

TISSUES II

I. CHARACTERISTICS OF CONNECTIVE TISSUES: binds/supports/protects other tissues and organs, derived from mesenchyme (embryonic CT)

A. Consists of:

1. Cells: the cells don't have a free surface.
2. Matrix = the non-living material surrounding the cells. It contains

- a. Fibers (protein)
 - i. Collagen
 - ii. Elastin
 - iii. Reticular
- b. Ground Substance

3. Vascularity varies

II. CLASSIFICATION OF C.T.

A. Connective Tissue Proper: Matrix is gel-like; Two classes: Loose C.T. & Dense C.T.

1. Loose CT

a. Areolar CT

- i. Contains fibroblasts, many irregularly arranged fibers and it is very vascular
- ii. Location: surrounds nerves, muscles, and some organs

iii. Function: packing & binding material

b. Adipose (Fat Tissue)

- i. Contains adipocytes
- ii. Location: primarily in skin

iii. Functions: energy source; insulation against temperature changes, and protection

2. Dense CT

a. Dense Irregular CT

i. Contains fibroblasts; protein fibers found are irregularly arranged bundles

ii. Location: skin

iii. Function: strength and support (in all directions)

b. Dense Regular CT

i. Contains fibroblasts; protein fibers are arranged in parallel bundles. Poor vascularity

ii. Location: skin

iii. Function: Strength and support (in one direction)

B. Cartilage: semisolid matrix; avascular; flexible; heals slowly; cells = chondroblasts and chondrocytes; cells in lacunae.

1. Hyaline (clear) Cartilage:

a. Matrix contains very fine collagen fibers.

b. Location: found on articular surfaces, nasal septum, trachea, fetal skeleton (ends of bones)

c. Function: support and protection.

2. Fibrocartilage

a. Matrix contains thick collagen fibers.

b. Location: found in intervertebral disks, symphysis pubis & menisci

c. Function: support & withstands compression

3. Elastic Cartilage

a. Matrix contains numerous elastic fibers

- b. Location: outer ear and larynx (voice box)
- c. Function: flexibility and strength

C. Bone (Osseous Connective Tissue): matrix is rigid

1. 3 kinds of cells found in bone:
 - a. osteoblasts – immature bone cells (create bone)

 - b. osteocytes – mature bone cells – maintain bone

 - c. osteoclasts – break down/absorb bone
2. Two kinds of bone tissue found within each of your bones:
 - a. Compact (dense): outer shell of bone.

 - b. Spongy (cancellous): inner lattice-work of bone;
hemopoietic (red bone marrow) tissue found within spaces

D. Vascular Tissue (Blood)

1. Contains blood cells (or formed elements) and a liquid matrix called plasma

2. Function: transport

III. MUSCLE TISSUE: moves body and materials within body

A. Classification

1. Smooth (Visceral) Muscle Tissue (involuntary)
 - a. Spindle-shaped cells

 - b. One centrally located nucleus (find it in the walls of hollow organs besides the heart)

2. Cardiac Muscle Tissue