

CHAPTER 4: THE TISSUE LEVEL OF ORGANIZATION

OVERVIEW

Histology

Four Types of Tissues

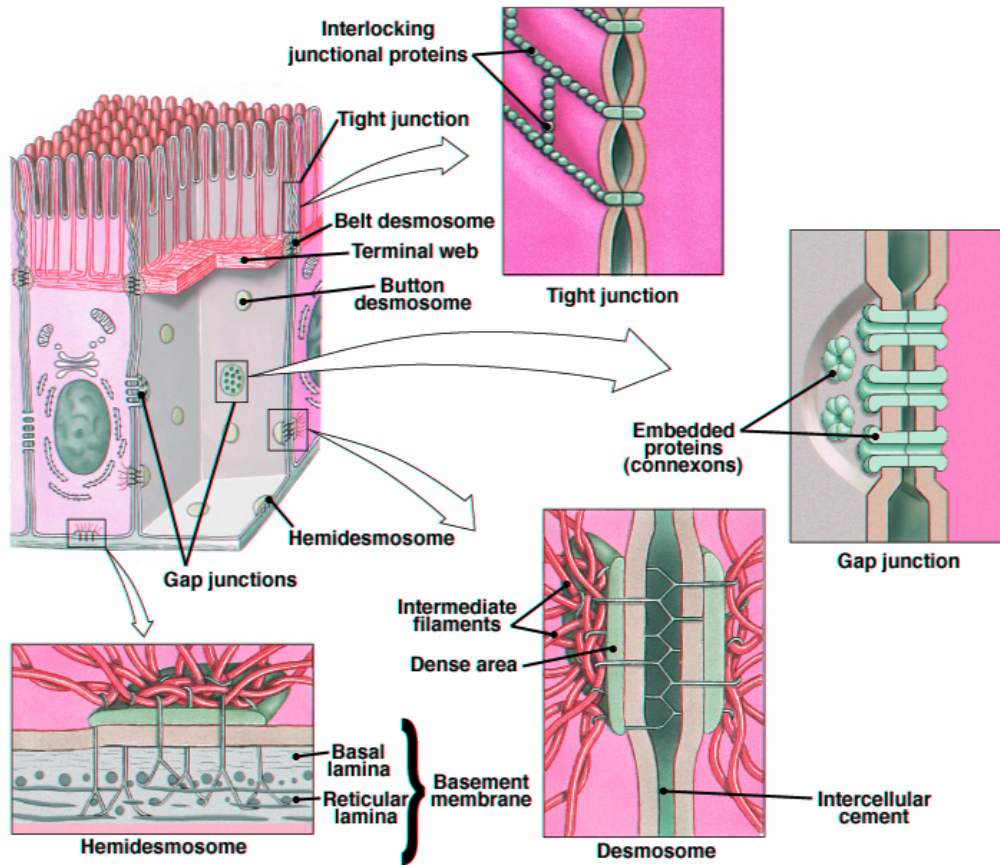
- 1)
- 2)
- 3)
- 4)

I. Epithelial Tissue

A. Functions

B. Characteristics

C. Your skin stretches at the elbow each time you flex your arm, the stomach epithelium stretches when food arrives to the stomach... **how do the cells of an epithelium avoid being pulled apart when stretched?**

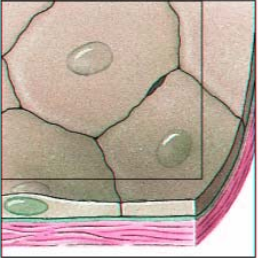
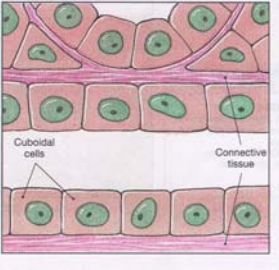
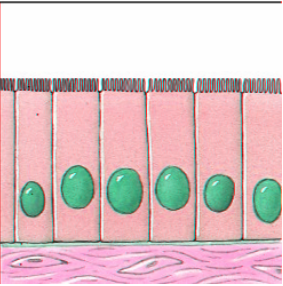


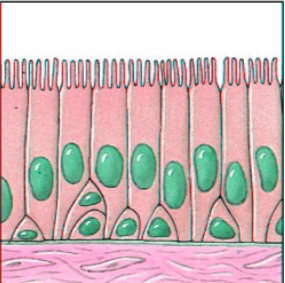
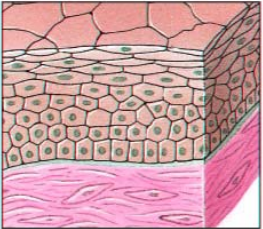
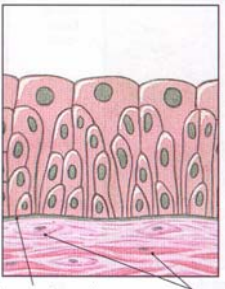
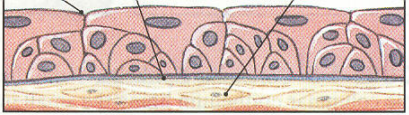
D. Classification of Epithelia

1) Cell Shape

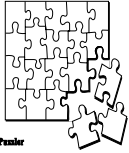
2) Number of Layers

REPRESENTATIVE EPITHELIAL TISSUES

Epithelial Tissue	Structure	Function	Examples
1) Simple Squamous			
2) Simple Cuboidal			
3) Simple Columnar			

Epithelial Tissue	Structure	Function	Examples
4) Pseudostratified columnar ciliated			
5) Stratified Squamous			
6) Transitional			

GLANDULAR EPITHELIA: Read pages 114-118. Answer the following questions.



1) What is the difference between an exocrine gland and an endocrine gland?

2) Distinguish between the following types of gland secretions:

merocrine

apocrine

holocrine.

3) How do the secretions of a serous gland differ from a mucus gland?

4) Be aware that glands are organized in different ways and are classified according to the shape of the gland, the number of ducts, and the branching pattern. See Figure 4-7. **It is not necessary to memorize this information.**


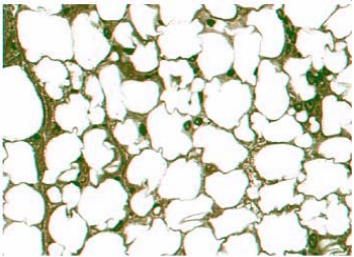
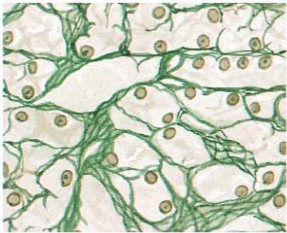
II. Connective Tissue

A. Functions

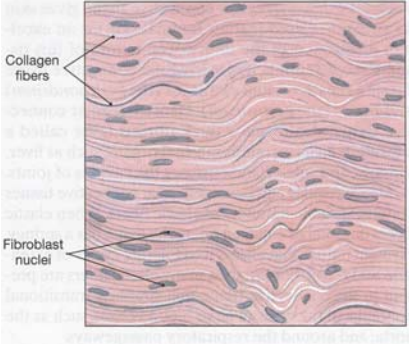
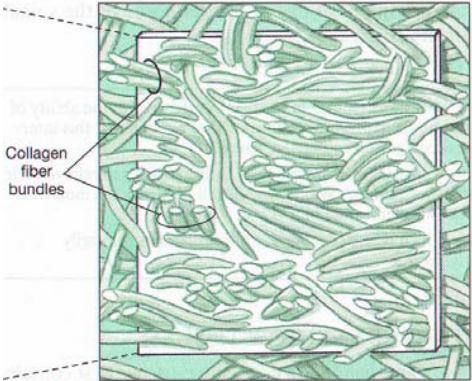
B. Characteristics

C. Classification of Connective Tissues

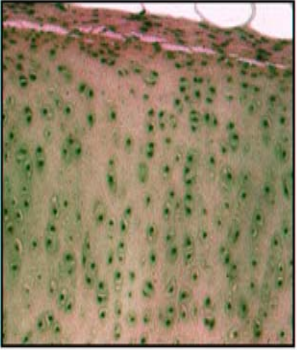
REPRESENTATIVE CONNECTIVE TISSUES

Connective Tissue	Structure	Function	Example
<i>Connective Tissue Proper: The Loose Connective Tissues</i>			
1) Areolar Connective Tissue			
2) Adipose			
3) Reticular			

Connective Tissue Proper: The Dense Connective Tissues

Connective Tissue	Structure	Function	Example
<p>1) Dense regular connective tissue</p>  <p>The image shows a histological section of dense regular connective tissue. It features a dense array of collagen fibers that are oriented in a single, parallel direction. The fibers are stained pink and appear as thick, wavy bands. Scattered among these fibers are the nuclei of fibroblasts, which are stained dark blue and have a spindle-like shape. Labels with arrows point to 'Collagen fibers' and 'Fibroblast nuclei'.</p>			
<p>2) Dense irregular connective tissue</p>  <p>The image shows a histological section of dense irregular connective tissue. It is characterized by thick, irregular bundles of collagen fibers that are arranged in a non-parallel, haphazard pattern. The bundles vary in thickness and orientation. Labels with arrows point to 'Collagen fiber bundles'.</p>			

Supporting Connective Tissue

Connective Tissue	Structure	Function	Example
 <p data-bbox="201 800 289 829">Bone</p>			
 <p data-bbox="201 1377 348 1406">Cartilage</p>			

Connective Tissue	Structure	Function	Example
<i>Types of cartilage</i>			
 <p>Chondrocytes in lacunae</p> <p>Matrix</p> <p>(b)</p>			
hyaline cartilage			
 <p>Collagen fibers in matrix</p> <p>Lacuna</p> <p>Chondrocyte</p> <p>(d)</p>			
fibrocartilage			
 <p>Nucleus of chondrocyte</p> <p>Lacuna</p> <p>Elastic fibers in matrix</p> <p>Matrix</p> <p>(c)</p>			
elastic cartilage			

III. Membranes

Definition -

Assignment: Read pages 129-131 and describe each of the following types of membranes and give an example.

A. Mucus (or spelled mucous) Membrane

B) Serous Membrane

C) Cutaneous Membrane

(Synovial membranes will be discussed later in class)

Assignments

Lecture Guide

- 1) Define: histology, tissue. List the four basic types of tissue.
- 2) Compare the characteristics of epithelial tissue and connective tissue.
- 3) How is the structure of each of the epithelial tissues particularly suited for their functions?
- 4) How is connective tissue classified? List the different types.
- 5) How is the structure of each of the connective tissues particularly suited for their functions?
- 6) Define the following: reticular fiber, hyaluronic acid, elastic fiber, collagenous fiber, adipocyte, mast cell, chondrocyte, lacunae, fibroblast, macrophage.
- 7) How are mucus and serous different? How are they similar?

Textbook: Chapter 4 (pages 140-141)

- Level 1 Reviewing Facts and Terms: 1-4, 6-10, 15-19
- Level 2 Questions: 21, 22, 25, 26
- Level 3 Critical Thinking and Application: 28

Study Guide Chapter 4 (pages 60-86)

- (L1) Multiple Choice: 1-4, 6-22, 24, 27, 29
Completion: 1-8, 11
Drawing and Labeling: Fig 4-1, Fig 4-2
- (L2) Concept Map I, II, III
Body Trek: Epithelia and Connective Tissue Only
Multiple Choice: 1-13
Short Essay: 1, 2, 4, 6-9