

Blood Smear .2

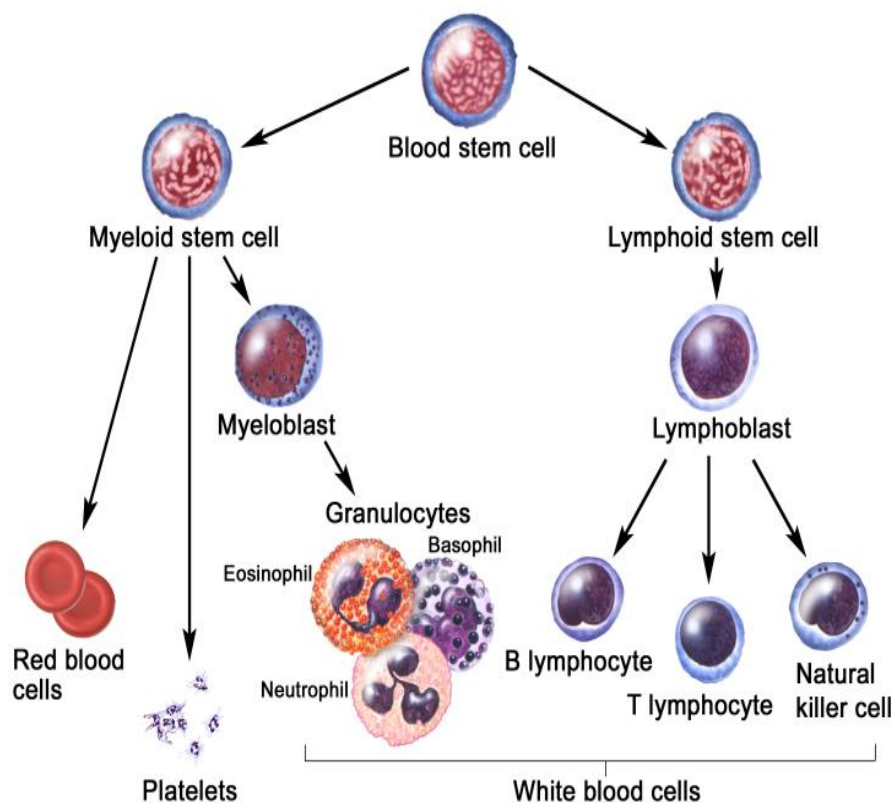
Background

Blood smear or blood film is a type of blood test; it looks at the appearance, number, and shape of your blood cells and it is also used to detect parasites. It is a drop of blood spread thinly onto a glass slide, then treated with a special stain and the blood cells on the slide are examined and evaluated.

Blood is essential to life; it circulates through our body and delivers essential substances like oxygen and nutrients to the body's cells.

It also transports metabolic waste products away from those same cells. Most adults have 4 to 6 L of blood. The process of making blood cells is called hematopoiesis; it takes place in bone marrow.

Blood Components



There are four basic components that comprise human blood:

1. Plasma

Plasma is the liquid portion of blood and it is yellowish in colour. It consists of; water, gases, proteins, glucose, enzymes and hormones.

2. Red Blood Cells- Erythrocytes

Red blood cells represent 40%-45% of your blood volume. They have a lifespan of about 120 days in the body. Normal range for men is 4.5 - 6.5 million cells/ μL , for women is 3.8 - 5.8 million cells/ μL .

3. White Blood Cells - Leukocytes

The lifespan of white blood cells ranges from 13 to 20 days. Normal range is 4,500 - 11,500 cells / μL .

4. Platelets - Thrombocytes

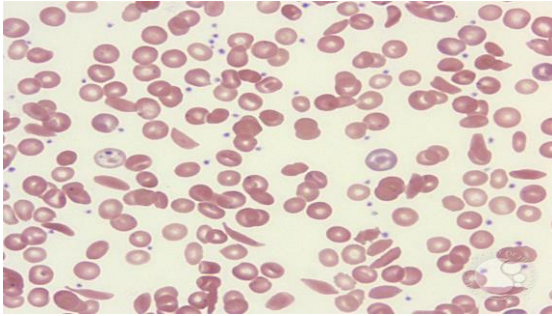
Platelets are the smallest of our blood cells and irregularly shaped, they control bleeding. The average lifespan of a platelet is normally just 5 to 9 days. Normal range is 150,000 to 450,000 platelets / μL

Blood Smear Methods or Techniques: generally, there are 3 techniques or method to prepare blood smear;

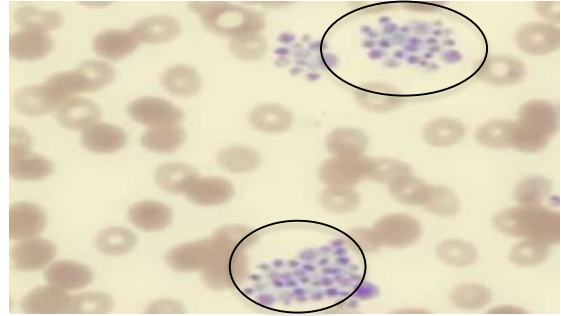
1. Slide method (push and pull) 2. Cover glass method 3. Spin method

The blood smear allows for the evaluation of these cells:

1. Red blood cells



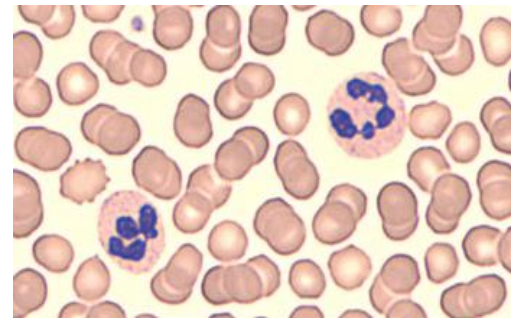
2. Platelets



3. White blood cells

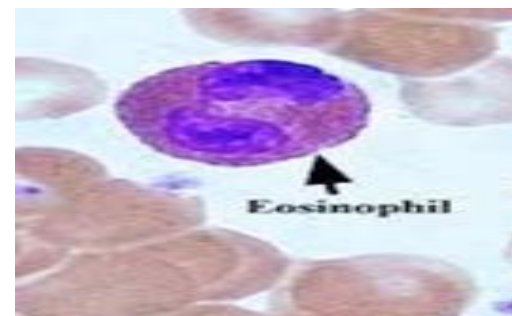
A. Neutrophil

In a blood smear, neutrophils are the most numerous of WBC; they are multi-lobed shape of their nucleus.



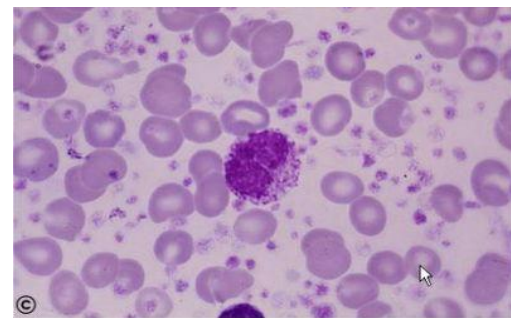
B. Eosinophil or Acidophil

The nucleus is typically bi-lobed.



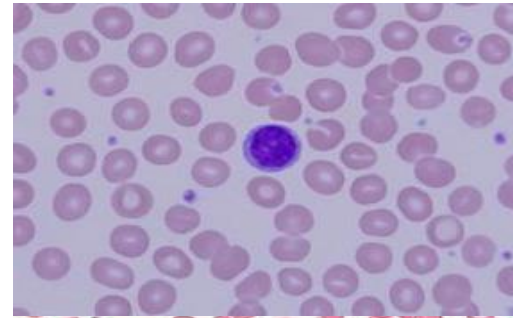
C. Basophil

Basophil is the least numerous of the WBC. It has a bi-lobed to irregular nucleus.



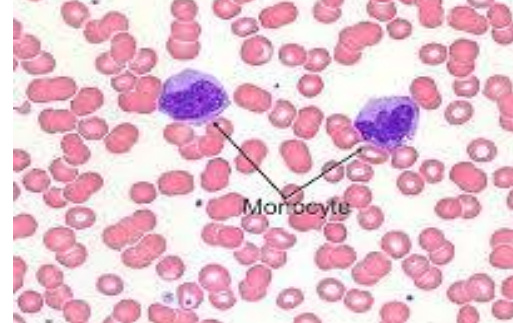
D. Lymphocyte

It has large spherical nucleus.



E. Monocyte

It is the largest type of leukocyte, it has kidney shape nucleus.



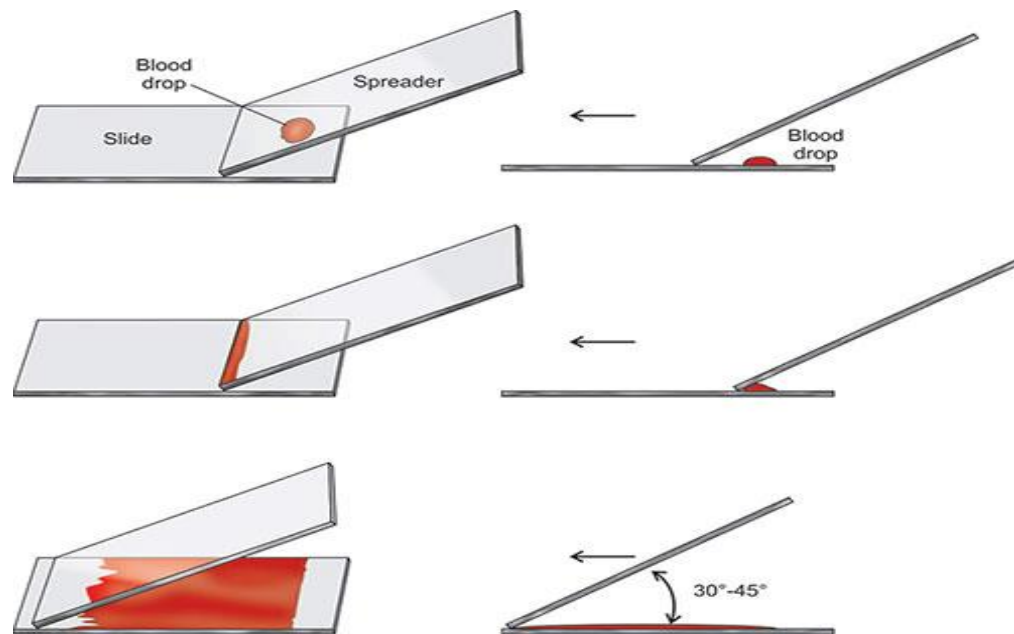
Procedure

Materials (Blood sample, clean microscope slides, 95% ethyl or methyl alcohol or methanol, distilled water, Giemsa stain or leishman stain , soft tissue or filter paper)

Note: - For each blood smear we need 2 slides, one to put a drop of blood on and the other to spread the blood that it called the spreader slide

1. Sample collection
2. Place a small drop of blood near the end of the sample slide
3. Holding the spreader at an angle of 30° - 40° (relative to the sample slide) bring the edge of spreader to contact with the drop of blood and allow the drop to blood evenly behind the spreader. By capillary action, a thin line of blood will spread along the edge of the spreader.
4. Now, push to the left in a smooth, quick motion. The smear should cover about half the slide.

5. Air-dry the sample
6. Place the smear in a container containing 95% ethyl or methyl alcohol or methanol for 2-3 minutes for fixation.
7. Staining by Wrights, Giemsa (for 15 min) or Leishman (The blood smear is covered with 10 drops of Leishman stain for 1-2 min, then add 20 drops of distilled water poured over the stain. The slide is rocked gently in order to mix the stain well with distilled water, let it for 10 min).
8. Then wash by running tap water, dry and examination.



Biologic causes of a poor blood smear

1. Cold agglutinin - RBCs will clump together.
2. Lipemia - holes will appear in the smear.
3. Rouleaux - RBC's will form into stacks resembling coins.