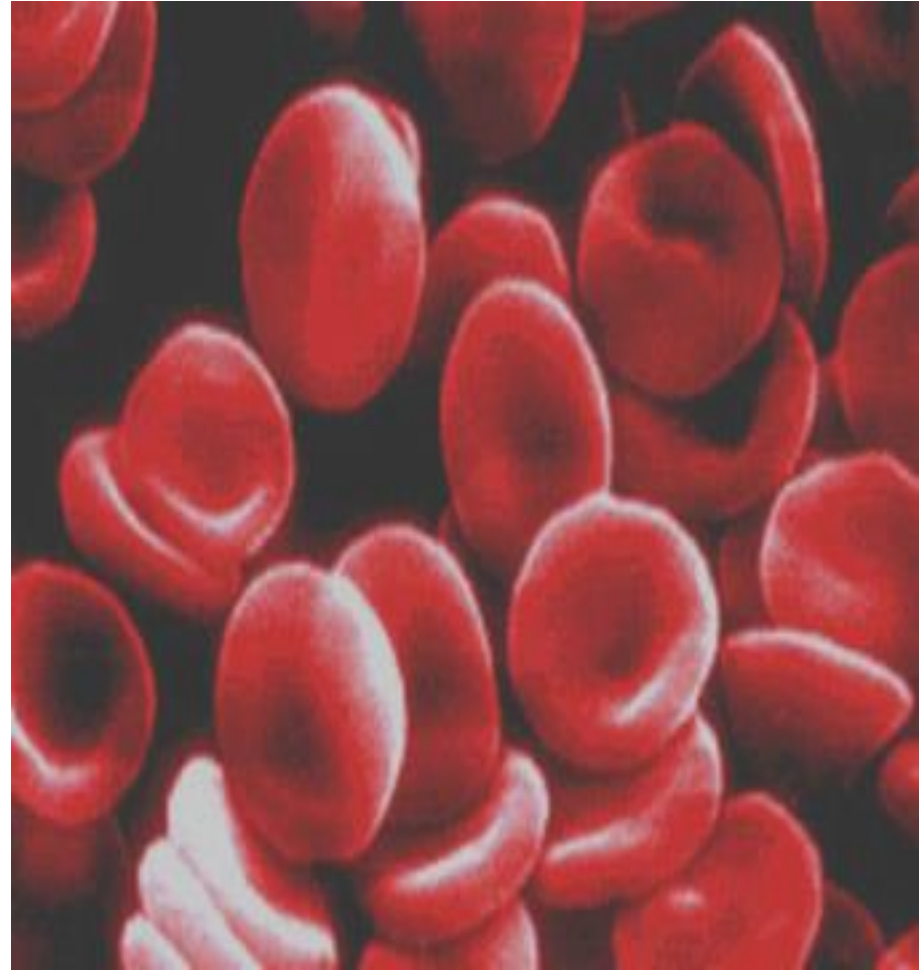
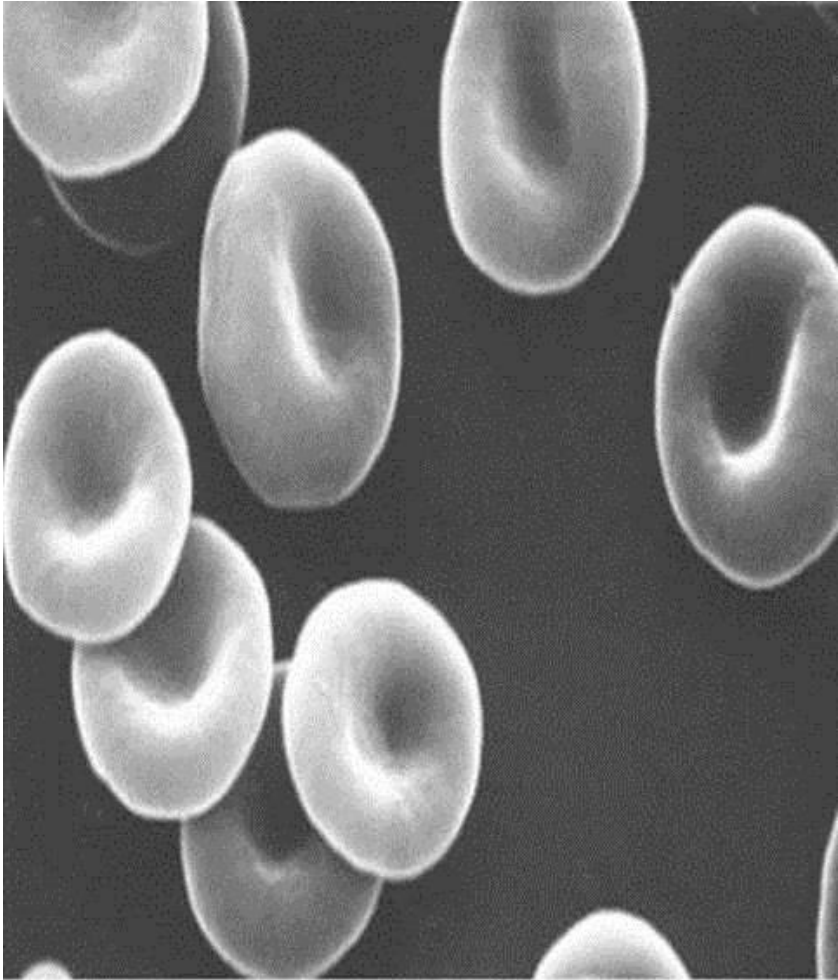
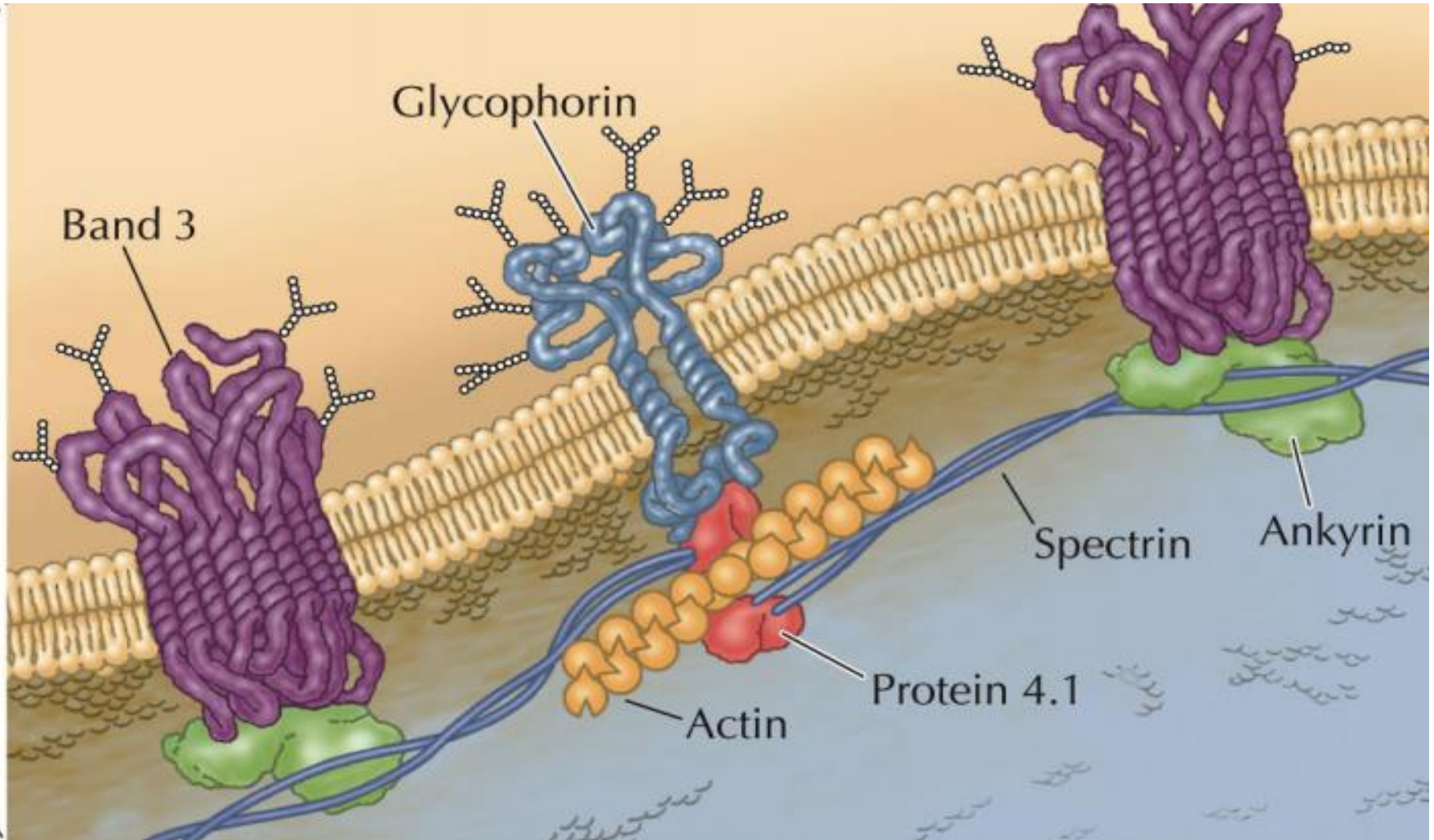


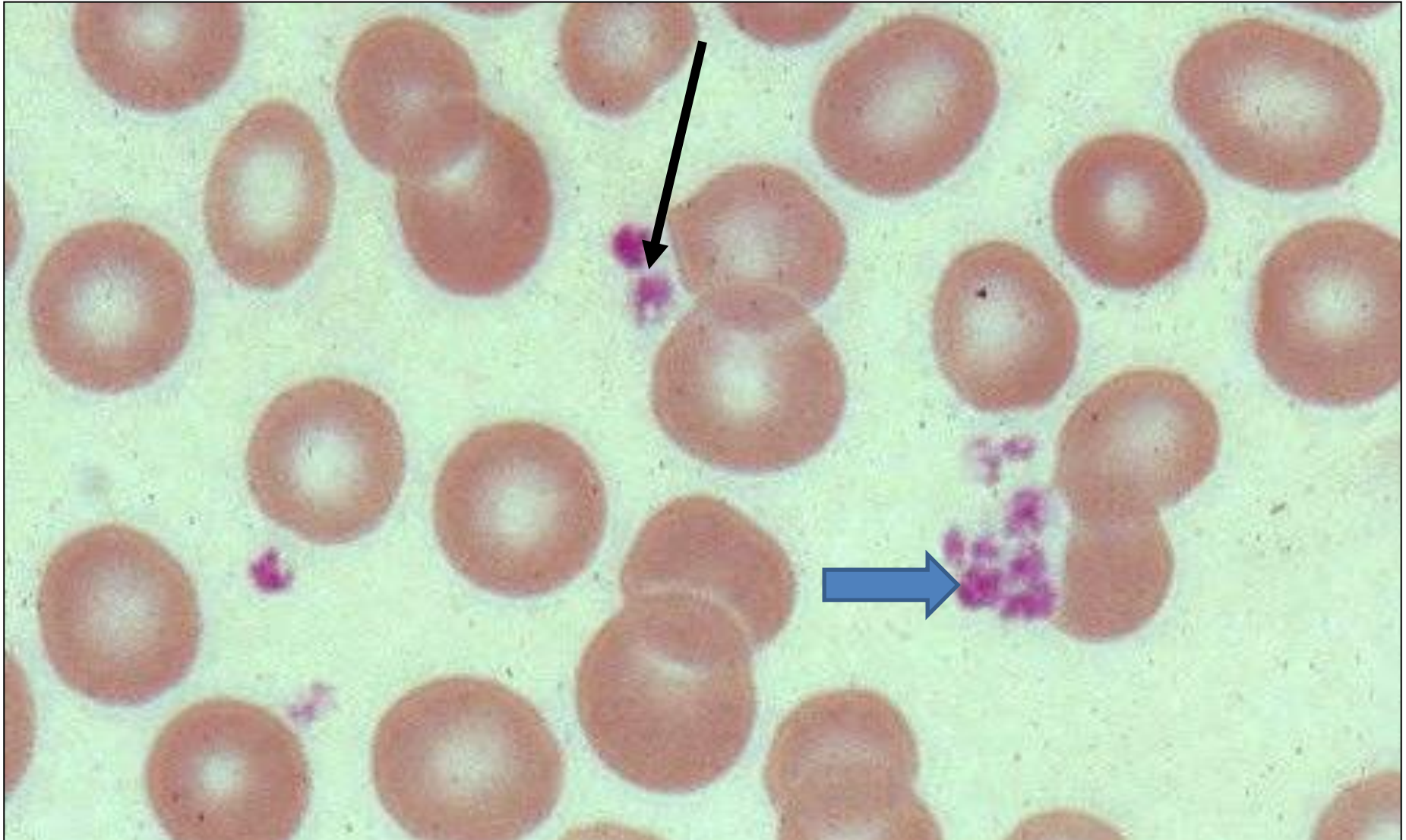
RBCs



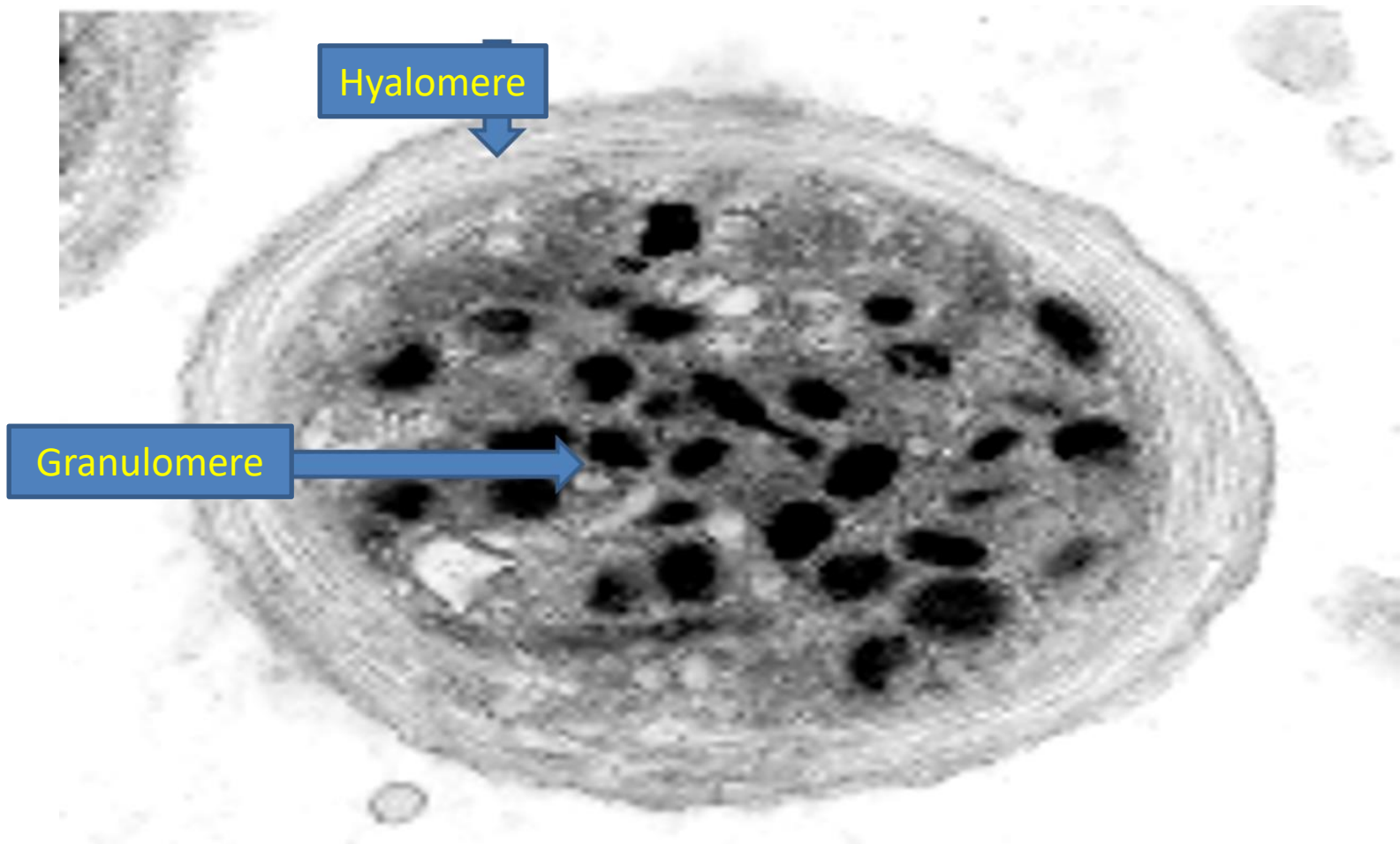
subplasmalemmal **cytoskeleton** (**actin, spectrin & ankyrin**) responsible for the flexibility of **RBCs**.



Platelet

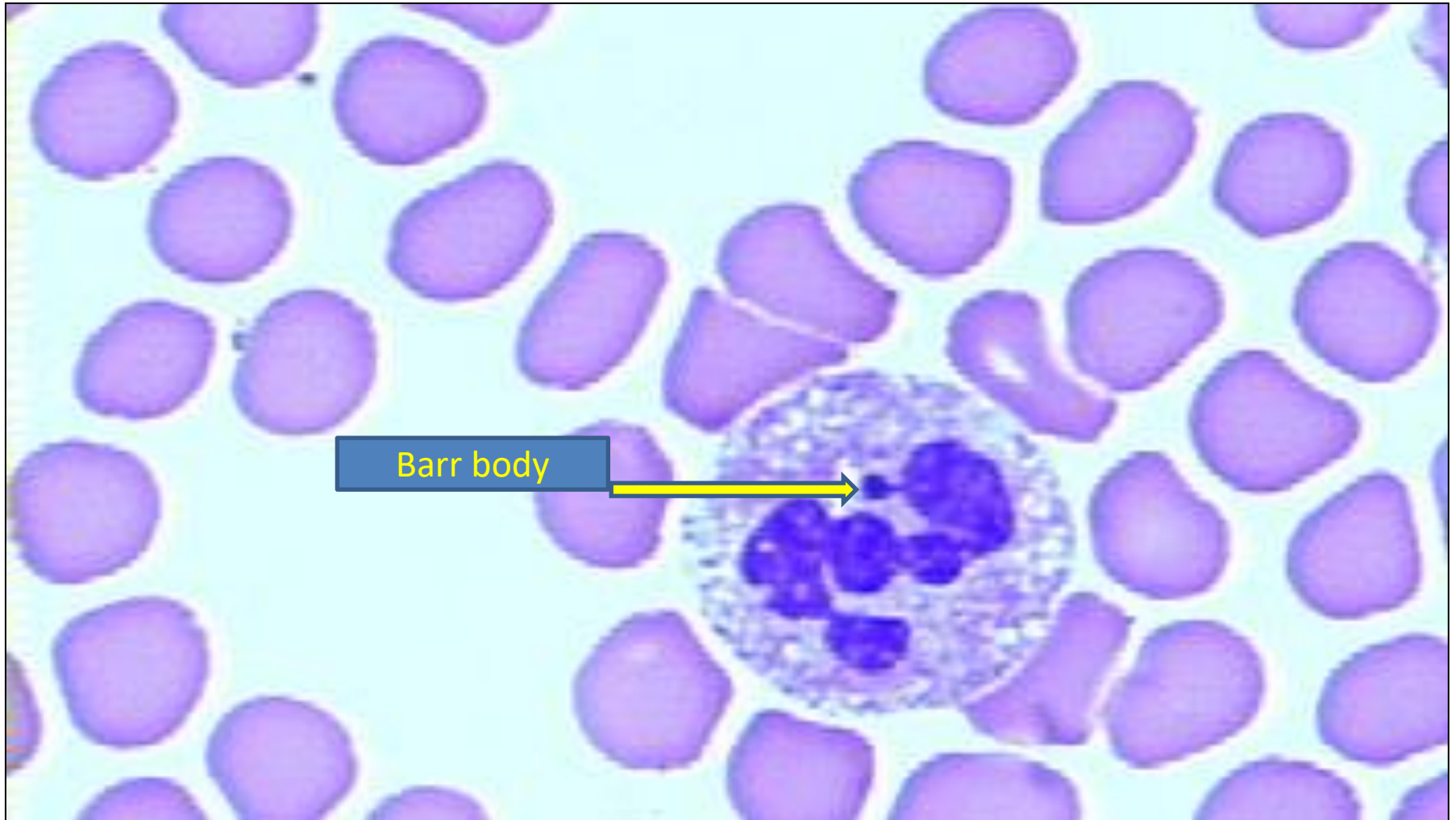


EM of Platelet

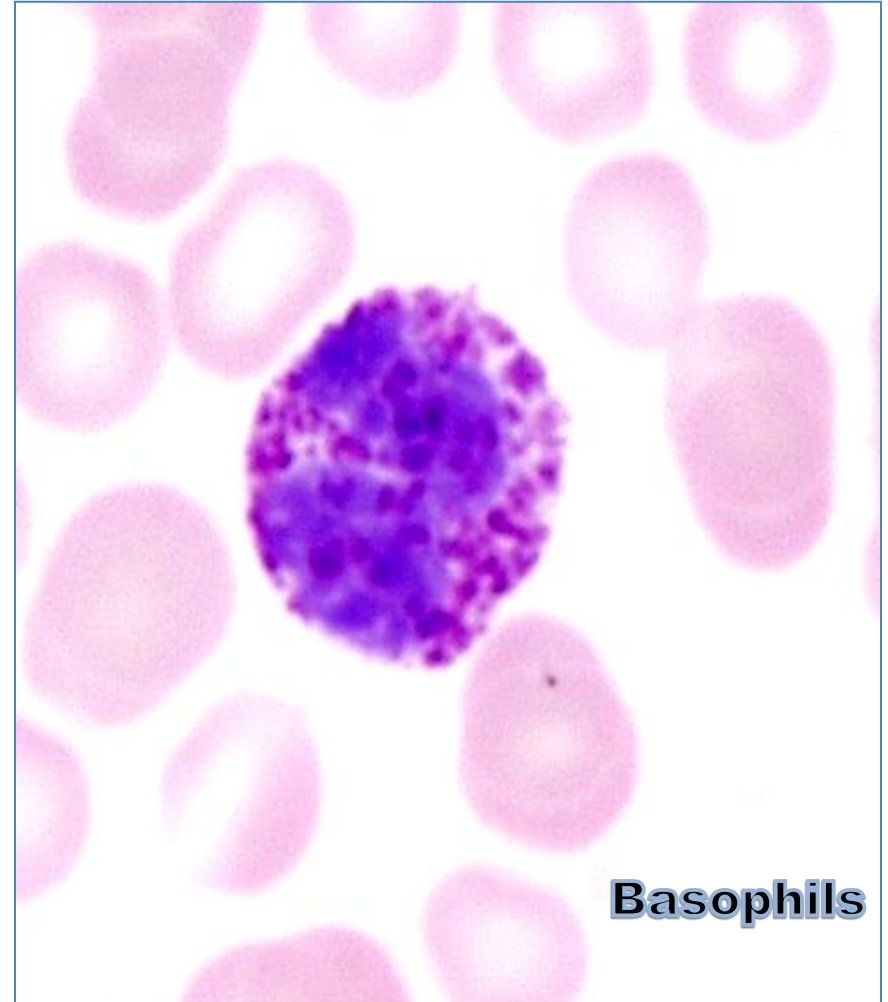
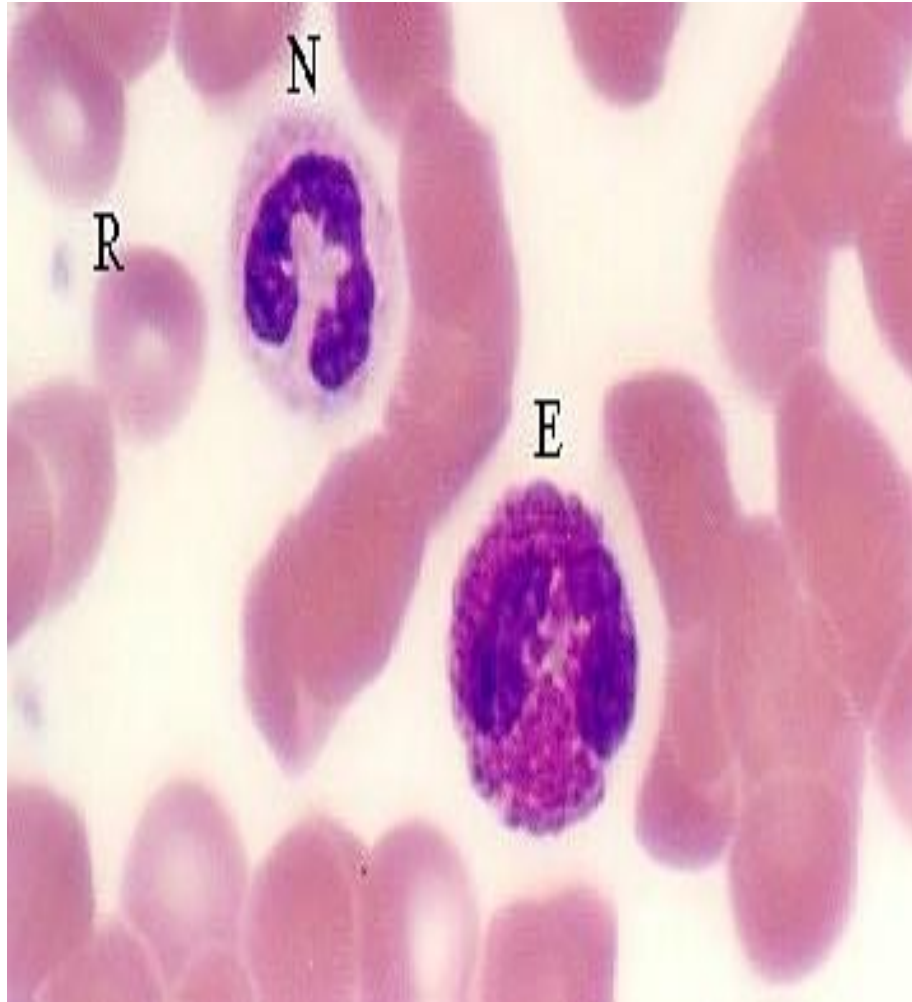


Neutrophils = polymorphonuclear leucocytes =

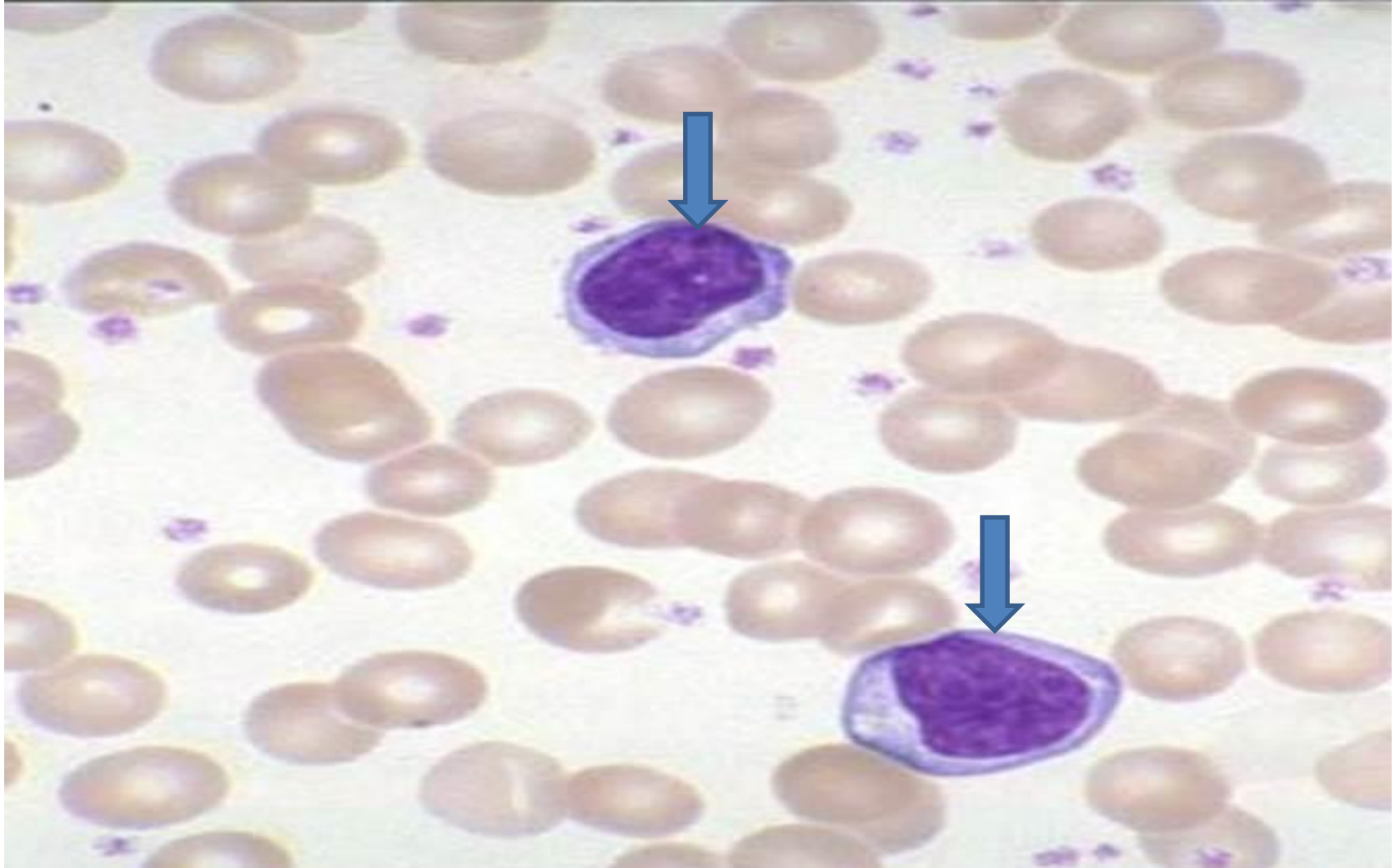
Microphage = pus cell



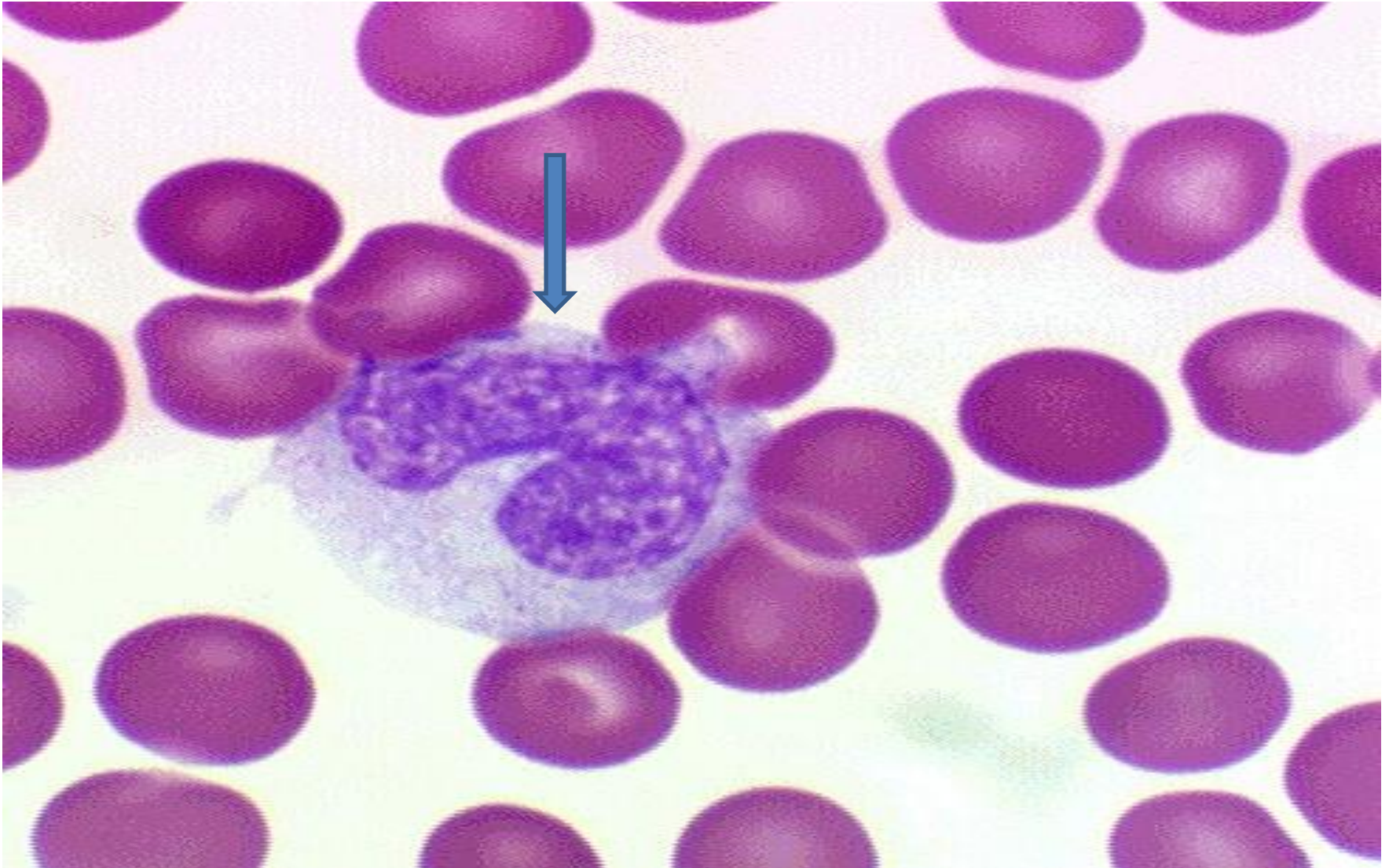
Eosinophils



lymphocyte



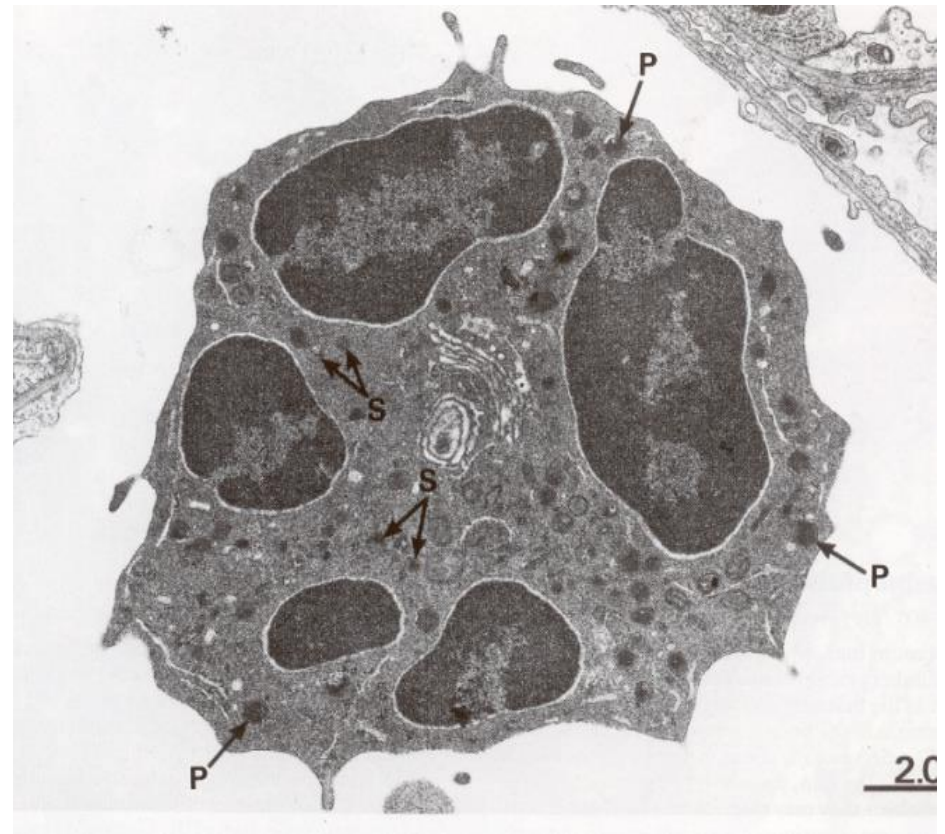
Monocyte



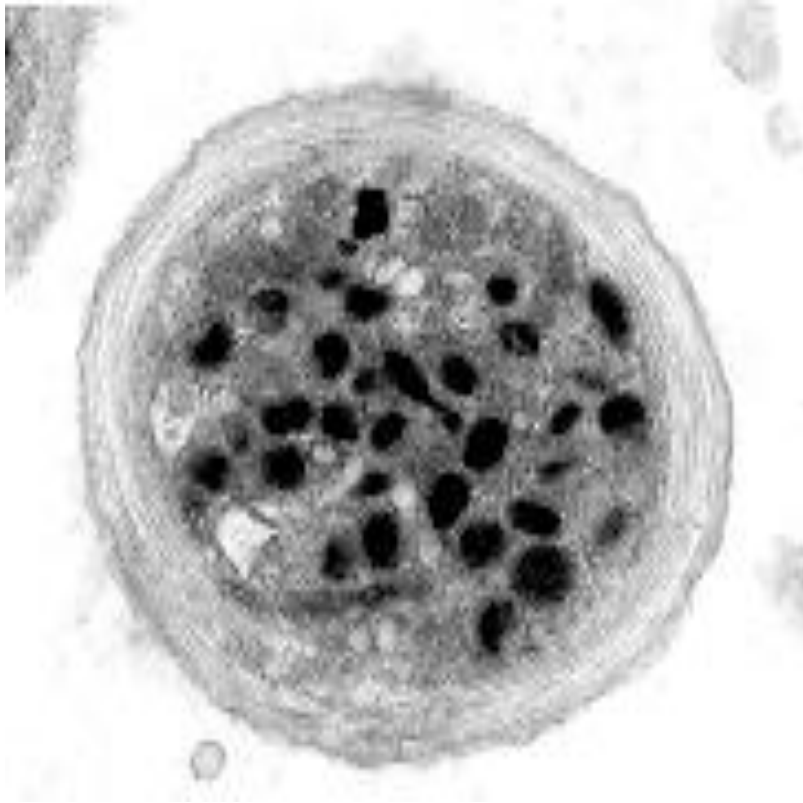
Eosinophils



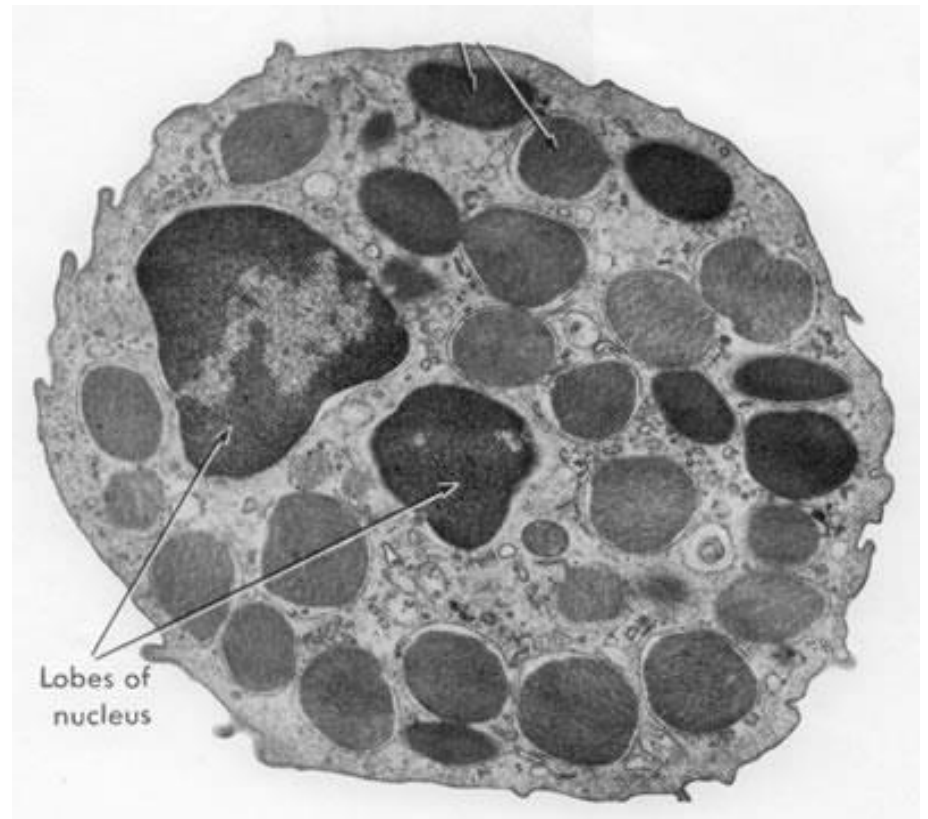
Neutrophils



Platelets

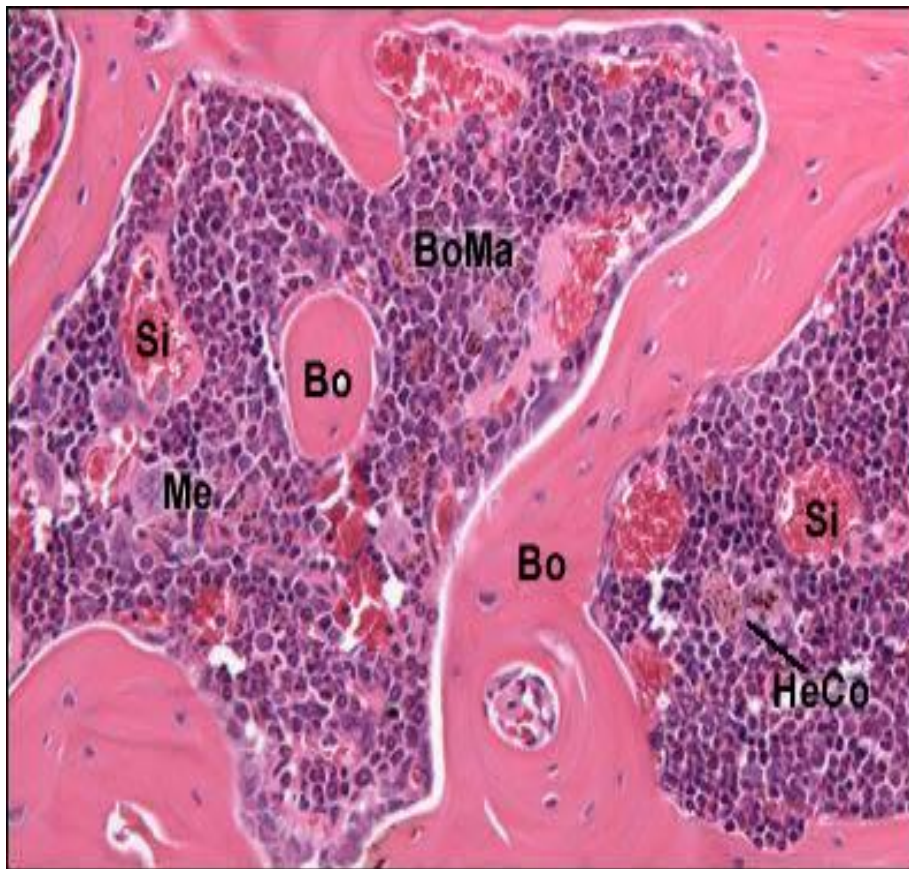


Basophils

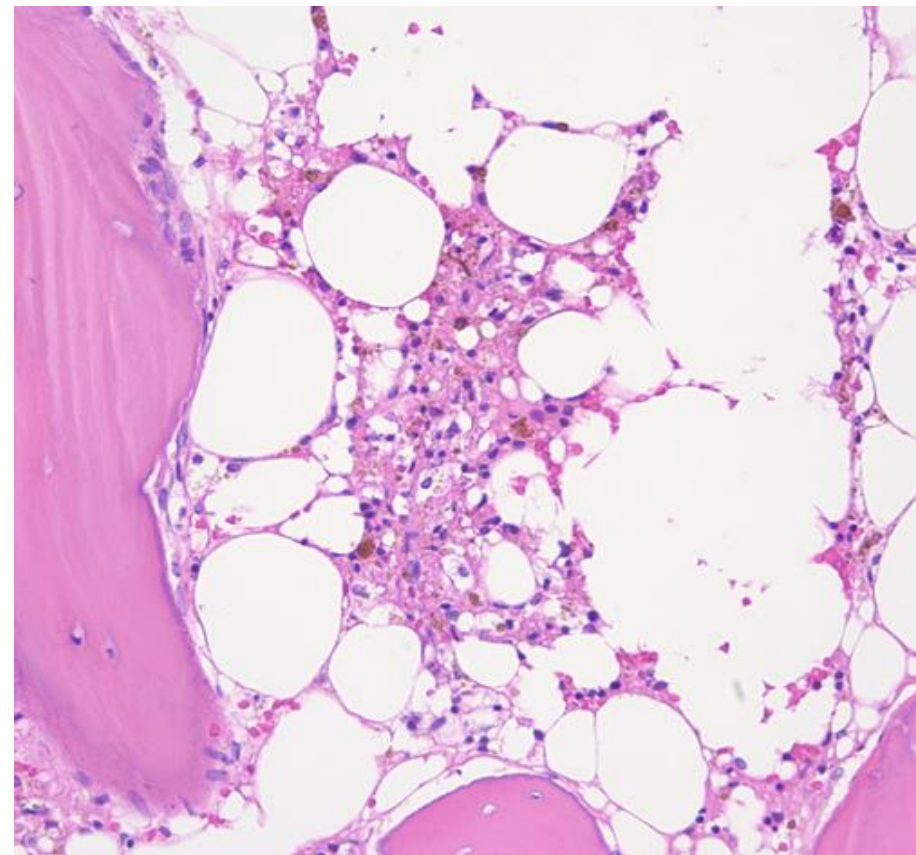


Bone marrow

Red bone marrow



Yellow bone marrow

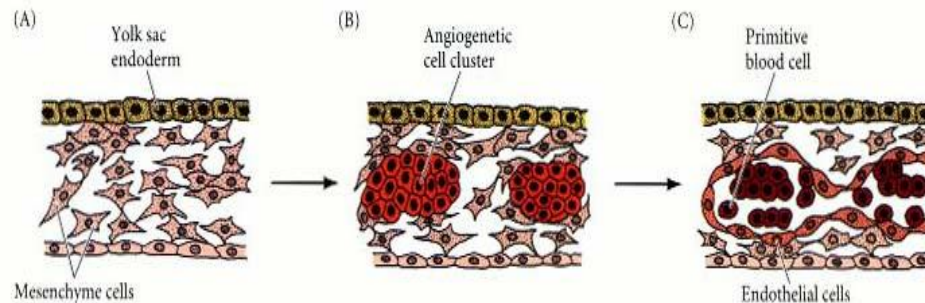


Prenatal hematopoiesis

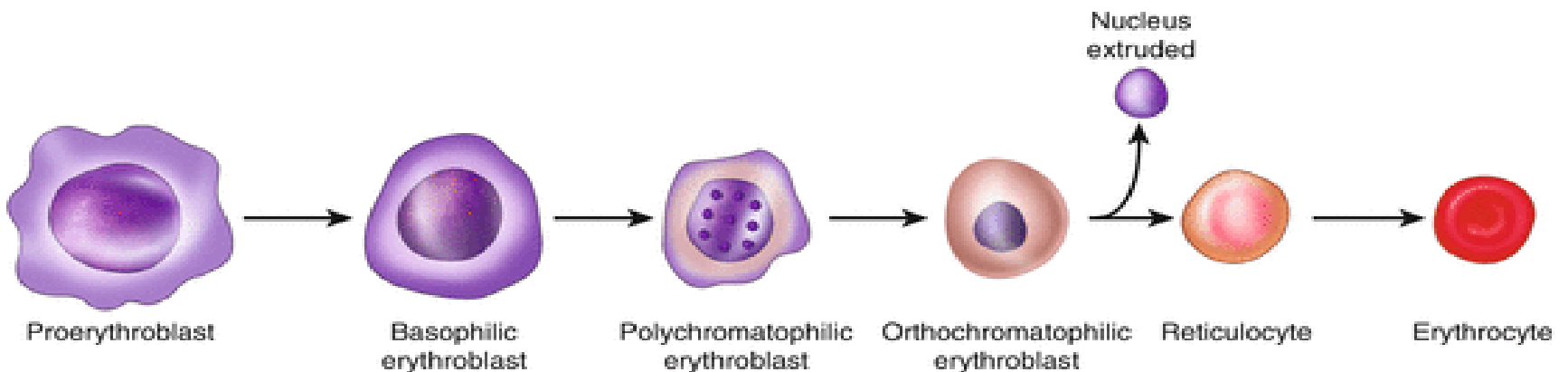
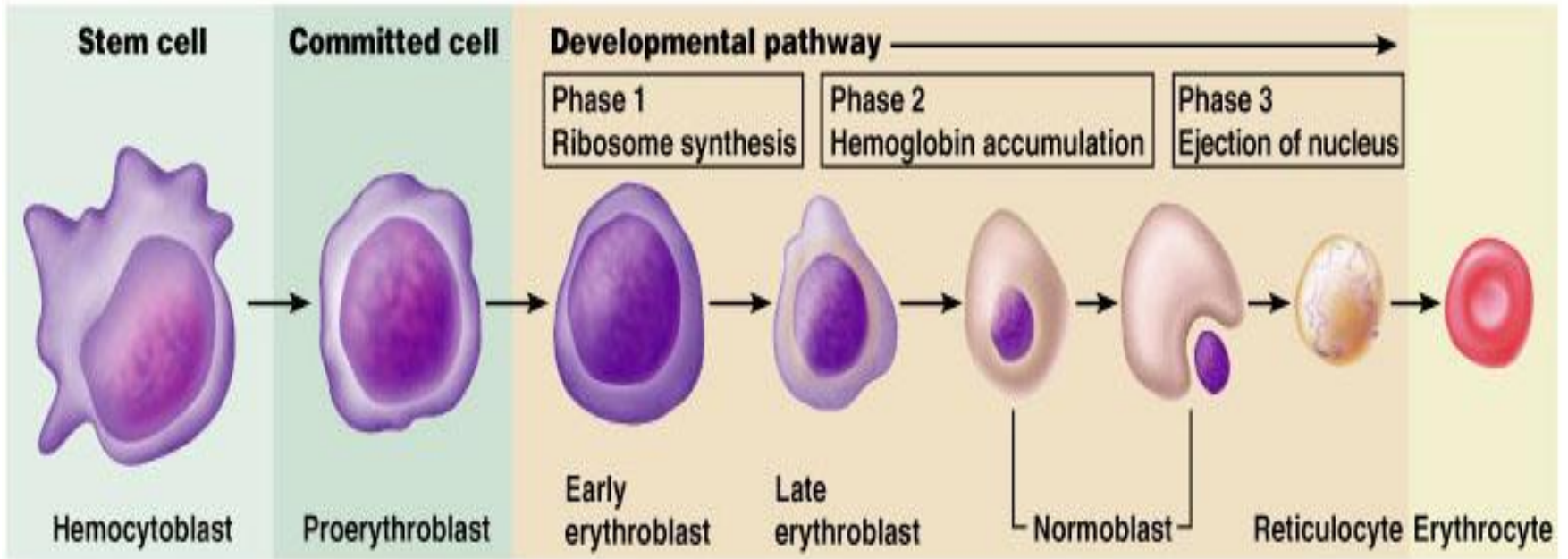
1- Yolk Sac Hematopoiesis (blood islands) 2-8 weeks:

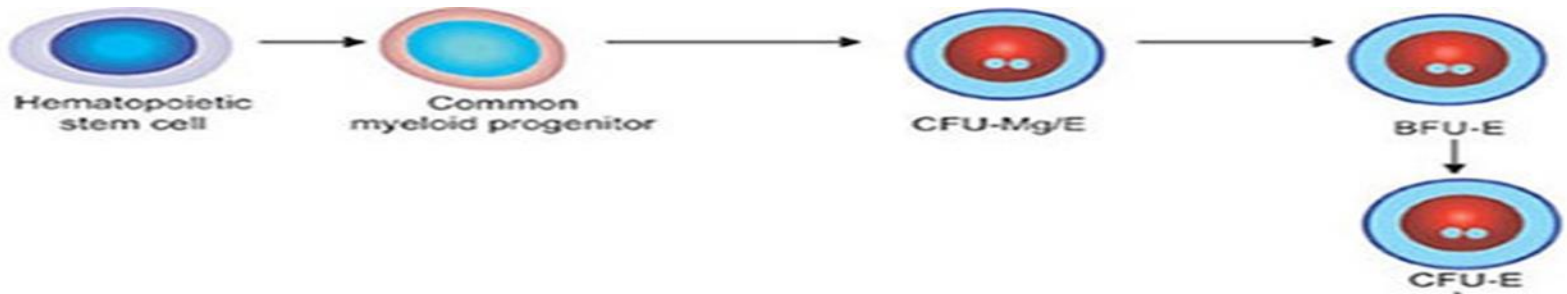
- In the yolk sac, mesenchymal cells differentiate to clusters of hemangioblast cells. **Mesoblastic phase**
- 1-Peripheral hemangioblasts further differentiate into endothelial cells &
- 2-Central hemangioblasts give rise to **nucleated red blood cells**, **no leukocytes** are formed in this phase.
- This is the first “blood vessel” like structure in the embryo.

- **2- Fetal Liver & spleen, L.N Hemopoiesis:** From **8 - 28** wks;
 - *Liver and spleen are colonized by definitive hematopoietic stem cells.
 - * **Erythrocytes still have nuclei**, leukocytes begin to appear. All blood cell types (**except T cells**) can differentiate in the fetal liver & spleen.
 - **extra-medullary hematopoiesis
- **3- Prenatal Myeloid phase:** Bone marrow is colonized late in embryogenesis (after **22 weeks**) by definitive hematopoietic stem cells derived from the fetal liver & spleen.
- All blood cell types (**except T cells**) can differentiate in the bone marrow.

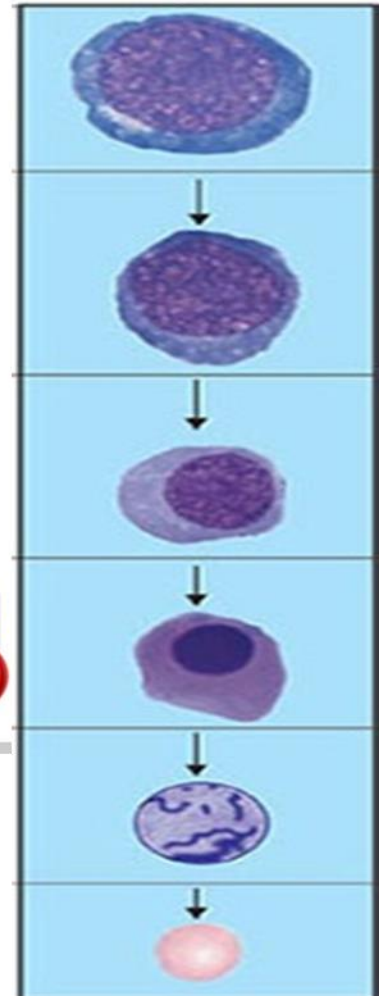
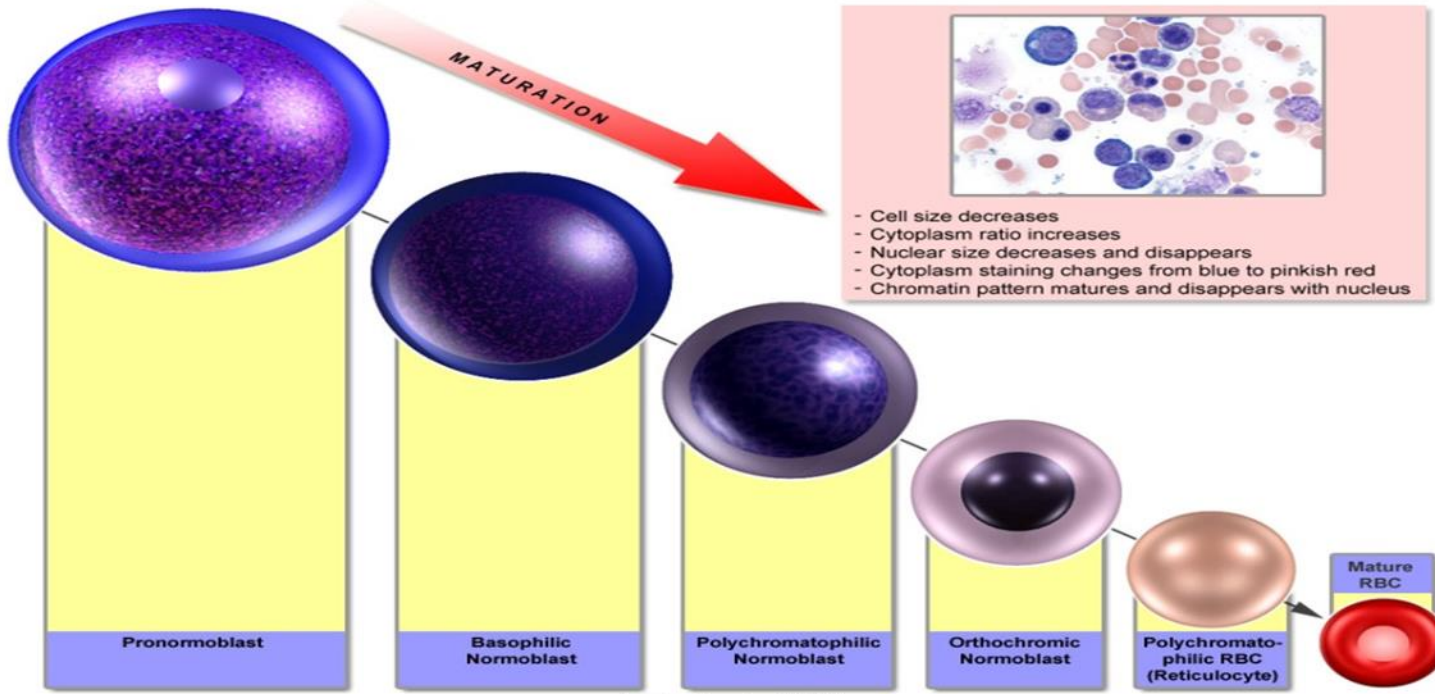


Erythropoiesis



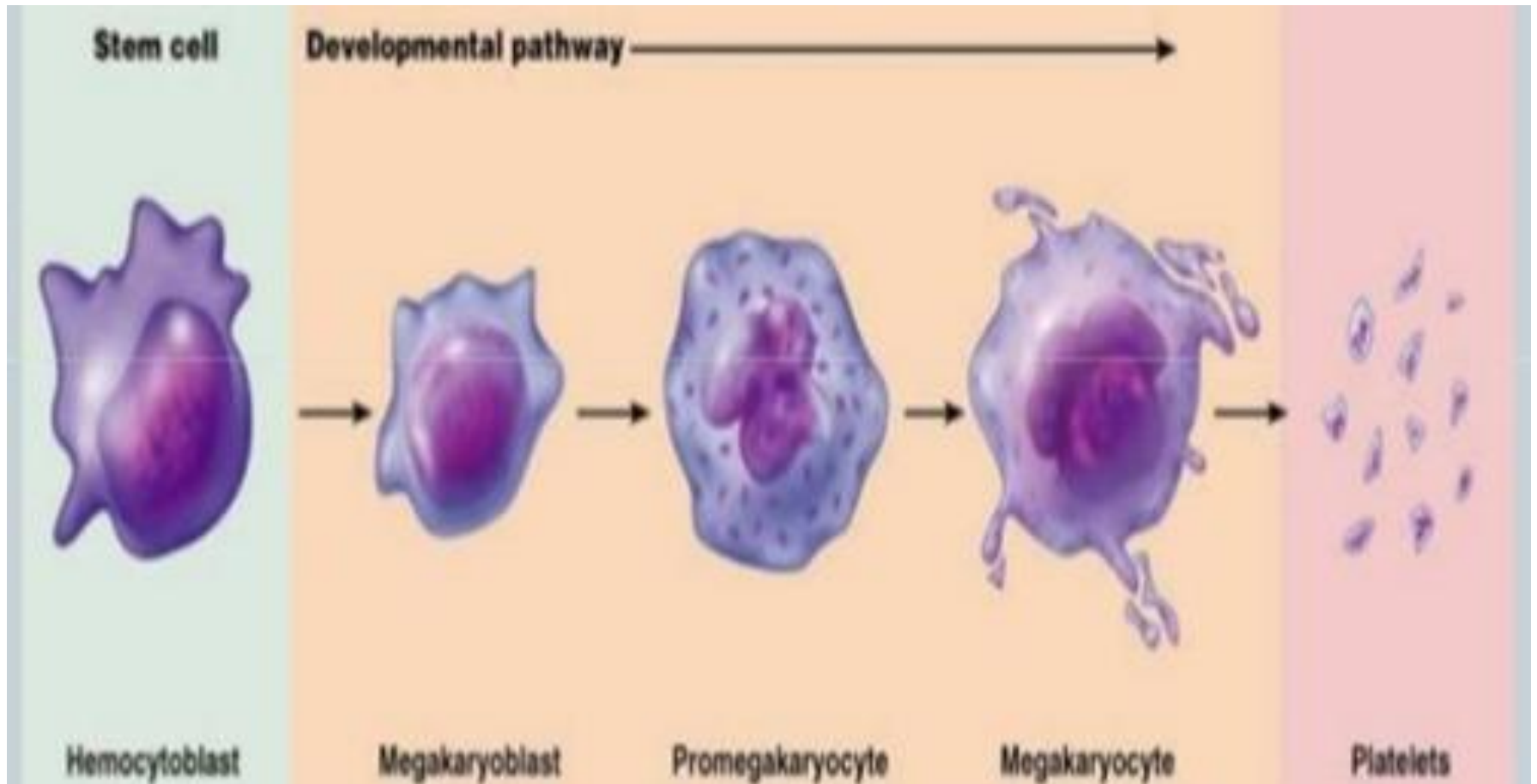


ERYTHROID (RBC) MATURATION DIAGRAM



10 μm

THROMBOPOIESIS



Megakaryocyte



- Lobulated nucleus +numerous cytoplasmic granules (Alpha, Delta, Lambda)
- Membranous demarcation lines around the granules ▼▼
- Lines of cleavage.

Granulopoiesis

1-UMC

2-Pluripotential hemopoietic stem cells (**hemocytoblasts**)

3-Restricted granulocyte progenitor, that are called

(Colony-forming unit granulocytes (**CFU-G**))

4-Myeloblast

5-Promyelocyte :(nonspecific granules)

6-Myelocyte :

(specific granules N,E,B.....?)

7-Metamyelocyte:

(specific granules N, E,B

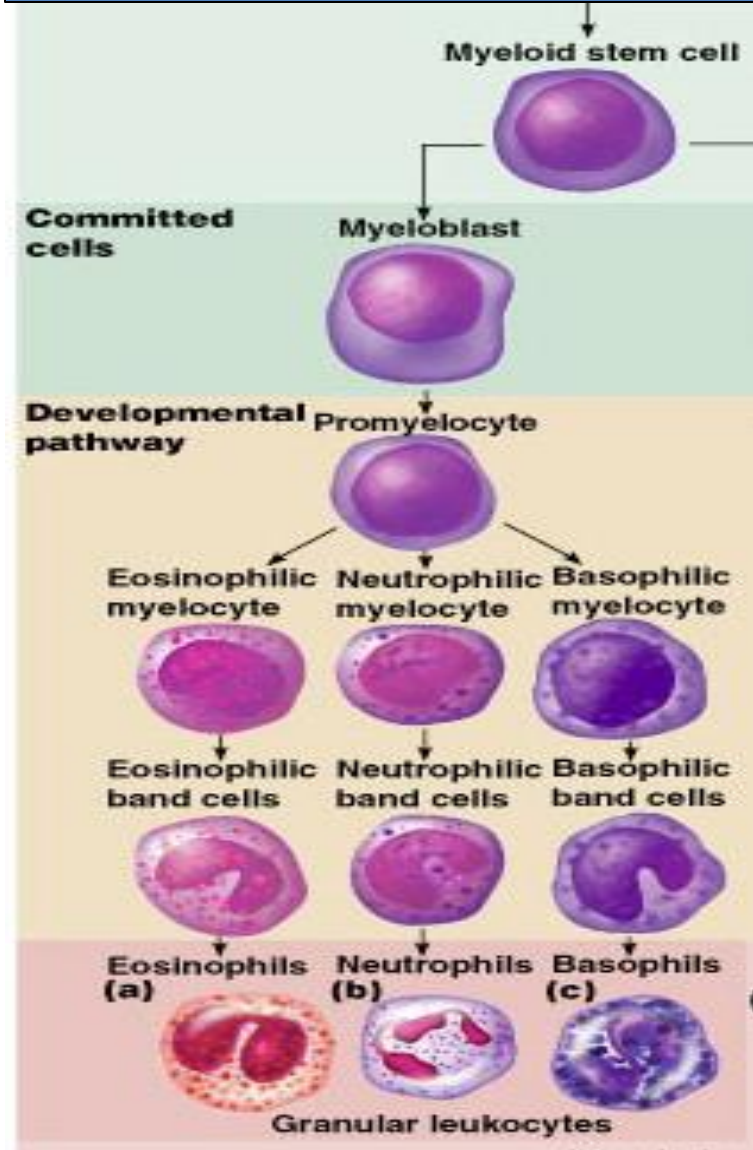
+**indentation of nucleus**)

8-Band cell

Smaller cells ,curved band nuclei ,**cannot divide**. May be present in peripheral blood.

9-Mature cells: (Neutrophils ,Eosinophils Basophils)

Takes about 10-11 days

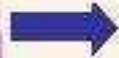




Myeloblast



Promyelocyte



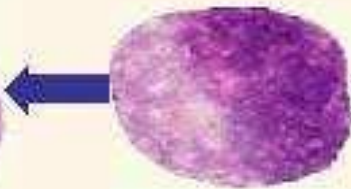
Myelocyte



**Segmented
Neutrophil**



Band cell



Metamyelocyte Myelocyte

