



Fill-in Answer Sheet Instructions

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Name _____

Date _____

Interplanetary Blood Typing Battle

Prelab Analysis

Planet	Surface Alien(s)	Defense System	Aliens from this planet can visit:	This planet can receive visitors from:
A				
B				
AB				
O				

Name

Date

Prelab Questions

1. Shown in the table below are the antigens present on the blood cells of four different people. Fill in the corresponding ABO blood type for each person and the antibodies expected to be found in each person's blood.

Blood Type	Red Blood Cell Antigen	Antibody in Blood Plasma
	A	
	B	
	AB	
	Neither	

2. For each blood type in the table below, fill in the expected agglutination result from mixing the blood with each of the antibodies.

Blood Type	Anti-A	Anti-B	Anti-Rh
A+			
A-			
B+			
B-			
AB+			
AB-			
O+			
O-			

Name _____

Date _____



Materials

vial synthetic anti-D (anti Rh) serum
 vial synthetic anti-A serum
 vial synthetic anti-B serum
 blood typing slide
 4 blue mixing sticks
 4 yellow mixing sticks
 4 white mixing sticks
 vial of Sample 1 synthetic blood
 vial of Sample 2 synthetic blood
 vial of Sample 3 synthetic blood
 vial of Sample 4 synthetic blood
 paper towels
 access to tap water and a sink

Key Question

How is blood type determined?

In this lab, you will determine the blood type of four different synthetic blood samples using antisera to the A, B, and Rh (D) antigens that exist on human red blood cells. The procedure for the blood test is the same that would be used for a real blood test, but, for convenience and safety, the blood and antisera are synthetic and contain no biological materials.

Procedure

- Using the dropper vial, place a drop of the Sample 1 synthetic blood sample in each well of the blood typing slide. Close the cap on the dropper vial. To prevent cross contamination, always close the cap on one vial before opening the next vial.
- Add a drop of synthetic anti-A serum (blue) to well A. Close the cap.
- Add a drop of synthetic anti-B serum (yellow) to well B. Close the cap.
- Add a drop of synthetic anti-Rh serum (clear) to well Rh. Close the cap.
- Using a different-colored mixing stick for each well (blue for anti-A, yellow for anti-B, white for anti-Rh), gently stir the synthetic blood and antiserum drops for 30 seconds. Remember to use a new mixing stick for each sample to avoid contamination of your samples.
- Examine the resulting films of liquid mixture in the well. If a film is uniform in appearance, there is no agglutination. If the sample is granular, agglutination has occurred.
- Fill in the column for Sample 1 in the following Data Table, answering *yes* or *no* as to whether agglutination occurred with each antiserum.
- Thoroughly rinse the blood typing slide and then repeat steps 1 through 7 for synthetic blood Samples 2, 3, and 4.

Data Table

	Sample 1	Sample 2	Sample 3	Sample 4
Anti-A				
Anti-B				
Rh				
Blood Types				

Name _____

Date _____

Questions

1. At 1:00 a.m., someone breaks a window in the back of a store and robs the safe. On the way out, the thief is cut on a piece of broken glass. A forensic team collects and tests a sample of blood left behind by the thief. It is O⁻. The police bring in a suspect with a cut forearm who was arrested just three blocks from the store. The person resembles someone seen leaving the store at the time of the robbery. A sample of the suspect's blood is taken and tested for blood type. Once the suspect's blood is mixed with anti-A serum, it is immediately clear that the suspect is not the person who was cut on the broken glass in the store. How did the test indicate that fact?

2. Suppose the same suspect's blood does not agglutinate when tested with anti-A or anti-B, but does agglutinate when tested with anti-Rh. Would this connect the suspect with the crime scene? Explain your answer.

3. Tom and Jane participate in a Red Cross blood drive. Both are first-time donors. As part of the screening process, their blood is typed. Tom is A⁺. Jane is AB⁺.
 - a. What ABO antibody is found in Tom's blood?

 - b. What ABO antigens are found in Jane's blood?

4. The same Tom and Jane's blood donations are sent to a processing center where the blood cells are separated from the plasma in each of the two samples. The separated cells and plasmas are then sent to a hospital. A blood researcher wishes to use Tom's blood in an attempt to extract and identify the A antigen. Should she attempt the extraction process on his blood cells or on his plasma?