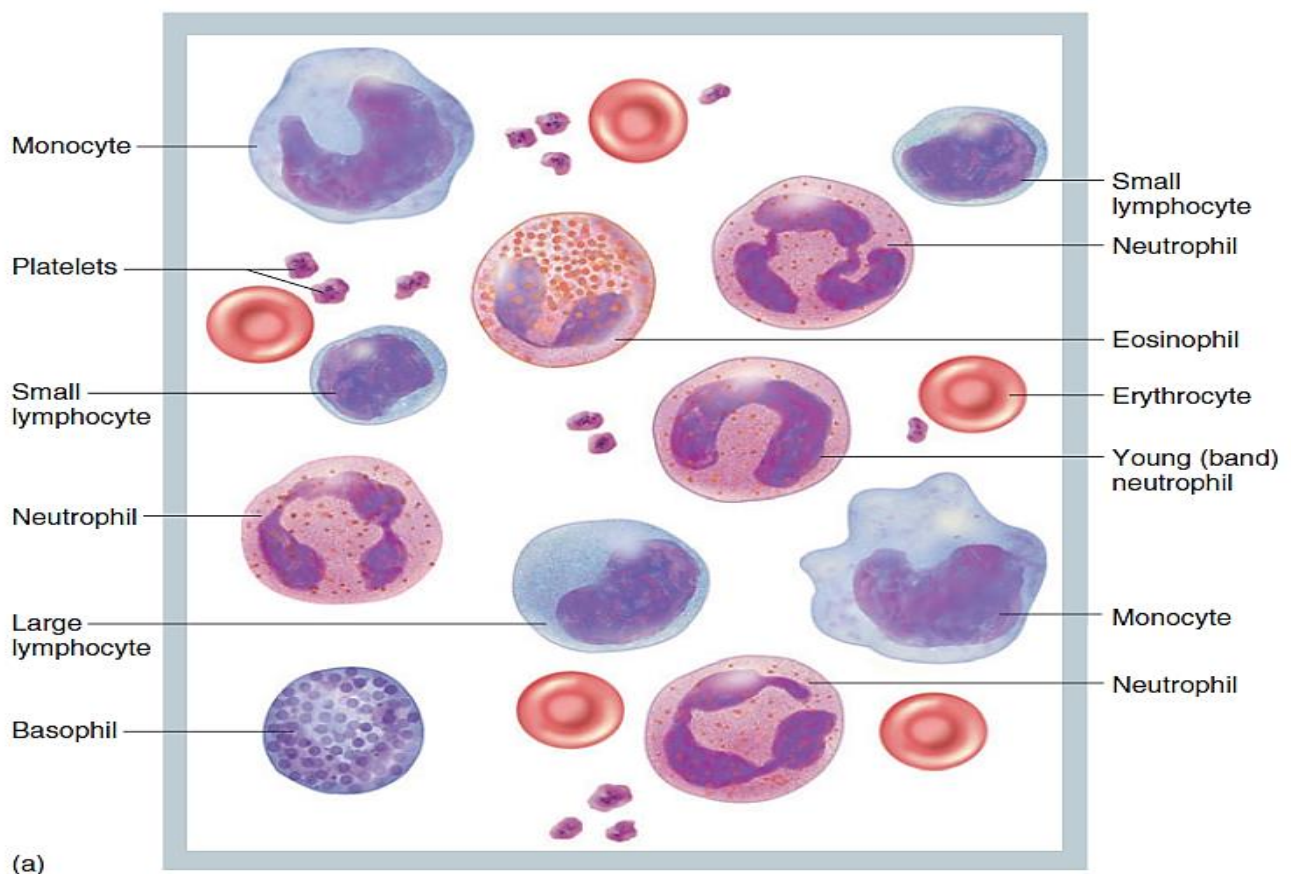


Blood

Blood is type of connective tissues called vascular tissue. The blood include extra cellular part called plasma formed 55% and cellular part formed 45% which include the blood cells.

There are three types of blood cells:

- 1. Erythrocytes = Red Blood Corpuscles (R.B.C.)**
- 2. Leucocytes = White Blood Cells (W.B.C.).**
- 3. Platelets.**



1.Erythrocytes = Red Blood Corpuscles (R.B.C.).

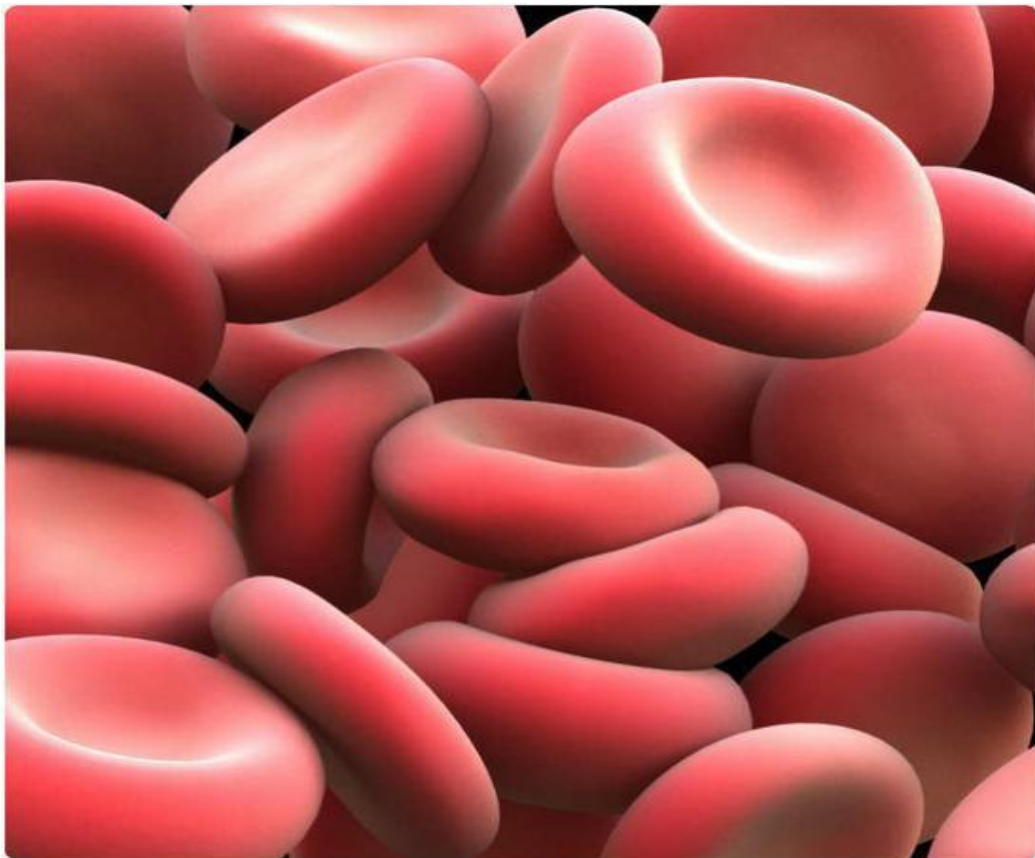
Red blood cells are biconcave discs, they have no nucleus and cytoplasmic organelles. They contain a red coloured protein called hemoglobin.

***Their main function is in gas transport, mainly of O₂ and also carry CO₂.**

***The normal concentration of (R.B.C.) in blood is:**

***In men: (4.3 - 5.6) million per microliter (mcL) of blood.**

***In women:(3.9 - 5.1)million per microliter(mcL) of blood for.**



2. Leucocytes = White Blood Cells (W.B.C.):

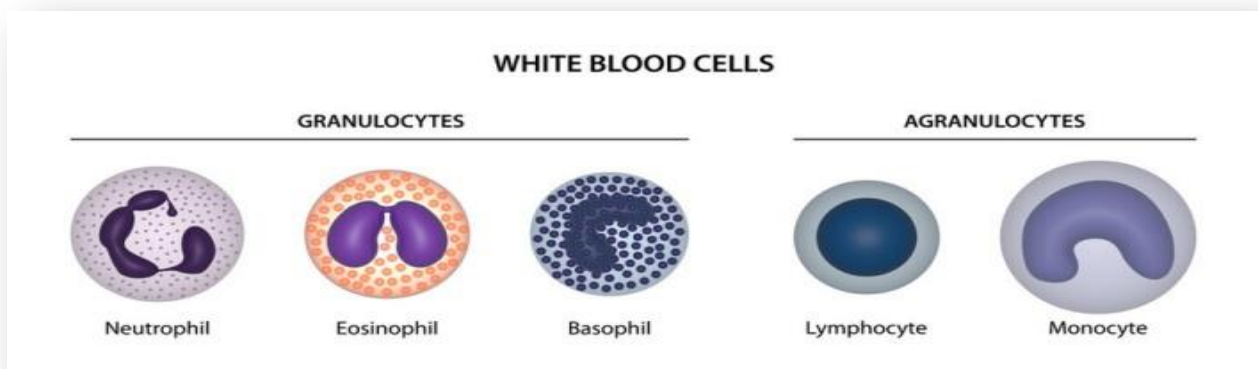
Leucocytes are the largest blood cells. They account for only about 1% of the blood volume.

* Leucocytes are different from erythrocytes in:

1. They are true cells, each leucocyte having a nucleus, mitochondria, and other organelles.
2. They do not contain Hb.
3. Leucocytes can actively move while erythrocytes do not have mobility of their own.

There are two main types of (W.B.C.):

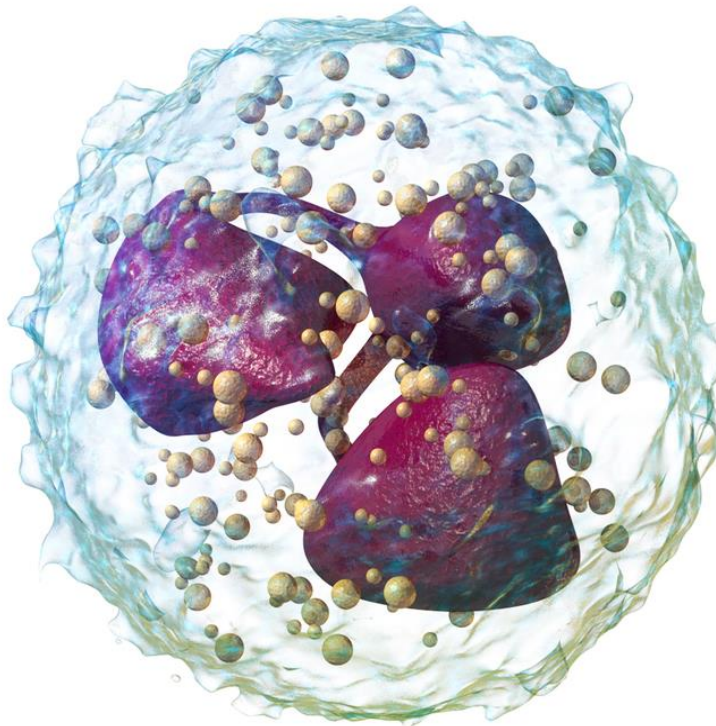
1. Granulocytes: which contain granules in their cytoplasm: and they (Neutrophils, Eosinophils and Basophils.)
2. Agranulocytes : did not contain granules in their cytoplasm: (Monocytes and lymphocytes)



Granulocytes:

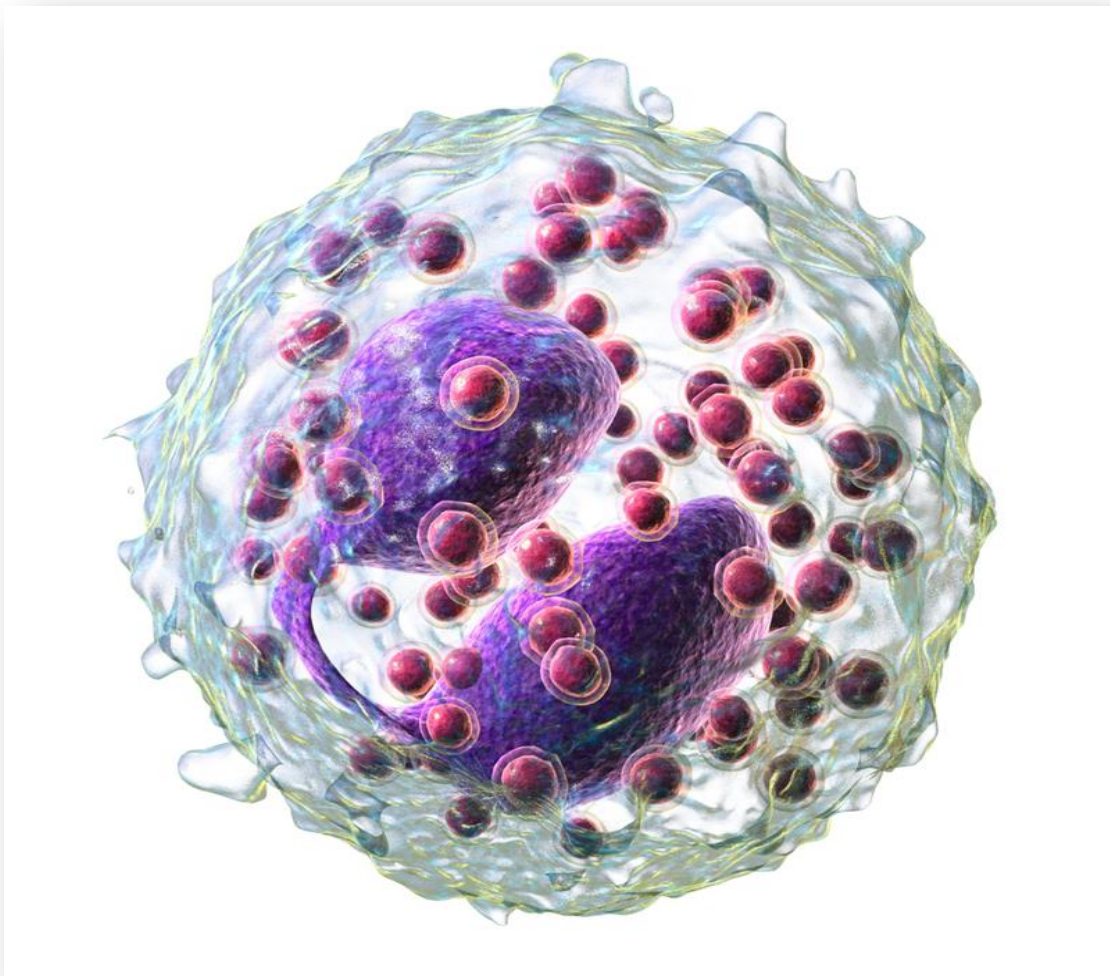
1. Neutrophils:

- A. Represent 60-70% of total WBC.**
- B. Have short half life 6-7 hours in blood and 1-4 days in the tissues.**
- C. With nucleus consisting of 2-5 lobes.**
- D. Have phagocytic activity against bacteria and other small particles.**



2.Eosinophils:

- A. Constitute 2-4% of leukocytes in normal blood.**
- B. Live in circulation about 10 hours and 10 days in tissues.**
- C. Have bilobed nucleus, The cytoplasm contains large granules.**



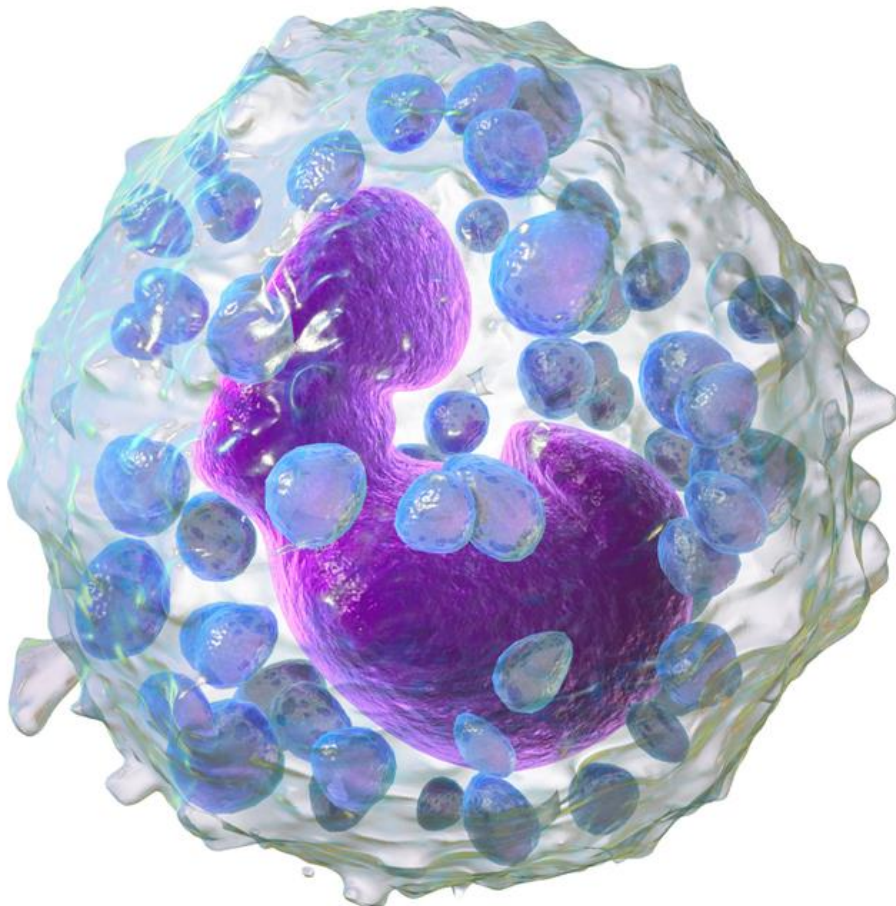
3. Basophils:

A. Make up less than 1% of blood leukocytes.

B. The nucleus is divided into irregular lobes or S shaped.

C. Cytoplasm contains very large granules.

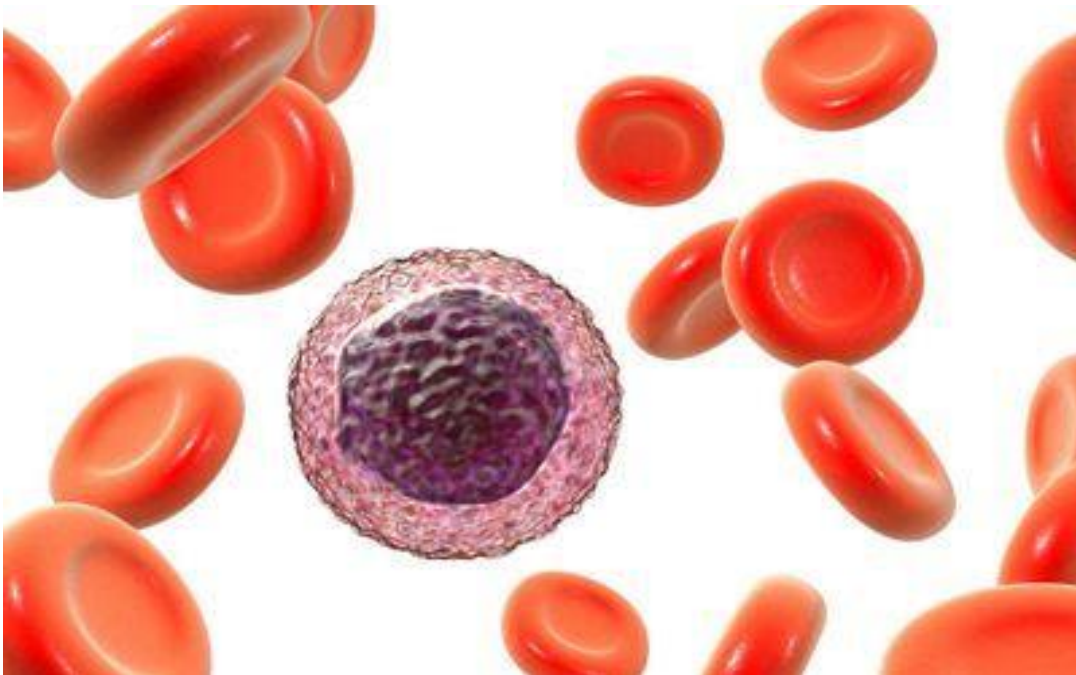
A. play an important role in the allergy.



Agranulocytes:

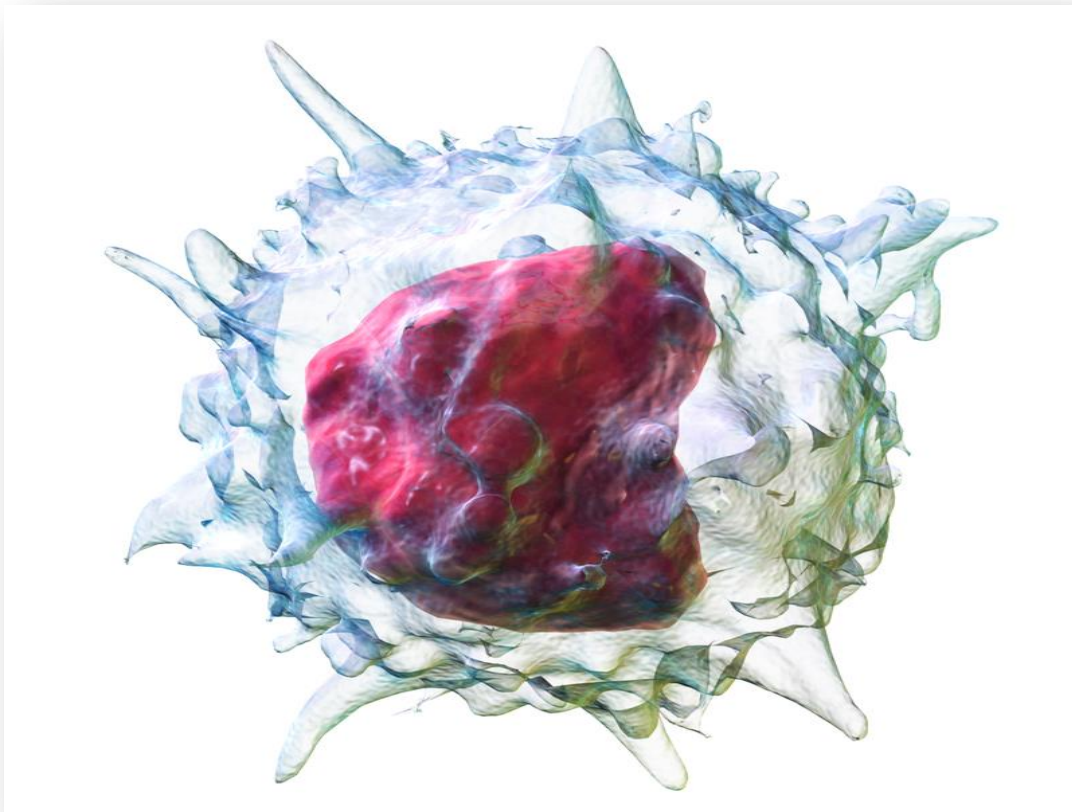
1.Lymphocyte:

- A. Are spherical cells, and Constitute about 20-30%.**
- B. Nucleus of lymphocyte are large and rounded.**
- C. Lymphocytes vary in life; some live only a few days and other survive for many years.**
- D. Classified according to their function to; B lymphocyte, T lymphocyte, and Natural Killer cell.**
- E. Defending against invading microorganisms, and cancer cells.**



2. Monocytes:

- A. Are the largest of the white blood cells, and Constitute about 5% of total W.B.C.**
- B. The nucleus is horseshoe- or kidney-shaped.**
- C. Migrate into the tissues and develop into macrophages.**
- D. Monocytes live in the circulation is few days but 60-120 days in the tissues.**



Blood groups

There are 4 main blood groups (types of blood):

- 1. A**
- 2. B**
- 3. AB**
- 4. O**

Your blood group is determined by the genes you inherit from your parents.

Each group can be either RhD positive or RhD negative, which means in total there are 8 blood groups.

• The ABO system

There are 4 main blood groups defined by the ABO system:

- 1. Blood group A : has A antigens on the red blood cells with anti-B antibodies in the plasma.**
- 2. Blood group B : has B antigens with anti-A antibodies in the plasma.**
- 3. Blood group AB : has both A and B antigens, but no antibodies.**
- 4. Blood group O : has no antigens, but both anti-A and anti-B antibodies in the plasma.**

Antibodies: are proteins found in plasma, They recognise foreign substances, such as germs, and alert your immune system, which destroys them.

Antigens: are protein molecules found on the surface of red blood cells.

- **The Rh system**

Red blood cells sometimes have another antigen, a protein known as the RhD antigen. If this is present, your blood group is RhD positive. If it's absent, your blood group is RhD negative.

This means you can be 1 of 8 blood groups:

A RhD positive (A+)

A RhD negative (A-)

B RhD positive (B+)

B RhD negative (B-)

O RhD positive (O+)

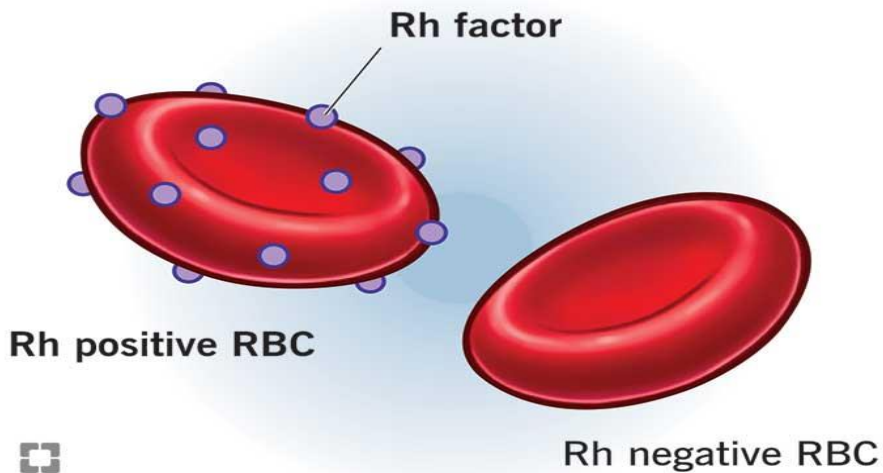
O RhD negative (O-)

AB RhD positive (AB+)

AB RhD negative (AB-)

Rh factor

Rh factor (or Rhesus factor) is a type of protein on the outside of your red blood cells (RBCs)




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