4 Body Tissues and Membranes

Chapter Summary

A tissue is composed of similarly specialized cells that perform a common function in the body. Epithelial tissues cover the body surface, line most cavities, and are classified according to cell shape (i.e., squamous, cuboidal, or columnar) and whether or not they are unstratified (simple), stratified, or pseudostratified. Connective tissues bind structures together, provide support and protection, fill spaces, and store fat. The cells of connective tissues are separated by a nonliving, noncellular matrix which often contains fibers. Connective tissues include loose connective tissue, fibrous connective tissue, cartilage, bone, and blood. Muscular tissue is composed of fibers (cells) that contract. Skeletal muscle is under voluntary control and functions to move body parts. Both smooth and cardiac muscle are under involuntary control. Smooth muscle is found in blood vessels and visceral organs, and cardiac muscle is found in the heart. Nervous tissue is composed of conducting cells called neurons and support cells called neuroglia. The classification of cancers according to the type of tissue they arise from is explained in this chapter and five types of body membranes are described. Mucous membranes line the interior walls of tubes that open to the outside of the body, serous membranes cover organs and line body cavities, synovial membranes line freely movable joint cavities, the cutaneous membrane (or skin) covers the body surface, and meninges cover the brain and spinal cord.

Chapter Outline

I. Epithelial Tissue
   - A. Squamous Epithelium
   - B. Cuboidal Epithelium
   - C. Columnar Epithelium
   - D. Pseudostratified Columnar Epithelium
   - E. Transitional Epithelium

II. Connective Tissue
   - A. Fibrous Connective Tissue
   - B. Cartilage
   - C. Bone
   - D. Blood

III. Muscular Tissue
   - A. Skeletal
   - B. Smooth
   - C. Cardiac

IV. Nervous Tissue
   - A. Neuroglia

V. Extracellular Junctions
   - A. Extracellular Junctions
   - B. Glands
   - C. Membranes
     1. Mucous Membranes
     2. Serous Membranes
     3. Synovial Membranes
     4. Meninges
     5. Cutaneous Membrane

Suggested Student Activities

1. Help students in matching organs to the tissues composing those organs.
2. Have students draw the various tissue types and label appropriate cell and tissue structures.

Answers to Objective Questions

1. tissues
2. layered, cilia, columnar
3. matrix, fibers
4. connective
5. epithelial, connective
6. c
7. a
8. b
9. d
10. c
11. a
12. b

Answers to Medical Terminology Reinforcement Exercise

1. epitheli/oma - tumor of the epithelium
2. fibro/dys/plasia - bad formation of fibrous tissue
3. meningo/encephalo/pathy - disease of the meninges of the brain
4. peri/cardio/centesis - puncture to aspirate fluid from pericardium (membranous sac surrounding the heart)
5. periton/itis - inflammation of the peritoneum (lining of the abdomen)
6. intra/pleural - within the pleura (membrane lining chest and covering lungs)
7. neuro/fibr/omat/osis - condition of many fibrous tumors along the nerves (affliction of the famous “elephant man”)
8. sub/mucosa - beneath the mucous membrane
9. poly/arthr/itis - inflammation of many joints
10. cardio/muo/pathy – heart muscle disease
11. en/cephal/it is – inflammation of the brain
12. gli/oma – tumor derived from neuroglia
13. pleur/isy – inflammation of pleura
14. chondro/blast – cartilage forming cell
15. osteo/ology – study of bone

Audiovisual Materials

1. Schick Notebook Chart Book (Concept Media)