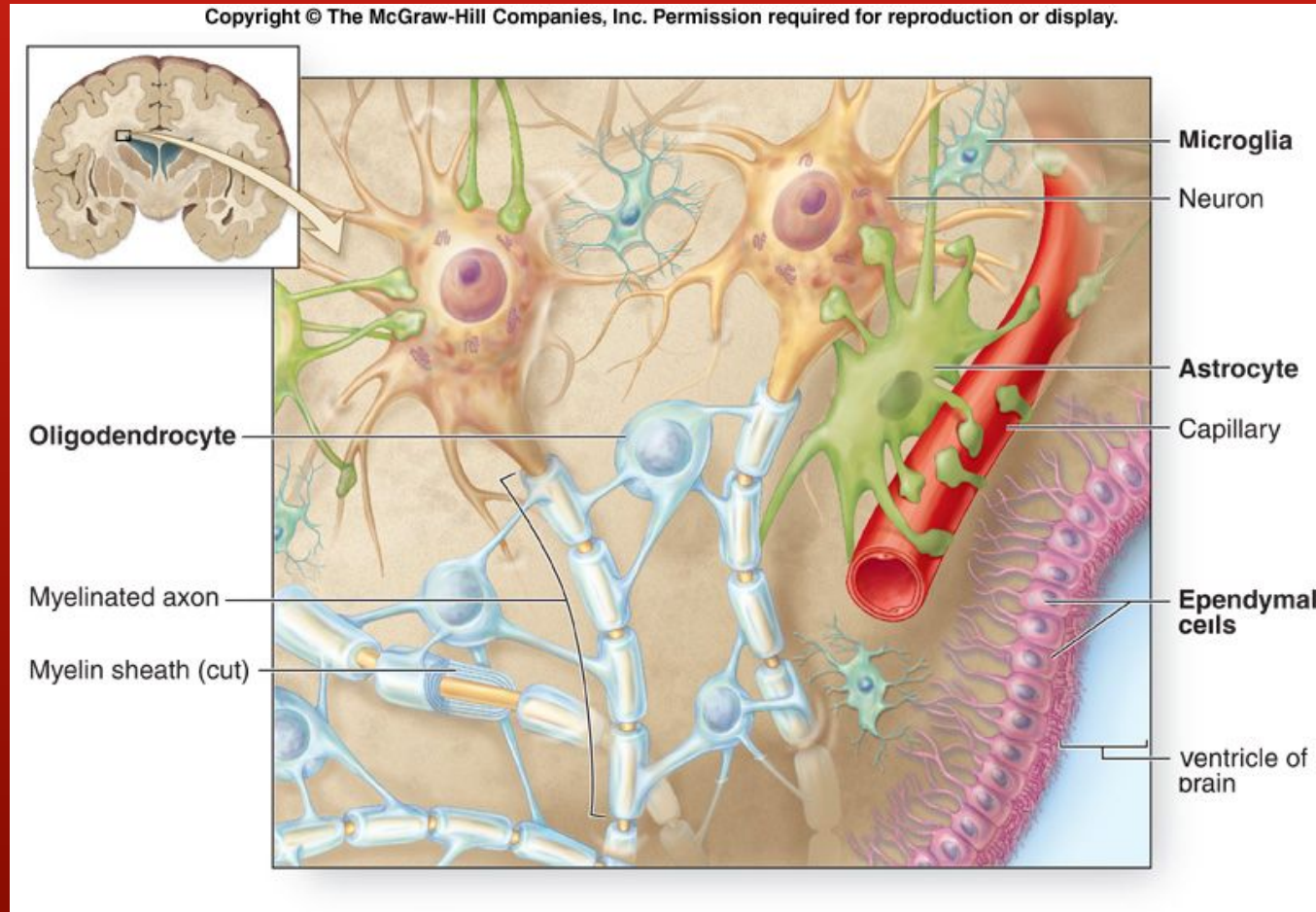
- Identify the parts/functions of the neuron
- Describe neural impulses
- Explain how neurons communicate at chemical synapses
- Identify common neurotransmitters and their functions
- Differentiate the major divisions of the nervous system

# The Neuron



# Glia: The Support Personnel of the Nervous System

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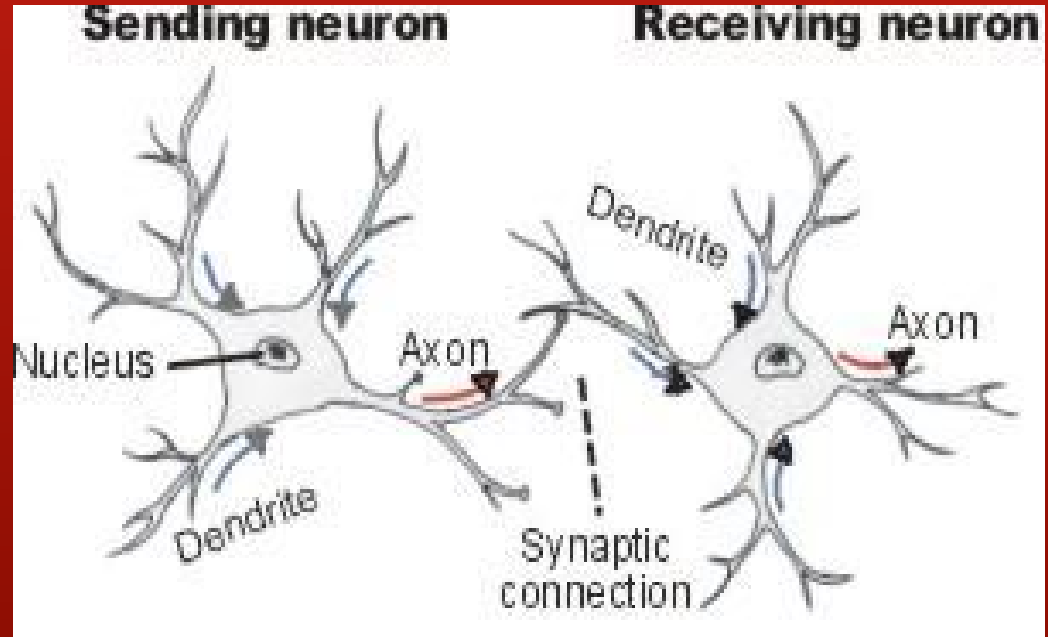


# Concept Check

- Choose the nervous system component that each statement describes (glia, neuron, dendrite, axon, myelin, terminal button, synapse)
  1. Like a tree; each branch is a telephone wire carrying messages to you
  2. Like insulation that covers electrical wires
  3. Like a silicon chip in a computer that sends and receives info between incoming and outgoing devices and other chips
  4. Like a cable that carries information
  5. Like maintenance personnel who keep things clean and orderly
  6. Like the nozzle at the end of the hose that sprays water
  7. Like a railroad junction where two trains may meet

# Neural Impulses: How Axons Communicate

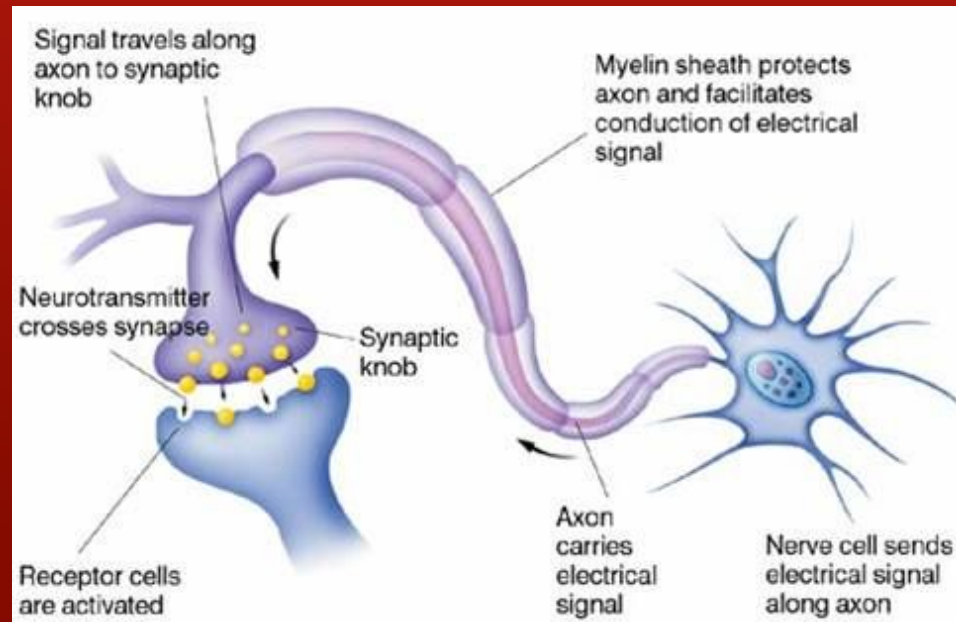
- Neurons as “Tiny Batteries”
- [Basic Overview of Neuronal Transmission](#)
- Action Potential
  - Occurs ***within*** each neuron
  - All-or-None Law
  - Refractory Period
- Domino Activity





# How Do Neurons Communicate Between Each Other?

- The Synapse
  - Synaptic Cleft
  - Presynaptic Neuron
  - Postsynaptic Neuron
  - Neurotransmitters



# ROLE PLAY:

- Divide into two teams
- Each team will need to select someone to play the following roles:
  - Dendrites
  - Soma
  - Axon
  - Myelin sheath
  - Terminal buttons
  - Synapse

# Neurotransmitters: Keys to Communication

| Neurotransmitter | Characteristics  | Associated Disorder   |
|------------------|--|---|
| Acetylcholine    | Released by motor neurons, regulates attention, arousal, memory                | Alzheimer's   |
| Dopamine         | Contributes to control of voluntary movement. Associated with "reward pathway" | Parkinson's, Schizophrenia                                  |
| Norepinephrine   | Contributes to modulation of mood and arousal                                  | Depression  |
| Serotonin        | Involved in regulation of sleep and wakefulness, eating, aggression            | Depression, Obsessive Compulsive Disorder, eating disorders |
| GABA             | Generally inhibitory, contributes to sleep/arousal                             | Anxiety disorders   |
| Glutamate        | Generally excitatory, involved in learning and memory                          | Schizophrenia   |
| Endorphins       | Mimic opiate drugs, related to pain relief, stress response                    |   |