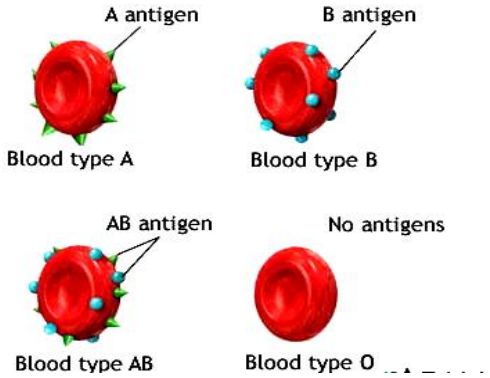
Blood Groups

ABO Blood Groups

ABO blood typing is based on the presence or absence of two possible antigens, called **type A antigen and type B antigen**, on the surface of red blood cells. The presence of these antigens depends on the particular inheritance of the person .

A person with type A antigen on the surface of the red blood cells has type A blood; one with type B blood has type B antigen on the surface of the red blood cells. **When both antigens are present , the blood is type AB , When both antigens are absent , the blood is type O ,**



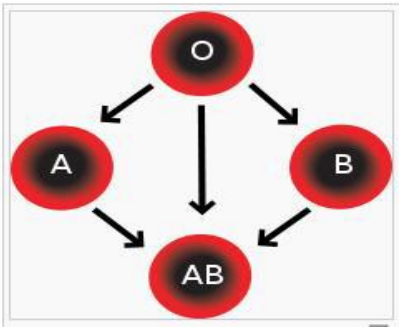
The antigen and the antibody in different blood groups is as follows:-

Blood Type	Antibody	Antigen
A	Anti - B	A
B	Anti - A	B
AB	--	A and B
O	Anti - A & Anti - B	--

A person with type A blood has anti-B antibodies in the plasma; a person with type B blood has anti-A antibodies in the plasma; a person with type O blood has **BOTH** antibodies in the plasma , and a person with type AB blood has **NO** antibodies in the plasma . These antibodies are not present at birth, but they appear over the course of several months after birth.

Blood group compatibility is very important when transfusions of blood are done. The antibodies in the plasma **must not** combine with the antigens on the surface of the red blood cells to avoid blood agglutination and hemolysis .

Type O blood is sometimes called the **universal donor** because it has no antigens on the red blood cells and can be given to any other type, and type AB blood is sometimes called the **universal recipient** because this blood type has no antibodies in the plasma and can receive any other type.



Rh Antigen :

In addition to the blood group (A, B, O, AB), the surface of RBCs has another antigen (antigen – D) , also called "the Rh factor" . According to Rh , blood type is written as either positive (**present**) or negative (**absent**) , e.g. A+ means that a person has A and Rh antigens . Most people (85%) are Rh^+ . This factor does not affect our health except during pregnancy and blood transfusion .

Recipient [1]	Donor[1]							
	O−	O+	A−	A+	B−	B+	AB−	AB+
O−	✓							
O+	✓	✓						
A−	✓		✓					
A+	✓	✓	✓	✓				
B−	✓				✓			
B+	✓	✓			✓	✓		
AB−	✓		✓		✓		✓	
AB+	✓	✓	✓	✓	✓	✓	✓	✓

Blood Group Test

Materials

1. Glass or plastic slides.
2. Applicator sticks
3. Cotton
4. Lancet
5. Sterile

Reagents

a. Anti-A b. Anti-B c. Anti-Rh

Procedure

1. Place 1 drop of Anti-A and 1 drop of Anti-B 1 drop of anti-Rh on a clean properly labeled glass or plastic slide.
2. Add 1 drop of RBCs to be tested to each drop of reagent.
3. Mix each drop thoroughly using separate applicator stick over area approximately
4. Move the slides slowly for a period not exceeding two minutes.
5. Read macroscopically for agglutination.
6. Record test results.

Cell Grouping			ABO Grouping
Anti-A	Anti-B	Anti-Rh	
+	0	+	A+
+	0	0	A^-
0	+	+	B+
0	+	0	B^-
0	0	+	O+
0	0	0	O^-
+	+	+	AB+
+	+	0	AB^-

(+) = Agglutination (**0**) = No agglutination