

Nervous Tissue

1. Nervous System

- Neurology

2. Functions

A. Senses environmental and internal changes

B. Integration of the information

C. Responds

3. Organization

A. Central Nervous System

B. Peripheral Nervous System

i. Afferent System

ii. Efferent System

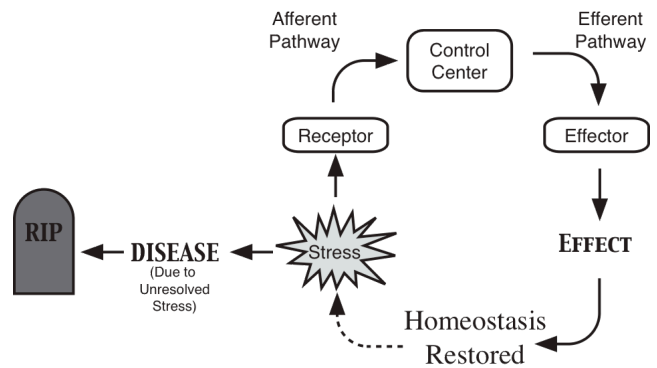
a. Somatic Nervous System

b. Autonomic Nervous System

- Sympathetic Division

- Parasympathetic Division

ANNOUNCEMENT: Bring safety eyewear of rating Z87.1 to lab for the remainder of the semester for the sheep brain dissection. If a student does not have safety eyewear, he / she will not be permitted to participate in the lab. Your safety comes first. To view an example of the “mini brain practical”, see the brain lecture link. Lastly, for NECC, the school no longer provides disposable gloves, so these will need to be provided by you.



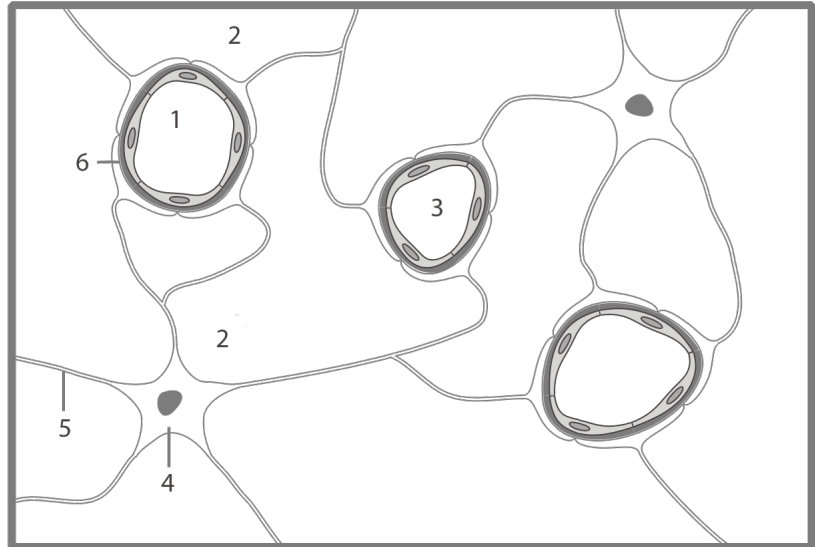
4. Histology

A. Neuroglia

i. Astrocytes

a. Blood Brain Barrier

- 1. Endothelia
- 2. Interstitial Fluid
- 3. Plasma
- 4. Astrocyte
- 5. Cytoplasmic Extention
- 6. Basement Membrane



ii. Microglia

Ependymal Cells

Oligodendrocytes

iii. Schwann Cells

B. Neurons

i. Anatomy of a Neuron

a. Body

b. Dendrites

c. Axon

- Axon Hillock
 - d. Axoplasm
 - e. Axolemma
 - f. Axon collaterals
 - g. Synaptic End Bulbs
 - h. Synaptic Vesicles
5. Nutrient Flow
- A. Axoplasmic Flow
 - B. Axonal Transport
6. Nerve Fiber
- A. Myelin Sheath
 - i. Myelinated
 - ii. Unmyelinated
 - Neurolemmocytes (Schwann Cells)
 - Neurolemma (Sheath of Schwann)
 - iii. Neurofibral Nodes
7. Neuron Classification
- A. Structural Classification of Neurons
 - i. Multipolar Neurons

ii. Bipolar Neurons

iii. Unipolar (pseudounipolar) Neurons

8. Functional Classification

i. Sensory (afferent) neurons

ii. Interneurons

a. Association Neurons

iii. Motor (efferent) neurons

9. Nerve Processes

A. Types

i. Nerves

ii. Fiber Tracks

B. Functional Components

i. General Somatic Afferent Fibers

ii. General Somatic Efferent Fibers

iii. General Visceral Afferent Fibers

iv. General Visceral Efferent Fibers

a. Autonomic Fibers

10. Physiology of an Action Potential – Essay!

Please have handouts ready for reference.

A. Membrane Potential

- Sodium-Potassium Pump
- Resting Membrane Potential
- Polarized

B. Excitability

- Stimulus
- Threshold Stimulus
- Depolarized
- Voltage-Sensitive (Gated) Gates
 - * Voltage-Sensitive Sodium Gates
- Depolarization (-70 mV to -55 mV)
- Nerve Impulse
 - * Action Potential
- Repolarization
- Voltage-Sensitive Potassium Gates
- Refractory Period
 - Absolute Refractory Period
 - Relative refractory period

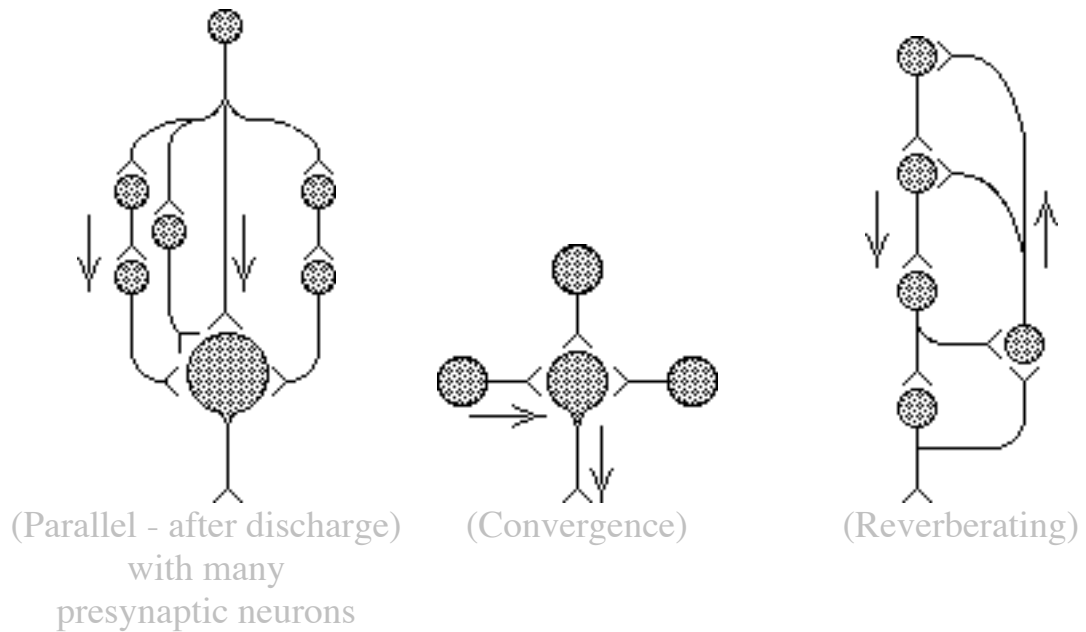
- Hyperpolarization
- B. All-or none Principle
- C. Saltatory Conduction
- D. Impulse Speed
- 11. Classification of Nerve Fibers
 - A. A Fibers
 - B. B Fibers
 - C. C Fibers
- 12. Conduction Across Synapses
 - A. Neuroeffector Junctions
 - i. Neuromuscular Junction
 - ii. Neuroglandular Junction
 - iii. Synapse
 - a. Synaptic Cleft
 - b. Presynaptic Neuron
 - c. Postsynaptic Neuron
 - d. Synaptic End Bulb
 - e. Types of Synapses:
 - Axodendritic
 - Axosomatic
 - Axoaxonic
 - B. Types of Synapses
 - i. Electrical Synapse

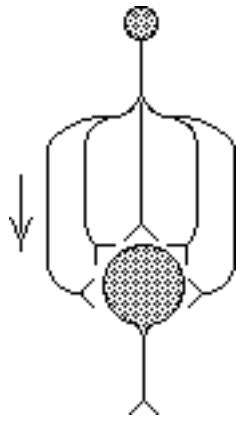
- Gap Junctions
- ii. Chemical Synapse (Excellent animations on web)
 - a. Neurotransmitters
 - b. Synaptic Vesicles
 - Presynaptic End Bulbs
 - Postsynaptic Neuron
 - c. Physiology, *again*

- iii. Synapse Classification and Function
 - ** **Pull out:** *“Interneurons” Handout*
 - a. Excitatory Synapses
 - Excitatory Postsynaptic Potentials (EPSP)
 - b. Inhibitory Synapses
 - Inhibitory Postsynaptic Potentials (IPSP)
 - c. Effect
 - Temporal Summation
 - Spatial Summation
 - d. Integration
 - Facilitation
 - Generation of one or More Impulses
 - Inhibition of the Postsynaptic Neuron

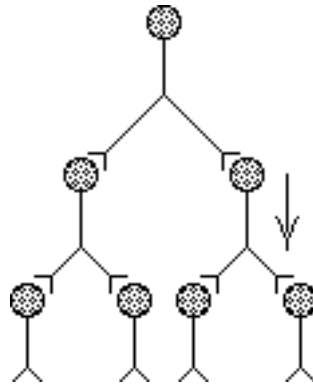
- 13. Neurotransmitters
 - A. Acetylcholine (ACh)
- 14. Nerve Regeneration
- 15. Organization of Neurons
 - A. Neuronal Pools
 - i. Input Neuron
 - ii. Intrinsic Neuron
 - iii. Relay Neuron

B. Circuits

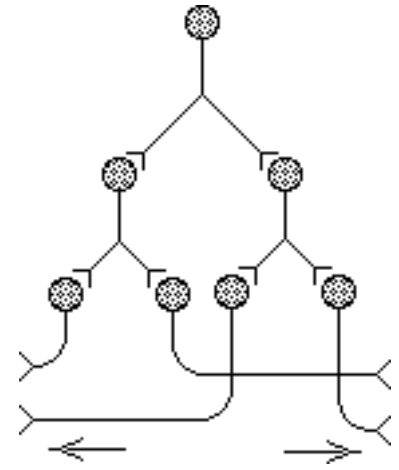




(Convergence)
with one presynaptic
neuron



(Divergent)
one way



(Divergent)
several pathways