

The logo features a red arrow pointing to the right, which is enclosed within a black square frame that is open on the left side.

SAFALTA CLASS™

An Initiative by **अमरउजाला**

BLOOD

→ Polymerase

• DNA → DNA
↓

Replication

• Transcription:

DNA → RNA
Transcriptase

• RNA → DNA

↓
Reverse Trans.

• RNA → Pro
↓
Translation



BLOOD: रक्त

pH: 7.35-7.45

- Blood is a connective tissue. संयोजी ऊतक
- Ph of blood is 7.4 (slightly basic/alkaline in nature)
- Average Volume of blood in an adult: (5-6) ltr (50-70) Kg
- Weight of blood: 7% of our body weight *

COMPOSITION OF BLOOD:

Blood is mainly composed of 2 parts:

1. Plasma (55%): liquid part of blood, yellow in colour
2. Cells/Corpuscles (45%): solid part of blood, red in colour.



50 kg → 3.5 kg
60 kg → 4.2 kg
70 kg → 4.9 kg

65-1.

Size: WBC > RBC > Plate

RBC : WBC : Plate

600 : 1 : 40

WBC: 8000

Plate: 8000 x 40

RBC: 8000 x 600

3.2 lakh

48 lakh → 4.8 mn

नसो : Anti Clotting Agent

Heparin हियरिन → (Carbohydrate)
↳ Liver यकृत

Pigment लक

Que: Yellow → Bilirubin → Liver

Jaundice →

Composition of Plasma:

1. Water: 92% ✓
2. Plasma Protein: 7%

Plasma protein mainly consists of 4 protein: Albumin, Globulin, Prothrombin, Fibrinogen

3. Salts and Minerals: 1% (Sodium, Calcium, HCO₃⁻)
नमक — खनिज

Note: Yellow colour of plasma is due to a pigments namely Bilirubin, produced by Liver.

FUNCTION OF PLASMA: कार्य

1. Provides fluidity to blood. तरलता
2. Helps in blood clotting. ✓
3. Regulates the Ph of blood. ✓
4. Regulates body temperature. ✓

7.4

Blood Clotting



*

*

	RBC RED BLOOD CORPUSCLES लाल रुधिर कणिका	WBC WHITE BLOOD CELL श्वेत रुधिर कोशिका	PLATELETS
SCIENTIFIC NAME:	ERYTHROCYTES ↓ ↓ Red Cell (45-55) lakh	LEUKOCYTES ↓ white (transparent)	THROMBOCYTES
NUMBER(/0.001ML): <u> </u>	(4.5- 5.5)MILLION FEMALE: (4.5- 5)MILLION MALE: (5-5.5)MILLION AVERAGE NUMBER :5 MN * Total (5-6) L - (25-30) trillion (10^{12})	(4000-11,000) <u> </u>	(1.5- 4.5)LAKHS <u> </u>
DISEASE:	DEFICIENCY: ANAEMIA अशक्तता / रुधिर क्षीणता EXCESS: POLYCYTHEMIA <u> </u>	DEFICIENCY: MANY DISEASE EXCESS: BLOOD CANCER * (LEUKEMIA)	DEFICIENCY: BLEEDING / HAEMMORHAGE EXCESS: THROMBOSIS

RBC (ERYTHROCYTES):

- Red colour of RBC is due to a protein namely Hemoglobin. (12-16) unit (gm/10ml)
- Hemoglobin: It is a protein found in our blood and composed of a metal IRON.
- Function of HB:

1. Transportation of Oxygen throughout the body that helps in energy formation.

2. Exhalation of CO₂. श्वासोच्छ्वास

Facts:

Shape: Biconcave 

* Nucleus: No nucleus, No Mitochondria

Brain of the cell

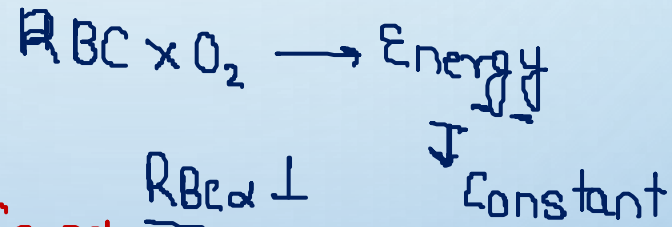
Life span: 120 days

Origin: Red Bone Marrow

Graveyard: Spleen and Liver

कोष्ठस्थान होती है। both

Que: 4 - I + ↑ses



Exception: Camel
Lama

Femur

Back bone

long bone

Kidney

Erythropoietin

Que: Embryo 8 week

↓ 8 week → liver

Bone marrow
आदि मज्जा

Blood → Haemoglobin (Jaggery, Dates)
 ↓ ↓
 Iron Protein

Que: 2 Max reactivity
 O_2, CO, CO_2, SO_2
Haematology 300X

Que: Central Metal: Iron

Fe^{2+} - ferrous
 Fe^{3+} - ferric

Haemocytometer
Blood Cell
↓
RBC

Both

Fn: air- O_2
 ↓
 lungs
 ↓
 Haemoglobin
 ↓
 Oxyhaemoglobin

Que: O_2 Porphyrin
 ↓
 Fe

Eg: 15 HB → 120.0 → 120 Energy
8 HB → 64.0 → 64 En

$O_2 + food \rightarrow Energy$

Atoms: 8.0

acidity ↓
Molecules: $4O_2$

WBC (LEUKOCYTES):

- Also known as “Soldier of body”/ “bodyguard of body”
- Function: To fight against disease i.e. to provide immunity
- Facts:
- Shape: Irregular/ amoeba shape
- Nucleus: Nucleated ~~no~~ mitochondria
- Life span: (2-5) days/ up to 21 days
- Origin: Bone Marrow
- Graveyard: Liver/ in the blood

अनियमित

सबसे छोटा रक्त कण

Smallest blood cell

Plat

RBC

Lym
Mo.

Largest blood cell

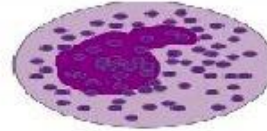
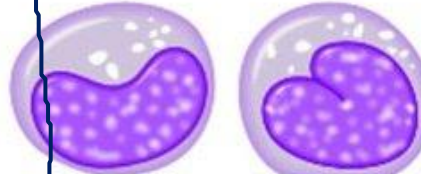
Plat

RBC

Lympho
Mono

WBC



Subtype	Nucleus	Function	Example
Neutrophil	Multi-Lobed	Bacterial or fungal infection. These are the most common first responders to microbial infection.	
Eosinophil	Bi-Lobed	Parasitic infections and allergic reactions (inflammatory).	
Basophil	Bi/Tri-Lobed	Allergic and antigen response (releases histamine causing vasodilation).	
Lymphocyte	Deep Staining, Eccentric	Include B cells, CD4+ helper T cells, and CD8+ cytotoxic T cells. Operate primarily in the lymphatic system.	
Monocyte	Kidney Shaped	Phagocytosis of pathogens. Presentation of antigens to T cells. Eventually, they become tissue macrophages, which remove dead cell debris and attack microorganisms.	

(60-70)% max

min (0.5-2)%

Smallest WBC

Largest WBC
largest blood cell

Granulocyte
अभिर उज्ज्वल

Granulocyte
अभिर उज्ज्वल

PLATELETS (THROMBOCYTES):

- Smallest blood corpuscles.
- Function: Helps in blood clotting
- **Facts:**
- Shape: Irregular (amoeba shape)
- Nucleus: No Nucleus
- Life span: 7 days
- Origin: Bone marrow
- Graveyard: Spleen

• PROCESS OF BLOOD CLOTTING:

1. Calcium + Prothrombin + Thromboplastin → Thrombin

↓ ↓ ↓

Damaged cell plasma damaged cell

Thrombokinase/ Factor IX

2. Thrombin + Fibrinogen → Fibrin

↓

plasma

Thrombin/ Pepsin

3. Fibrin + Blood (platelets) → Clot

Vitamin K

