

Total and Differential Leucocytic Count (TLC and DLC)



Objectives

- To be able to identify the different types of leucocytes under the microscope
- To practice the procedure for differential leucocyte counting.
- To know the normal values expected for the differential white cell count.
- To understand the use of the differential white cell count in the diagnosis of disease processes.



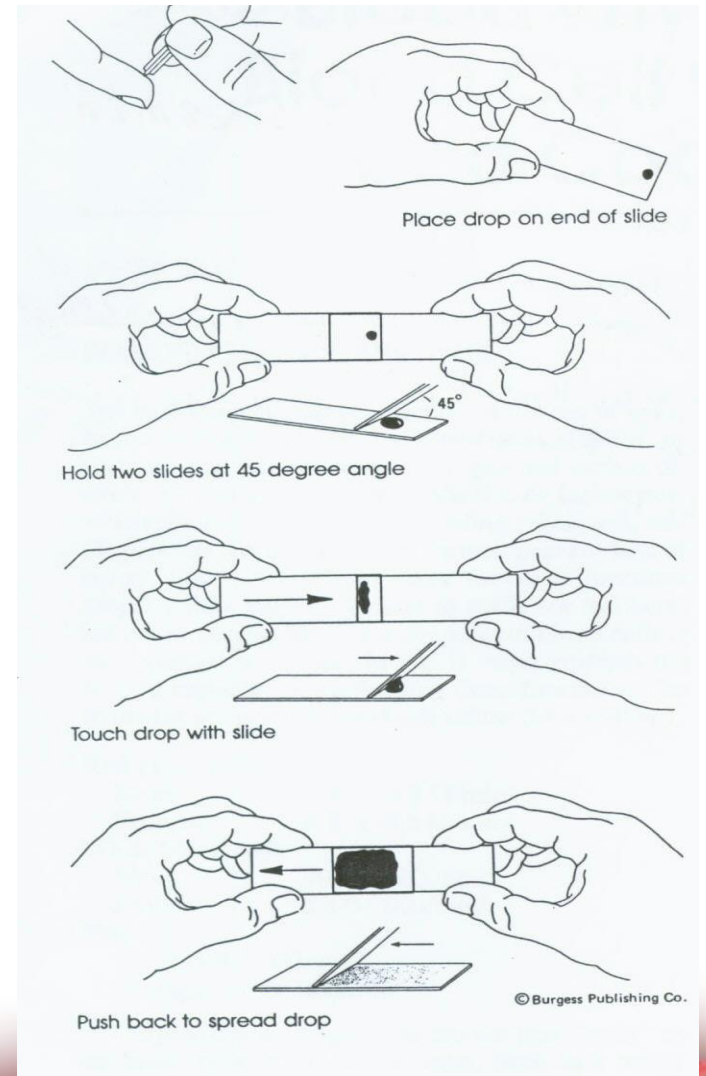
Reagents and apparatus:

- A microscope with an oil immersion objectives.
- Mineral or cedar oil
- Various dyes for staining blood films (e.g., Wright's stain and Leishman's stain)
- Microscope slides.



Procedure

- Prepare blood film and stain it with Wright's stain
- Examine it under the oil immersion objective lens of the microscope and identify the different leucocytes (count about 100 cells)



WBCs are classified into

Granular :

- Neutrophils
- Eosinophils
- Basophils

Agranular:

- Lymphocytes
- Monocytes

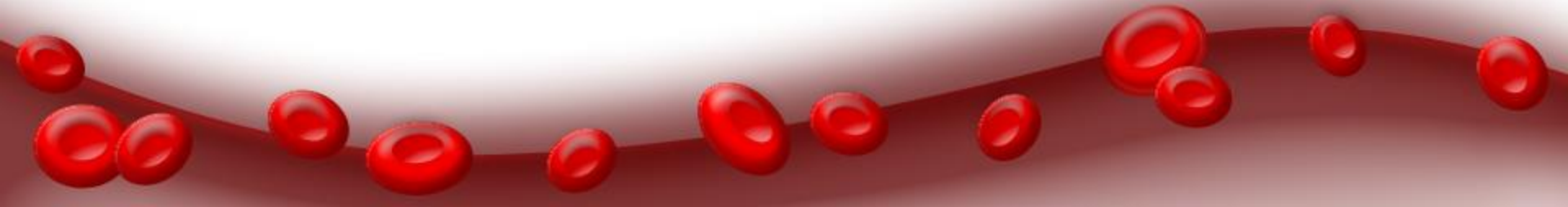
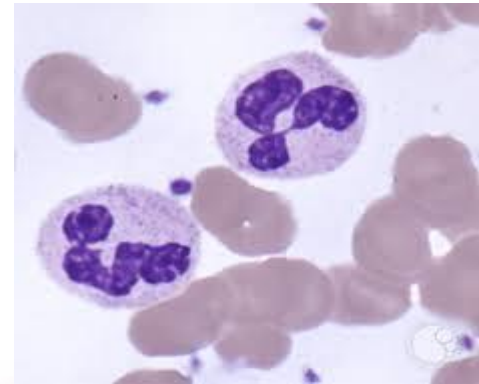


Neutrophils

- Most common type of blood cells (50-70%)
- They have small cytoplasmic granules and a complex, multilobed nucleus.
- Their granules take a neutral (purple or pink) color with various stains such as Wright's stain.

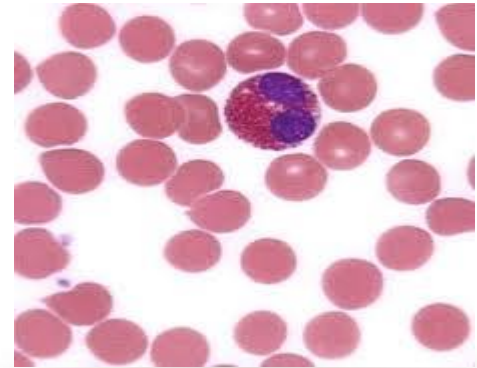
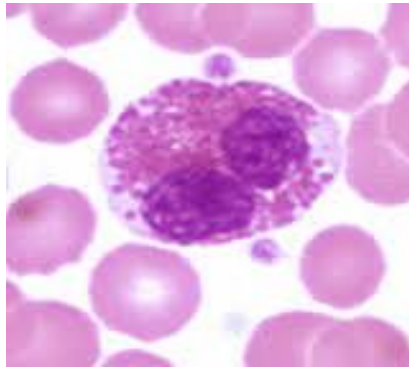
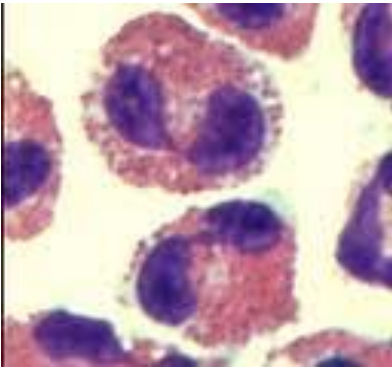


Erythrocytes and a neutrophil.
Wright's (Oil)



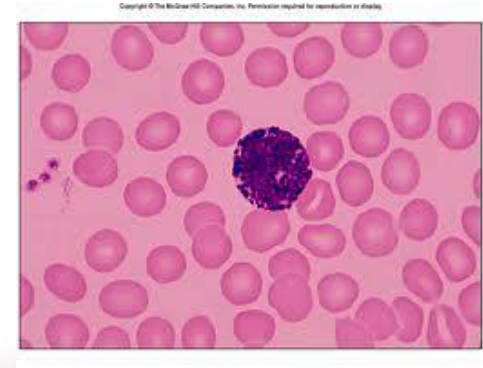
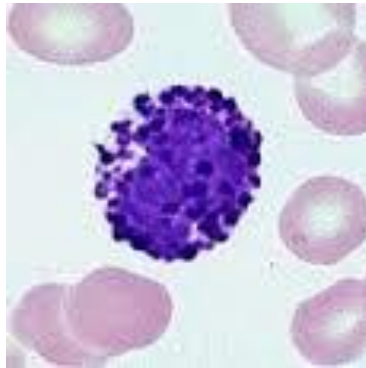
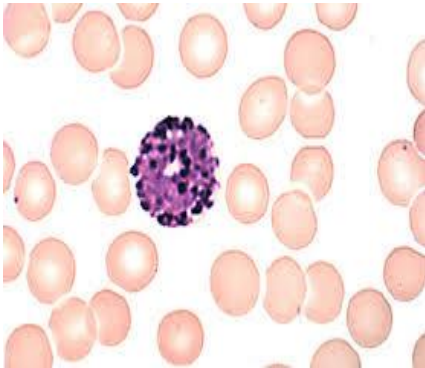
Eosinophils

- Less common in the blood stream (1-3%)
- They are characterized by a dumbbell-shaped nucleus (bi-lobed) and large, prominent, red (eosinophilic) granules



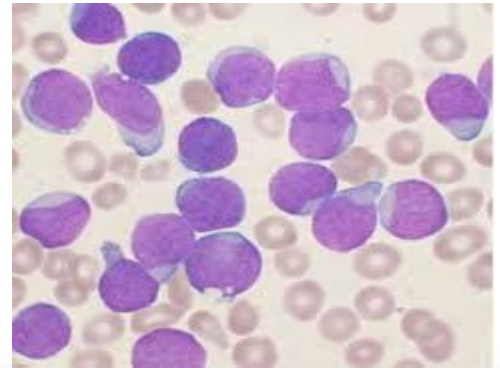
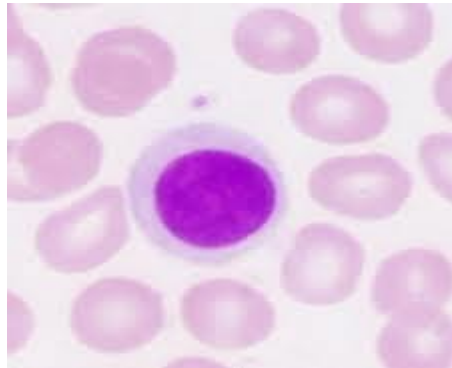
Basophils

- The rarest of all blood cells (0.4-1%)
- It is a large cell filled with prominent blue (basophilic) granules. These large granules contain heparin and histamine. The nucleus is somewhat hidden behind these large granules.



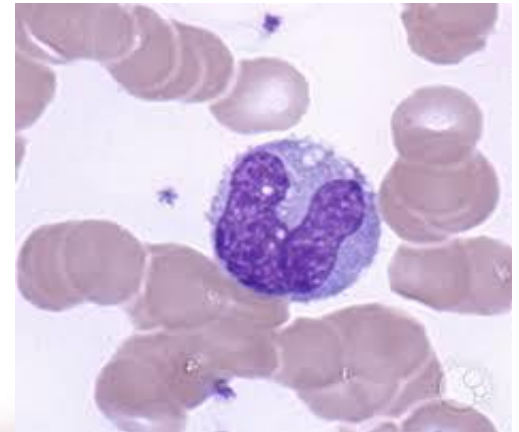
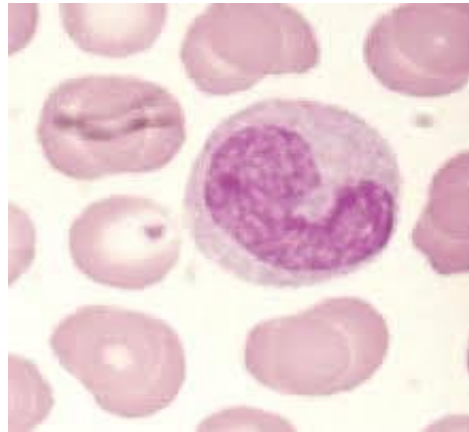
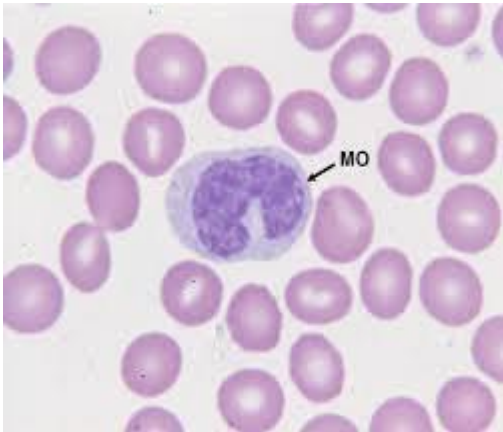
Lymphocytes

- About 25-35% of the blood cells
- Small, spherical cells with large, round nucleus
- The cytoplasm does not contain any granules.
- The nucleus occupies most of the volume of the cell, leaving only a thin rim of the cytoplasm around it .



Monocytes

- About 4-6% of the blood cells
- The largest of the blood cells, the cytoplasm has no granules
- The nucleus is large and kidney-shaped



Clinical Application

Differential count provides clues about certain illnesses

1. **Neutrophilia:** pyogenic illness(bacterial and fungal infection)
2. **Eosinophilia:** Allergy and parasitic infections
3. **Basophilia:** in allergy and malignancy
4. **Lymphocytosis:** viral infections (infectious mononucleosis).
5. **Monocytosis :** chronic infections



Blood element	% of leukocytes	Size μ	Cytoplasmic staining	Nucleus morphology
Erythrocyte	-	7-8	pink, no granules	none
Neutrophil	50-70	10-12	salmon-colored small granules	Segmented,-2-5 lobed
Lymphocyte	25-35	7-8	Light blue, scant amount, no granules	Single large Oval purple
Monocyte	4-6	16-18	Basophilic, no granules	Large, kidney shaped
Eosinophil	1-3	13-14	Bright red coarse granules	bilobed purplish
Basophil	0-4-1	14-15	Large, basophilic granules	Bilobed bluish black

Thank you

You don't have to be a doctor to save lives.



Just donate blood.

Do you know that just a pint of blood can save up to 3 lives?

Donating blood is safe. It's painless, simple, and noble.

