

Erythrocyte Encyclopedia Article

Erythrocyte

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Erythrocyte

Erythrocytes, also known as red blood cells, contain the pigment hemoglobin which has the remarkable capacity to combine with and release oxygen. Human red blood cells contain a 33% solution of hemoglobin. Oxygen is transported to living tissues of the body as oxyhemoglobin in red blood cells. The human red blood cell is a biconcave disc with an average of about 0.0003 inch (7.5 μ m) in diameter. Erythrocytes are the most common cell type in blood (with an average of about 5,500,000 per ml in men and 5,000,000 per ml in women). Newborn babies have an even greater number of erythrocytes with as many as 7,000,000 per ml. Red blood cells are suspended in plasma which is the straw colored liquid part of the blood. The characteristic red color of blood is due to the erythrocytes. Human, and most mammalian erythrocytes, have nuclei while they develop in the bone marrow. The nuclei and some cytoplasmic structures are lost as the red blood cell matures. The life span of an erythrocyte is about 120 days. Old cells are removed from the circulation by the spleen and bone marrow. The old cells are constantly being replaced by fresh new red blood cells.

The pathological condition of having too few erythrocytes, or erythrocytes containing too little hemoglobin, is known as anemia. Anemia can be caused by blood loss or by other conditions. Too many red blood cells is referred to as polycythemia and may occur as an adaptation to living in mountains to compensate for reduced oxygen in the air.

The mature erythrocytes of many lower animals, such as many fish, amphibians, and birds, contain nuclei in contrast to humans. Frog erythrocyte nuclei are virtually inert. In a sense, that means that frog erythrocytes are physiologically quite similar to erythrocytes of higher animals. While it is true that mammals do not have mature nucleated red blood cells, the nuclei of comparable cells in frogs and other lower animals behave as if they were not there. Curiously, while frogs and fish tend to have small bodies, their erythrocytes are huge compared to humans.