

# ELISA

## *(Enzyme-Linked Immunosorbent Assay)*

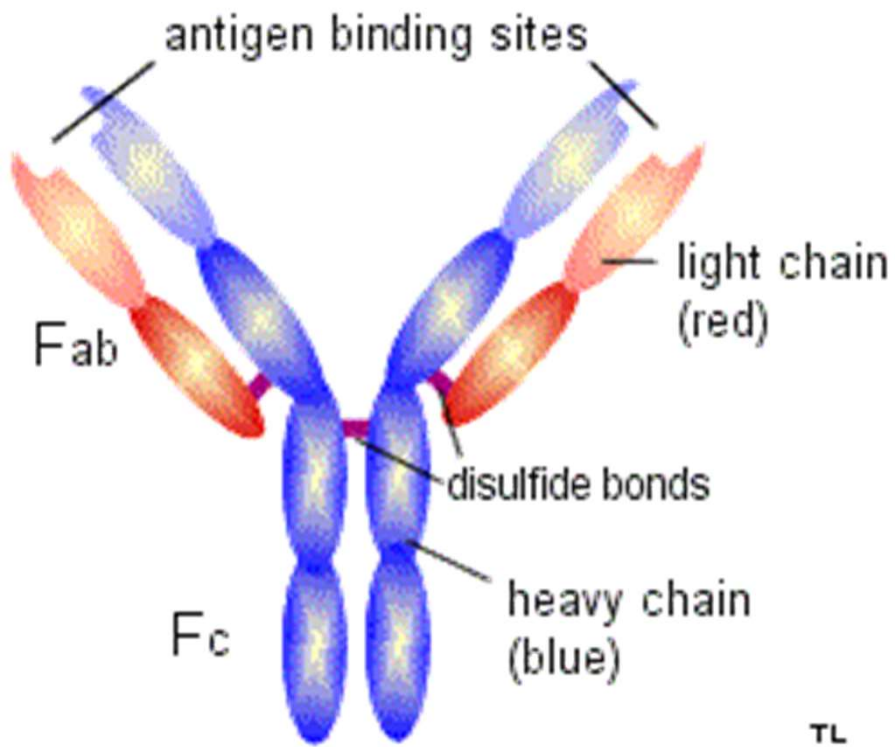
Catherine Hamdani

Nadia Suryawinata

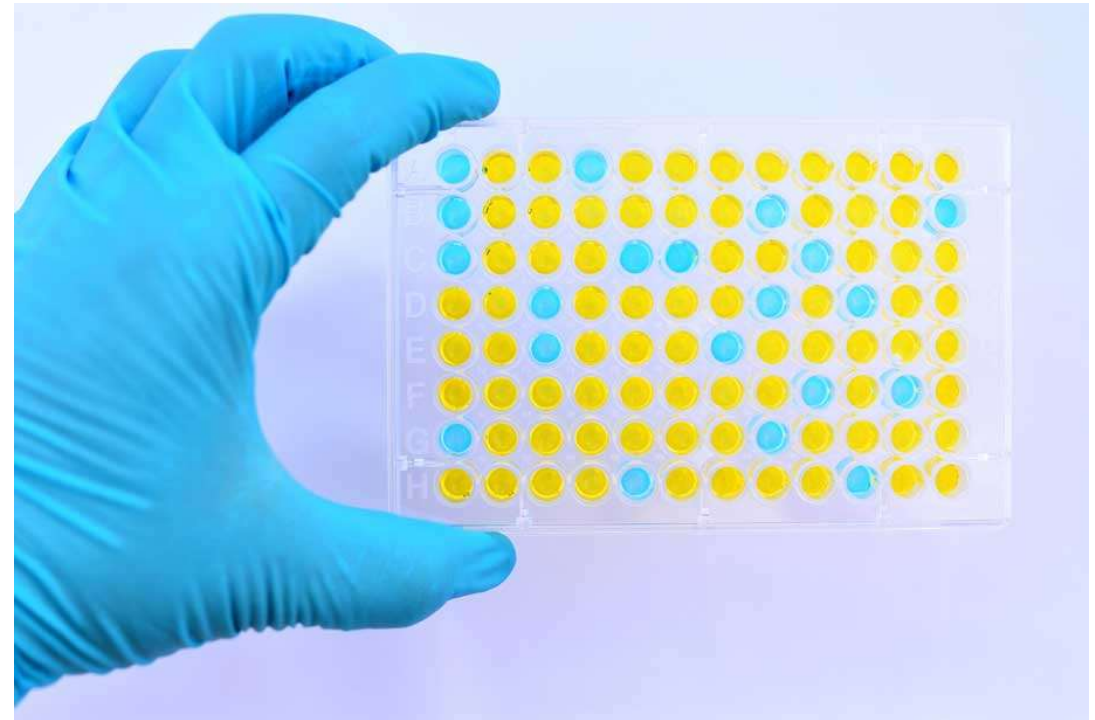


# What is ELISA?

- A test that detects and measures antibodies/antigens in the blood.
- Purpose: To see if the patient has antibodies/antigens related to certain conditions.
- Uses antigen-antibody interaction
- There are 4 types of ELISA:
  - Direct
  - Indirect
  - Sandwich
  - Competitive

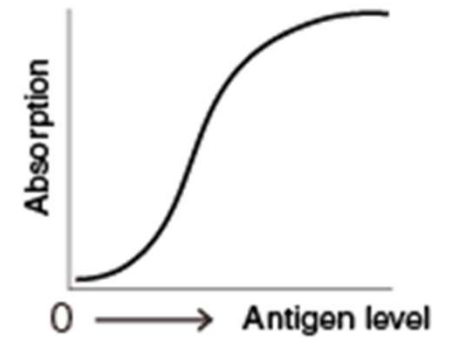
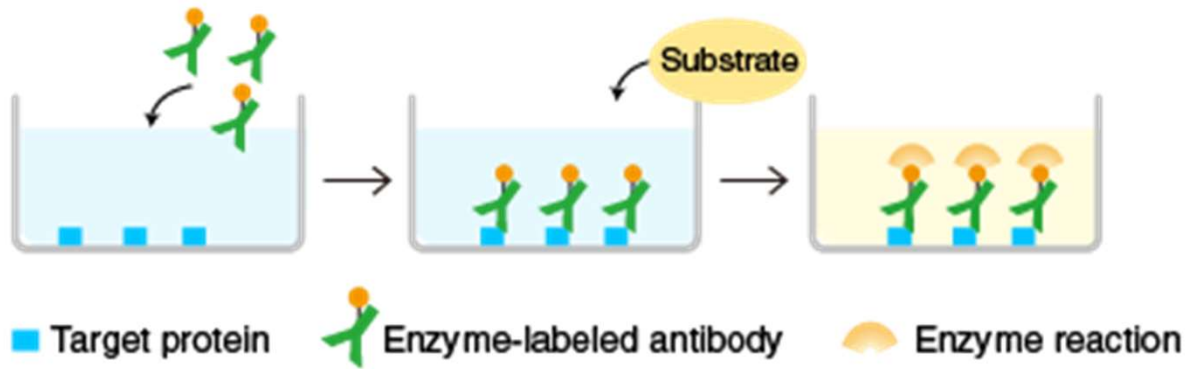


**Structure of an Antibody**

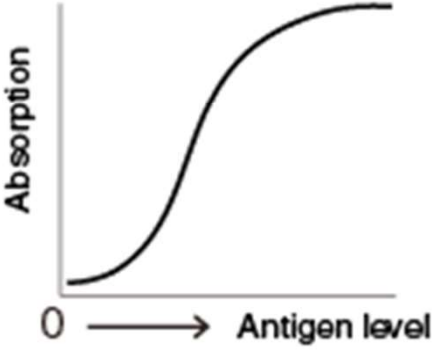
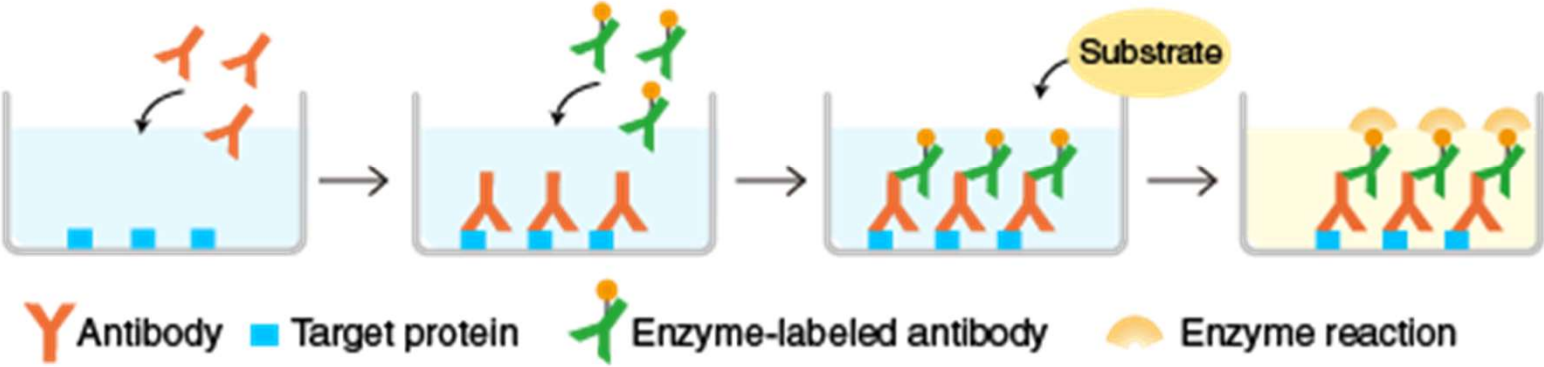


**Sample of an ELISA plate**

# Direct ELISA

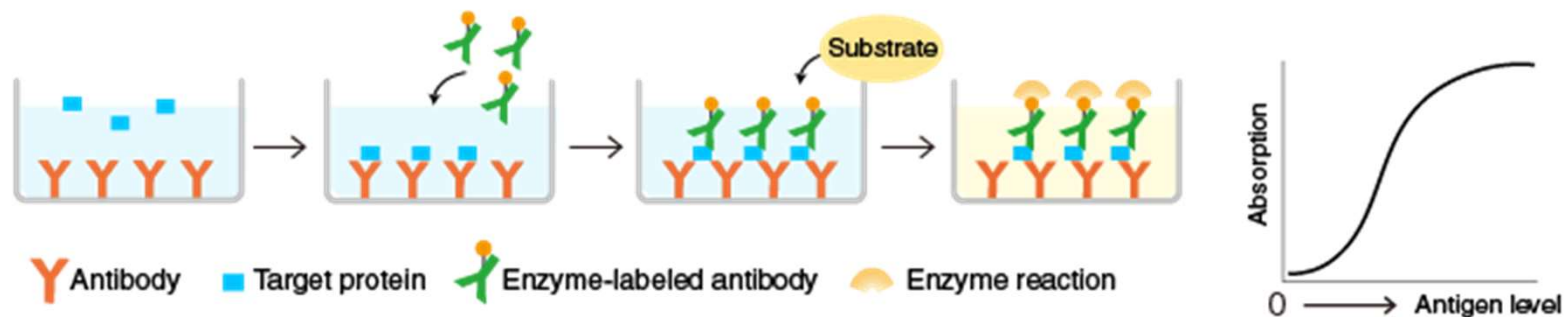


# Indirect ELISA



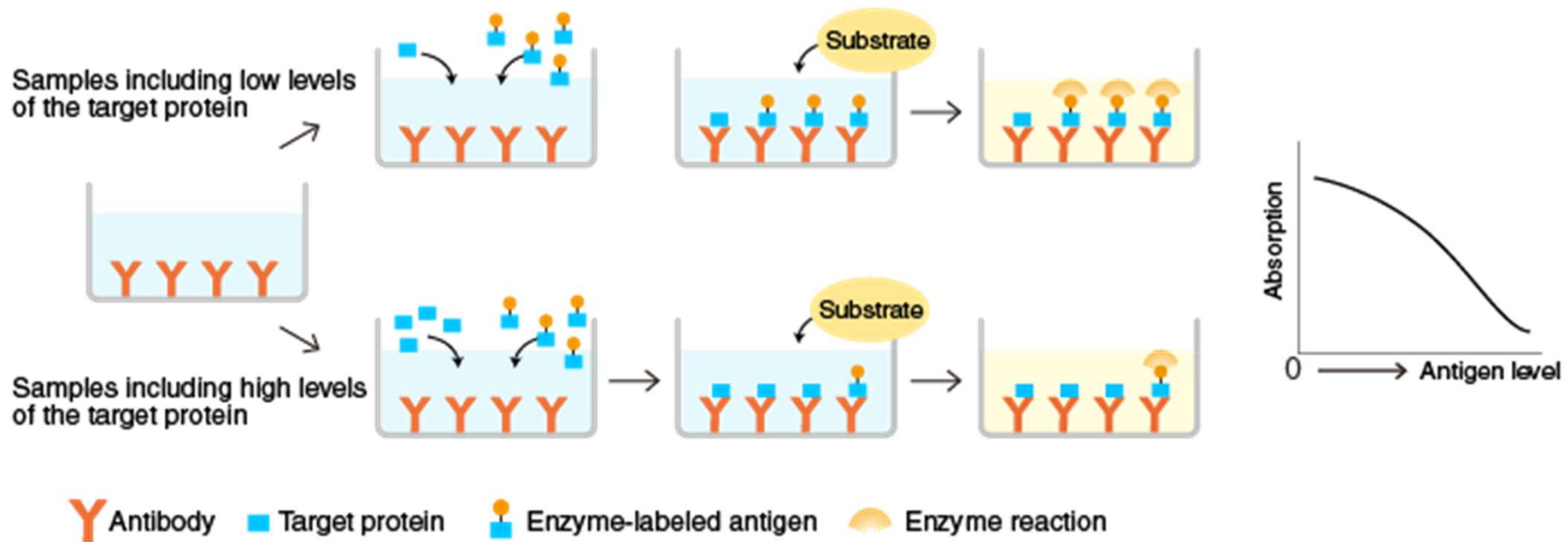
# Sandwich ELISA

- Used to detect presence of antigens
- Higher specificity → two different antibodies have to recognize different epitopes of the antigen



# Competitive ELISA

- Useful for targets with low molecular weight (e.g. histamine)
- It is too small for 2 antibodies to bind together like in sandwich ELISA (only 1 epitope)



# Application

- Food industry: detection for potential allergens (peanut, milk, eggs)
- Medicine: tests for numerous diseases, such as HIV antibodies, hepatitis B antigens, enterotoxin in *E. coli*



# Citations

“Overview of ELISA.” *Thermo Fisher Scientific*, Thermo Fisher Scientific, [www.thermofisher.com/au/en/home/life-science/protein-biology/protein-biology-learning-center/protein-biology-resource-library/pierce-protein-methods/overview-elisa.html#3](http://www.thermofisher.com/au/en/home/life-science/protein-biology/protein-biology-learning-center/protein-biology-resource-library/pierce-protein-methods/overview-elisa.html#3)

“The Principle and Method of ELISA.” *The Role of Antibodies* | *MBL Life Science -ASIA-*, [ruo.mbl.co.jp/bio/e/support/method/elisa.html](http://ruo.mbl.co.jp/bio/e/support/method/elisa.html)