Seminar

Cells of the Immune System and their Functions

Delivered by

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Date –

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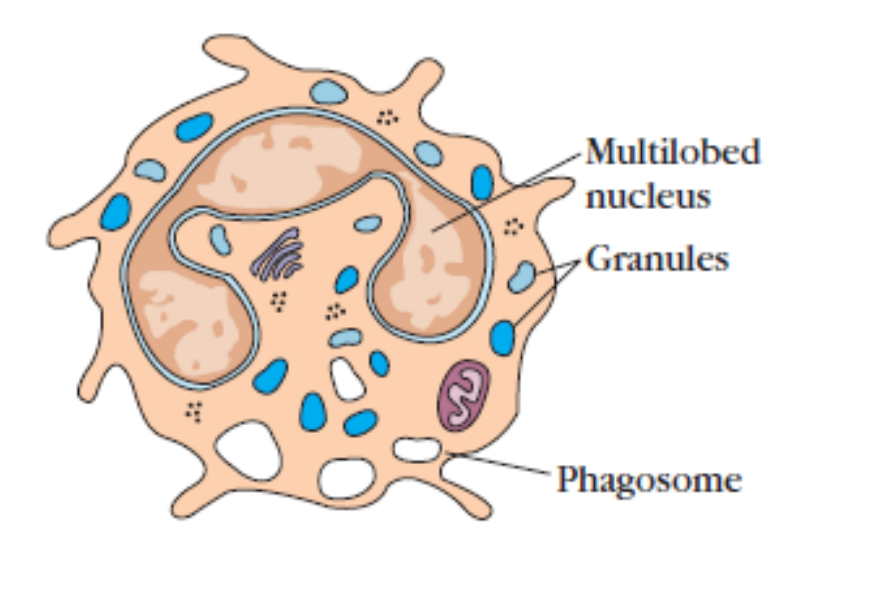
Introduction

- The cells that are specialized roles in innate and adaptive immune responses are phagocytes, Dendritic cells, antigen specific lymphocytes.

1. Granulocytic cells

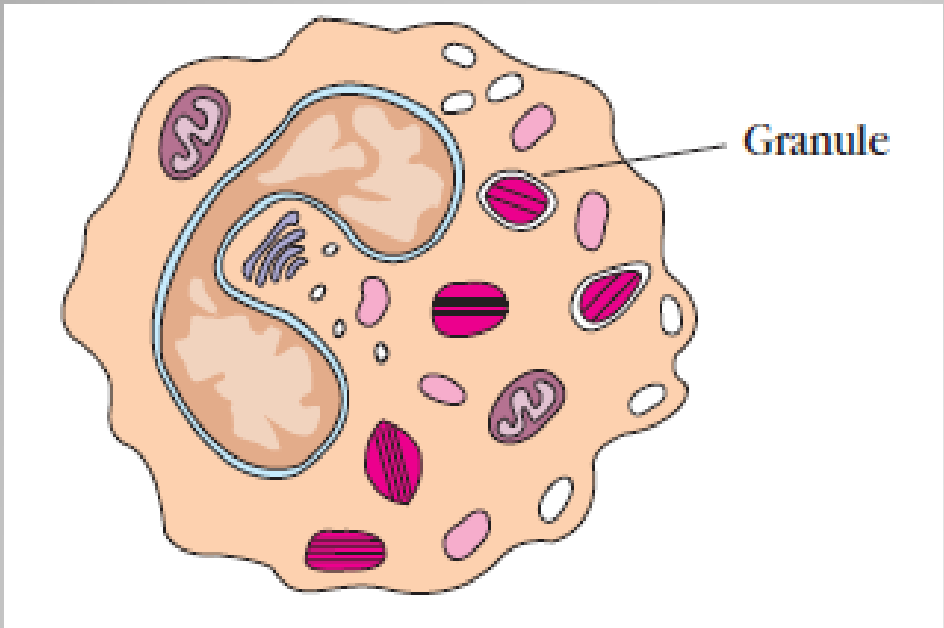
- The granulocytes are classified as neutrophils, eosinophils or basophils on the basis of cellular morphology and cytoplasmic staining characteristics

i. Neutrophil



- The neutrophil has a multilobed nucleus and a granulated cytoplasm that stains with both acid and basic dyes it is often called polymorphonuclear (PMN) leukocyte for its multilobed nucleus.

Eosinophil

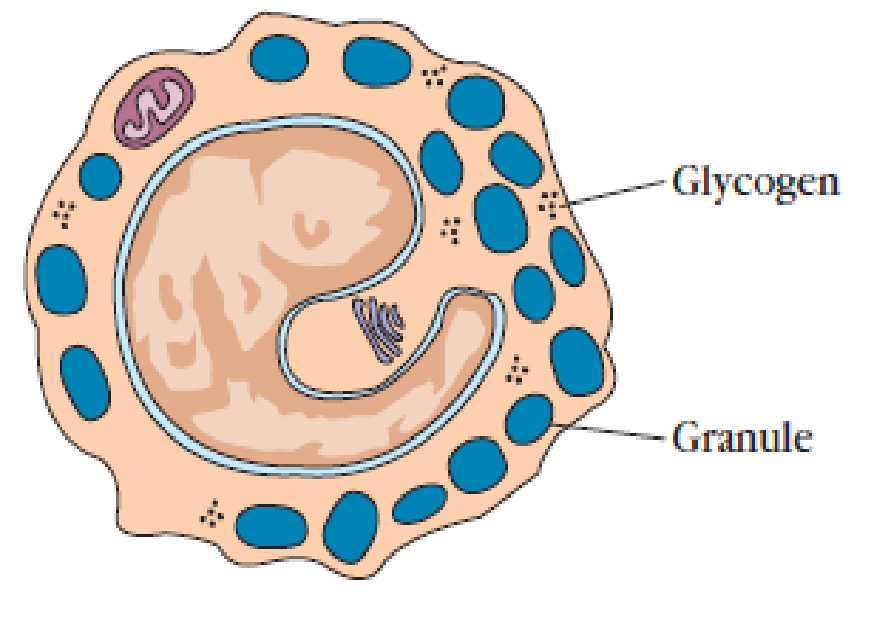


- The eosinophil has a bilobed nucleus and a granulated cytoplasm that stains with the acid dye eosin red.

Functions of Eosinophil

- Eosinophil like neutrophils are motile phagocytic cells that can-migrate from the blood into thee tissue spaces.
- Their phagocytic role is significantly less important than that of neutrophils.
- They play a role in the defense against parasitic organisms by secreting the contents of eosinophilic granules which may damage the parasite membrane.

Basophil



- The basophil has a lobed nucleus and a heavily granulated cytoplasm that stains with the basic dye methylene blue.

Functions of Basophil

- Basophils are nonphagocytic granulocytes that arise by hematopoiesis and function by releasing pharmacologically active substances from their cytoplasmic granules.
- These substances play a major role in certain allergic responses.

Monocyte

- The mononuclear phagocytic system consist of monocytes circulating in the blood.
- Differentiation of a monocytes into a tissue macrophage involves a number of changes, the cell enlarges five to ten fold.
- It acquires increased phagocytic ability to produces higher level of hydrolytic enzymes an begins to secrete a variety of soluble factors.

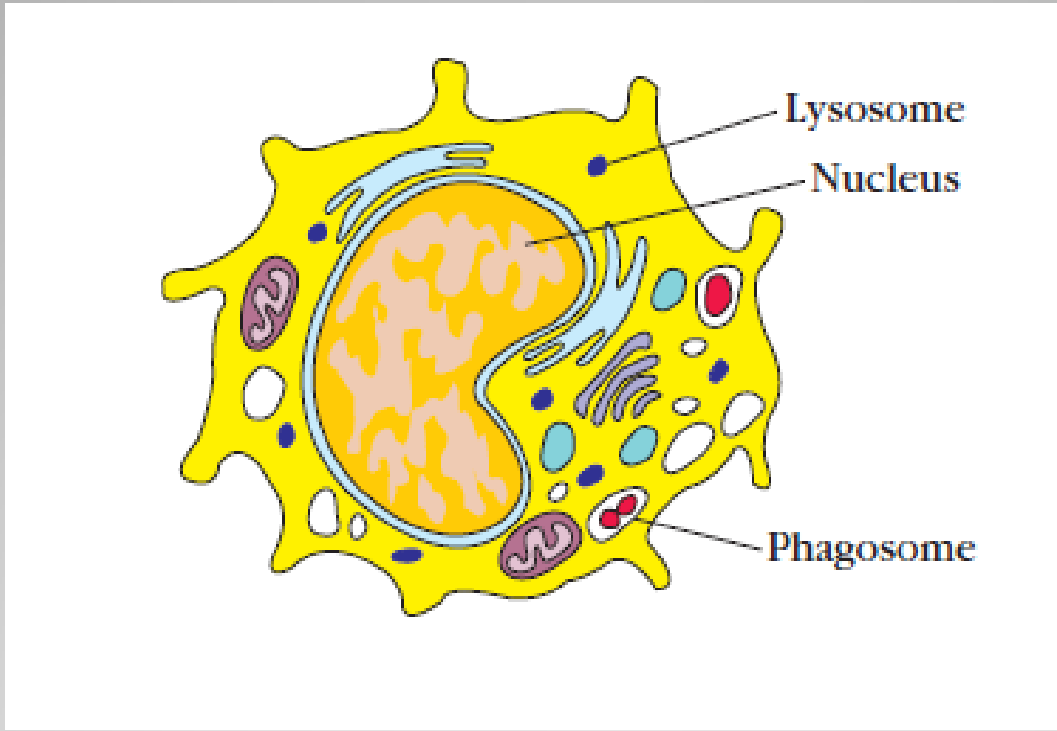
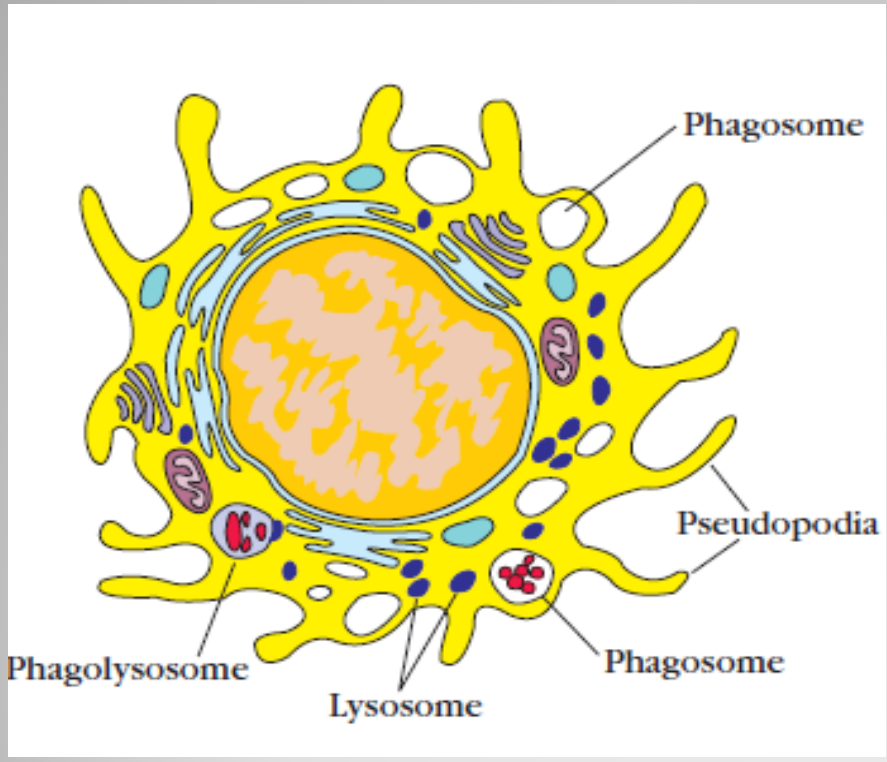


Fig: Monocyte

Macrophage


Phagosome
Pseudopodia
Phagosome
Phagolysosome
Lysosome