

# Definition Structure and Function Antibodies

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## ABSTRACT

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## ANTIBODIES

Antibodies are the specialized cells, and they are the main key payers of the immune system. Antibodies are also called as the immunoglobulins. These are produced by the immune system as a protective protein to fight against the foreign substances called as the antigens. The antibodies find the foreign substances in the body and remove them from the body. The antigens are generally referred to as disease causing organisms and some toxic materials.

When a foreign body enters the body, the immune system identifies it as foreign because of the surface molecules that differ from the antibodies and antigens. The specialized white blood cells produce these antibodies called B-lymphocytes. When a foreign body (Antigen) binds to these B cells they mature and divide rapidly and provide a bunch of identical cells called clones.

The mature B cells are called as the plasma cells they release millions of antibodies into the blood stream and the lymphatic system. These antibodies circulate throughout the body and attack and neutralize the antigens that are identical to the one that triggered the immune response.

The neutralization occurs because the antibodies when binded to the antigen they change the chemical composition of the antigens. By doing so they immobilize the microorganisms and prevent them from entering the body cells.

The most important functions of the immune system are provided by the B-cells and the antibodies together. They recognize the invading antigen and provide a numerous number of proteins that help the immune system to remove all the possible traces of antigen. The B-cells can bind to only one antigen individually they distinguish the antigens though proteins that are found on the surfaces of antibodies called as antigen receptors. All the antigen receptors on the B-cells are identical the variation lies in the area that interacts with the antigen called antigen binding site.

The antibodies are divided into five classes based on their constant region they are IgG, IgM, IgA, IgD, and IgE. They differ in their activity and their constant region. Eg: IgA is found in the inner mucous membranes of the respiratory and gastrointestinal tracts whereas IgG which is the most common antibody is found in the blood and the fluid tissues.

**Monoclonal Antibodies:** These are the antibodies that are produced artificially though some genetic engineering techniques. It is the most important technique of biotechnology in the 20th century.

**Human monoclonal antibodies:** As most of the monoclonal antibodies are prepared from the rat or mouse cells has become a practice and the production of human hybridomas is a not a easy technique. This is because the human cells do not grow very well in the culture. If the that are isolated from the body are infected by Epstein-Barr virus. They can be developed in culture.

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