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Basic Immunology focuses on substances that take part in serological reactions, including antigens, antibodies, and the physicochemical nature of **immunological** reactions. The main **parts of the immune system** are: white blood cells, antibodies, the complement **systems**, the lymphatic **system**, the spleen, the thymus, and the bone marrow.

Role of immune system

The major function of the immune system is to protect the host from environmental agents such as microbes or chemicals, thereby

preserving the integrity of the body. This is done by the recognition of self and response to non-self. The immune response has been artificially divided into innate immunity (resistance) and specific immunity.

Two types of immunity

1.Adaptive **immunity** works slower than innate, and is more specific. There are **two types**: passive and active.

2.Passive **immunity** occurs when antibodies are passed from one person to another, as through transfusion for example.

Tpes of antibodies and their roles

Human antibodies are classified into five isotypes (IgM, IgD, IgG, IgA, and IgE)

according to their H chains.
IgG is the most abundant antibody isotype in the blood (plasma), accounting for 70-75% of human immunoglobulins (antibodies). IgG detoxifies harmful substances and is important in the recognition of antigen-antibody complexes by leukocytes and macrophages.
IgM usually circulates in the blood, accounting for about 10% of human immunoglobulins. IgM has a pentameric structure in which five basic Y-shaped molecules are linked together. B cells produce IgM first in response to microbial infection/antigen invasion.
IgA is abundant in serum,

nasal mucus, saliva, breast milk, and intestinal fluid, accounting for 10-15% of human immunoglobulins. IgA forms dimers. IgA in breast milk protects the gastrointestinal tract of neonates from pathogens.
IgE is present in minute amounts, accounting for no more than 0.001% of human immunoglobulins. Its original role is to protect against parasites. In regions where parasitic infection is rare, IgE is primarily involved in allergy.
IgD accounts for less than 1% of human immunoglobulins. IgD may be involved in the induction of antibody production in B cells, but its exact function remains unknown.