

# Antigens

## ANTIGENS

- Antigen: Any substance reacting with the products of any specific immune response (Ig or T cells)
- Immunogen: Any substance capable to induce a specific immune response
- All antigens are NOT Immunogenic.

## Antigen

### Types of antigens

- Th:Thymus-dependent antigen(TD-Ag)
- Thymus-independent antigen(TI-Ag)
- Relative:Xenogenic antigen
  - Allogenic antigen
  - Autoantigen
  - Heterophilic antigen
  - Idiotypic antigen

### xenogeneic antigen

- an antigen common to members of one species but not to members of other species; called also heterogeneic antigen

### allogeneic antigen

- allogeneic antigen one occurring in some but not all individuals of the same species, e.g., histocompatibility antigens and human blood group antigens; called also isoantigen
- Alloantigens
- are antigens found in different members of the same species (the red blood cell antigens A and B are examples).26-Sep-2018.

### Heterophile antigens

- are antigens of similar nature, if not identical, that are present in different tissues in different biological species, classes or kingdoms.
- Usually different species have different antigen sets but the heterophile antigen is shared by different species. Other heterophile antigens are responsible for some diagnostic serological tests such as:
  - Weil-Felix reaction for typhus fever
  - Paul Bunnell test for infectious mononucleosis
  - Cold agglutinin test in primary atypical pneumonia
  - Chemically, heterophile antigens are composed of lipoprotein-polysaccharide complexes

### T-dependent antigen

- one that requires the presence of helper T cells to stimulate antibody production by B cells; most antigens are T-dependent.

### T-independent antigen

- an antigen that can trigger B lymphocytes to produce antibodies without the participation of T lymphocytes. See also T-dependent antigen.
- tumor antigen T antigen .
- tumor-specific antigen.
- tumor-specific antigen (TSA) any cell-surface antigen of a tumor that does not occur on normal cells of the same origin

### Origin of antigen

#### Exogenous antigens

are antigens that have entered the body from the outside, for example by [inhalation](#), [ingestion](#), or [injection](#).

#### Endogenous antigens

are antigens that have been generated within previously normal cells as a result of normal cell [metabolism](#), or because of viral or intracellular bacterial [infection](#)

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### Types of antigen

#### 1- Immunogen:

- Substance that stimulate the specific immune response (production of antibody and T cell) without help from APCs.
- Usually has a high molecular weight.
- Such as proteins, lipoproteins, polysaccharides, some nucleic acids

#### 2. Hapten:

- Substance that cannot stimulate an immune response but can bind to antibodies or T cells
- Low molecular weight molecule
- It can be immunogenic by conjugation to a carrier.

### TYPES

The types of antigen-antibody reactions are:

- Precipitation Reaction.
- Agglutination Reaction.
- Complement Fixation.
- ELISA – Enzyme Linked ImmunoSorbent Assay.
- Immunofluorescence.

### INTRODUCTION

Antigens & antibodies combine specifically with each other. This interaction between them is called 'Antigen Antibody reaction'.

- Abbreviated as Ag – Ab reaction.
- They form the basis for humoral/antibody mediated immunity.
- They are used for detection of disease causing agents & some non-specific Ag's like enzymes.

