



Blood Typing 101

What is “blood type?”

Blood type refers to the combination of proteins found on the surface of a person’s red blood cells. That means that the proteins on **your** cells determine your blood type. We are going to look at two of the blood types that are the most common: **ABO** and **Rh**.

Materials

Cow’s Milk	3 small bowls
Water	4 spoons
Vinegar	4 cups
Red food coloring	
Permanent marker	
Tape	

Set-Up

Prep your containers:

- Using the tape and a permanent marker, create labels for each of the 4 cups. Each of the 4 cups should be labeled as one of the following:
 - Blood
 - Anti-A Serum
 - Anti-B Serum
 - Anti-D (Rh) Serum
- Each of the 3 small bowls should be labeled as one of the following:
 - Blood + Anti-A
 - Blood + Anti-B
 - Blood + Anti-D (Rh)

Make your samples:

- In the cup labeled “Blood,” add $\frac{1}{4}$ cup milk. Add red food coloring a few drops at a time stirring in-between to make the milk look like blood. Repeat until it becomes a convincing hue.
- In each of the cups labeled Antiserum, add $\frac{1}{4}$ cup of water.
- One person, without telling the others, should choose either One or Two of the cups containing Antiserum to add 1-1 $\frac{1}{2}$ tablespoons of vinegar to.
- Put ONE spoon in each of the cups of Antiserum. Once a spoon is in a cup, do not use it for anything but mixing with that Antiserum, or you will cross-contaminate.
- Line up the small bowls and cups so that you can read each of the labels on them.





Activity

Scenario

You are a medical technician in a blood bank at the local hospital. You have just received a write-up about a patient who needs a blood transfusion. In order to properly identify what blood to give them, you first have to figure out what their blood type is.

Blood Typing

To test what blood types a patient will react to, a small sample is taken from the patient and exposed to different antisera (plural of antiserum). Antisera are solutions that contain samples of the proteins that we want to test against.

Instructions for Testing

1. In each of your small bowls, place 2 spoonfuls of "blood."
2. In the bowl labeled "Blood + Anti-A," add 1 spoonful of Anti-A Serum. Mix.
3. In the bowl labeled "Blood + Anti-B," add 1 spoonful of Anti-B Serum. Mix.
4. In the bowl labeled "Blood + Anti-D (Rh)," add 1 spoonful of Anti-D (Rh) Serum. Mix.
5. Observe each bowl for a reaction. Discuss what you see.

You will know if a reaction occurred if your blood agglutinates, or clumps together.

If your blood agglutinates (clumps together) in:	Your blood type is:
Anti-A and Anti-B	AB
Anti-A	A
Anti-B	B
Anti-D (Rh)	Rh+
Neither Anti-A or Anti-B	O

Background Information

ABO Blood Group System

The ABO system refers to a group of proteins: we call these proteins A and B. In this blood system it is possible for a person to express both A and B proteins, creating the combined AB blood type. There are also some people who don't have either A or B proteins. These individuals are blood Type O.

Rh blood type refers to a single protein called the Rh factor. Some people have this protein while others do not. If your blood cells have the protein then you are Rh-positive (+). If you don't then you are Rh-Negative (-).

Why is this important?

The proteins on the surface of a person's red blood cells are used by the body's immune system to help determine what does and does not belong in the body. Blood cells that differ from the ones found in a person's body can be attacked by immune cells. These immune reactions are very severe and dangerous for the patient. To avoid this, medical professionals match the patient with a donation that matches their own blood, thus preventing a serious reaction.

