

# CHAPTER 5

## TISSUES

### OVERVIEW

This chapter deals with the simplest level of organization of cells—tissues. It explains the types of tissue that occur in the human body, the general functions of each of these types of tissue, and the organs in which the various types of tissue and membranes occur (learning outcomes 1–9).

The characteristics of a tissue remain the same regardless of where it occurs in the body. Knowledge of these characteristics is basic to understanding how a specific tissue contributes to the function of an organ.

### LEARNING OUTCOMES

After you have studied this chapter, you should be able to:

- 5.1 Introduction
  - 1. List the four major tissue types and relate where each is located in the body.
- 5.2 Epithelial Tissues
  - 2. Describe the general characteristics and functions of epithelial tissue.
  - 3. Name the types of epithelium, and identify an organ in which each is found.
  - 4. Explain how glands are classified.
- 5.3 Connective Tissue
  - 5. List the types of connective tissue.
  - 6. Compare and contrast the general cellular components, structures, fibers, extracellular matrix (where applicable) to each type of connective tissue.
  - 7. Explain the major functions of each type of connective tissue.
- 5.4 Types of Membranes
  - 8. Distinguish among the four major types of membranes.
- 5.5 Muscle Tissues
  - 9. Distinguish among the three types of muscle tissue.
- 5.6 Nervous Tissue
  - 10. Describe the general characteristics and functions of nervous tissue.

### FOCUS QUESTION

How is tissue related to the organization of the body?

### MASTERY TEST

Now take the mastery test. Do not guess. As soon as you complete the test, correct it. Note your successes and failures so that you can read the chapter to meet your learning needs.

- 1. List the four major types of tissue found in the human body.
- 2. Cells in a tissue are (similar, dissimilar).
- 3. The function of epithelial tissue is to
  - a. support body parts.
  - b. cover body surfaces.
  - c. bind body parts together.
  - d. form the framework of organs.

4. Which of the following statements about epithelial tissue is (are) true?
- Epithelial tissue has no blood vessels.
  - Epithelial cells reproduce slowly.
  - Epithelial cells are nourished by substances diffusing from connective tissue.
  - Injuries to epithelial tissue heal rapidly as new cells replace damaged cells.
5. The underside of epithelial tissue is formed of nonliving tissue called the \_\_\_\_\_.
6. Match the following types of epithelial cells with their correct location.
- |   |  |
|---|--|
| _____ a. simple squamous epithelium           | 1. lining of the ducts of salivary glands  |
| _____ b. simple cuboidal epithelium           | 2. lining of respiratory passages          |
| _____ c. simple columnar epithelium           | 3. epidermis of the skin                   |
| _____ d. pseudostratified columnar epithelium | 4. air sacs of lungs, walls of capillaries |
| _____ e. stratified squamous epithelium       | 5. lining of digestive tract               |
7. The inner lining of the urinary bladder and the passageways of the urinary tract are composed of \_\_\_\_\_.
8. A gland that secretes its products into ducts opening into an external or internal surface is called a(n) \_\_\_\_\_ gland.
9. A merocrine gland that secretes its product by \_\_\_\_\_.
10. The function of connective tissue is
- support.
  - protection.
  - coverage.
  - fat storage.
11. Fibroblasts and mast cells found in connective tissue are (fixed, wandering) cells.
12. The connective tissue cells that produce fibers are
- mast cells.
  - macrophages.
  - fibroblasts.
13. The major structural protein of the body and of white connective tissue is \_\_\_\_\_.
14. Yellow connective tissue that can be stretched and returned to its original shape is \_\_\_\_\_.
15. The most common cells of loose connective tissue are \_\_\_\_\_.
16. Which of the following statements is (are) true about adipose tissue?
- It is a specialized form of loose connective tissue.
  - It occurs around the kidneys, behind the eyeballs, and around various joints.
  - It serves as a conserver of body heat.
  - It serves as a storehouse of energy for the body.
17. The cartilage found in the tip of the nose is \_\_\_\_\_ cartilage.
18. The type of cartilage in the intervertebral discs is \_\_\_\_\_.
19. Because of the nature of its blood supply, injured cartilage heals (quickly, slowly).
20. The most rigid connective tissue is \_\_\_\_\_.
21. The intercellular material of vascular tissue is \_\_\_\_\_.
22. The three types of muscle tissue are \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
23. Coordination and regulation of body functions is the function of \_\_\_\_\_ tissue.
24. List the four major types of membranes.