



General Immunology Services Section Front Page

The immune system consists of factors that provide innate and acquired immunity, and has evolved to become more specific, complex, efficient, and regulated. One of the principal functions of the human immune system is to defend against infecting and other foreign agents by distinguishing self from non-self (foreign antigens) and to marshal other protective responses from leukocytes. The immune system, if dysregulated, can react to self antigens to cause autoimmune diseases or fail to defend against infections.

The immune system is organized into discrete compartments to provide the milieu for the development and maintenance of effective immunity. Those two overlapping compartments: the lymphoid and reticuloendothelial systems (RES) house the principal immunologic cells, the leukocytes. Leukocytes derived from pluripotent stem cells in the bone marrow during postnatal life include neutrophils, eosinophils, basophils, monocytes and macrophages, natural killer (NK) cells, and T and B lymphocytes. Hematopoietic and lymphoid precursor cells are derived from pluripotent stem cells. Cells that are specifically committed to each type of leukocyte (colony-forming units) are consequently produced with the assistance of special stimulating factors (e.g. cytokines).

Cells of the immune system intercommunicate by ligand-receptor interactions between cells and/or via secreted molecules called cytokines. Cytokines produced by lymphocytes are termed lymphokines (i.e., interleukins and interferon- γ) and those produced by monocytes and macrophages are termed monokines.