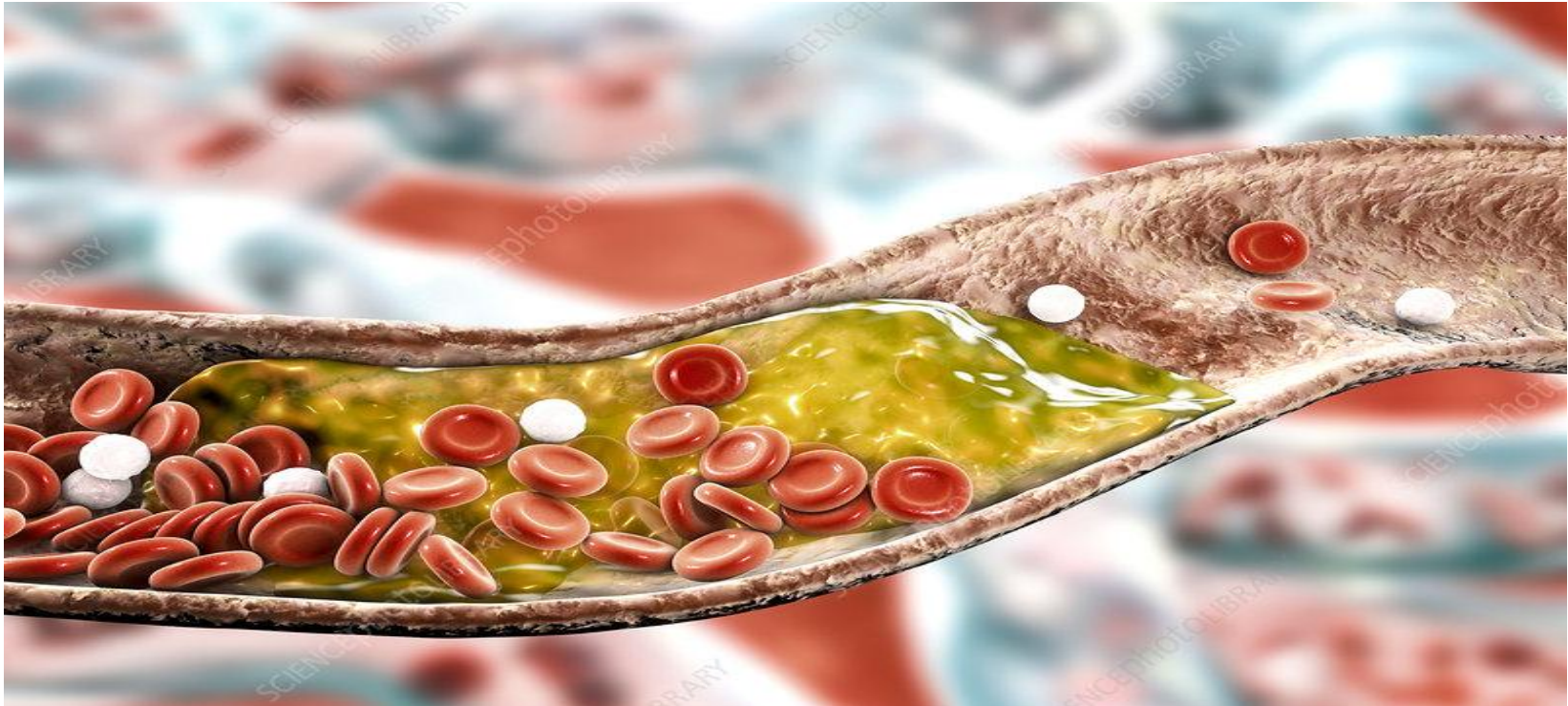


Blood

(Lab)



By

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Associate Professor of Histology & Cell Biology

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

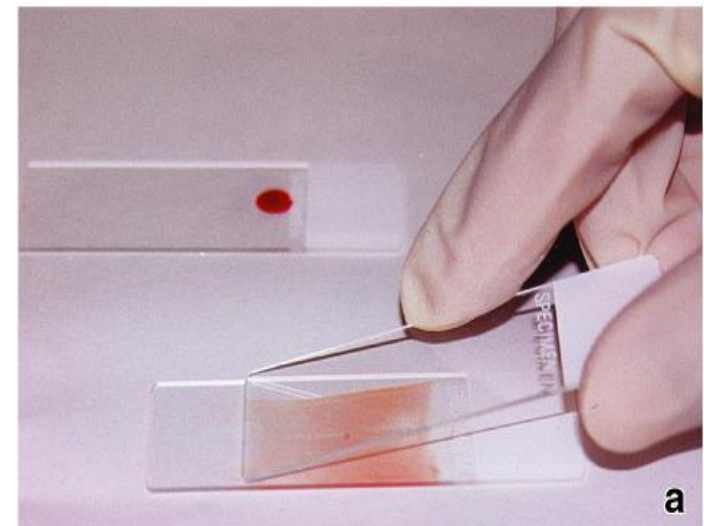
Preparation of blood for study of blood elements.

Steps:

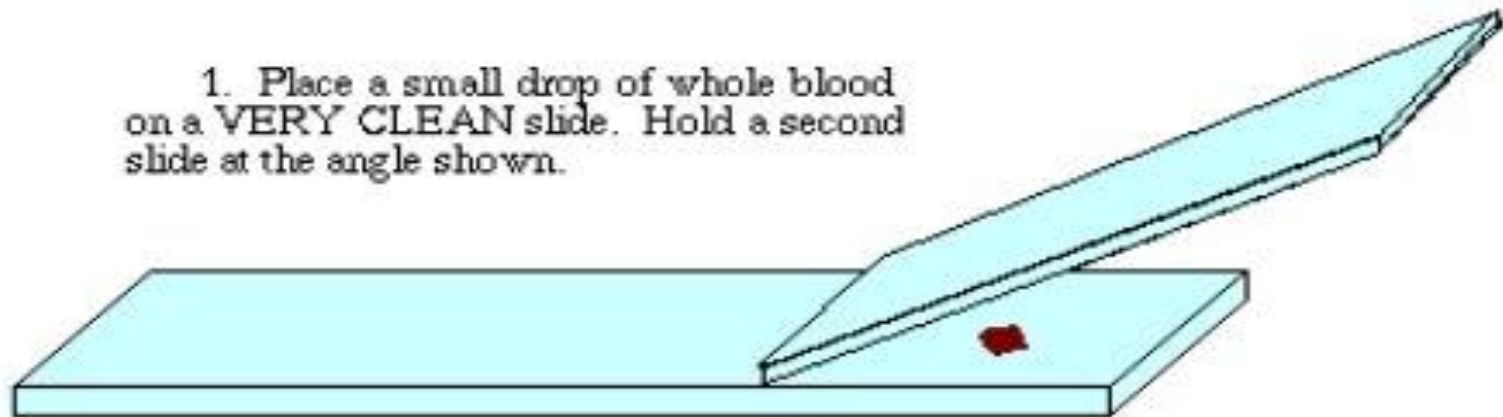
1. Clean
2. Prick.
3. Put drop on clean dry slide.
4. Put another slide (spreader slide) on 45°
5. Move backward to **touch drop**
6. Move forward to **spread drop**.
7. left to dry for 5 minutes.
8. Stain with **Leishman or Giemsa stain**

mixture of:

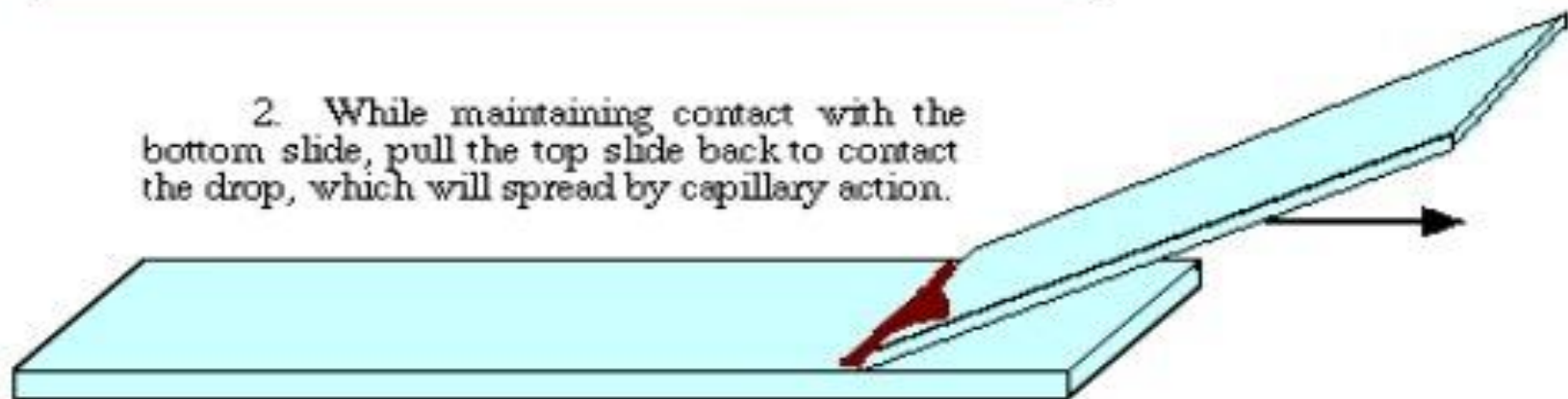
- Eosin (acidic).
- Methylene blue (basic).
- Oxidized methylene blue → **methylene azures (purple)**.
- ► **basophilic (violet)**
- ► **eosinophilic (pink)**
- ► **azurophilic (red purple)**



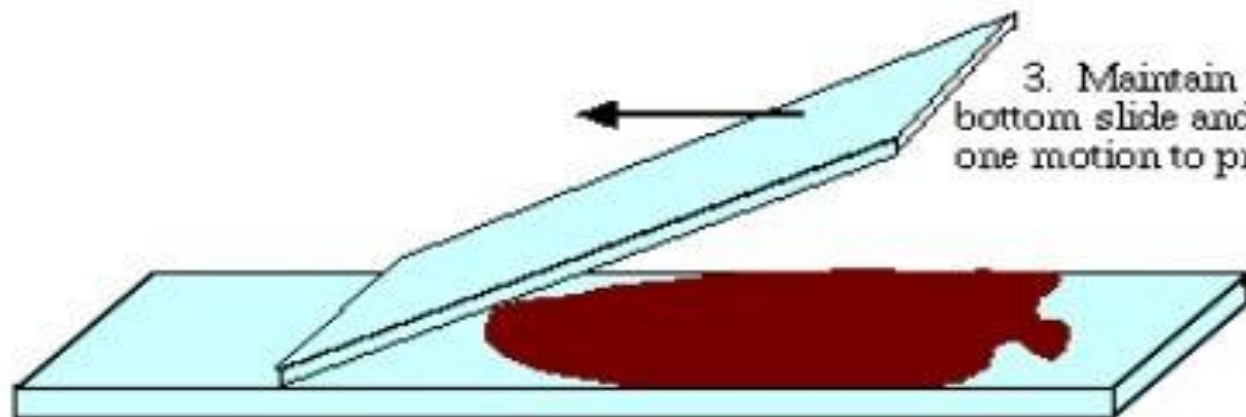
1. Place a small drop of whole blood on a **VERY CLEAN** slide. Hold a second slide at the angle shown.

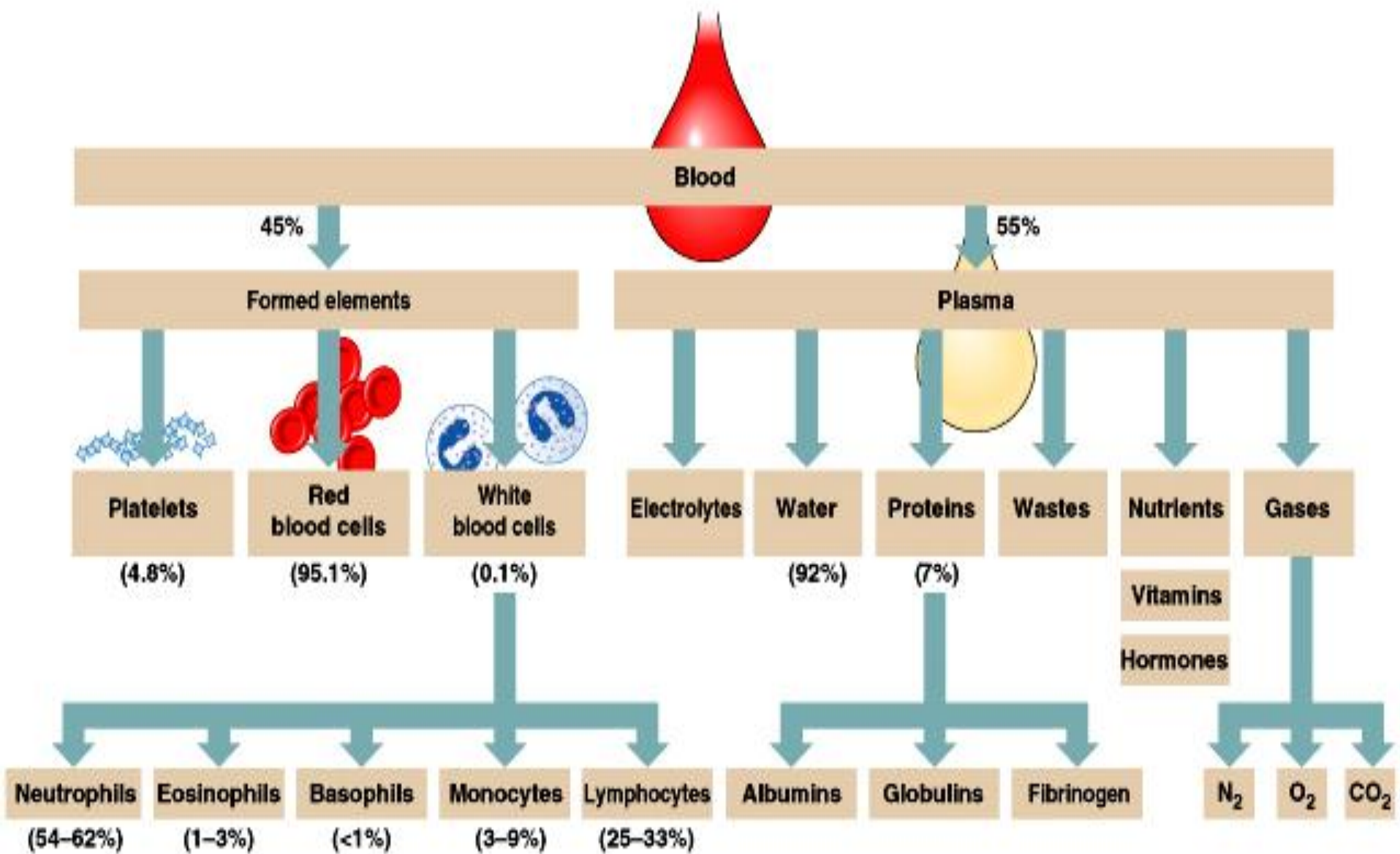


2. While maintaining contact with the bottom slide, pull the top slide back to contact the drop, which will spread by capillary action.

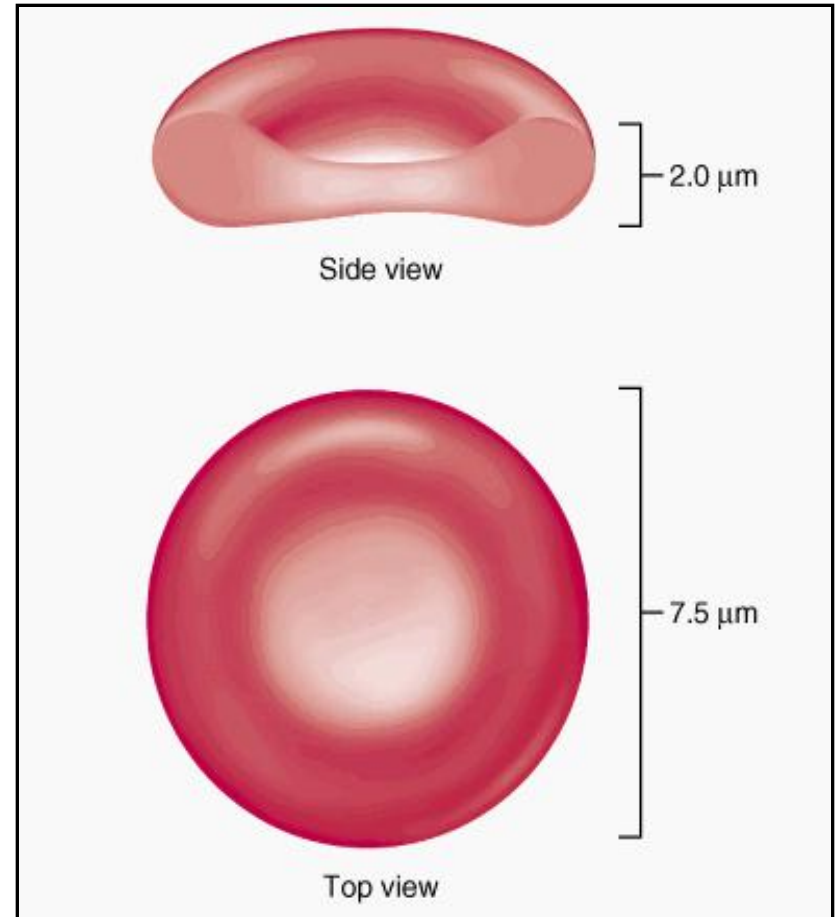


3. Maintain firm contact with the bottom slide and push the top slide in one motion to produce the smear.



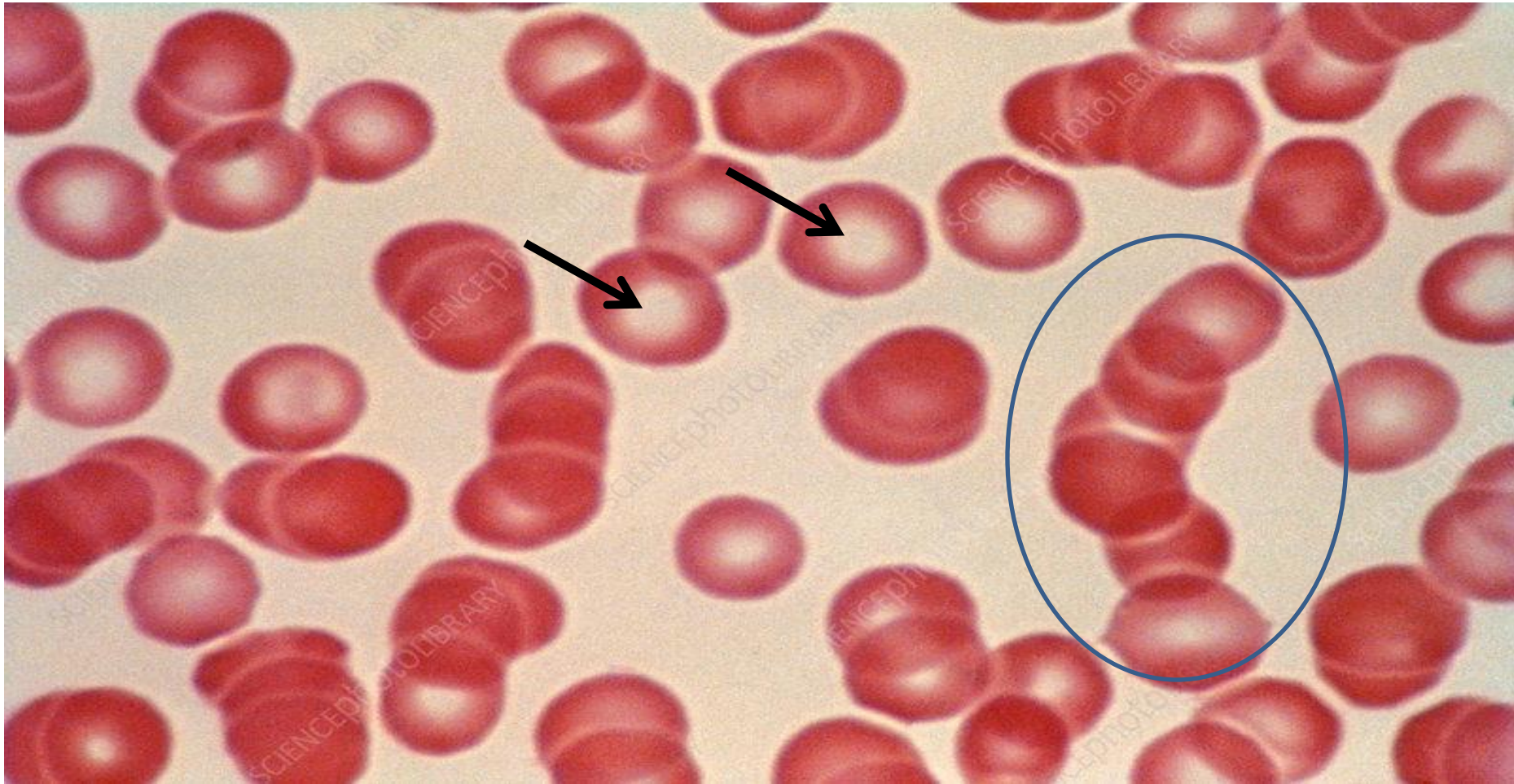


Red blood corpuscles (RBCs)



rounded biconcave discs

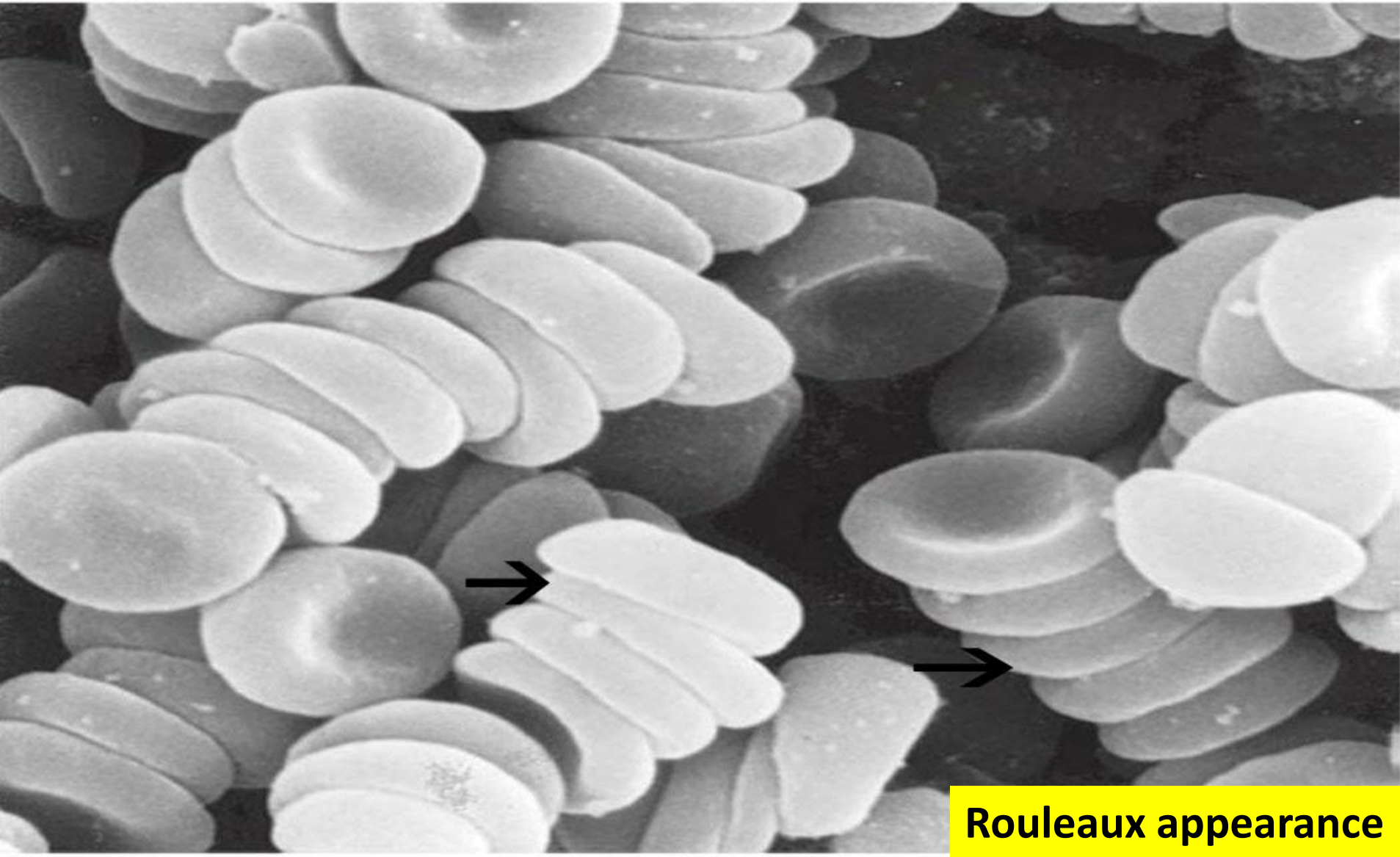
Red blood corpuscles(LM)



Arrows: central clear region representing the thinnest area of the biconcave discs

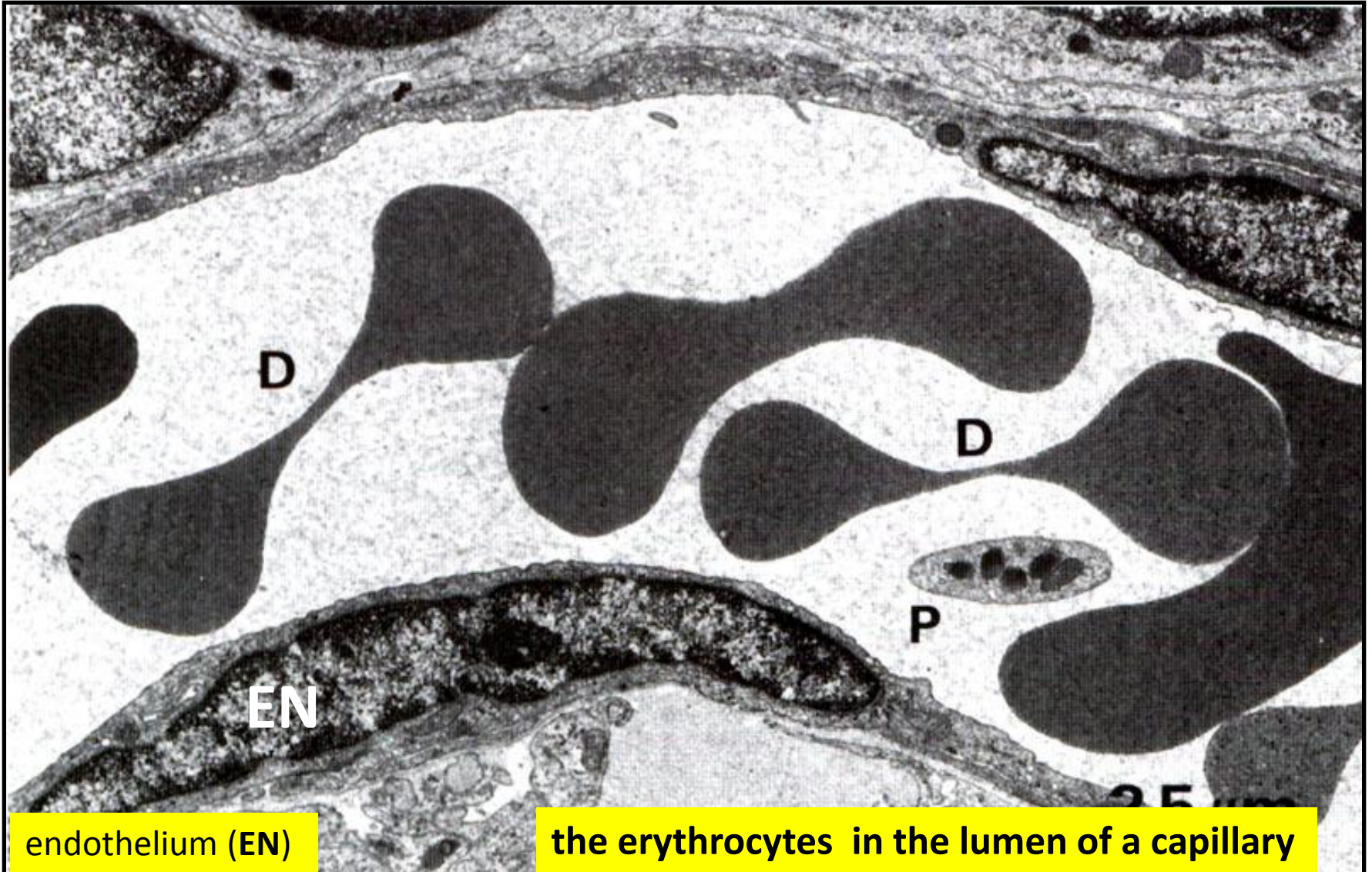
Circle: Rouleaux appearance

Red blood cells (SEM)

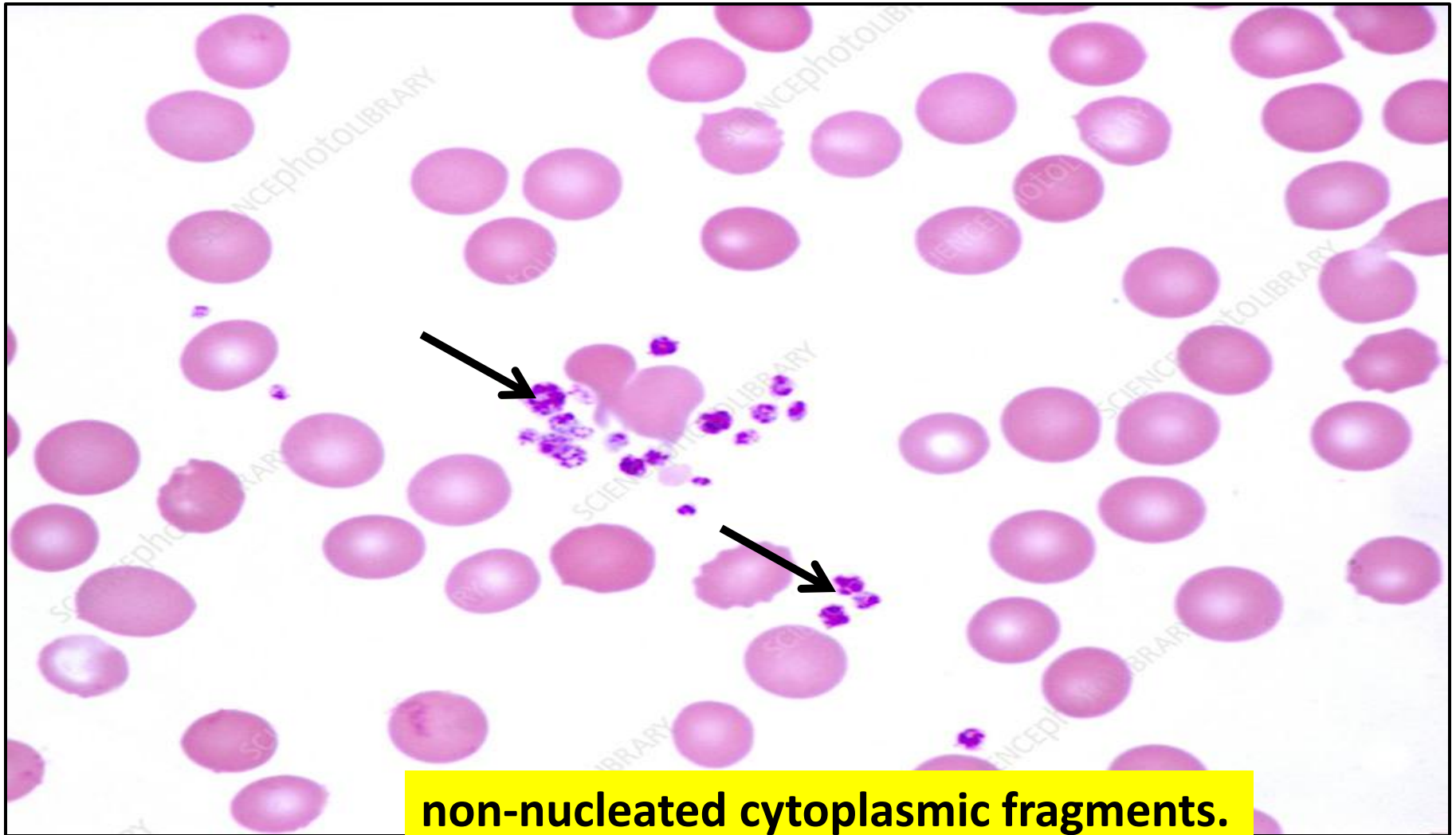


Rouleaux appearance

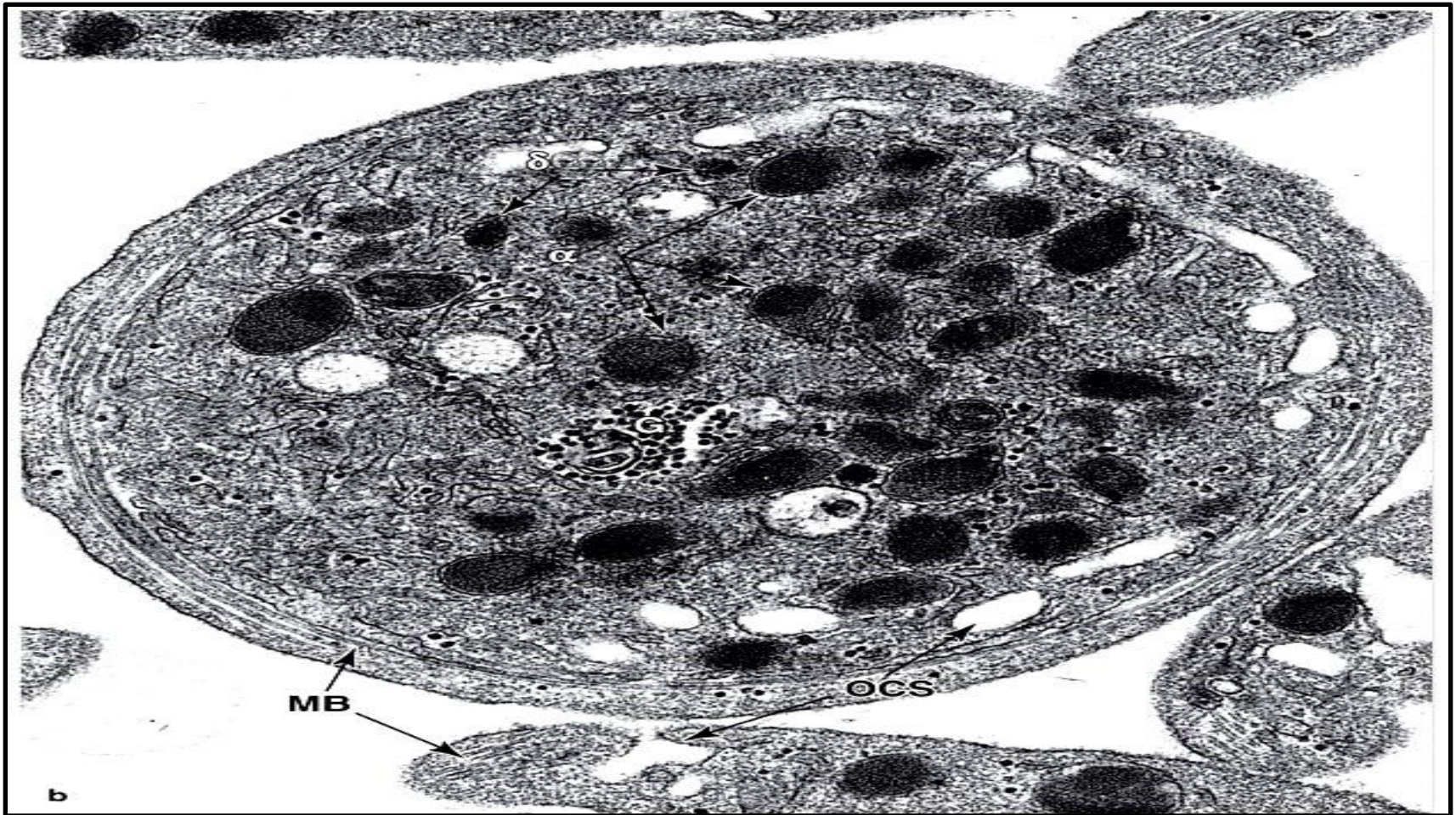
Erythrocytes (TEM)



Platelets (Thrombocytes) (LM)

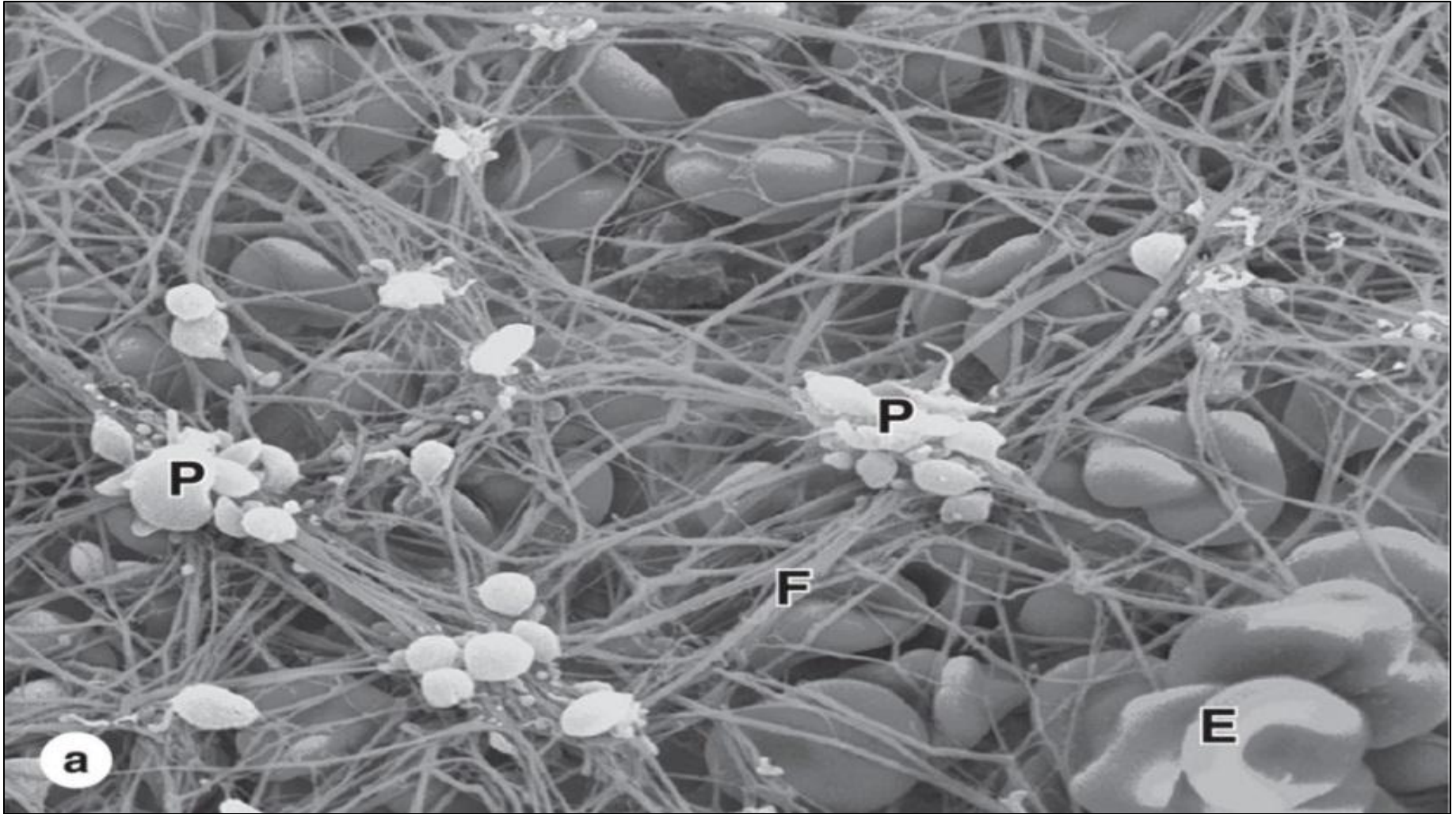


Platelets (TEM)



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

Classification

Granular Leukocytes

Neutrophils
60-70%

Eosinophis
1-4%

Basophils
0.5%

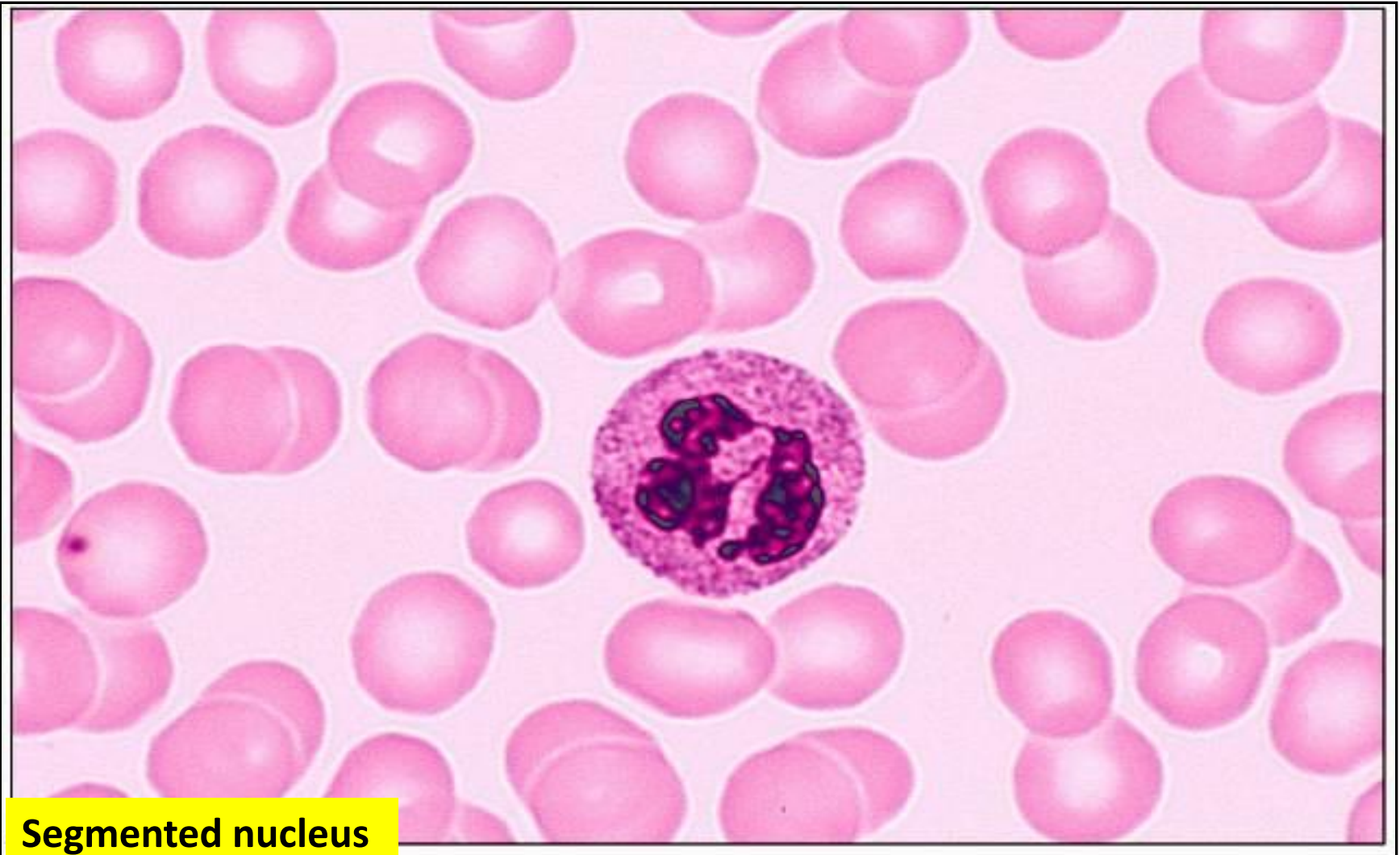
Non Granular Leukocytes

Lymphocytes
20-25%

Monocytes
3-8%

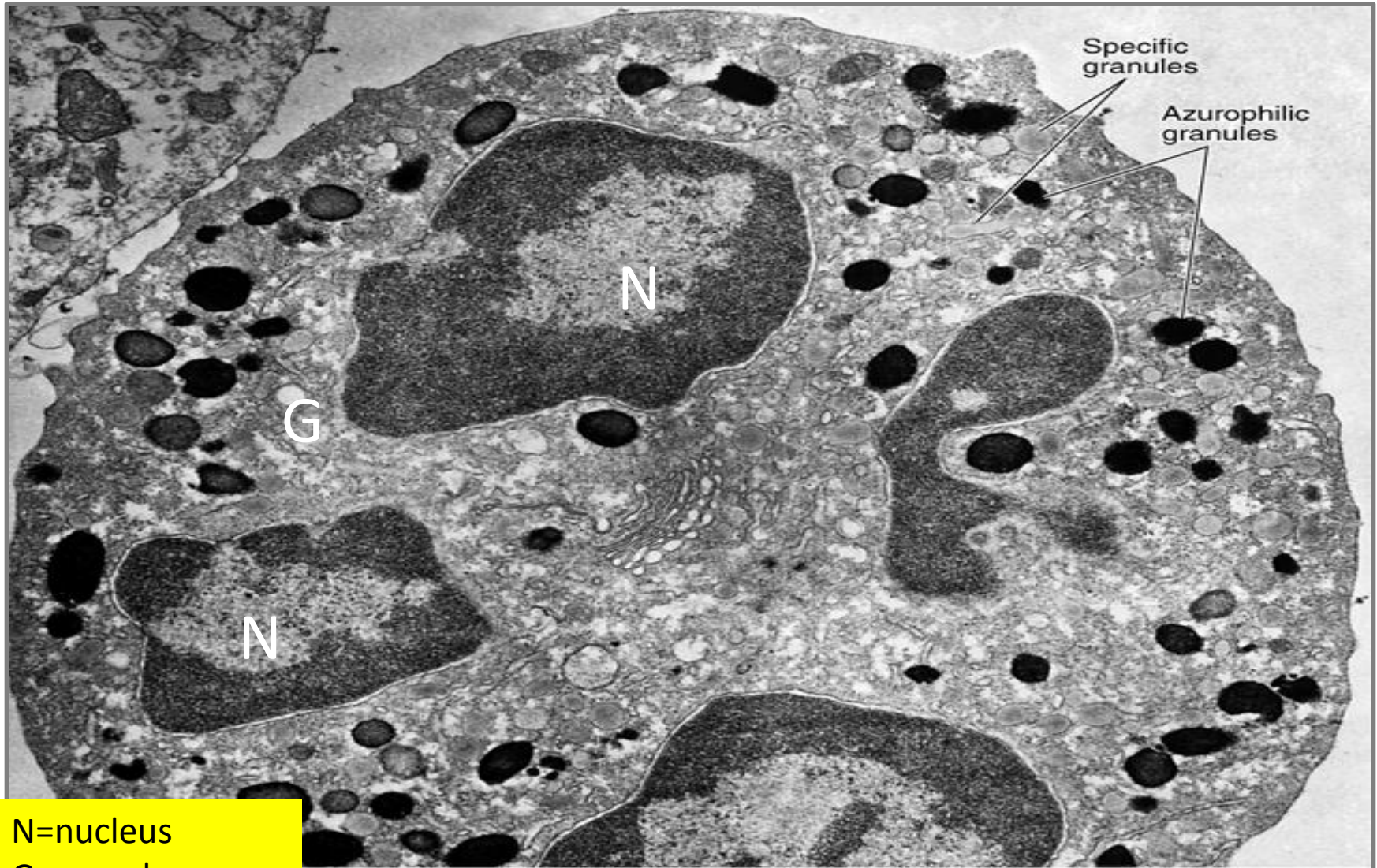
**Differential
leucocytic count**

Neutrophil (LM)



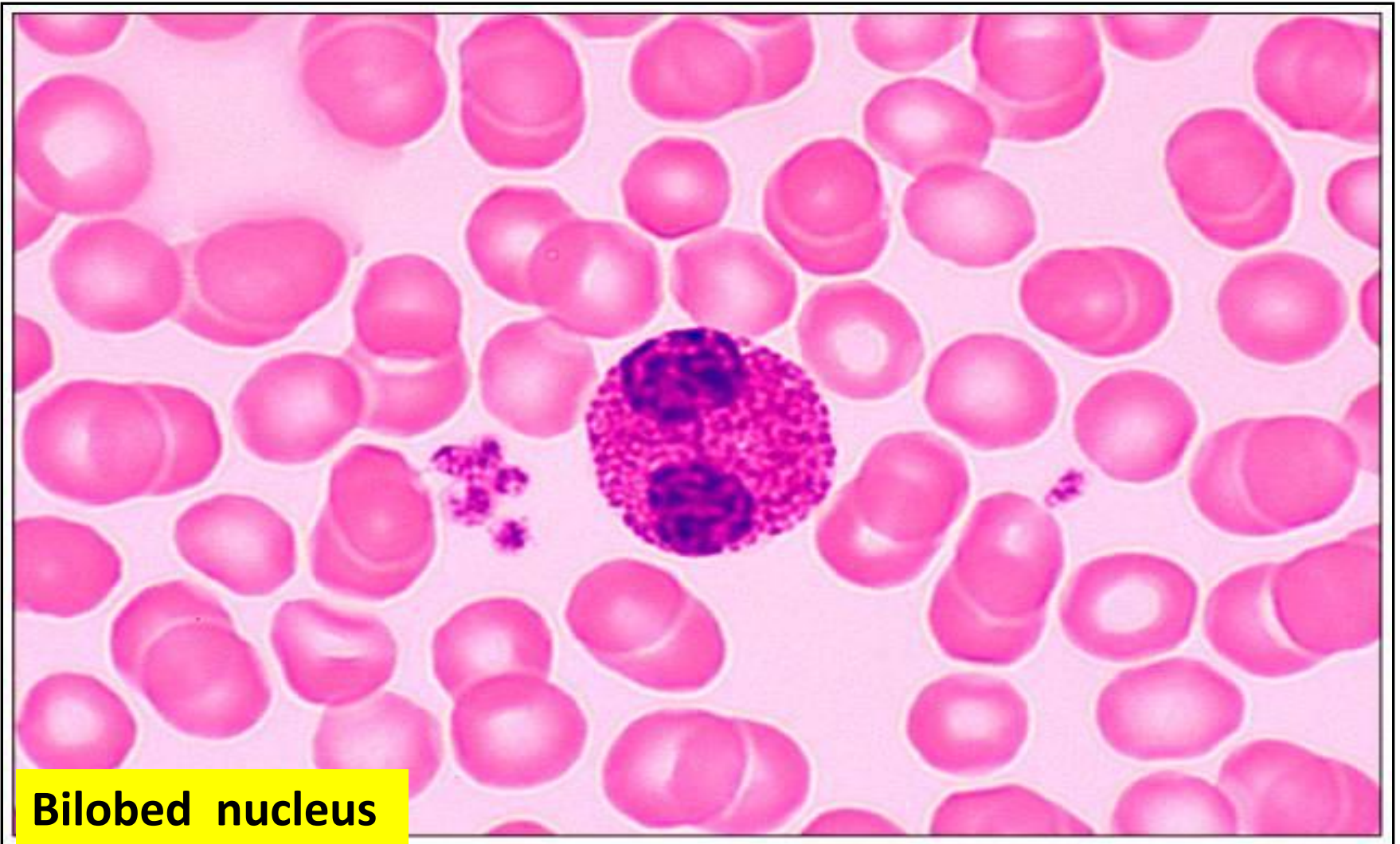
Segmented nucleus

Neutrophil (EM)



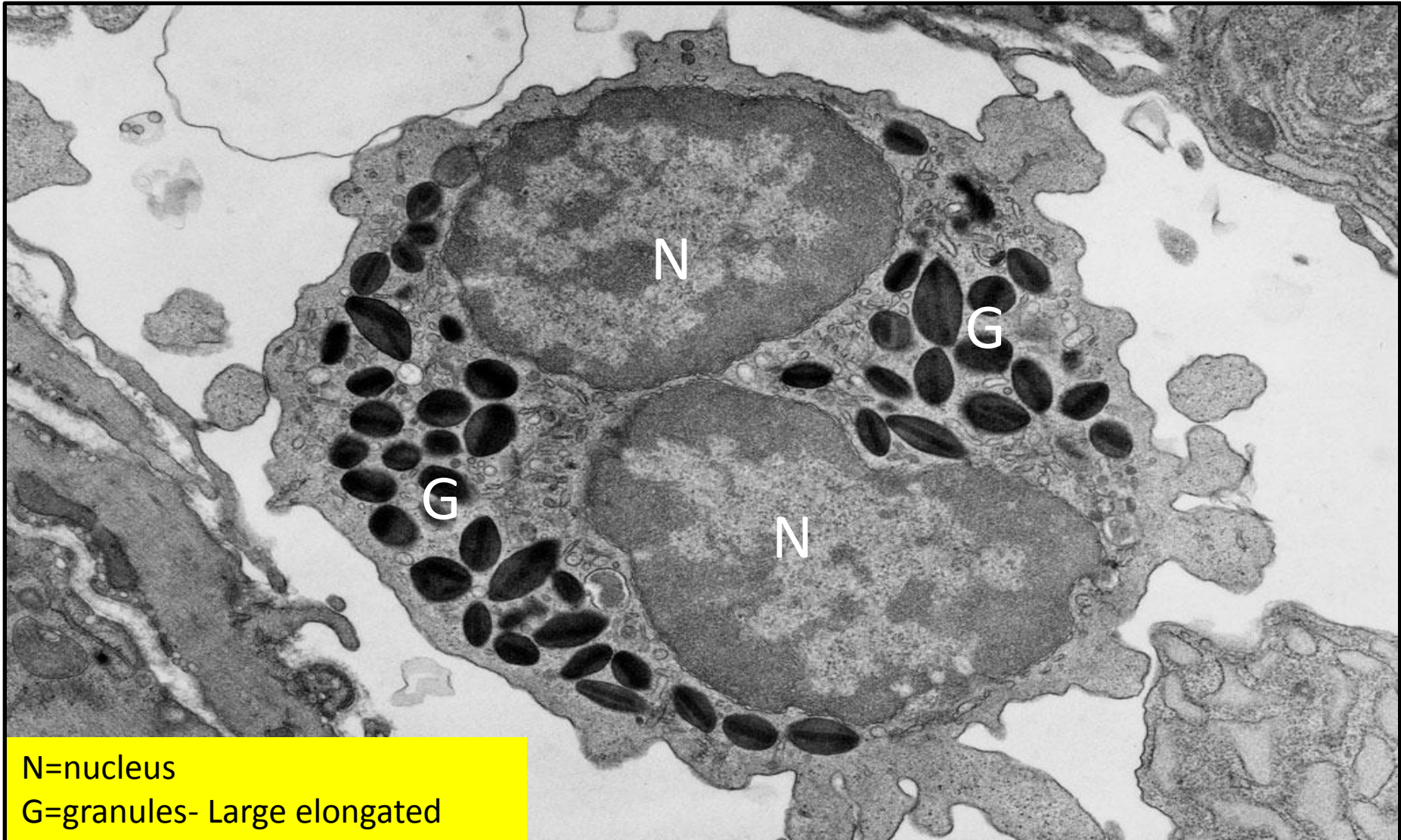
N=nucleus
G=granules

Eosinophil (LM)



Bilobed nucleus

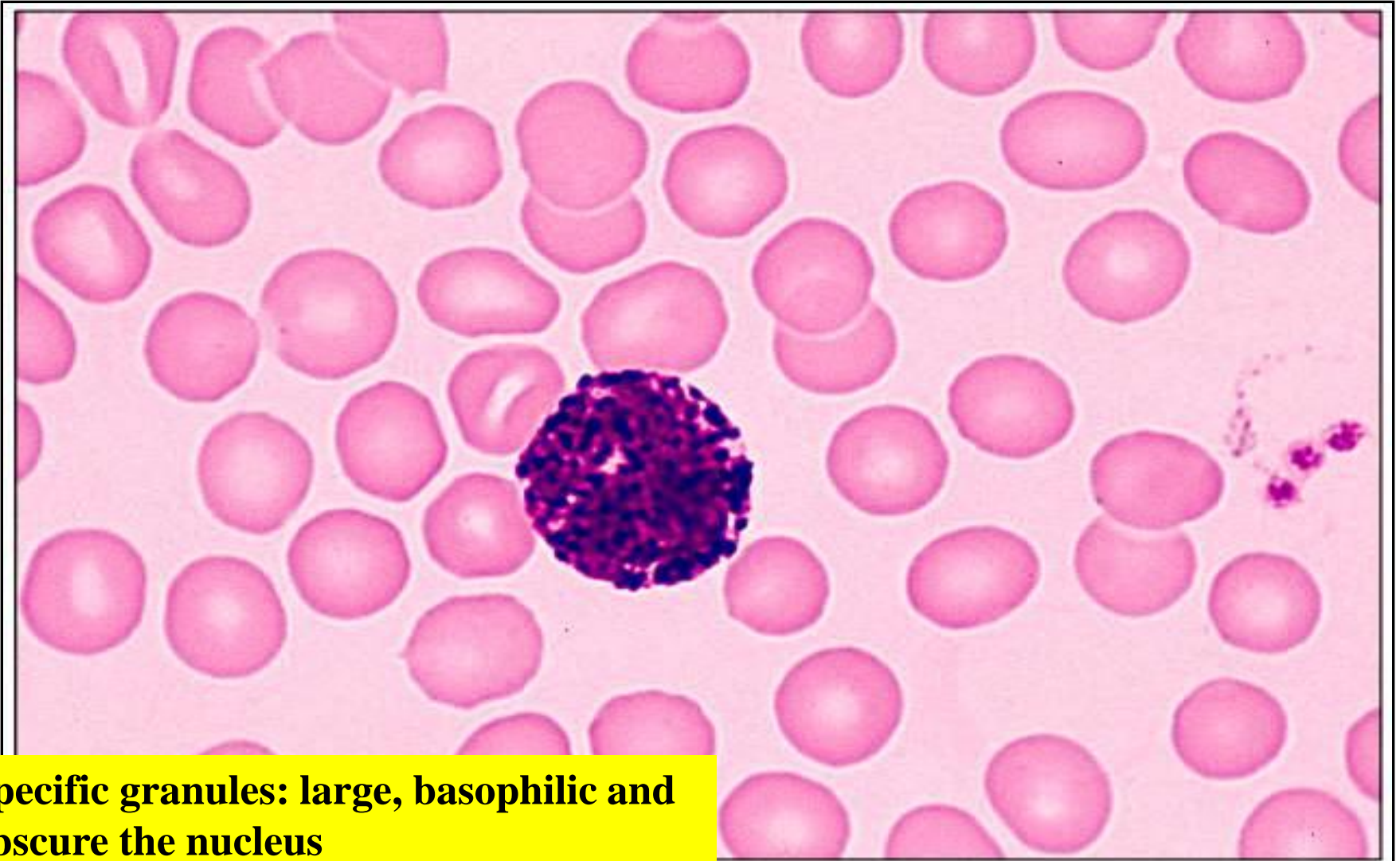
Eosinophil (EM)



N=nucleus

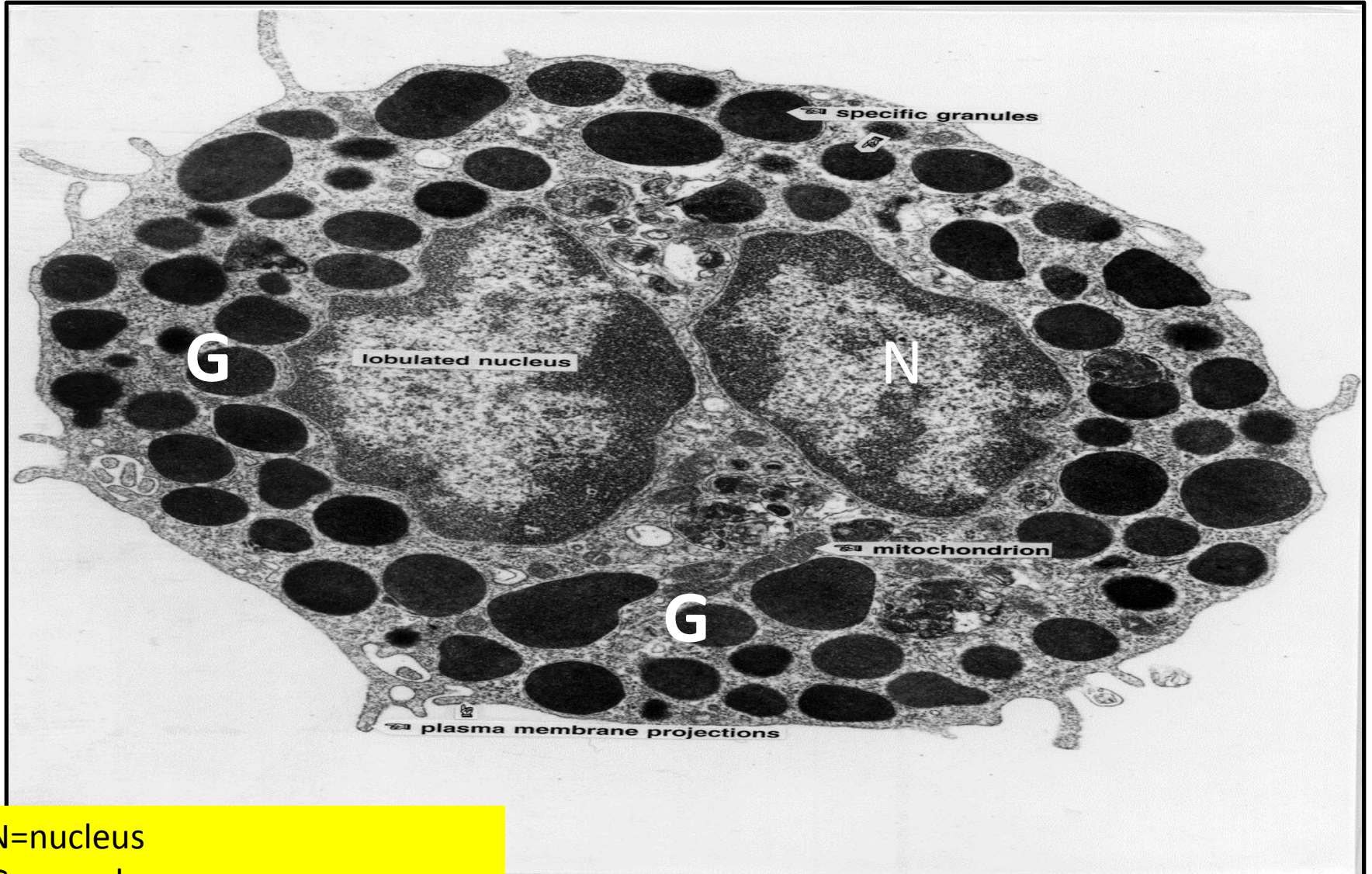
G=granules- Large elongated

Basophil (LM)



Specific granules: large, basophilic and obscure the nucleus

Basophil (EM)



N=nucleus
G=granules

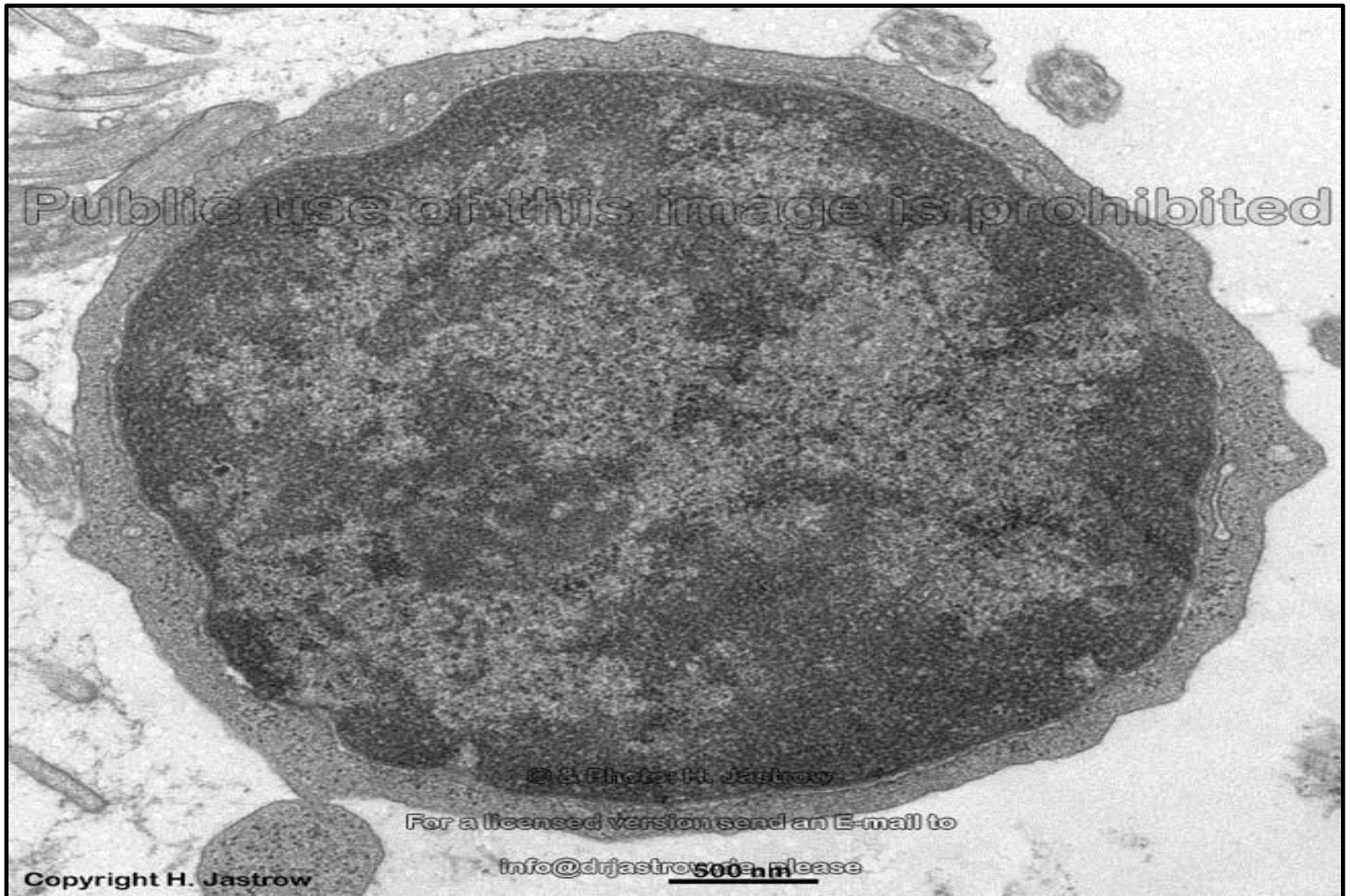
Lymphocyte (LM)



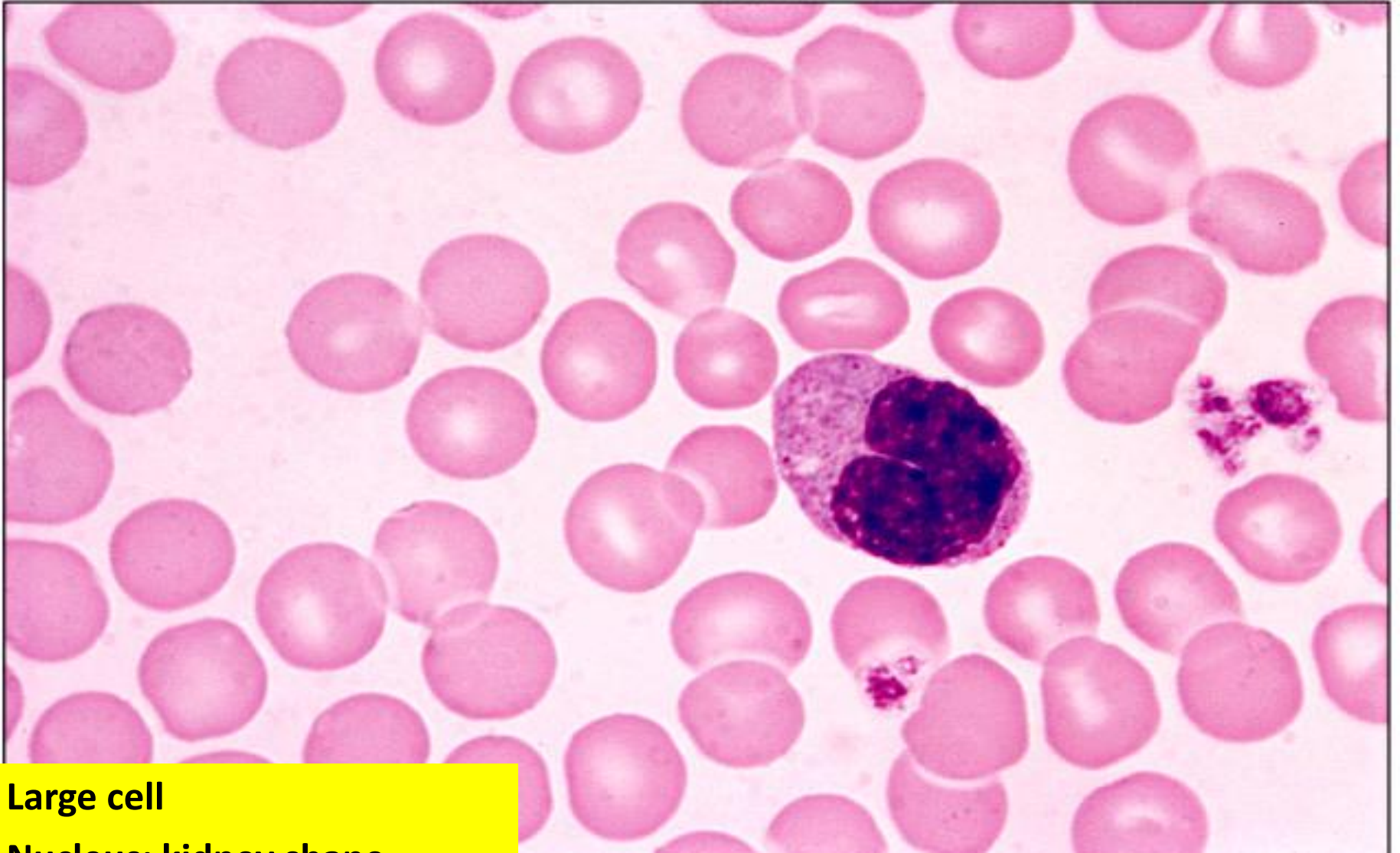
Nucleus: is large, rounded & darkly with little indentation at one side.

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

Lymphocyte (EM)



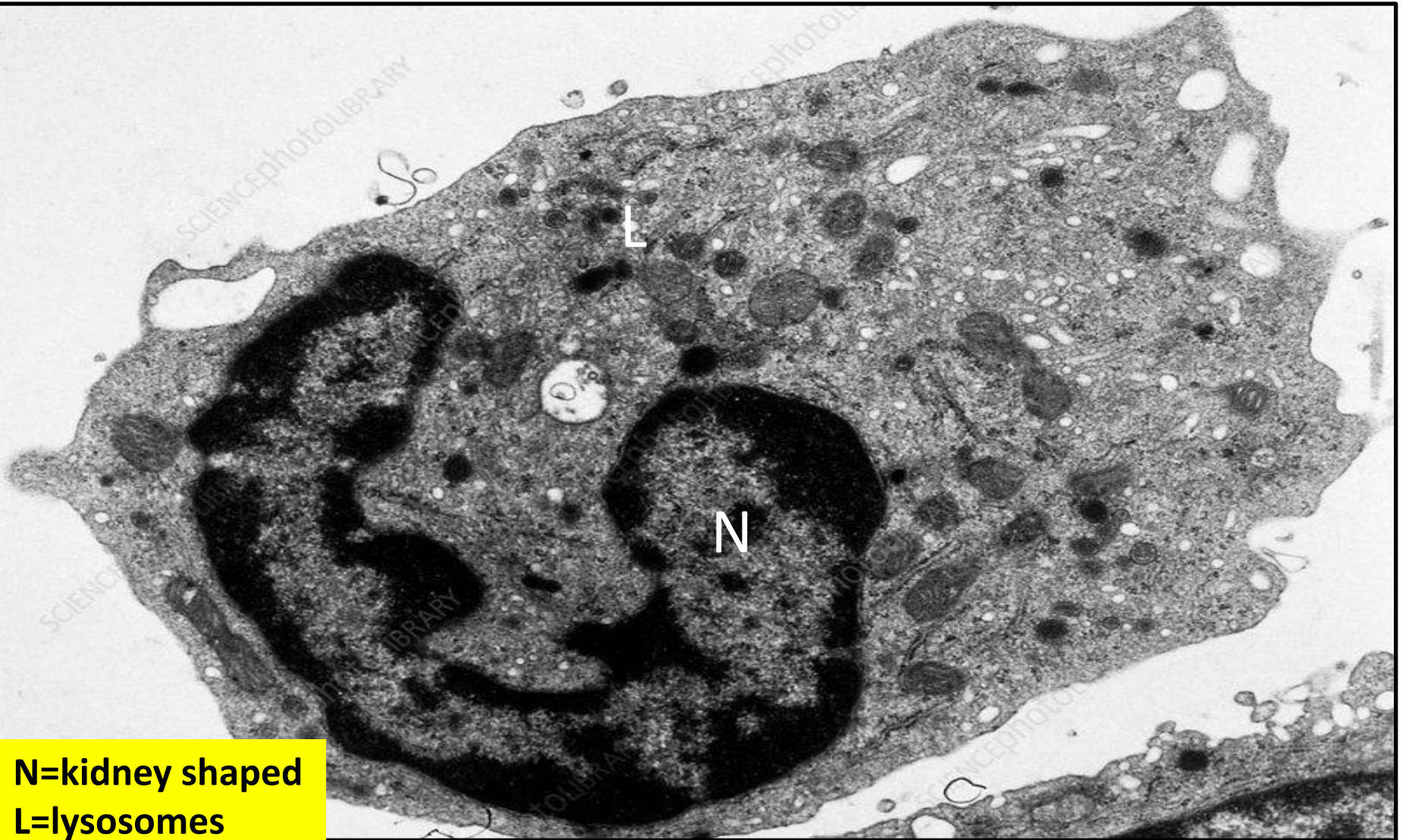
Monocyte (LM)



Large cell

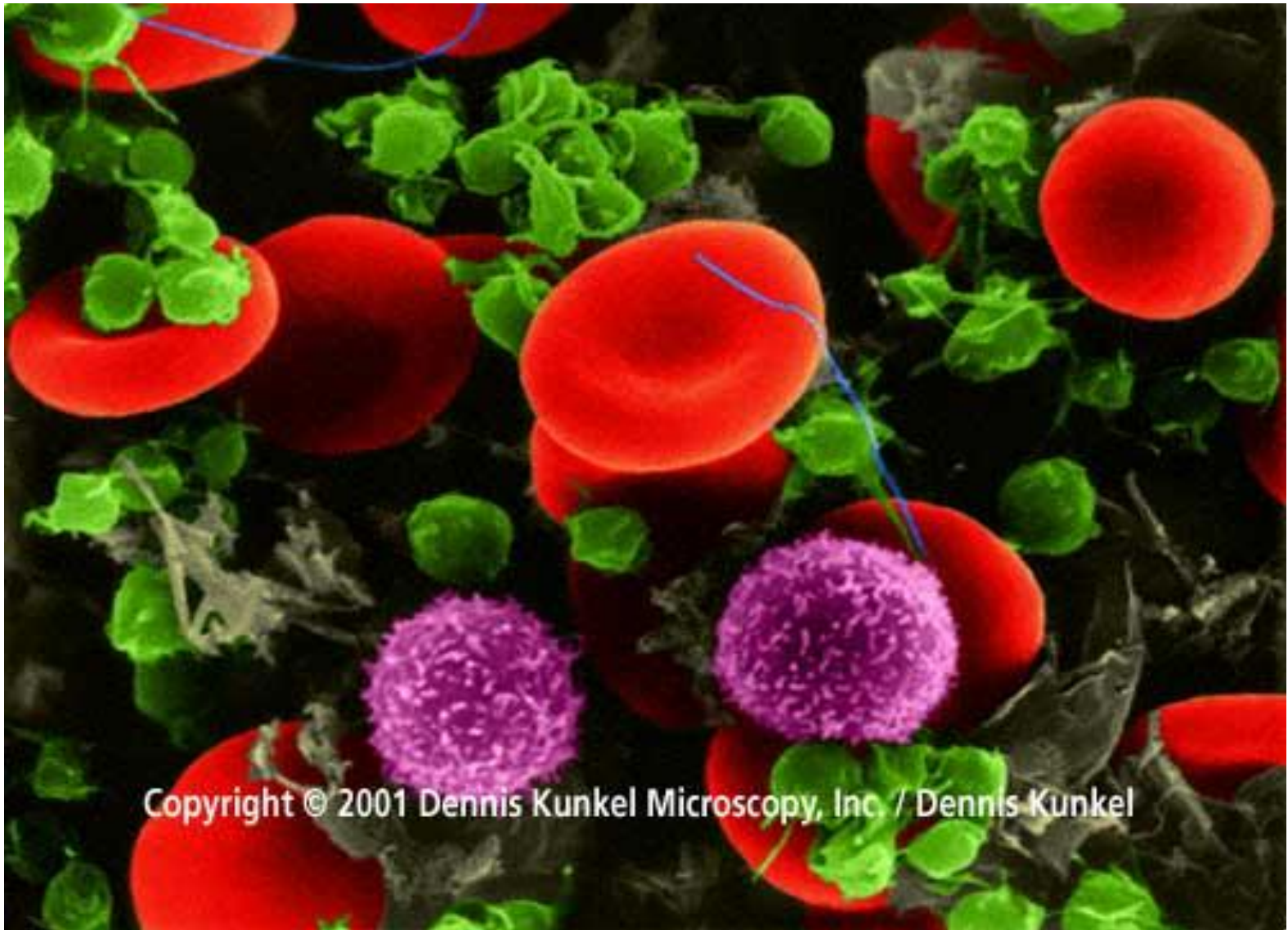
Nucleus: kidney shape

Monocyte (EM)



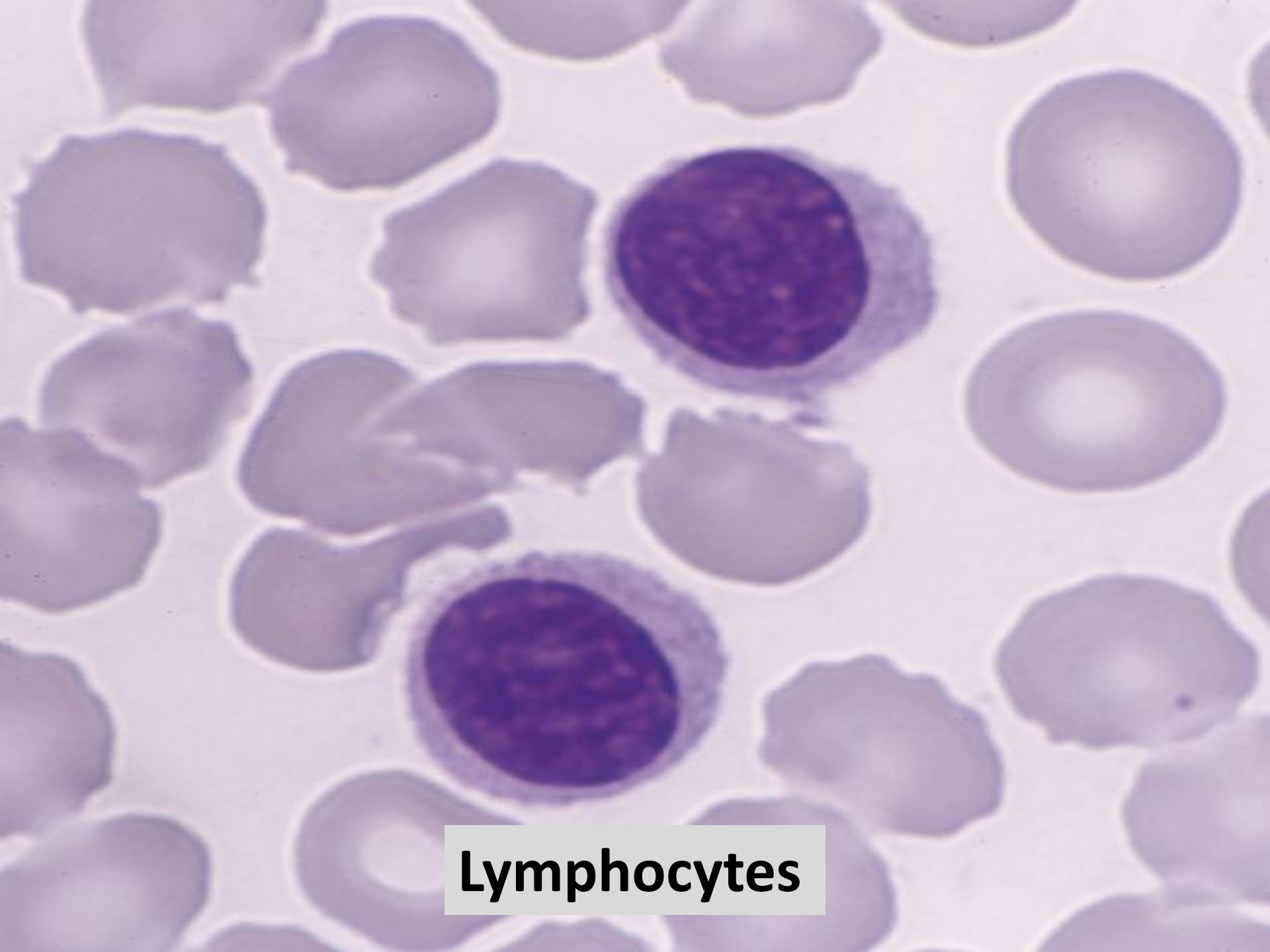
N=kidney shaped
L=lysosomes

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



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Test your self



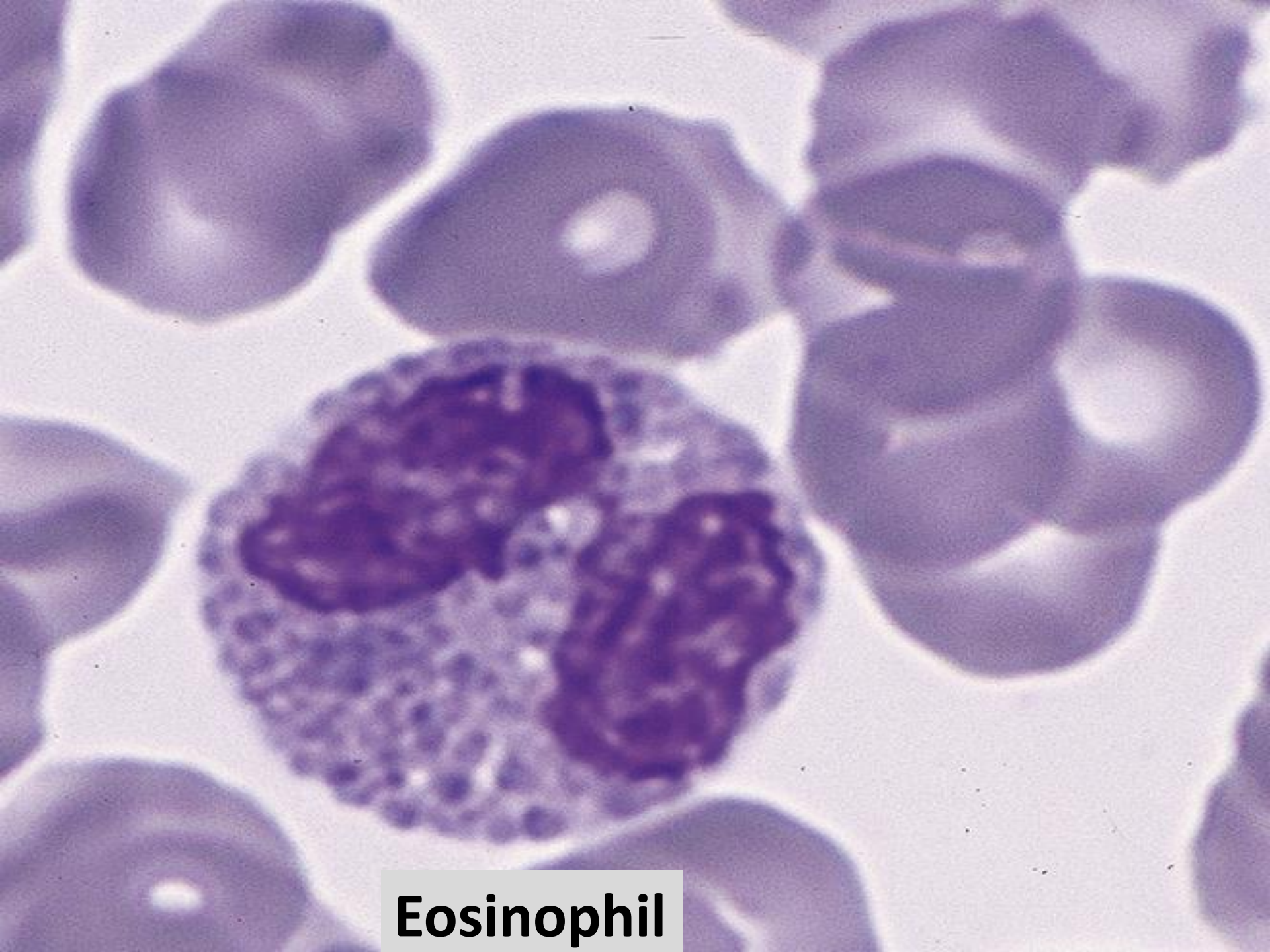
Lymphocytes



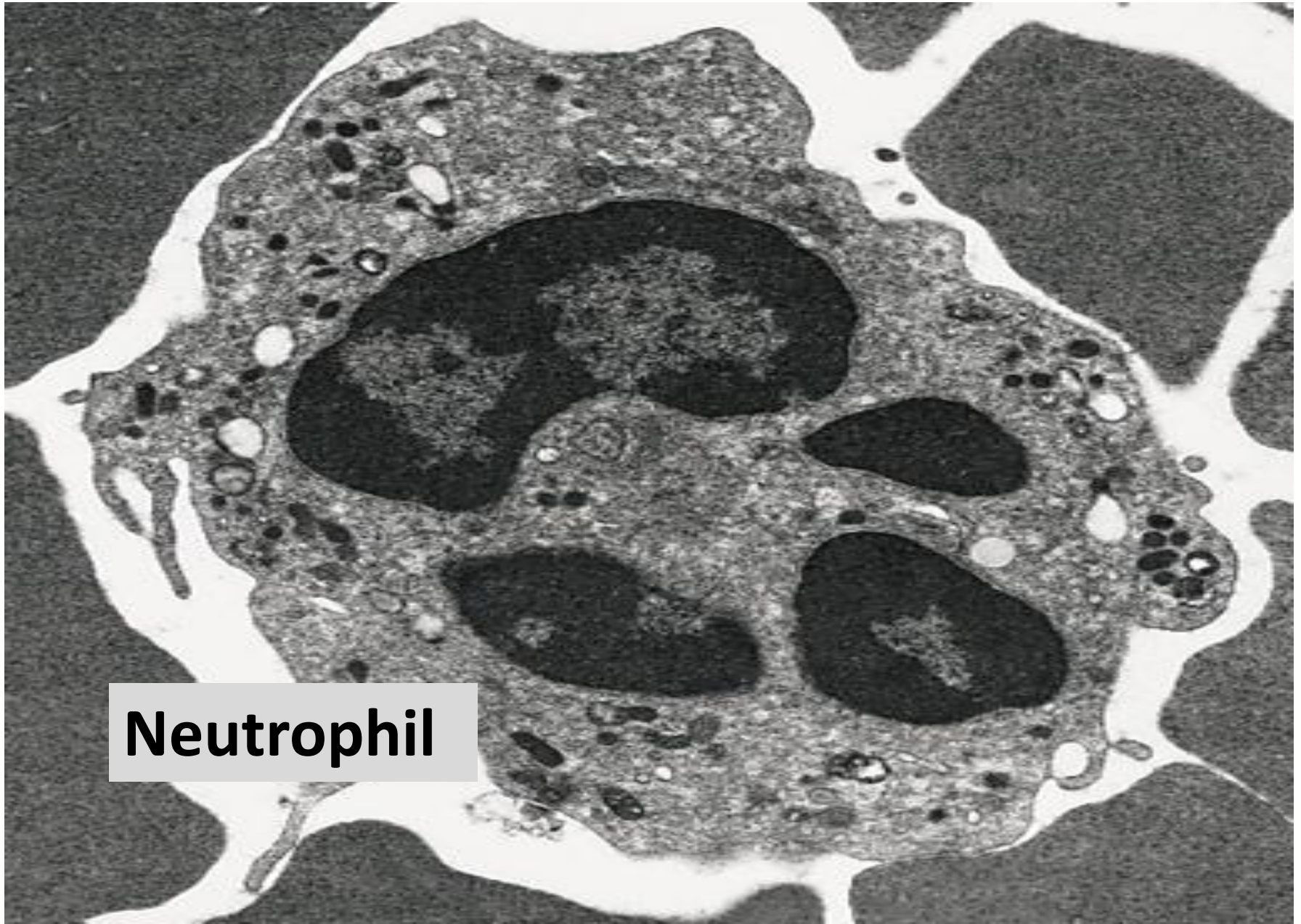
Neutrophil

This image shows a microscopic view of a blood smear. The field is dominated by numerous red blood cells (erythrocytes) which appear as pale, biconcave discs. Two white blood cells (leukocytes) are highlighted. The one on the left is a neutrophil, characterized by its multi-lobed, dark purple nucleus and a light purple, granular cytoplasm. The one on the right is a basophil, characterized by its large, dark purple, granular cytoplasm that obscures the nucleus, and a thin rim of lighter purple granules. The labels 'Neutrophil' and 'basophil' are placed in white boxes below their respective cells.

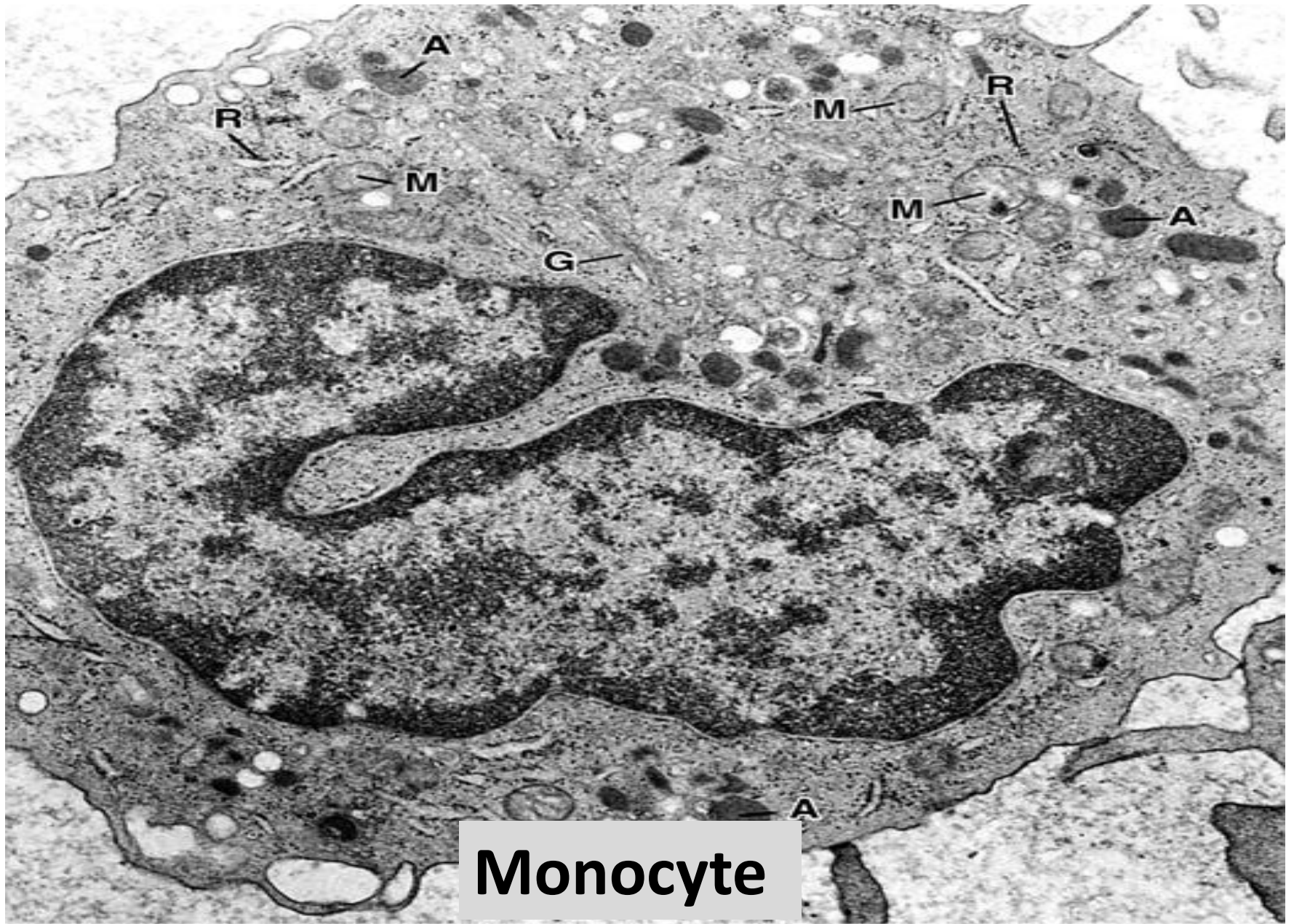
basophil



Eosinophil



Neutrophil



Monocyte

The image features a light cream background decorated with various colorful elements: four-pointed stars in shades of teal, pink, purple, and orange, and small solid circles in blue, purple, pink, and yellow. The text is arranged in three lines. The top line reads 'THANK' in a bold, sans-serif font, with each letter in a different color: 'T' is dark blue, 'H' is teal, 'A' is light green, 'N' is medium green, and 'K' is lime green. The second line reads 'YOU!' in a similar bold, sans-serif font, with 'Y' in orange, 'O' in pink, 'U' in yellow, and '!' in orange. The third line reads 'SO MUCH' in a smaller, dark blue, bold, sans-serif font.

THANK

YOU!

SO MUCH