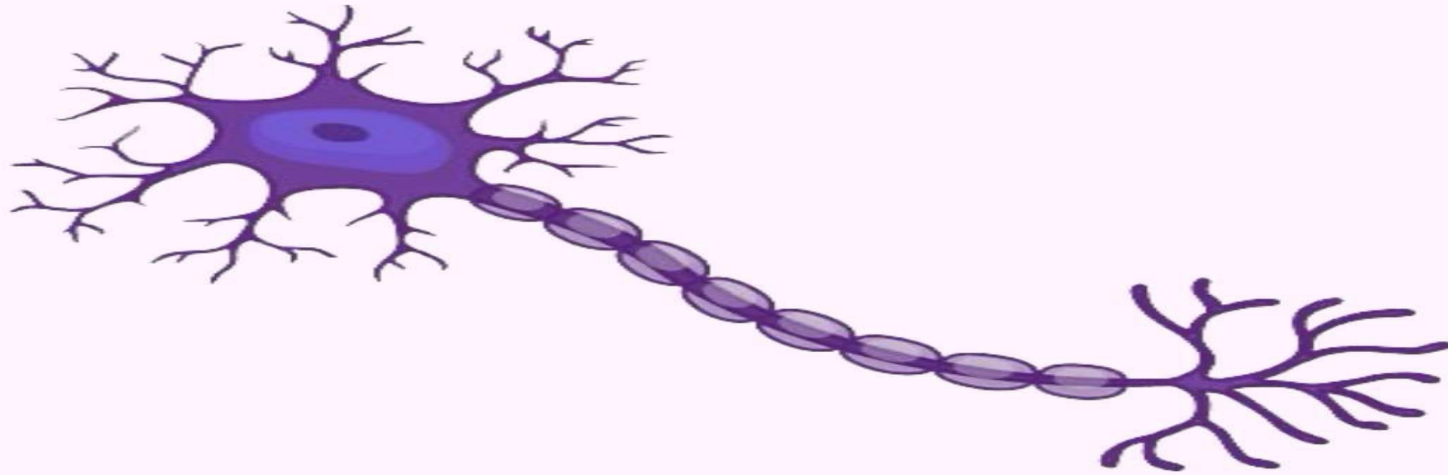




PHYSIOLOGY



LEC NO. : Lab . 4
DONE BY : Malak Al-humaid

وَقُلْ رَبِّ زِدْنِي عِلْمًا

The background features abstract, overlapping green geometric shapes, primarily triangles and polygons, in various shades of green, creating a modern and dynamic look.

Lab 4 Differential leucocytic count

D Gehan el wakeel

Indication:

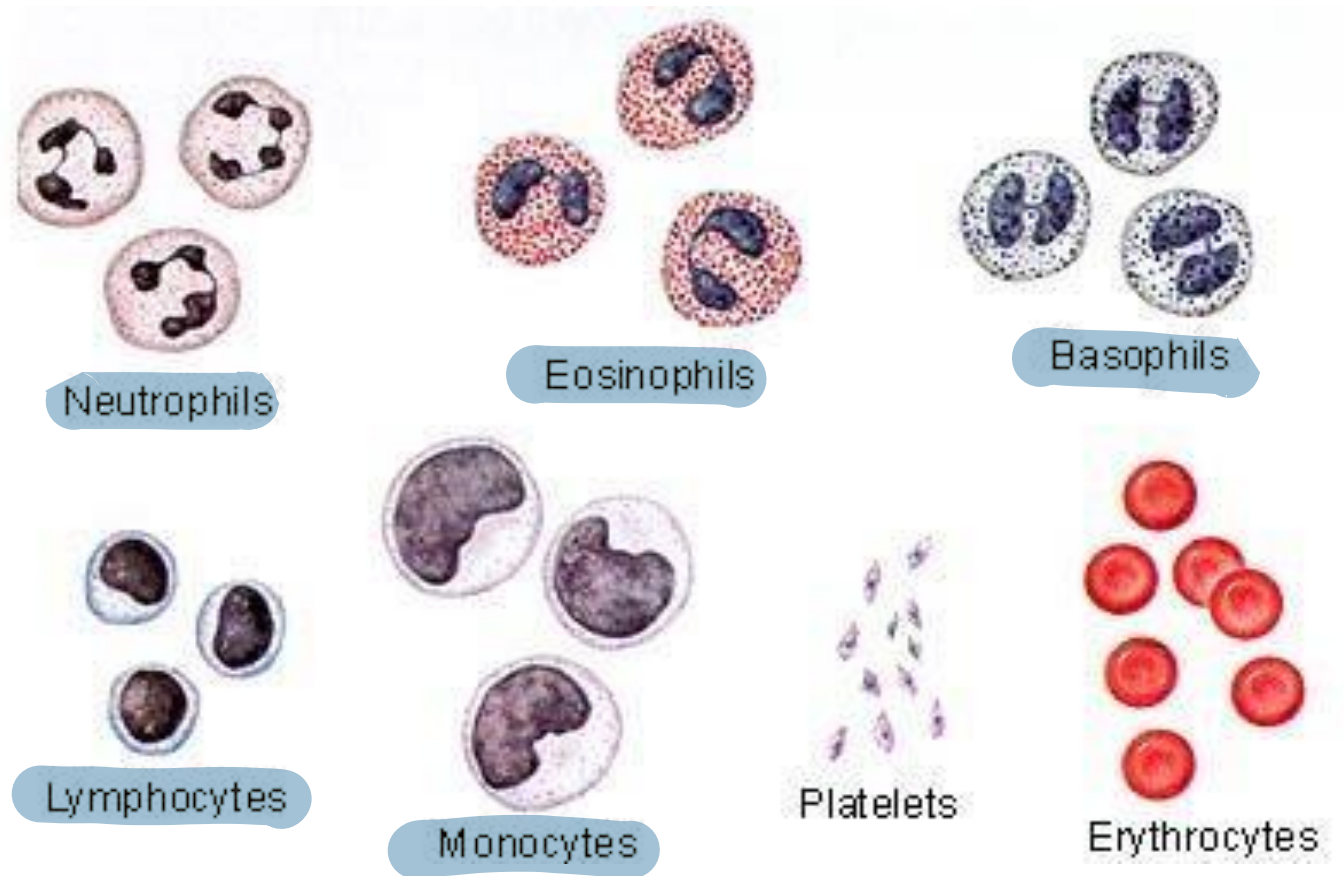
1. As apart of routine health care
2. Prescence on symptoms and signs of infections or inflammation
3. Abnormal result of Complete blood count
4. Prescence of signs and symptoms of autoimmune disease

1-Relative differential leucocytic count:

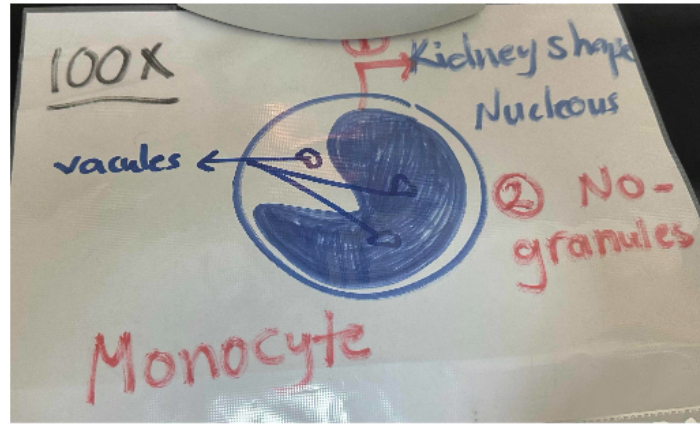
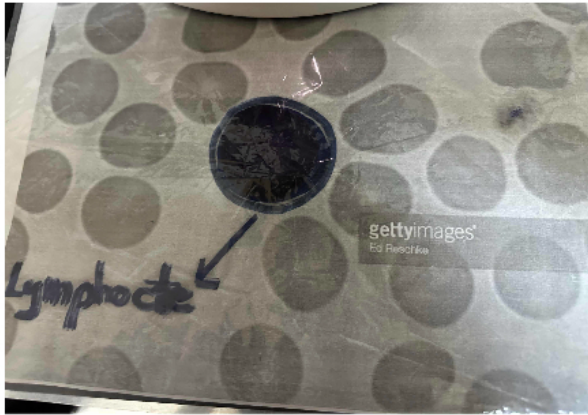
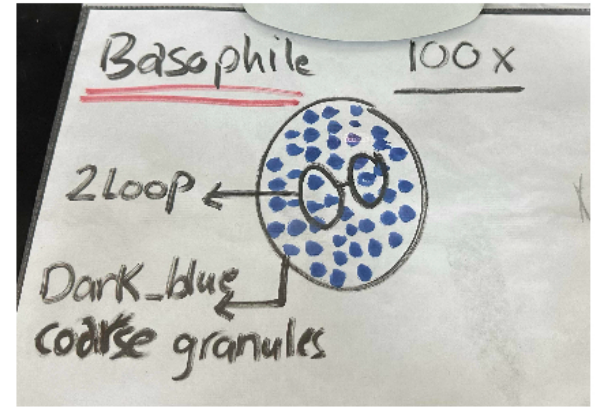
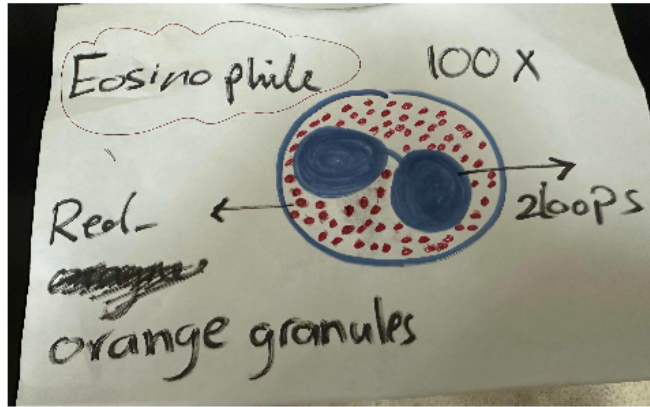
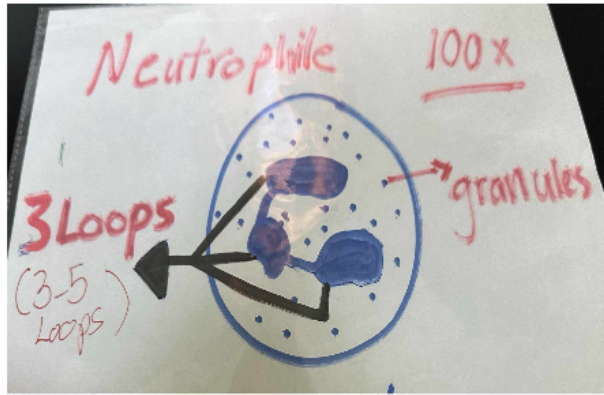
$$\frac{\text{Number} \times 100}{\text{Total leucocytic count}}$$

2-Absolute count:

$$\frac{\text{DLC} \times \text{total}}{100} = \text{cells/mm}^3$$



Blood cells including white blood cells



15550	Granular leukocytes			A granular leukocytes	
	Neutrophils	Eosinophils	Basophils	Lymphocytes	Monocytes
Site of formation	Formed in the bone marrow			Formed in the lymphoid tissues.	Formed in the bone marrow
Cytoplasmic granules	contain granules			contain no granules	
% of total leukocytes	60-70%	1-5%	0.0-1.0%	20-30%	3-8%
Life span	4 -5 days			months or even years	
Functions	First line of defense against bacterial infection by phagocytosis	1. Defense against parasite 2.decrease allergic reaction	1. Synthesize and liberates heparin into blood 2. Histamine for al	1. T lymphocytes for cell mediated immunity 2. B lymphocytes secrete antibodies	Phagocytosis of bacteria and old cells such as RBCs

- Functions of leukocytes:

(I) Granular leukocytes

حو بخلات

A) Neutrophils:

Constitute the first defensive line: against invading micro organisms.

Main function: phagocytosis and destruction of invading bacteria.

B) Eosinophils: → يعني في حال وجود حساسية بشكلها زيادة في عدد ما للتخلص من الحساسية او تقليلها

- ▶ Weak phagocytosis.
- ▶ Defense against parasitic infections e.g. schistosomiasis.
- ▶ Decrease allergy. / inflammation

C) Basophils:

- ▶ Liberation of heparin into blood (prevent blood coagulation).
- ▶ Play a role in allergy. / inflammation

(II) Non-Granular leukocytes:

(A) **Lymphocytes**: T lymphocytes for ^①cell mediated immunity and ^②B lymphocytes secrete antibodies

(B) **Monocytes**:

They phagocytes and kill bacteria but more powerful than neutrophil

هي المسئولة عن المناعة المكتسبة acquired immunity

4 million–6 million
per mm³ blood

White Blood Cells
(leukocytes)
5,000–11,000
per mm³ blood

Granular leukocytes

- Neutrophils



40–70%

← الوحدة

← نسبة الحويصلات

- Eosinophils



1–4%

- Basophils



0–1%

Agranular leukocytes

- Lymphocytes



20–45%

- Monocytes



4–8%

صي المبروحه ممكن
تصل الى 24 كم

3 اشكال

7–8 μ m in diameter;
bright-red to dark-purple
biconcave disks without
nuclei.

Fight infection.
Remove dead/dying cells.
Destroy cancer cells.

Phagocytize pathogens.
10–14 μ m in diameter;
spherical cells with
multilobed nuclei; fine, lilac
granules in cytoplasm if
stained.

← light purple

Phagocytize antigen-antibody
complexes and allergens.
10–14 μ m in diameter;
spherical cells with bilobed
nuclei; coarse, deep-red,
uniformly sized granules in
cytoplasm if stained.

← red

Release histamine and
heparin, which promote
blood flow to injured tissues.
10–12 μ m in diameter;
spherical cells with lobed
nuclei; large, irregularly
shaped, deep-blue granules
in cytoplasm if stained.

← blue

Responsible for specific
immunity.
5–17 μ m in diameter
(average 9–10 μ m);
spherical cells with large,
round nuclei.

Become macrophages that
phagocytize pathogens and
cellular debris.
10–24 μ m in diameter;
large, spherical cells with
kidney-shaped, round, or
lobed nuclei.

Red bone
marrow



Questions

1-Neutrophilia occurs in which of the following conditions?

- a) Polycythemia
- b) Leucopenia
- c) Agranulocytosis
- d) Bacterial infection
- e) Anemia

2-Which of these cells increase in number in blood in allergy?

- a) Red blood cell
- b) Platelet
- c) Basophil
- d) Monocyte
- e) Megaloblast

3-Which of these cells increase in number in blood in infectious mononucleosis?

- a) Monocytes
- b) Basophils
- c) Platelets
- d) Red blood cells
- e) Erythroblast

4-Which stain is used in staining blood film in testing for differential leucocytic count?

- A) Hematoxylin and eosin
- B) **Romanowsky stain**
- C) Gram stain
- D) Negative Stain.
- E) Congo Red Capsule Stain.