    c. Post-lab Probing
        i. Explain the purpose of a hematocrit test
        ii. Recall the normal hematocrit levels
4. Hemoglobin Content
    a. Pre-lab Briefing
        i. Recall how to prepare a blood sample for a hemoglobin test
    b. Simulation of Hemoglobin Test
        i. Test the three blood samples and positive and negative controls
        ii. Stir until all hemoglobin is out of the red blood cells
        iii. Measure the hemoglobin content
        iv. Use safe blood handling practices
        v. Avoid cross-contaminating samples
        vi. Recall why hemolysis applicators are used
        vii. Infer whether test results indicate doping
    c. Post-lab Probing
        i. Explain the purpose of hemoglobin test
        ii. Recall the normal hemoglobin content
5. Blood Typing Test
    a. Pre-lab Briefing
        i. Recall how to determine the blood type
        ii. Recall which transfusions lead to transfusion reactions
    b. Simulation of Blood Typing Test
        i. Test all blood samples
        ii. Label the test slides
        iii. Recall how the slides should be labeled
        iv. Add blood from only one patient to each slide
        v. Add the test serum to the labeled spot on the slide
        vi. Determine the blood type
        vii. Use safe blood handling practices
        viii. Avoid cross-contaminating blood samples
        ix. Recall why toothpicks are used in this experiment
        x. Use your results to determine who can donate blood to whom
    c. Post-lab Probing
        i. Realize the need for type O packed cell transfusion when donor and recipient do not exactly match
6. Final Summary Questions
    a. Differentiate between the purpose of the various blood tests

INSTRUCTOR NOTE: Safety requirements for blood handling may vary slightly from those used in this lab. Students may become frustrated if they begin to miss questions. Remind them that when missing a question they should remediate using the provided learning resource, most often a Slide, or the Library for that topic.

Student Instructions for Lab Experiments

Overview for All Experiments:

In the following exercises you will perform tests that allow you to examine the nature of blood and also let you evaluate different samples of blood.

These tests are useful diagnostic tools for physicians because blood composition reflects the status of many body functions and malfunctions.

Before getting started on the actual lab, I would like to go over some core concepts related to blood testing. Then you will proceed with the experiments.

Differential WBC Count:

In this experiment, you will prepare a microscope slide with a blood smear and perform a differential white blood cell count.

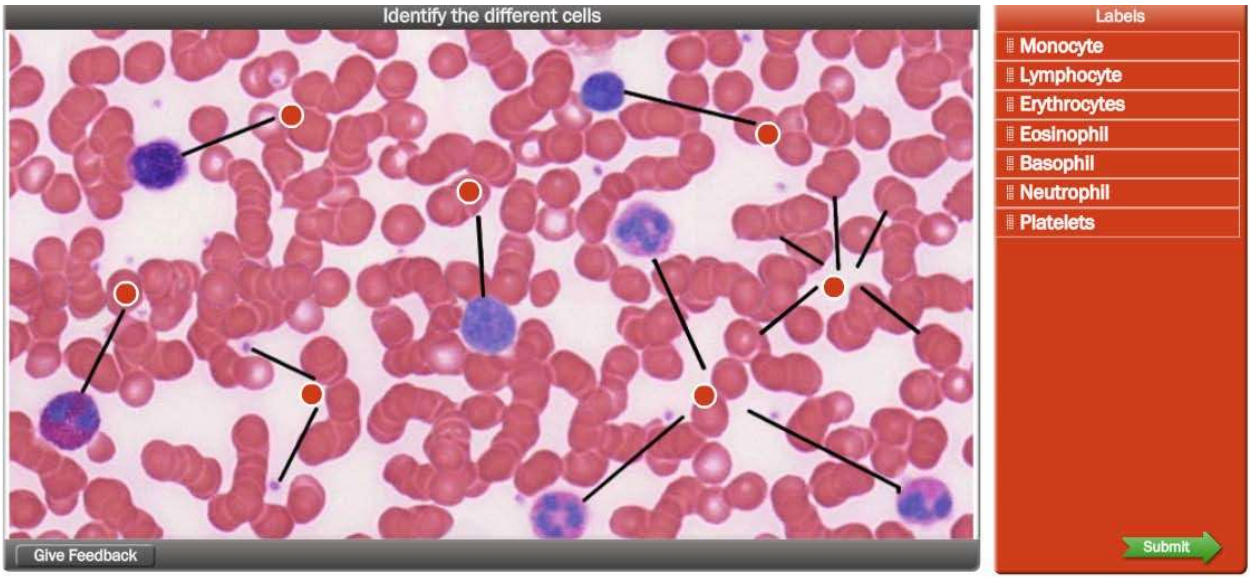
Before you start, I want to make sure that you have the necessary knowledge to execute the experiments.

Let's make sure you know how to prepare a blood smear microscope slide and how to perform a differential white blood cell count.

Important to Know About Blood Samples:

- What is a blood smear and how to make one
- How to stain a blood sample
- How to identify the different white blood cells
- What is a differential white blood cell count

Drag the labels from the right hand side to the correct locations on the slide. Select "Submit" when you are done.



INSTRUCTOR NOTE: Often the Coach will appear at the top right. Sometimes students think she is in the way of completing the exercise. However, if they are patient, she will disappear when she completes talking. Students can reactivate her and make her repeat instructions by clicking on her refresh icon.

Drag the labels from the right hand side to the correct locations on the slide. Select "Submit" when you are done.

Simulator:

Click the Instructions button and follow the steps to make a blood smear.

Move the slide to the microscope to view it.

First, correctly focus the microscope slide. Move to the x40 objective to complete the count.

Hematocrit:

In this experiment, you will measure the hematocrit of blood samples.

Before we begin, I want to make sure you have the knowledge you need to execute the experiment and interpret your results.

Let's learn more about the hematocrit of a blood sample

Important to Know About Hematocrit Testing:

- What is the hematocrit value
- How is a hematocrit test performed

Drag the labels from the right hand side to the correct locations on the slide. Select "Submit" when you are done.

Simulator:

Click the Instructions button and follow the steps to determine the hematocrit.

Compare the hematocrit to blood doping samples.

INSTRUCTOR NOTE: Students will see a number of possible combinations of doping results and hematocrit levels. If they repeat the experiment, they should expect different results. Each student should have different results.

Hemoglobin Content:

In this experiment, you will measure the hemoglobin content of blood samples.

Before we begin, I want to make sure you have the knowledge you need to execute the experiment and interpret your results.

Let's learn more about the hemoglobin content of blood and how to determine it.

Important to Know About Hemoglobin

- Hemoglobin in red blood cells
- How to measure the hemoglobin content of blood

Student labeling activity before entering lab simulation