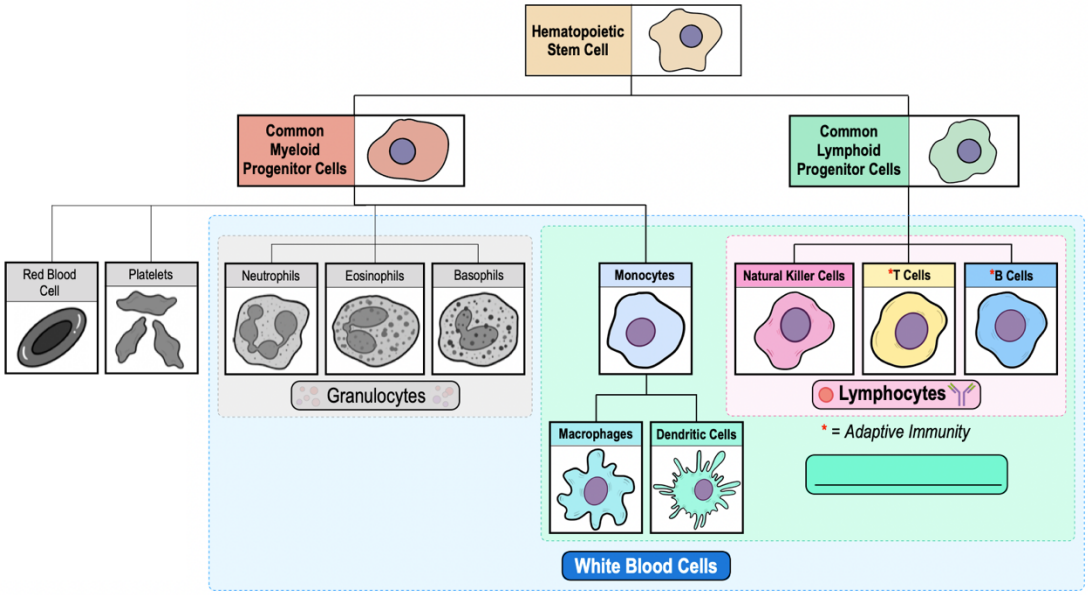
CONCEPT: CELLS OF THE INNATE IMMUNE SYSTEM: AGRANULOCYTES

●**Agranulocytes:** white blood cells with cytoplasmic granules that are _____ visible under a light microscope.

●There are ____ types of agranulocytes:

1) _____: leukocytes that circulate the blood & can develop into *macrophages* or *dendritic cells.*

2) Lymphocytes: includes leukocytes involved in _____ *immunity* (covered in separate video).



Monocytes

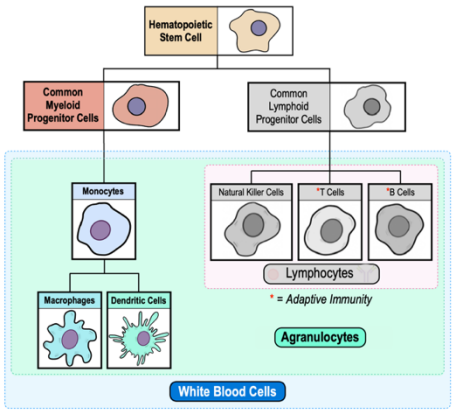
●Monocytes develop into one of _____ types of *phagocytic cells*:

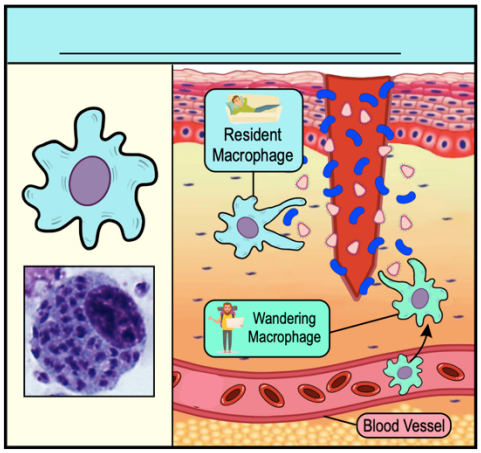
1) Macrophages: phagocytic, sentinel cells that respond *directly* to an infection & can alert other host defenses.

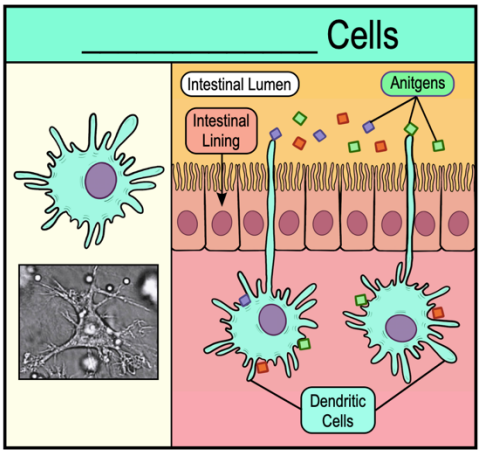
- □ _____ **Macrophages:** *reside* permanently in specific tissues (remain *stationary* in tissues).
- □ **Wandering Macrophages**: _____ through the blood to *other* sites of infection.
- □ **Giant Cells:** macrophages fused together to increase their destructive ability.

2) Dendritic Cells: sentinel cells with long appendages that reside in tissues & alert/initiate *adaptive immunity.*

- □ _____ pathogens in tissues, then present them to cells of the *adaptive immune system*.







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PRACTICE: All of the following are major differences between macrophages & neutrophils except which of these answers?

a) Macrophages can perform phagocytosis while neutrophils cannot.

b) Macrophages kill microbes by "eating" them. Neutrophils kill microbes with hydrolytic enzymes and/or phagocytosis.

c) Neutrophils circulate the bloodstream while resident macrophages reside in tissues.

d) Neutrophils are granulocytes while macrophages are agranulocytes.

PRACTICE: Monocytes can differentiate into which types of immune cells?

a) Basophils & macrophages.

b) Neutrophils & dendritic cells.

c) Macrophages & dendritic cells.

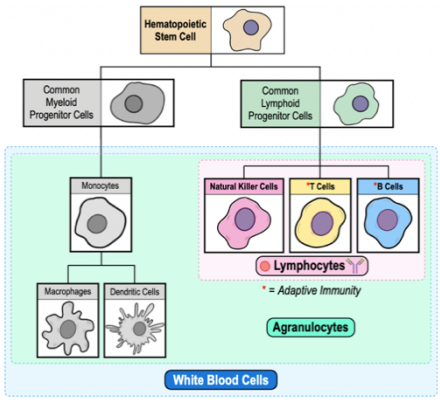
d) Mast cells & macrophages.

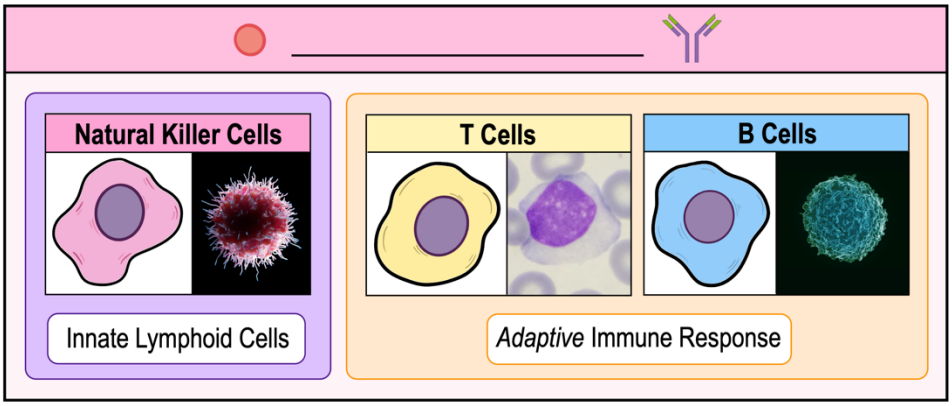
Introduction to Lymphocytes

●*Recall:* **Lymphocytes:** includes leukocytes involved in _____ *immunity* (covered in other videos).

□ 2 major groups of lymphocytes: 1) ____ **cells** & 2) ____ **cells**

□ Both respond to _____ antigens of invading microbes.





●HOWEVER, a group of lymphocytes (*innate lymphoid cells*) differ from B & T cells since they are part of *innate* immunity.

□ **Innate Lymphoid Cells (ILCs):** differ from B & T cells due to a _____ of specificity in antigen recognition.

□ An example of ILCs are **Natural Killer Cells (_____s)** that kill a variety cell types.

PRACTICE: Why is a bone marrow transplant used to replace defective lymphocytes in a patient?

a) Bone marrow creates common myeloid progenitor cells which differentiate into lymphocytes.

b) Bone marrow creates monocytes which differentiate into lymphocytes.

c) Bone marrow creates hematopoietic stem cells which differentiate into all immune cells including lymphocytes.

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PRACTICE: Which of the following immune cells is NOT a professional phagocyte?

a) NK cell.
b) Neutrophil.
c) Macrophage.
d) Dendritic cell.

PRACTICE: Which of the following are referred to as mononuclear phagocytes?

a) Lymphocytes and basophils.
b) Mast cells and eosinophils.
c) Basophils and eosinophils.
d) Monocytes and macrophages.