

CHAPTER 5: BIOLOGICAL PSYCHOLOGY • LECTURE NOTES

Chapter 5

- Biological Psychology
 - Nervous System Cells
 - Neurons
 - Cells that the brain uses to process information
 - These types of cells are also present in the rest of the nervous system
- Brain and spinal cord
 - Glia cells
 - Cells that support the neurons
- Neuron
 - Has three parts
 - Cell Body(Soma)
 - Dendrites
 - Axon
- Neuron
 - Cell Body (Soma)
 - Contains the nucleus
 - Dendrites
 - RECIEVE transmissions from other cells
 - Axon
 - SENDS information to other cells
 - Myelin
 - Insulating sheath layer that speeds up transmissions
- Axon: 2 ways of responding
- Excitatory Impulses: Respond; excited or action responses;
- Inhibitory Impulses: _____
- The Action Potential
 - Electro-Chemical Process
 - Efficient and does not diminish in strength
- All or None Law
 - It either happens or it doesn't happen
- How it works
 - Resting Potential: At rest

- Role of Sodium (Na⁺) and Potassium (K⁺) ions
 - Both are positive ions
 - Sodium-Potassium Pump
 - At resting potential, this pump pushes Sodium out of the axon, and pumps Potassium in.

- How it works: action potential travels down the axon like a wave of energy
 - Action Potentials start in one of two ways
 - Spontaneous activity
 - They are excited by other neurons
 - Sodium enters into the cell,
 - Axon becomes more positive
 - Threshold
 - Action Potential
 - Sodium gates close
 - Potassium gates open, Potassium leaves
 - Resting Potential

- Why Should You Care?
 - Helps you interpret pain
 - Helps block pain

- Synapse
 - Gap between Neurons
 - Chemical communication
- Terminal buttons
 - Triggers neurotransmitter release

- Post-synapse
 - Post-synaptic neuron
 - The neuron on the the receiving end of the synapse

- Neurotransmitter fate after it has done its job
 - Reuptake
 - Metabolized
 - Reattach

- Neurotransmitters
 - Psychiatry
 - any drug that increases or decreases the activity of a particular type of receptor produces specific effects on behavior
 - Parkinson's disease
 - Too little Dopamine

- L-Dopa-drug
 - Increases Dopamine levels
 - Depression
 - Dopamine and Serotonin
 - Drugs
 - Drugs also affect your behavior by way of the neurotransmitters. Each drug acts on specific neurotransmitters to create a particular type of “high”
- Major Divisions of the Nervous System
 - Central nervous system
 - Brain and spinal cord
 - Peripheral nervous system
 - Bundles of axons between the spinal cord and the rest of the body
 - Somatic nervous system
 - Skin and muscles
 - Autonomic nervous system: involuntary, or automatic, we have little control over it
 - Heart, stomach, other organs
 - Sympathetic: fight and flight
 - Feed and sleep
- The Brain
 - Forebrain
 - Most dominant part
 - Consists of two hemispheres
- Cerebral Cortex
 - Gray matter:
 - White matter:
- Cerebral Cortex
 - 4 lobes
 - Occipital Lobe
 - At the rear of the brain
 - Vision
 - Blindsight
 - Parietal Lobe
 - In front of the occipital lobe
 - Specialized for body senses
 - Touch, pain, temperature, awareness of location of body parts
 - Primary somato-sensory (body-sensory) cortex
 - Part of the parietal lobe