

Department of Dentistry

Second Class

General Histology

Lec:4

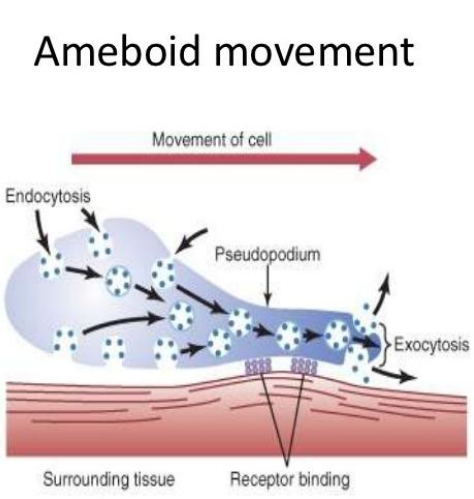
Dr.Lec. Fatima

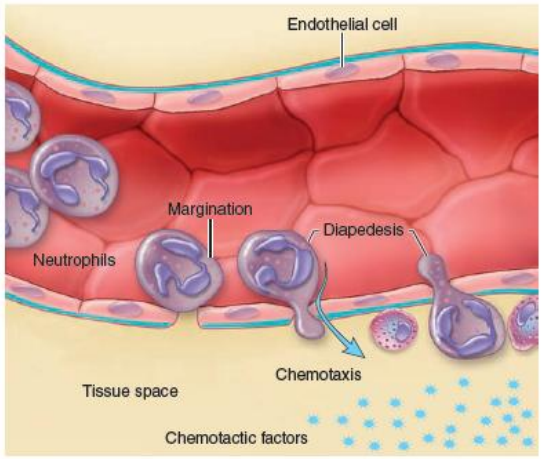
Leukocyte (white cells leukocytes or white cells)

- Defense against organism
- They are much less numerous in blood than red cell
- The density of leukocyte in blood 5000-7000/mm2
- Leukocytes divided into two categories:
- Granulocyte and lymphoid cell or a granulocyte.
- The granulocyte is due to the presence of granules in the cytoplasm of white cell.
- In different type of granulocyte, the granules are different and help us to distinguish them. These granules have different affinity towards neutral, acidic or basic stains give cytoplasm different colors.

Function of white blood cells

- Defend against microbes
- Diapedesis- squeeze though the capillary walls.
- Ameboid motion to move once outside blood stream.
- Chemotaxis chemical released from sites of damage or inflammation attract WBC.
- Phagocytosis ingestion of bacteria and debris.





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The granulocytes distinguish themselves in

- Neutrophil
- Eosinophil
- Basophil

The lymphoid cell (agranulocyte)distinguish themselves in

- Lymphocyte
- Monocyte

The shape of the nucleus helps us in the recognition of the leukocyte

Each type of leukocyte is present in blood in different properties

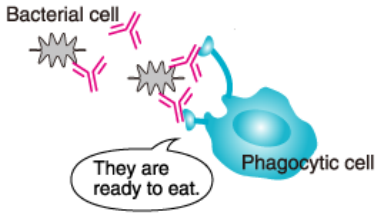
- Neutrophil 50-70%
- Eosinophil 2-4%
- Basophil 0.5-1%
- Lymphocyte 20-40%
- Monocyte 3-8%

Neutrophil

- Very active in phagocyting bacteria
- Present in large amount in pus of wound
- The cells are not able to renew the lysosome used in digesting microbes and died after having phagocyted the bacteria.

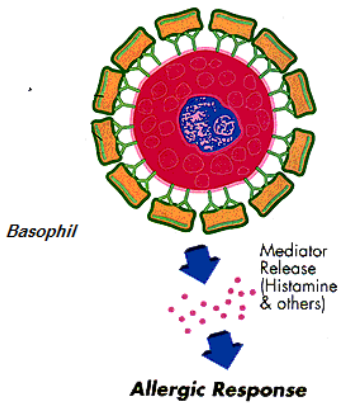
Eosinophil attack parasite

- Phagocyte antigen-antibody complex



Basophil

- Secrete anti-coagulant
- Secrete vasodilator substance as histamine and serotonin
- Their main function is secreting substances which mediate the hypersensitivity reaction.



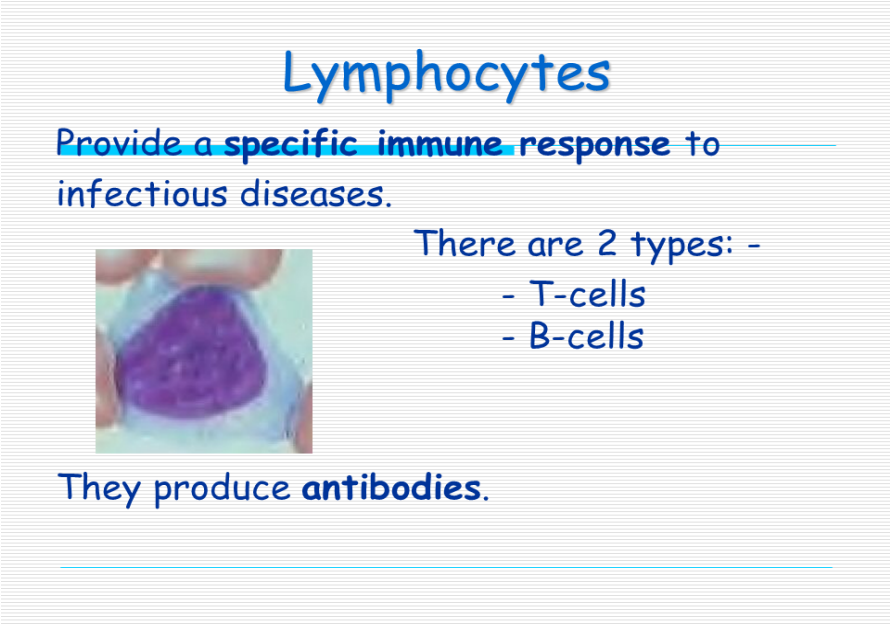
Lymphocyte

Present in the blood

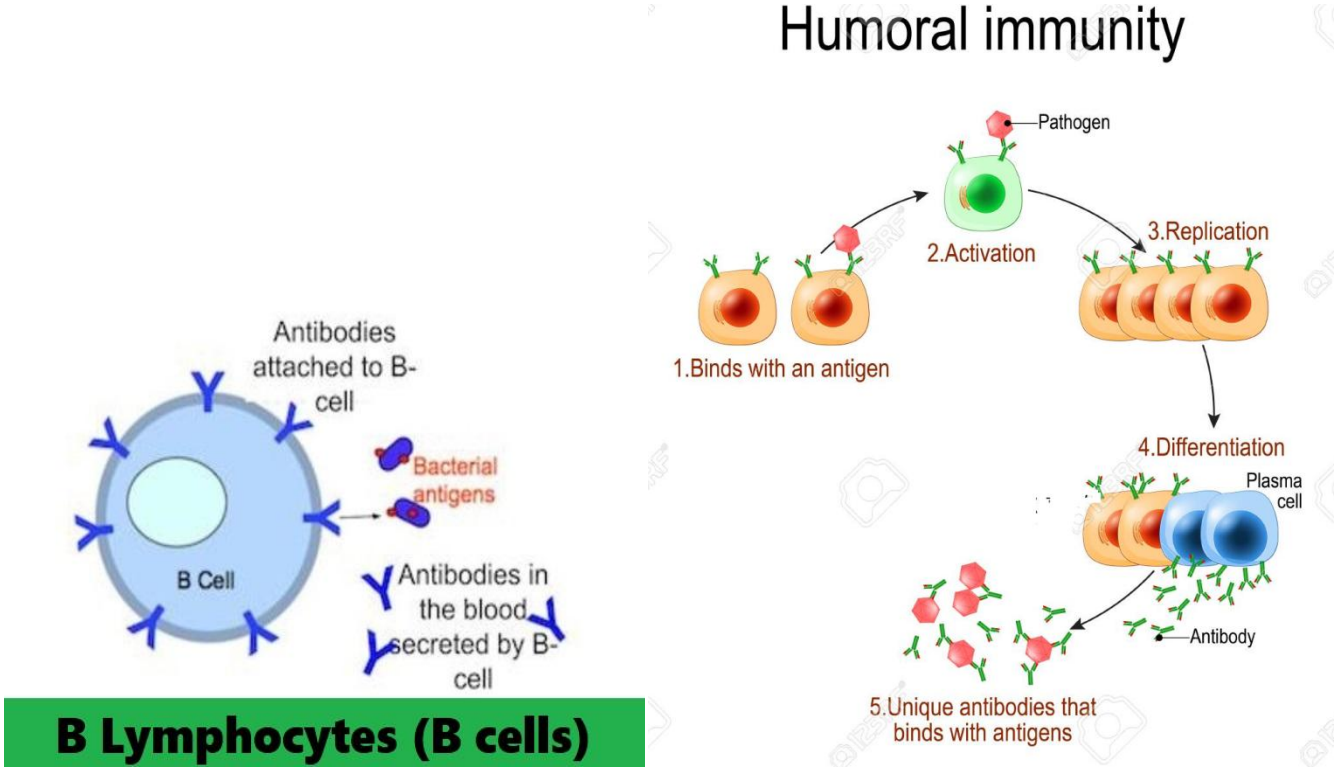
Populate the lymphoid tissue and organs too.

As well as the lymphocyte circulate in the lymphatic vessels include

- Thymus
- Bone marrow
- Spleen
- Lymphoid nodules
- Respiratory and gastrointestinal tract

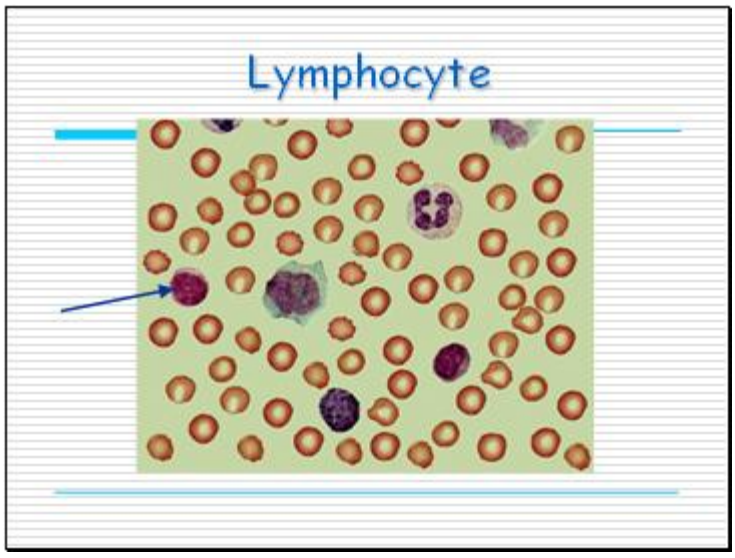


- Since circulating lymphocyte is so large that they are able to recognize practically all substance and foreign bodies
- The cell of immune system, chiefly lymphocyte cooperate together to activate, boost or make more precise the immune response.
- Different types of lymphocyte with different function such as T and B lymphocyte
- B lymphocyte when activated they breed quickly (clonal selection) and they become plasma cell which secrete a great deal of antibodies in the blood stream (humoral immunity)
- When free antibodies meet microorganisms with complementary shape (epitope), they bind to them and form complexes which immobilize the microorganisms

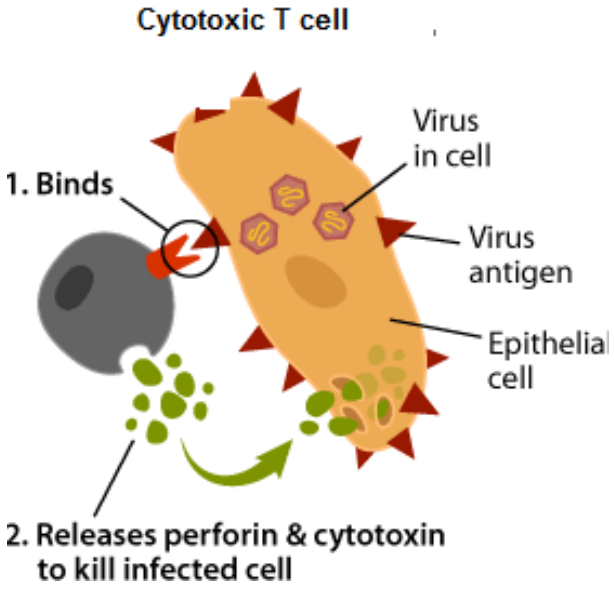


B Lymphocytes (B cells)

- T cell it is responsible for cell mediated immunity
- Also T cell is divided into three categories
- TC cytotoxic T cell
- Th helper T cell
- Ts suppressor T cell



- The cytotoxic lymphocytes kill cells by means of the release of perforin, substance which produce lesions in the membrane of the target cell and cause its death by osmotic lysis



- The helper lymphocytes are needed to activate both B and T lymphocyte cells which recognize extraneous agent.
- Suppressor lymphocytes reduce the intensity of the immune response.

