

of different molecules that help eliminate infection such as the major basic protein, cationic protein, oxygen metabolites and perforins; they eliminate infections caused by large parasites

- Mast cells and basophils – both are granulocytes and have very similar properties, but mast cells are mononuclear and basophils are polymorphonuclear; mast cells are found in the tissues and basophils are found in the blood
- Dendritic cells – predominantly found in tissues; share several properties with macrophages in that they are phagocytic; there are different types of dendritic cells
- Natural Killer (NK) cells – found in both the blood and the tissues and are granular lymphocytes; involved in extracellular killing either by releasing toxic molecules or more commonly, by inducing cell death in an organism or an infected cell; it is different from the other cells of the innate immune response such that it is derived from the lymphoid pathway

Molecules of the innate immune response include complement, acute phase proteins (e.g. C-reactive protein) and interferons (IFN- $\alpha/\beta/\gamma$), the latter of which interferes with viral replication.

Adaptive immune response

Cells known as lymphocytes mediate the adaptive immune response. They can be divided into the T-lymphocytes and B-lymphocytes. Lymphocytes look very much like NK cells such that they are mostly nucleus and little is cytoplasm.

- T-cells – three different types:
 - Helper T-cells (Th cells) – assist other cells of the immune system
 - Regulatory T-cells (Treg cells) – regulate or suppress other cells of the immune system
 - Cytotoxic T-cells – kill infected body cells similar to NK cells; recognition of infected cells by these cells is different, but the mechanism by which they kill i.e. by inducing apoptotic cell death, is essentially identical
- B-cells – produce antibody molecules; antibodies can directly neutralise bacterial toxins and viruses by binding to them and preventing their activity, but it can also recruit other immune system components to enhance the effect

The innate and adaptive immune responses work collaboratively to fight infection.

Lineage of Immune system cells

The exact pathways of differentiation in vivo are still rather a matter of debate.