

Common myeloid progenitor

White Blood Cells Blood

- White blood cells often have irregularly shaped nuclei.
- 65% of white blood cells are **granular leucocytes** as they have granules in their cytoplasm. They are formed in the bone marrow.
- 35% have no granules and are **agranular**. They are formed in the lymph nodes, spleen, tonsils and thymus.

granular leukocytes agranular leukocytes

TYPES OF LEUKOCYTES

- Granulocytes**
 - Granules in their cytoplasm can be stained
 - Biologically active substances involved in inflammatory and allergic reactions.
 - Neutrophils, Eosinophil, and Basophils**

Eosinophils

- Defense (specially against parasites)
- Role in allergic reactions
- Substances present in granules
 - Major basic protein
 - Eosinophilic cationic proteins
 - Eosinophil peroxidase
 - Aryl sulphatase B

Eosinophils (0.04-0.4 x 10⁹/L)

- Eosinophils- Functions :**
 - They migrate to the site of infection.
 - Weak phagocytes.
 - Antiparasitic (kills parasites including worms).
 - Contains histaminase – and so it reduces allergic reaction.
 - Eosinophilia** – increased level of eosinophils in the blood.

BASOPHILS;

MORPHOLOGY:
 SIZE:10-14µm
 NUCLEUS:IRREGULAR,
 BILOBED OR TRI-LOBED
 BOUNDARY IS NOT CLEARLY DEFINED
 BECAUSE OVERCROWDING WITH COARSE GRANULES
 CYTOPLASM:
 BASOPHILIC AND APPEARS BLUE
 FULL OF GRANULES
 CONTAINS-HEPARIN,HISTAMINE AND 5-HT

Basophil

Neutrophils

Comprises approximately 60% of the peripheral blood leukocytes, neutrophils are the most numerous leukocyte population.

- Neutrophils have multi lobed nuclei (2-5) and cytoplasmic granules stain with both acid and basic dyes.
- often called polymorphonuclear cells (PMN's).

The neutrophil's main role is in inflammation.

- First to arrive at inflammation site
- Leave blood/endothelium into tissue (extravasation).

Neutrophils are attracted in factors stimulated by tissue

- complement proteins, clotting proteins and T cell derived



Introduction

- Mast cells are primary effector cells in immunoglobulin E (IgE) mediated inflammatory reactions.
- They are implicated in:-
 - both acquired and innate immune responses,
 - wound healing,
 - fibrosis ,
 - angiogenesis, and
 - autoimmune diseases

Mast cell distribution and identity

- Mast cells are widely distributed, long lived cells found predominately in connective and mucosal tissues and often in proximity to blood vessels, nerves, and lymphatic tissues.
- Mast cells are abundant in the skin, respiratory tract, gastrointestinal tract, and genitourinary tract.
- 7000 mast cells/cubic mm in normal skin.