**Name…… Lab Day and Period…….**

**Student Laboratory Packet**

# Identifying Blood Cells

**A Laboratory Activity for the Living Environment**

## Background

Blood is a complex fluid tissue that transports materials throughout the body. Blood has both liquid and solid parts. The liquid portion of blood, plasma, consists mainly of water and proteins. It transports foods, wastes, salts, and hormones. The solid portion of blood consists of red blood cells, white blood cells, and platelets. Red blood cells carry oxygen to the body cells. White blood cells help the body fight infections. Platelets aid in the clotting of blood.

Karl Landsteiner discovered the ABO blood groups in the early 1900s. This important discovery made blood transfusions safe. In transfusions, the blood types of the donor and the recipient must be carefully matched. Transfusion of the wrong type of blood can result in agglutination, or clumping, of red blood cells. Agglutination is the result of an immune reaction between *antigens* on the red blood cells of the donor and *antibodies* in the blood plasma of the recipient.

## Objectives

Identify blood cells using microphotographs

## Procedures and Observations

### PART I. IDENTIFYING BLOOD CELLS

You will be using photographs of human blood cells (found on page 5) contained in a human blood smear. A blood smear is made by spreading a drop of blood thinly across a microscope slide. The smear is then stained and photographed using a microscope. Staining makes the blood cells more visible and more easily photographed

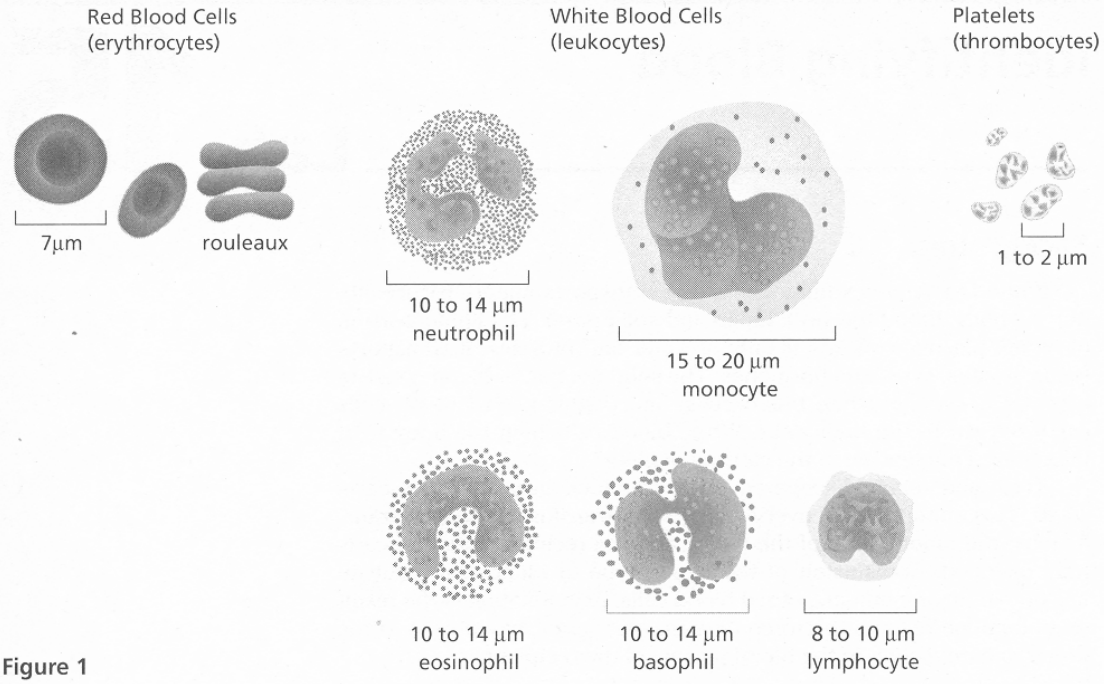


Figure 1

By far the most numerous cells that you see on the slide are red blood cells. You may see them in stacks of cells called *rouleaux*. Look for individual cells to observe their shape.

**a.** *Use colored pencils to draw several red blood cells in the space below. Try to depict the true shape of the cells in your drawings.*

**b.** *Do the red blood cells appear to have a nucleus?*

c. Estimate the number of red blood cells under low power in the photograph on page 5

Platelets are fragments of larger cells called megakaryocytes, which are found in bone marrow. Platelets are smaller than red blood cells, they are disk-shaped, and they stain a pale-blue color.

**2.** Locate some platelets in the blood smear.

In the space provided, draw a few platelets as they appear in the photographs. Keep their size in scale with the red blood cells you drew earlier

e. Estimate the number of platelets under low power in the photograph on page 5

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White blood cells are larger and less numerous than red blood cells. There are several types of white blood cells that can be recognized by their size, the shape of their nuclei, and the staining of their cytoplasm.

**3.** Search the smear for white blood cells. See Figure 1.

**f.** *Use colored pencils to draw several different kinds of white blood cells in the space provided. Again, keep the size of your drawings to scale.*

g. Estimate the number of white blood cells under low power in the photograph on page 5

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## Analysis and Interpretations

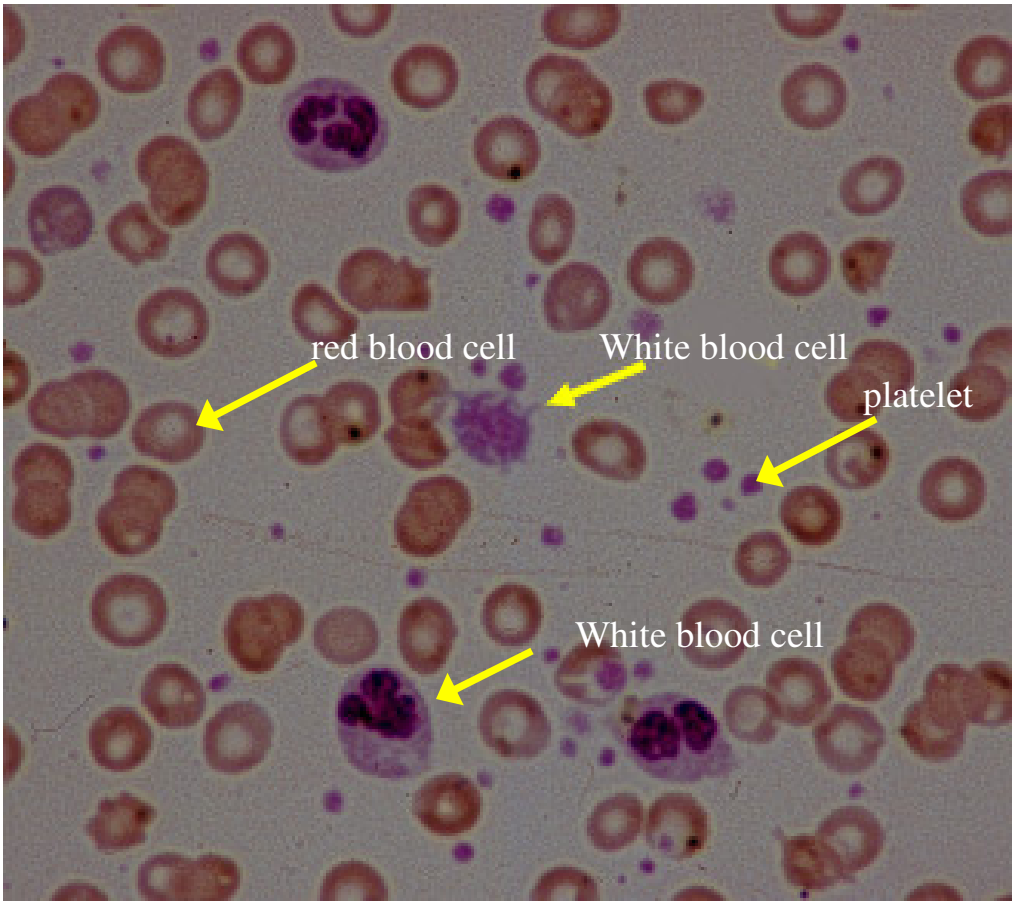
1. Describe the size, appearance, and relative number of red blood cells in the blood smear.

2. Describe the size, appearance, and relative abundance of white blood cells in the blood smear.

3. Describe the size, appearance, and relative abundance of platelets in the blood smear.

4. If a blood smear shows a higher than normal number of white blood cells, what might this indicate to a doctor?

LOW POWER




HIGH POWER