**STUDY GUIDE CONNECTIVE TISSUE**

**VOCABULARY**

Fibroblast Collagen fiber Elastic fiber

Mesenchymal cell Elastin Collagen

Proteoglycan Ground substance Fibronectin

Procollagen Trophocollagen Macrophage

Adipose tissue Mast cells

**OBJECTIVES AND QUESTIONS**

1. What are the functions of connective tissue? (Hint: mechanical support, metabolite exchange, energy storage in the form of adipose tissue, inflammation, fibrosis).
2. Which collagen types form fibers? (Hint: I, II, and III). Aggregates? (Hint: IV and V). What is meant by periodicity? Can this be appreciated at the light microscopic level? (Hint: no).
3. Understand the classification of connective tissue. (Hint: based on ratio of cells to extracellular matrix or fibers and arrangement of fibers).
4. Understand the distinction between connective tissue proper, CT with special properties, (e.g., adipose, elastic, hematopoietic, mucous), and supporting CT (e.g., cartilage and bone).
5. Understand collagen synthesis (Hint: secreted by fibroblasts as procollagen, cleaved extracellularly to tropocollagen, polymerized).
6. What are the normal cells found in connective tissue and what are their functions? (Hint: see handout, e.g., mast cell – allergic response). Where are macrophages normally found? (Hint: see handout, rather than memorize the list, examine it and think about what is missing, e.g., GI tract, cardiac muscle, etc.).
7. What are the important components of extracellular matrix and what are their characteristics and functions? (e.g., collagen – flexible, high tensile strength, structural support; fibronectin – binds cells to matrix and to each other, etc.; see handout).
8. Understand the development of cells of CT. Which are derived from differentiation of Mesenchymal stem cells and which are derived from the blood and hence the bone marrow? (Hint: Mesenchymal 🡪 fibroblast, osteoblast, chondroblast, adipocyte, and probably mast cells although this is under debate; blood 🡪 macrophages, plasma cells, lymphocytes, eosinophils). Realize that a monocyte is a monocyte in the blood and macrophage in the tissue. The blood equivalent of the mast cell is the basophil (e.g., similar functions); but they probably are derived from different origins.