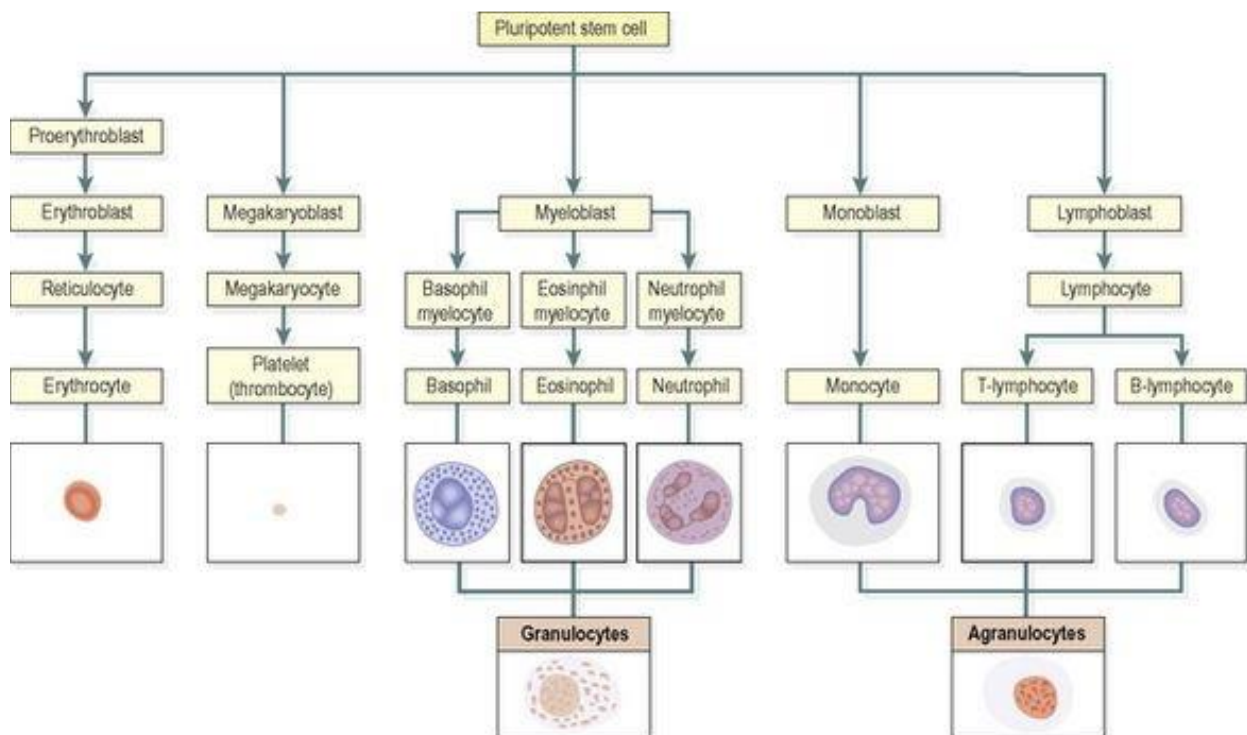


## Types of Cellular component

There are three types of blood cell.

- 1.erythrocytes (red cells)
- 2.platelets (thrombocytes)
- 3.leukocytes (white cells).

Blood cells are synthesised mainly in red bone marrow. Some lymphocytes, additionally, are produced in lymphoid tissue. In the bone marrow, all blood cells originate from *pluripotent* (i.e. capable of developing into one of a number of cell types) *stem cells* and go through several developmental stages before entering the blood. Different types of blood cell follow separate lines of development. The process of blood cell formation is called *haemopoiesis*.

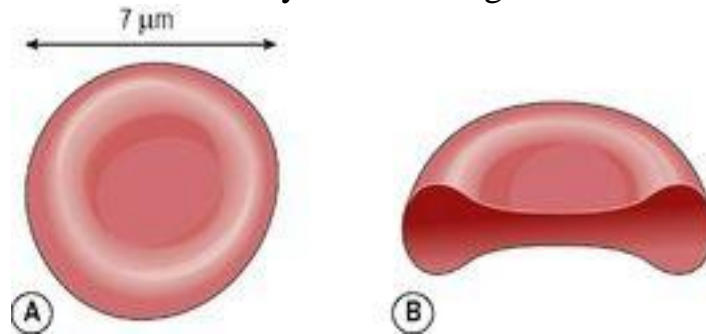


**Haemopoiesis:** stages in the development of blood cells.

In adults, haemopoiesis takes place in skeleton flat bones, irregular bones and the ends (*epiphyses*) of long bones, the main sites being the sternum, ribs, pelvis and skull.

**Erythrocytes** (red blood cells) Red blood cells are biconcave discs; they have no nucleus, and their diameter about 7 micrometres. Their main function is in gas transport, mainly of oxygen, but they also carry some carbon dioxide.

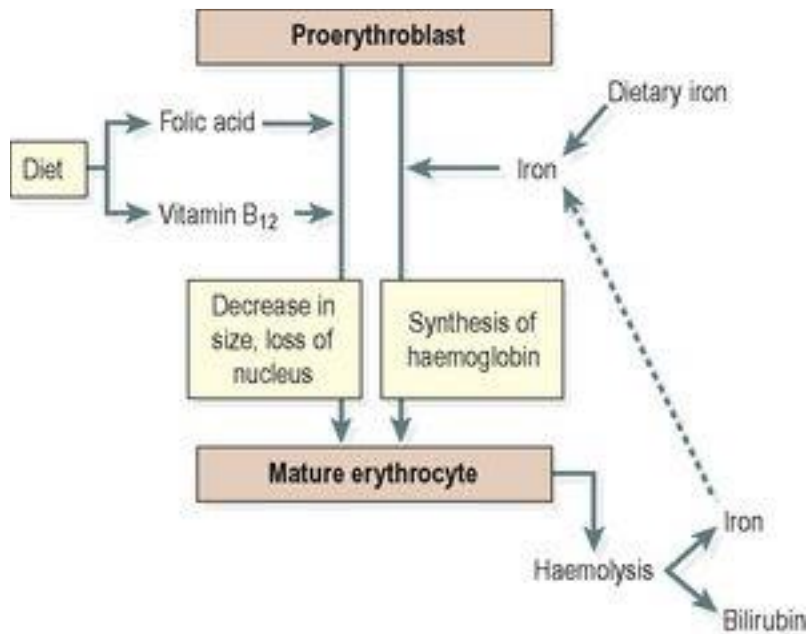
the biconcavity increases their surface area for gas exchange, and the thinness of the central portion allows fast entry and exit of gases.



## Erythrocytes

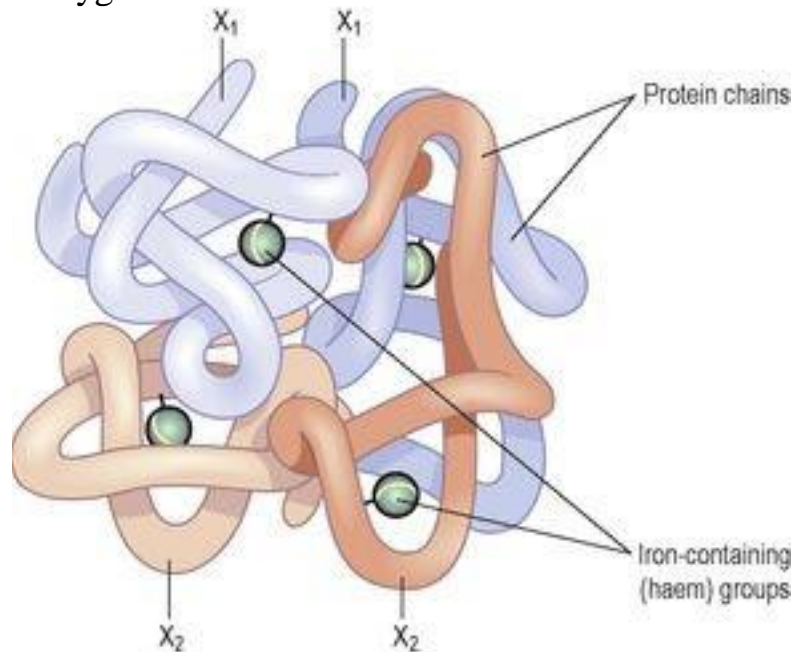
### Life span and function of erythrocytes

Erythrocytes are produced in red bone marrow, which is present in the ends of long bones and in flat and irregular bones. They pass through several stages of development before entering the blood. Their life span in the circulation is about 120 days. The process of development of red blood cells from stem cells takes about 7 days and is called *erythropoiesis*



## Haemoglobin

Haemoglobin is a large, complex protein containing a globular protein (globin) and a pigmented iron-containing complex called haem. Each haemoglobin molecule contains four globin chains and four haem units, each with one atom of iron. As each atom of iron can combine with an oxygen molecule, this means that a single haemoglobin molecule can carry up to four molecules of oxygen. An average red blood cell carries about 280 million haemoglobin molecules, giving each cell a theoretical oxygen carrying capacity of over a billion oxygen molecules!



### Structure of Haemoglobin

Iron is carried in the bloodstream bound to its transport protein, *transferrin*, and stored in the liver. Normal red cell production requires a steady supply of iron. Iron absorption from the alimentary canal is very slow, even if the diet is rich in iron, meaning that iron deficiency can occur readily if losses exceed intake.