

Immune System

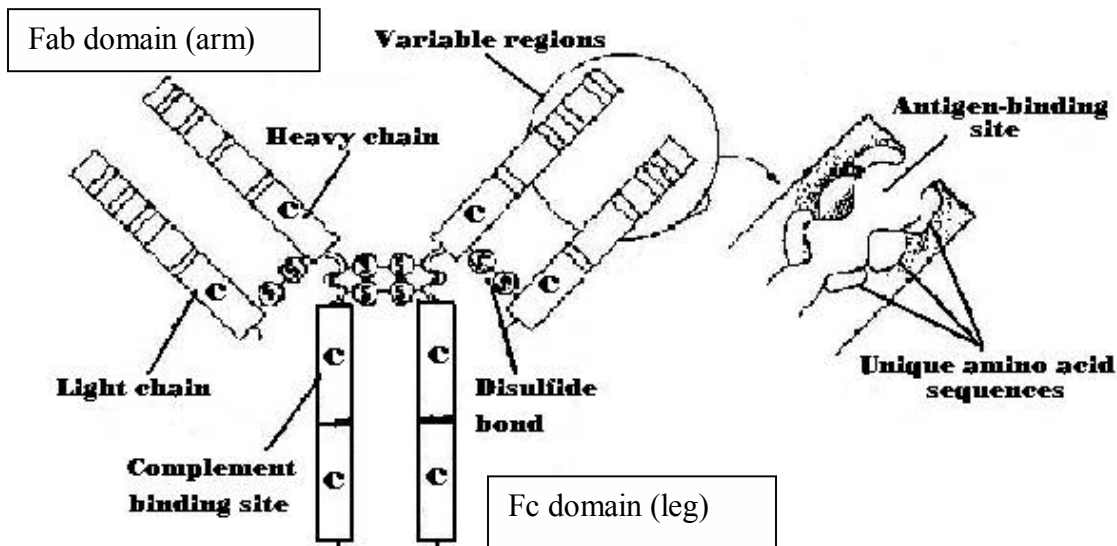
I.
II.
III.

Antibodies; are protein produces by B cells and plasma cells

- A. B cells incorporate antibodies into their plasma membrane as antigen receptors
- B. Plasma cells secrete these proteins into the blood or other bodily fluids to serve as molecular arsenal in the body's war against invading pathogens.
- C. Immune system produces million of different antibodies and 1 antibody interacts with only 1 antigenic structure.

D. Structures of Immunoglobulins (antibodies) are globular proteins.

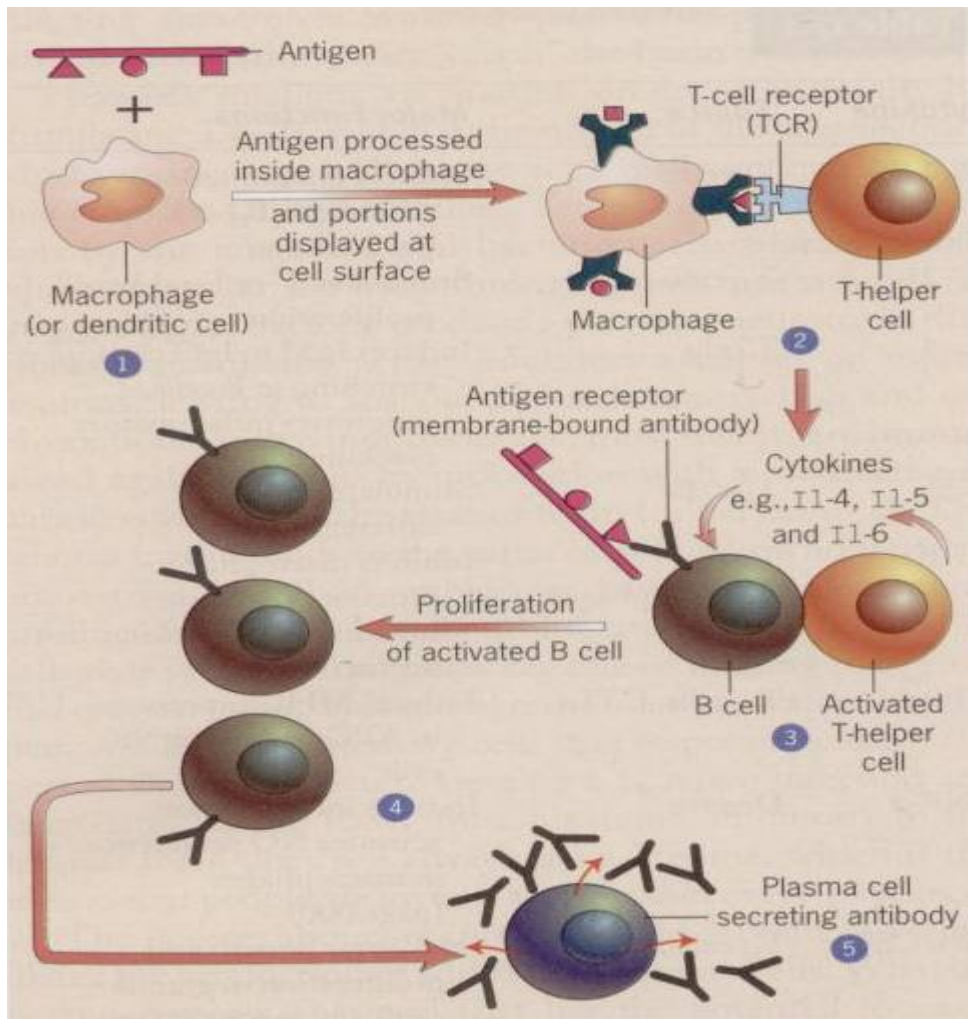
- 1. Made up of light and heavy chain that is link together by disulfide bond, arranging in such a way to form a Y-shaped molecule.
- 2. divided into fragment
 - 1. 2 Fab domain (arm) containing antigen binding sites
 - a. variable (V): region at the N terminal end of light and heavy chain. amino acid sequence of the variable region varies from 1 immunoglobulin to another
 - b. Constant portion (C): constant sequence of amino acid
 - c. Hypervariable: regions allow for great diversity of antibody specificity.
 - d. One antibody binds 2 identical antigens at the variable regions of the arm = bivalent
 - 2. 1 Fc domain (leg): effectors site
 - a. bind antibodies to membrane
 - b. Specific to macrophage receptors.



E. Types of antigen

- 1. All immunoglobulins (Ig)
 - 1. IgA, IgD, IgE (longer life), IgG (longer life), & IgM (short ½ life)
- 2. The different kinds of Ig are due to the kinds of heavy chain they have.

F. Function



1. Antibody displayed on B cell surface binds to antigen
Antigen taken up and processed
Fragment displayed on cell surface
2. T_H cell binds to one of the displayed fragment
T_H cell activated
3. activated T_H cell bind to the B cell with antigen receptor bind to soluble antigen
B- cell activation is stimulated by cytokines
4. B- cell activation induces proliferation and maturation of B call into plasma cell
5. secreted antibody binds antigen, clumping it
6. Phagocyte binds antibodies and destroys antigen.

G. Heterogeneity (ask)