**STUDY GUIDE HEMATOPOIESIS AND STEM CELLS**

**VOCABULARY**

Granulocyte Neutrophil Basophil

Eosinophil Lymphocyte Monocyte

Platelet Azurophilic granule Specific granule

Red blood cell White blood cell Rouleaux

Megakaryocyte

**OBJECTIVES AND QUESTIONS**

1. Under normal conditions, what is the most common leukocyte in the blood? (Hint: PMN). Least Common? (Hint: basophil).
2. What is the precursor for platelets in the bone marrow? What is the major function of platelets (Hint: clotting) and what are the major products released by platelets following activation? (Hint: serotonin, thromboplastin, thrombosthenin).
3. **Know** the major functions of cells found in blood! (e.g., RBC – oxygen transport, PMNs – phagocytosis and killing of some bacteria, etc.).
4. Understand the basic types of lymphocytes and their main functions. (Hint: e.g., T-helper cells – secrete substances to help T and B cells).
5. Know which cell types have granules and which one specifically has both specific and Azurophilic granules (Hint: PMNs) but DO NOT memorize Table 12-3 (contents of the granules) except as outlined in the handout under functions of blood cells (e.g., basophils – histamine).
6. Be able to differentiate individual blood cells based on morphology.
7. Understand blood cell formation in general terms (e.g., bone marrow stem cell 🡪 RBC and WBC precursors 🡪 mature blood cells in circulation). Also understand the leukocytes do not usually stay in circulation long, they migrate into tissue to participate in the inflammatory response (Hint: remember the inflammatory lesion in the skin we looked at in lab?) What are the steps in getting a PMN to the site of inflammation and in killing bacteria? (Hint: migration, emigration/chemotaxis, endocytosis, intracellular killing).
8. What is the significance of polychromasia? (Hint: immature RBCs in circulation).
9. What is the significance of the darkly staining nucleus and minimal cytoplasm of lymphocytes in circulation? (Hint: heterochromatin inactive).