

Chapter 3 Notes

Biological Bases of Mental Life and Behavior

- Neurons – fundamental unit of the nervous system
- 10-100 billion neurons in brain alone
 - Types of neurons
 - Sensory neuron- transmit sensory info from cells to the brain
 - Motor neurons – transmit info from the brain to organs and muscles
 - Interneurons – pass info between sensory and motor neurons
 - Neuron Parts
 - Dendrites – extends from the cell body and collects input
 - Cell body – processes information and input
 - Axon – sends information forward
 - Myelin sheath – coating of fat (lipids) that surrounds axons. Facilitates transmission of info
 - Terminal buttons - end of axon transmits info to the next neuron
 - Triggering a Neuron
 - Resting potential – no action underway
 - Action Potential – triggers neuron into action. All or none event.
 - Graded Potential – can receive info from multiple sources
 - Depolarization – more likely to
 - Hyperpolarization – less likely to fire
 - Communication between neurons
 - Synapse – bridge or connection between terminal buttons and dendrite
 - Synaptic Cleft – actual connection point between terminal buttons and dendrite
 - Neurotransmitters
 - Synaptic vesicles – small sacs that contain neurotransmitters
 - Neurotransmitters – chemicals that carry the signal from one neuron to another
 - Excitatory neurotransmitters – increases action potential
 - Inhibitory neurotransmitters – decreases action potential
 - Types of neurotransmitters
 - Dopamine – pleasure
 - Serotonin – sleep
 - Endorphins – pain relief
 - Epinephrine and norepinephrine – arousal
- Endocrine System – collection of glands that secrete hormones (signals) directly into the bloodstream
 - Pituitary gland – master gland
 - Thyroid gland – growth and metabolism
 - Adrenal glands – release adrenalin
 - Gonads – sexual development
 - Males – testosterone
 - Females – estrogens

	Nervous System		
Peripheral nervous systems (pns)			central nervous system
Somatic Nervous Systems	autonomic nervous systems		spinal cord
	Sympathetic Nervous System	parasympathetic nervous system	
			Brain
			hindbrain
			midbrain
			fore brain
			cerebral cortex

- Peripheral nervous system
 - Somatic nervous system- intentional actions – some automatic behaviors
 - Automatic nervous systems – controls automatic body functions
 - Sympathetic – responses to threats
 - Parasympathetic – routine duties
- Central nervous system
 - Spinal cord
 - collects sensory info from peripheral nervous system and transmits to the brain
 - Transmits instructions from brain to peripheral nervous system
 - Brain - Central processing unit of the body.
 - Hindbrain – directly above and linked to the spinal cord
 - Most primitive and essential part of our nervous system
 - Medulla oblongata – heartbeat, circulation, respiration, extension of our spinal cord (links to the brain)
 - Reticular activating system (RAS) – maintains consciousness, regulates our arousal
 - Cerebellum – balance and posture
 - Pons – sleep
 - Midbrain – sensory information
 - Tectum – vision and hearing
 - Tegmentum – orienting our body and eyes toward a sensory stimuli
 - Subcortical forebrain – complex emotional cognitive and behavioral processes
 - Hypothalamus – 4 F's
 - Fight
 - Flight
 - Feeding
 - Fucking (reproduction)
 - Key link between nervous system and endocrine system
 - Thalamus – processing sensory data
 - Amygdala – emotionally significant events – recognize emotions in others
 - Hippocampus – storing information in our memory
 - Basal Ganglia – movements and judgments requiring minimal conscious thought
 - Cerebral cortex – 80% of brain mass

- Enables symbolic thinking
- Lobes of the brain
 - Occipital lobes - vision
 - Parietal lobes - touch
 - Frontal lobes - movement, memory, planning, personality
 - Temporal lobes - hearing, language, recognizing objects by sights