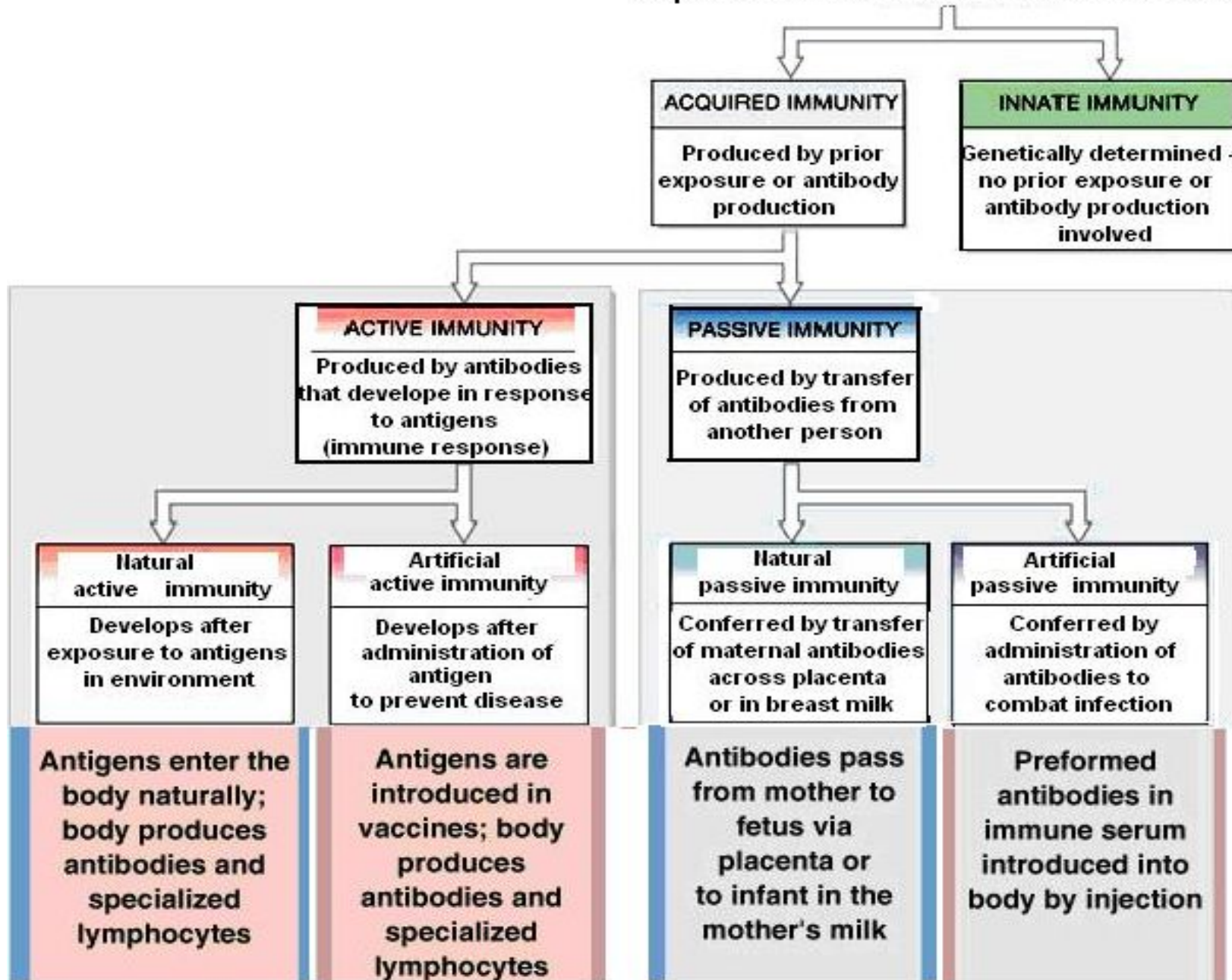


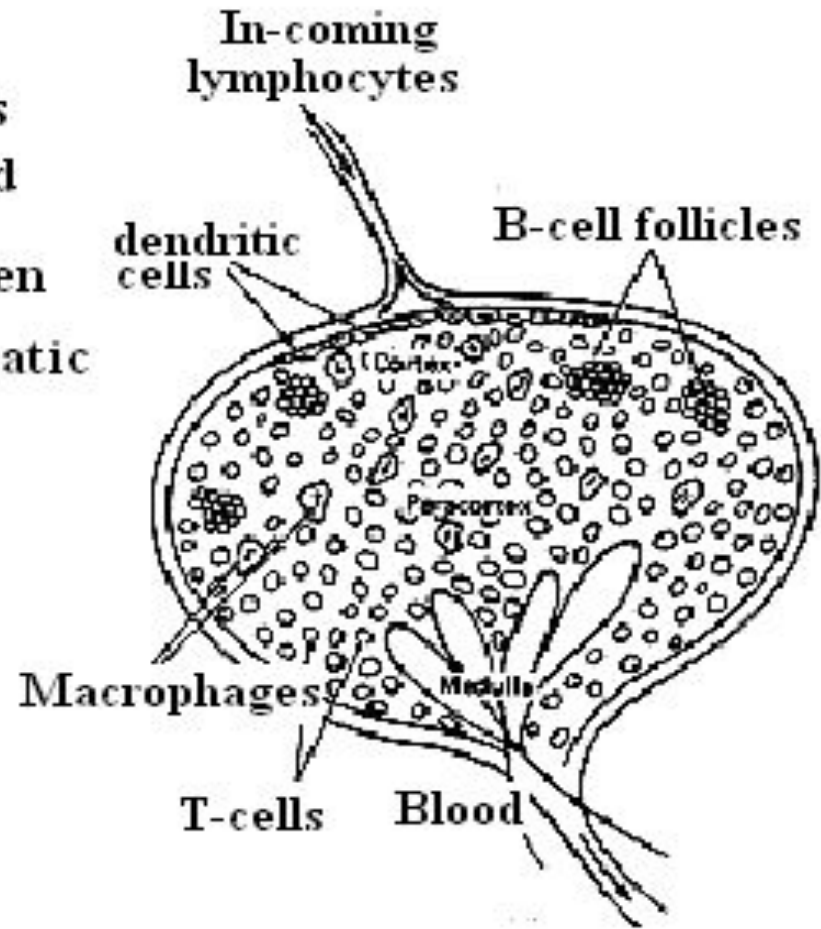
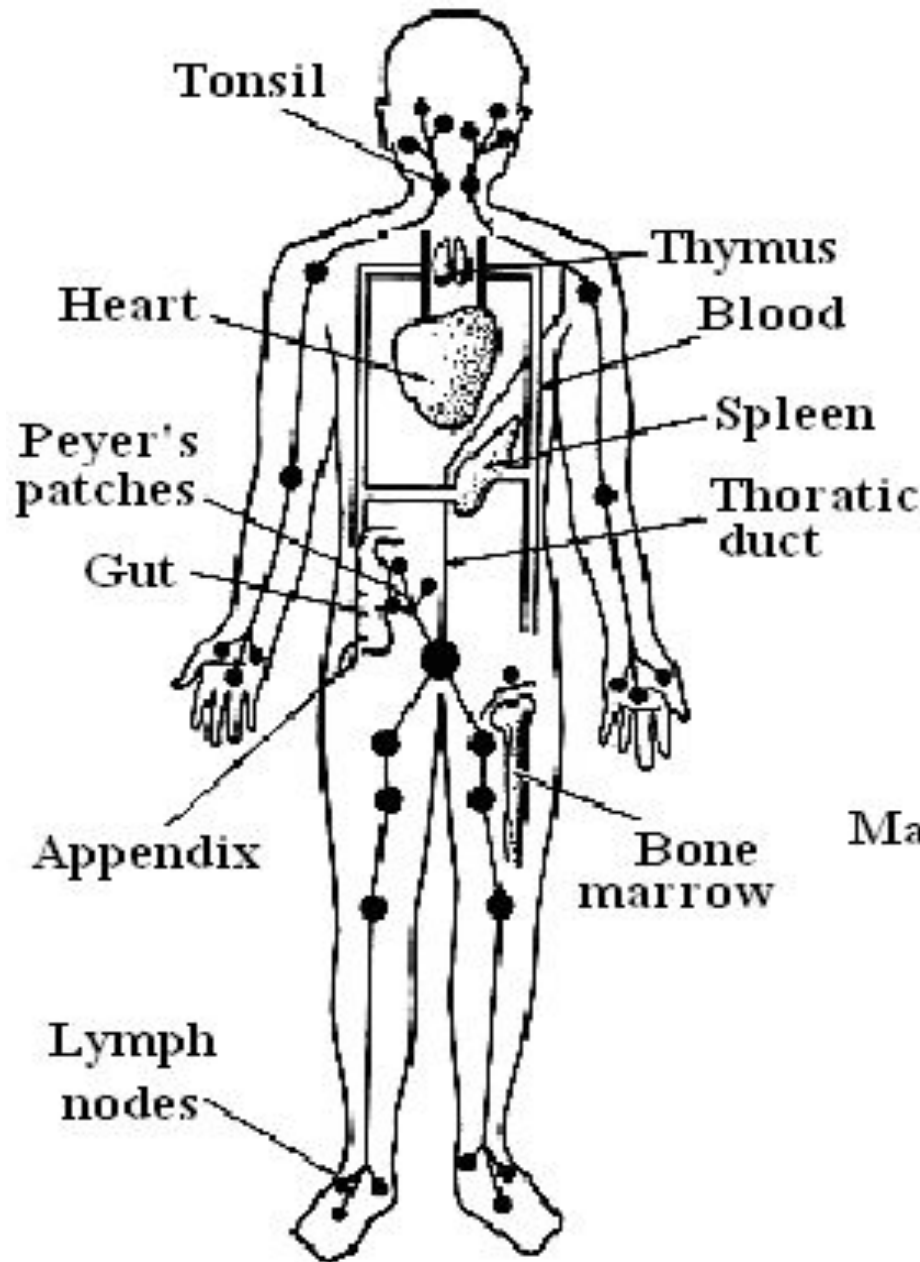
**Theme: Studying of immunity.
Agglutination and precipitation
tests.**

Specific resistance (immunity)

Responds to threats on an individualized basis



Immune system



The Lymph Node

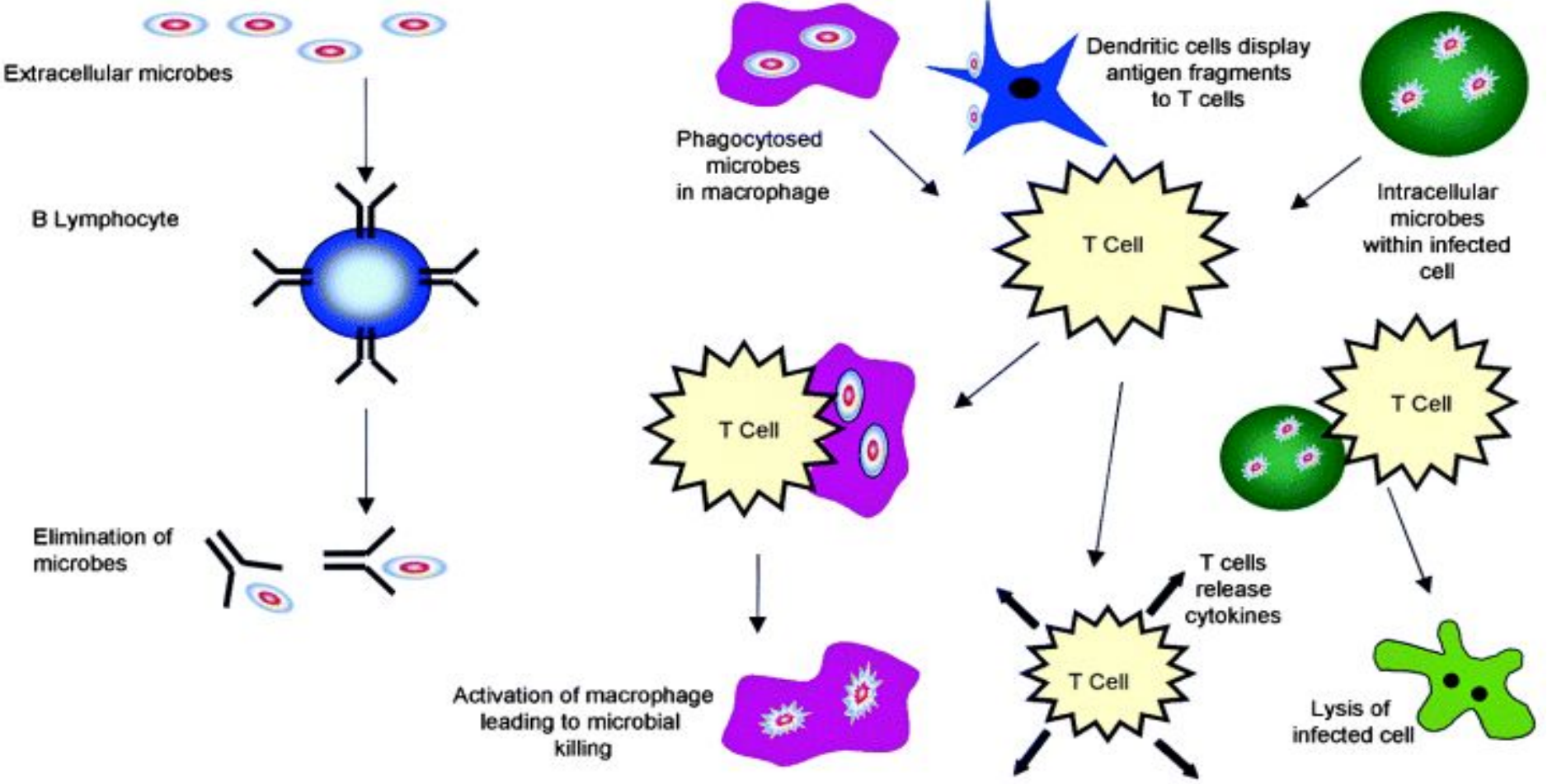
LYMPHOID TISSUES

Primary		Secondary	
(Responsible for maturation of Ag-reactive cells)		(Sites for Ag contact and response)	
↓	↓	↓	↓
Thymus	Bone marrow	Lymph nodes	Spleen
T-cell maturation	B-cell maturation	Expansion of lymphatic system, separate from blood circulation. Deep cortex harbors mostly T-cells, superficial cortex harbors mostly B-cells	Similar to lymph nodes but part of blood circulation. Collects blood-borne Ags

Adaptive Immunity

Humoral immunity

Cell-mediated immunity



LYMPHOCYTES

White blood cells formed in bone marrow and active in lymphatic tissue

B-CELLS

Mature in bone marrow

Move to lymph nodes

Recognise antigens

Most produce antibodies

Some remain as memory cells

T-CELLS

Mature in thymus gland

Helper T-cells

Recognise antigens

Stimulate B-cells

Stimulate killer T-cells

Killer T-cells

Recognise antigens

Cause abnormal cells to burst

Suppressor T-cells

Recognise antigens

Turn off immune responses

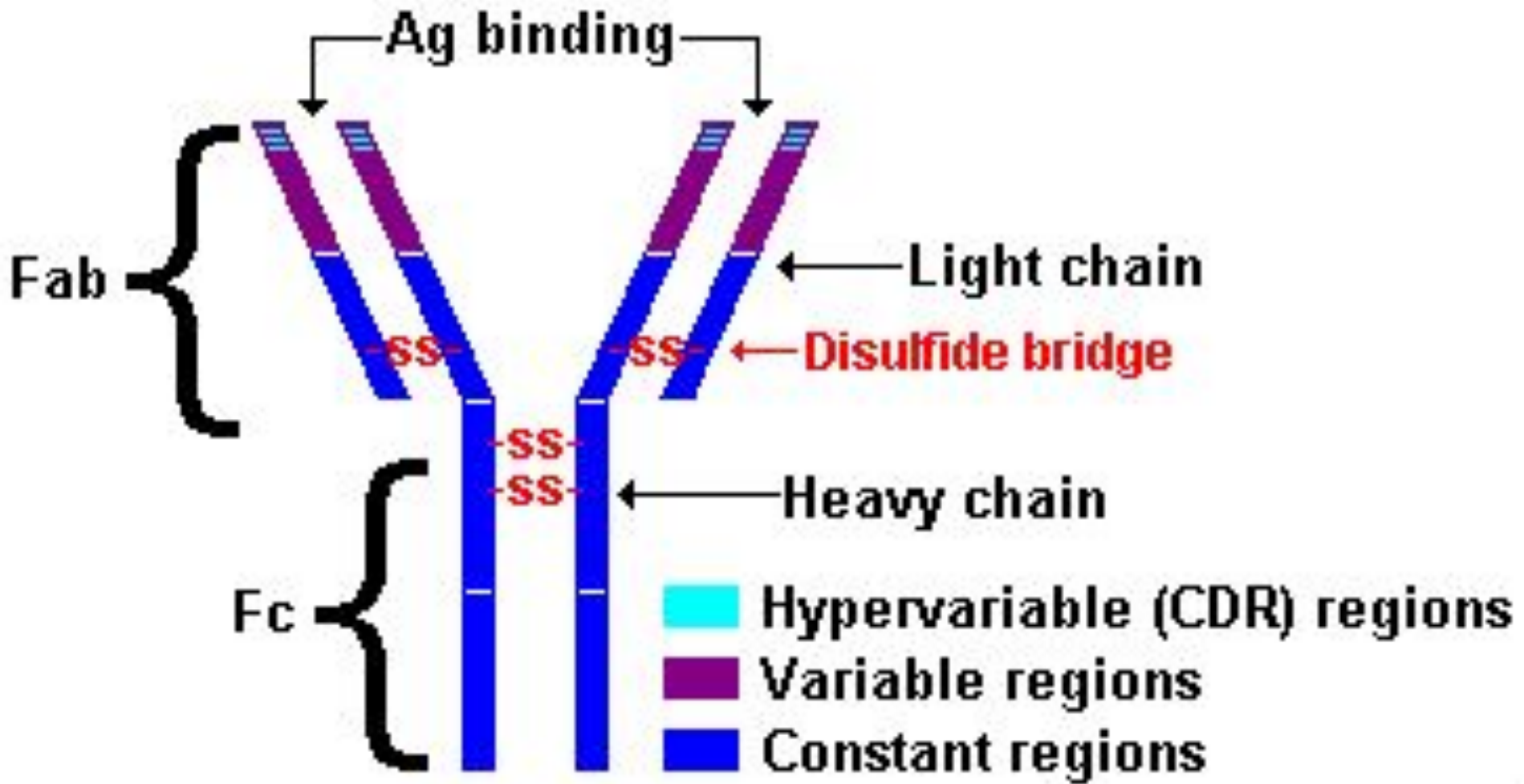
Memory T-cells

Recognise antigens


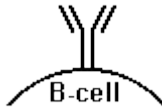

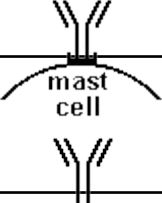
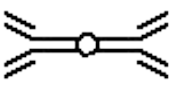
Stimulate B-cells

Stimulate killer T-cells

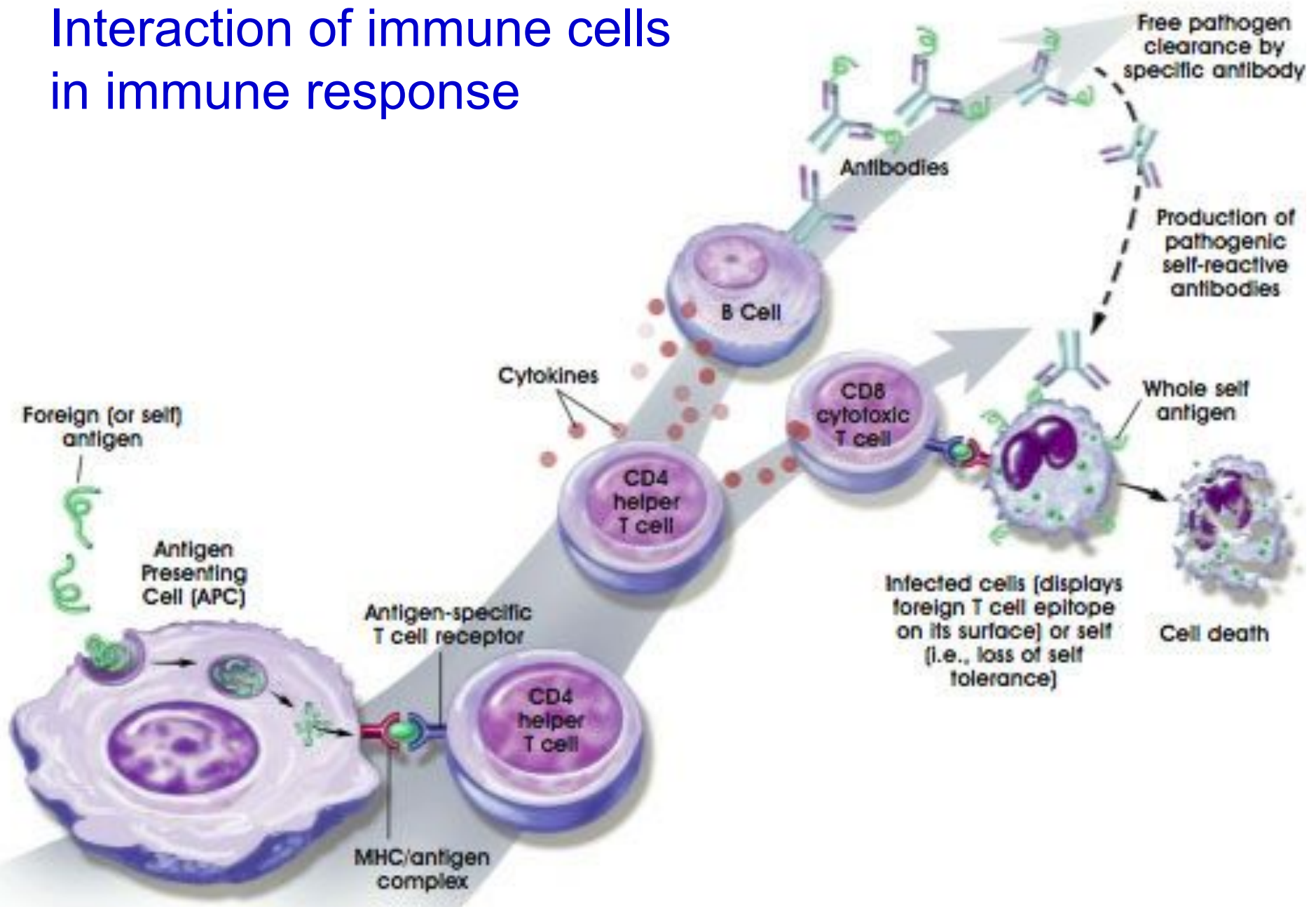
Immunoglobulin Structure



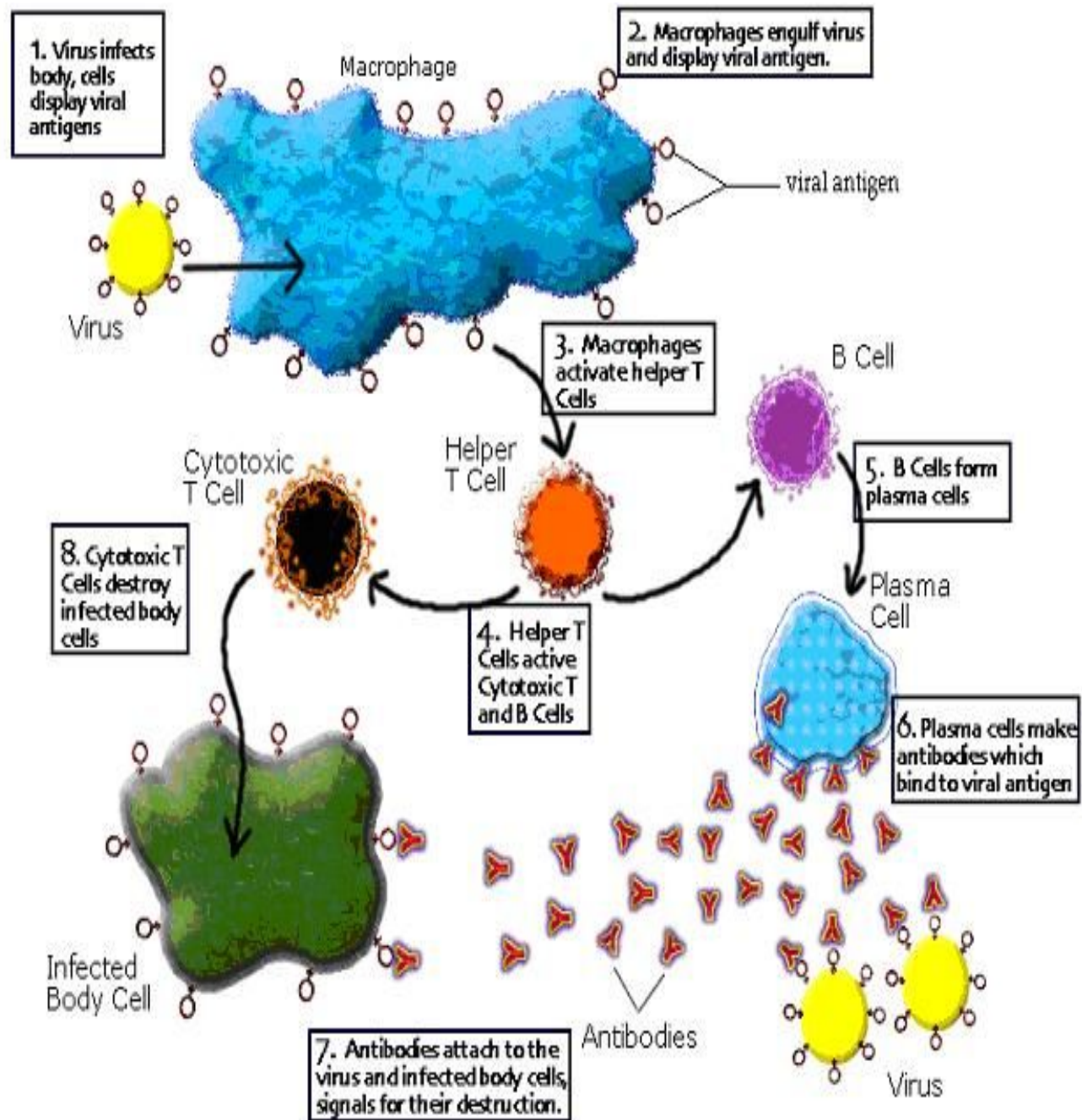
Immunoglobulins Structure and Properties

Isotype	Structure	Placental transfer	Binds mast cells	Binds phagocytes	Additional features
IgM		-	-	-	First Ab in development and response.
IgD		-	-	-	B-cell receptor.
IgG		+	-	+	Involved in opsonization. Sub-classes: IgG1, IgG2, IgG3, IgG4.
IgE		-	+	-	Involved in allergic responses.
IgA		-	-	-	Subclasses: IgA1, IgA2. Dimer (sIgA) in secretions.

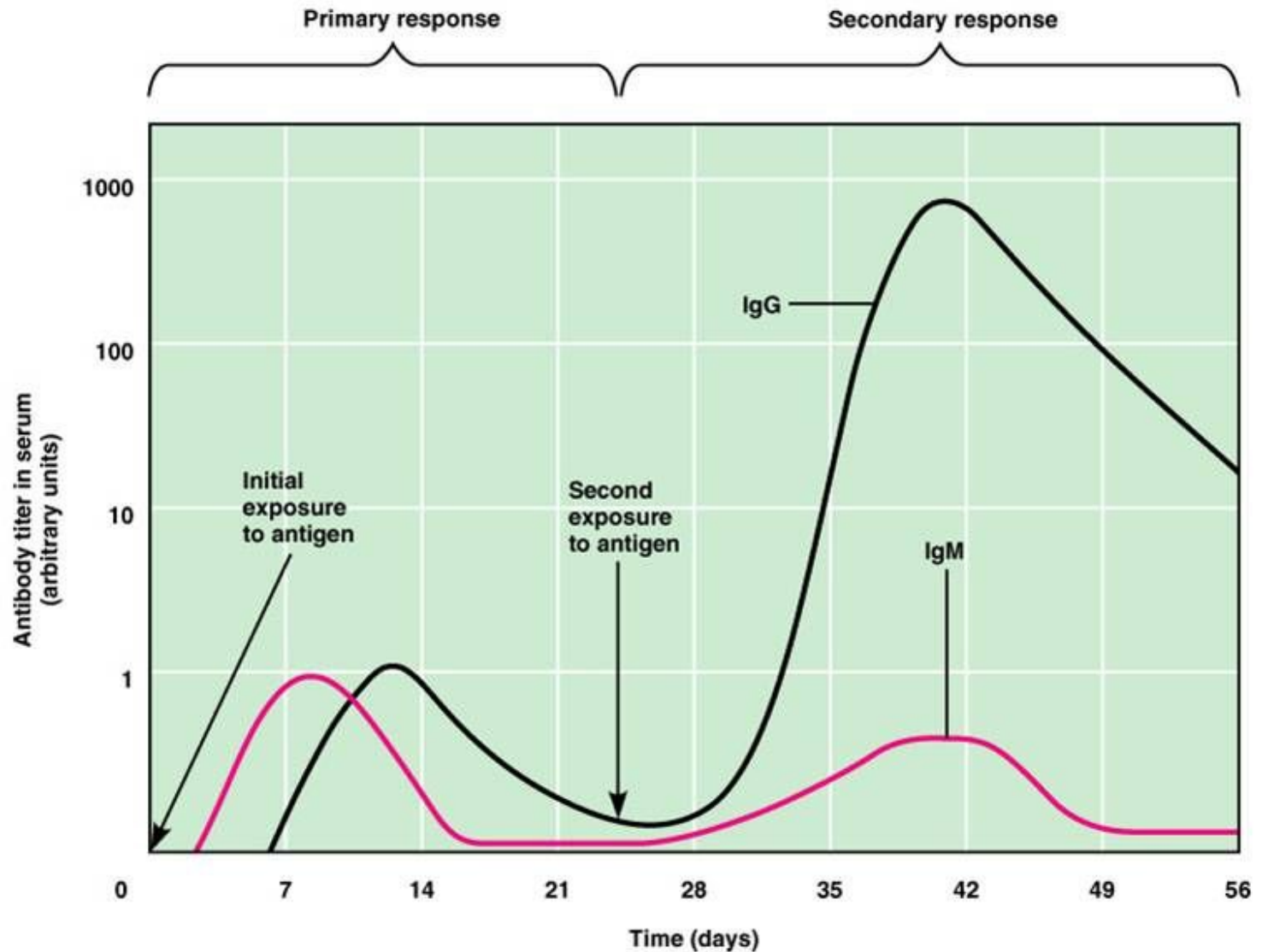
Interaction of immune cells in immune response



- Interaction of immune cells in immune response

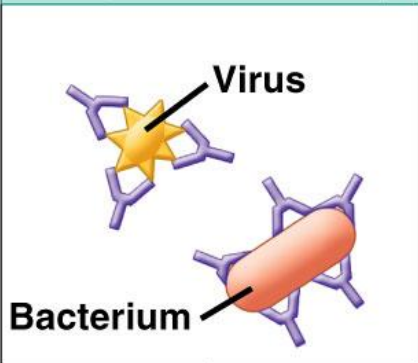


Primary and secondary immune responses

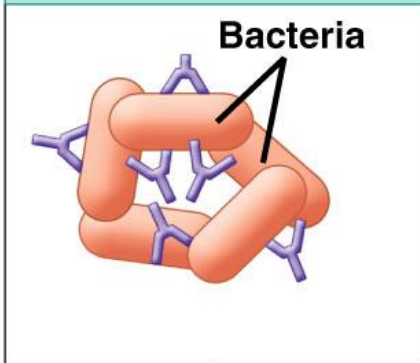


**Binding of antibodies to antigens
inactivates antigens by**

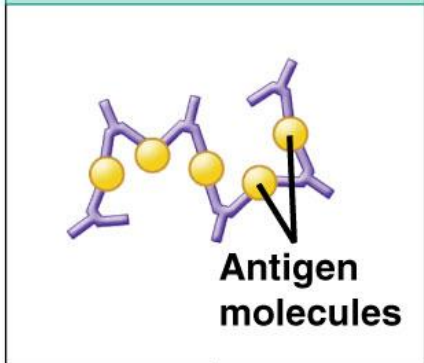
Neutralization
(blocks viral binding sites; coats bacteria)



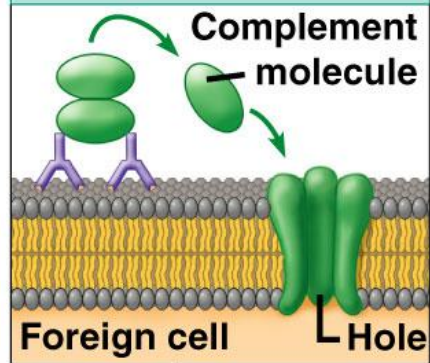
Agglutination of microbes



Precipitation of dissolved antigens

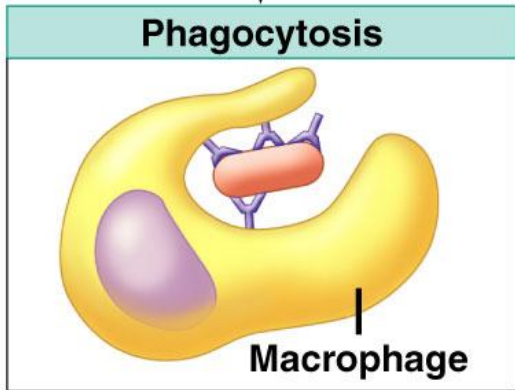


Activation of complement system



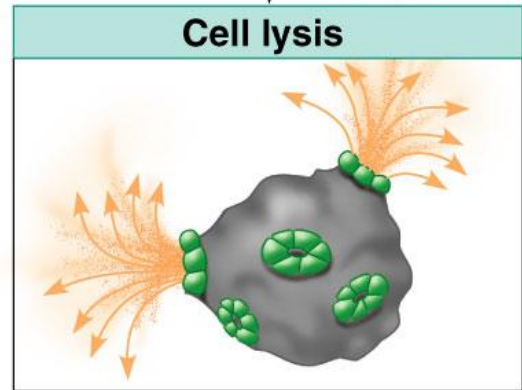
Enhances

Phagocytosis

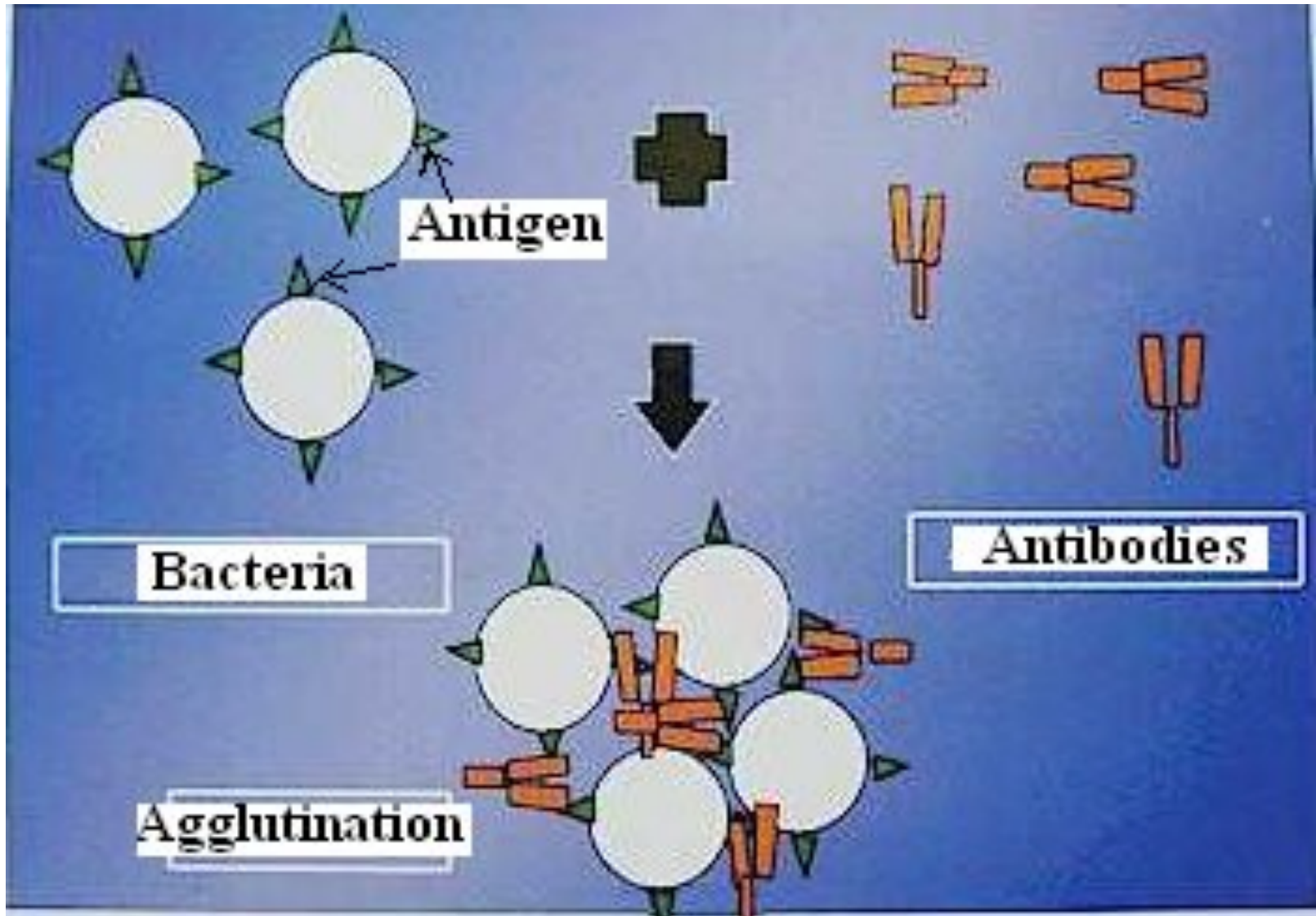


Leads to

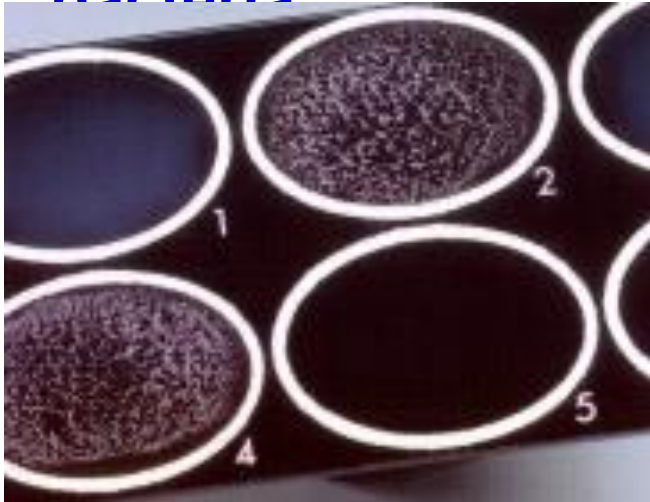
Cell lysis



AGGLUTINATION TEST

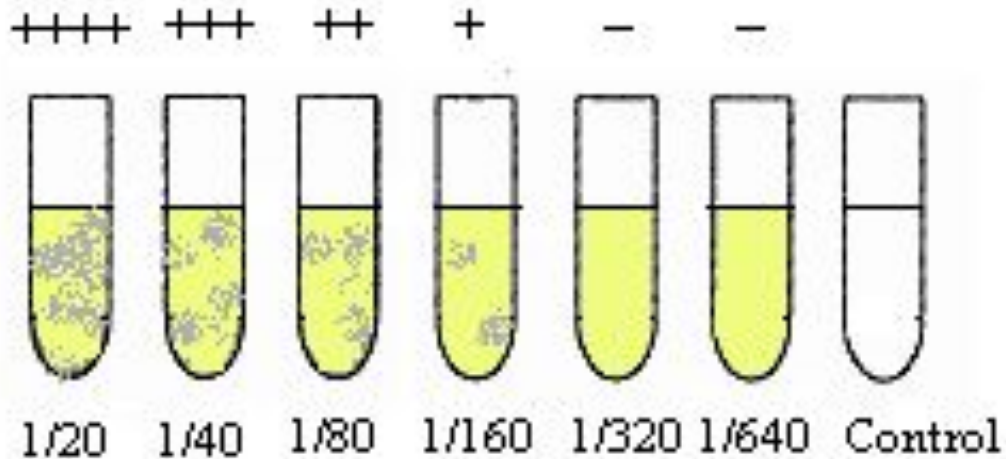


Slide agglutination test in the serological typing of bacteria



2, 4 – positive reaction;
1, 5 – negative reaction

Tube agglutination test for determining antibody titer



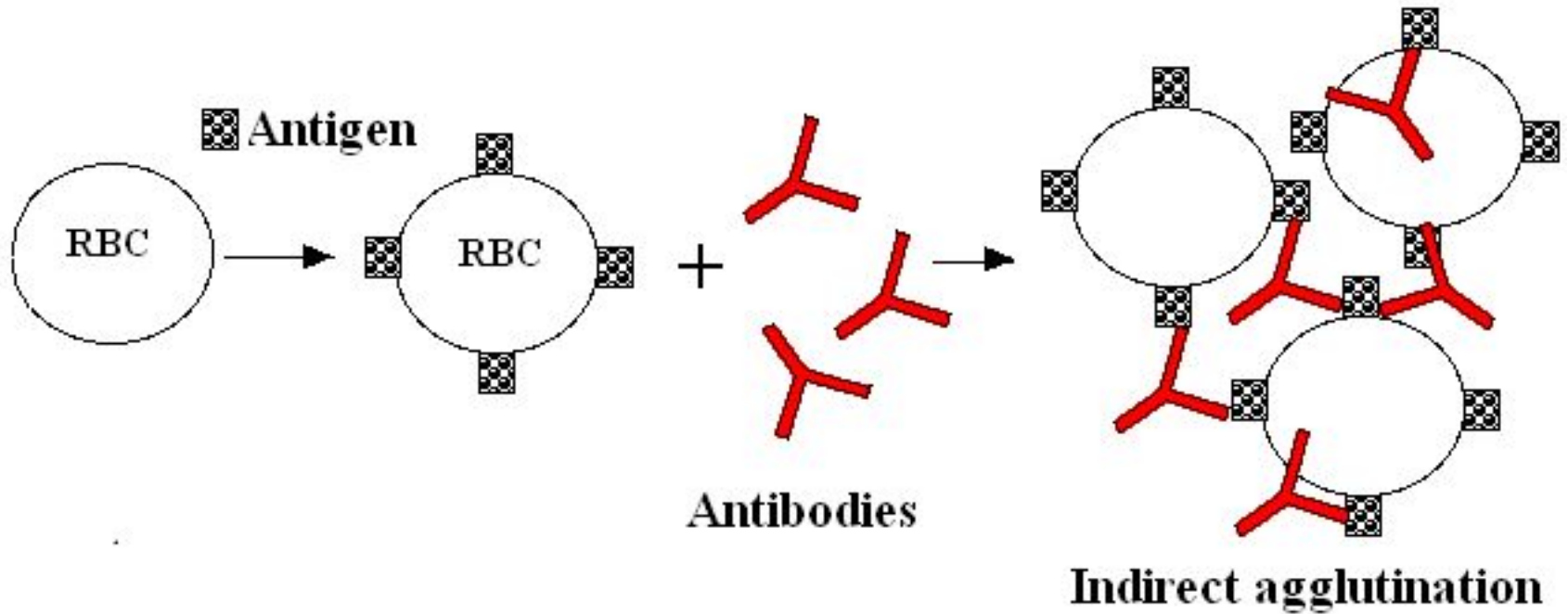
The titer is 160 since there is no agglutination in the next tube in the dilution series.

SCHEME OF TUBE AGGLUTINATION TEST

Ingredients	Tube						
	1	2	3	4	5	Control	
Physiological saline (ml)	1,0	1,0	1,0	1,0	1,0	1,0	1,0
Patient serum 1:50 (ml)	1,0	1,0	1,0	1,0	1,0	1,0	-
Diagnosticum – antigen (ml)	0,1	0,1	0,1	0,1	0,1	-	0,1
Serum dilution	1:100	1:200	1:400	1:800	1:1600	-	-

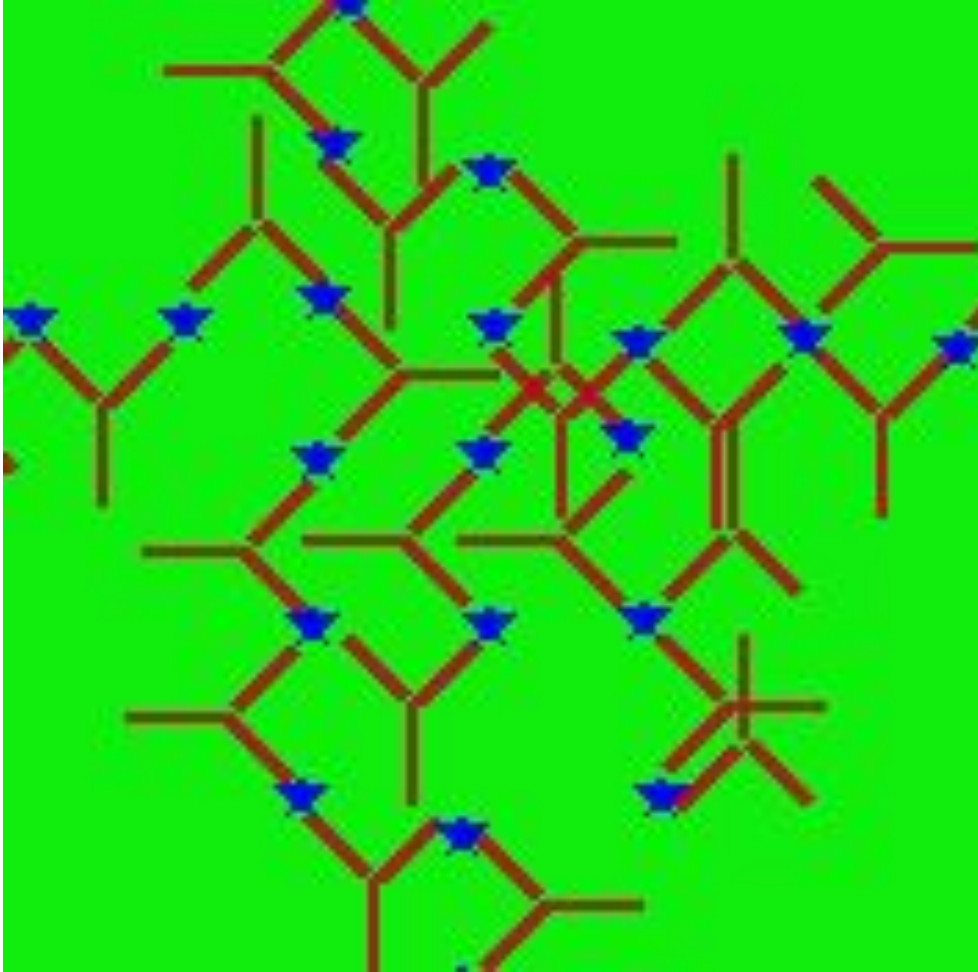


Passive or indirect hemagglutination



negative reaction
positive reaction

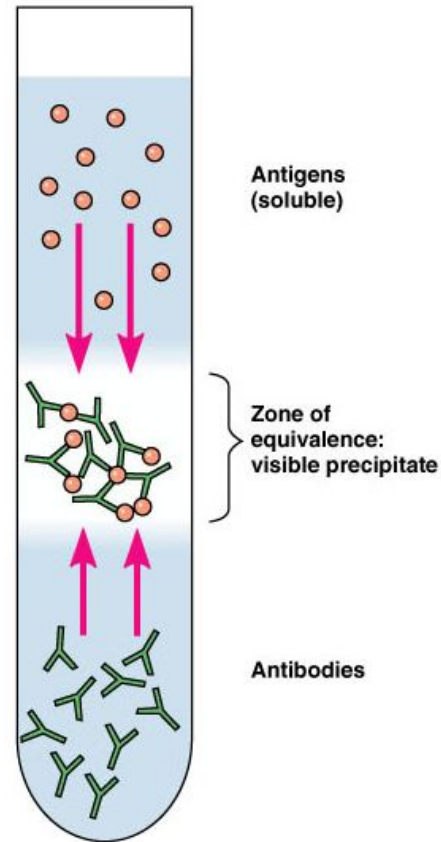
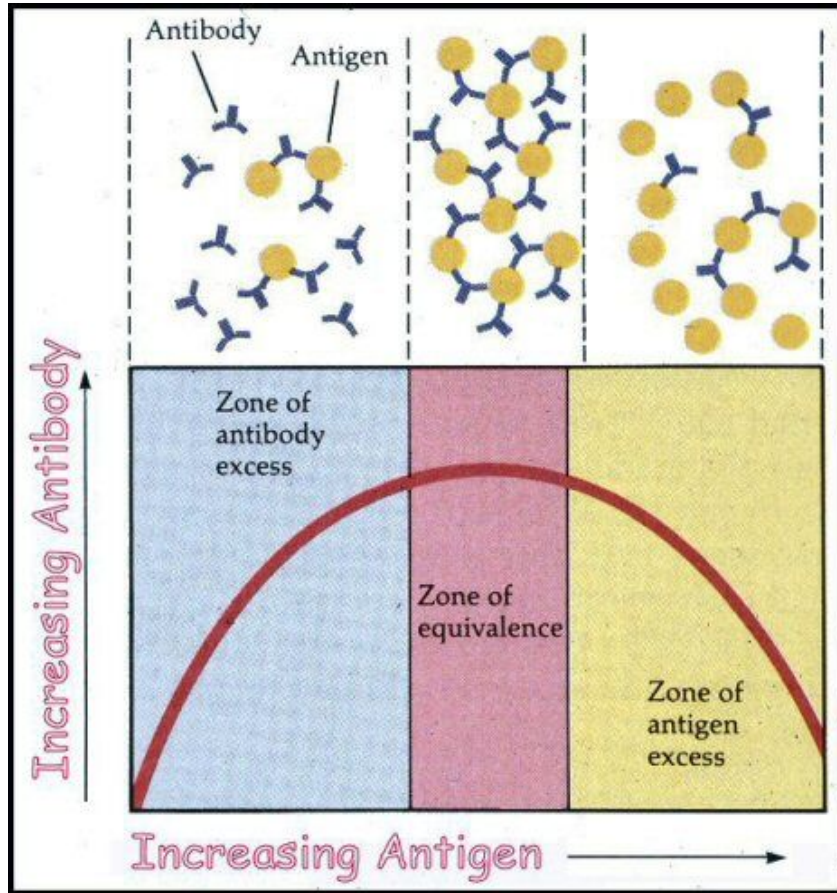
PRECIPITATION TEST



An example of antibodies clumping antigens. The interaction of antibodies, with their dual binding arms reacts with antigen (the "blue stars") to produce large aggregates that result in agglutination.

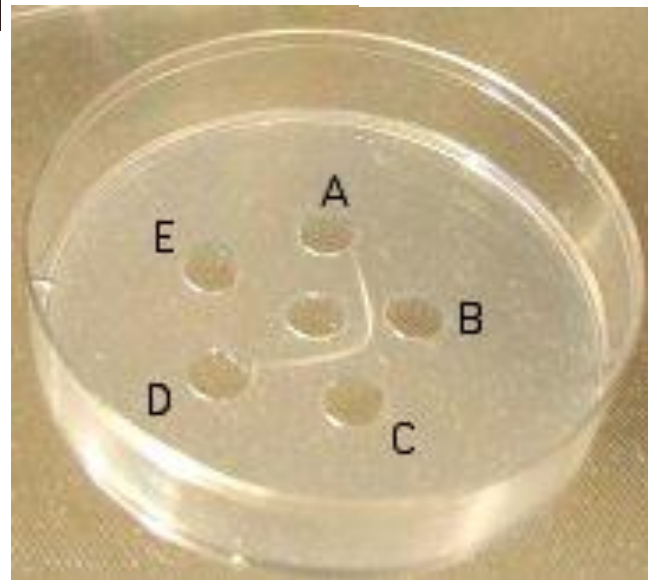
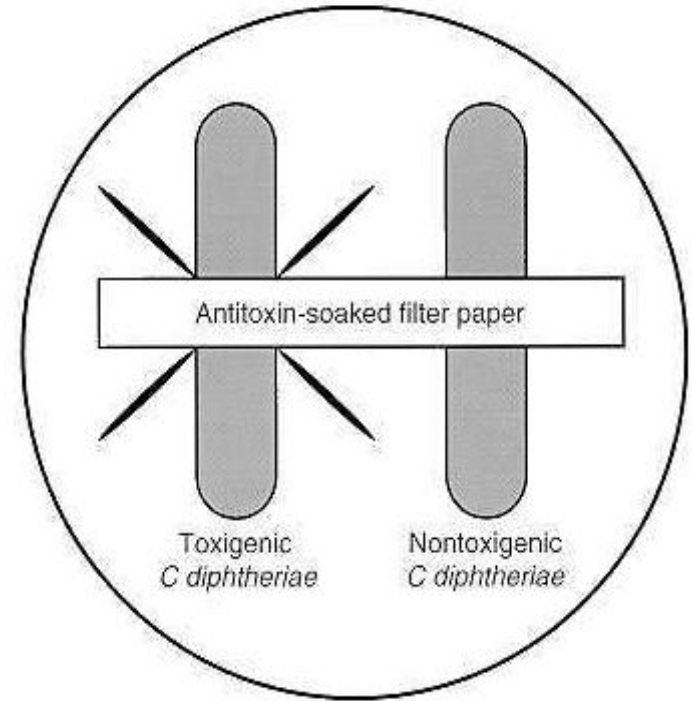
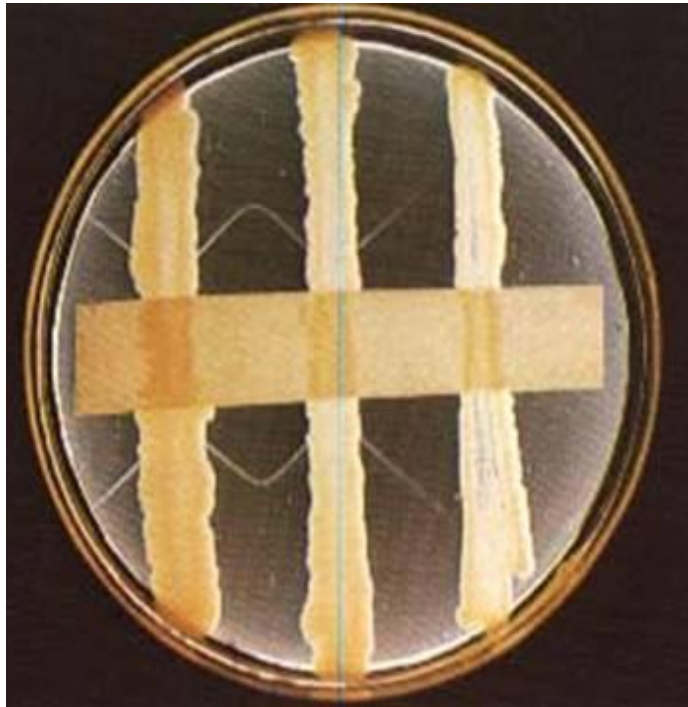
Precipitation in solution.

Ring precipitation test



The precise "Zone of Equivalence"

Double immunodiffusion (Ouchterlony test)



Immunolectrophoresis

