

Try to understand the following serological methods

1- Agglutination

2- Toxin-antitoxin neutralization

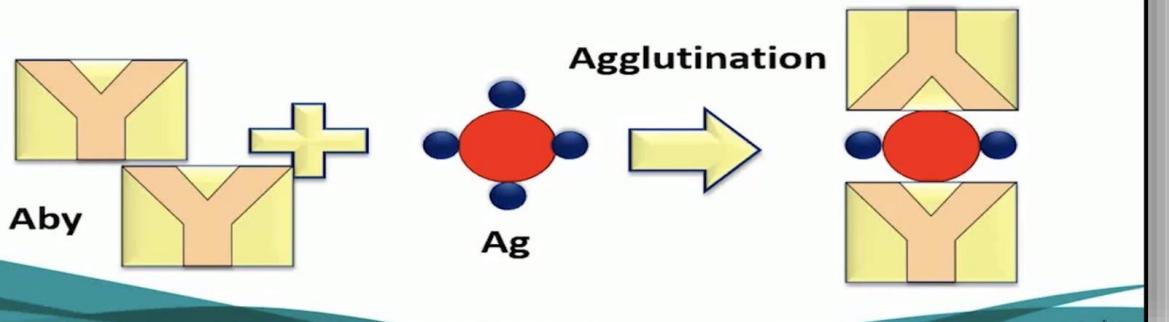
3- ELISA

4- Immunofluorescence

5- Complement fixation test

I) Agglutination

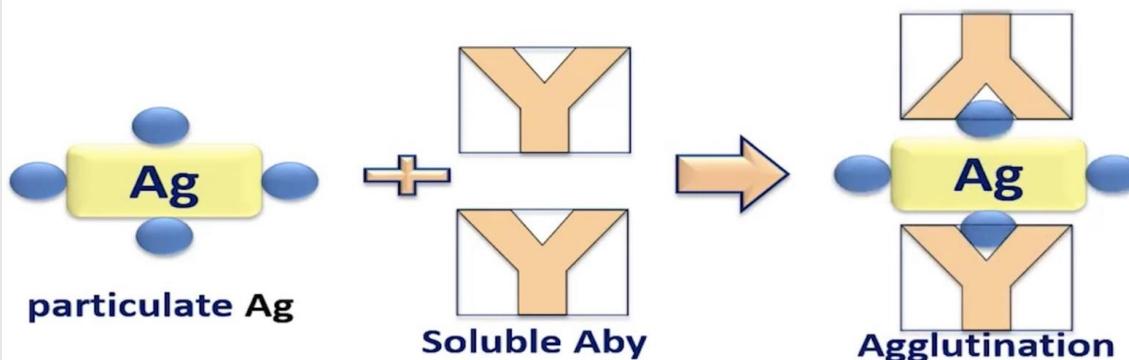
An antibody that forms clumps or aggregates when reacts with cells or particular antigen



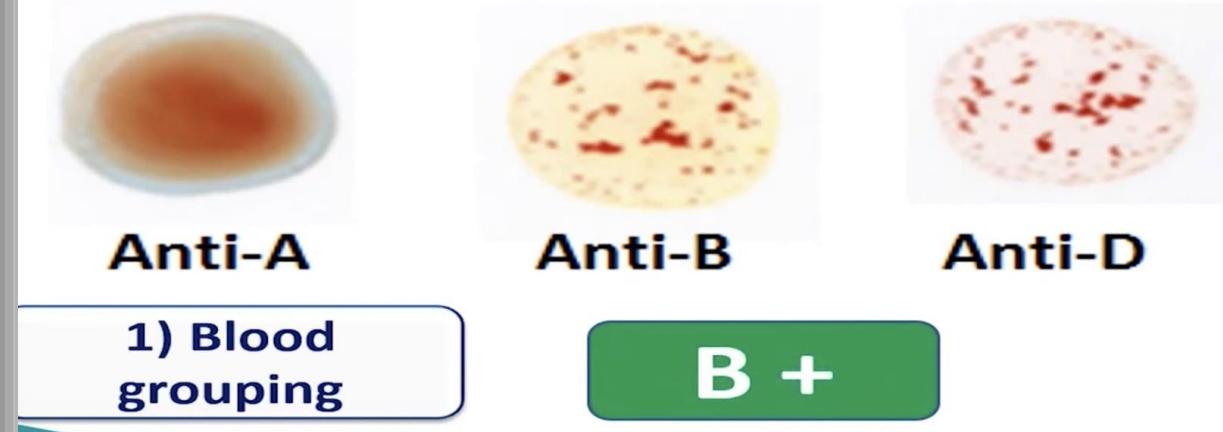
1) Definition of Direct agglutination

When a particulate antigen (e.g. bacteria, fungi, RBC or WBC) is mixed with its specific antibody, agglutination (clumping) occurs directly.

1) Principle of Direct agglutination



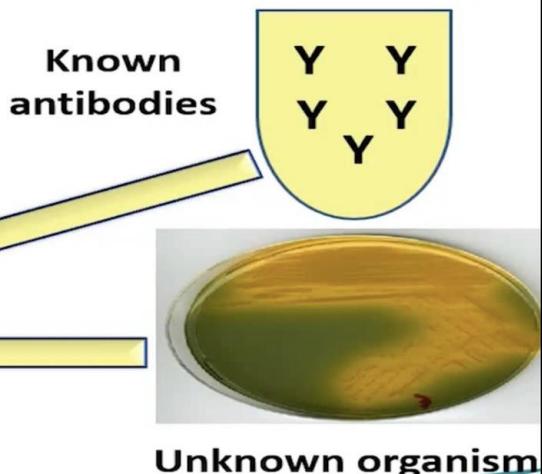
1) Applications of Direct agglutination



1) Applications of Direct agglutination

2) Identification of an unknown organism.

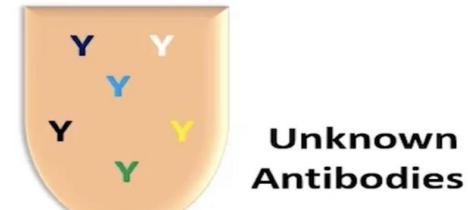
- 1-Salmonella with polyvalent sera
- 2- Serogrouping of Strep.pyogens
- 3- Serological diagnosis of Shigella species
- 4- Serogrouping of Vibrio cholerae



1) Applications of Direct agglutination

3) Identification of an unknown antibodies.

- 1- Widal test
- 2- ASOT
- 3- Brucella agglutination



2) Indirect agglutination

Soluble Ag + Soluble Aby → No visible Agg.

So Ag or Aby must be converted into a particle to get visible agglutination

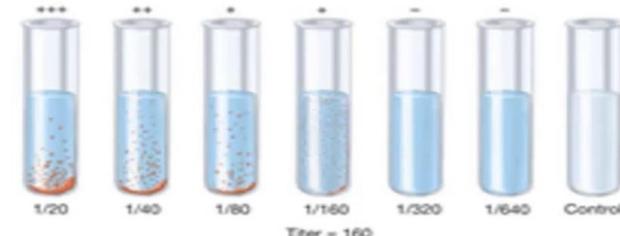
1) Applications of Direct agglutination

3) Identification of an unknown antibodies.

Tube agglutination
(Widal test)

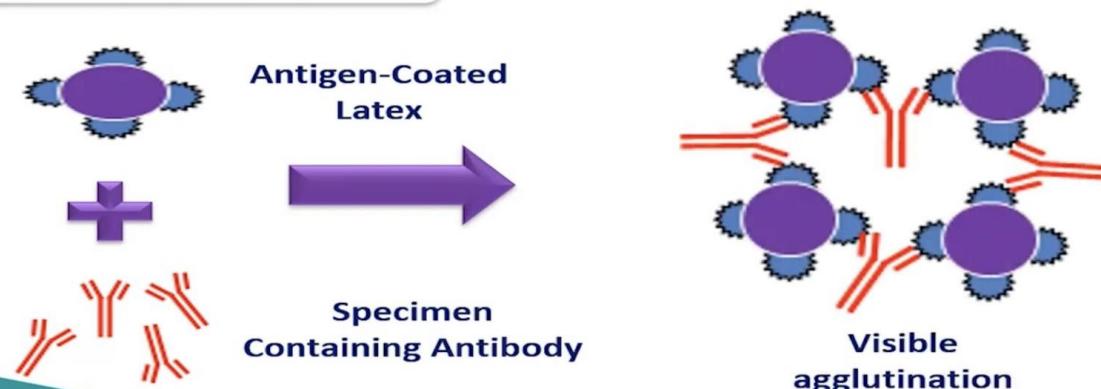
2nd weeks

Serum dilution



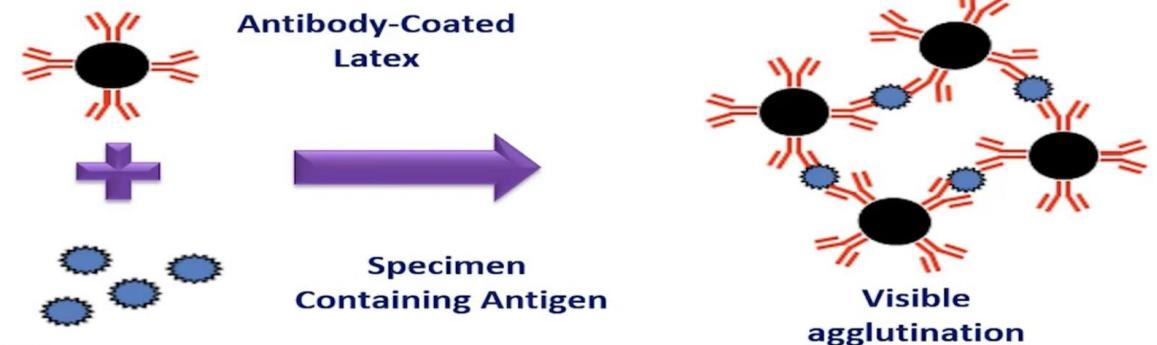
2) Indirect agglutination

Antibody test



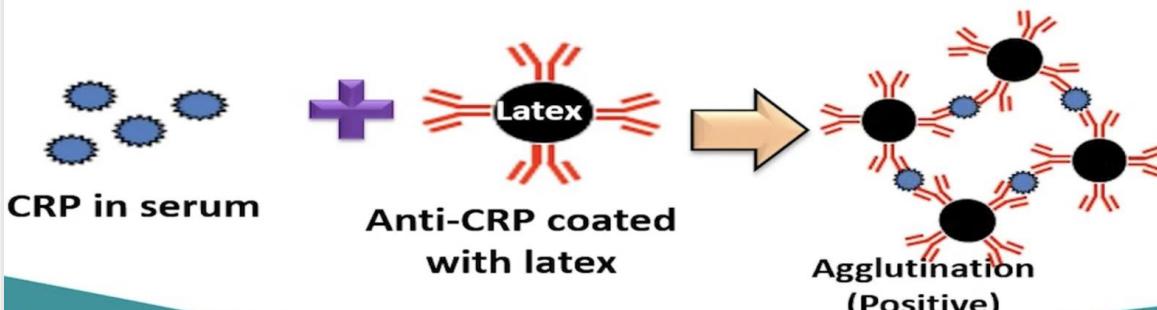
2) Indirect agglutination

Antigen test



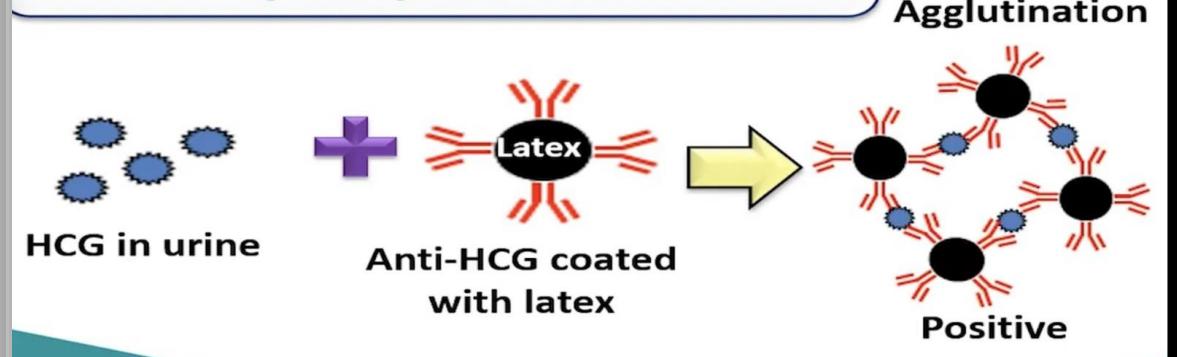
2) Indirect agglutination

1) Detection of CRP



2) Indirect agglutination

2) Detection of Pregnancy test (HCG) in urine

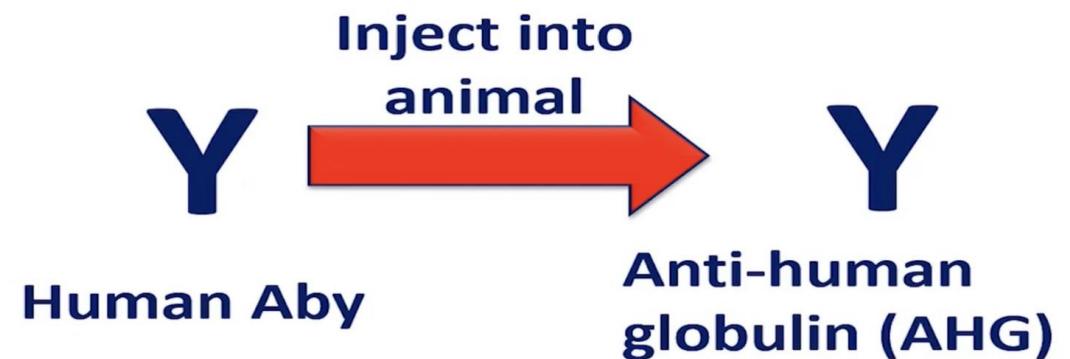


3) Direct Coomb's test

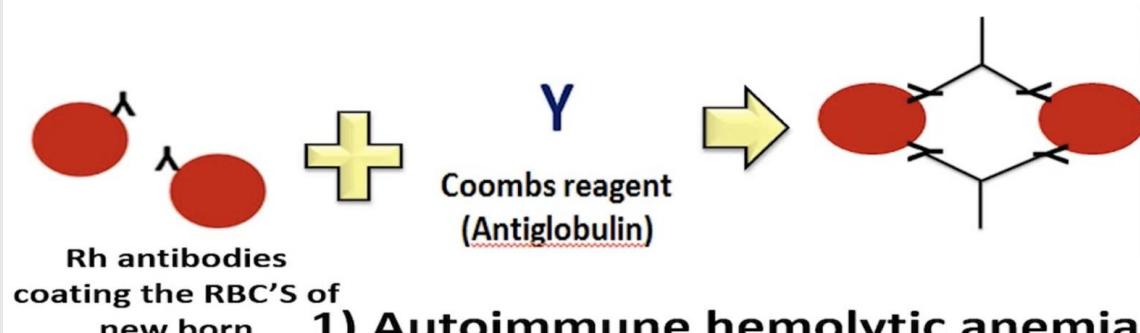
This test to detect the presence of Anti-RBCs Antibodies



Coomb's Reagent

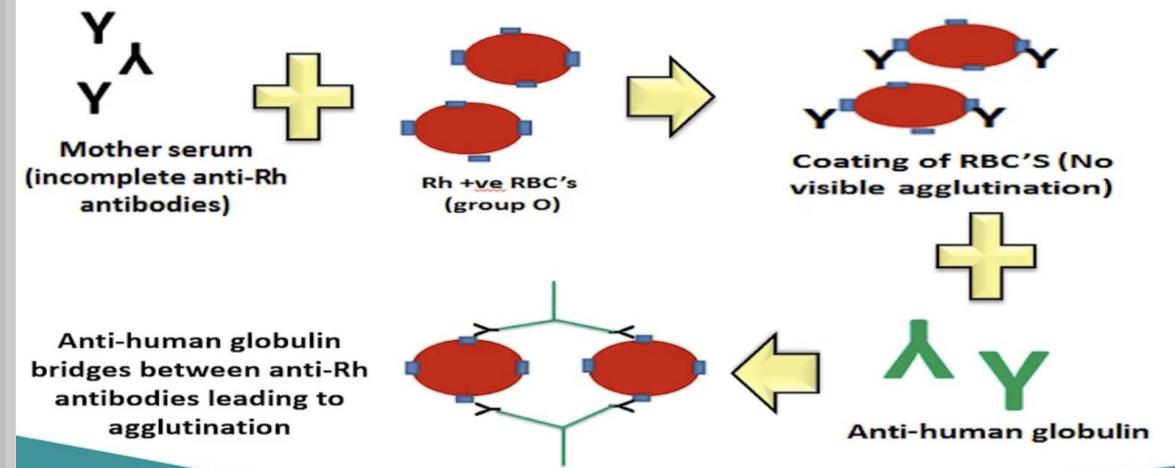


3) Direct Coomb's test



- 1) Autoimmune hemolytic anemia
- 2) Hemolytic disease of newborn (erythroblastosis fetalis)

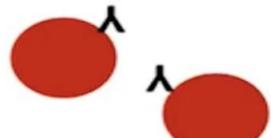
3) Indirect Coomb's test



3) Indirect Coomb's test

Direct

In vivo



Blood
(Anticoagulant)

Indirect

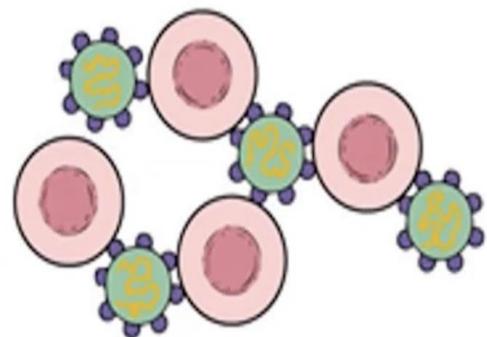
In vitro



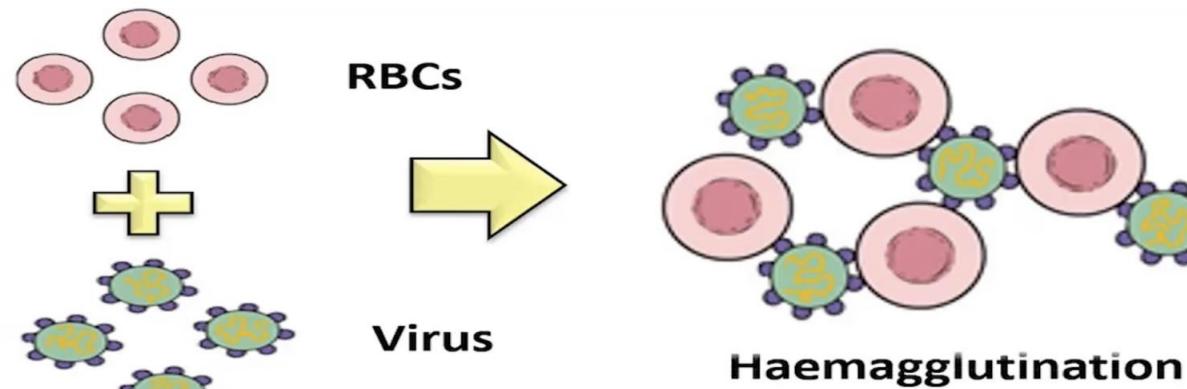
Serum

4) Hemagglutination test

Detection the ability
of some viruses to
hemagglutinate RBCs.

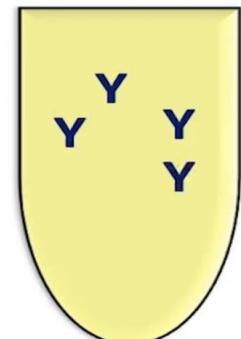


4) Hemagglutination test

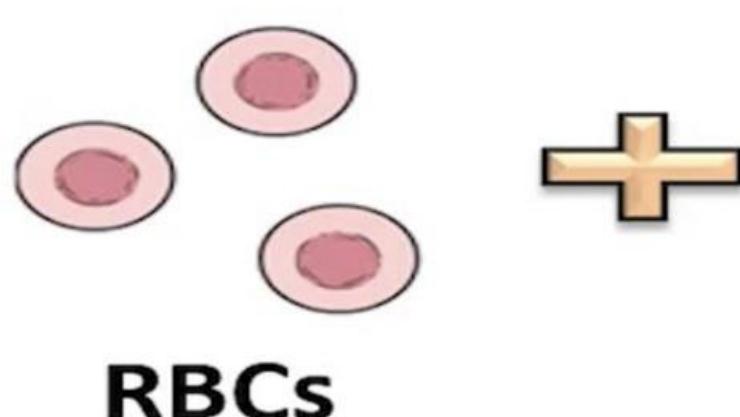


4) Hemagglutination Inhibition test

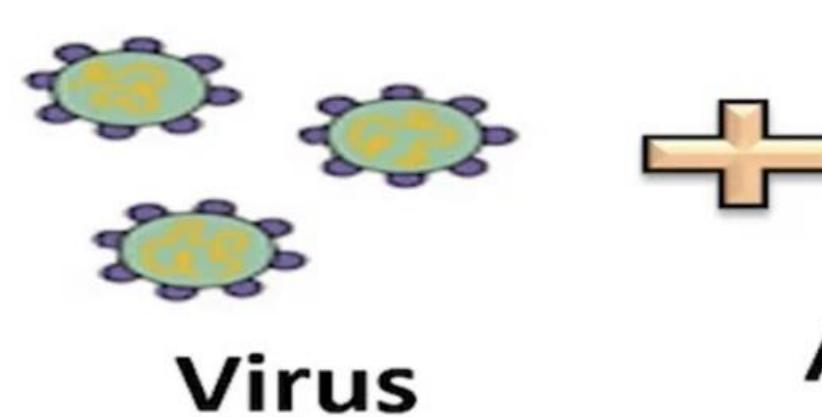
Detection of the
presence of anti-viral
antibody in the
serum



4) Hemagglutination Inhibition test



RBCs

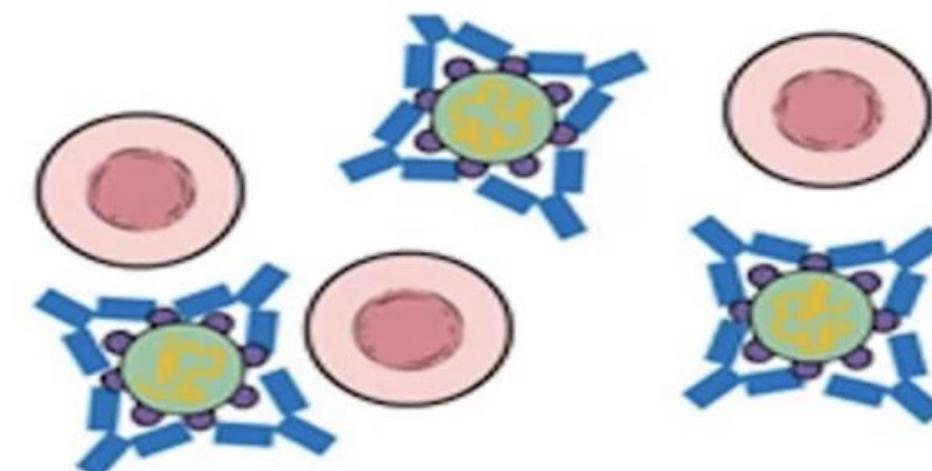


Virus



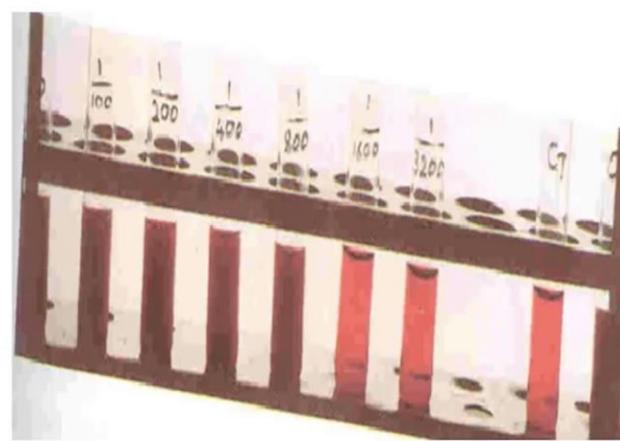
Aby against virus

**Haemagglutination
Inhibition
(Aby neutralize the virus)**



II) Toxin-antitoxin neutralization

1- ASO
(more than
200 units)

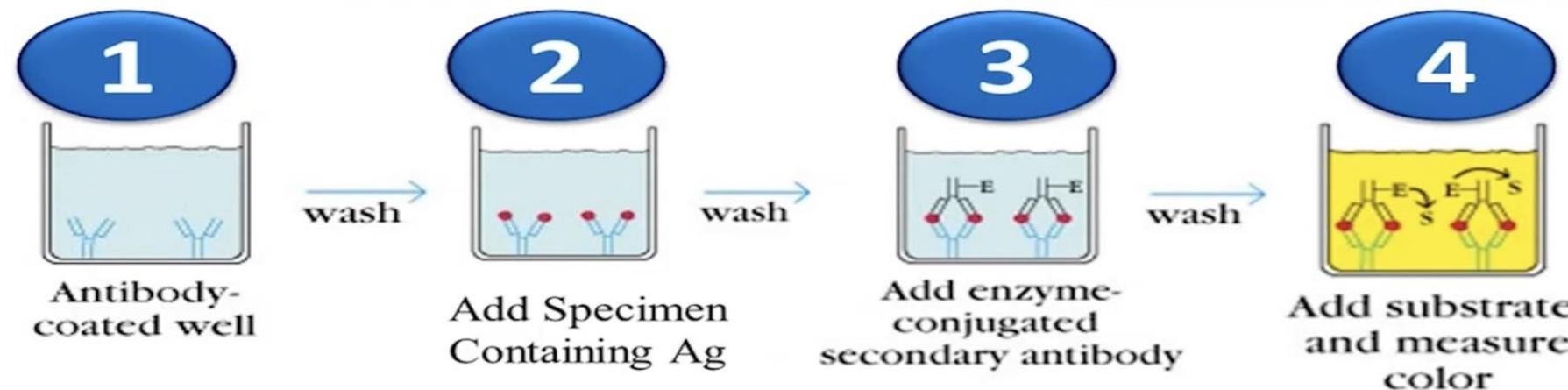


Antigen antibody reaction

III) ELISA

(Detection of Ag)
Sandwich ELISA

III) ELISA



Antigen antibody reaction

IV) Electrochemi-luminescence

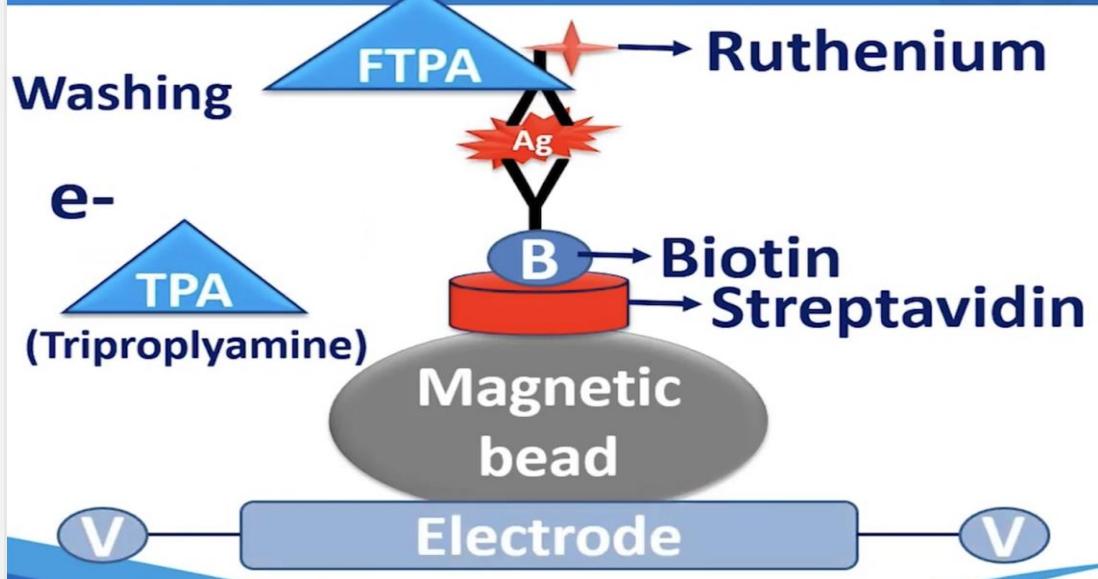
IV) Electro-chemiluminescence (ECL)

Electro =electrical stimulation

Chem = chemical reaction

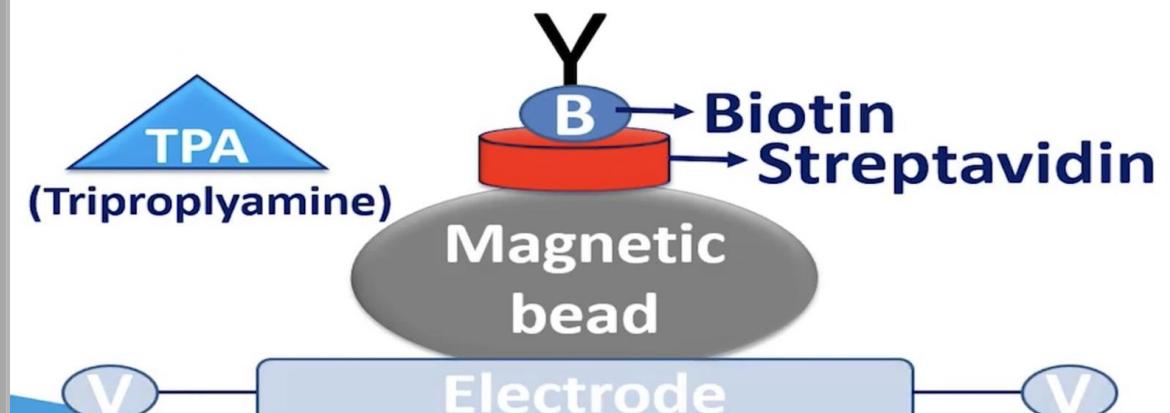
Luminescence = produce light

IV) Electro-chemiluminescence (ECL)



IV) Electro-chemiluminescence (ECL)

Washing



IV) Electro-chemiluminescence (ECL)

ELISA



Nanogram

ECL



Picograms

V) Direct Immunofluorescent

The test is used to detect Antigen (bacteria or Ag in tissues)



V) Direct Immunofluorescent

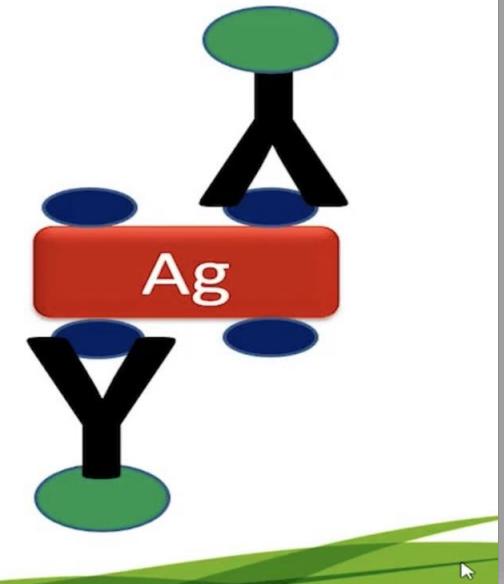
Ag fixed on a slid



Fluorescin labelled antibodies are added



Apple green fluorescence



VI) Complement fixation test

It used for detection of antibody



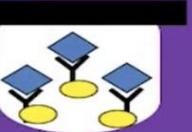
VI) Complement fixation test



Serum with antibodies



Antigen binds to antibodies



Complement binds to Ag/Ab complex



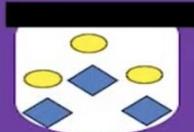
RBCs coated with Aby serve as an indicator is added



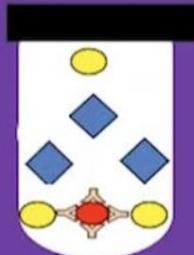
Serum without antibodies



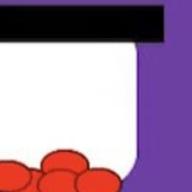
Unbound antigen



Unbound complement



RBCs coated with Aby serve as an indicator is added



No lysis
Positive



Lysis
Negative

Q1

A serological test using a microscope

Complement fixation test

Latex agglutination

Fluorescent Ab test

ELISA test

Q2

Fluorescent Ab test detects the presence of:

A specific antigen

A specific antibody

Complement

Lysis of RBCs

Q3

A serological test using an antibody against an antibody

Direct Fluorescent antibody test

Indirect fluorescent antibody test

Complement fixation test

Passive latex agglutination test

Q4

A test which detects the lysis of red blood cells

Direct Fluorescent antibody test

Indirect fluorescent antibody test

Complement fixation test

Passive latex agglutination test

Q5

The positive result for the presence of antibodies in ELISA test is:

Absence of color

Lysis of RBCs

Agglutination of cells

Appearance of color

Q6

All the following is about Direct Coomb's test

It detects Autoimmune hemolytic anemia

It detects hemolytic disease of new born

Bind IgG with RBC in vivo

Need blood with anticoagulant

Q7

All the following is about Indirect Coomb's test

It detects Preformed Aby before transfusion

It detects Anti-Rh in mother

Antibodies free

Need serum sample