

Enzyme-Linked Immunosorbent Assay



Antigens [Ag]:

A substance that when introduced into the body stimulates the production of an antibody.

Antigens include toxins, bacteria, foreign blood cells, and the cells of transplanted organs.

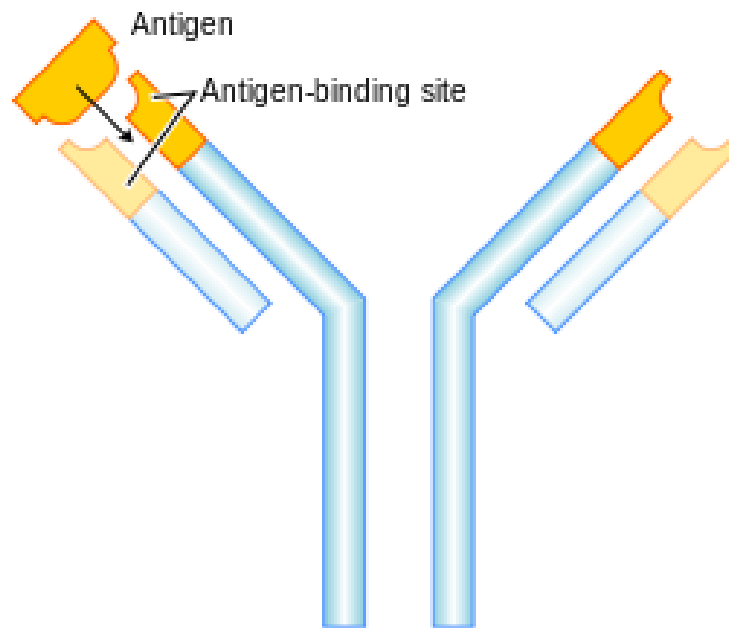
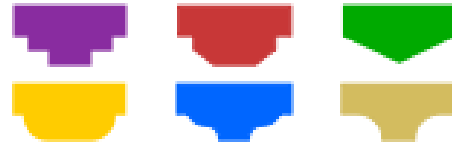
Antibody [Ab]:

Antibodies are large Y-shaped glycoproteins.

They are produced by the immune system to identify and neutralize foreign objects like bacteria and viruses or antigens in general.

The antibody recognizes a unique foreign target, called an antigen[not normally found in the body] .

Antigens



Antibody

Immunoassay is : a test that uses antibody and antigen complexes[immuno-complexes]as a means of generating measurable results.

ELISA: method used in immunology and other scientific field, designed for detecting and quantitating substances such as:

1. peptides, proteins, hormones “antigens in general” .
2. antibodies.

Principle:

The basic principle of ELISA is to detect a specific antibody- antigen reaction by using an enzyme which can convert a colorless substrate to a color product indicating the presence of the antibody - antigen [Ab-Ag] binding.

Propose of ELISA:

- To determine the presence and the concentration of a particular Ag or Ab in a sample. Thus it can be run in a qualitative format.
- In qualitative ELISA**, results provide a positive or negative result for a sample.
- In quantitative ELISA**, the optical density or fluorescent units of the sample is interpolated into a standard curve (obtained from serial dilutions of a standard).

Application of ELISA:

ELISA can be used in the field of medicine, food industry and in toxicology.

They can be used for:

- Screening donated blood for evidence of viral contamination.
- Measuring hormones level.
- Measuring autoantibody in autoimmune disease such as rheumatoid arthritis.

Types of ELISA:

1. Direct ELISA .
2. Indirect ELISA.
3. Sandwich ELISA
4. Competitive ELISA.

