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LearnSmart Labs: Blood

General Lab Outline

Total Time: 2 hr, 15 min

- I. Core Concepts: Blood (15 min)**
- II. Blood Smear and Differential White Cell Count (40 min)**
- III. Hematocrit (20 min)**
- IV. Hemoglobin Content (20 min)**
- V. Blood Typing Test (20 min)**
- VI. Final Summary Questions (10 min)**
- VII. Reports**

Assessed Learning Outcomes

- 1. Core Concepts: Blood
 - a. Recall that blood is composed of plasma and the formed elements
 - b. Structure and function of the formed elements
 - i. Recall the structure and function of red blood cells
 - ii. Recall the structure and function of white blood cells
 - iii. Recall the structure and function of platelets
 - iv. Compare the structure and function of the formed elements
 - c. Understand the basis of blood typing
 - i. Recall the red blood cells are covered in antigens, and plasma contain antibodies for foreign antigens
 - ii. Match blood types and antibodies
 - iii. Explain when transfusion reactions occur
 - d. Recall how to safely handle human blood
- 2. **Blood Smear and Differential White Cell Count**
 - a. Pre-lab Briefing
 - i. Recall the steps to perform a blood smear
 - ii. Recall how to perform a differential white blood cell count
 - b. Identify different white blood cells
 - i. Identify platelets in a blood smear slide
 - ii. Identify erythrocytes in a blood smear slide
 - iii. Identify neutrophils in a blood smear slide
 - iv. Identify lymphocytes in a blood smear slide
 - v. Identify monocytes in a blood smear slide
 - vi. Identify eosinophils in a blood smear slide
 - vii. Identify basophils in a blood smear slide

- c. Stimulation of Blood Smear and Differential White Cell Count
 - i. Prepare a blood smear
 1. Add a drop of blood
 2. Smear the blood drop
 3. Let blood smear dry in the air
 - ii. Stain the blood smear
 1. Add Wright's stain to blood smear
 2. Let Wright's stain react for a suitable time
 3. Add distilled water to the slide with stain
 4. Let the stain and water mixture react for a suitable time
 5. Rinse the stained blood smear
 6. Let the slide air dry
 - iii. Perform the correct procedure without guidance
 - iv. Dispose of materials contaminated with blood in biohazard container
 - v. Perform a different count on prepared microscope slide
 - vi. Differential cell count
 1. Count the correct number of neutrophils
 2. Count the correct number of lymphocytes
 3. Count the correct number of monocytes
 4. Count the correct number of eosinophils
 5. Count the correct number of basophils
 - vii. Infer the patient's health problem from the results of the differential white cell count
 - d. Post-lab probing
 - i. Explain the outcome if the stain acts for the wrong time
 - ii. Identify the normal values of a differential's white blood cell count
 - iii. Know the relationship between an abnormal differential white cell count and likely diseases
3. Hematocrit
- a. Pre-lab Briefing
 - i. Recall how to prepare a blood sample for a hematocrit test
 - b. Stimulation of Hematocrit Test
 - i. Fill a capillary tube with blood
 - ii. Seal capillary tubes
 - iii. Separate blood and plasma in the centrifuge
 - iv. Measure the hematocrit for one blood sample
 - v. Test all 5 blood samples
 - vi. Balance centrifuge
 - vii. Recall how to place the capillary tubes in centrifuge
 - viii. Infer whether test results indicate doping
 - ix. Use safe blood handling practices
 - x. Avoid cross-contamination samples