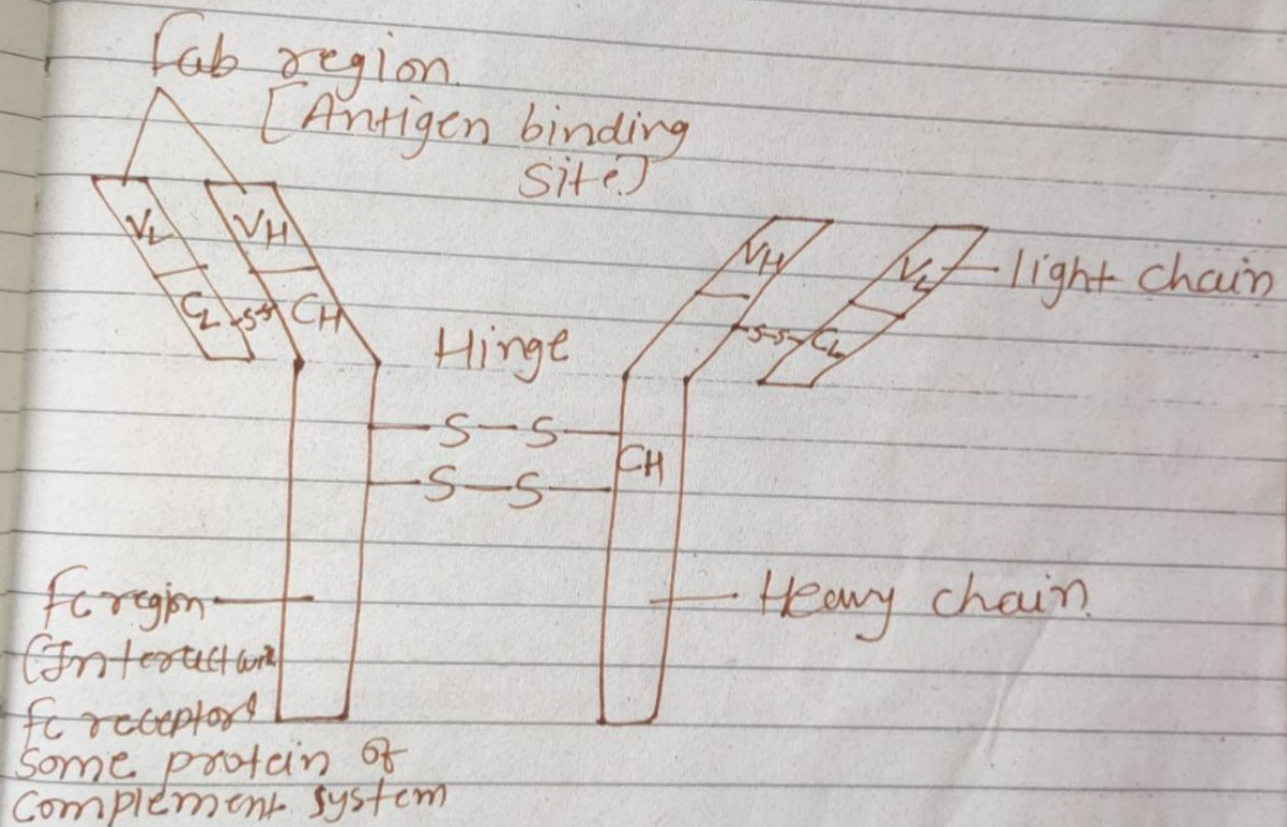


Immunoglobulin

- also called antibodies
 - glycoprotein
 - produced by plasma cells
 - participate in humoral immune response by acting against specific antigens.
- Structure :-

- Four polypeptide chain $\left\{ \begin{array}{l} 2 \text{ Heavy} \\ 2 \text{ light} \end{array} \right.$
- linked by disulfide bond.



→ Heavy chain - gamma γ
alpha α
mu μ
Delta δ
Epsilon ϵ

→ Light chain - kappa κ
lambda λ

- Single antibody molecule contain only one type of light chain & one type of heavy chain.

→ It has following region:

- Variable region - In both light & heavy chain
- Constant region - Same amino acid sequence
- Hinge region - provide flexibility & binding of antibody with antigen
- Fc region - only heavy chain
- Fab region - Variable region of both heavy & light chain
 - Has antigen binding site

→ Classification:

Based on heavy chain -

IgG → cross placenta

- Responsible for Rh isoimmunization
- Enable 2° immune response
- Complement activation
- Agglutination

IgM → Enable 1° immune response

- complement activation
- agglutination

IgA → Secretory antibodies
Agglutination

IgD → Facilitate immune response from B cell

IgE → Mediate allergy & anaphylaxis
- Cause mast cell degranulation, release of histamine

→ Immunoglobulin gene:

gene of heavy chain - chromosome 14
K light chain - chromosome 2
lambda light chain - chromosome 22

- Light chain gene segment

↓
V - variable region
J - joining region
C - constant region

- Heavy chain gene segment

↓
V - variable region
D - Diversity region ✓
J - joining region
C - constant region

→ Immunoglobulin gene rearrangement

- of variable region occurs in heavy chain followed by light chain.

- cause formation of immunocompetent B cell which can produce antibodies