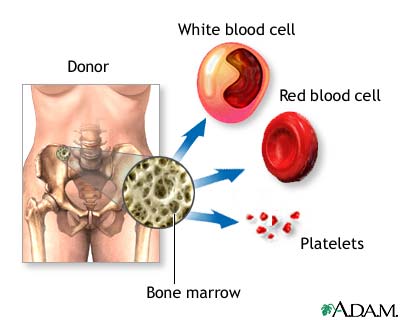
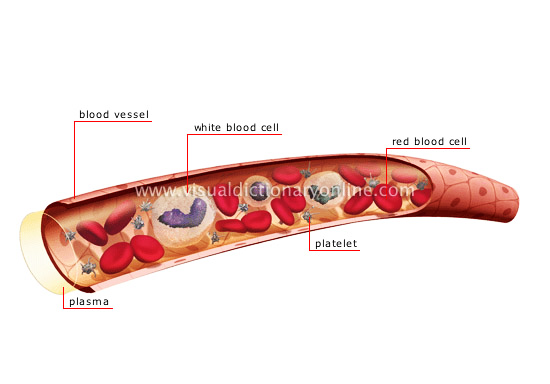
**Hematology tests**

**`**



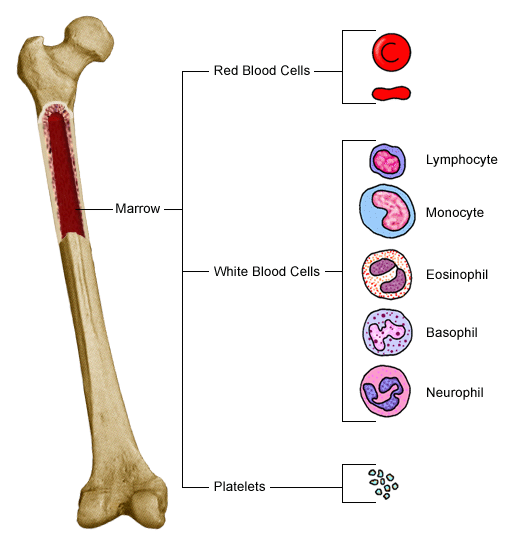
**-1-**

**THE BLOOD**

**The general functions of blood are transportation, regulation, and protection. Materials transported by the blood include nutrients, waste products, gases, and hormones. The blood helps regulate fluid–electrolyte balance, acid–base balance, and the body temperature. Protection against pathogens is provided by white blood cells, and the blood clotting mechanism prevents excessive loss of blood after injuries.**

**BLOOD CELLS**

**There are three kinds of blood cells: red blood cells, white blood cells, and platelets. Blood cells are produced from stem cells in hemopoietic tissue.**

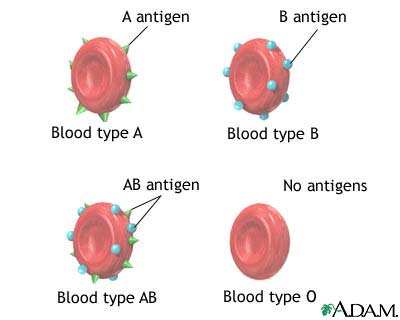


**-3-**

**BLOOD GROUPS**

**Blood Types**

**Our blood types are genetic; that is, we inherit genes from our parents that determine our own types. There are many red blood cell factors or types; the two most important ones: the ABO group and the Rh factor.. The ABO group contains four blood types: A, B,AB, and O. The letters A and B represent antigens(protein-oligosaccharides) on the red blood cell membrane. A person with type A blood has the A antigen on the RBCs, and someone with type B blood has the B antigen. Type AB means that both A and B antigens are present, and type O means that neither the A nor the B antigen is present. Circulating in the plasma of each person are natural antibodies for those antigens not present on the RBCs. Therefore, a type A person has anti-B antibodies in the plasma; a type B person has anti-A antibodies; a type AB person has neither anti-A nor anti-B antibodies; and a type O person has both anti-A and anti-B antibodies.**

****

***Introduction and principle***

**Blood grouping isbased on the presence of antigen (agglutinogen) on the RBC membrane. The main types of these antigens are A, B, and D. Accordingly, blood groups are classified into ABO blood group and Rh (D) blood group.**

***Slide Method*Material and Instruments   
1-Anti-A serum.  
2- Anti-B serum.  
3- Anti-D serum.  
These anti-sera are available commercially.  
4-Slide.  
5- Microscope.  
6- Applicator sticks for mixing.**

**Table 1: ABO grouping.**

**AB**

UNIVERSAL RECIPIENTS

Because AB blood group people make nither anti-A nor anti-B ANTIBODIES

**O**

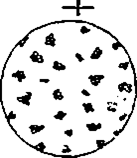
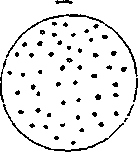
**UNIVERSAL DONOR**

**Because O blood group people have neither A nor B antigens on their red cell membranes.**

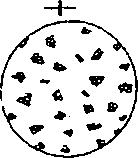
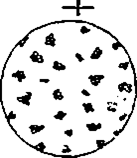
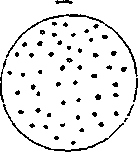
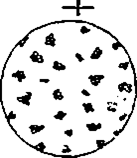
**Reaction of subject's cells to:**

**AB**

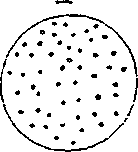
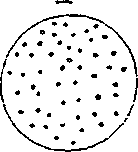
**Anti-A sera Anti-B sera Blood group**

** **

**A**

**  **

B

** **

**o**

**NOT**

**---------------------------------------------------------------------**

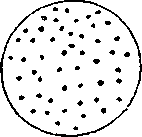
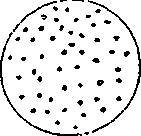
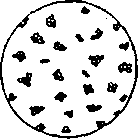
**The Rhesus system**

**The red blood cell membrane antigen important here is the Rhesus (Rh) antigen or Rhesus factor.About 85% of people have this antigen; they are Rhesus positive (Rh+) and do not therefore make anti-Rhesus antibodies.The remaining 15% have no Rhesus antigen (they are Rhesus negative,or Rh-).**

**The blood group and Rh- system are important in blood transfusion and in a disorder affecting the fetus and neonatal infants-”haemolytic disease of the new born”.**

**Table 3: Combining ABO blood group and Rh (D) blood group**

**Reaction of subject's cells to:**

**Anti- A Anti- B Anti- D Rh (D)group   **

**B-**