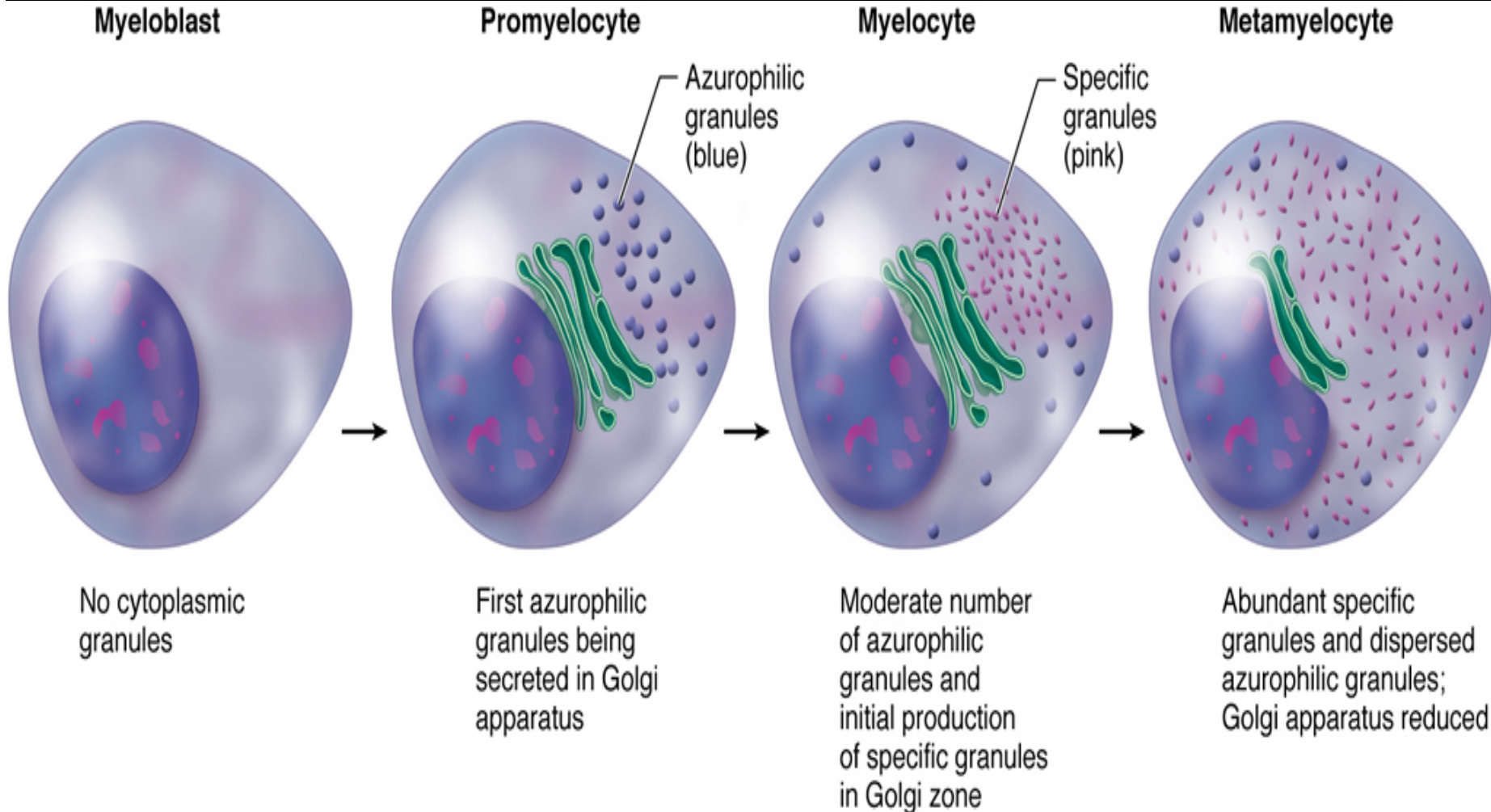




Biology

Bone marrow:

■ Granulopoiesis:



GRANULOCYTOPOIESIS

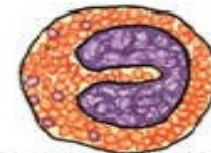
EOSINOPHILIC



Eosinophilic myelocyte



Eosinophilic metamyelocyte



Eosinophilic stab cell



Eosinophil

NEUTROPHILIC



Neutrophilic myelocyte



Neutrophilic metamyelocyte



Neutrophilic stab cell



Neutrophil

BASOPHILIC



Basophilic myelocyte



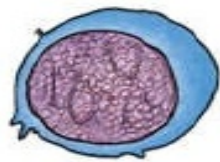
Basophilic metamyelocyte



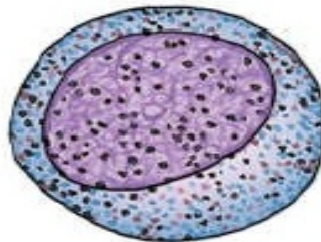
Basophilic stab cell



Basophil



Myeloblast



Promyelocyte

The top row represents the eosinophilic cell line, the middle row represents the neutrophilic line, and the bottom row represents the basophilic line. Note the decrease in cell size, the decrease in cytoplasmic basophilia (meaning decrease in polyribosomes), the increase in cytoplasmic granules (these first become specific and distinguishable as eosinophilic or basophilic at the myelocyte stage), and an increase in lobulation of the nucleus.

Bone marrow

Mitosis:
Stem cell
Myeloblast
Promyelocyte
Myelocyte

Maturation:
Metamyelocyte
Band cell
Mature granulocyte

Storage

Blood

Marginating
cells

Circulating
cells

1

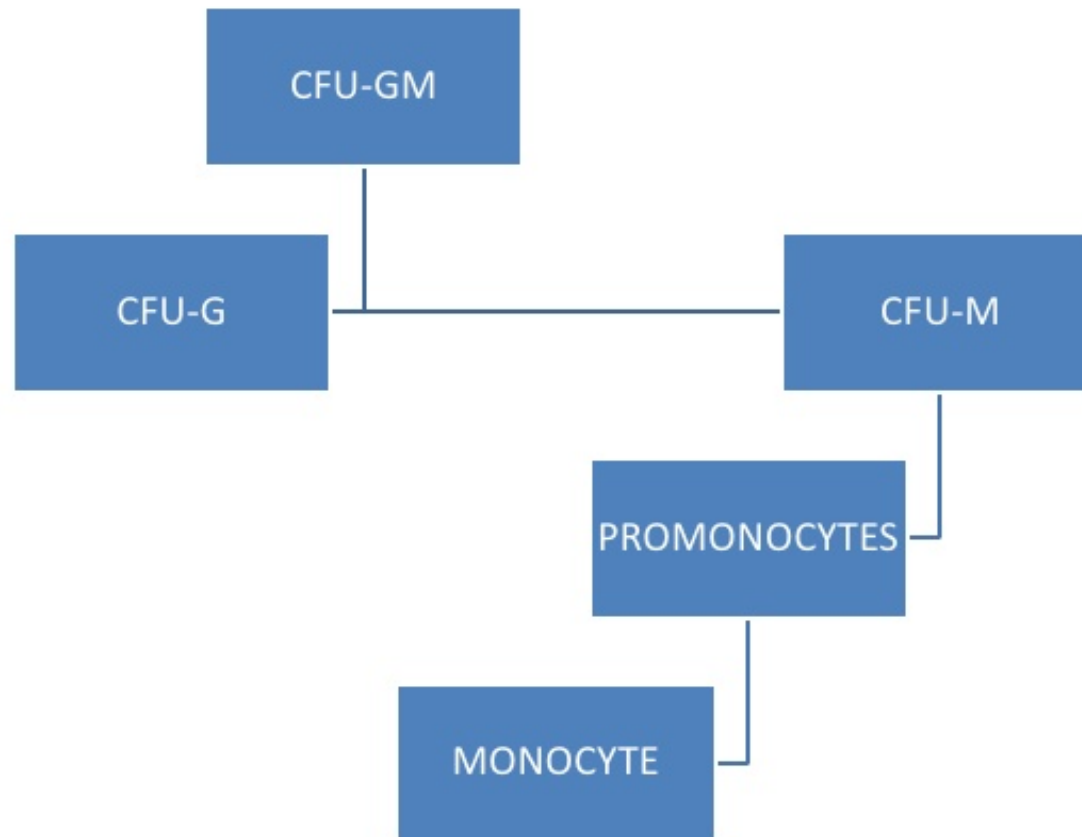
2

4

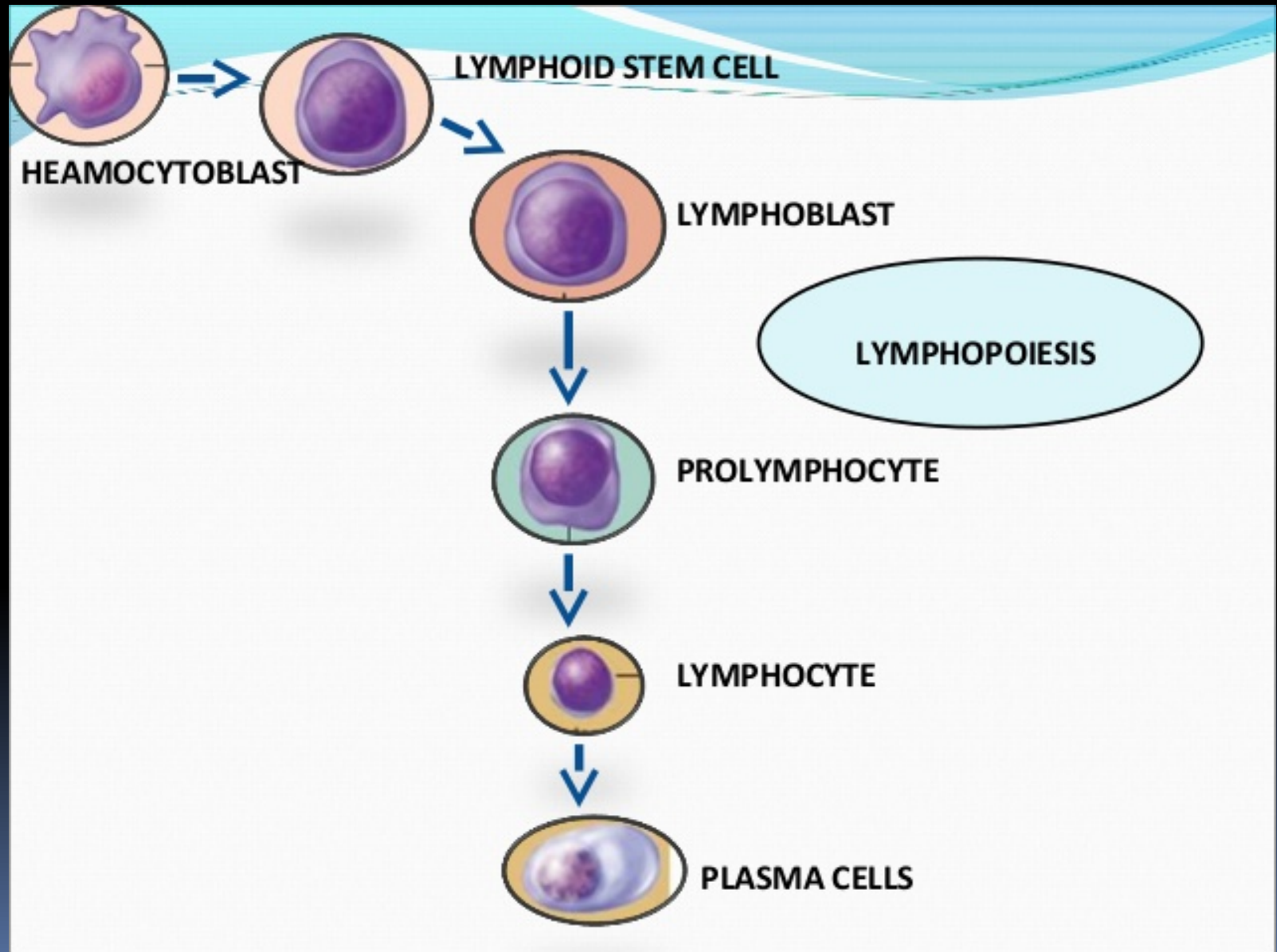
3

- **Agranulopoiesis:**
- **Monocytes:**

MONOCYTOPOIESIS



■ Lymphocytes:



Lymphopoiesis

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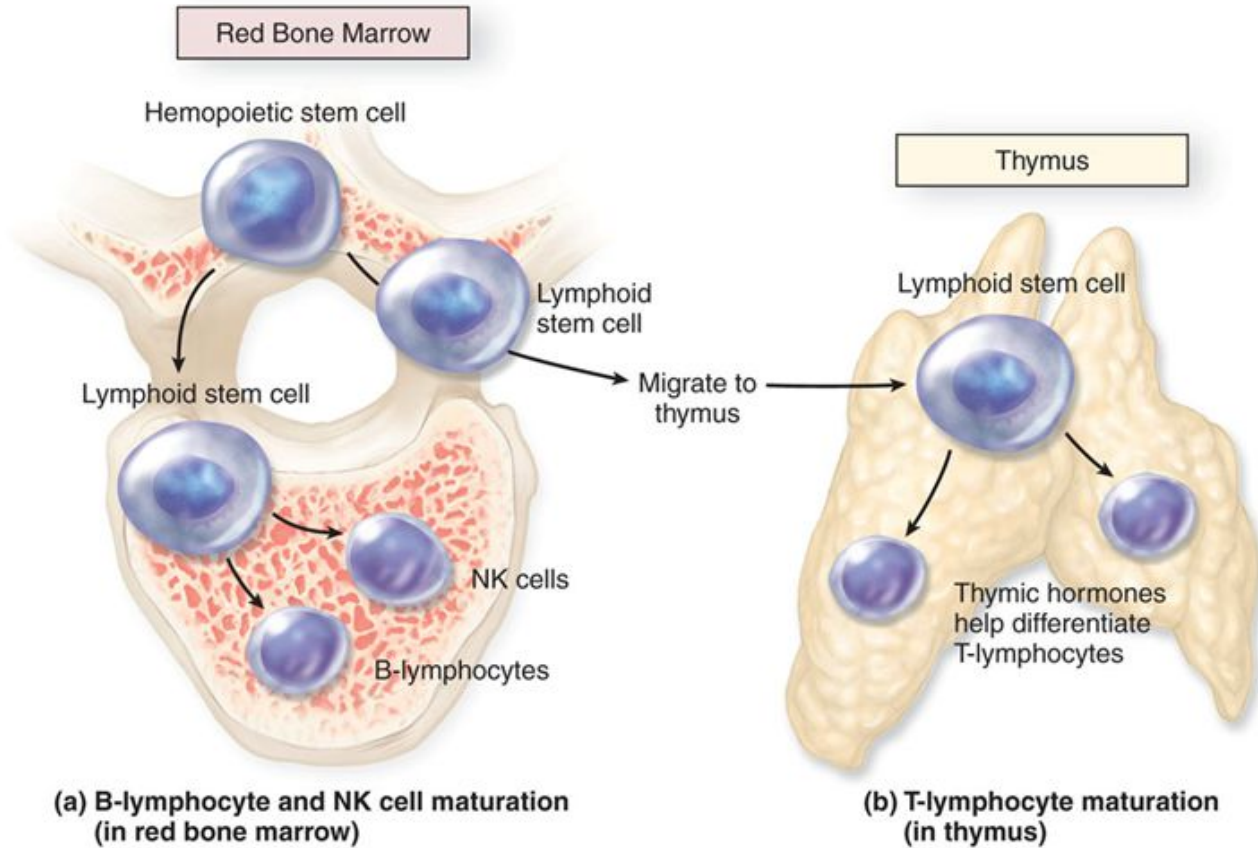
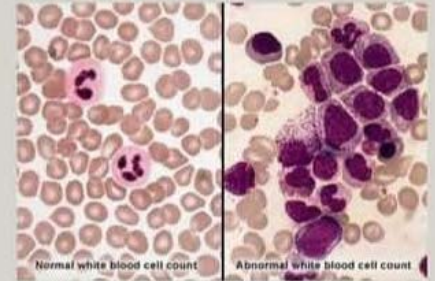


Figure 24.7

- Clinical correlation:
- Leukemia
- Bandemia

What is leukemia?

A cancer found in the blood and bone marrow, caused by too many white blood cells in the body. The white blood cells don't let the body fight disease and prevent the body from making red blood cells and platelets.



4 types of leukemia



Acute lymphoblastic leukemia

Found in lymphoid cells
Grows quickly
Common in children
6,000 cases a year



Acute myelogenous leukemia

Found in myeloid cells
Grows quickly
Common in adults and children
18,000 cases a year



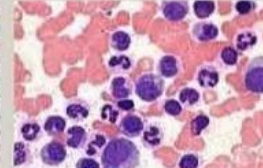
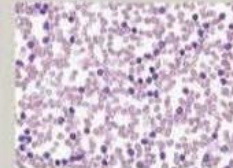
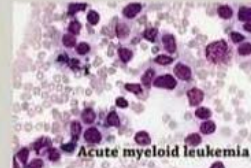
Chronic lymphoblastic leukemia

Found in lymphoid cells
Grows slowly
Common in adults 55+
15,000 cases a year

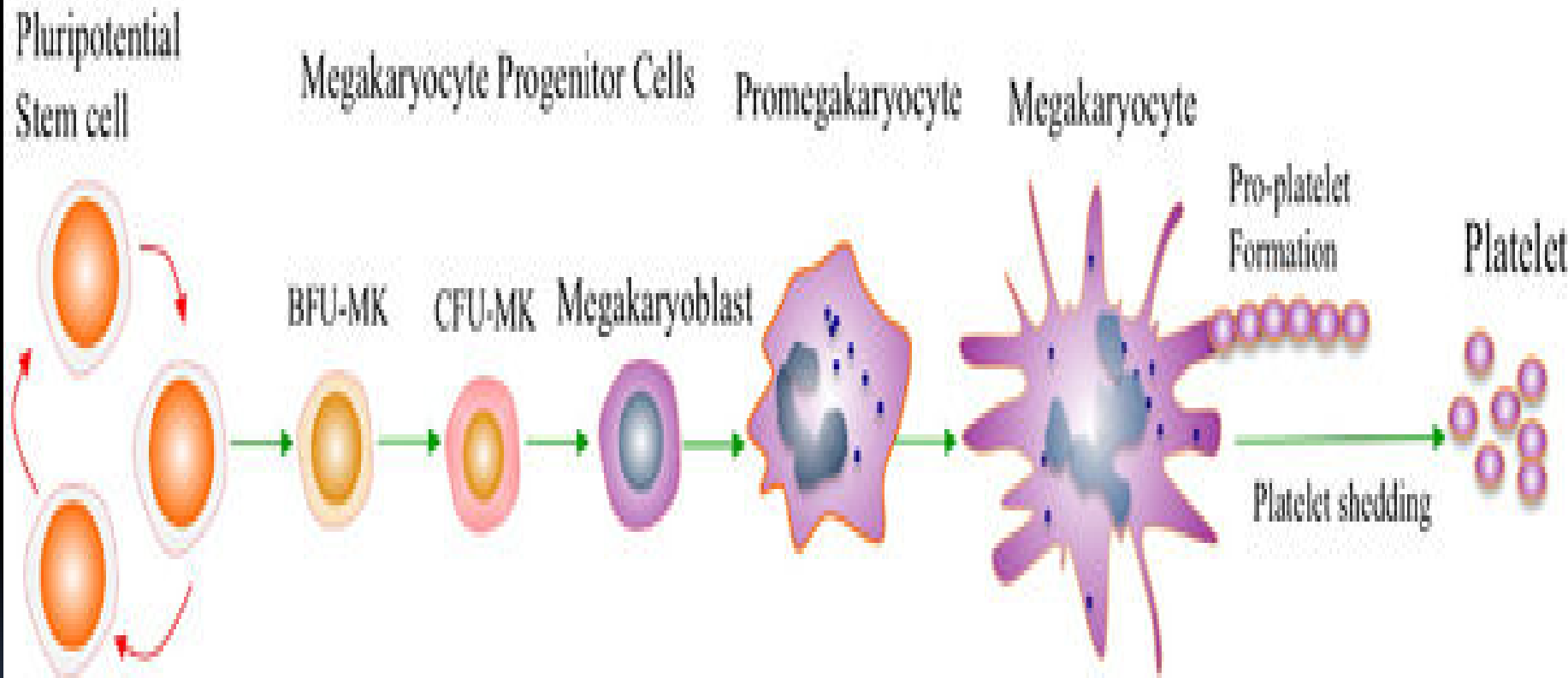


Chronic myelogenous leukemia

Found in myeloid cells
Grows slowly
Common in adults
6,000 cases a year

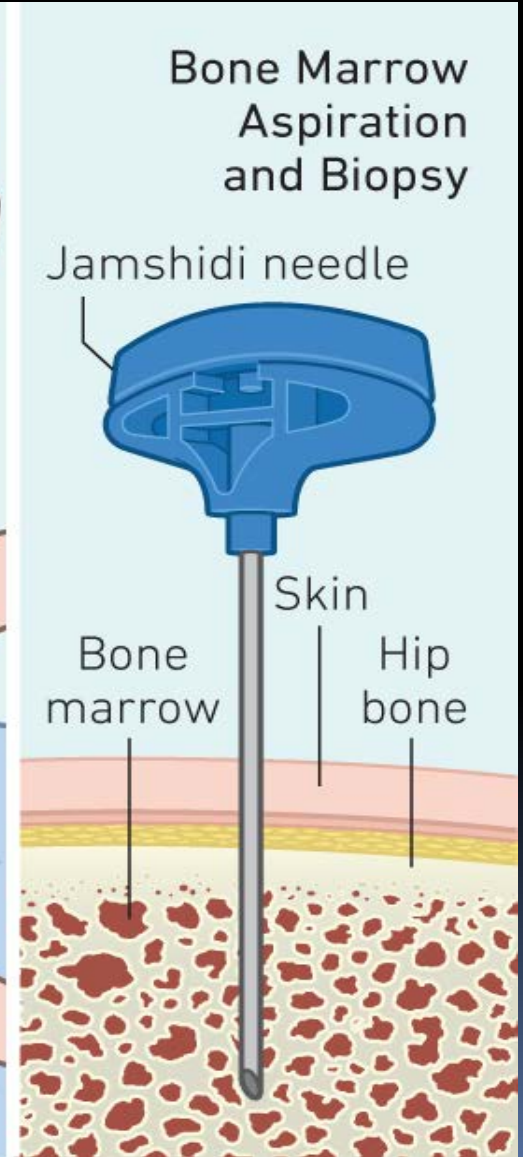


- **Megakariocytopoiesis:**



- **thrombocytopenic purpura**

Bone Marrow Aspiration and Biopsy



Bone Marrow Cellularity

- Bone marrow cellularity index (%) = $100 - \text{age} \pm 10\%$



Thank You