**Chapter 1: Introduction to Human Anatomy and Physiology**

**Anatomy**: Structure of Body Parts. Morphology
**Physiology**: Function of body parts. What they do and how.
\*A & P are very closely related - structure closely related to function

**Characteristics of Life**

* Movement - self initiated change in position, motion of internal parts
* Responsiveness (irritability) - Ability to sense changes within, or around the organism and react to them
* Growth - increase in body size
* Reproduction - Parents produce offspring / producing new individuals
* Respiration - Obtaining oxygen (O2), using it to release energy from food substances, and getting rid of wastes
* Digestion - Chemically changing (breaking down) food substances, and getting rid of wastes
* Absorption - Passage of Digested products (food substances) through membranes and into body fluids
* Circulation - Movement of substances throughout the body
* Assimilation - Changing absorbed substances into chemically different substances
* Excretion - Removal of wastes

**METABOLISM**:: All physical and chemical changes occurring in an organism

Needs: Water, food, oxygen, heat, pressure - all must be regulated

**HOMEOSTASIS**: Tendency of the body to maintain a stable, balanced internal environment. Accomplished through self regulating adjustments

**Levels of Organization (from simplest to most complex)**

Atoms --> Molecules --> Macromolecules --> Organelles --> Cells --> Tissues --> Organs --> Organ Systems --> Organism

\*A group (mass) of cells working together to carry out certain common functions form a tissue
\*A group of tissues working together to carry out certain common functions form an organ
\*A group of organs........

General Organization of the Body:

Axial Portion - head, neck, trunk
Appendicular Portion - arms & legs

1. Several body cavities
2. Layers of membranes within cavities
3. Variety of organs and organ systems within cavities (VISCERA = internal organs. "Visceral organs")

**Body Cavities (see p.9)**

A. Dorsal Cavity ---Cranial Cavity - Brain, Spinal Cavity - Spinal Cord
B. Ventral Cavity

1. Thoracic Cavity - right and left compartment separated by mediastinum. Heart , lungs, esophagus, trachea
2. Abdominopelvic Cavity
---Abdominal cavity - stomach, spleen, liver, gall bladder, small intestine
---Pelvic cavity - part of the large intestine, urinary bladder, reproductive organs

\*Thoracic and abdominopelvic cavity separated by DIAPHRAGM
\*The organs within the cavities are surrounded by a type of two layered membrane called the SEROUS MEMBRANE

\*The outer lyer of each membrane is called the PARIETAL layer and forms a "lining" against the inner wall of each cavity
\*The inner layer of each membrane covers the surface of each organ and is called the VISCERAL layer

Membranes:

1. Pleura (or pleural membrane) - surrounds the lungs
--outer layer = parietal pleura
--inner layer = visceral pleura

2. Pericardium (or pericardial membrane) - surrounds the heart
--outer layer = parietal pericardium
--inner layer = visceral pericardium

3. Peritoneum (or peritoneal membrane) - surrounds all the organs within the abdominopelvic cavity
--outer layer = parietal peritoneum
--inner layer = visceral peritoneum

\*Between the layers of each membrane is a lubricating fluid which is called SEROUS FLUID

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| **ORGAN SYSTEMS** |
| 1. Integumentary | Body covering. Skin, hair, nails, sweat glands.Function: protect underlying tissues and regulate body temperature |
| 2. Skeletal | Bones, ligaments, cartilageFunction: Support, movement, protection, and production of blood cells |
| 3. Muscular | Muscles of the bodyFunction: Movement, maintenance of posture, production of body heat |
| 4. Nervous | Brain, spinal cord, nerves through the bodyFunction: Communication throughout body, mental activities, maintaining homeostasis |
| 5. Endocrine | Ductless glands = pituitary, adrenal, thyroid, parathyroid, pancreas, ovaries, testes, thymus, pineal glandsFunction: Secretion of hormones, communication between body parts |
| 6. Digestive | Mouth, teeth, pharynx, esophagus, stomach, small intestine, large intestine, liver, gall bladder, and many glands including the pancreasFunction: Breakdown of food substances into simpler forms that can be absorbed (digestion). |
| 7. Circulatory | Heart, blood vessels, blood. Function: Transports materials throughout the body. \*Lymphatic system usually included with the circulatory system |
| 8. Urinary | Kidneys, ureters, urinary bladder, urethraFunction: Removes ("filters") wastes from the blood and helps maintain the body's water and electrolyte balance |
| 9. Reproductive | Reproductive organs, primarily the ovaries (females) and testes (males)Function: Produce special reproductive cells for reproduction |

**Anatomical Terminology**

Anatomical Position = standing erect, face forward, arms at side, palms facing forward

\*Study and learn the following terms which are used to describe relative positions -- location of one body part with respect to another (p.13 -14)

|  |  |  |
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| 1. Superior | 5. Medial | 9. Superficial |
| 2. Inferior | 6. Lateral | 10. Deep |
| 3. Anterior | 7. Proximal |  |
| 4. Posterior | 8. Distal |

\*Learn and understand the following body sections ("slices") through the body for observing internal structures

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| 1. Sagittal |
| 2. Transverse |
| 3. Frontal (or coronal) |

**Describe the body region each of these terms refer to:**

|  |  |
| --- | --- |
| 1. Abdominal |   |
| 2. Acromial |   |
| 3. Antebrachial |   |
| 4. Brachial |   |
| 5. Buccal |   |
| 6. Carpal |   |
| 7. Celiac |   |
| 8. Cephalic |   |
| 9. Cervical |   |
| 10. Costal |   |
| 11. Coxal |   |
| 12. Digital |   |
| 13. Dorsal |   |
| 14. Femoral |   |
| 15. Frontal |   |
| 16. Genital |   |
| 17. Gluteal |   |
| 18. Inguinal |   |
| 19. Lumbar |   |
| 20. Mammary |   |
| 21. Nasal |   |
| 22. Occipital |   |
| 23. Oral |   |
| 24. Orbital |   |
| 25. Otic |   |
| 26. Palmar |   |
| 27. Pectoral |   |
| 28. Pedal |   |
| 29. Pelvic |   |
| 30. Sacral |   |
| 31. Sternal |   |
| 32. Umbilical |   |
| 33. Vertebral |   |