BI-112 Midterm Study Guide

THIS EXAM IS OVER CHAPTERS 1-6.

**BIG IDEA FOCUS POINTS**

**Chapter 1 : The Human Body**

* Recognize the orientation of the body in “anatomical position”
* Know terminology relating to anatomical position (posterior, lateral, deep, etc.)
* Recognize the 3 body planes
* Understand “body cavity” and be able to recognize the 12 cavity examples by location and prominent organ features.
	+ Recognize the overalp of 4 quadrants and 9 regions of the abdominal cavity
	+ Dorsal vs Ventral cavities
* Be able to describe the unique purpose or differences in medical imaging technology (Xray, PET, CT, MRI, Ultrasound).
* Know the criteria for living things (6!!)
* Be able to describe cell theory
* Catabolism vs anabolism
* Understand signal transduction- (signal, reception, transduction, control center, response, effector)
	+ Recognize positive vs negative feedback
	+ Afferent vs efferent pathways
* There are 7 “main requirements”, be able to identify their importance and specific set points.
	+ Be able to describe homeostasis

**Chapter 2 : Chemistry**

* Atomic Structure (nucleus and electrons)
	+ 3 subatomic molecules and charge differences
	+ Nucleus composed of …
	+ Valence electrons + octet rule
* Atomic Number and Atomic Mass
* Chemical bonds (covalent, ionic, hydrogen)
	+ Polar vs non polar
	+ Types of chemical reactions (synthesis, decomposition, exchange)
	+ Activation energy
* Function/role of enzymes
	+ Factors that affect the enzyme
* Acids, Bases & pH (the scale)
* Monomers and polymers of DNA, Carbs, proteins
* Saturated vs non saturated fats
* 4 levels of protein folding

**Chapter 3 : Cell Structure**

* Differences between prokaryotes and eukaryotes
	+ Organelles (identify structure and function-mitochondria, rough ER, smooth ER, Golgi Apparatus, Lysosomes, Nucleus, etc).
	+ Types of filaments
* Function of ribosomes
* Structure and significance of the plasma membrane
* Endosymbiosis theory
* Stem cells and various potency

**Chapter 4 : Membranes**

* Structure and significance of the plasma membrane
	+ “Fluid mosaic”
	+ “selectively permeable”
* Saturated vs non saturated fats
* Significance of cholesterol
* Transport across the membrane (water, gases, ions, lipids, organic molecules)
* Diffusion & osmosis
* Hypertonic, Hypotonic, Isotonic
* Active Transport
	+ Types of transporters (uni, sym and antiporters)
* Endocytosis & Exocytosis
	+ Differences in phago, pino and potocytosis
* Rates can be affected by (6 factors!)

**Chapter 5: Energetics**

* Catabolism vs anabolism
* Kinetic vs potential energy, be able to recognize difference
* Laws of thermodynamics and entropy
* Transferred vs transformed
* Endergonic vs exergonic
* Collision theory
* Know Enzyme structure
* Understand the role of enzymes and differences between inhibitors
* Effect of temperature, pH on systems enzyme activity
* Cellular Respiration
	+ Know aerobic vs anaerobic , which pathways work where
	+ Have a general understanding of Glycolysis, Fermentation, Krebs and the Electron Transport Chain
	+ Known the difference (and where it occurs) between substrate level phosphorylation and chemiosmosis
* Recognize important energy storage molecules

**Chapter 6: Tissue Organization**

* Recognize the 3 germ layers and what types of cells/tissues they give rise to
* Recognize the 4 general tissue types and main function (Epithelial, connective, muscle, nervous)
	+ Be able to identify at least 2 types of cells from each tissue and their function
	+ 3 types of connective tissue
		- 3 types of cartilage
	+ 3 types of muscle
* Recognize differences in cell junctions (tight, gap, anchoring)
	+ Recognize differences in desmosomes, hemidesmosomes and adherens
* Be able to classify epithelial cells based upon shape and cell layer
* Endocrine vs exocrine glands
	+ Unicellular vs multicellular
	+ simple vs compound
	+ 3 types of secretion (merocrine, apocrine, holocrine)
* Necrosis vs apoptosis
* Be able to describe inflammation the process and role
* Be able to describe the relationship between telomeres and aging