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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