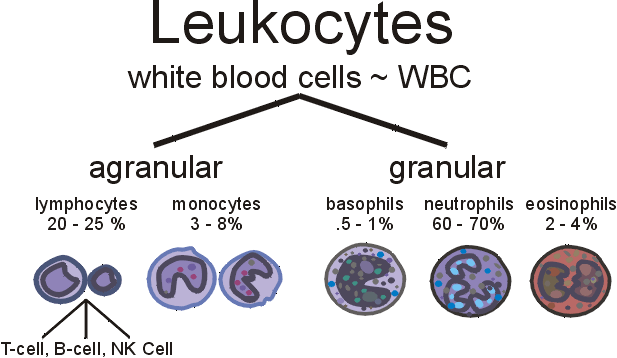
**Types of White Blood Cells (WBC's)**

**The five kinds of white blood cells, all produced in the red bone marrow (and some lymphocytes in lymphatic tissue), may be classified in two groups: granular and agranular. The granular leukocytes are the neutrophils, eosinophils, and basophils, which usually have nuclei in two or more lobes or segments, and have distinctly colored granules when stained. Neutrophils have light blue granules, eosinophils have red granules, and basophils have dark blue granules. The a granular leukocytes are lymphocytes and monocytes, which have nuclei in one piece.**

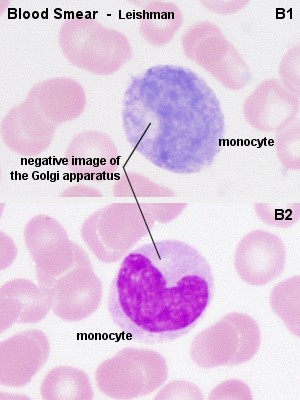
**Monocytes are usually quite a bit larger than lymphocytes. A differential WBC count (part of a CBC) is the percentage of each kind of leukocyte.**



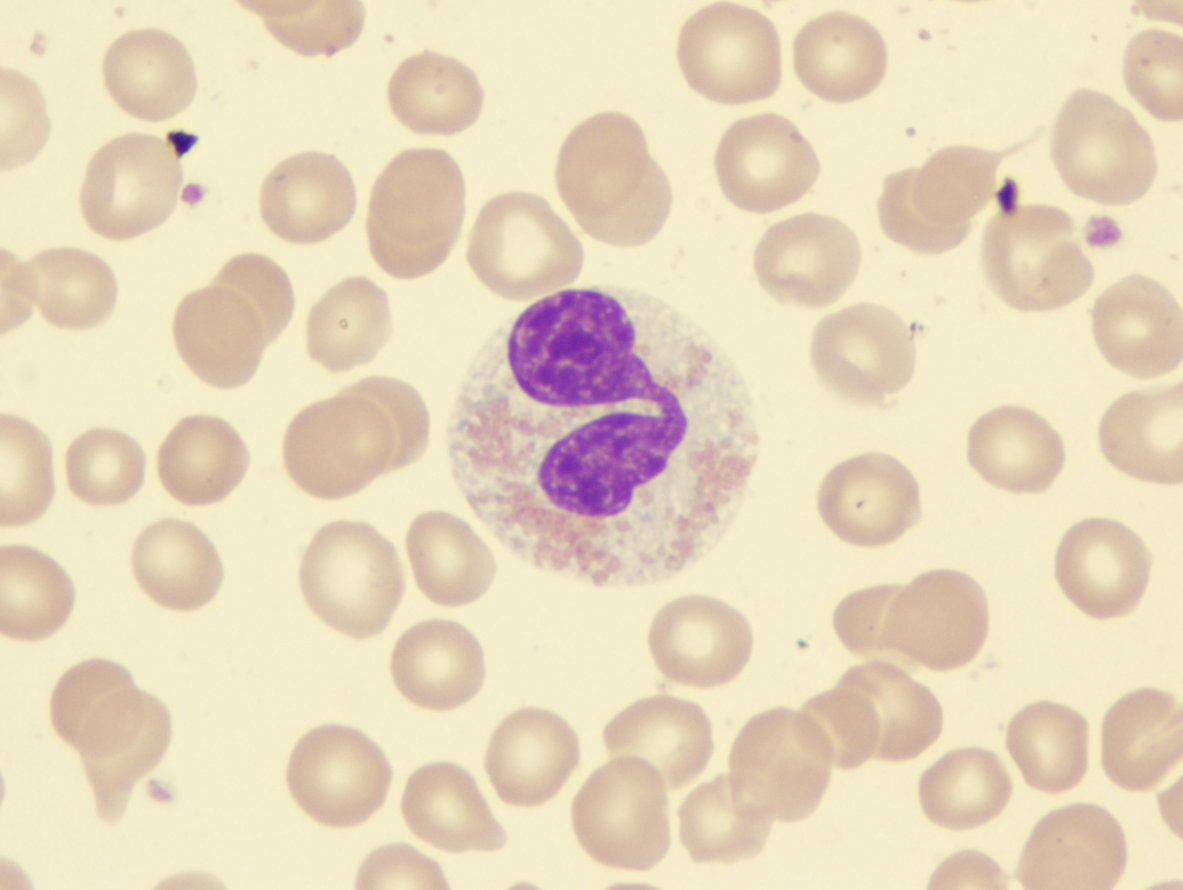
**Functions**

**White blood cells all contribute to the same general function, which is to protect the body from infectious disease and to provide immunity to certain diseases. Each kind of leukocyte makes a contribution to this very important aspect of homeostasis.**

**Neutrophils and monocytes are capable of the phagocytosis of pathogens.**

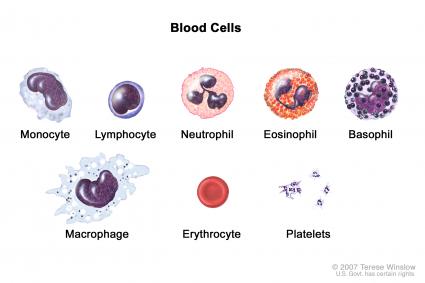
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**Eosinophils are believed to detoxify foreign proteins and will phagocytize anything labeled with antibodies. This is especially important in allergic reactions and parasitic infections.**



**Basophils contain granules of heparin and histamine. Heparin is an anticoagulant that helps prevent abnormal clotting within blood vessels.**

**There are two major kinds of lymphocytes, T cells and B cells, and a less numerous third kind called natural killer cells. For now we will say that T cells (or T lymphocytes) help recognize foreign antigens and may directly destroy some foreign antigens. B cells (or B lymphocytes) become plasma cells that produce antibodies to foreign antigens. Both T cells and B cells provide memory for immunity. Natural killer cells (NK cells) destroy foreign cells by chemically rupturing their membranes.**

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**A high WBC count, called leukocytosis, is often an indication of infection. Leukopenia is a low WBC count, which may be present in the early stages of diseases such as tuberculosis. Exposure to radiation or to chemicals such as benzene may destroy WBCs and**

**lower the total count. Such a person is then very susceptible to infection. Leukemia, or malignancy of leukocyte-forming tissues.**

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**(Figure) Leukemia.**

**Normal range**

**Basophils 0.5-1%**

**Eosinophils 1-3%**

**Monocytes 3 -8%**

**Lymphocytes 20 -35%**

**Neutrophils 55 -70%**