RBC: Structure and Function of Erythrocytes

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The most interesting fact that I found about red blood cells is that the mature blood cells, after they are released into the bloodstream, hardly survive for 120 days. This shows that the average life span of red blood cells is 120 days (Hattangadi & Lodish, 2007). This makes us wonder how our body can retain large quantities of blood when blood cells are continuously destroyed. Continuous availably of Red blood cells is ensured by the hematopoietic stem cells of the bone marrow which are responsible for the formation of blood cells by the process called “erythropoiesis”. The naïve blood cells contain nucleus but the moment they enter into the bloodstream they lose their nucleus and become mature.

Red blood cell has a biconcave shape with a diameter of about 2-8 µm. During the routine examinations, they make an ideal candidate for “histologic rulers”. If we examine the mature blood cell, we will realize that it resembles a donut which indicates the central portion is thinner than the edges. This structural characteristic mainly supports red blood cells to perform its function. As you already described the function according to which blood cells are responsible for the transport of oxygen throughout the body, the structure makes it ideal for that purpose. The biconcave shaped feature of red blood cells increases the surface area of the cell so it incorporates normal quantities of oxygen and facilitates its transport to and fro from body tissues and lungs. The oxygen is mainly carried by hemoglobin present in the cells. It is a component of the red blood cells that is essential for oxygen transport. If the blood cells are a deficit in hemoglobin, they lead to several blood disorders among which the most significant one is Sickle Cell Anemia (Eaton & Hofrichter, 1990). It mainly occurs due to the mutation in the gene that forms hemoglobin as indicated by you. The essay is quite well written and covers the basic purpose of the topic with extra information quoted from the outside source.

**References**

Eaton, W. A., & Hofrichter, J. (1990). Sickle cell hemoglobin polymerization. In *Advances in protein chemistry* (Vol. 40, pp. 63–279). Elsevier.

Hattangadi, S. M., & Lodish, H. F. (2007). Regulation of erythrocyte lifespan: Do reactive oxygen species set the clock? *The Journal of Clinical Investigation*, *117*(8), 2075–2077.