Practice 13 Blood and hematopoiesis

1. What is the hematocrit, how it can be obtained, and what are the normal values in men and women?
2. Graphically schematize the normocyte (normal erythrocyte), include the sizes, and define the terms describing deviations from the norm: anisocytosis and poikilocytosis. Provide the examples of abnormal erythrocytes.
3. How does the osmotic pressure of environment affect morphology of the erythrocyte? What is the osmolality of blood plasma?
4. Draw in correct size ratio: neutrophilic, basophilic and eosinophilic granulocyte (including arrangement of nuclear segments and specific granules), lymphocyte, monocyte, and thrombocyte.
5. Determine the normal number of erythrocytes, leukocytes and thrombocytes per a volume unit.
6. Create a table describing differential white blood cell count. For each type of leukocyte include normal values [in %]. Describe in words the increased and decreased numbers.
7. Create a brief scheme of hematopoiesis. Starting with morphologically distinct precursors (proerythroblast, myeloblast, megakaryoblast), graphically schematize the structure and staining of individual stages within a lineage.
8. Explain the terms „substantia reticulofilamentosa“, „enucleation - nuclear extrusion“, „endomitosis“, „demarcation membrane system (canals)“, „Barr’s body“, “azurophilic granules”. Which blood cells (developmental stages) these terms refer to?
9. What are the stages of embryonic/fetal hematopoiesis? When and where do they take place?

Recommended study materials: Presentations from practices and lectures, Atlas of Histology (online), Atlas of Cytology and Embryology (online), Junqueira's basic histology.