B.Sc (Hons) Zoology
Part -- II
Paper - IV
St. Prabhat - Roy Jaish Coll. Siwan

RBC (Erythrocytes)

- In Mammals, RBC is Smaller, Circular, Biconcave & Non-Nucleated. (but in Camel, Dromedary, Alpaca & Llama RBC is Oval)
- The outline is like that of a Dumb-bell. So shape favours flexibility & the absorbing & releasing of gases Quickly.
- In Man, the living Corpuscles is 8.5μ in diameter. Rabbit is slightly smaller than Man. The extremes are 9.4μ in Elephant & 2.5μ in Musk deer.
- Amphibians RBC are largest among the vertebrates
- The normal Erythrocytes Count is usually slightly lower in Women than in Men.
  - Women — 4.5 to 5 Million / cubic m.m of blood.
  - Men — 5 to 5.5 Million / cubic m.m of blood.
- The Colour of Corpuscles is pale-yellow, but when the Corpuscles are seen in mass, the Hb (Haemoglobin) gives the characteristic red Colour
- Erythrocytes are surrounded by a thin peripheral Membrane (0.02μ), Consists of Lipo-protein Complex
- It Serves as an elastic & Semipermeable membrane
- The Nucleus & Cytoplasmic Organelles like ER, Golgi Complex, Centriole, & Mitochondria are lost in the later stage of development.
- Its life span is approx. 120 days in human (100 days in frog), when worn out, the cells break
- down in the Spleen
- Spleen is Grave-yard of RBC.
- The protein part of the Erythrocytes is converted to a Substance called Biliverdin, which is almost Completely Changed to Bilirubin (yellow) pigment.
- It's formed in yolk sac, Liver, Spleen, & lymphnodes in foetus. &
- And Red bone marrow (cradle of RBC) in adult.

- About 1% of RBC is destroyed per day in man
- Formation of Erythrocytes is known as Erythropoiesis and is completed in 72 hrs.
- RBCs are soft & flexible. They withstand much bending, squeezing & deformation as they are pushed through the narrow capillaries.
- Rouleaux are columns of erythrocytes, stacked one above the other like a pile of coins. The adherence is due to surface tension.
- The development of a mature RBC takes about a week, during which the endothelial cells enlarges divides forms Haemoglobin & finally loses its nucleus.
- Maturation process takes place along the following lines

V.V.S

Myeloblast (Stem cells) → Proerythroblast → Erythroblast → Normoblasts → Reticulocytes → Erythrocytes

- The mature mammalian RBC lacks Mitochondria hence the Cytochrome System is absent & the TCA (Tricarboxylic acid cycle) is not evident.
- The energy of the mature erythrocytes is supplied by Anaerobic Glycolysis & the Phosphogluconate pathway.

(Decrease)

- When RBC count decreased, caused Anaemia
- The RBC count increases during muscular exercise, rise in environmental temperature & high altitude (due to low oxygen tension) causes Polycythemia

function - It helps in transport of O2 & CO2 (Respiratory gases)

- It helps in formation of Blood groups

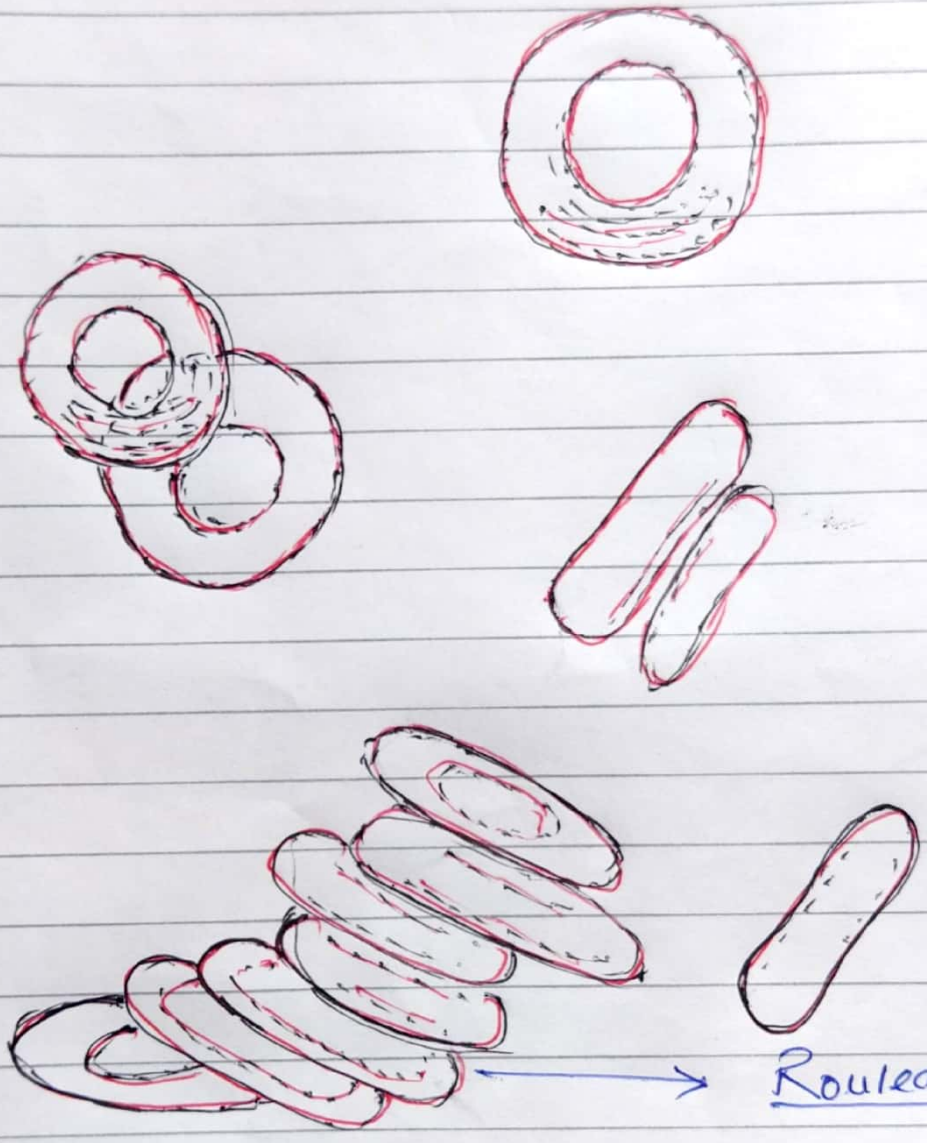

Fig - shows - RBC (Red blood corpuscles)