

SEROLOGICAL REACTIONS

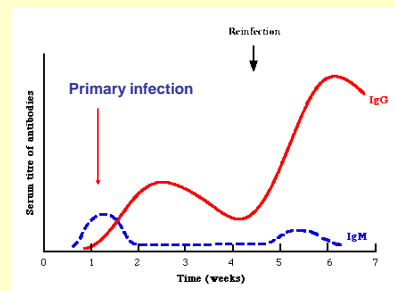
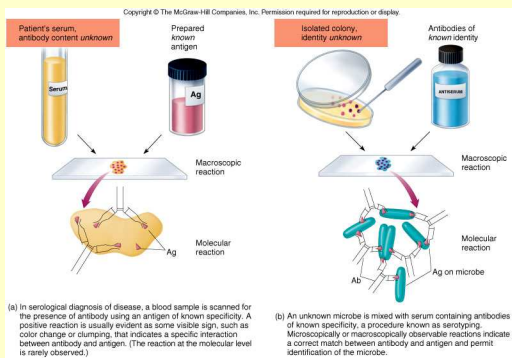
Antigen-antibody reactions

- Using known antibody/antibodies to identify the pathogen microorganism in the blood (or in tissue samples)

Source of pathogen specific antibodies:

- from vaccinated animals (i.e. horse, goat, mouse)

- Using known antigen(s) to detect specific antibodies in the patient's serum



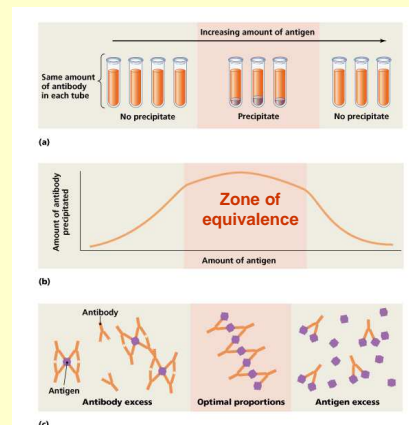
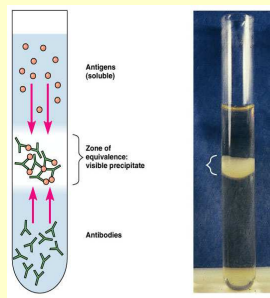
- Detection of rising titres of antibody between acute and convalescent stages of infection,
- or the detection of IgM in primary infection.

Precipitation

- the antigen is in solution

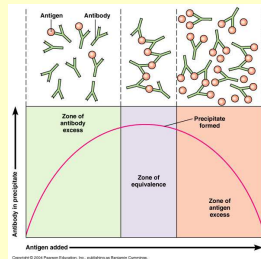
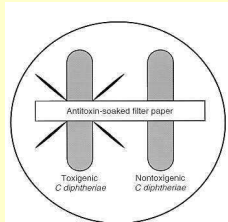
- Precipitin ring test (ring precipitation)

- detection of *Bacillus anthracis* from animal (i.e. cattle) tissues



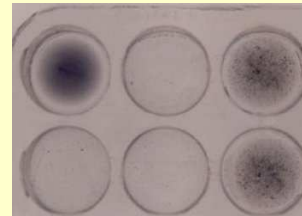
Precipitation

- **Elek-test** (immunodiffusion, agar diffusion)
- detection of toxin producing *Corynebacterium diphtheriae* strains



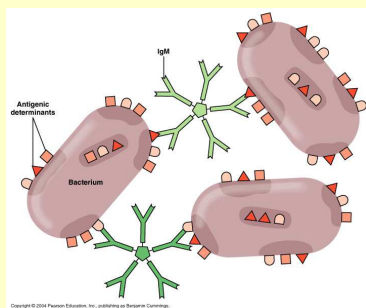
Precipitation

- **Lues flocculation tests**
- VDRL (Venereal Disease Research Lab.) test
- RPR (Rapid Plasma Reagin) test



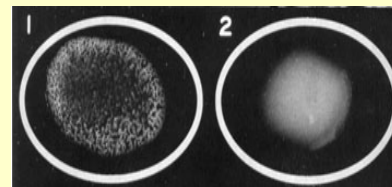
Agglutination

the antigen is a particle



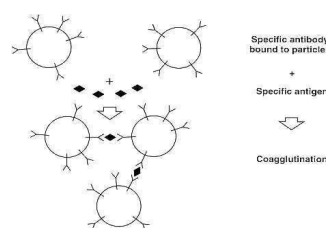
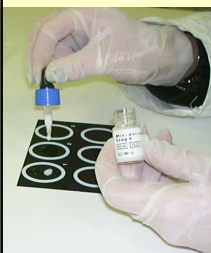
Agglutination

- **Qualitative slide agglutination**
- identification of pathogenic *E. coli* strains
- with antisera directed against O, H, K antigens



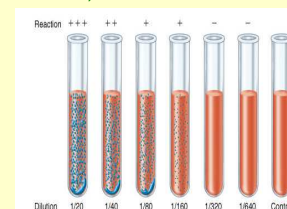
Agglutination

- **Latex agglutination**
- **Coagglutination**

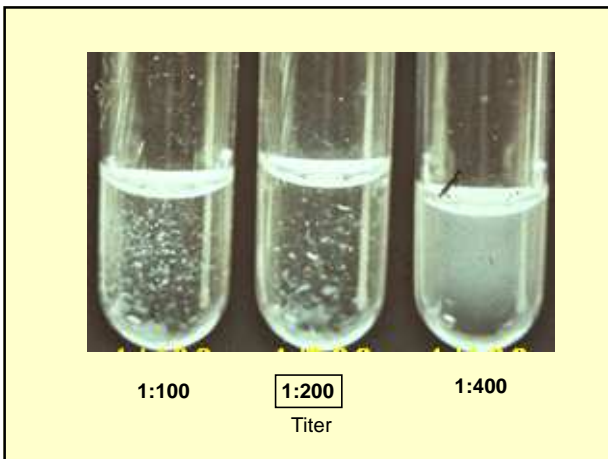


Agglutination

- **Tube agglutination tests:**
- Gruber-Widal: typhoid fever (*S. typhi*)
- Weil-Felix: typhus (*Rickettsia*)
- Wright: brucellosis



Identify and titrate antibodies in the patient's serum.
Titre: is defined as the reciprocal of the highest dilution of serum showing agglutination.



Bacteriolysis, bacteriocida

TPIT = Treponema pallidum immobilization test

-demonstration of specific **immobilizine** antibodies in the serum

Capsular swelling (quellung)

Complement fixation test

Stage 1	Reaction System	Stage 2
Positive patient's serum Ab + Ag → Ab/Ag complex Complement + Ab/Ag complex → Complement fixed to Ab	Sheep red blood cells with lysins on surface Lysins (unrelated to Ab in stage 1)	Complement fixes antibodies; RBCs do not lyse No hemolysis (+) Antibody
Negative patient's serum No Ab + Ag → No Ab/Ag complex Complement + No Ab/Ag complex → No fixation	Lysins	Complement fixes RBCs; hemolysis occurs Hemolysis Free complement is fixed by lysins on RBCs (-) No antibody present

In Wassermann test: antigen is cardiolipin (non-treponemal test)

Complement fixation test (Wassermann test for syphilis)

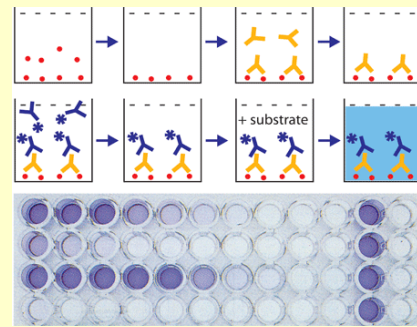
IFA (immunofluorescent assay)

FTA: fluorescent treponemal assay (a treponemal assay)
 FTA-ABS: FTA with antibody absorption

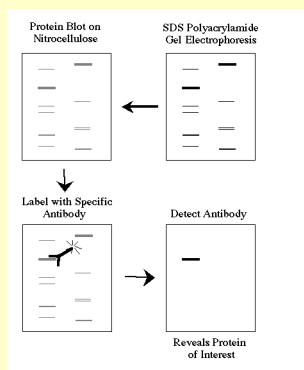
LABORATORY DIAGNOSIS OF SYPHYLIS

- A. Direct demonstration (darkfield, IFA)
- B. Nonspecific serologic tests
 - 1. Complement fixation (Wassermann test)
 - 2. Flocculation tests (VDRL, RPR)
- C. Specific serologic tests
 - 1. TPI (Treponema pallidum immobilization test)
 - 2. FTA-ABS (Fluorescent treponemal assay / antibody adsorption)
 - 3. TPHA (Treponema pallidum indirect hemagglutination)

ELISA



Western blot assay



Western blot assay

