

Chapter 10 — The Human Body: An Introduction

I. An Overview of Anatomy and Physiology (p. 1-1)

- A. **Anatomy** is the study of the structure of body parts and their relationships to each other, and **physiology** is the study of the function of body parts (p. 1).
- B. **Types of Anatomy** (p. 2)
 - 1. **Gross (macroscopic) anatomy** is the study of structures large enough to be seen with the naked eye.
 - a. **Regional anatomy** is the study of all body structures in a given body region.
 - b. **Systemic anatomy** is the study of all structures in a body system.
 - c. **Surface anatomy** is the study of external body structures as they relate to the underlying sites.
 - 2. **Microscopic anatomy** is the study of structures that are too small to be seen with the naked eye.
 - a. **Cytology** is the study of individual cells.
 - b. **Histology** is the study of tissues.
 - 3. **Developmental anatomy** is the study of the change in body structures over the course of a lifetime, including formation and development that occur before birth.
 - 4. **Specialized branches of anatomy**
 - a. **Pathological anatomy** is the study of structural changes associated with disease.
 - b. **Histological anatomy** is the study of internal structures using specialized visualization techniques.
 - c. **Molecular biology** is the study of biological molecules.
 - 5. **Specialized fields for studying anatomy** are the anatomy of medical technology and the development of two-dimensional models.
- C. **Types of Physiology** (p. 1-8)
 - 1. **Physiology** has several types, most of which consider the function of specific organ systems.
 - 2. **Physiology** often focuses on cellular and molecular events.
- D. **Complementarity of Structure and Function** (p. 8)
 - 1. The principle of complementarity of structure and function states that function is dependent on structure, and that the form of a structure is determined by its function.

II. Levels of Structural Organization (p. 1, Figs. 1.1, 1.2)

- A. The chemical level is the simplest level of organization (Fig. 1.1).
 - 1. **Atoms**, nonbuilding blocks of matter, combine to form molecules.
 - 2. **Molecules** combine in specific ways to form organelles, which are the basic units of living cells.
- B. The cellular level is the smallest unit of life, and tissue stability is maintained according to the cells' function.
- C. The tissue level is groups of cells having a common function.