



Determinants Of Antigenicity

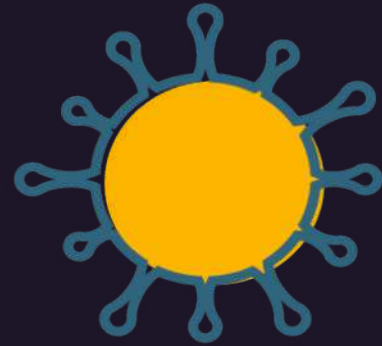
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ILOS

- 1 Define Antigenicity
- 2 Explain mechanism of antigenicity
- 3 Discusses determinants of antigenicity
- 4 Describe characters of antigenicity



Define Antigenicity

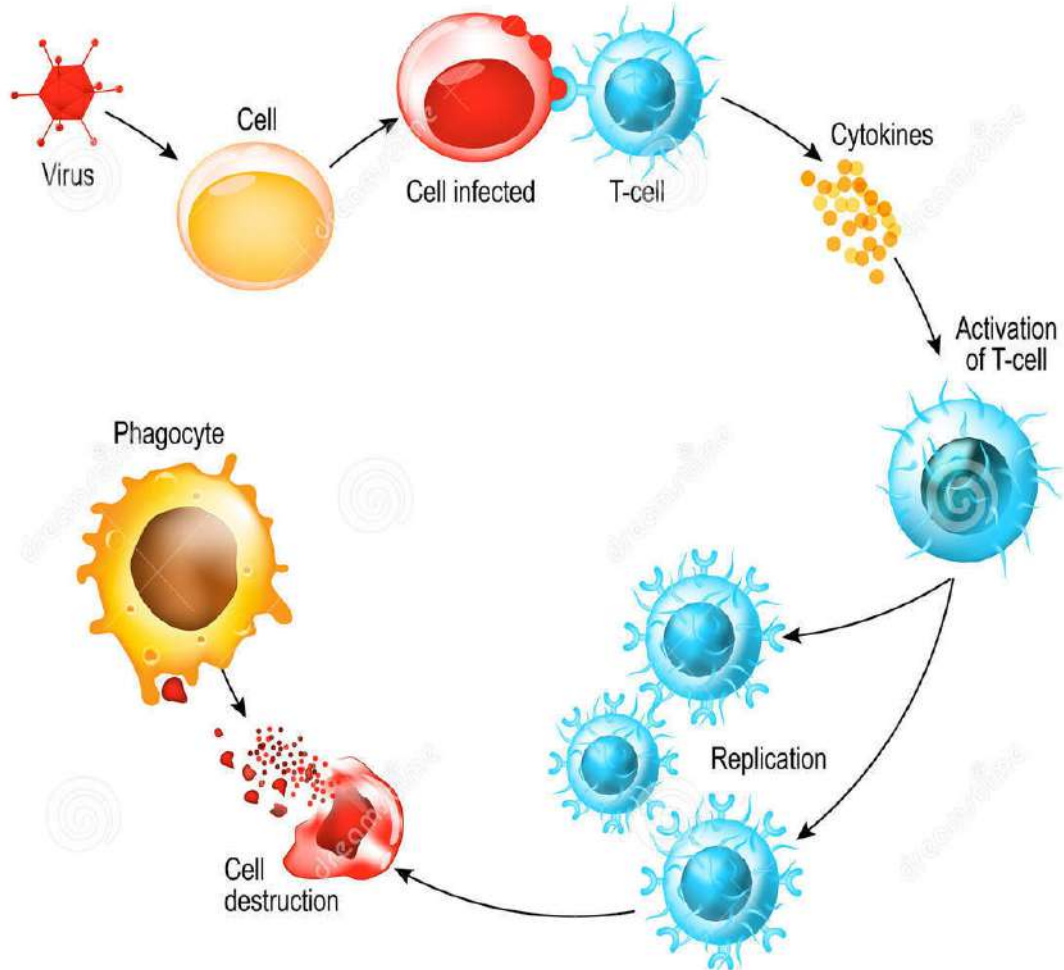


Antigenicity is a term used to define whether and how well the substance attaches to immune cells and beginning the immune response process.

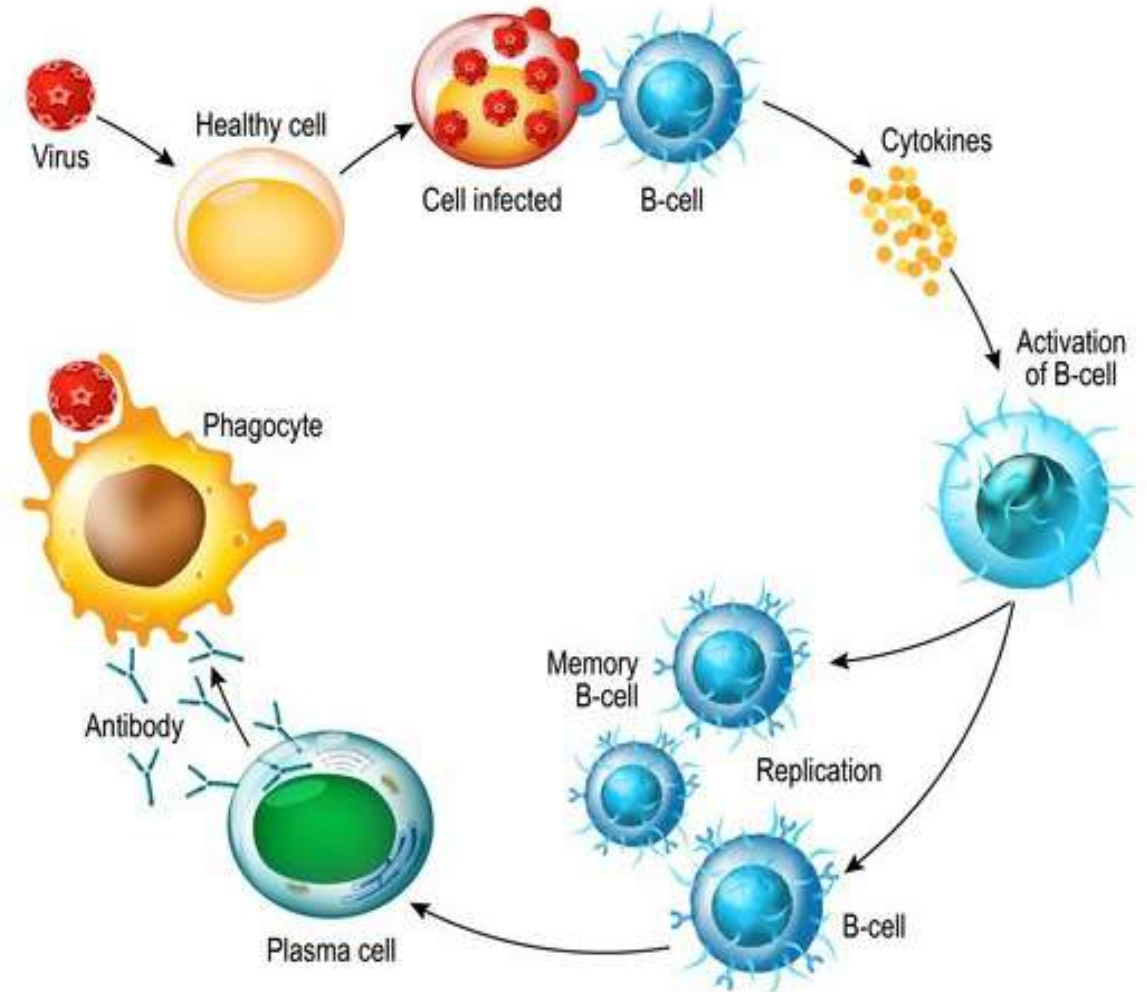
Antigenicity may also be described as the ability of an antigen or a hapten to bind to a B-cell's or T-cell's receptors and activation immune system.

Mechanism of Antigenicity

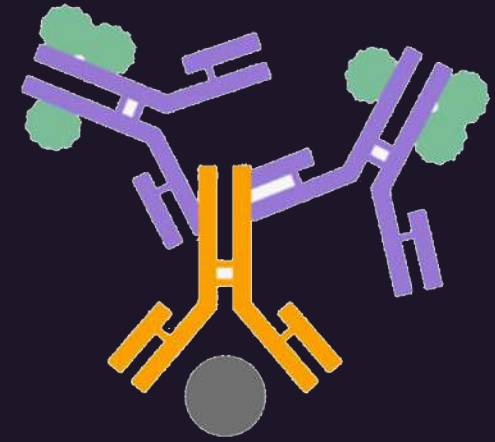
T-cell activation



B-cell activation



3 Determinants of antigenicity



The whole antigen does not evoke immune response and only a small part of it induces B and T cell response.

The small area of chemical grouping on the antigen molecule that determines specific immune response and reacts specifically with antibody is called an antigenic determinant.

4 Characters of antigenicity

1. Foreignness

An antigen must be a foreign substance to the animal to elicit an immune response.

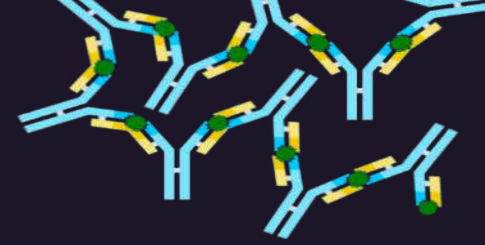
2. Molecular Size

The most active immunogens tend to have a molecular mass of 14,000 to 600,000 Da.

Examples: tetanus toxoid, egg albumin, thyroglobulin are highly antigenic.

Insulin (5700) are either non-antigenic or weakly antigenic.

3. Chemical Nature and Composition



In general, the more complex the substance is chemically the more immunogenic it will be.

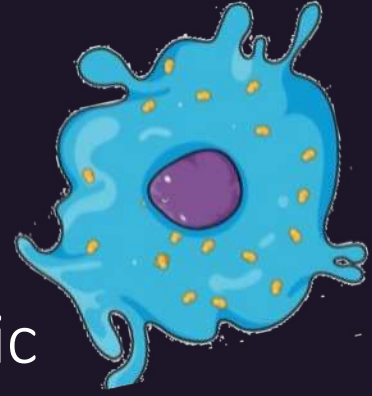
Antigens are mainly proteins and some are polysaccharides.

It is presumed that presence of an aromatic radical is essential for rigidity and antigenicity of a substance.

4. Heterogenetic (Heterophile) Specificity

Same or closely related antigens occurring in different biological species, classes and kingdoms are known as heterogenetic or heterophile antigens.

5. Antigen Specificity



Antigen Specificity depends on the specific active sites on the antigenic molecules (Antigenic determinants).

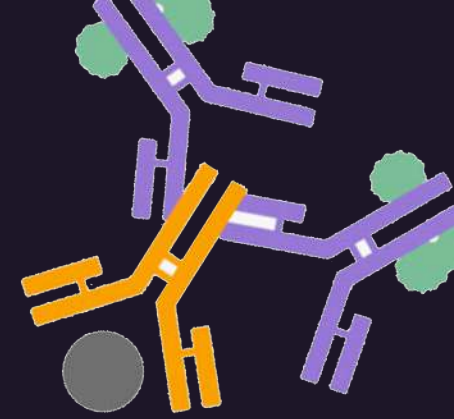
Antigenic determinants or epitopes are the regions of antigen which specifically binds with the antibody molecule.

6. Species Specificity

Tissues of all individuals in a particular species possess, species specific antigen.

Human Blood proteins can be differentiated from animal protein by specific antigen-antibody reaction.

7. Organ Specificity

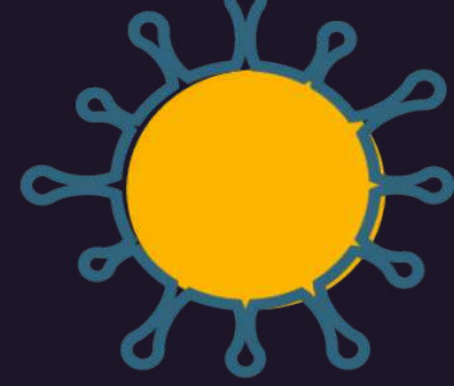


Organ specific antigens are confined to particular organ or tissue.

Certain proteins of brain, kidney, thyroglobulin and lens protein of one species share specificity with that of another species.

8. Auto-specificity

The autologous or self antigens are ordinarily not immunogenic, but under certain circumstances lens protein, thyroglobulin and others may act as autoantigens.



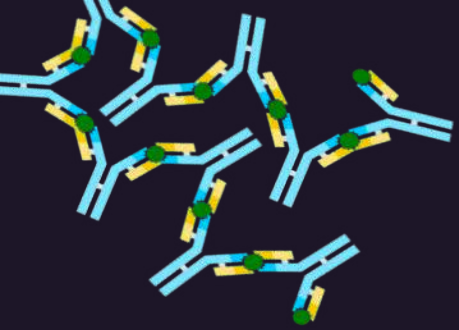
9. Isospecificities

Isoantigens or alloantigens are antigens found in some but not all members of a species. On the basis of isoantigens, a species may be divided into different groups.

10. Susceptibility to Tissue Enzymes

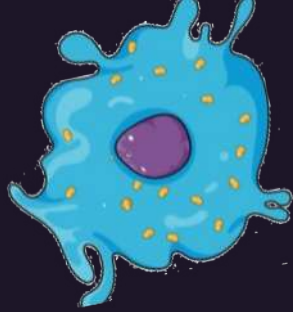
Only those substances which can be metabolized and susceptibility to the tissue enzymes behave as antigens.

Substances unsusceptible to the tissue enzymes are not antigenic.



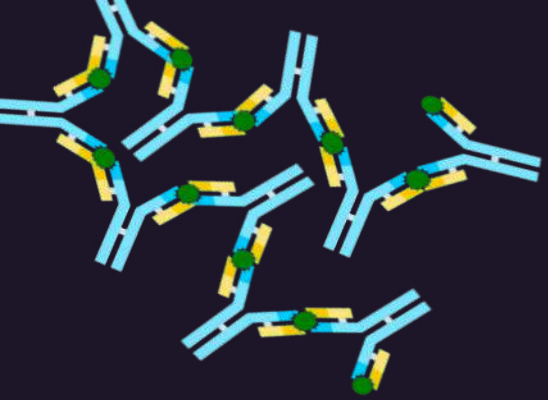
Summary

We Know

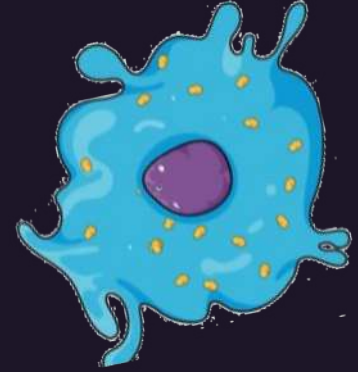


1. Antigenicity is the term used to define whether and how well the substance attaches to immune cells.
2. Mechanism of antigenicity is T cell activation and B cell activation.
3. The small area of chemical grouping on the antigen molecule that determines specific immune response is called an antigenic determinant.
4. Characters of antigenicity include Foreignness, Molecular Size, Organ Specificity and Auto-specificity

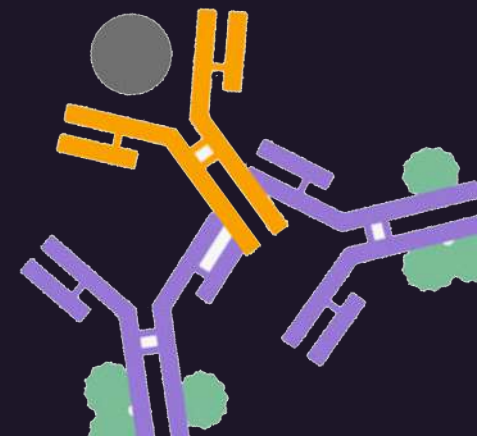
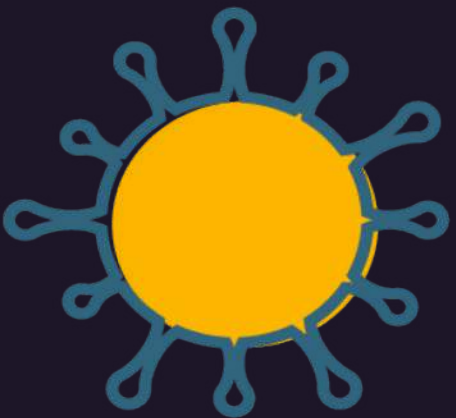




References



<https://microbiologyinfo.com>





Thank you