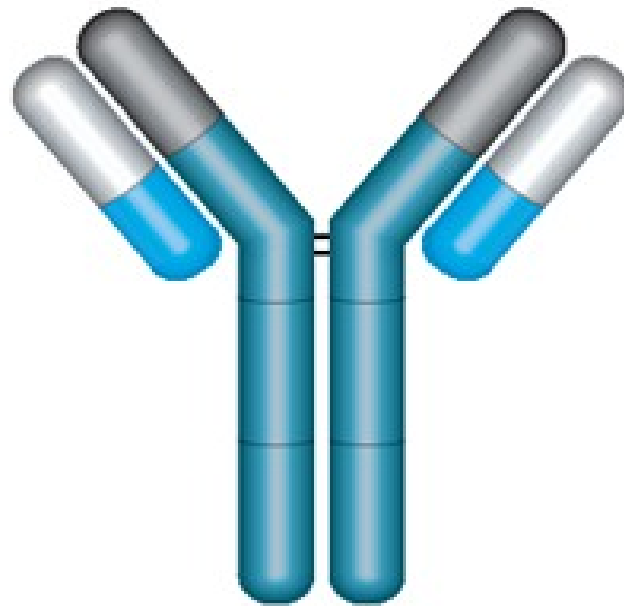


Four Classifications of Humoral Immunity



Antibody

What is the difference between natural and artificial immunity?

- Natural Immunity
 - Stimulus activates immune response (e.g. virus infection)
 - Immunity acquired by normal human experience
 - Antibodies are produced by host plasma cells
- Artificial Immunity
 - Antibodies are produced by unnatural process or induced by a medical procedure
 - Host does not make the antibodies
 - Stimulus is not an active pathogen // attenuated pathogen

What is the difference between active and passive immunity?

- Active Immunity
 - Host's immune cells make antibodies (or T cells and B cells)
 - This type of immunity makes memory cells
- Passive Immunity
 - Host injected with antibodies harvested from donor's plasma
 - Precipitant receives antibodies across a semipermeable membrane (e.g. fetus from mother or newborn from breastfeeding)
 - No memory cells made

Four Acquired Immunity Classifications

- Natural active acquired immunity
- Natural passive acquired immunity
- Artificial active acquired immunity
- Artificial passive acquired immunity

Table 13.10 The Four Types of Acquired Immunity

Natural Immunity is acquired through the normal life experiences of a human and is not induced through medical means.



Active

After recovering from infectious disease, a person will generally be actively resistant to reinfection for a period that varies according to the disease. In the case of childhood viral infections such as measles, mumps, and rubella, this natural active stimulus provides nearly lifelong immunity. Other diseases result in a less extended immunity of a few months to years (such as pneumococcal pneumonia and shigellosis), and reinfection is possible. Even a subclinical infection can stimulate natural active immunity. This probably accounts for the fact that some people are immune to an infectious agent without ever having been noticeably infected with or vaccinated for it.



Passive

Natural, passively acquired immunity occurs only as a result of the prenatal and postnatal mother-child relationship. During fetal life, IgG antibodies circulating in the maternal bloodstream are small enough to pass or be actively transported across the placenta. This natural mechanism provides an infant with a mixture of many maternal antibodies that can protect it for the first few critical months outside the womb, while its own immune system is gradually developing active immunity. Depending on the microbe, passive protection lasts anywhere from a few months to a year.

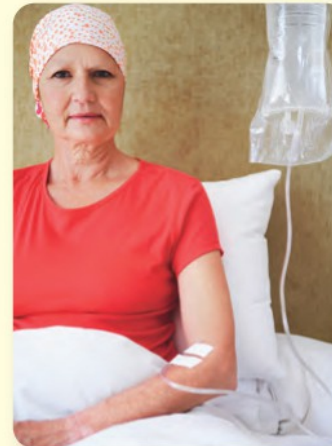
Another source of natural passive immunity comes to the baby by way of the mother's milk. Although the human infant acquires 99% of natural passive immunity in utero and only about 1% through nursing, the milk-borne antibodies provide a special type of intestinal protection that is not available from transplacental antibodies.

Artificial Immunity is that produced purposefully through medical procedures.



Active

Vaccination exposes a person to a specially prepared microbial (antigenic) stimulus, which then triggers the immune system to produce antibodies and lymphocytes to protect the person upon future exposure to that microbe. As with natural active immunity, the degree and length of protection vary.



Passive

Passive immunotherapy involves a preparation that contains specific antibodies against a particular infectious agent. Pooled human serum from donor blood (gamma globulin) and immune serum globulins containing high quantities of antibodies are frequently used.