

REVIEW NOTES FOR CHAPTER 1 AND FIRST LECTURE: (Summer Term I)

I. Definitions of the Sciences

- A. Anatomy - to cut
- B. Physiology - the study of function
- C. These are complementary (go together)

II. Other definitions

- A. Gross Anatomy-large body structures
 - 1. includes regional (all parts of an area-leg)
 - 2. systemic anatomy (systems-cardiovascular)
- B. Microscopic Anatomy-too small to be seen without a microscope
 - 1. Cytology-study of cells
 - 2. Histology-study of tissues
- C. Developmental anatomy-changes that occur as we age
 - 1. Embryology-study of changes that occur before birth
- D. Specialized branches
 - 1. Pathological anatomy-changes caused by disease
 - 2. Molecular biology-studies the link between structure and function
- E. Subdivisions of physiology
 - 1. Renal physiology-urine production and kidney function
 - 2. Neurophysiology-study of nervous system
 - 3. Cardiac physiology-study of the workings of the heart

III. Levels of Organization

- A. Chemical Level
 - 1. chemicals combine to form the complex molecules of life like water and sugar
 - 2. CHNOPS are the most essential elements
- B. Cellular level
 - 1. cells are the structural and functional units of life
 - 2. they vary widely in size and shape
 - 3. muscle is unique because it can contract
- C. Tissue level
 - 1. groups of similar cells that work together
 - 2. four basic types
 - a. epithelium-covers/lines
 - b. muscle-movement
 - c. nervous-rapid internal communication

- d. connective tissue-connects, supports, protects
 - 3. for example in the stomach you have:
 - a. parietal cells that produce HCl
 - b. mucous cells that produce mucous to protect you from that acid
 - c. zymogenic cells that produce enzymes to begin digestion of protein
- D. Organ level
 - 1. groups of tissues that work together
 - 2. usually 4 different kinds of tissues
 - 3. for example in the stomach you have:
 - a. lining of epithelium
 - b. wall of muscle
 - c. connective tissue reinforces muscle
 - d. nerve fibers increase digestive action
- E. System or Organ System level
 - 1. all the organs that participate in a particular purpose
 - 2. you have 11
 - 3. examples; cardiovascular, digestive, reproductive
- F. Organism
 - 1. Everything working together

IV. Characteristics of Life

- A. Movement
- B. Responsiveness (irritability)
 - ability to respond to a stimulus
- C. Digestion
- D. Metabolism
 - 1. catabolism
 - 2. anabolism
 - 3. regulated by hormones
 - 4. depends on digestion, respiratory, and cardiovascular systems
- E. Excretion
 - 1. removal of waste
 - 2. also urinary system, digestive, respiratory (CO₂)
- F. Reproduction
 - 1. formation of offspring
 - 2. development of new cells for repair, replacement, growth
 - 3. involves reproductive system and endocrine

- G. Growth
 - 1. in size and in number
- H. Differentiation
 - 1. specialization of the cell
 - 2. unfertilized egg becomes an adult human once it is fertilized
 - 3. Scientists are growing human parts on mice (ear on the back of a mouse)....
- V. Maintenance of Life (survival needs)
 - A. Nutrients
 - 1. carbohydrates are a major fuel (glucose)
 - B. Oxygen
 - 1. need oxygen for chemical reactions
 - 2. 20% of the air you breathe
 - C. Water
 - 1. 60-80% of your body is water
 - 2. this is the most abundant chemical in the body
 - 3. gain it by eating, drinking, and lose by excretion, sweating
 - D. Temperature regulation
 - 1. Our body temperature is 98.6 F or 37C
 - 2. High temperature will destroy protein
 - 3. most heat comes from muscle
 - E. Atmospheric pressure
 - 1. force exerted on us by weight of air
 - 2. helps us breathe and exchange oxygen and carbon dioxide (there is a big difference between high altitude and low.)
- VI. Homeostasis
 - A. Steady State
 - 1. ability to maintain internal environment
 - 2. or maintaining physiological limits
 - B. Negative feedback
 - 1. majority of systems work this way
 - 2. get an opposite reaction or the reverse of the stimulus
 - 3. blood pressure go up and is adjusted by body to return to normal
 - C. Positive feedback
 - 1. rare
 - 2. get an enhancement of the original condition
 - 3. childbirth (the hormone oxytocin increases labor,

continues until the birth of child and placenta)

VII. Fluids

- A. Inside cells fluid is called ICF or intracellular
- B. Outside cells fluid is called ECF or extracellular
 - 1. also called plasma or interstitial
 - 2. this fluid is found between cells of tissues
 - 3. plasma is fluid in the blood
- C. You are in homeostasis when internal environment (fluids) contain optimum amounts of gases, ions, water, nutrients, temp, and volume.

VIII. Language of Anatomy

- A. Anatomical position
 - 1. facing the observer and palms forward
 - 2. left is always the patients left
- B. Directional terms or relative position
 - 1. Use clear terminology to avoid mistakes
 - 2. superior, inferior, anterior, posterior, medial, lateral, ipsilateral, contralateral, proximal, distal, superficial-near the surface, peripheral-also means outward or near the surface, used to describe location of b.v., or nerves , deep-more internal (definitions in book)
- C. Body Regions (figure 1.23, plate 4,5,6)
 - 1. epigastric
 - 2. left and right hypochondriac
 - 3. umbilical
 - 4. left and right lumbar
 - 5. left and right iliac
 - 6. Hypogastric
- D. Also use Quadrants
 - 1. left and right upper quadrants
 - 2. left and right lower quadrants
- E. Body Planes and sections
 - 1. sagittal
 - a. divides into left and right
 - b. mid-sagittal (equal)
 - c. para-sagittal (unequal)
 - 2. Frontal (coronal)
 - a. separates anterior from posterior

3. transverse or horizontal
 - a. superior from inferior
- F. Body cavities
1. axial-main axis
 2. appendicular-limbs
 3. within the axial are two main cavities
 - a. dorsal
 1. cranial
 2. vertebral (spinal)
 - b. ventral
 1. thoracic
 - a. mediastinum is a region between the lungs including everything except lungs
 - b. pleural cavity contains the lungs
 - c. lungs are surrounded by double layered membrane called serosa or serous membrane
 1. if it is on the walls of the cavity it is called parietal pleura
 - a. if it is on the organ it is called visceral pleura
 - b. if in heart cavity (pericardium) it is visceral pericardium, parietal pericardium.
 - c. Fluid is serous fluid and is between these two layers
 2. abdominopelvic cavity
 - a. separated from each other by the diaphragm
 - b. also has serosa (parietal and visceral peritoneum)
 - ** also have nasal cavity, oral cavity, orbital cavity, and middle ear cavity
- G. See terminology Figure 1.24
- a. carpal is wrist
 - b. tarsal is ankle
 - c. digital is fingers
 - d. antebrachial is forearm
 - e. buccal is cheek
 - f. mental is chin
 - g. learn these all from pages 24-25

**KNOW THE TERMS IN THE BACK OF THE CHAPTER P. 25;
BECOME FAMILIAR WITH THE REFERENCE PLATES ON PAGES
29-36; FUNCTIONS OF THE 11 SYSTEMS (TABLE 1.2). You will
work on these in lab, too.**

AUTOPSY-AUTO-SELF OPSIS-TO SEE WITH OWN EYES

PHYSICAL EXAM-

1. INSPECTION-LOOKING AT THE PATIENT USING VARIOUS INSTRUMENTS
2. PALPATION-TOUCHING
3. AUSCULTATION-LISTENING
4. PERCUSSION-STRIKING GENTLY
5. MEASURE VITALS (blood pressure, heart rate, respiratory rate)
6. LAB TEST
7. DIAGNOSIS

LIFE SPAN CHANGES

- n Aging starts at conception and persists until death of the human body.
- n 1st signs of aging are noticeable in one's thirties; including decline in fertility.
- n In 40's & 50's, adult-onset disorders may begin
- n Skin Changes due to loss of elastin, collagen, and subcutaneous fat.
- n Older people may metabolize certain drugs at different rates than younger people
- n Cells divide a limited number of times.
- n Oxygen free-radical damage produces certain pigments. Metabolism slow, and beta amyloid protein may build up in the brain => linked to Alzheimer disease in some.

Medical and Applied Sciences

- n Cardiology - study of the heart and vascular system
- n Dermatology - study of the skin
- n Endocrinology - study of hormones , hormone-secreting glands, and associated diseases.
- n Epidemiology - study of the factors that contribute to determining the distribution and frequency of health-related conditions.
- n Gastroenterology - study of the stomach and intestines
- n Geriatrics - Branch of medicine dealing with older individuals and their medical problems

- n Gynecology - study of the female reproductive system
- n Hematology - study of blood and blood diseases.
- n Histology - study of the structure and function of tissues (microscopic anatomy)
- n Immunology - study of the body's resistance to disease
- n Neonatology - study of newborns and the treatment of their disorders
- n Nephrology - study of the structure and function of the kidneys
- n Neurology - study of the brain and nervous system
- n Obstetrics - branch of medicine dealing with pregnancy and childbirth
- n Oncology - study of cancer
- n Ophthalmology - study of the eye and eye disease
- n Otolaryngology - study of the ear, throat, larynx, and their diseases
- n Psychiatry - branch of medicine dealing with the mind and its disorders
- n Radiology - Study of X rays and radioactive substances
- n Toxicology - study of poisonous substances and their effects on physiology
- n Urology - branch of medicine dealing with the urinary and male reproductive systems and their diseases