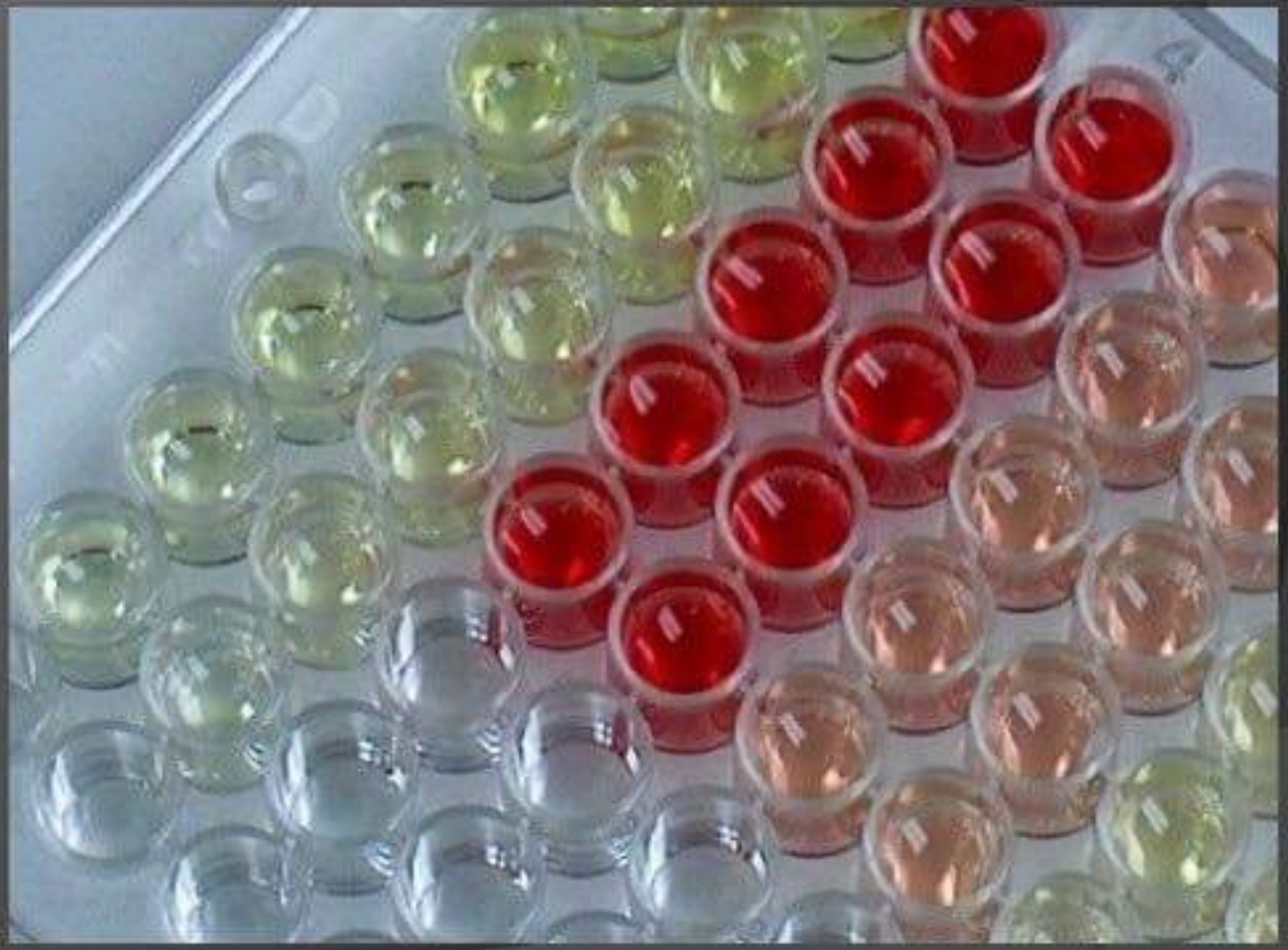
Enzyme-Linked Immunosorbent Assay



INTRODUCTION

- Is a biochemical technique used mainly in immunology to detect the presence of an antibody or an antigen in a sample.
- ELISA is so named because the technique involves the use of an immunosorbent, an absorbing material specific for one of the components of the reaction, the antigen or antibody.
- ELISA is usually done using 96-well microtitre plate suitable for automation

What is ELISA?

- Technique used to detect (*assay*) specific molecules (e.g. proteins & carbohydrates) in samples.
- Immunological technique: uses antibodies.
- Quantitative.
- Very sensitive.
- Commonly used in medicine and scientific research.

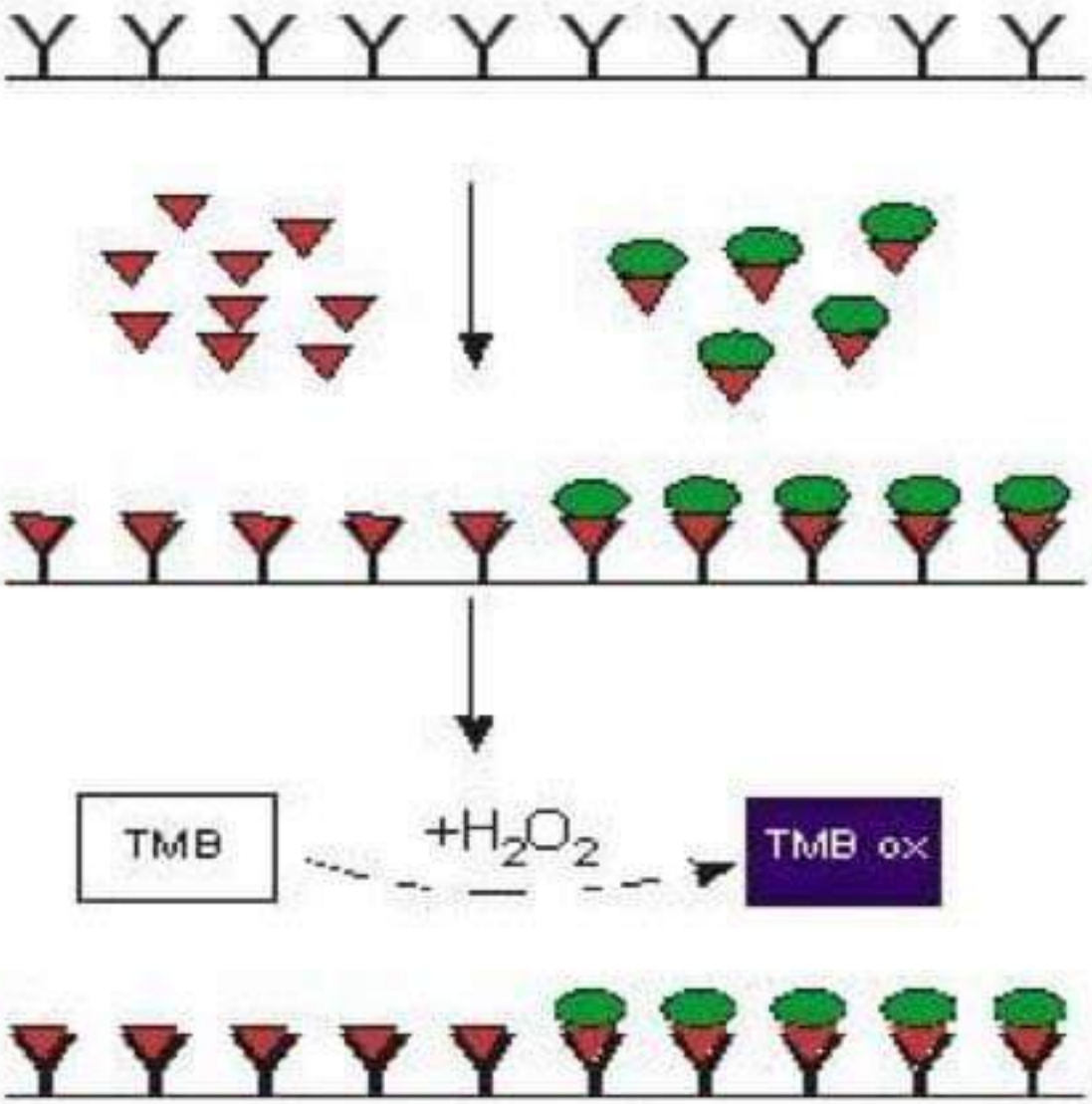
- **The technique is divided into :**

1- Competitive ELISA
2- Sandwich ELISA (also called direct ELISA)
3- Indirect ELISA

COMPETITIVE ELISA

- The labelled antigen competes for primary antibody binding sites with the sample antigen (unlabeled).
- The more antigen in the sample, the less labelled antigen is retained in the well and the weaker the signal.
- Advantage:
- The ability to use crude or impure samples and still selectively bind any antigen that may be present.
- Application:
- Used for the detection of human T-cell leukemia-lymphoma virus type III (HTLV-III).

Competitive Enzyme Immunoassay



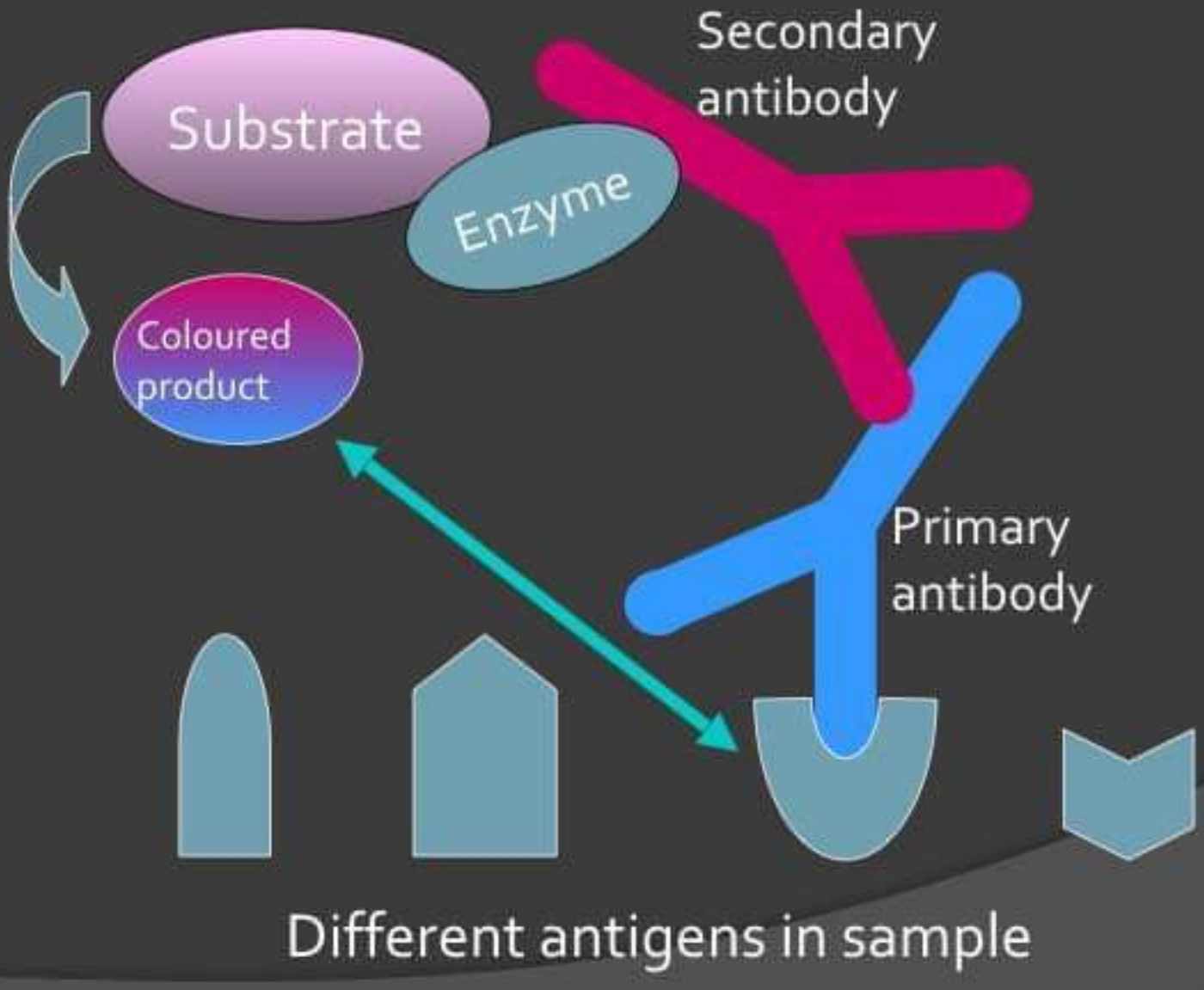
Solid phase coated with antibody

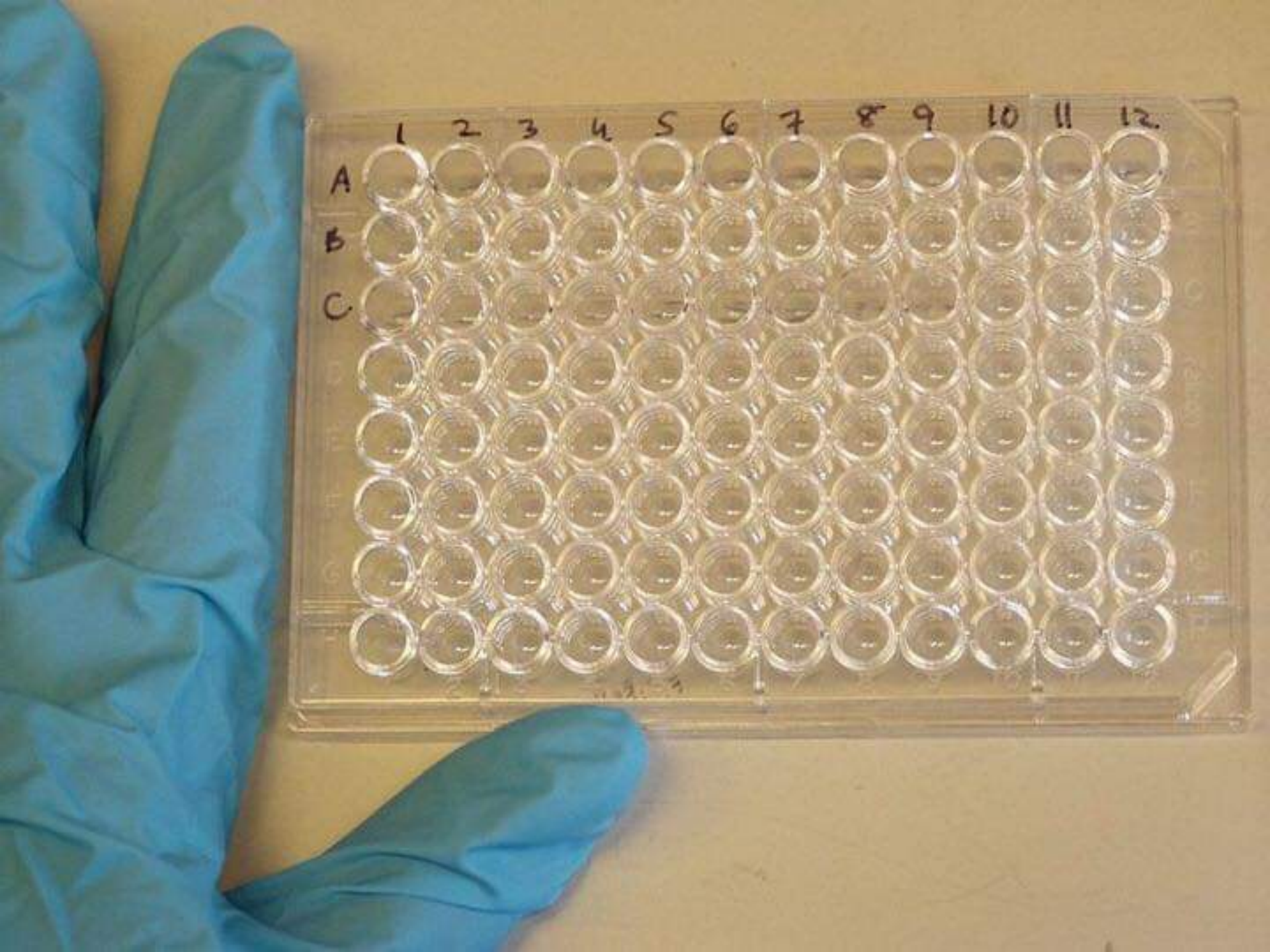
Add free and labelled antigen

Free and labelled antigen are captured

Color formation by oxidation of substrate into a colored compound

PRINCIPLE


Secondary antibody
Substrate
Enzyme
Coloured product
Primary antibody
Different antigens in sample


1 2 3 4 5 6 7 8 9 10 11 12
A
B
C

INDIRECT ELISA