Practical Immunology
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Introduction

The immune system is a complex system that is responsible for protecting us against infections and foreign substances.

There are three lines of defense:

- The first is to keep invaders out (through skin, mucus membranes, etc.)
- The second line of defense consists of non-specific ways to defend against pathogens that have broken through the first line of defense (such as with inflammatory response and fever).
- The third line of defense is mounted against specific pathogens that are causing diseases (B cells produce antibodies against bacteria or viruses in the extracellular fluid, while T cells kill cells that have become infected).

Immunology: Is the science that study immune system and its response to pathogens

Immunity: is the ability of the body to defend against infections agent such as pathogens

organisms (viruses, bacteria, fungi and parasites) and foreign substances

Immune system: is collection of cells, tissues, organs, and molecules that mediate

protection against infections agent

Role of the immune system

1- Defense against microbes.

2- Defense against the growth of tumor cells, kills the growth of tumor cells

3- Homeostasis: destruction of abnormal or dead cells (e.g. dead red or white blood cells, antigen-antibody complex).

Adaptive immunity: specified host defense mechanism that is mediated

by T&B cells following exposure to antigens.

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Innate immunity: non-specific host defense that exists prior to the

exposure to antigens.

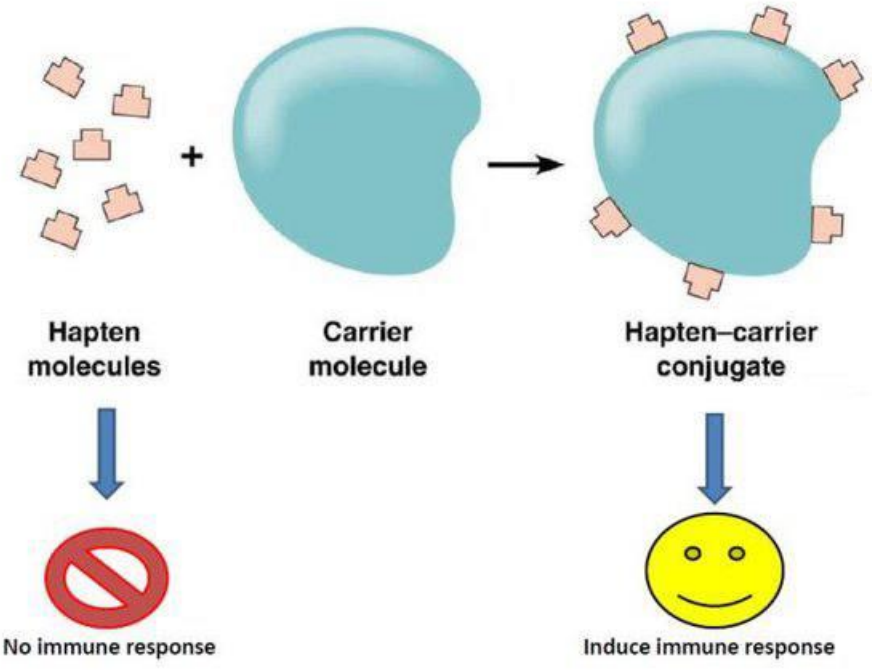
Immune response: collective and coordinated response to the introduction of foreign substances in an individual mediated by the cells and molecules of the immune system.

Immunogen: is any substance capable of inducing an immune response.

Antigen (Ag): is any substance capable of binding specifically to the products of the immune response. Antigens can be proteins, peptides, polysaccharides, lipids, or nucleic acids.

Epitope: is a restricted part of Ag that bind with antibodies (Abs).

Hapten: a small molecule had a low molecular weight that cannot initiate an immune response unless its coupled with a large carrier molecule.



Antibody (Ab): also known as an immunoglobulin (Ig),is a large, Y shaped protein

produced mainly by plasma cells that is used by the immune system to identify and

neutralize pathogens such as bacteria and viruse, also the immunoglobulins can be divided into five different classes (IgA, IgD, IgE, IgG, and IgM).

Paratope, also called an antigen-binding site, is a part of an antibody which recognizes and binds to an antigen.