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(Zoology)

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Immunology deals with the defense mechanism of animals against parasites, so that these animals are normally capable of resisting the infection by most pathogens. However, the biochemical and molecular basis of such resistance has been understood only during the last few decades. The pathogens are always recognized by the host cells through chemical interactions, a specific antigen or immunogen, present in the parasite's body, elicits in the host the production of a specific glycoprotein complex (an antibody or an immunoglobulin, Ig).

The antibody or immunoglobulin is always a protein, covalently bound with an oligosaccharide. In contrast, although most often, antigen is a protein, it may also be a polysaccharide or

nucleic acid or any other substance. It is also possible that a foreign protein (not necessarily belonging to a pathogen) may act as an antigen so that when injected, it may induce antibody formation. Certain low molecular weight molecules called haptens, may though bind to antibodies, do not individually stimulate antibody production. However, they may become antigenic and stimulate antibody production, if they are tightly bound to certain macromolecules such as protein, polysaccharides and nucleic acids. It should also be recognized that the entire surface of an antigen molecule is not necessary for its antigenicity; instead specific group of atoms called antigenic determinant or epitope, consisting of 5-8 amino acids, is needed for immune response and antibody production.