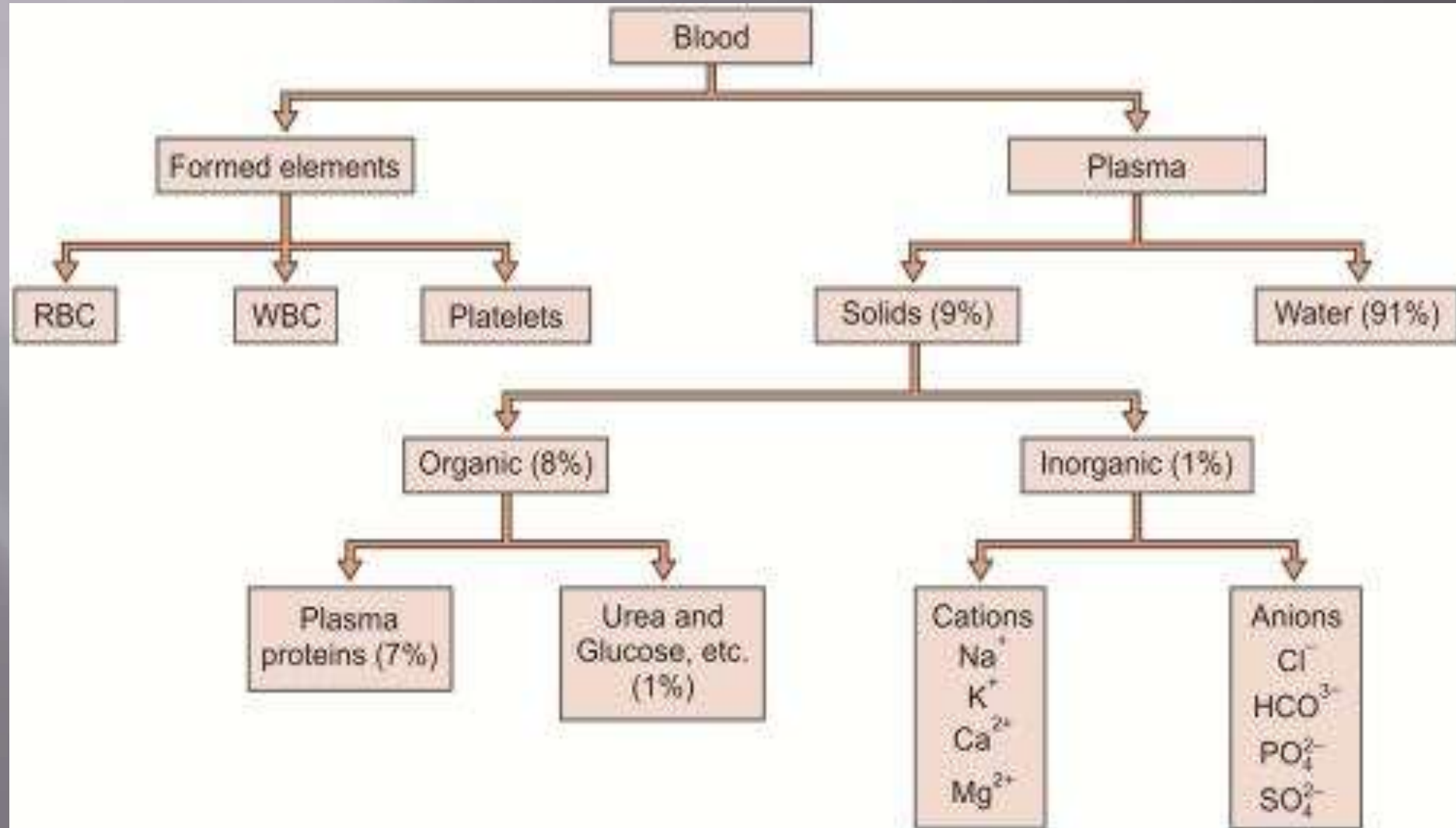


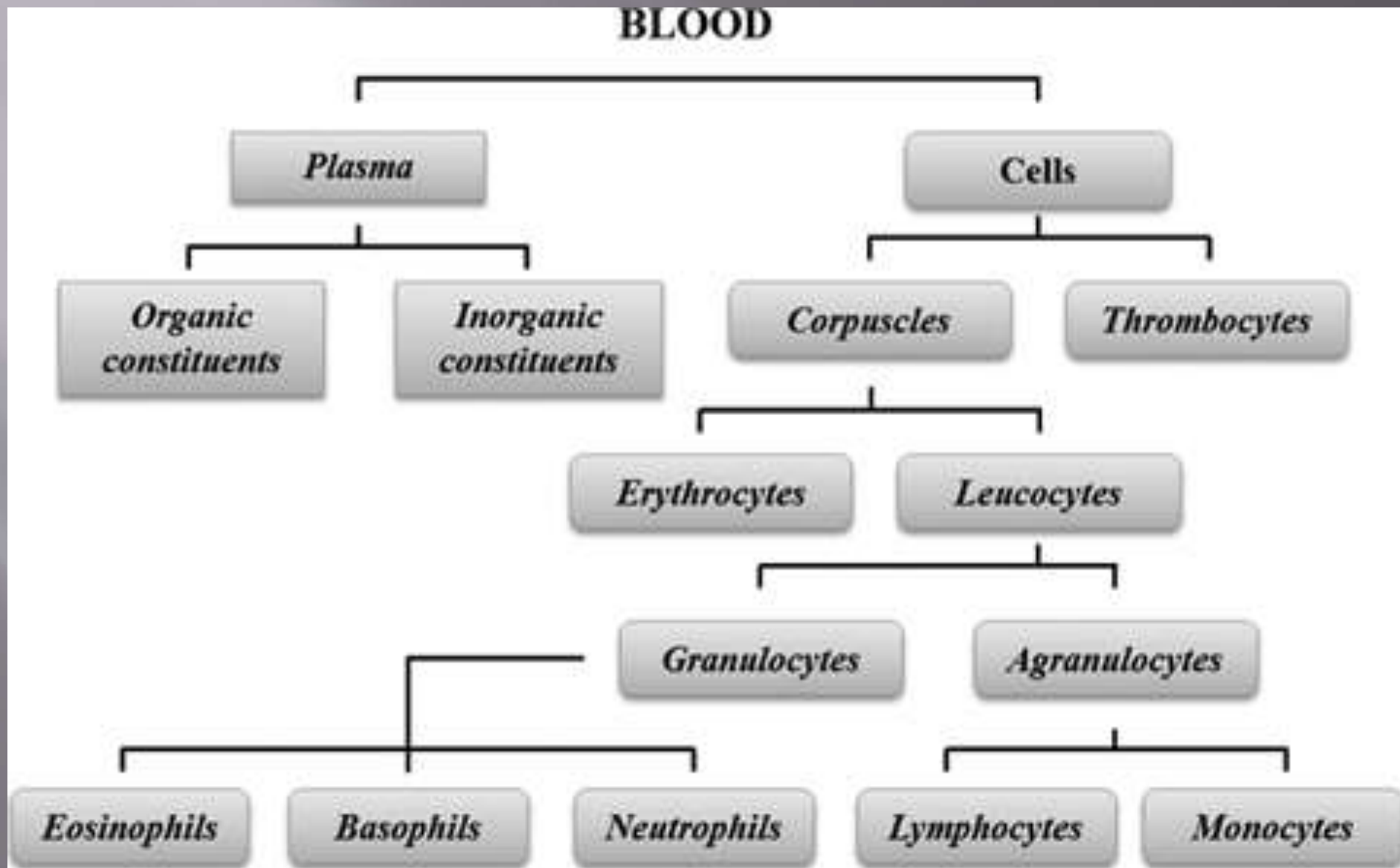
ESTIMATION OF RED BLOOD CELLS

DR.SHEETAL
JAIN

BLOOD COMPOSITION

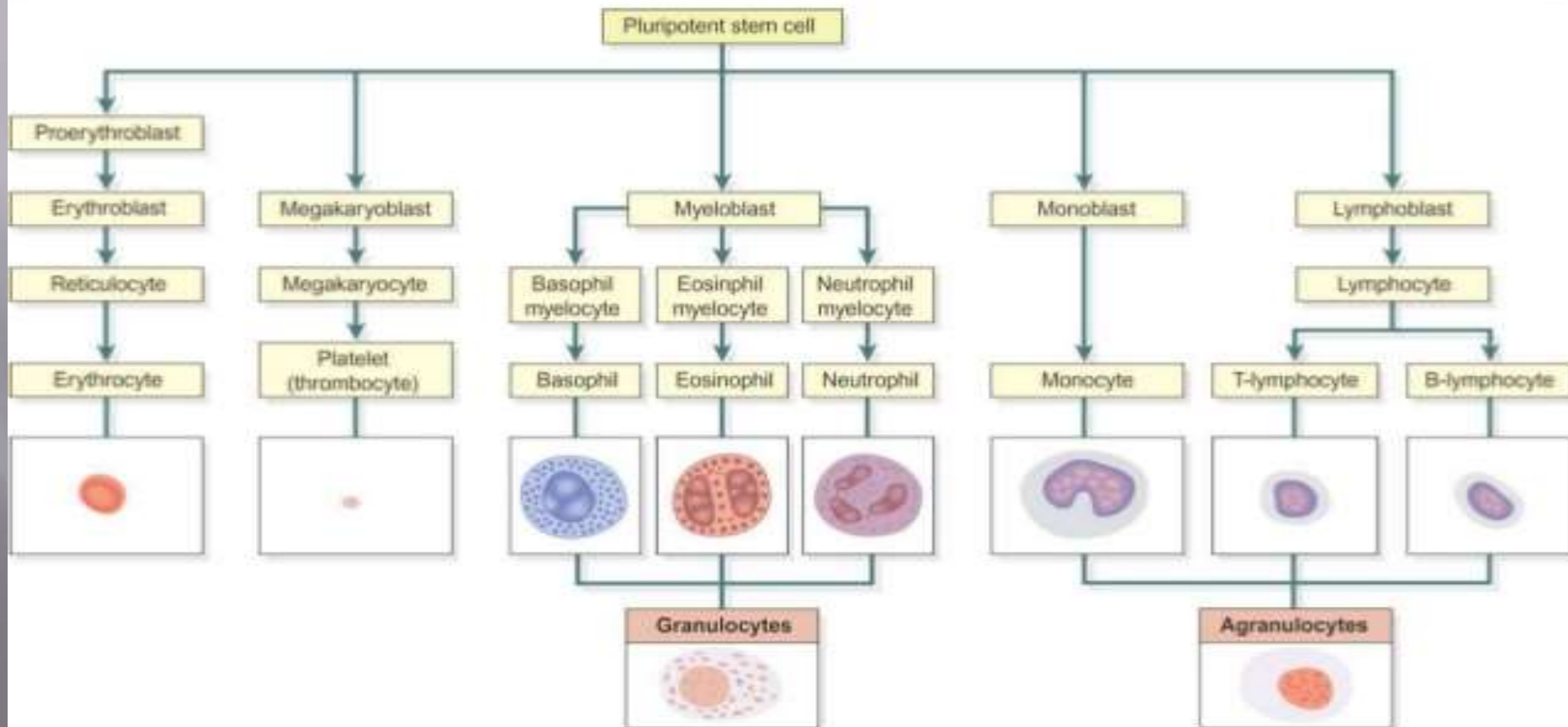


BLOOD COMPOSITION

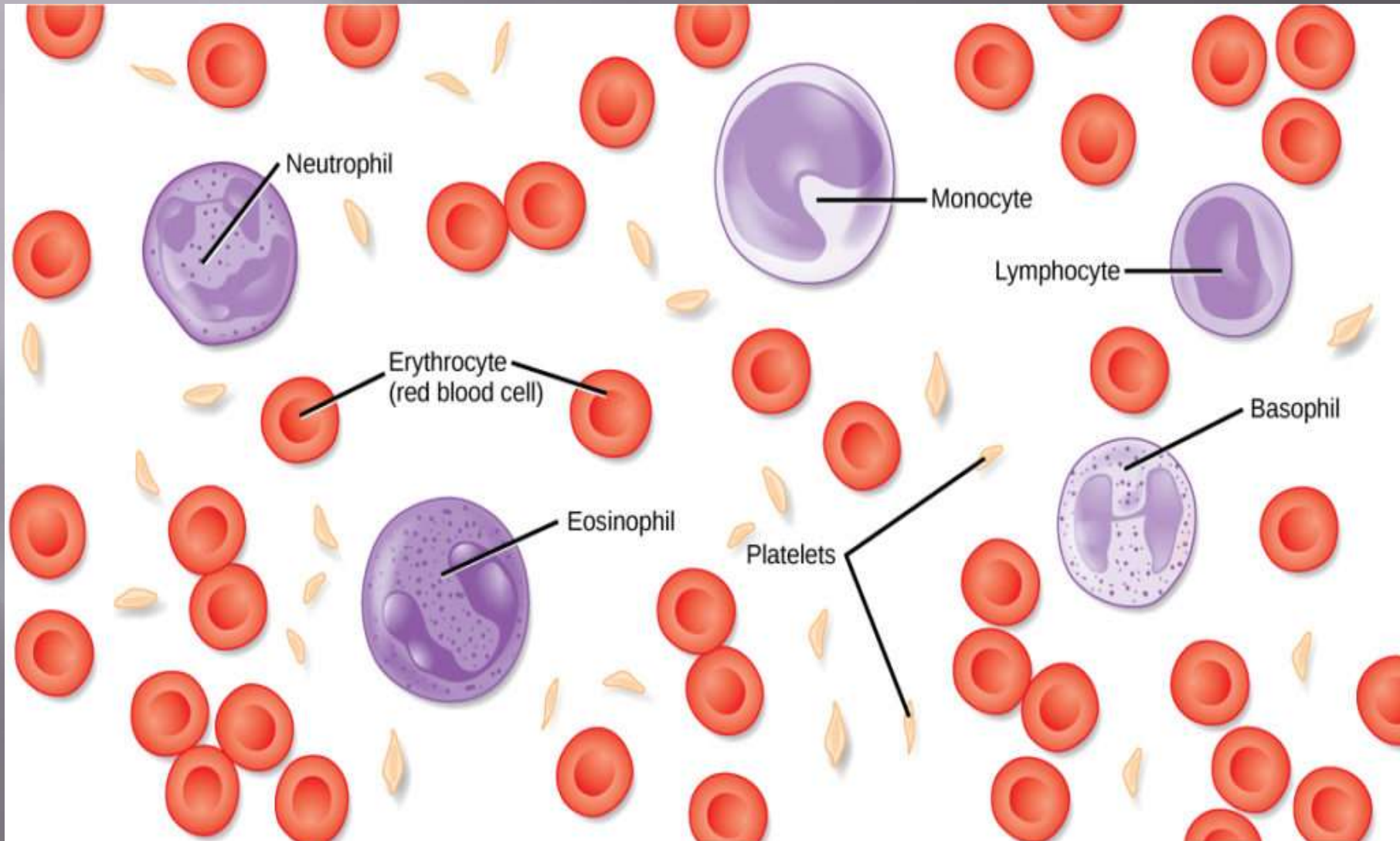


BLOOD CELLS

Haemopoiesis: Stages in the development of blood cells



DIFFERENT TYPE OF BLOOD CELLS





Neutrophils



Eosinophils



Basophils



Lymphocytes



Monocytes



Platelets



Erythrocytes

Components of the Blood



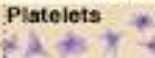


Plasma 55%

Constituent	Major functions
-------------	-----------------

Water	Solvent for carrying other substances
Ions Sodium Potassium Calcium Magnesium Chloride Bicarbonate	Osmotic balance, pH buffering, and regulation of membrane permeability
Plasma proteins Albumin Fibrinogen Immunoglobulins (antibodies)	Osmotic balance pH buffering Clotting Defense
Substances transported by blood Nutrients (e.g., glucose, fatty acids, vitamins) Waste products of metabolism Respiratory gases (O ₂ and CO ₂) Hormones	

Cellular elements 45%

Cell type	Number (per mm ³ of blood)	Functions
Erythrocytes (red blood cells) 	5–6 million	Transport oxygen and help transport carbon dioxide
Leukocytes (white blood cells) 	5000–10,000	Defense and immunity
Platelets 	250,000–400,000	Blood clotting

Total Erythrocyte Counting

- **Hemocytometer (Neubauer) Counting Method:**

- Blood should be carefully drawn to the 0.5 mark of the RBC pipette.
- An isotonic solution (Normal saline or Hayem's solution) should be drawn to the 101 mark to dilute the blood.
- The blood and diluting fluid are mixed by shaking the pipette vigorously in a horizontal position for 2 to 3 minutes (to ensure complete hemolysis of WBC).

Total Erythrocyte Counting

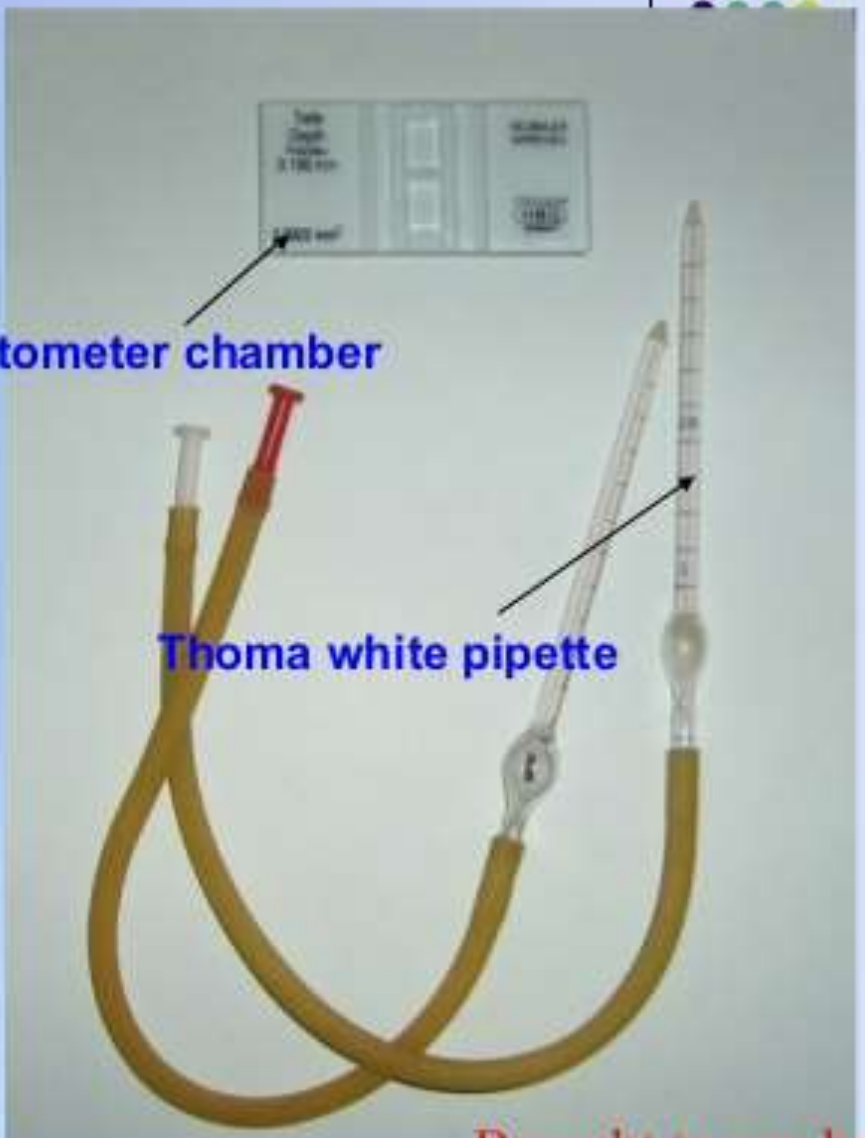
- **Hemocytometer (Neubauer) Counting Method:**

- 2 to 4 drops of mixed fluid are discarded and the end of the pipette.
- The tip of the pipette is touched to the side of the hemocytometer chamber and a drop of a fluid will run under the cover glass.
- Wait for about 2 - 3 minutes as erythrocytes require settling time to assume a single level.



HAEMOCYTOMETER

Rubber sucking tube



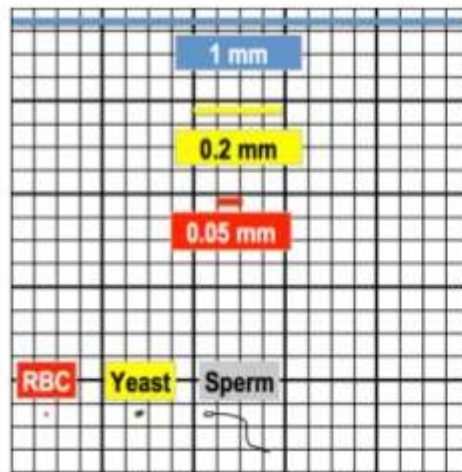
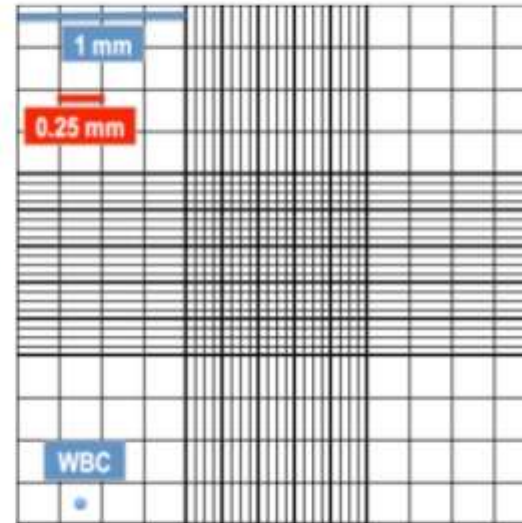
haemocytometer chamber

Thoma white pipette

Brought to you by

Other  Other

Total Erythrocyte Counting



Hemocytometer



- The hemacytometer counting chamber is used for cell counting.
- It is constructed so that the distance between the bottom of the coverslip and the surface of the counting area of the chamber is 0.1 mm.
- The surface of the chamber contains two square ruled areas separated by an H-shaped moat.

Brought to you by

Other  **Other**

Procedure



1. Draw the blood up to 0.5 mark in the thoma pipette.
2. Wipe the outside of the capillary pipette to remove excess blood that would interfere with the dilution factor.
3. Holding the pipette almost vertical place into the fluid. Draw the diluting fluid into the pipette slowly until the mixture reaches the 11 mark, while gently rotating the pipette to ensure a proper amount of mixing.
4. Place the pipette in a horizontal position and firmly hold the index finger of either hand over the opening in the tip of the pipette, detach the aspirator from the other end of the pipette now the dilution of the blood is completed

Brought to you by

Other  **Other**

Procedure



5. Mix the sample for at least 3 minutes to facilitate hemolysis of RBCs.
6. Clean the hemacytometer and its coverslip with an alcohol pad and then dry with a wipe.
7. Before filling the chamber, discard the first four to five drops of the mixture on a piece of gauze to expel the diluent from the stem.



Brought to you by

Other  Other

Procedure



8. Carefully charge hemacytometer with diluted blood by gently squeezing sides of reservoir to expel contents until chamber is properly filled.



Brought to you by


Other  Other



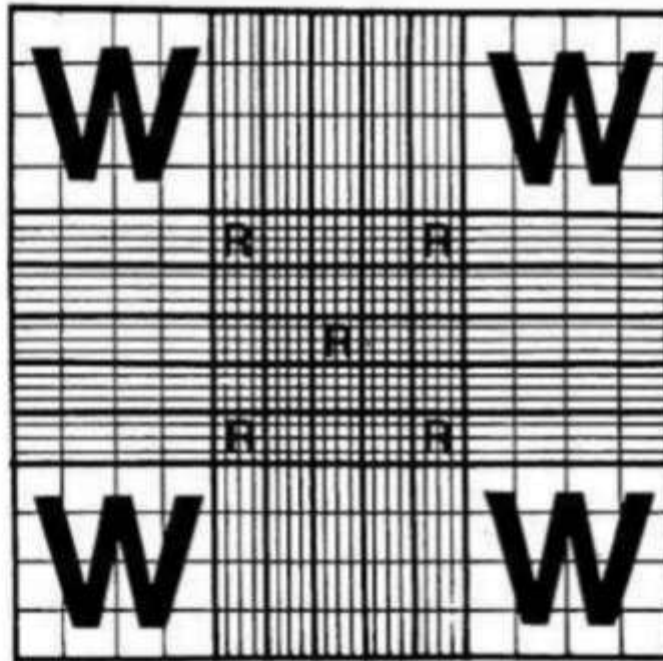
Small square = 1/400 sq. mm. 1/25 sq. mm.

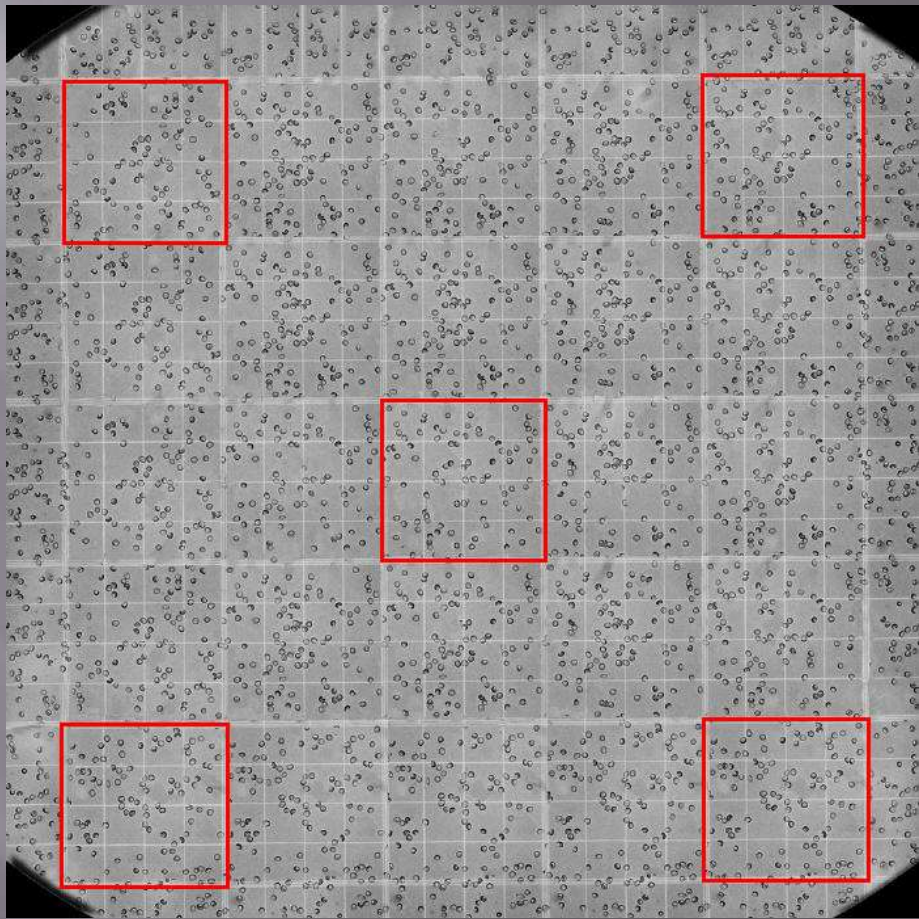
← 1 millimeter →

Counting grid (central area)

Brought to you by
Other  **Other**

Total Erythrocyte Counting





THANKS