TYPES OF LEUKOCYTES

- Leukocytes, also known as White Blood Cells (WBCs) develop in the bone marrow from stem cells. They circulate in the blood stream and also reside in tissues. Pus is a mixture of fluids, leukocytes and pathogens from a wound. Cloudy blood or CSF indicates a blood infection.

- Some of them differentiate with granules that contain chemicals that aid in their fighting of a variety of invaders.
  - Eosinophils: designed to damage fungi and helminths (eukaryotic pathogens)
    - ✓ in areas that do not have a lot of worm infections, eosinophils react against environmental particles or food and cause allergies
  - Neutrophils: secrete bleach and peroxide to kill all types of foreign invaders. Also very good at phagocytosis. Immature neutrophils that are circulating in the blood are referred to as "band cells" and may indicate a disease process such as infection or cancer.
  - Basophils and Mast Cells: Release histamine which causes all the symptoms of inflammation. Complement can stimulate basophils to release histamine. Mast cells are found in mucous membranes; basophils circulate in the blood.

- Lymphocytes are highly specialized leukocytes, able to recognizing specific viruses, bacteria or other pathogens. They destroy only one type of pathogen, then "remember" it for many years.
  - Natural Killer Cells: Part of both innate and adaptive immune responses. NK cells function to a) destroy host cells infected with viruses; b) destroy host cells that have become cancerous; and c) destroy leukocytes that are attacking the host (autoimmune).
  - T-lymphocytes organize adaptive immunity and some directly destroy pathogens; Suppressor T cells calm the immune system after a threat has been neutralized.
  - B-lymphocytes make antibodies that stick to pathogens and encourage them to be phagocytosed by macrophages.

- Macrophages and Dendritic Cells:
  - Both arise from monocytes.
  - Macrophages, once activated are vigorous phagocytosers of invaders. They love to eat antibody-covered cells.
  - Macrophages and dendritic cells are antigen-presenting cells. This means they constantly "sample" cell material around them and display it on their surfaces to T-lymphocytes. Thus, they are the key link between innate and adaptive immunity.