

# Blood Lab

## **Blood Typing Protocol:**

1. Get 4 of the plastic trays and rinse them thoroughly. Label each tray with the name of the individual whose blood you are testing, using a wax pencil.
2. Obtain a vial of simulated blood and place 2-3 drops of blood in each of the three wells (A, B, & Rh) of the correct plastic tray.
3. Place 2-3 drops of each of the typing sera in the appropriate well of the tray (anti-A goes in the A well, anti-B in the B well and anti-Rh in the Rh well).
4. Mix the blood and serum together with a toothpick. DO NOT USE THE SAME END OF THE TOOTHPICK IN TWO DIFFERENT WELLS!!! Always use a clean toothpick for mixing in a new well.
5. Let the blood sit for approximately a minute and then begin examining the wells for agglutination reactions. If agglutination has occurred, you should see small dark spots within the well. These spots are easier to see against a white background, so put your tray over a blank sheet of paper or a paper towel.
6. Record the blood type of this individual on the Blood Lab Worksheet.
7. Repeat the above steps and determine the blood types for the simulated blood from each of the other three individuals. Again, record this information on the blood lab worksheet.

## **Blood Cell Counts**

A common physiological assessment of blood is the determination of the number of blood cells present. In this lab, you will perform two types of cell counts: 1) Hematocrit, a measurement of the number of red blood cells currently in the blood; and 2) Differential white blood cell count, a determination of the percentage of each type of white blood cell in the blood. Your data for this portion of the lab along with the blood typing data will be recorded on the [Blood Lab Worksheet](#). Please print out a copy of the worksheet to be turned in with your results.

## **General Protocol**

You will be assigned a number between 1 and 24. This number will determine the set of slides you use for your cell counts. Record this number on your Blood Lab Worksheet. Use the **same** number for both the red and white blood cell counts. Once you have accessed the Cell count home page use the pull-down menu under your assigned number to select either the red (Hematocrit) or white (Differential white blood cell) blood cell count option.

## Hematocrit Protocol

Red blood cell counts employ a special microscope slide called a [hemocytometer](#). A hemocytometer is a special glass slide with a small chamber, or counting area, for counting cells in a given volume. The counting area has a grid on it to allow for easier counting of the cells. This technique allows for an estimation of the total number of red blood cells present in a sample. The large numbers of red blood cells present in blood make it impossible to count every cell. Instead, you will use a simulated hemocytometer to estimate the number of RBCs present.

After you select your "Red blood cell count, you will be presented with 4 images, or "slides", of blood cells. Each image has a grid superimposed on it, much like the grid found on a hemocytometer slide. The grid divides the area to be counted into 16 smaller sections, allowing you to count the red blood cells in smaller, manageable groups. Count all of the red blood cells in each of the grid squares. **DO NOT** count a cell if **ANY** part of the cell touches **ANY** part of the **OUTER** grid lines. If a cell touches or overlaps any of the **INNER** grid lines, count the cell but be sure to count it only once. There may be white blood cells present in these samples. The white blood cells are not to be counted. Count only the red blood cells. Repeat this procedure for each of the four images.

Count and record the number of red blood cells in each square and, ultimately, the entire area of the grid. Record each of your cell counts in the table on the [Blood Lab Worksheet](#). Add up your counts from all 4 slides and record the total on the "Total" line of the worksheet. Once you have added all of your counts, multiply your total by 2500 (Note: **DO NOT** use 10,000 as indicated in the lab manual). Record this value, your RBC estimate, in the appropriate blank on the worksheet.

## Differential White Blood Cell Count Protocol

Select the appropriate White blood cell count. You will be presented with a series of blood smear slides. For each slide, you will identify and record the number of each of the 5 different types of [leukocytes](#) present. Record your white cell count data on the [Blood Lab Worksheet](#). For each slide, identify the WBCs present and place a tick mark next to the name of the white blood cell you see. When you have counted 100 **TOTAL** white blood cells (all WBCs together, **NOT** 100 of each type of WBC) **STOP!** Count the number of ticks for each cell type and determine the percentage of each type of leukocyte present in your sample. Record the percentages in the table on your worksheet.

When you are finished with both cell counts (red and white), answer the questions at the bottom of the worksheet.