



# Dr. M.G.R

## EDUCATIONAL AND RESEARCH INSTITUTE

(Deemed to be University with Graded Autonomy Status)

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Maduravoyal, Chennai - 600 095, Tamilnadu, INDIA

TOPIC : WBC AND ITS FUNCTION  
SUBJECT CODE : BAH102  
SUBJECT NAME : PHYSIOLOGY I  
DELIVERED BY : SUBHASHREE.M.V

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# **WHITE BLOOD CELLS (LEUKOCYTES) AND ITS FUNCTION**

# INTRODUCTION

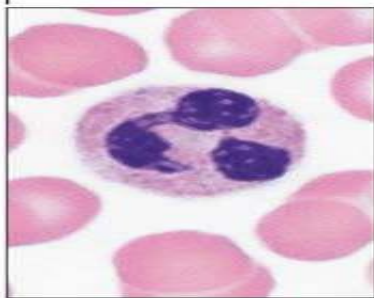
- ❑ White blood cells (WBCs) or leukocytes are the colorless and nucleated formed elements of blood (leuko is derived from Greek word leukos = white).
- ❑ Alternate spelling for leukocytes is leucocytes. Compared to RBCs, the WBCs are larger in size and lesser in number.
- ❑ Yet functionally, these cells are important like RBCs because of their role in defense mechanism of body and protect the body from invading organisms by acting like soldiers.

# TYPES OF WBC

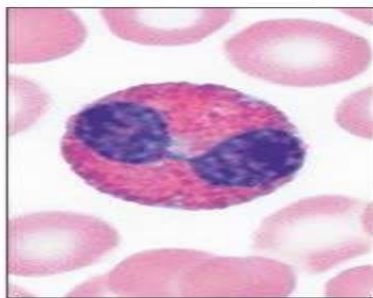
WBCs cells are classified into two major type. They are:

1. Granulocytes - Neutrophils, Basophils, and Eosinophils
2. Agranulocytes - Monocytes and Lymphocytes.

## Granulocytes



**(a) Neutrophil:**  
Multilobed nucleus,  
pale red and blue  
cytoplasmic granules

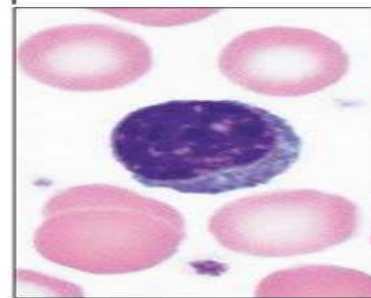


**(b) Eosinophil:**  
Bilobed nucleus, red  
cytoplasmic granules

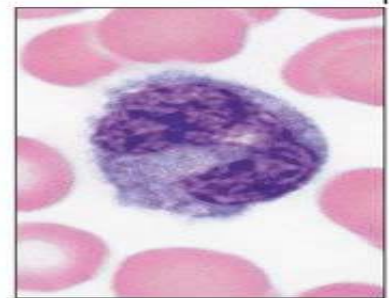


**(c) Basophil:**  
Bilobed nucleus,  
purplish-black  
cytoplasmic granules

## Agranulocytes

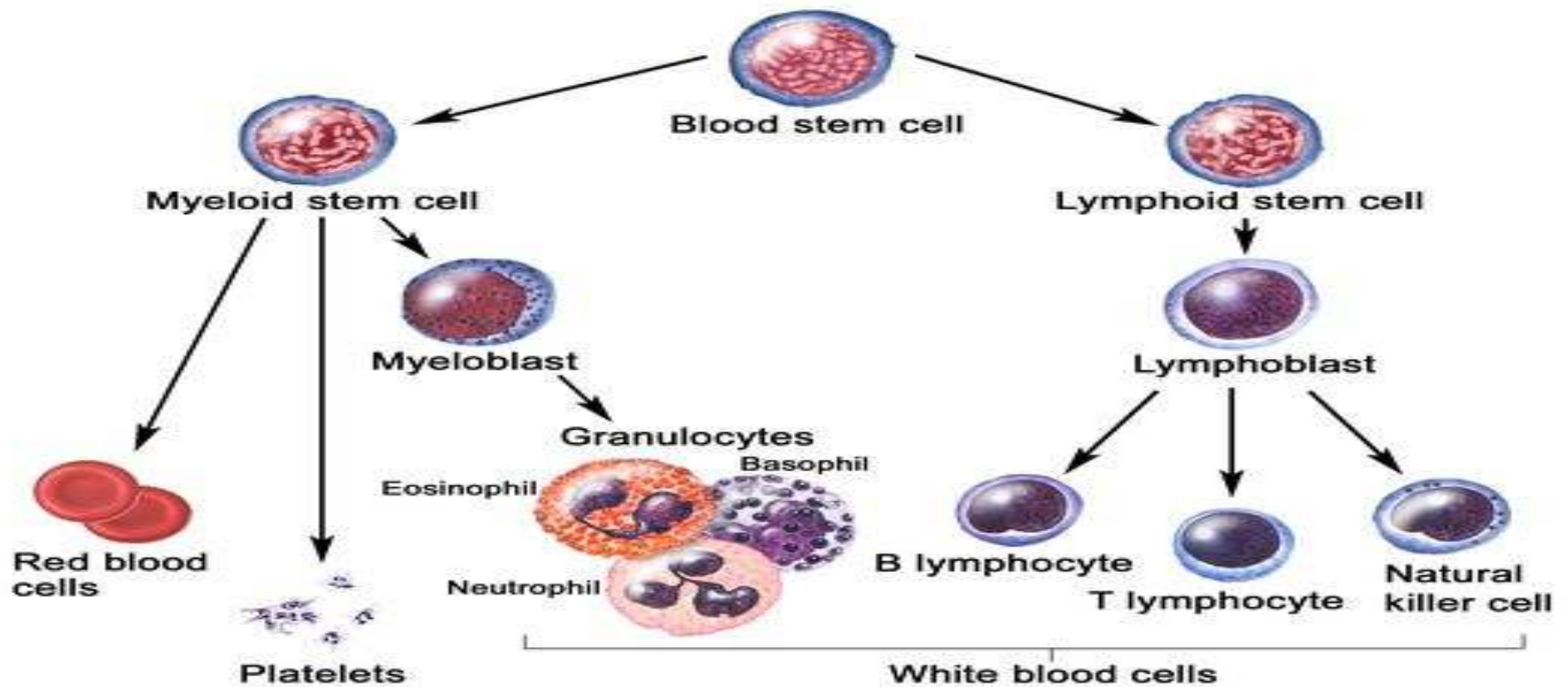


**(d) Lymphocyte (small):**  
Large spherical  
nucleus, thin rim of  
pale blue cytoplasm



**(e) Monocyte:**  
Kidney-shaped  
nucleus, abundant  
pale blue cytoplasm

# LEUCOPOIESIS





# NORMAL VALUES OF DIFFERENT WBC

WBC	PERCENTAGE	ABSOLUTE VALUE PER CU MM
Neutrophils	50 to 70	3,000 to 6,000
Eosinophils	2 to 4	150 to 450
Basophils	0 to 1	0 to 100
Monocytes	2 to 6	200 to 600
Lymphocytes	20 to 30	1,500 to 2,700

## FUNCTIONS OF WBC

- ❑ Neutrophils – It provide first defence against invading micro-organisms. The granules of neutrophils contains oxidative enzymes which kills the foreign pathogens.
- ❑ Eosinophils – It performs Allergic reactions and parasitic infections. This eosinophil associate with mast cells and IgE and releases histamine (which causes inflammation).

❑ Basophils – It also performs allergic reaction and it secretes heparin (an anti-coagulant), so that is why the blood didn't clot while inside our system.

❑ Monocytes – It performs phagocytic functions. In tissues these monocytes are called as Macrophages.

❑ Lymphocytes – It has two type. They are

1. T-Lymphocytes-It has Helper cells, Cytotoxic cells, and Killer cells.

2. B-Lymphocytes-It has Memory cells and Plasma cells.



# APPLIED

## LEUKEMIA

Leukemia is the condition which is characterized by abnormal and uncontrolled increase in leukocyte count more than 1,000,000/cu mm.

It is also called blood cancer.

## LEUKOCYTOSIS

Leukocytosis is the increase in total leukocyte (WBC) count.

It occurs in conditions such as:

1. Infections
2. Allergy
3. Common cold
4. Tuberculosis
5. Glandular fever.

# LEUKOPENIA

Leukopenia is the decrease in the total WBC count.

It occurs in the following pathological conditions:

1. Anaphylactic shock
2. Cirrhosis of liver
3. Disorders of spleen
4. Pernicious anemia
5. Typhoid and paratyphoid
6. Viral infections





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