

ACTIVITY 9

Investigating Blood Types

Background

Blood is a red, sticky fluid. The watery part is called plasma. Several kinds of cells are suspended in the plasma: red blood cells, white blood cells and platelets. Many chemicals are also suspended or dissolved in the plasma, including proteins, sugars, fats, salts, enzymes and gases. Each person's blood has certain inherited characteristics that distinguish it from the blood of other people, but only recently have scientists developed the ability to identify most of these characteristics. Until the 1980s, blood was primarily differentiated according to the presence of three substances on the outside of red blood cells, called antigens. The presence or absence of A and B antigens on the blood determines a person's blood type. The other important blood antigen is the Rh factor, or D antigen. If a person has the D antigen, he/she is Rh positive. If a person lacks it, she/he is Rh negative. In order to type a person's blood, antibodies made to the antigen (called agglutinins) are added to a few drops of blood. If clumping occurs, that antigen is present. Once all antigens have been tested then the blood type is known.

Instructions and Safety Notes

You have been given 4 different victims' simulated blood samples and it is your job to determine the type of blood each victim has, using the following procedure. (CAUTION – WEAR GLOVES)

Place 2 drops of one blood sample into the first dimples on the first two rows of your dimple tile. Complete the rows with the other blood samples as shown in Figure 3.

Add a drop of Anti-A antiserum to each dimple in the first row and record your observations. If you're not sure of a result, add another drop.

Add a drop of Anti-B antiserum to each dimple in the second row and record your observations. If you're not sure of a result, add another drop.

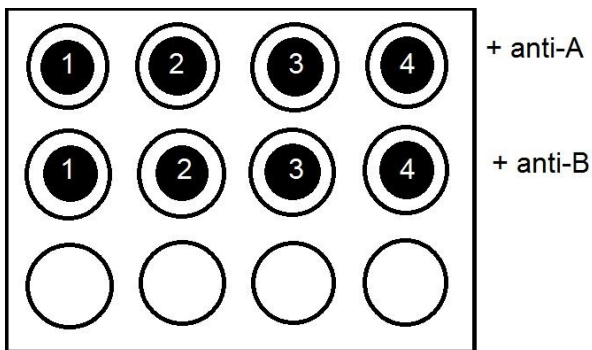


Figure 3: Blood samples on dimple tile

Observations

Record all observations (i.e. has clumping occurred?) in the following table:

| Victim # | Observations with anti-A. Did clumping occur? | Observations with anti-B. Did clumping occur? |
|----------|--------------------------------------------------|--------------------------------------------------|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |

Conclusion

Based on your observations and using the following table, determine the blood type of each victim and record in the final table.

| Anti-A agglutinin + Blood: Clumping Occurs? | Anti-B agglutinin + Blood: Clumping Occurs? | Blood Type |
|------------------------------------------------|------------------------------------------------|------------|
| YES | NO | A |
| YES | YES | AB |
| NO | YES | B |
| NO | NO | O |

| Victim # | Blood Type | Victim # | Blood Type |
|----------|------------|----------|------------|
| | | | |
| | | | |