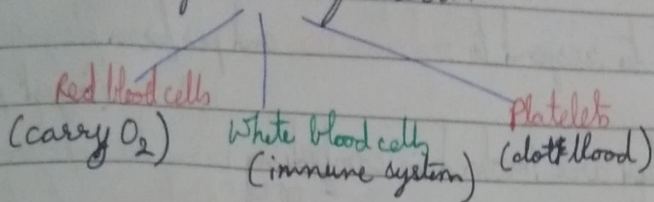


Blood :-

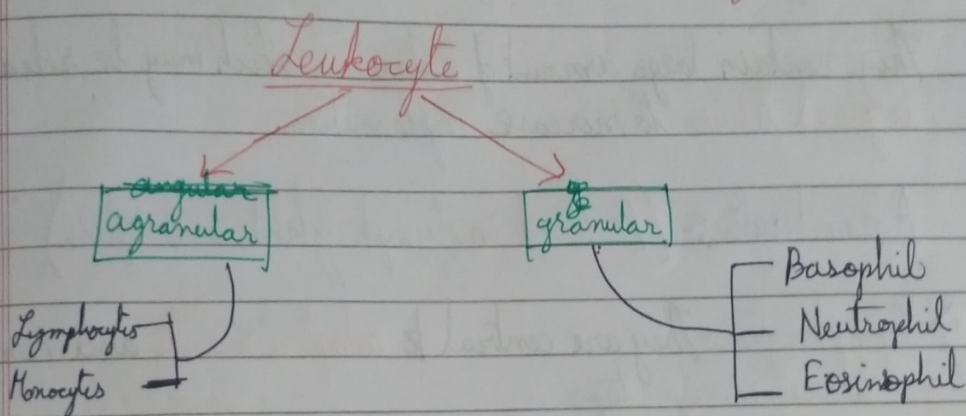
- It is 55% liquid + 45% cellular
(plasma)

- Cellular components of blood :-



- All blood cells arise from stem cells in bone marrow

White Blood Cells :- They are the immune cells of blood.
Also known as Leukocytes



Types of Leukocytes :-

- 1) Granulocytes :- They are involved in innate immunity
 - They have granules in cytoplasm
 - 1st line of defence against infection
 - They perform phagocytosis, releasing toxins to kill pathogens
 - Their nucleus is usually lobed

- 2) Agranulocytes :- They are involved in adaptive immunity
 - They lack granules in cytoplasm
 - Provides more specific, long term defence against pathogens
 - Lymphocytes provide antibodies (B cells) and regulate immune responses (T cells)
 - Their nucleus is usually round/kidney shaped

Granulocytes:- (Produced in Bone Marrow)

1) Neutrophils:- They are the most abundant type of WBC, that takes part in body's defense against bacterial infections.

They are quick to respond to infection sites and perform phagocytosis (ingest pathogens).

2) Eosinophils:- They are involved in combating parasitic infections (such as worms) and ~~also~~ by releasing an enzyme called histamine to fight pathogens during allergic reactions.

3) Basophils:- They are the least abundant type of WBC, that takes part in allergic and inflammatory ~~responses~~ reactions.

They contain large amount of histamine which may be released in injured tissues to increase inflammation.

Agranulocytes:- (Produced in Lymph Glands and Spleen)

1) Lymphocytes:- They are central to adaptive immunity and come in three main types:-

- T lymphocytes (T cells):- These cells help regulate immune responses and directly attack infected/cancer cells.
- B lymphocytes (B cells):- These cells produce antibodies that target specific antigens, providing humoral immunity.
- Natural Killer cells:- These cells recognise and destroy infected/cancerous cells without prior exposure to pathogens.

2) Monocytes:- They are the largest type of WBC, that are involved in phagocytosis.

They differentiate into macrophages or dendritic cells, which take part in both innate & adaptive immunity.