Connective Tissues

To complete this worksheet, select:

Module: Foundations  
Activity: Anatomy Overviews  
Title: Connective Tissues

Complete the following worksheet and add it to your notes.

Interactions Foundations CD/Contents/Tissue Level/Anatomy Overviews/Connective Tissues

1. What are the functions of connective tissue?

   ____________________________________________________________________
   ____________________________________________________________________
   ____________________________________________________________________

Cell Matrix

2. Describe the function of fibroblasts.

   ____________________________________________________________________
   ____________________________________________________________________

3. What is ground substance? What is its function?

   ____________________________________________________________________
   ____________________________________________________________________
   ____________________________________________________________________
4. Identify the function for each type of connective fiber:

   Reticular
   _______________________________________________________________
   _______________________________________________________________

   Elastic
   _______________________________________________________________
   _______________________________________________________________

   Collagen
   _______________________________________________________________
   _______________________________________________________________

5. Using the text as a guide, identify the cells found in connective tissue:

   fibroblasts
   _______________________________________________________________
   _______________________________________________________________

   macrophages
   _______________________________________________________________
   _______________________________________________________________

   plasma cells
   _______________________________________________________________
   _______________________________________________________________

   mast cells
   _______________________________________________________________
   _______________________________________________________________

   adipocytes
   _______________________________________________________________
   _______________________________________________________________

   white blood cells
   _______________________________________________________________
   _______________________________________________________________

Loose Connective Tissue

6. Identify each tissue type, by sight. You are expected to identify these tissues and will be asked to do so on your tests. Note how the fibers are "loosely" arranged between the cell types.

   Areolar - Areolar tissue is found in the subcutaneous (under the skin) layer.
**Adipose** - These are our “fat cells.” They are found anywhere areolar tissue is found. Adipose tissue is our stored energy reserves, insulates us from temperature extremes, and, it is an excellent protective cushion.

**Reticular** - Reticular tissue forms the supporting structure, or stroma, of many organs. This function is much like the internal beams supporting a house or building.

**Dense Connective Tissue**

7. Identify each dense connective tissue type, again, by sight. Note how these tissues contain more numerous, and thicker, fibers arrayed densely among considerably fewer cells.

**Dense Regular** - Found in tendons and ligaments, this tissue can withstand tension along the axis of the fibers. Lateral tension can result in tears or strains.

**Dense Irregular** - Generally found in sheets underlying the epidermis (skin). This tissue withstands pulling forces from various directions.

**Elastic** - Found in the lungs and elastic arteries, this tissue can recoil to its original dimensions after stretching.
Cartilage

8. First, consult your text to identify the following and determine what they do:

Chondrocytes

Lacunae

Perichondrium

9. Examine each type of cartilage from the CD. Once again, learn to identify these by sight. Cartilage matrix consists of a dense network of collagen and elastic fibers embedded in chondroitin sulfate, a rubbery component of the ground substance. Cartilage withstands more stress than either loose or dense connective tissues.

**Hyaline** - This is the most common cartilage in the body. It provides flexibility, support, cushioning, and reduces friction at the joints. The fine collagen fibers are not visible with ordinary staining techniques. Due to its level of flexibility, hyaline cartilage is the weakest of the cartilage types.

**Fibrocartilage** - Found in the inter-vertebral discs, fibrocartilage combines strength and rigidity to be the strongest of the cartilage types. Collagen fibers are clearly visible between the chondrocytes.

**Elastic** - Found in structures needing strength and elasticity, like the outer ear, elastic cartilage is the most flexible of the three types. Elastic fibers are visible between the chondrocytes.
Bone (Osseous) Tissue

10. Examine the following on your CD. Remember, click on the red words to progress for more information on that structure.

*Compact Bone* - Define or describe each of the following for compact bone:

- **Compact bone function**
  - Description
  - Description
  - Description

- **Osteon**
  - Description
  - Description
  - Description

- **Lamellae**
  - Description
  - Description
  - Description

- **Lacunae**
  - Description
  - Description
  - Description

- **Haversian Canal**
  - Description
  - Description
  - Description

- **Canaliculi**
  - Description
  - Description
  - Description

- **Osteocyte**
  - Description
  - Description
  - Description
Spongy (Cancellous) Bone - Again, define or describe each of the following:

Function


Trabeculae


Space


Blood Tissue

11. It may be difficult to think of blood as a tissue because it is fluid. It is a connective tissue, however, with two basic types of cells suspended in a fluid matrix. It clearly "connects" to every part of our body, too!

Using your CD, identify each of the following and determine their function(s):

Plasma


RBCs (erythrocytes)


WBCs (leukocytes)


Platelets
Embryonic Connective Tissue

12. Using the CD, determine what embryonic connective tissue is. Although you do not need to identify these two tissues by sight, you do need to describe the functions of each:

*Mesenchyme*

*Mucous c.t. (Wharton’s jelly)*