

# Bio& 241: A& P 1

## STUDY GUIDE: Unit #1 (Chapters 1-5)

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### Background Information from PowerPoint's, Lectures, and Notes.

1. Understand the scientific method, inductive method, deductive method, falsifiability, Sample size, control group, treatment group, psychosomatic effect, placebo, experimenter bias, double blind method, statistical test, peer review, fact, law of nature, theory

### Chapter 1 Introduction to the Human Body

1. Know the levels of structural organization (Hierarchy) in the human body.
2. Know the 8 basic characteristics of living things (6 in book, 8 from PowerPoint)
3. Understand what is meant by homeostasis, which major body systems regulate homeostasis; and be able to recognize an example of both negative and positive feedback loops.
4. Know anatomical position. (supine, prone)
5. Know the following anatomical terms:

#### A) Directional Terms:

superior / inferior; cephalic / caudal;  
anterior / posterior; ventral / dorsal;  
proximal / distal;  
medial / lateral / intermediate;  
superficial / deep;  
ipsilateral / contralateral.

#### B) Planes or Sections:

Sagittal; midsagittal; parasagittal; Frontal or Coronal; Transverse; Oblique.

#### C) Anatomical terms:

Be able to locate and match anatomical terms with common names on figures in the Textbook, Lab 1, PowerPoint's, and/or atlas.

6. Body Regions;
  - A) **Axial region:** head, neck, trunk, thoracic region, abdominal region.
  - B) **Appendicular region:** Legs and Arms
7. Know the nine regions and the four quadrant designations used for anatomical studies and to locate pain or tumors.
8. Know the human body's two general cavities and the specific cavities found in each.

9. Know the serous membranes of the body, (Visceral and Parietal: pleura, pericardium, and peritoneum).
10. Know the major organ systems of the human body; each system's major organs and major functions.

## **CHAPTER 2: The Chemical Level of Organization**

1. The information in this chapter is a review from General Biology. You should have a good basic understanding of this material. Review as needed, especially atomic structure, chemical bonds: Ionic, Covalent, and Hydrogen, Properties of water, pH and hydrogen ion concentration and organic compounds.

## **CHAPTER 3: The Cellular Level of Organization**

1. Shape and size of cells: Squamous, Polygonal, Stellate, Cuboidal, Columnar, Spheroid, Ovoid, discoid (PowerPoint's)
2. Know the structure of the plasma membrane and its function. Understand diffusion, facilitated diffusion, osmosis (tonicity), active transport (ion pumps, exchange pumps, sodium-potassium exchange pumps), secondary active transport (symporters, antiporters), endocytosis (pinocytosis and phagocytosis), and exocytosis, membrane potential.
3. Know cell anatomy and be able to identify cell organelles by shape and know their functions
4. Genetics material should be a review from General Biology
5. Understand the cell cycle. Know the phases of interphase and mitosis and the key event(s) for each phase.

## **CHAPTER 4: The Tissue Level of Organization.**

1. Know four primary tissue classes and the three types of embryonic tissues.
2. Know the general features of epithelial tissue including the structure of the basement membrane. Also know the basic classification system used for epithelial tissues. (based on cell layers and cell shape.)
3. Be able to identify the following epithelial tissue if viewed through a microscope or on charts; know their function; know names of any specialized cells, and know where these tissues are found in the human body: simple squamous, simple cuboidal, simple columnar, keratinized stratified squamous, nonkeratinized stratified squamous, ciliated pseudostratified columnar, and transitional.

4. Know the major components of connective tissue:
  - A) **CELLS:** fibroblasts, macrophages, plasma cells, mast cells, and adipose cells
  - B) GROUND SUBSTANCE**
  - C) **FIBERS:** collagen, elastic, and reticular
5. Know the basic classification system for connective tissue (Embryonic, Mature, Loose, Dense, Cartilage, Bone, Liquid)
6. Be able to identify the following types of connective tissue if viewed through a microscope or on charts; know their functions and be able to identify structural components; and know where they are found in the human body: areolar connective tissue, adipose, dense regular connective tissue, dense irregular connective tissue, hyaline cartilage, and fibrocartilage.
7. Know the five types of cell junctions. (Tight, Adherens, Desmosomes, Hemidesmosomes, Gap)
8. Understand the classification and function of glandular epithelium: exocrine, endocrine, holocrine, merocrine, and apocrine
9. Know the four major types of epithelial membranes: mucous, serous, cutaneous, and synovial

: \*\* Know the following clinical terminology:

Neoplasm	benign/malignant tumor	metastasis	carcinoma (cancer)
carcinogen	mutagen	angiogenesis	Anaplasia
Dysplasia	Hyperplasia	Hypertrophy	Metaplasia
Apoptosis	Atrophy	Biopsy	Xenotransplantation
Necrosis	Gangrene	Infarction	Decubitus ulcer
Embryonic stem cells (SC)		Pluripotent (SC)	unipotent (SC)

## CHAPTER 5: The Integumentary System

1. Know the general functions of the integumentary system.
2. Be able to identify the five layers of the epidermis and know the functions and basic location of the following specialized cells: stem cells, keratinocytes, melanocytes, Tactile (merkel) cells and Dendritic (Langerhans cells).
3. Be able to identify the layers of the dermis and know what specific kinds of tissues each layer is composed of. Know the following associated structures of the dermis: dermal papillae, Meissner's corpuscles, and Pacinian corpuscles.
4. Be able to identify a hair follicle microscopically and associated structures of the hair such as sebaceous oil gland and arrector pili muscle.

5. Know the following glands associated with the skin and the mechanism by which they produce their secretion: sebaceous glands; sudoriferous glands; sweat glands; eccrine and apocrine; mammary glands; and ceruminous glands.
6. Know four phases of epidermal wound healing. (inflammatory, migratory, proliferative, maturation)
7. Know the following disorders and clinical terminology:

basal cell carcinomas	Squamous cell carcinomas	malignant melanomas
Abrasion	callus	comedo
Corn	cyst	eczema
hemangioma	keratosis	laceration
papule	pruritus	cyanosis
Erythemia	Pallor	Albinism
Jaundice	Bronzing	Hematoma