

Chapter Section 1.2-1.4

- Read text sections 1.2-1.4 define anatomy and physiology and describe the levels of organization and the characteristics of life.



Chapter 1

Introduction to Human Anatomy and Physiology

Anatomy and Physiology

- **Anatomy** deals with the structure (morphology) of the body and its parts, in other words, what are things called?
- **Physiology** studies the functions of these parts or asks the question, "how do they work?"
- The two disciplines are closely interrelated because the functional role of a part depends on how it is constructed.

Therefore, "Anatomy and Physiology" literally means structure defines function

Section 1.5



- Read text section 1.5 Describe factors that maintain life and how the body maintains an internal environment.

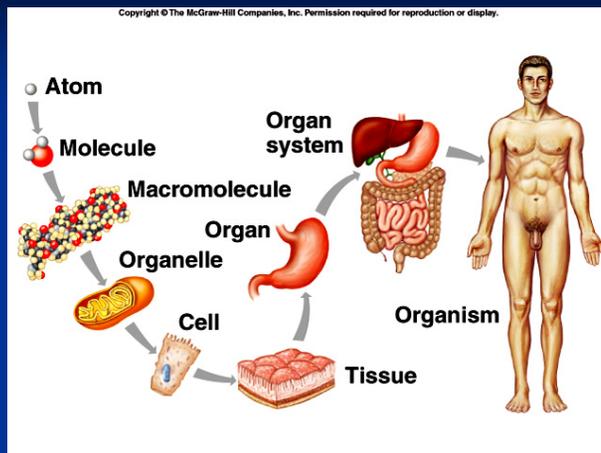
Homeostasis:

- Maintenance of a stable internal environment is called **homeostasis**.
- Homeostasis is regulated through control systems which have receptors, a set point and effectors in common. Examples include:
 - a. Homeostatic mechanisms regulate body temperature in a manner similar to the functioning of a home heating thermostat.
 - b. Another homeostatic mechanism employs pressure-sensitive receptors to regulate blood pressure.

Homeostasis:

- Many of the body's homeostatic controls are negative feedback mechanisms.
- Each individual uses homeostatic mechanisms to keep body levels within a normal range; normal ranges can vary from one individual to the next.

■ Levels of Organization:



Section 1.6



- Read section 1.6 Organization of the Human Body

The human body is the sum of its parts and these parts can be studied at a variety of levels of organization.

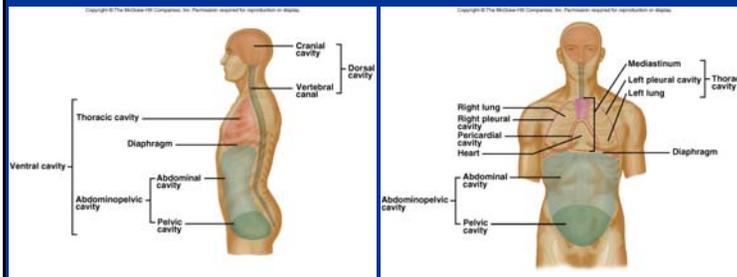
1. Atoms are the simplest level.
2. Two or more atoms comprise a molecule.
3. Macromolecules are large, biologically important molecules inside cells.
4. Organelles are aggregates of macromolecules used to carry out a specific function in the cell.
5. Cells are the basic living unit.
6. Tissues are groups of cells functioning together.
7. Groups of tissues form organs.
8. Groups of organs function together as organ systems.
9. Organ systems functioning together make up an organism.

■ Organization of the Human Body

- Major features of the human body include its cavities, membranes, and organ systems.

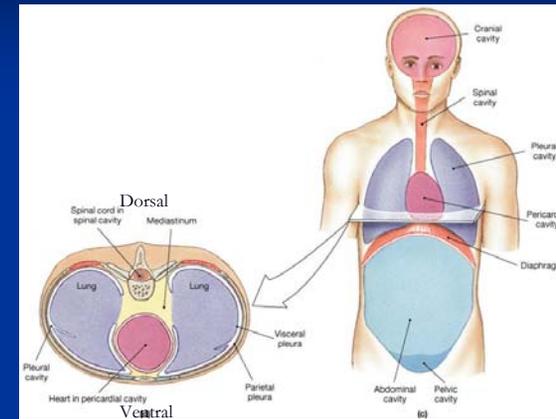
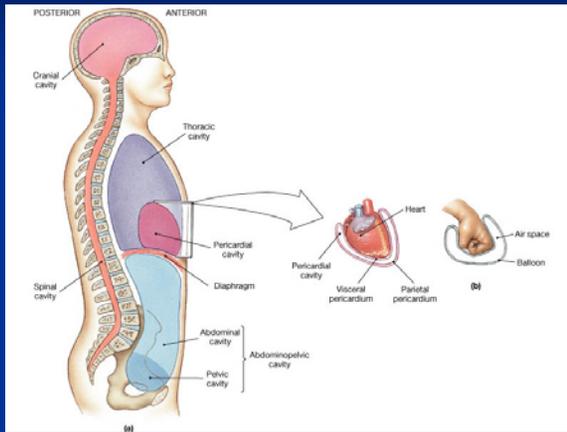
■ Body Cavities:

- The body can be divided into an **appendicular** portion (upper and lower limbs) and an **axial** portion (head, neck, and trunk), which includes a dorsal and a ventral cavity. Organs within these cavities are called viscera.



- a. The **dorsal** cavity can be divided into the **cranial** cavity and vertebral canal.
- b. The **ventral** cavity is made up of a thoracic cavity and an **abdominopelvic** cavity, separated by the diaphragm.
 - i. The **mediastinum** divides the thorax into right and left halves.
 - ii. The **abdominopelvic** cavity can be divided into the **abdominal** cavity and the **pelvic** cavity.
- c. Smaller cavities within the head include the oral cavity, nasal cavity, orbital cavities, and middle ear cavities.

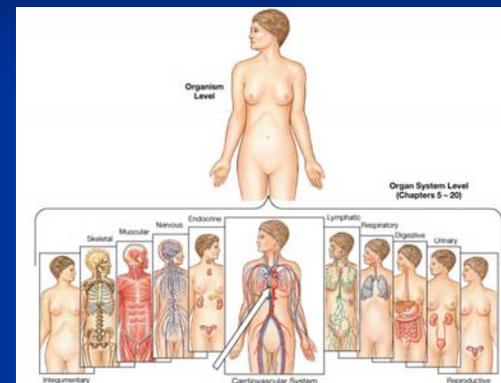
Body cavities



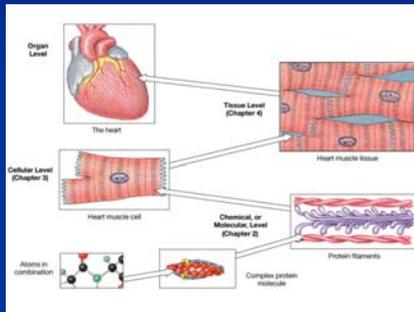
■ Thoracic and Abdominopelvic Serous Membranes:

1. The **thoracic** cavity is lined with **pleura**; the parietal pleura lines the cavities while the visceral pleura covers the lungs. A thin layer of serous fluid separates the two layers.
2. The **heart** is surrounded by **pericardium**. The visceral pericardium covers the heart and the parietal pericardium makes up an outer sac. Serous fluid separates the two layers.
3. **Peritoneum** lines the **abdominopelvic cavity**;
 - a **parietal** peritoneum lines the wall while **visceral** peritoneum covers the organs.

Eleven systems of the body



Example of levels of organization



■ Organ Systems:

■ Body Covering

- The **integumentary** system, including skin, hair, nails, and various glands, covers the body, senses changes outside the body, and helps regulate body temperature.

■ Support and Movement

- The **skeletal** system, made up of bones and ligaments. It supports, protects, provides frameworks, stores inorganic salts, and houses blood-forming tissues.
- The **muscular** system consists of the muscles that provide body movement, posture, and body heat.

■ Integration and Coordination

- The **nervous** system consists of the brain, spinal cord, nerves, and sense organs. It integrates information incoming information from receptors and sends impulses to muscles and glands.
- The **endocrine** system, including all of the glands that secrete hormones, helps to integrate metabolic functions

■ Transport

- a. The **cardiovascular** system, made up of the heart and blood vessels, distributes oxygen and nutrients throughout the body while removing wastes from the cells.
- b. The **lymphatic** system, consisting of lymphatic vessels, lymph nodes, thymus, and spleen, drains excess tissue fluid and includes cells of immunity.

■ Absorption and Excretion

- a. The **digestive** system is made up of the mouth, esophagus, stomach, intestines and accessory organs. It receives, breaks down, and absorbs nutrients.
- b. The **respiratory** system exchanges gases between the blood and air and is made up of the lungs and passageways.
- c. The **urinary** system, consisting of the kidneys, ureters, bladder, and urethra, removes wastes from the blood and helps to maintain water and electrolyte balance.

■ Reproduction

- a. The **reproductive** system produces new organisms.
 - i. The male reproductive system consists of the testes, accessory organs, and vessels that conduct sperm to the penis.
 - ii. The female reproductive system consists of ovaries, uterine tubes, uterus, vagina, and external genitalia. The female reproductive system also houses the developing offspring.

Section 1.7



- Read section 1.7 and use anatomical terms

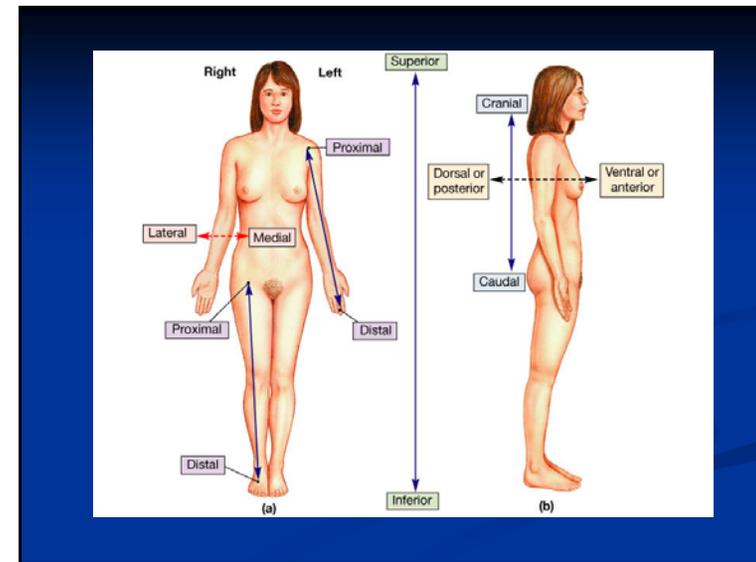
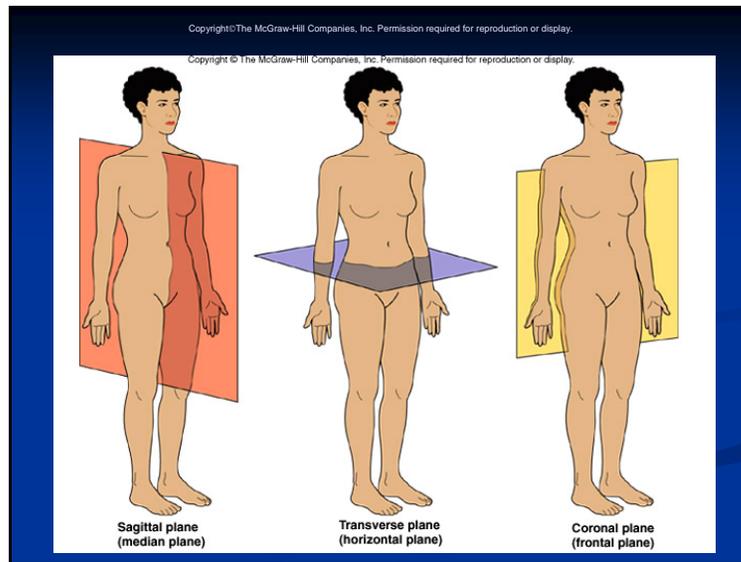
■ Anatomical Terminology

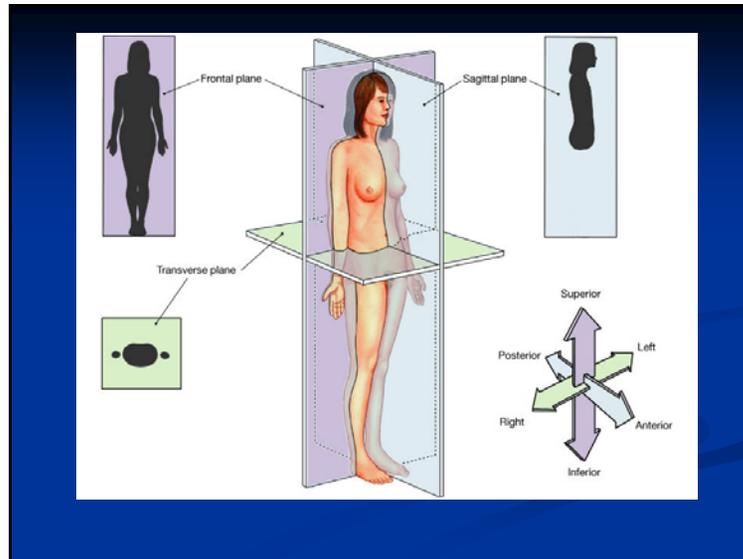
■ Relative Positions:

1. Terms of relative position are used to describe the location of a part relative to another part.
2. Terms of relative position include: superior, inferior, anterior, posterior, medial, lateral, proximal, distal, superficial (peripheral), and deep.

■ Body Sections:

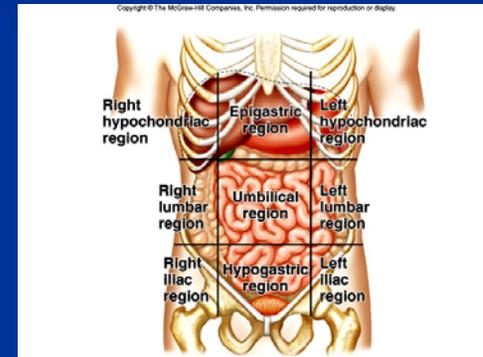
1. A **sagittal** section divides the body into right and left portions.
2. A **transverse** section divides the body into superior and inferior portions. It is often called a "cross section".
3. A **coronal** section divides the body into anterior and posterior sections.





■ **Body Regions**

1. The abdominal area can be divided into nine regions.
2. Terms used to refer to various body regions are depicted in the figure below.



Finished Chapter 1

- Review terms and concepts learned
- Take quiz.

