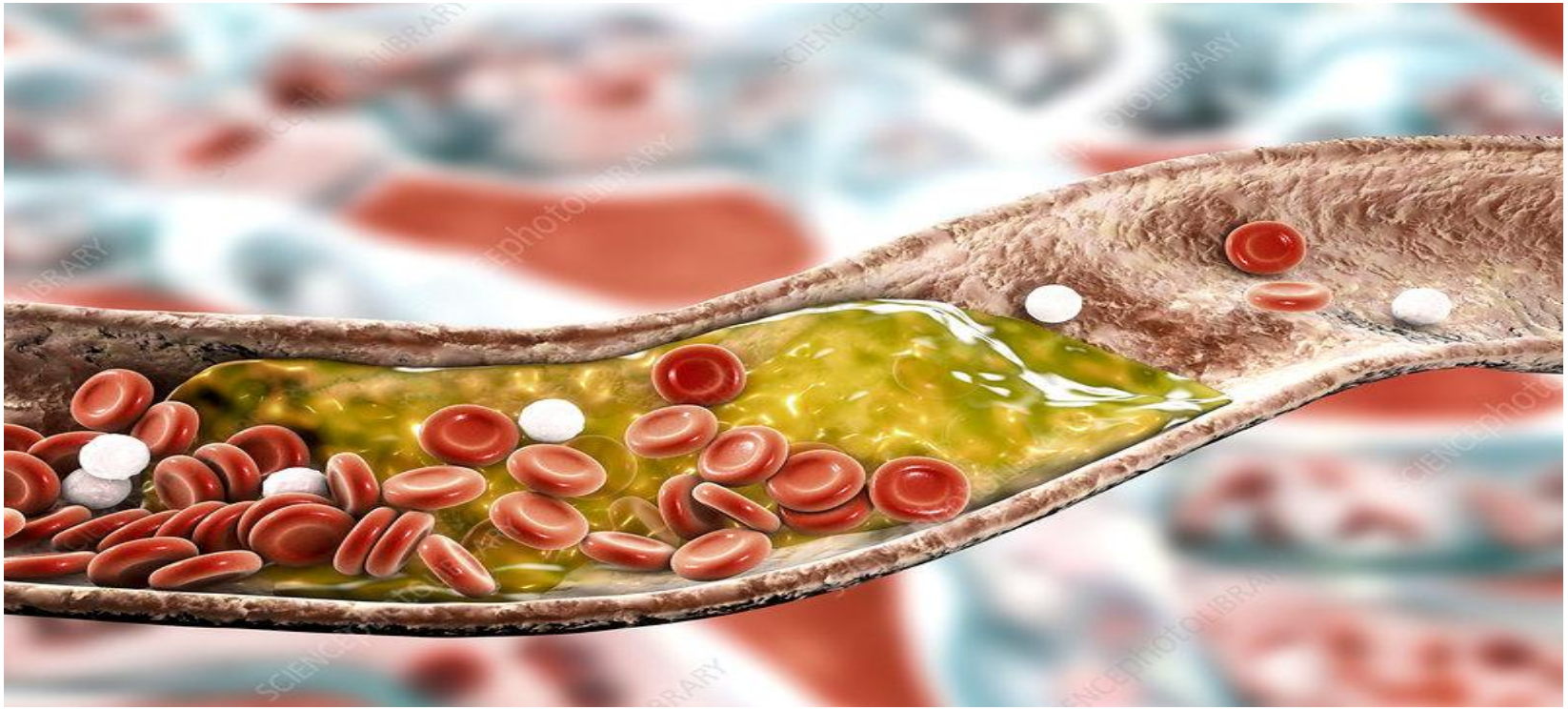
Blood

(Lab)



By

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Blood film

Blood film or peripheral blood smear

- Used to demonstrate the cells of peripheral blood.
- It is a thin layer of blood smeared on a glass microscopic slide to be *stained* to allow the various blood cells to be examined microscopically

Blood film

Preparation of blood for study of blood elements.

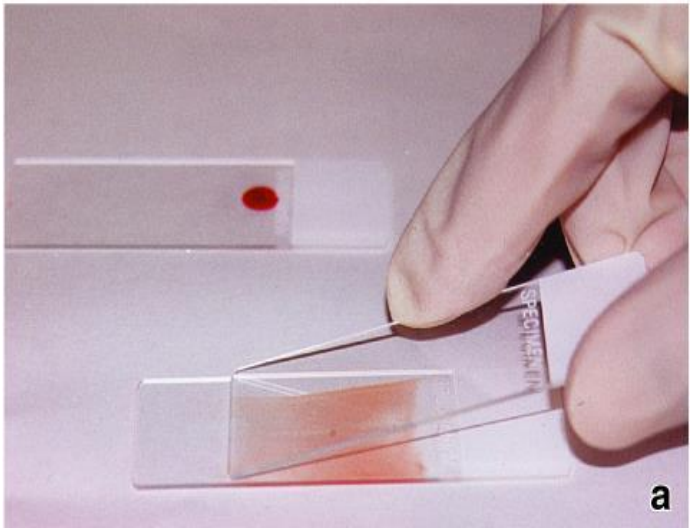
Steps:

1. Clean
2. Prick.
3. Put drop on clean dry slide.
4. Put another slide (spreader slide) on 45°
5. Move backward to touch drop
6. Move forward to spread drop.
7. left to dry for 5 minutes.
8. Stain with **Leishman or Giemsa stain**

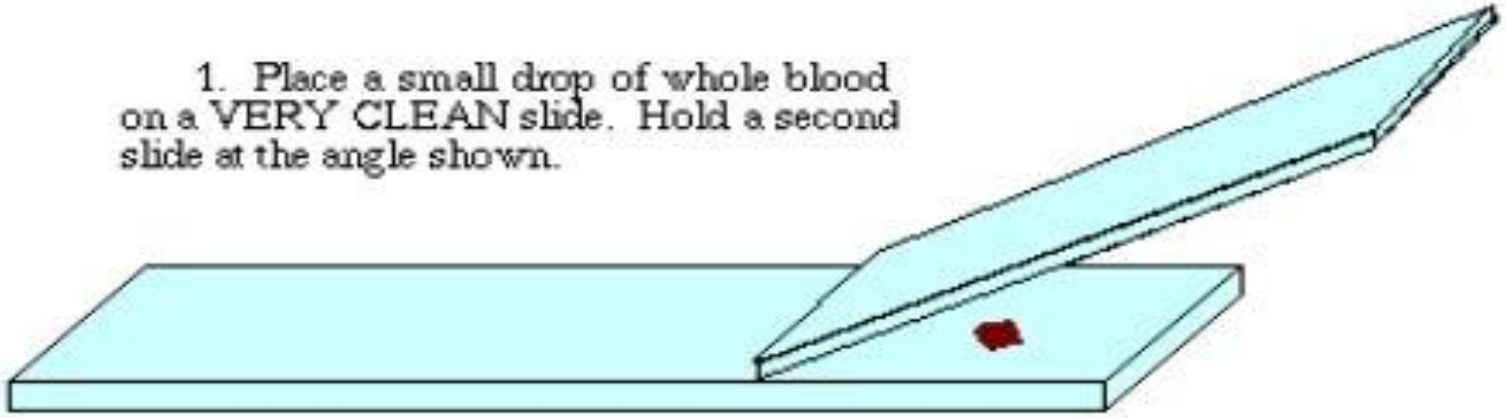
mixture of:

- Eosin (acidic).
- Methylene blue (basic).
- Oxidized methylene blue → methylene azures (purple).

- ►basophilic **(violet)**
- ►eosinophilic **(pink)**
- ►azurophilic **(red purple)**

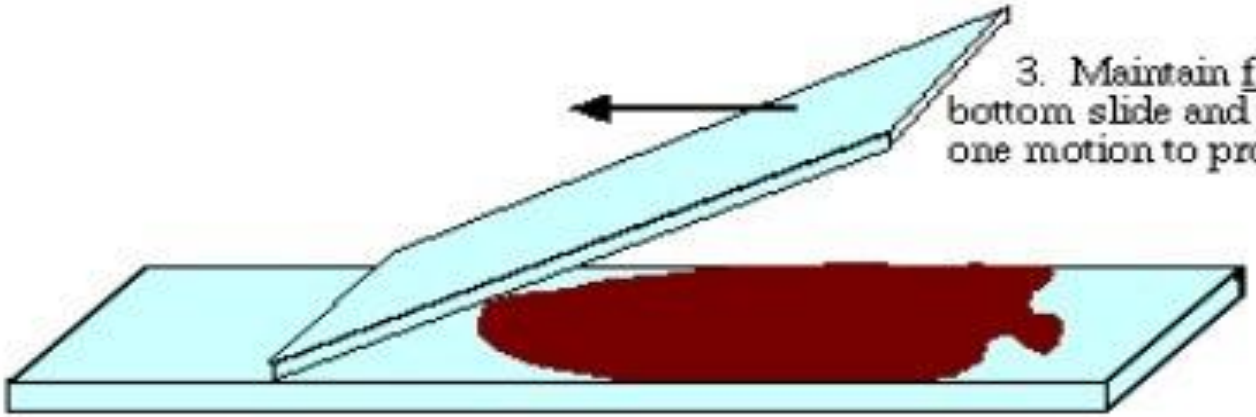


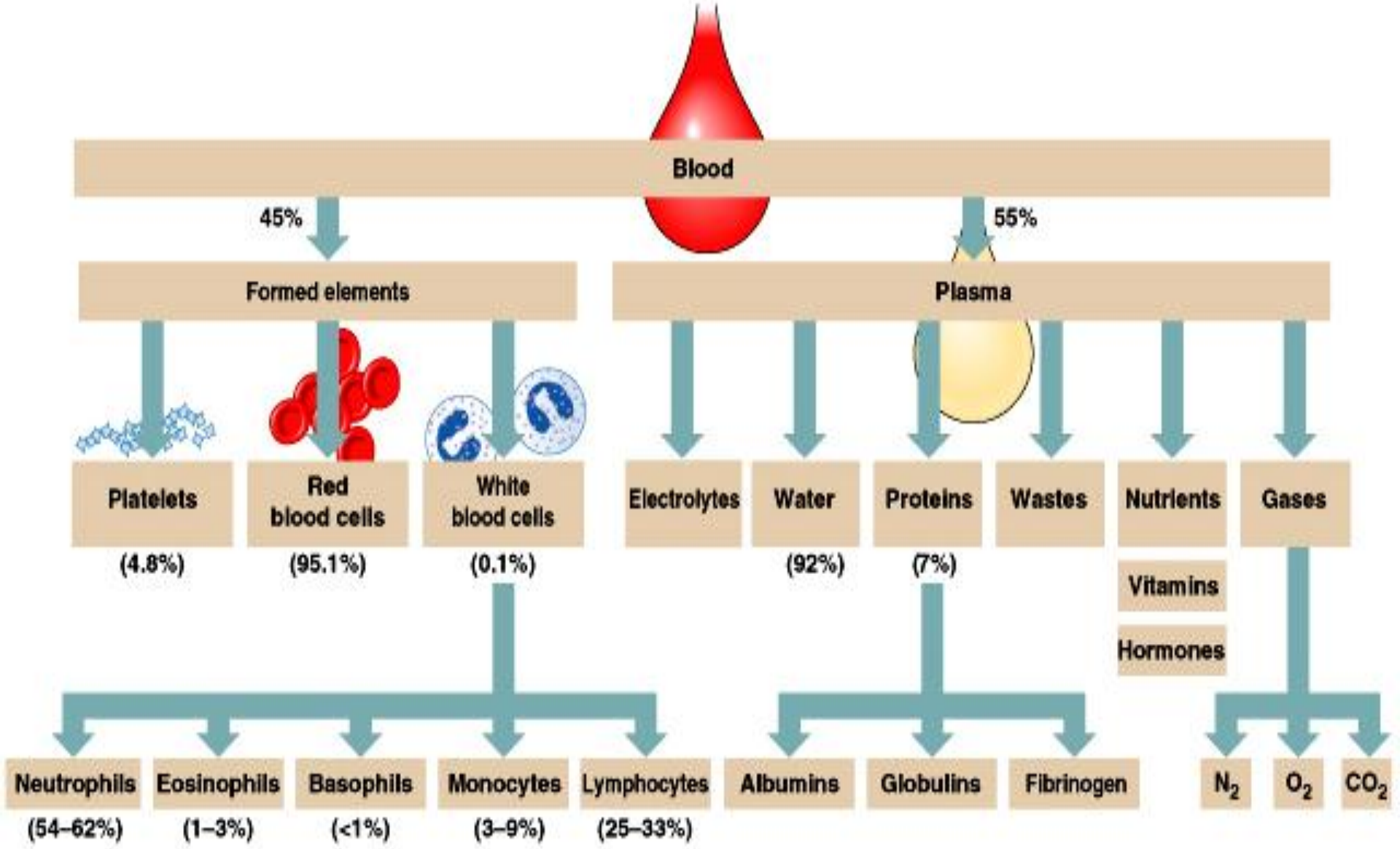
1. Place a small drop of whole blood on a VERY CLEAN slide. Hold a second slide at the angle shown.



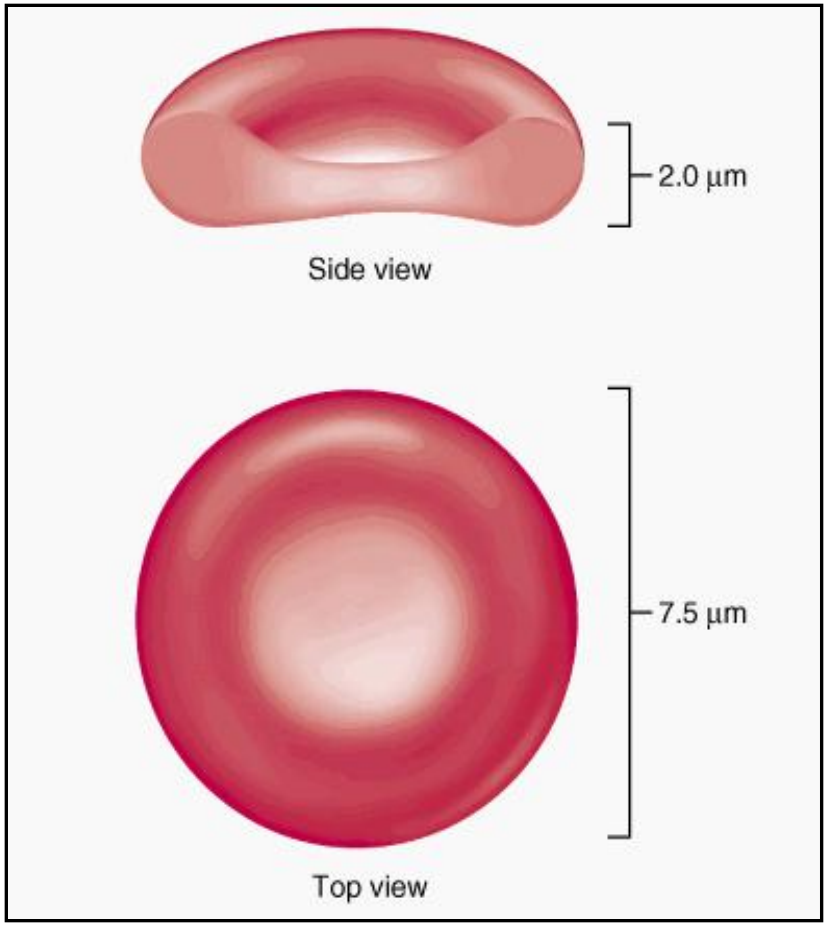
2. While maintaining contact with the bottom slide, pull the top slide back to contact the drop, which will spread by capillary action.

3. Maintain <u>firm</u> contact with the bottom slide and push the top slide in one motion to produce the smear.



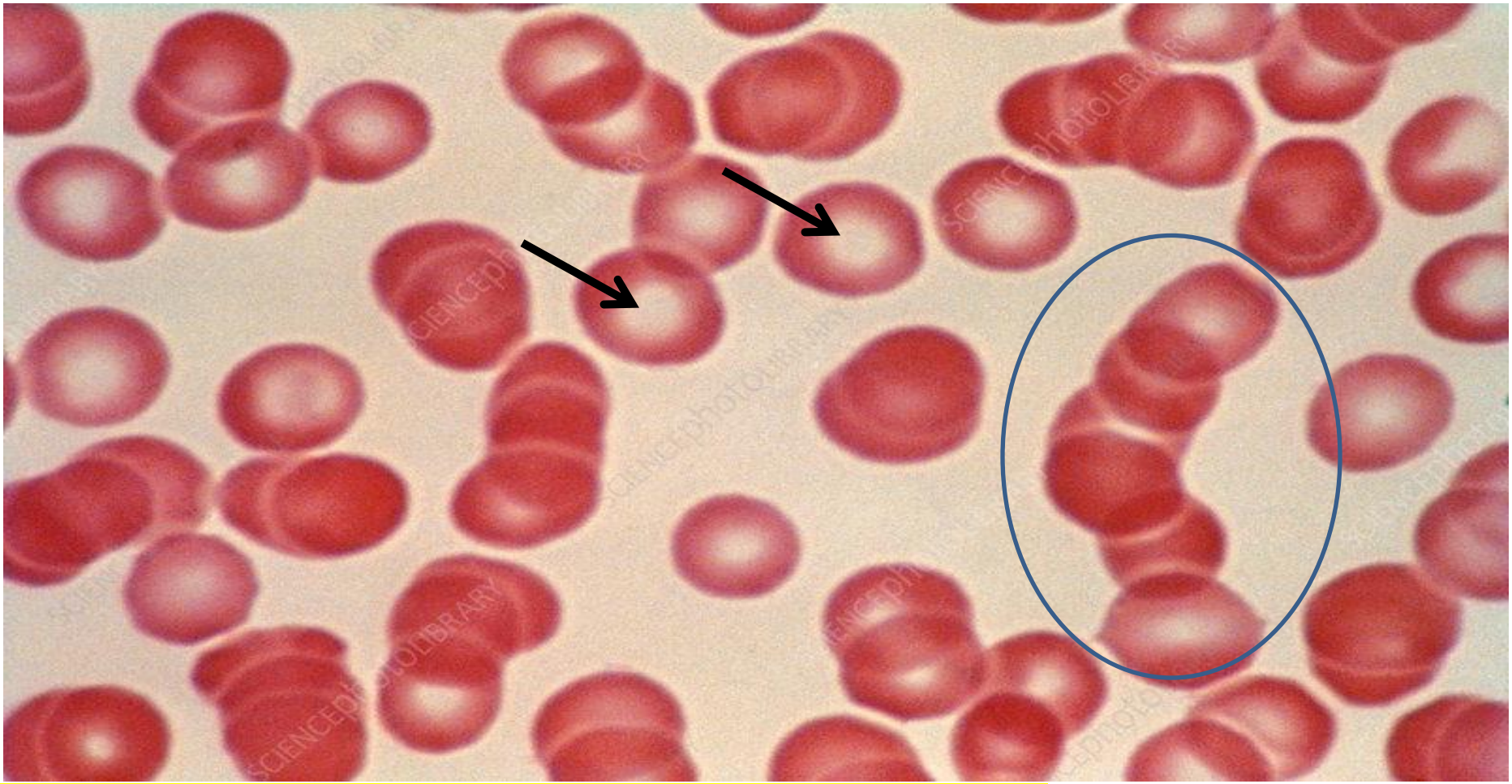

Blood
45%
55%
Formed elements
Plasma
Platelets
Red blood cells
White blood cells
Electrolytes
Water
Proteins
Wastes
Nutrients
Gases
(4.8%)
(95.1%)
(0.1%)
(92%)
(7%)
Vitamins
Hormones
Neutrophils
Eosinophils
Basophils
Monocytes
Lymphocytes
Albumins
Globulins
Fibrinogen
N_2
O_2
CO_2
(54–62%)
(1–3%)
(<1%)
(3–9%)
(25–33%)

Red blood corpuscles (RBCs)



rounded biconcave discs

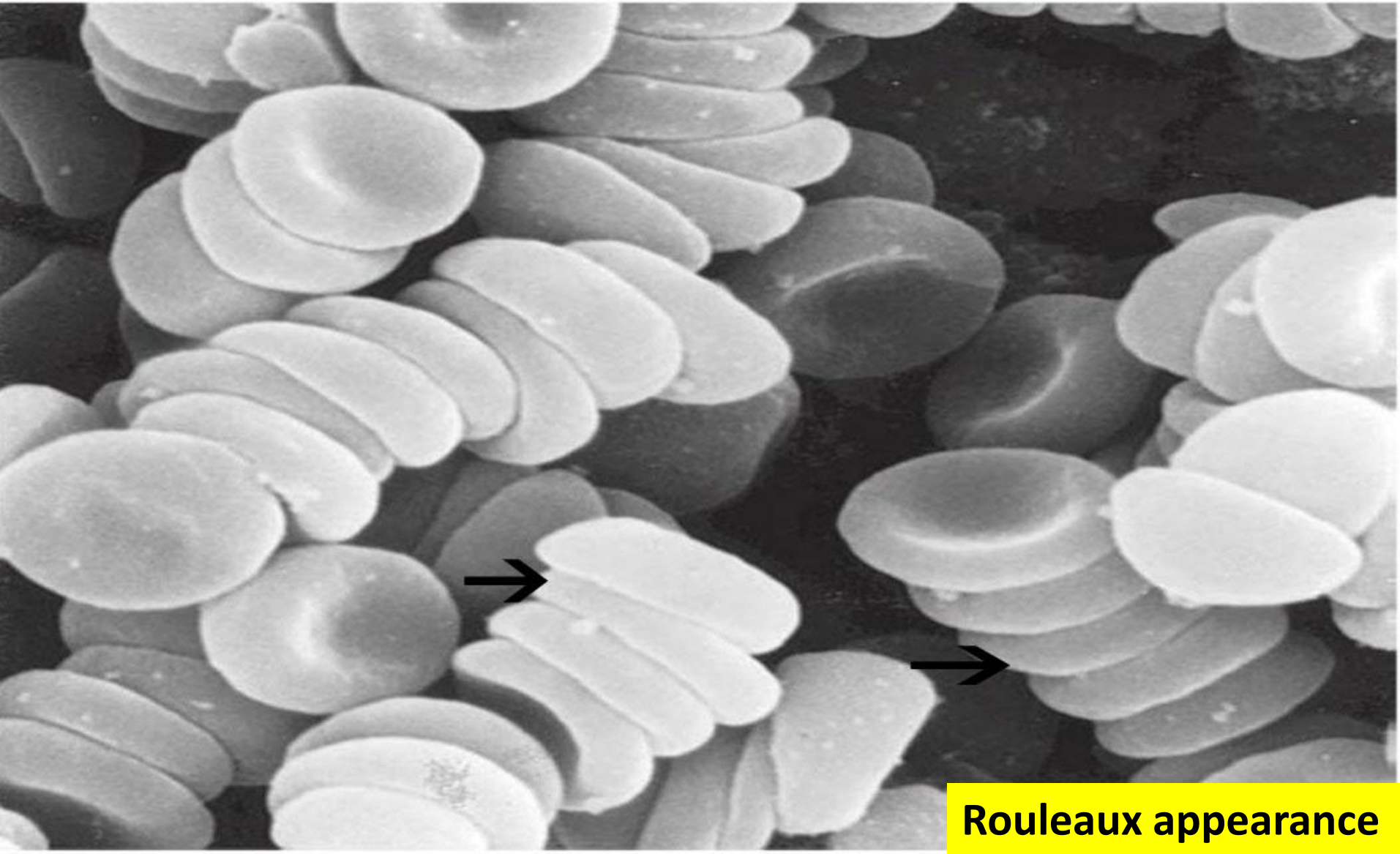
Red blood corpuscles(LM)



<u>Arrows:</u> central clear region representing the thinnest area of the biconcave discs

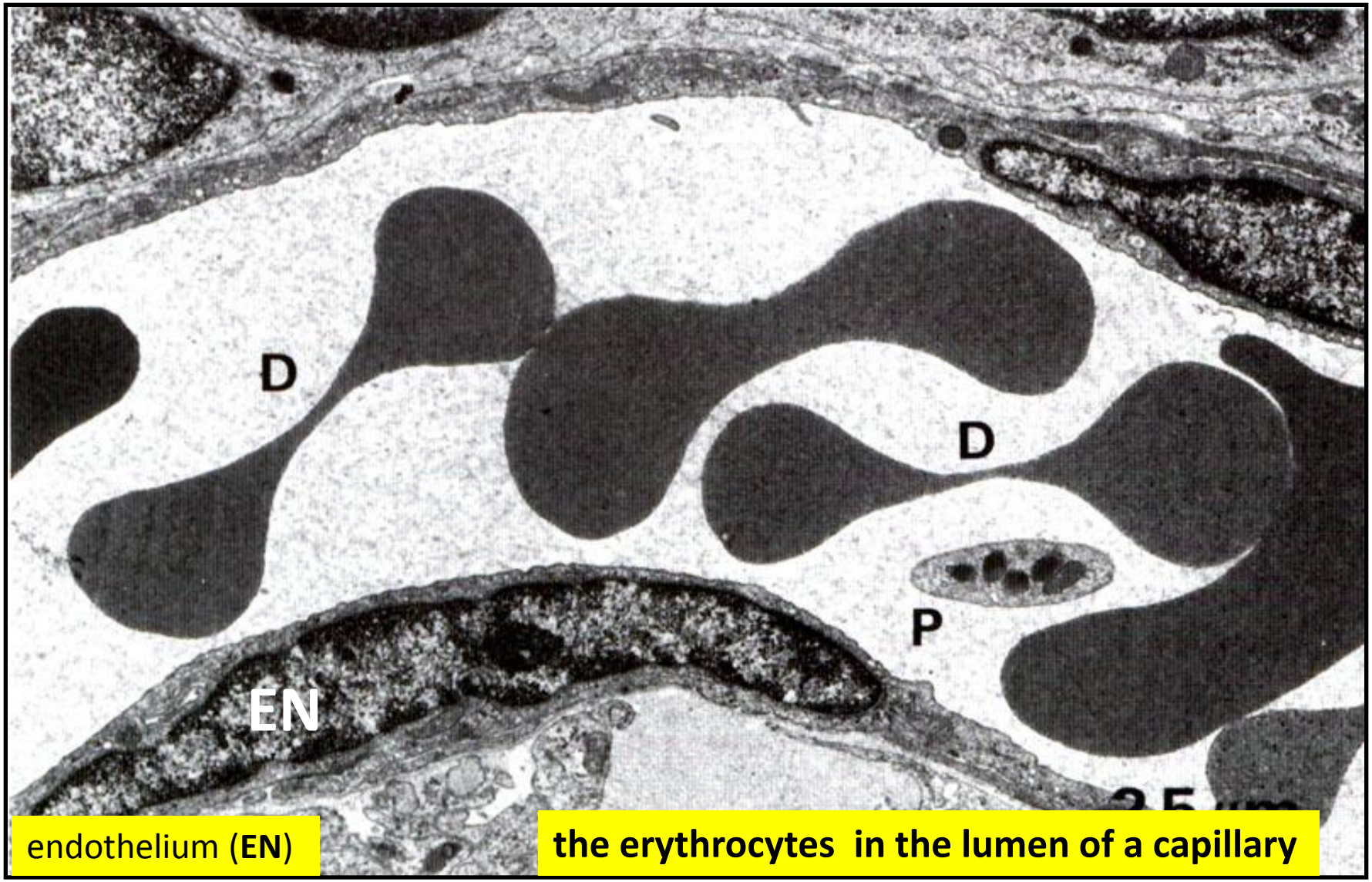
<u>Circle:</u> Rouleaux appearance

Red blood cells (SEM)



Rouleaux appearance

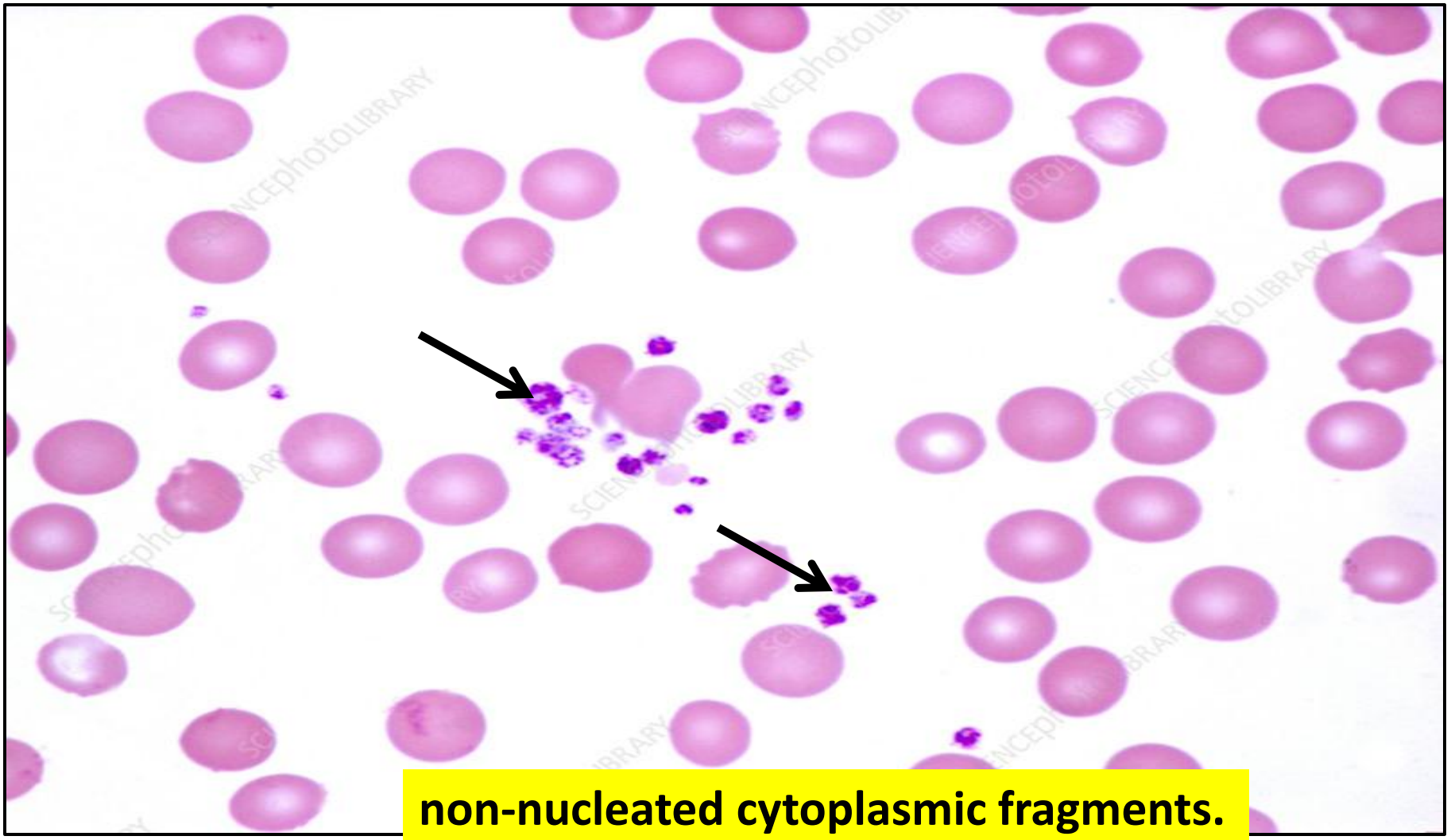
Erythrocytes (TEM)



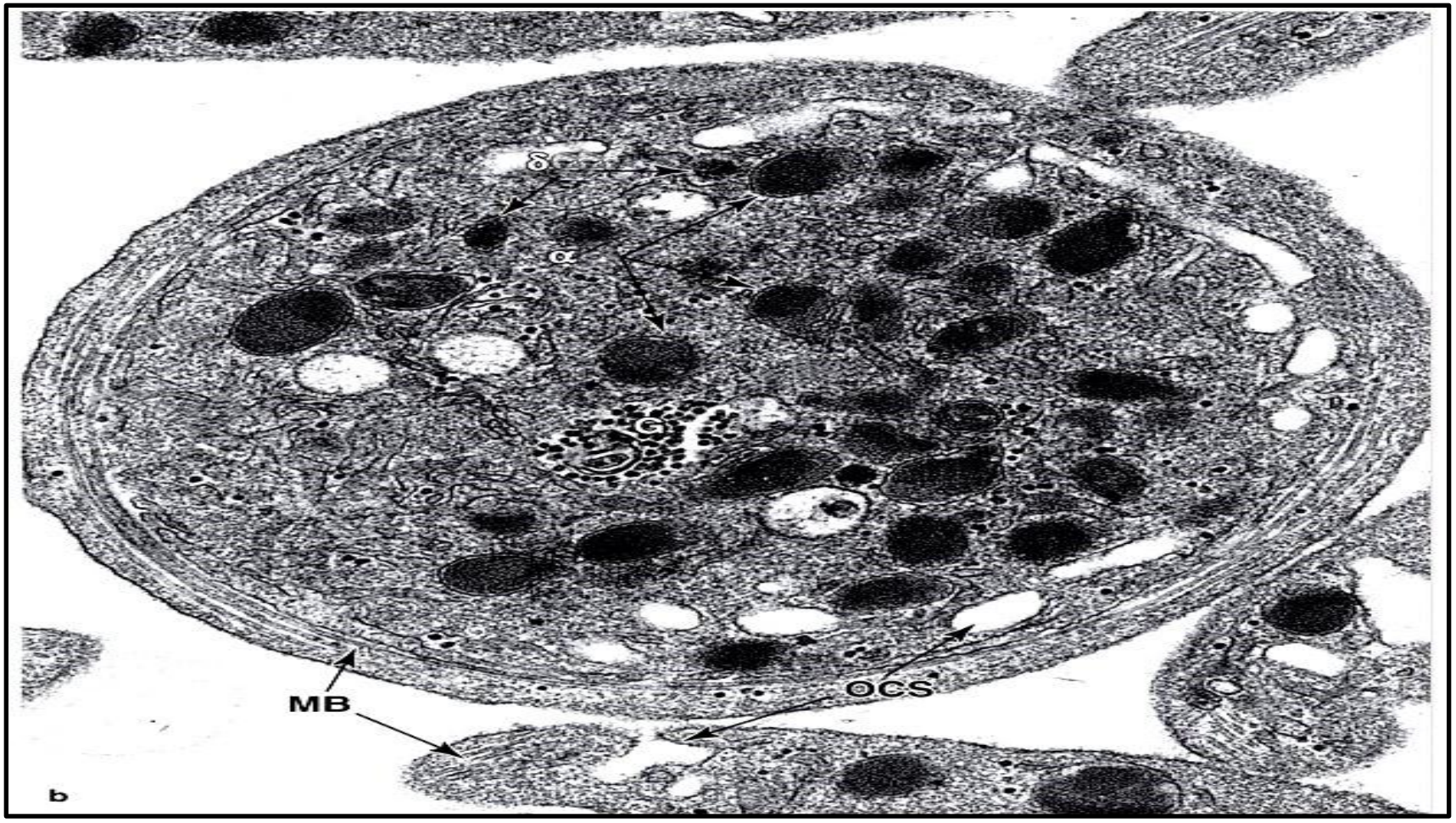
endothelium (**EN**)

the erythrocytes in the lumen of a capillary

Platelets (Thrombocytes) (LM)

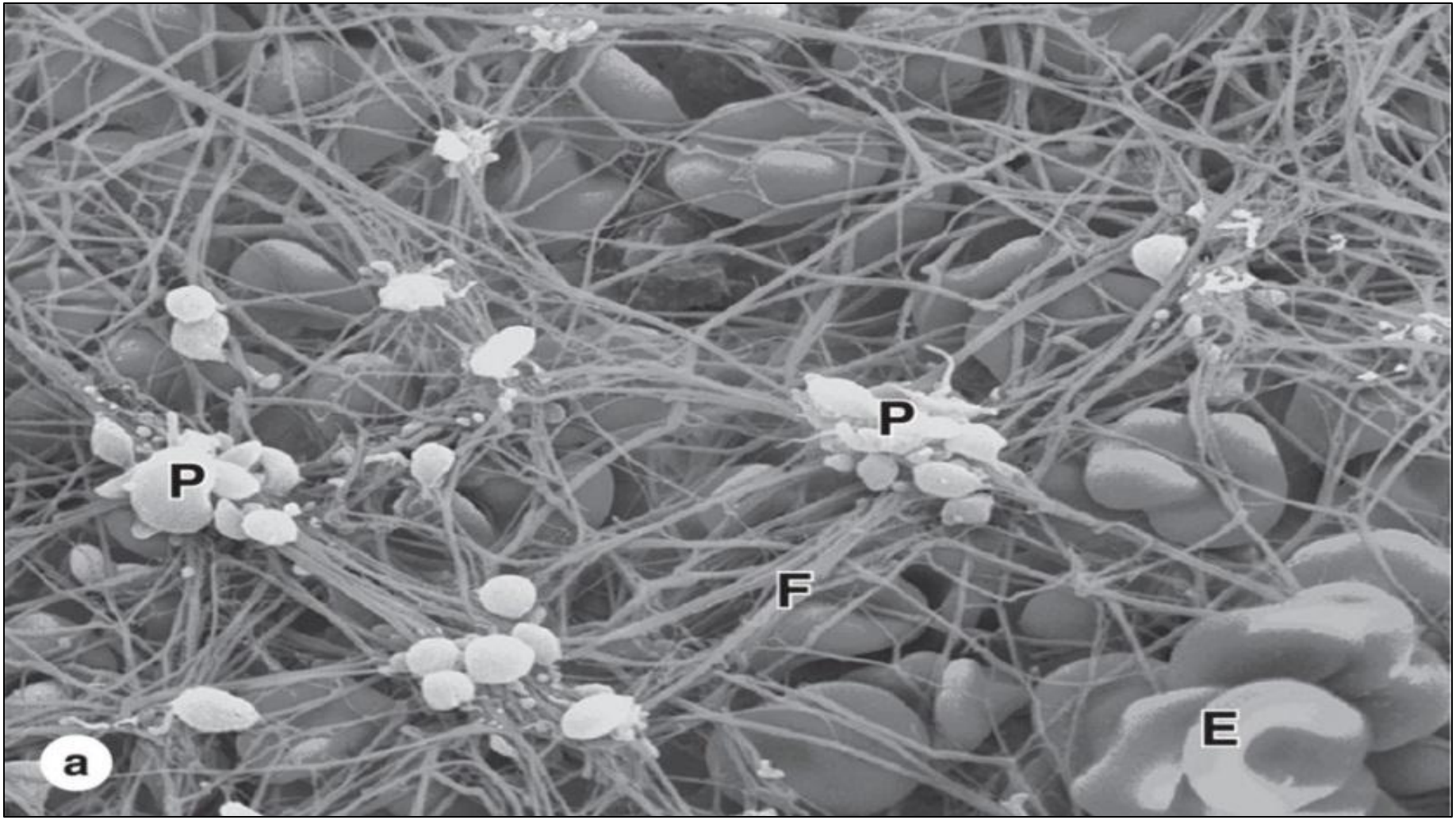


Platelets (TEM)



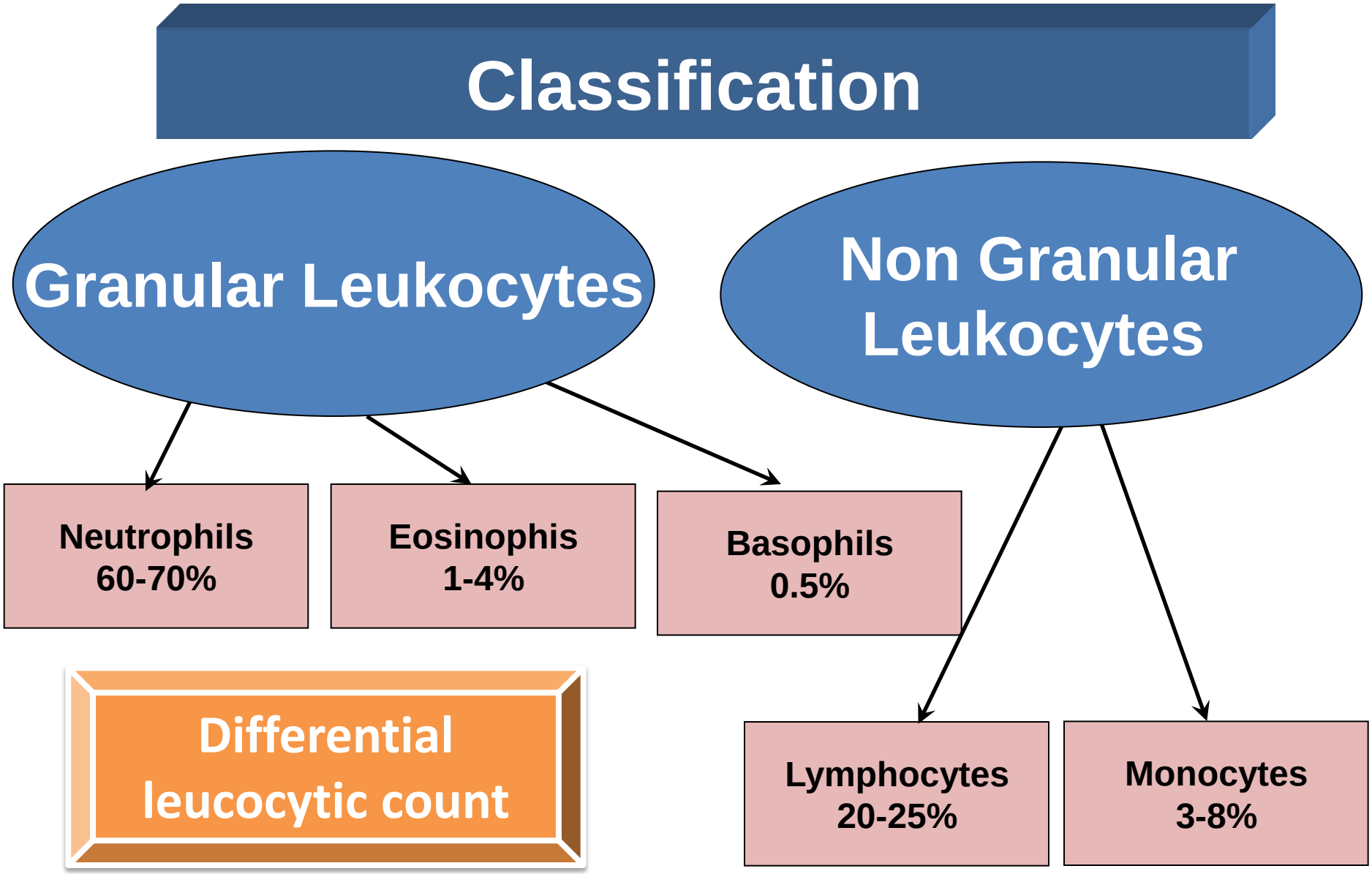
TEM of a platelet showing a **peripheral hyalomere** with open canalicular system (OCS) and a system of microtubules and actin filaments (MB). The central **granulomere region** contains small dense delta **(δ)** granules, larger and more numerous alpha granules (**α**), and glycogen (**G**).

Platelets (SEM)

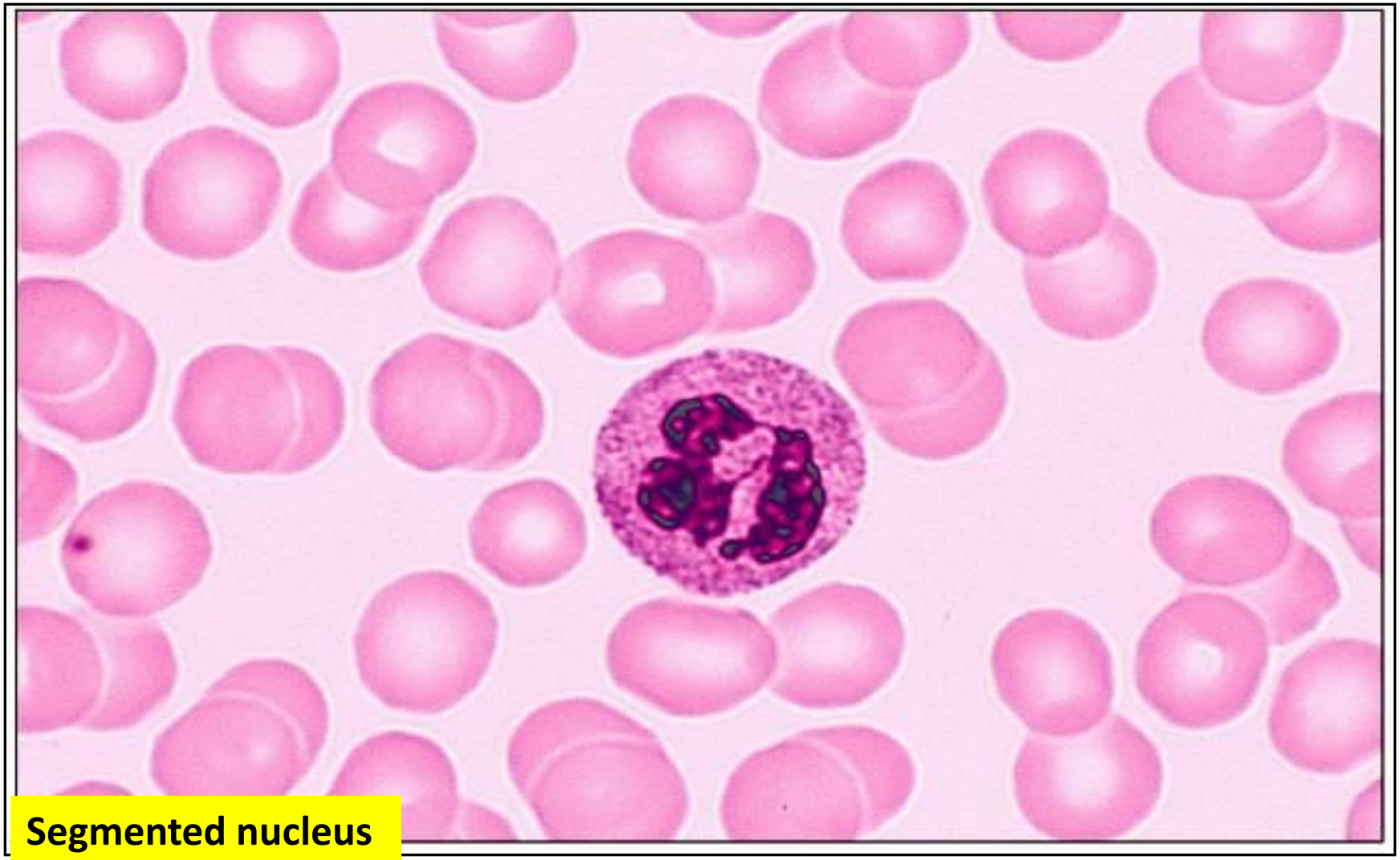


In case of minor trauma to vessels, platelets (P) aggregate, swell, and release factors that trigger formation of a fibrin meshwork (F) that traps erythrocytes (E) forming a blood clot to prevent the bleeding.

According to the type of cytoplasmic granules



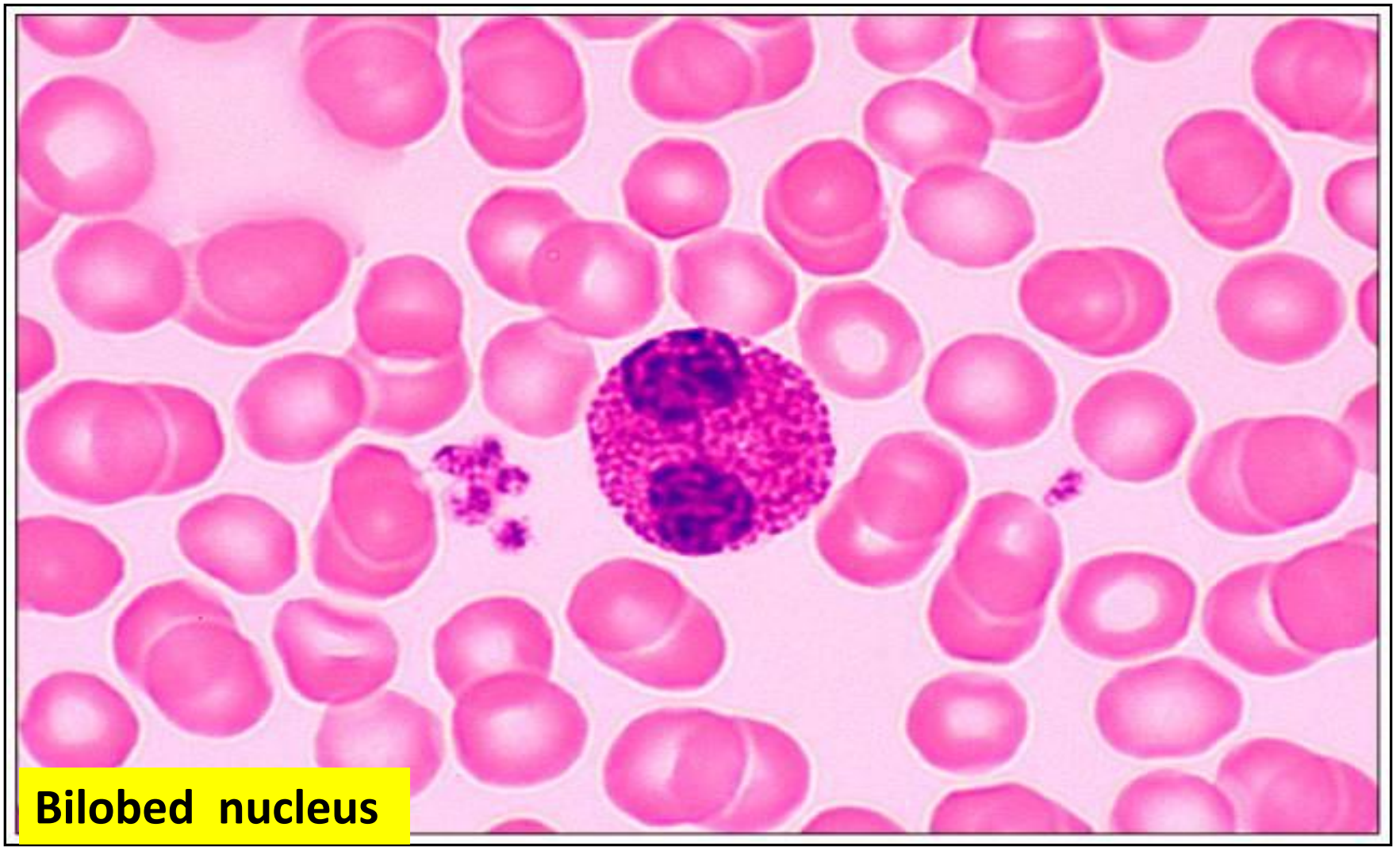
Neutrophil (LM)



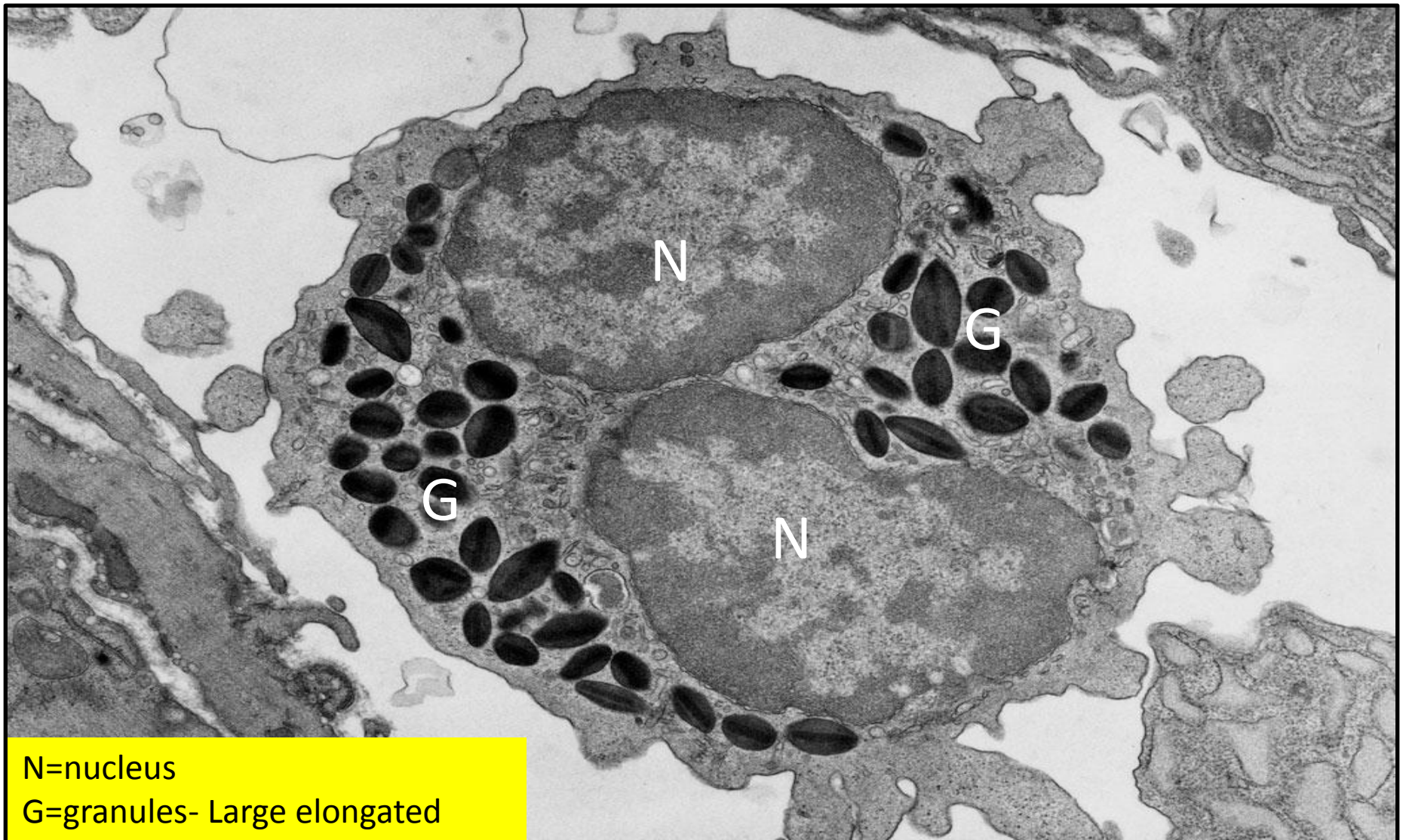
Neutrophil (EM)

N=nucleus
G=granules

Eosinophil (LM)

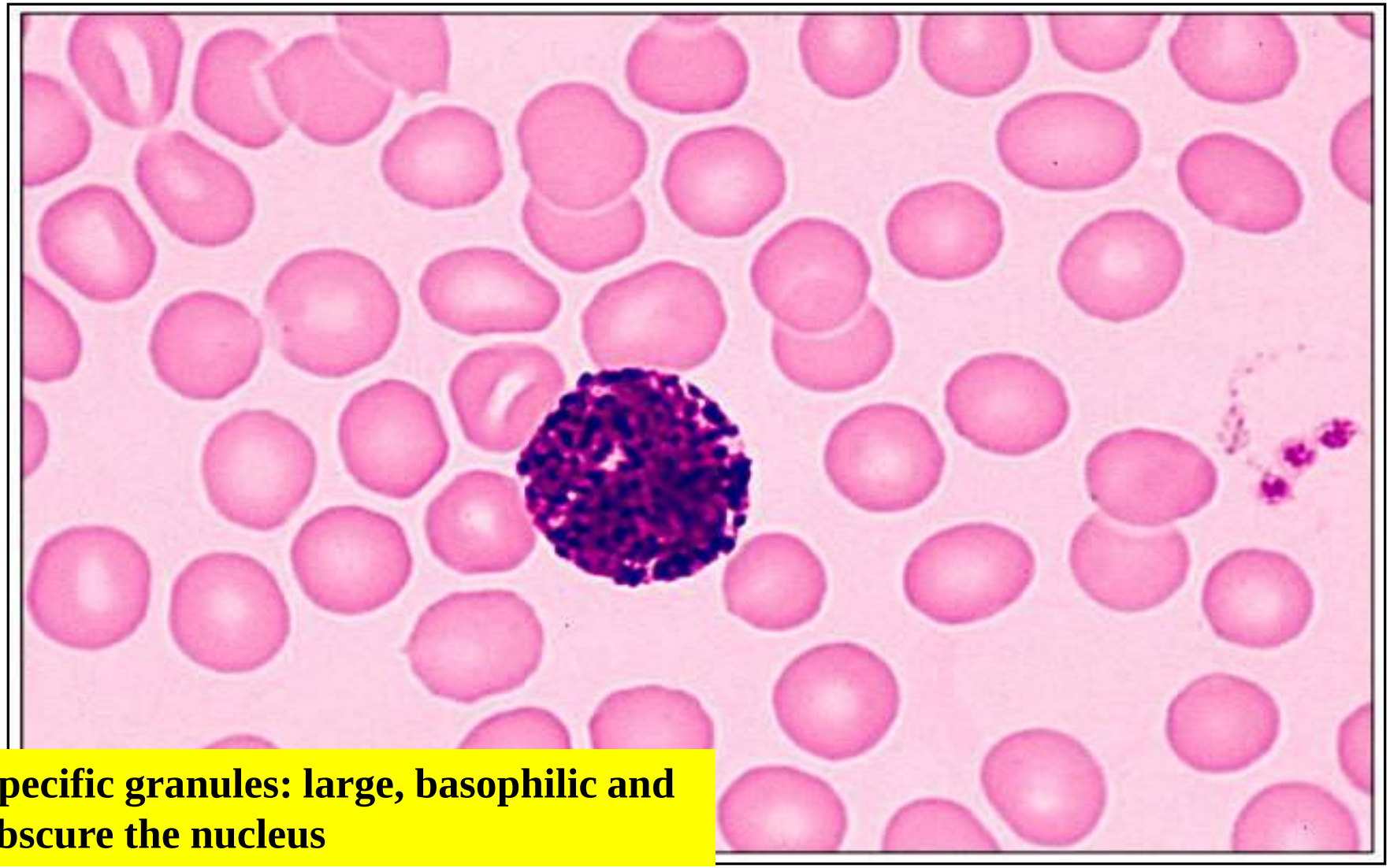


Eosinophil (EM)



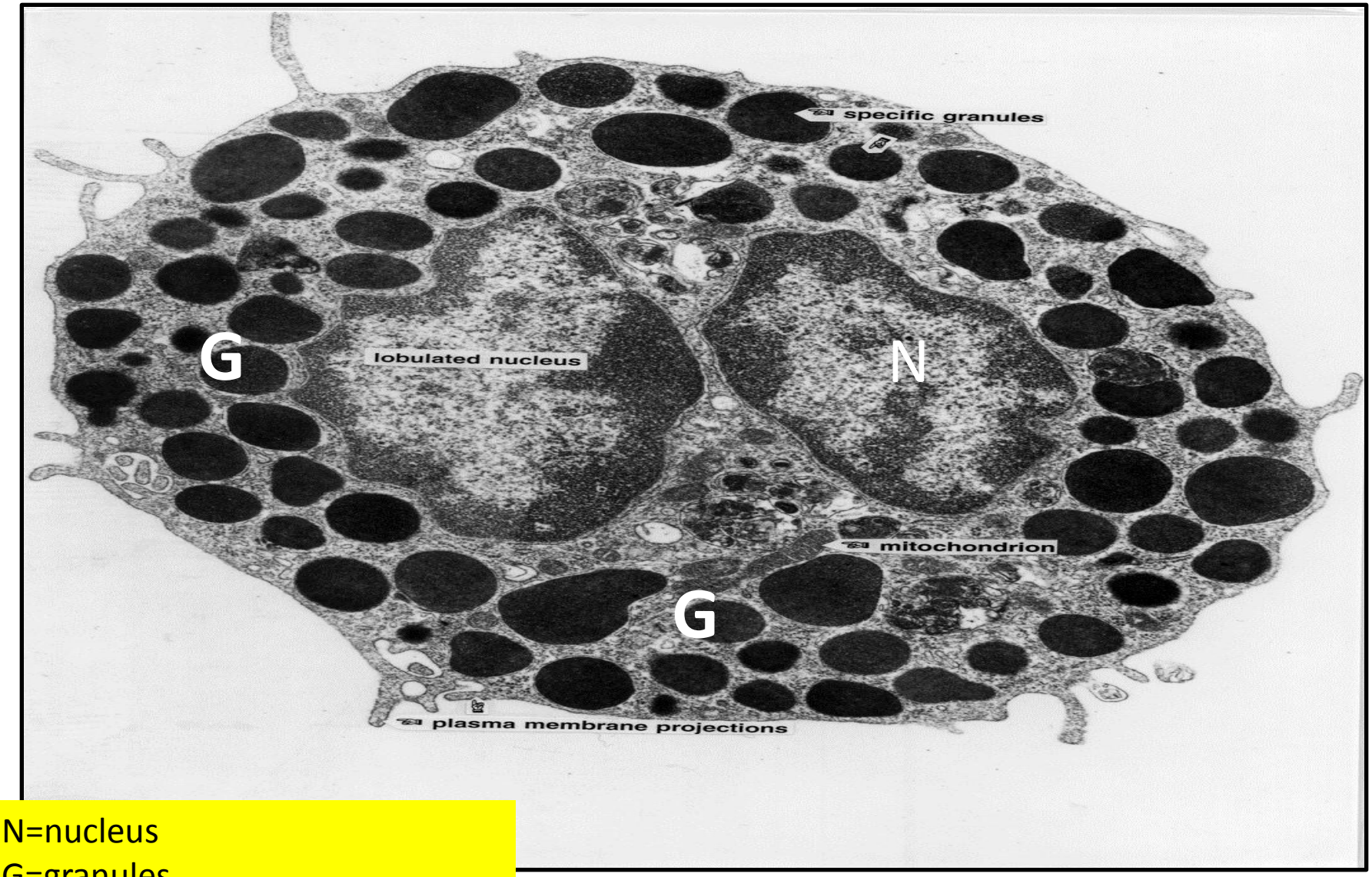
N=nucleus
G=granules- Large elongated

Basophil (LM)



Specific granules: large, basophilic and obscure the nucleus

Basophil (EM)



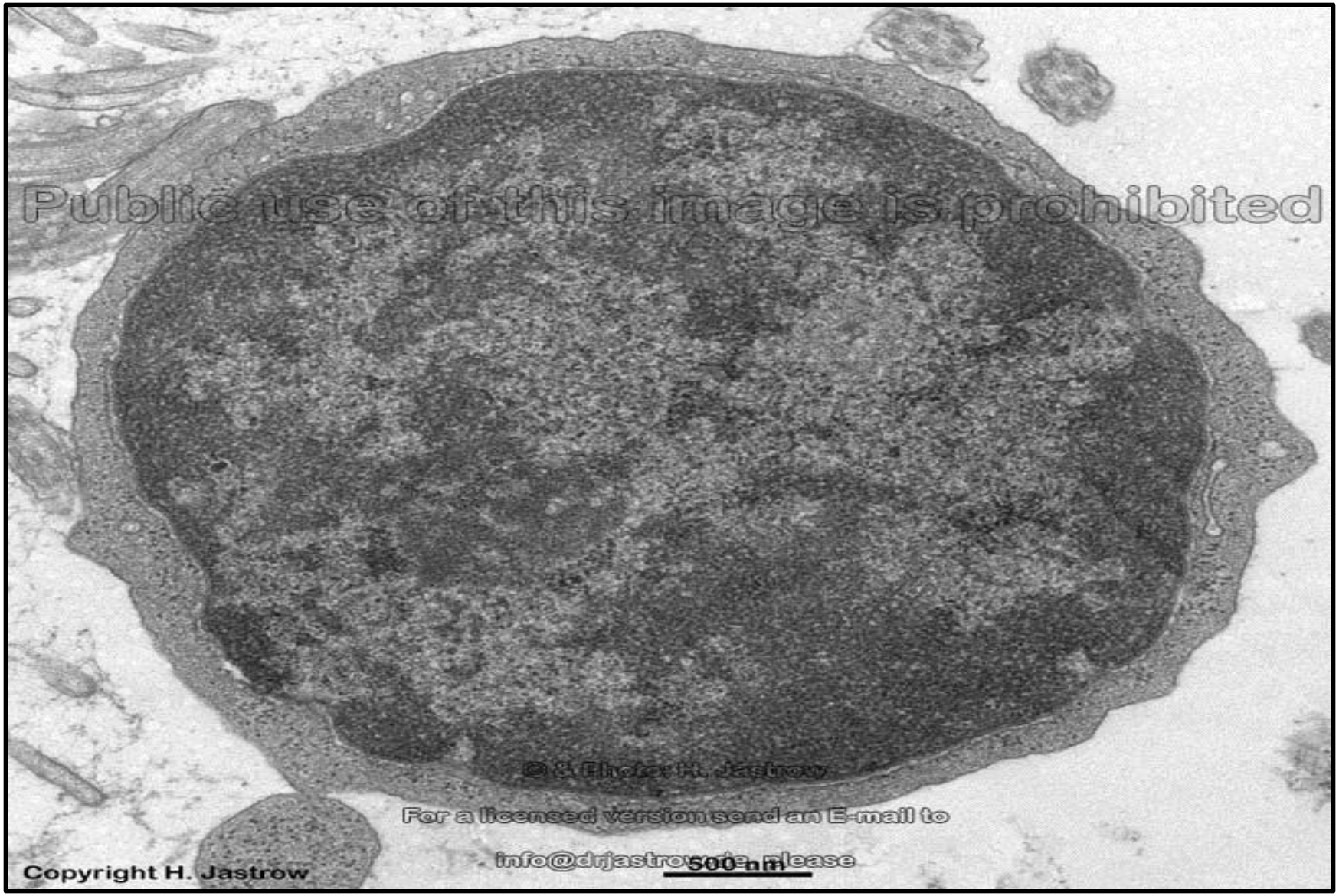
N=nucleus
G=granules

Lymphocyte (LM)

Nucleus: is large, rounded & darkly with little indentation at one side.

-Cytoplasm: is scanty, and appears as a narrow rim around the nucleus.

Lymphocyte (EM)

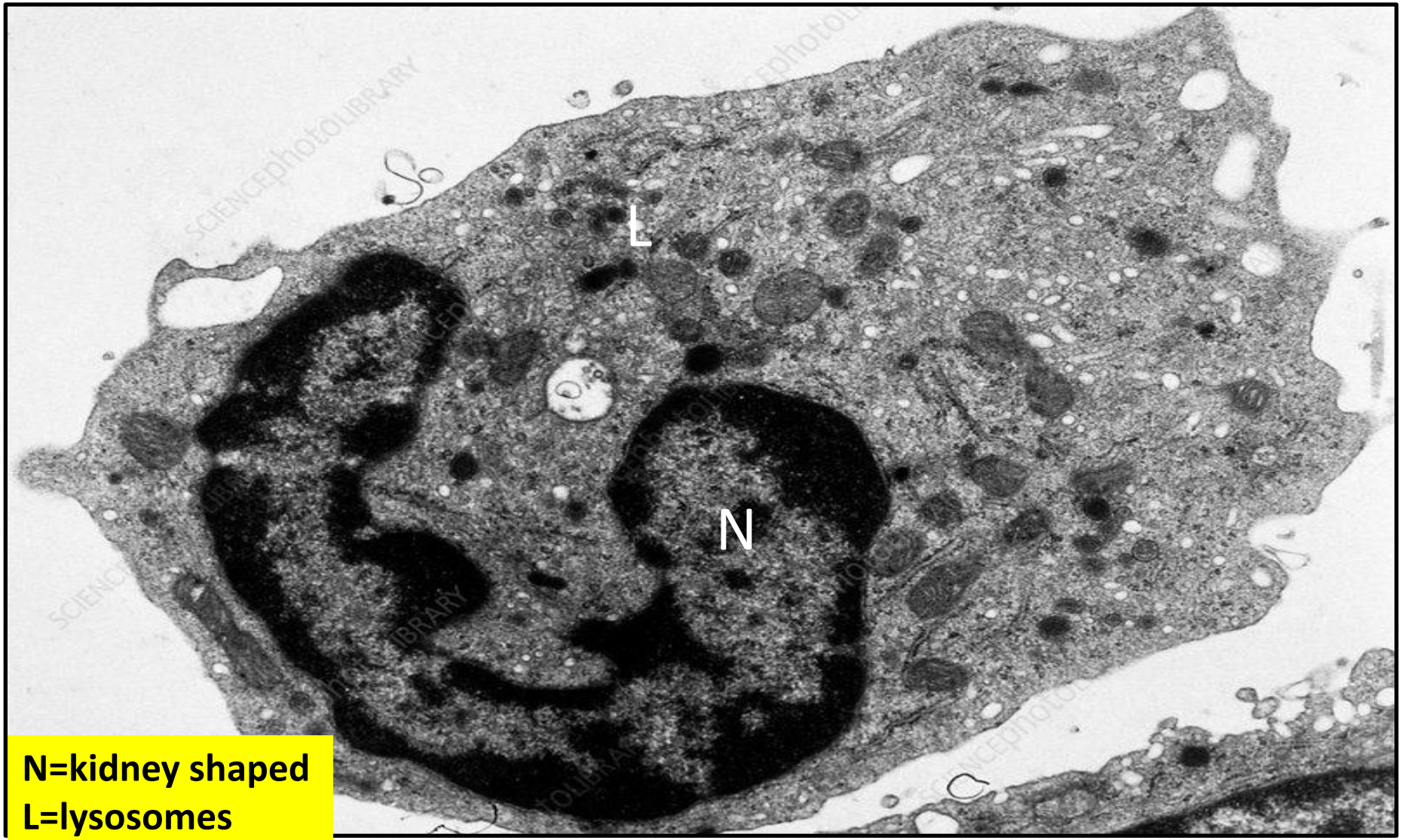


Monocyte (LM)

Large cell

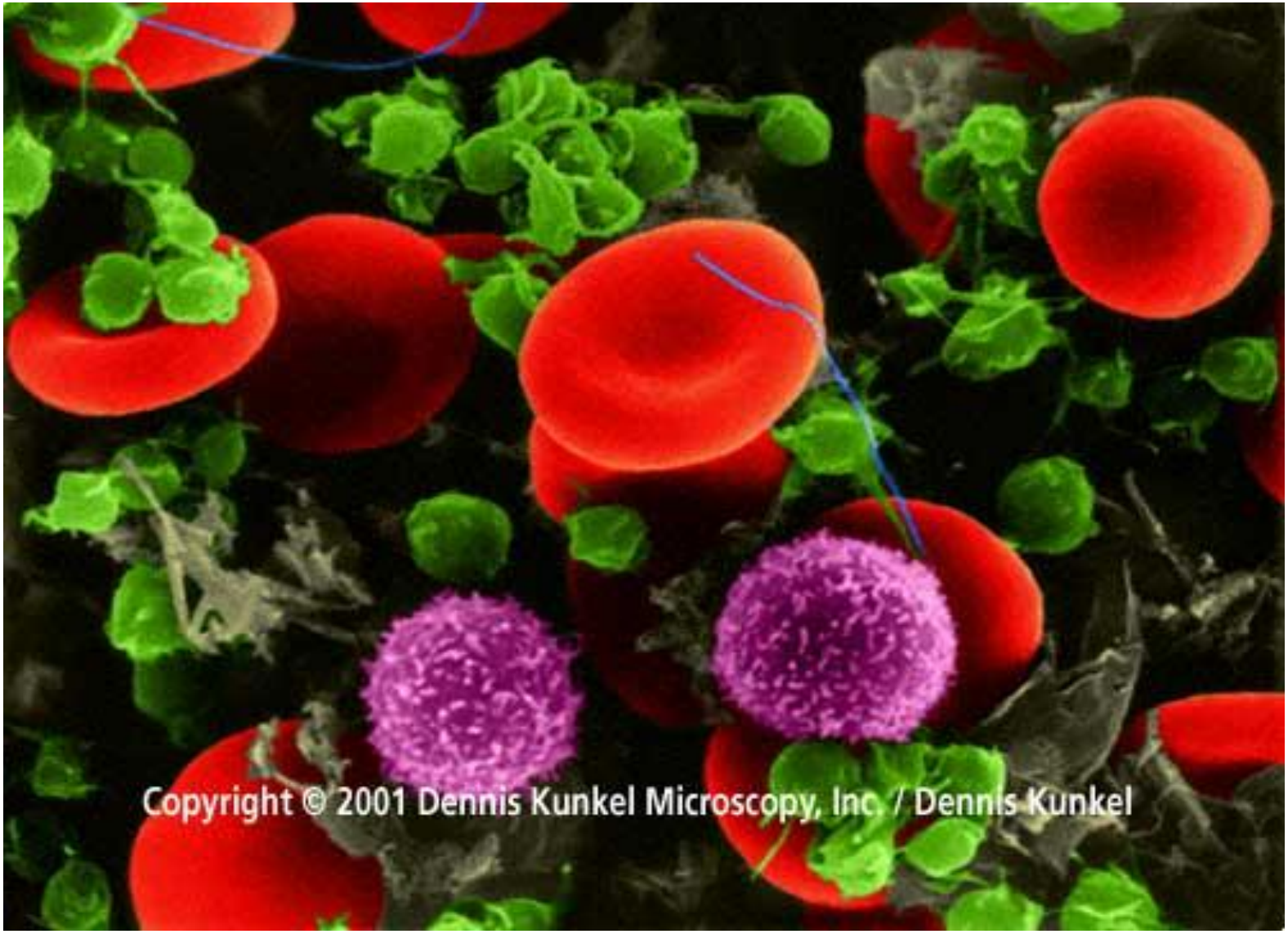
Nucleus: kidney shape

Monocyte (EM)

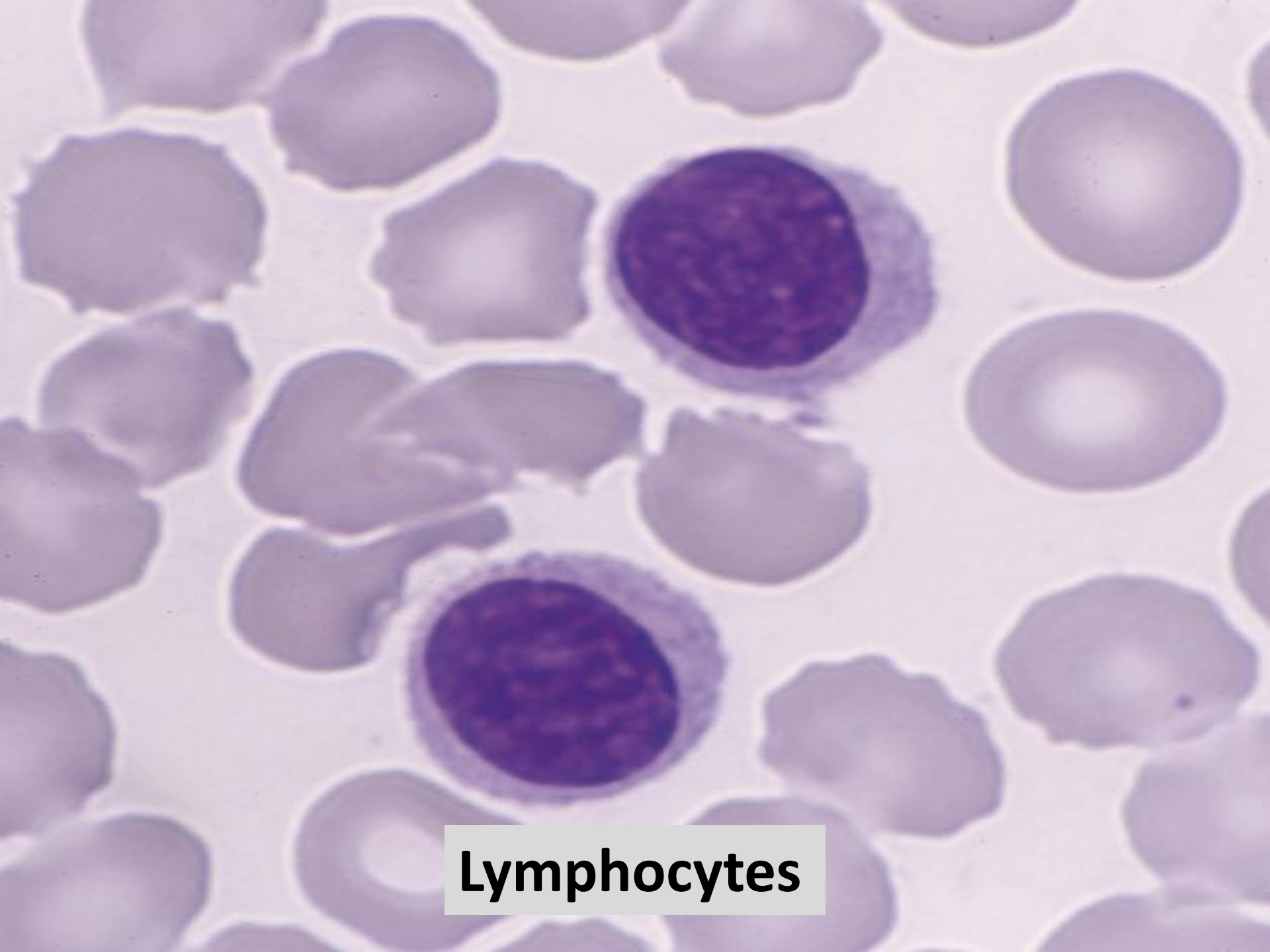


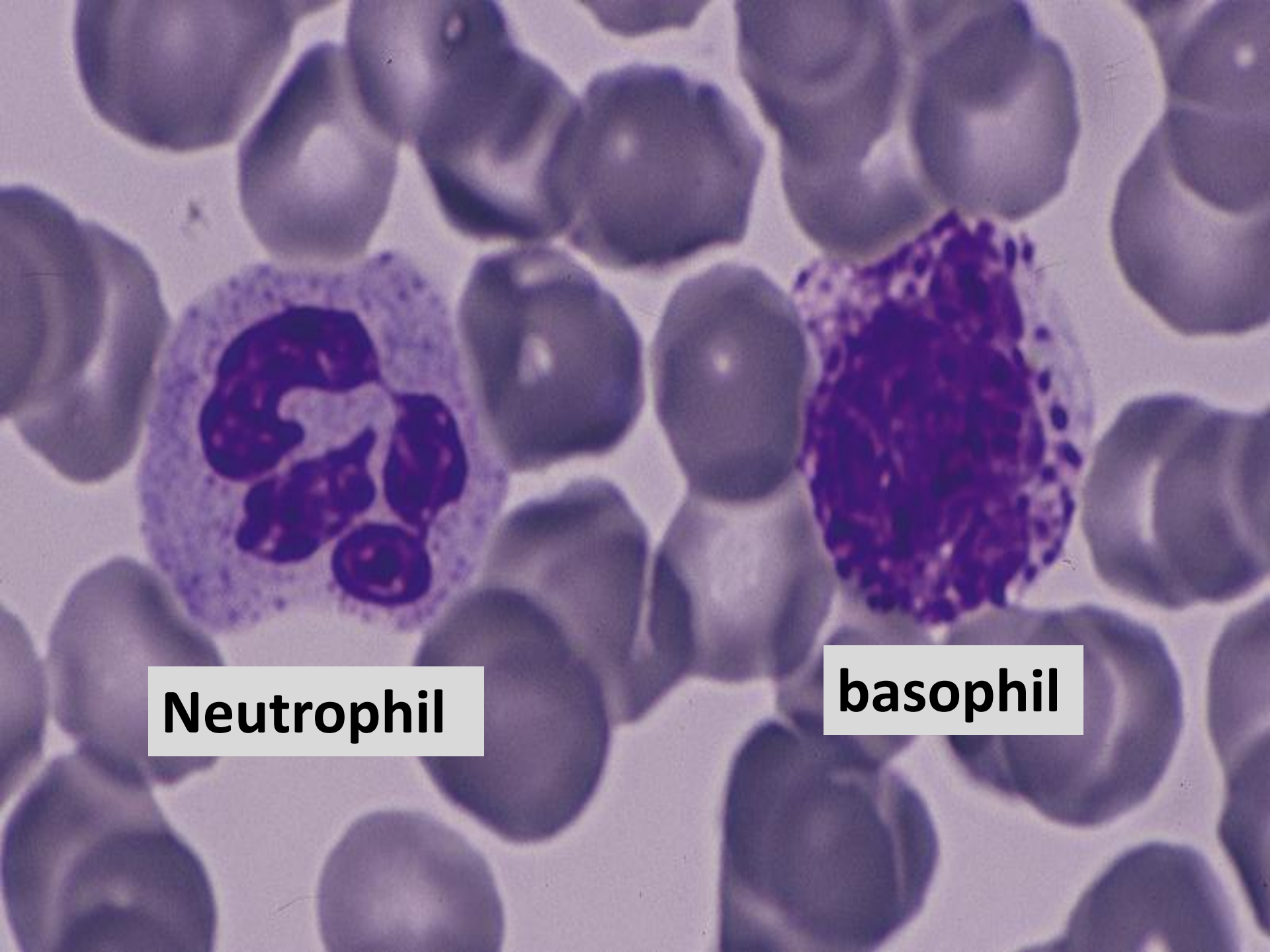
N=kidney shaped
L=lysosomes

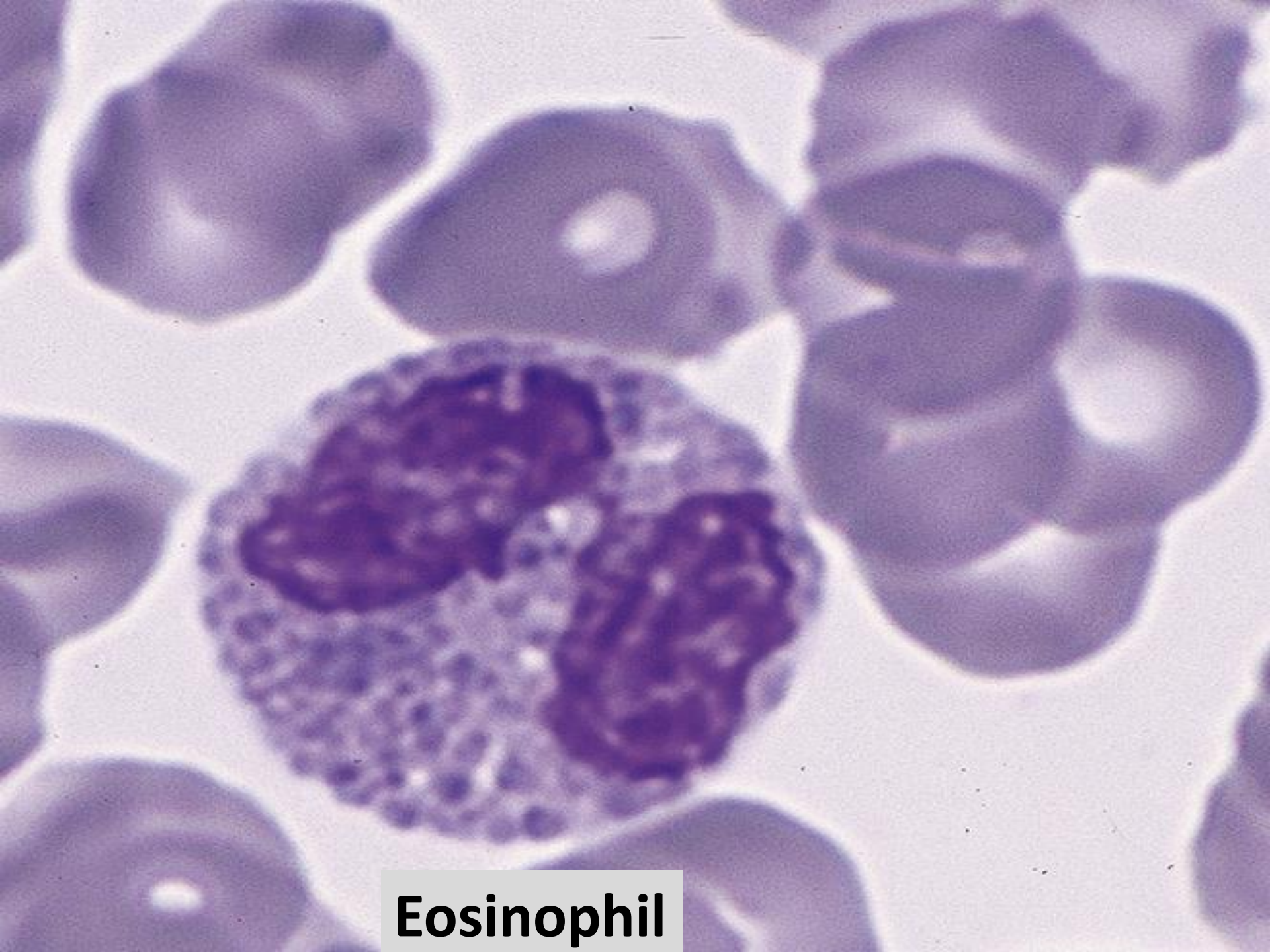
Colorized SEM of **Red Blood Cells** (red), **platelets** (green) and White Blood Cells (purple)

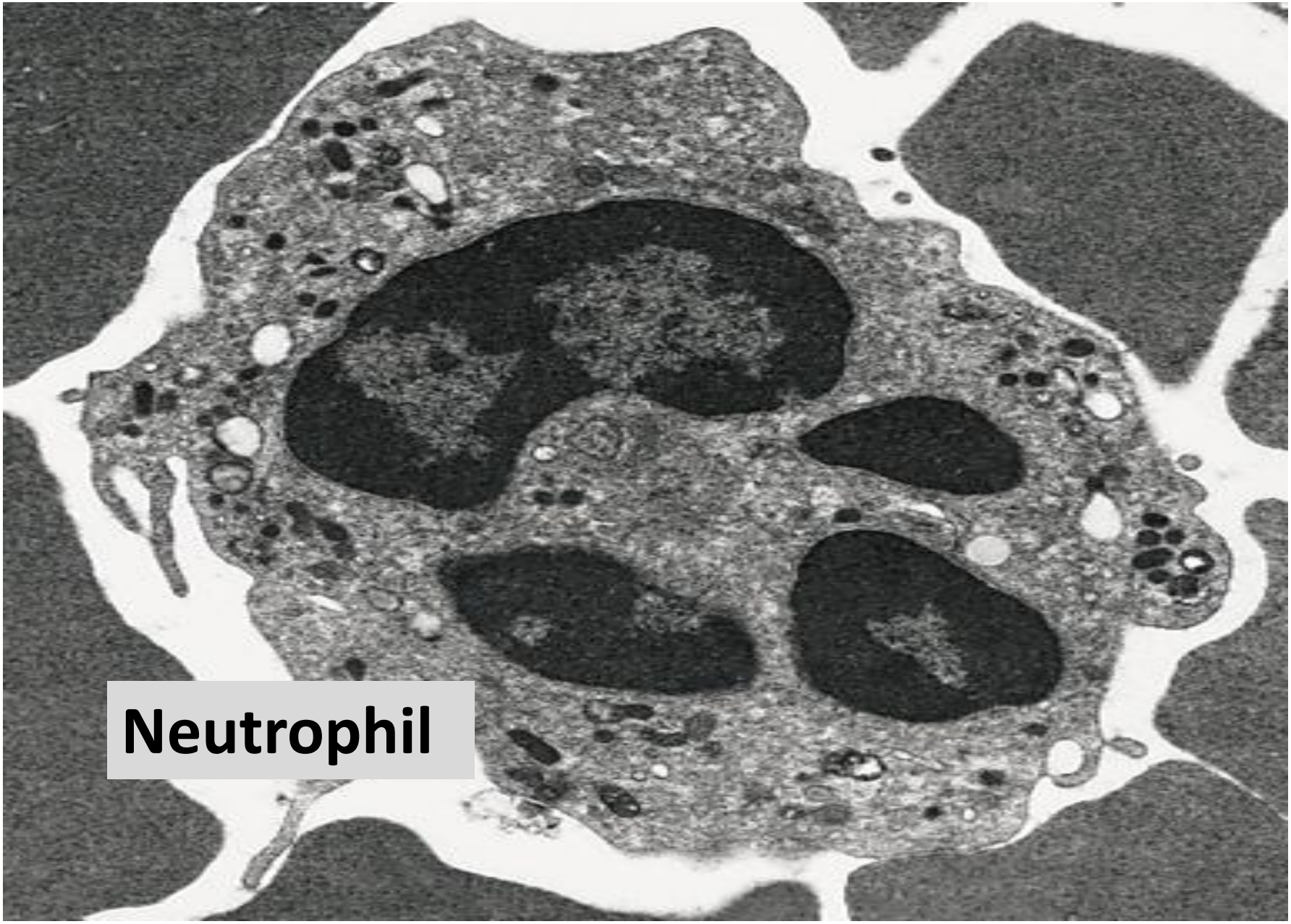


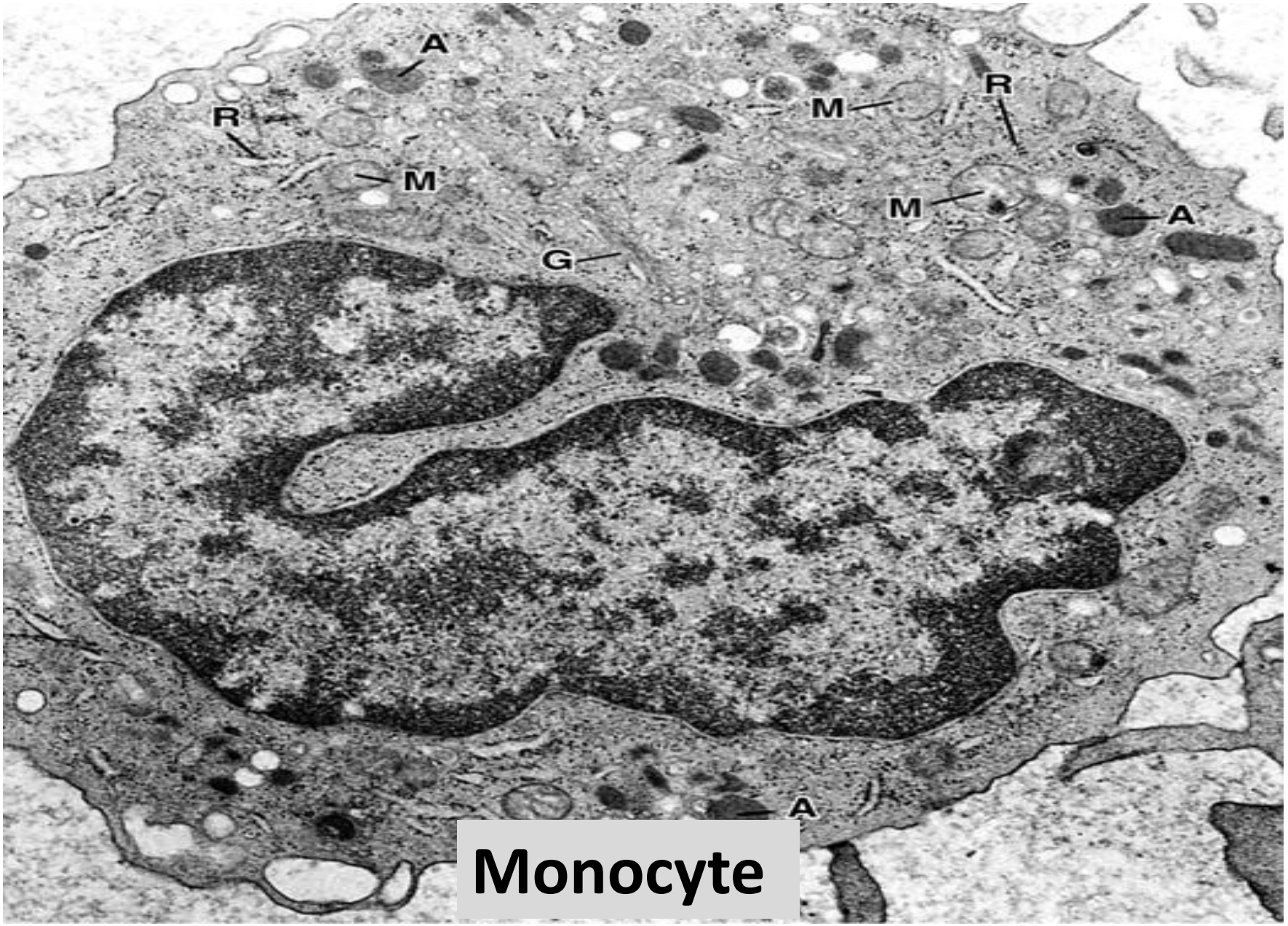
Test your self


Lymphocytes


Neutrophil
basophil


Eosinophil


Neutrophil



Monocyte


THANK
YOU!
SO MUCH