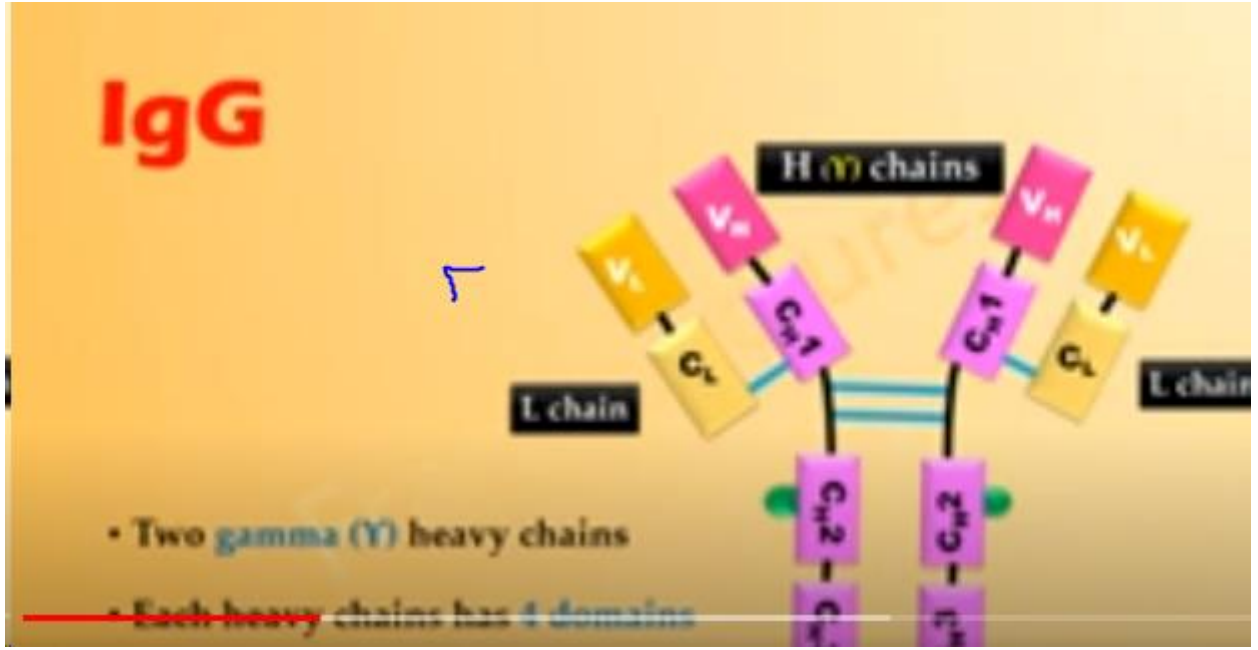

Antibody Classes
Play (k)

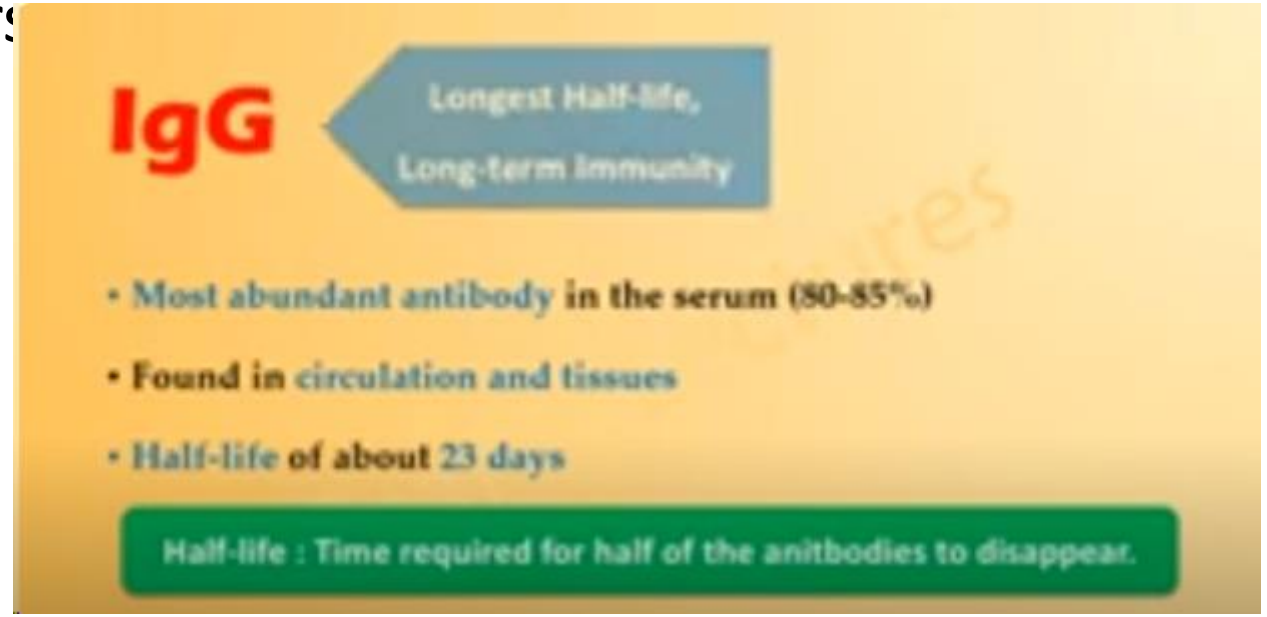
IgG

- IgG structure



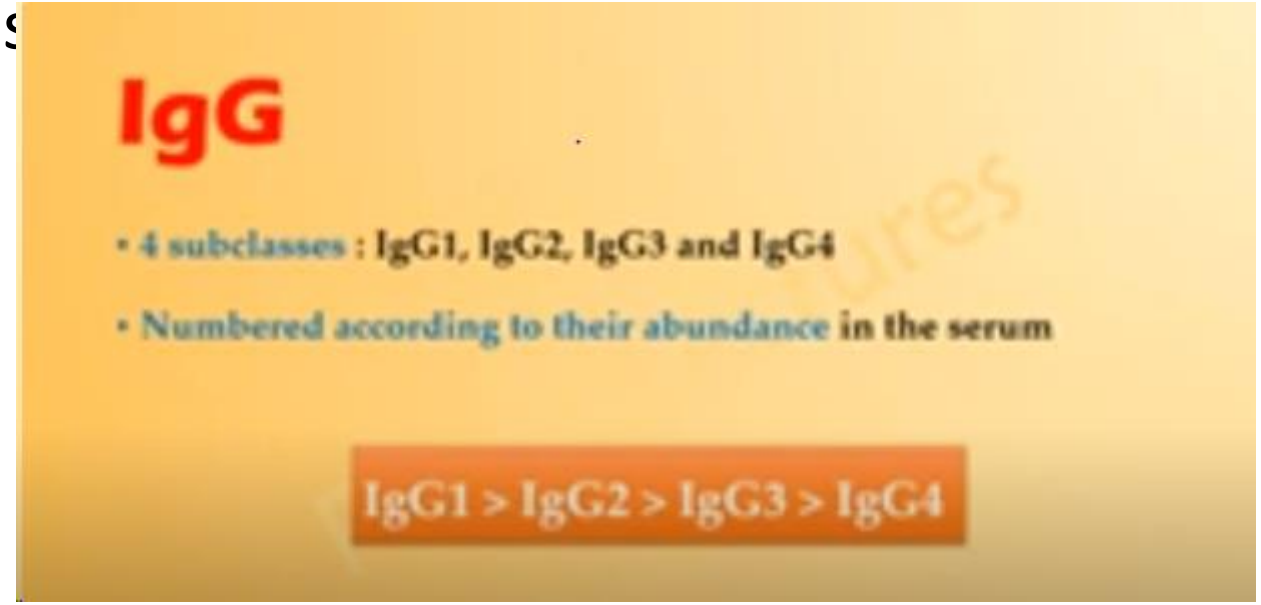
IgG

- IgG characters



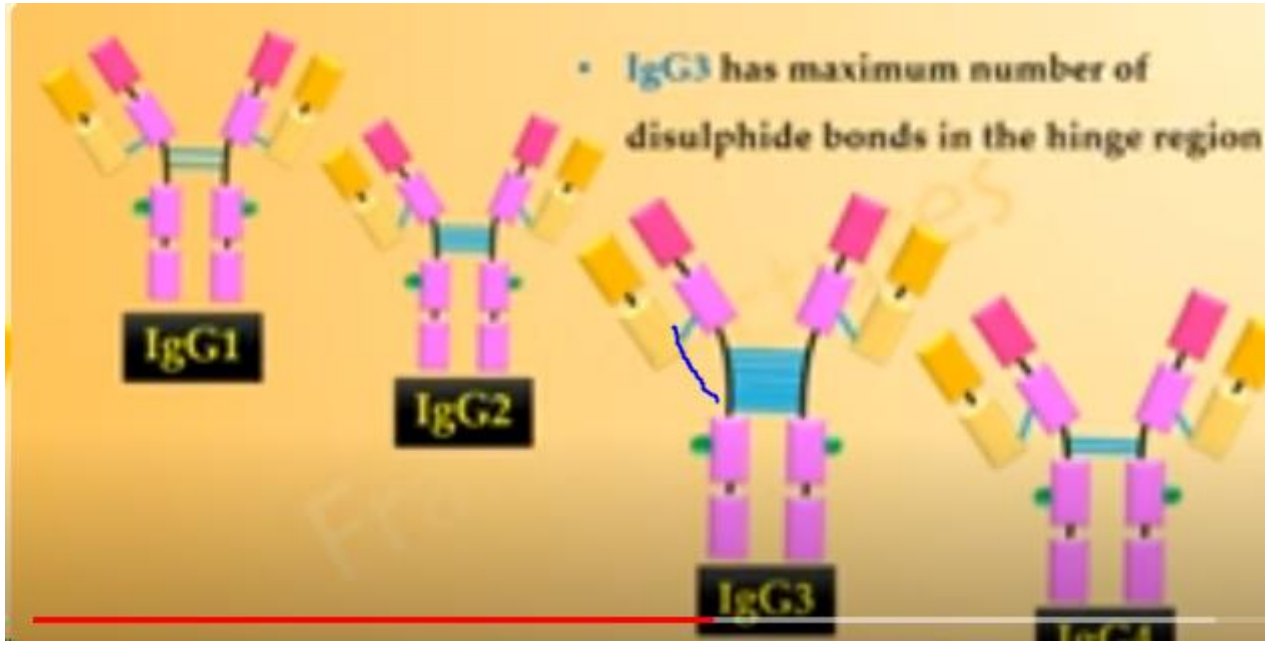
IgG

- IgG subtypes



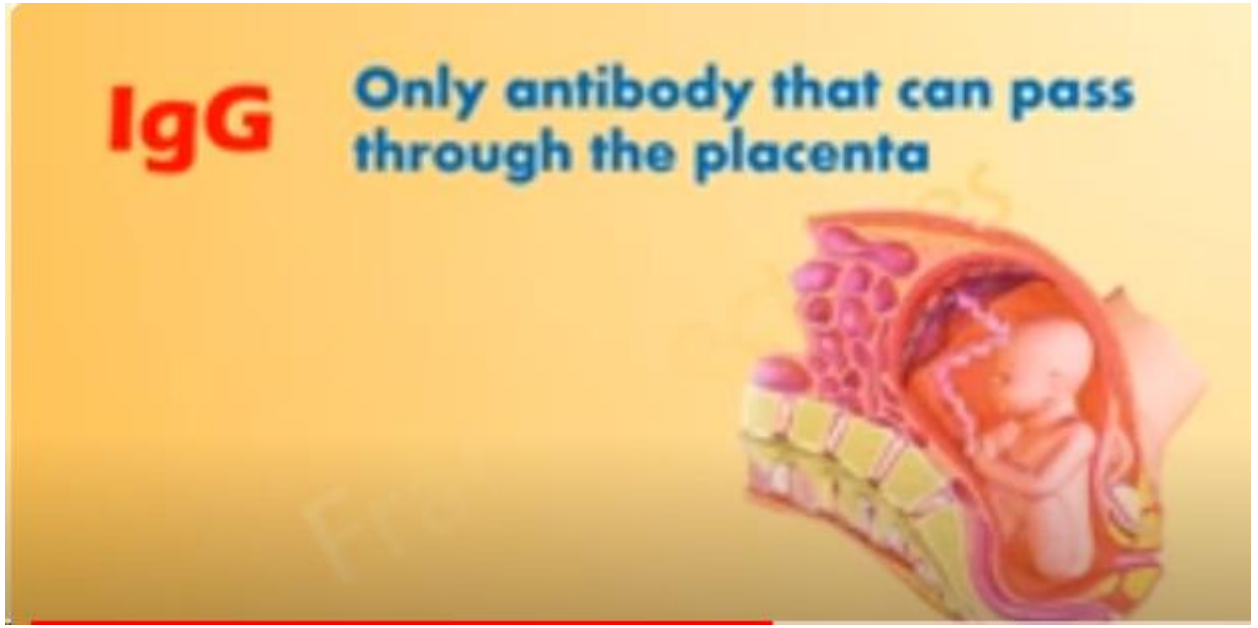
IgG

- IgG subtypes



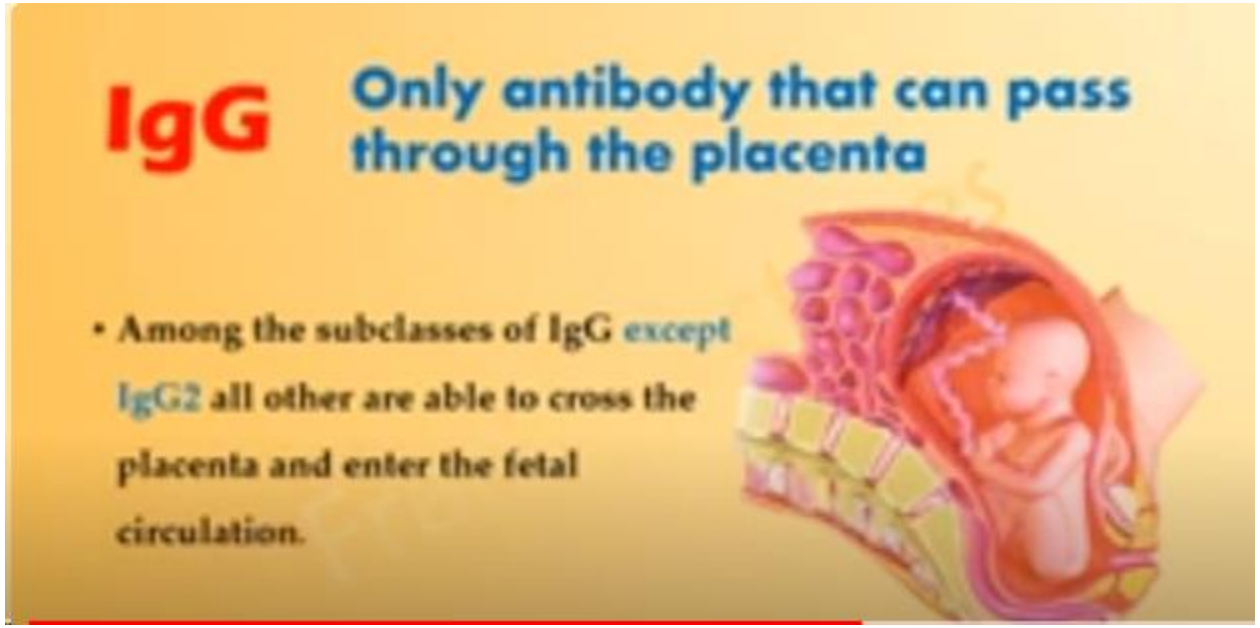
IgG

- IgG function



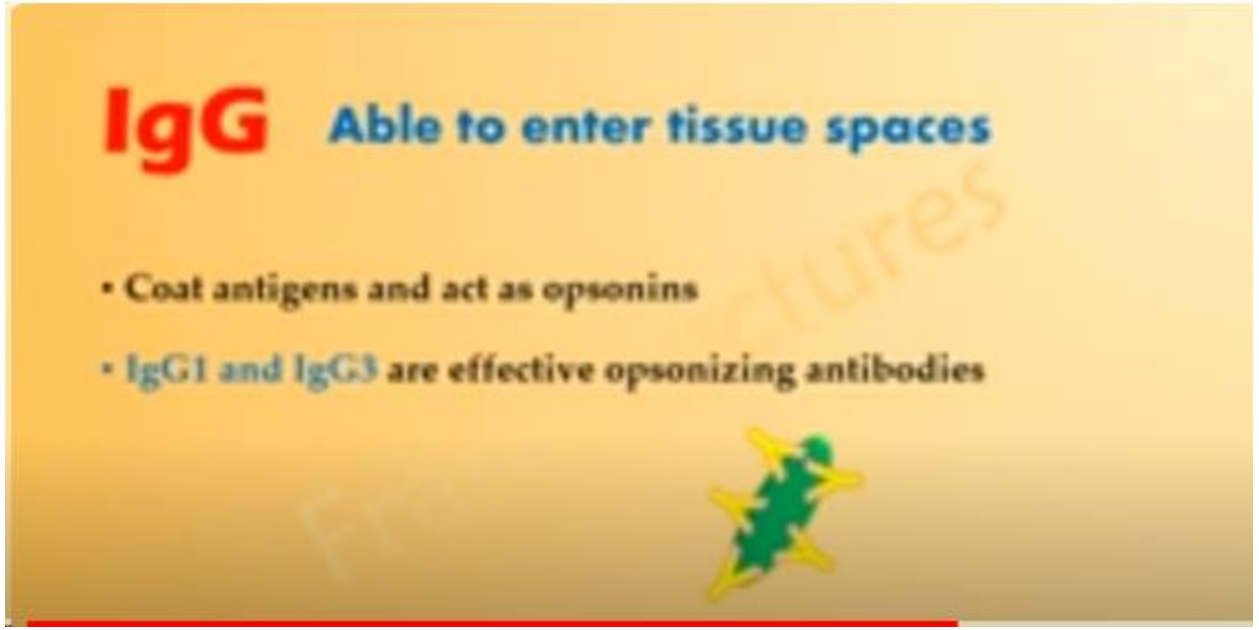
IgG

- IgG function



IgG

- IgG function



IgG

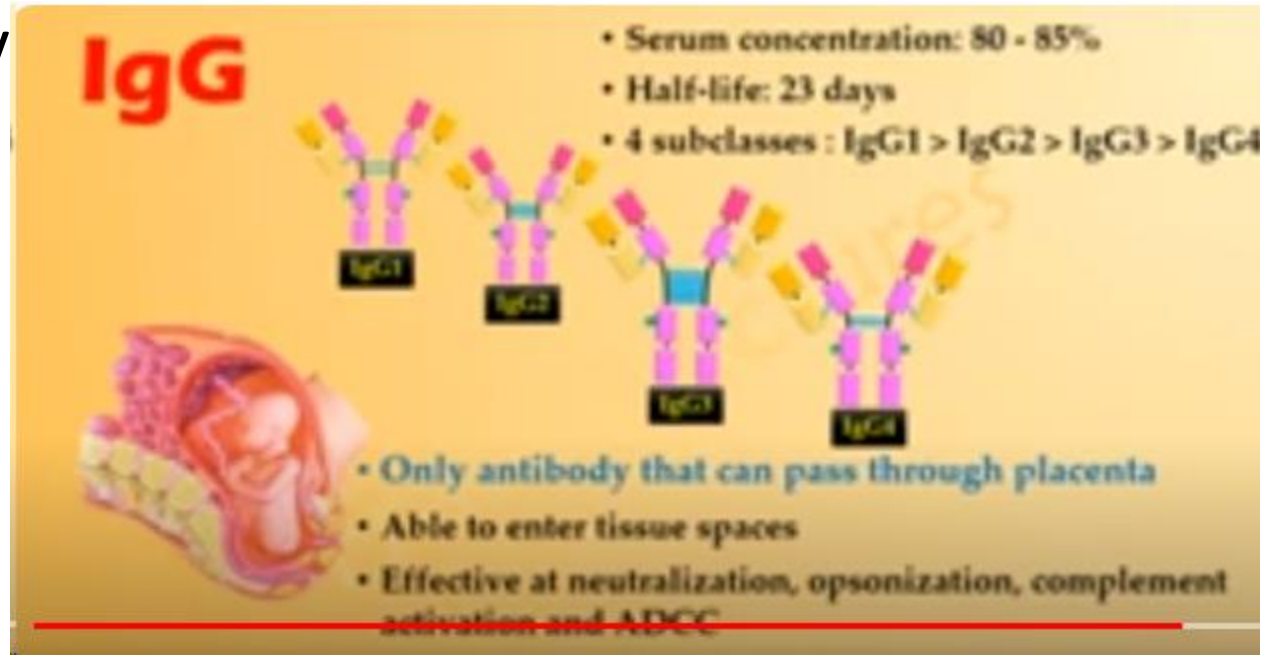
- IgG function

IgG

- IgG function

IgG

- IgG-Summary

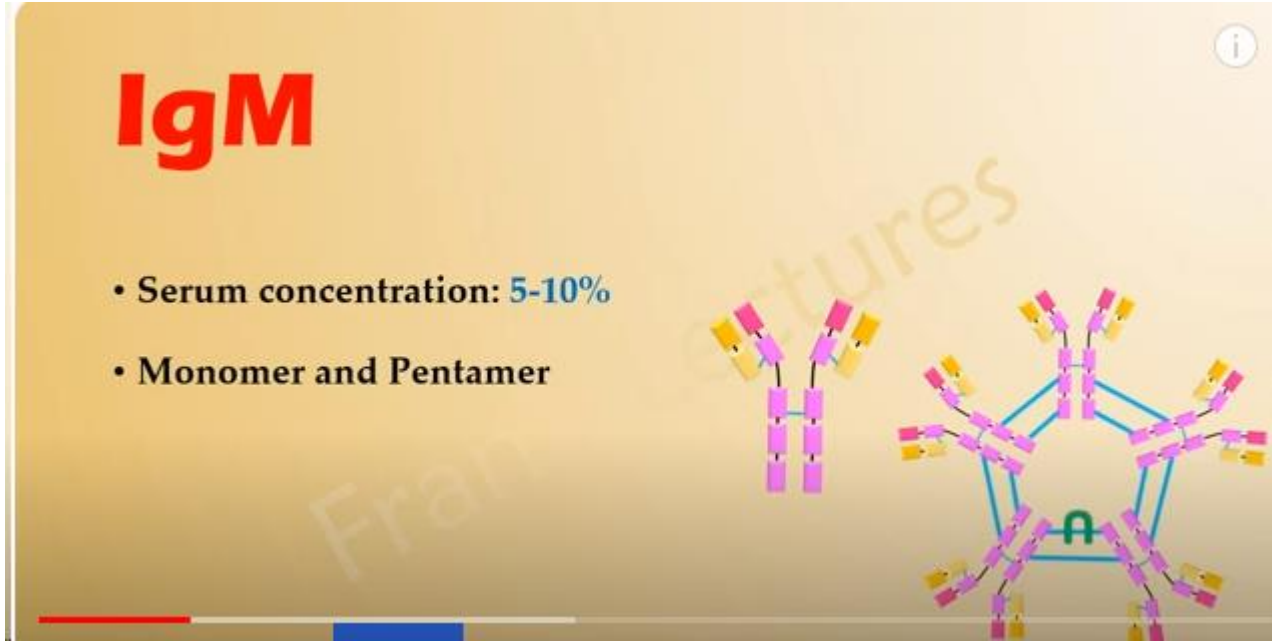


IgM

- IgM

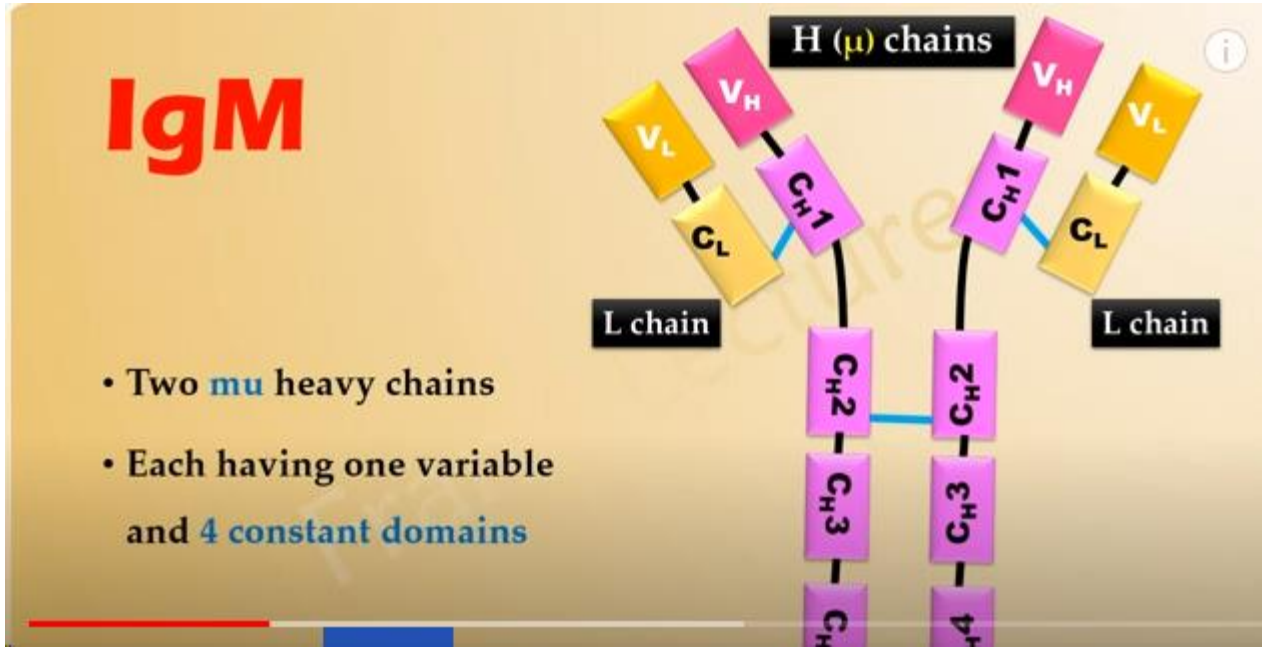
IgM

- IgM



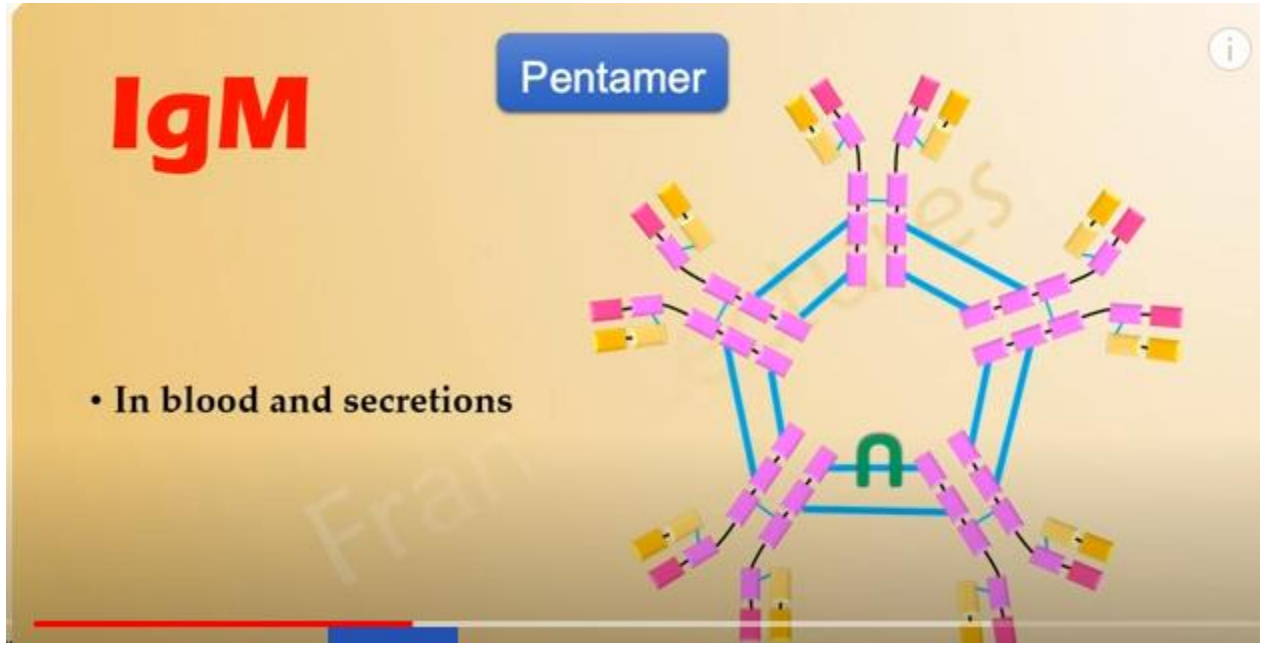
IgM

- IgM


IgM
H (μ) chains
V_H
V_L
C_H1
C_L
L chain
C_H2
C_H3
• Two mu heavy chains
• Each having one variable and 4 constant domains

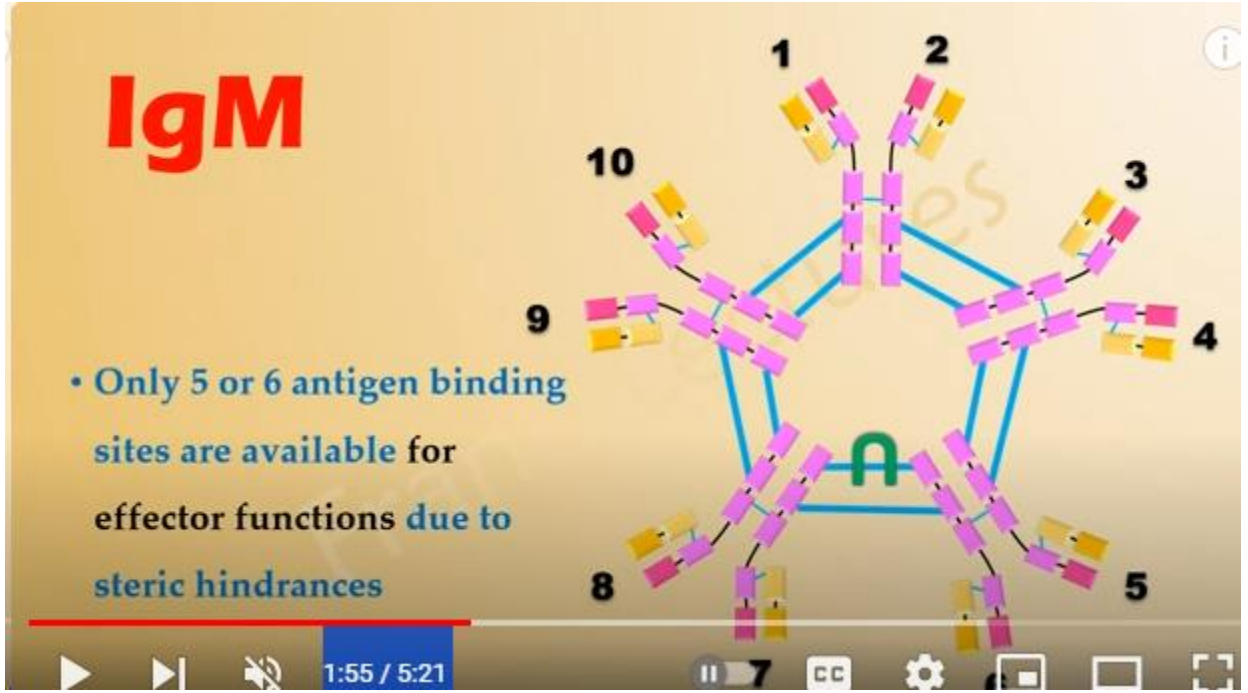
IgM

- IgM



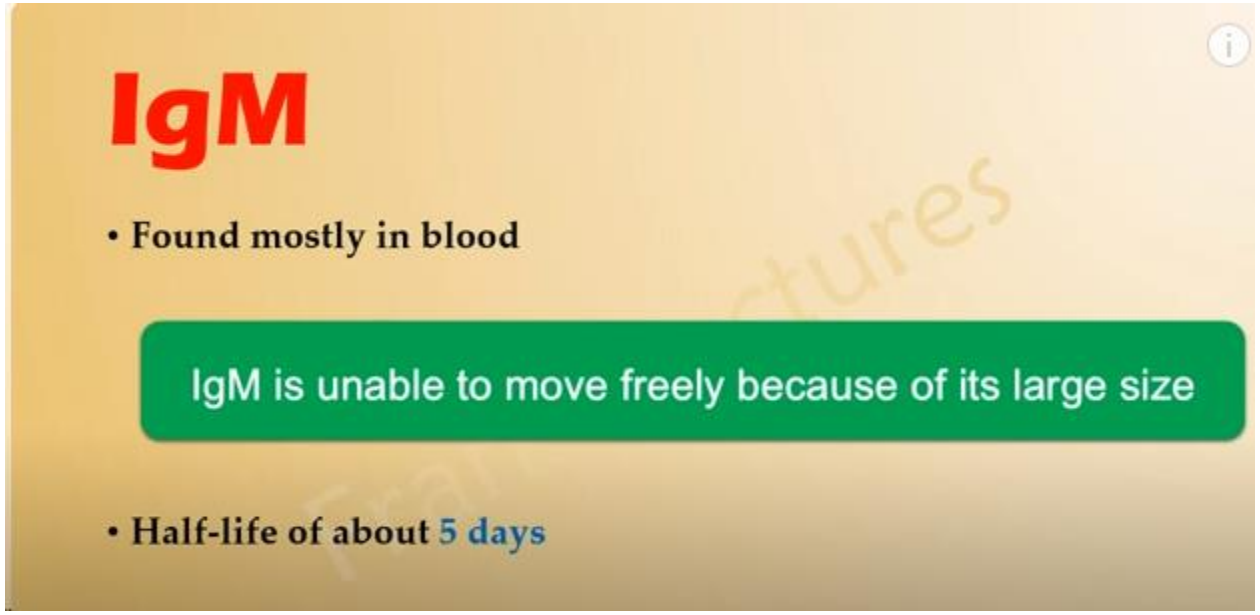
IgM

- IgM


IgM
• Only 5 or 6 antigen binding sites are available for effector functions due to steric hindrances
1
2
3
4
5
7
8
9
10
1:55 / 5:21

IgM

- IgM


IgM
• Found mostly in blood
IgM is unable to move freely because of its large size
• Half-life of about 5 days

IgM

- IgM


IgM
First antibody that is formed by the fetus
First antibody to appear during an immune response

IgM

- IgM


IgM Complement Activation
• Most efficient antibody that activates complement
• Classical complement pathway

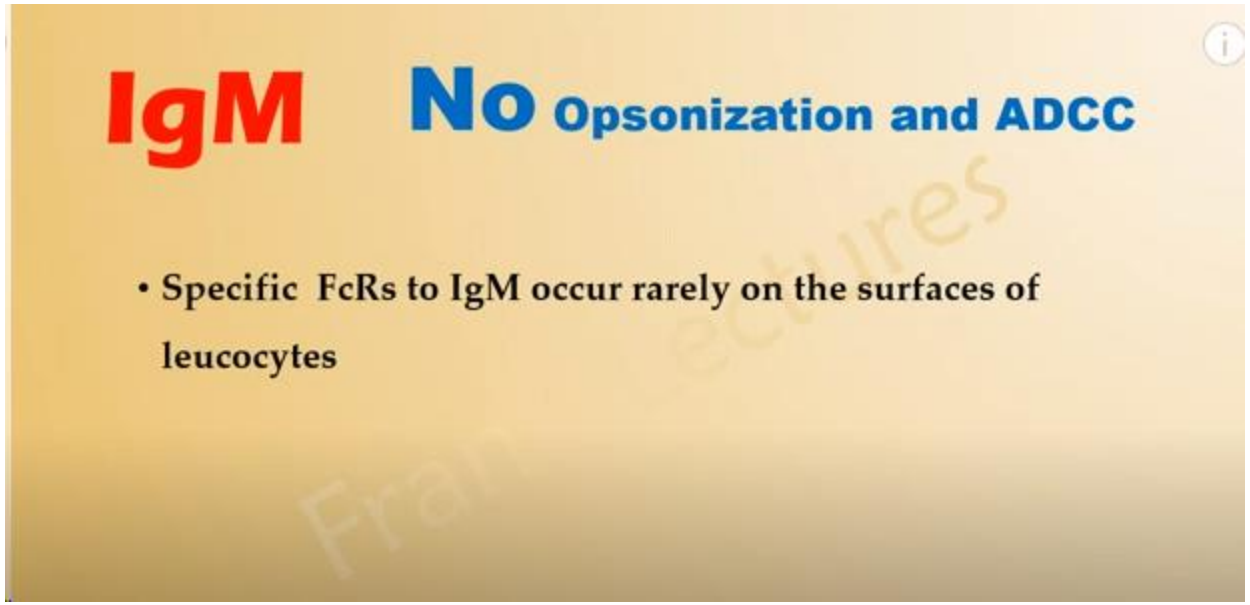
IgM

- IgM


IgM
Neutralization
• Important defense against bacterial diseases
• Very effective neutralizers

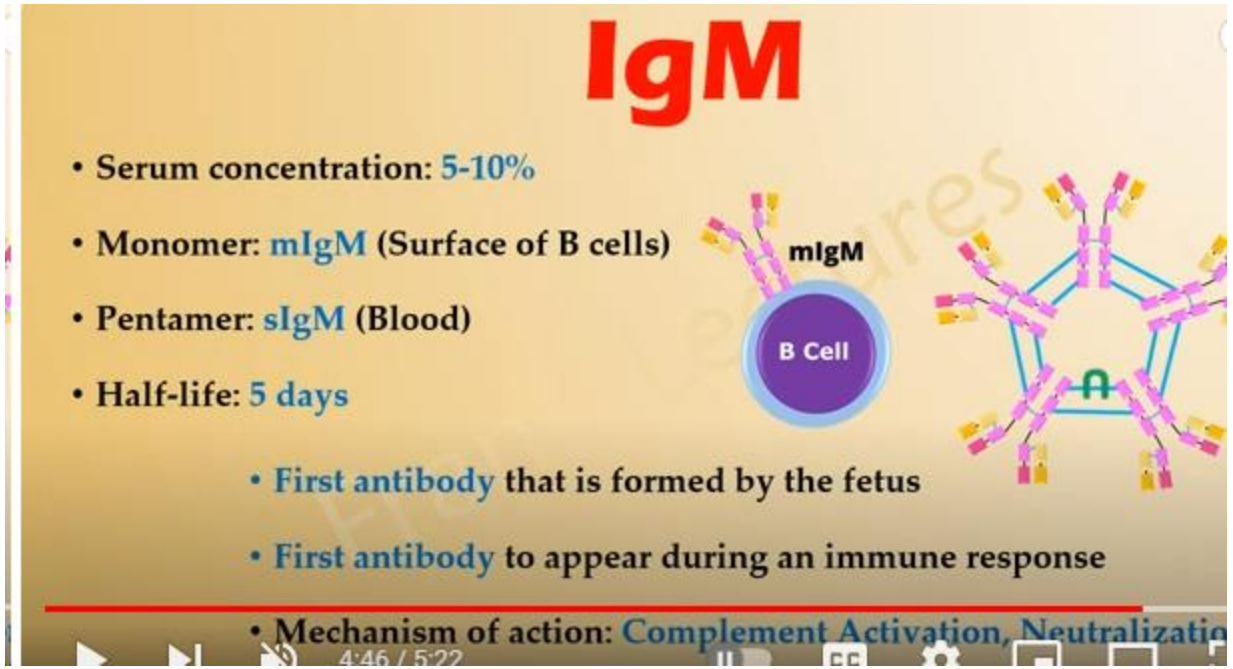
IgM

- IgM


IgM
No Opsonization and ADCC
• Specific FcRs to IgM occur rarely on the surfaces of leucocytes

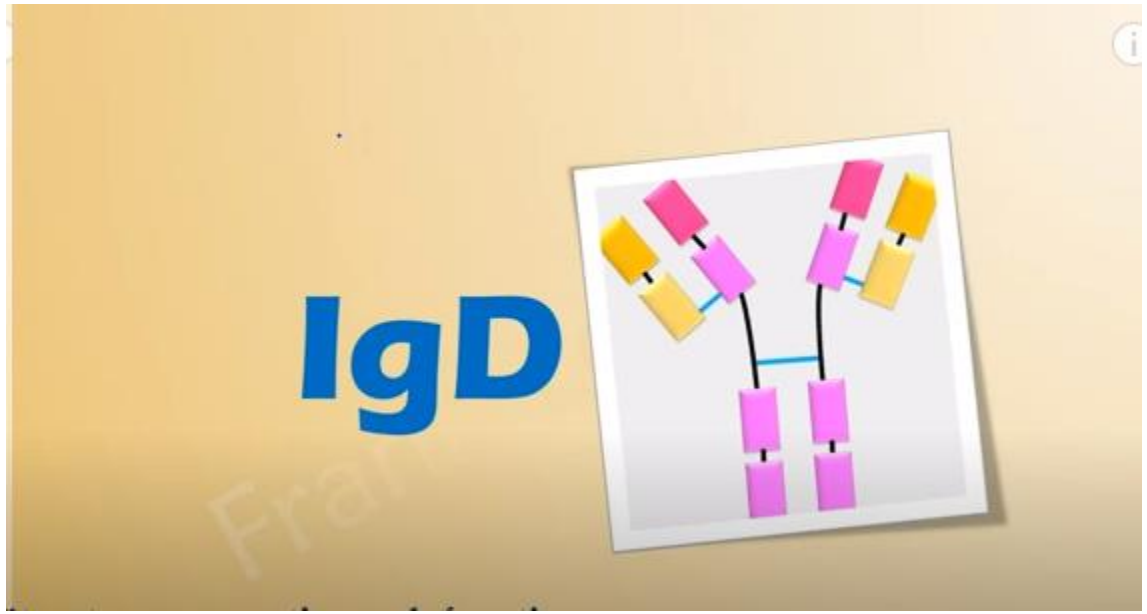
IgM

- IgM


IgM
• Serum concentration: 5-10%
• Monomer: mIgM (Surface of B cells)
• Pentamer: sIgM (Blood)
• Half-life: 5 days
mIgM
B Cell
• First antibody that is formed by the fetus
• First antibody to appear during an immune response
• Mechanism of action: Complement Activation, Neutralizatio
4:46 / 5:22

IgD

- IgD



IgD

- IgD structure

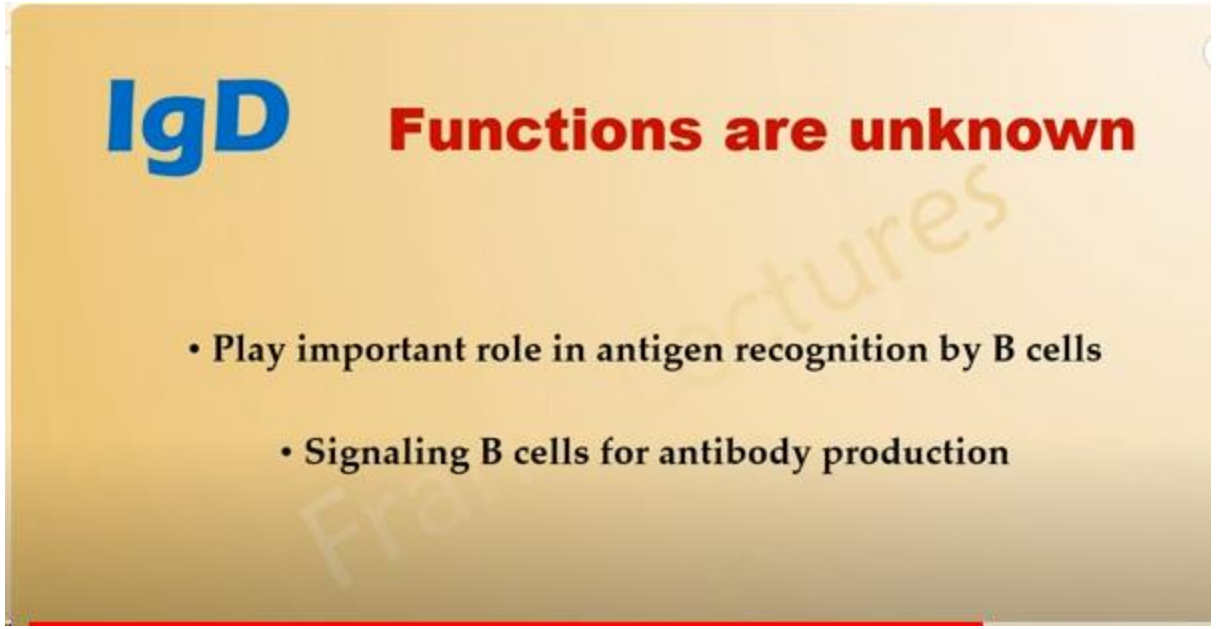
IgD

- IgD character

IgD

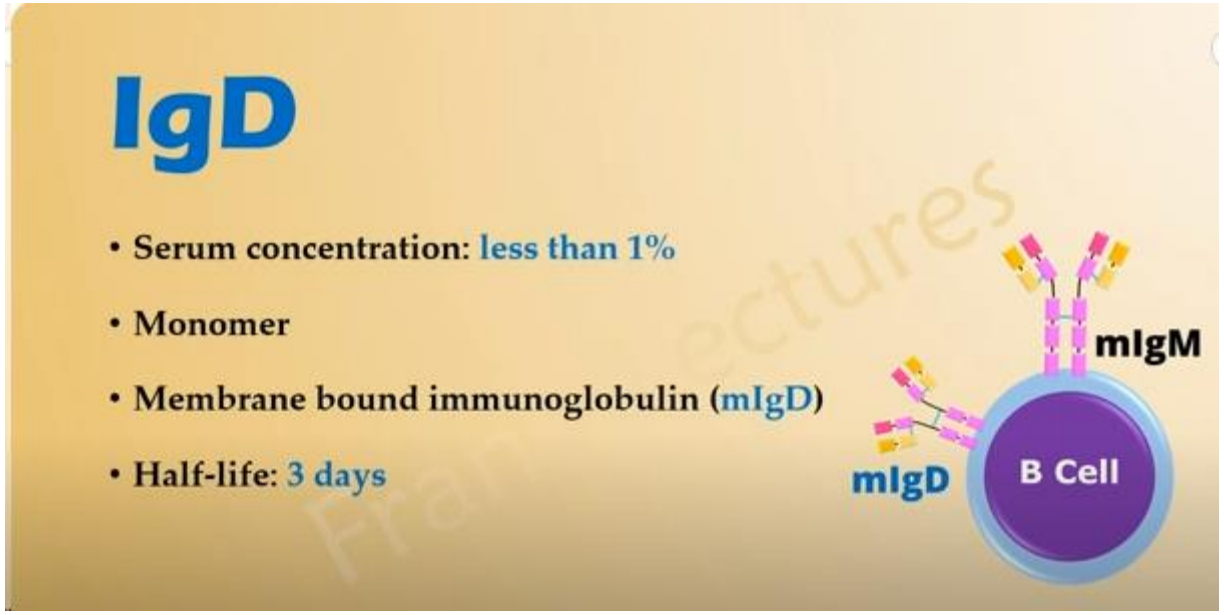
- IgD characters

- IgD function



IgD

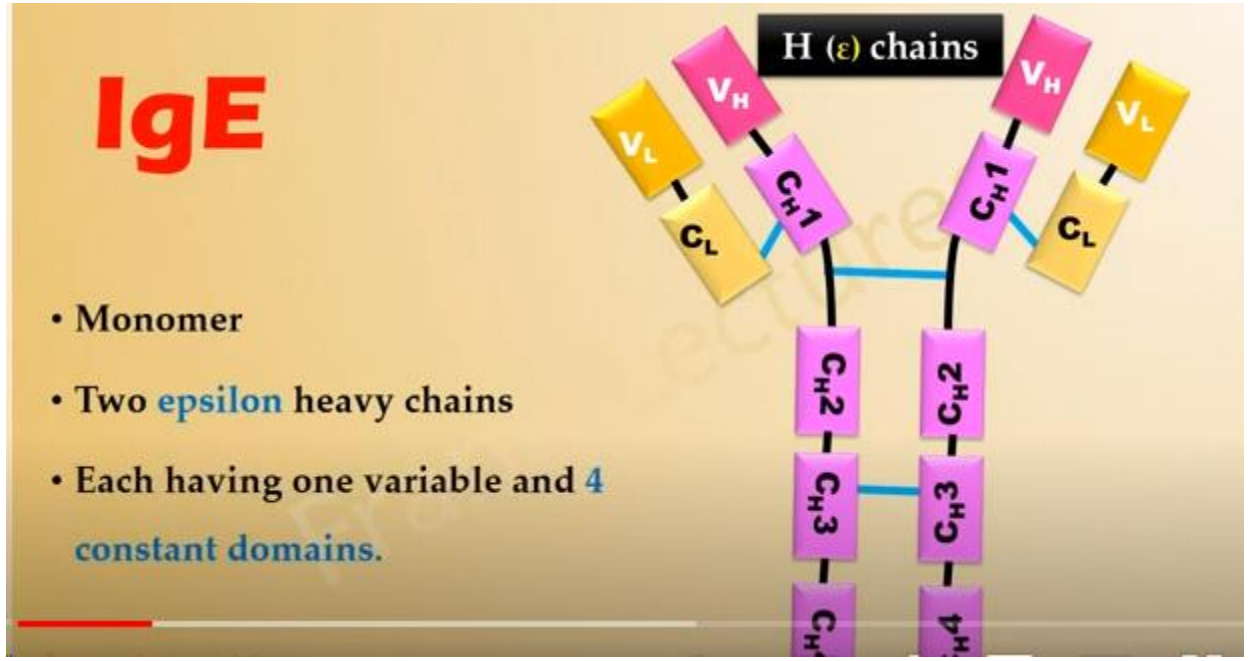
- IgD-summary



IgE

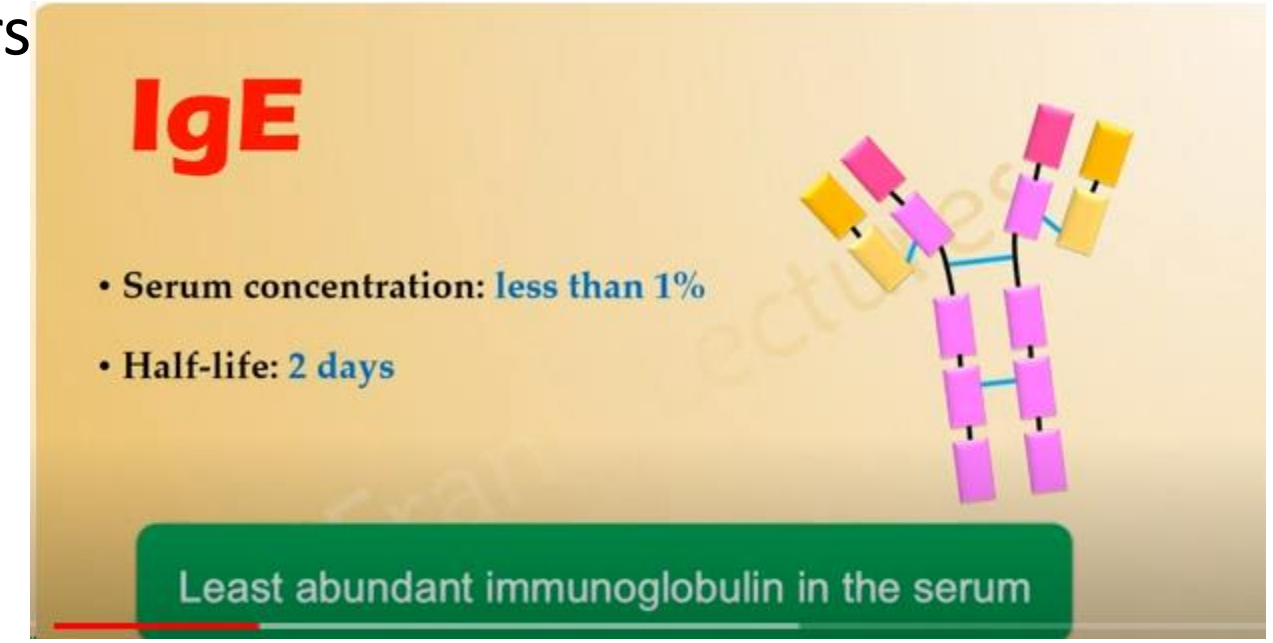
IgE

- IgE structure



IgE

- IgE characters



IgE

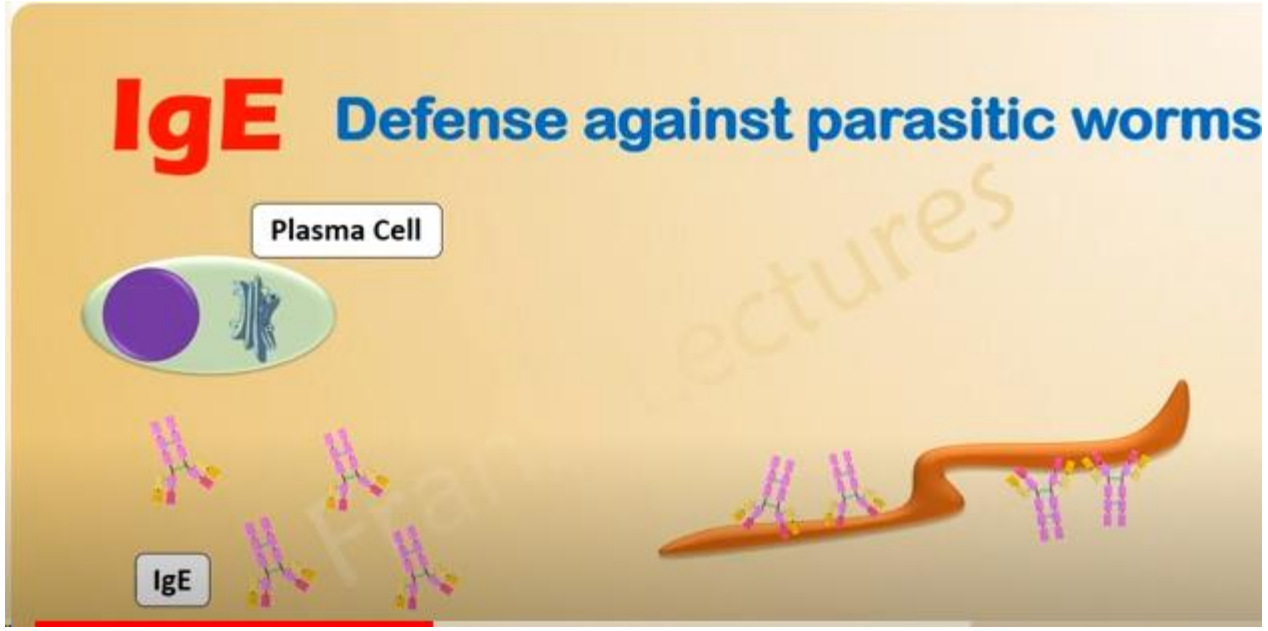
- IgE functions

IgE

- IgE function

IgE

- Function



IgE

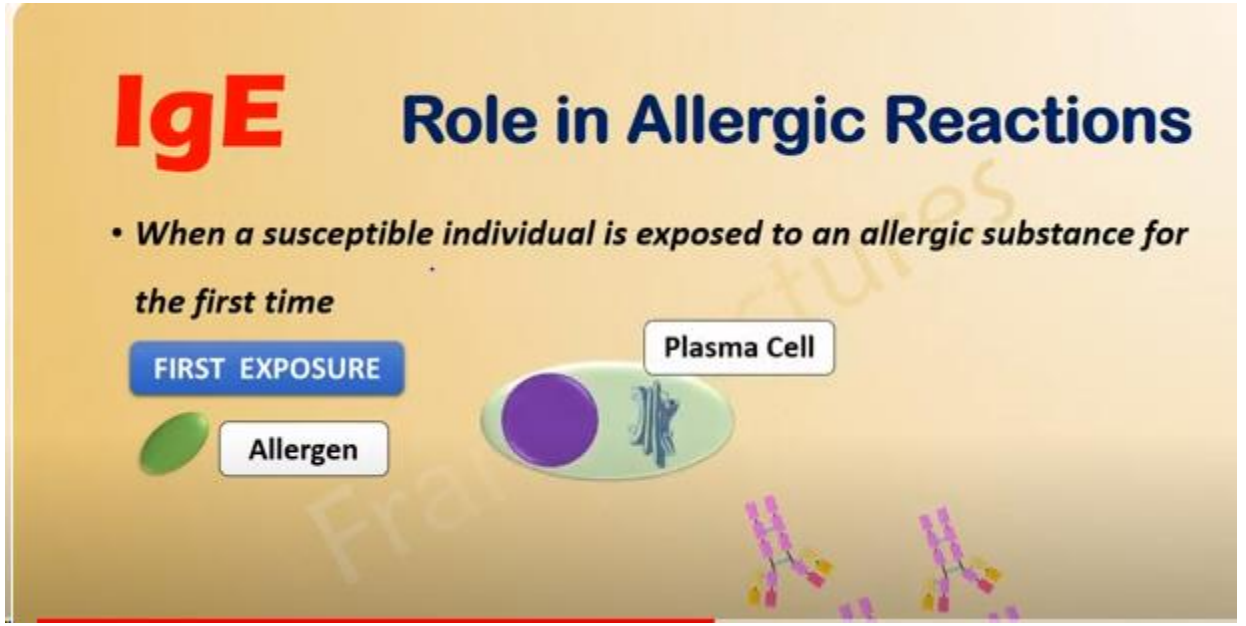
- IgE function

IgE

- IgE function

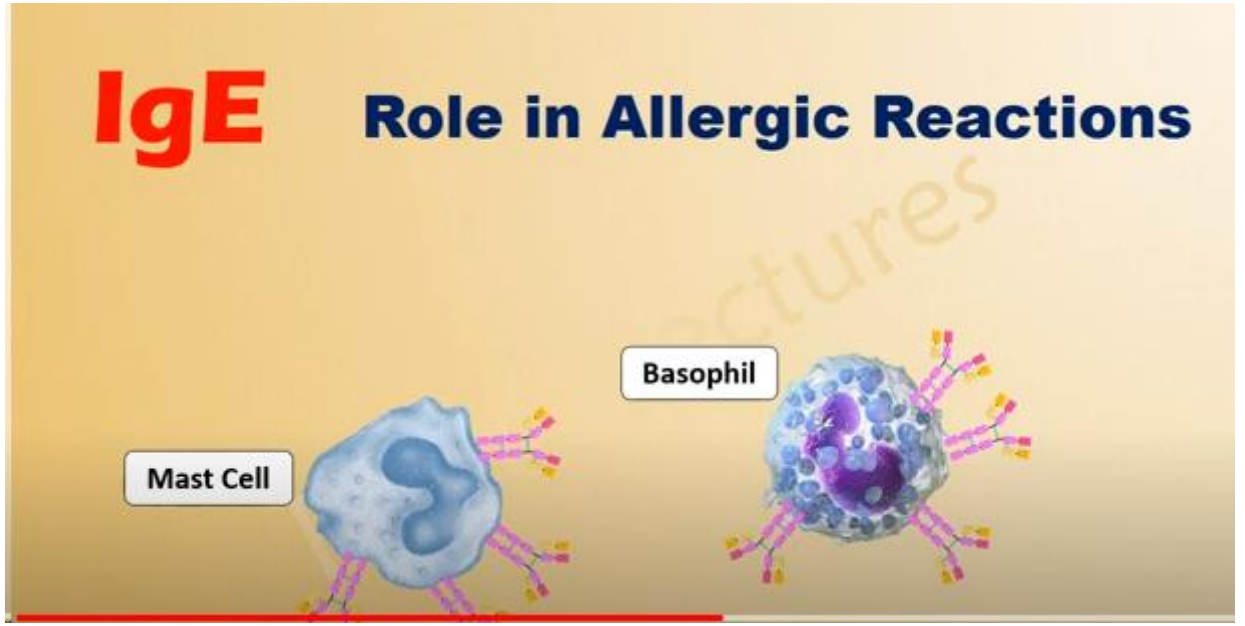
IgE

- IgE function



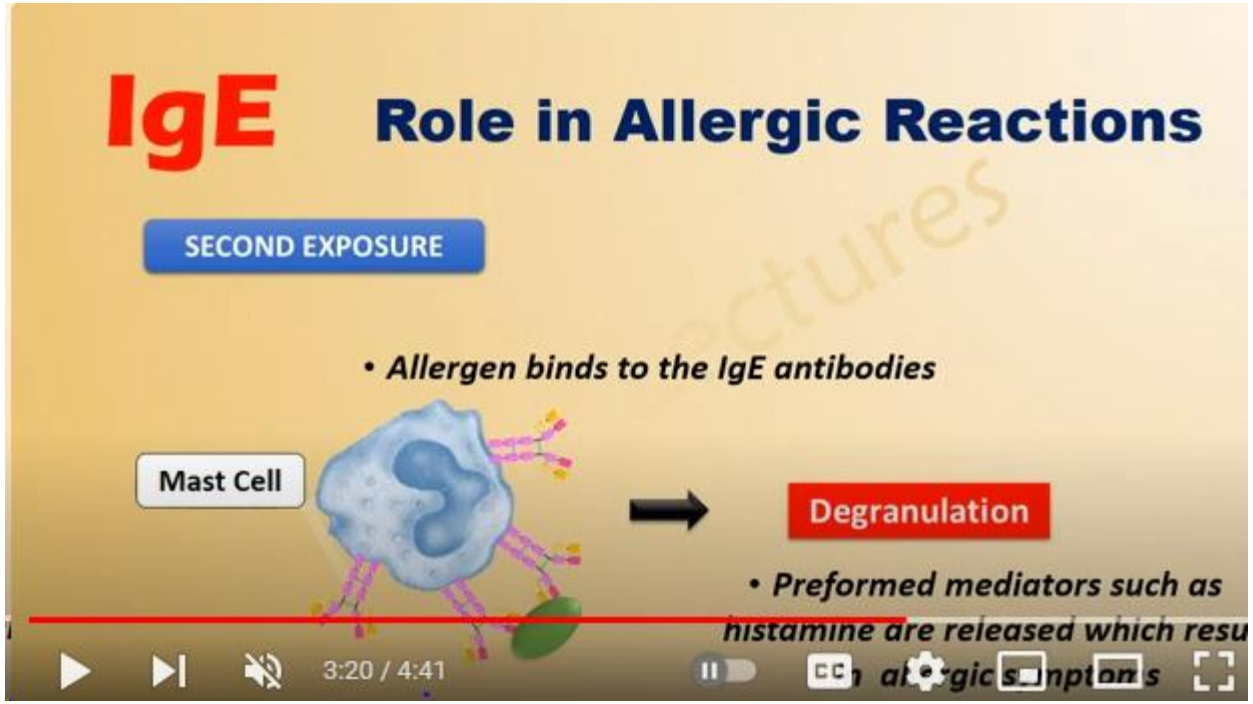
IgE

- IgE function



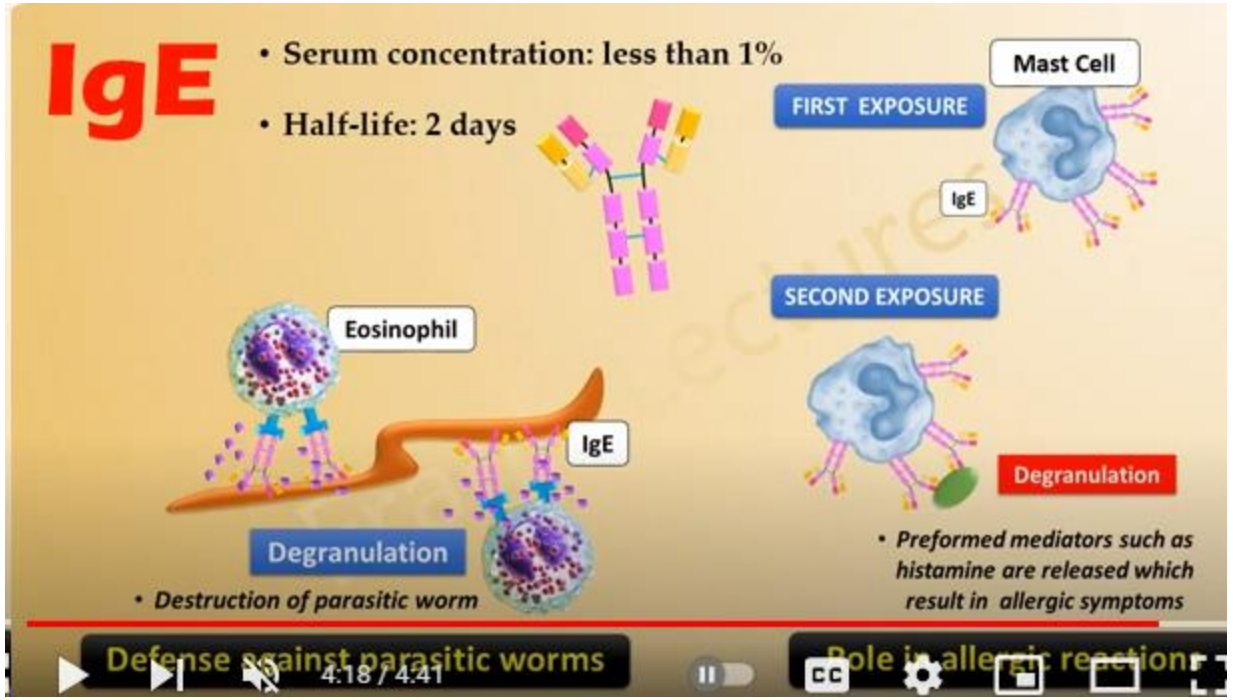
IgE

- IgE function



IgE

- IgE-summary



IgA

IgA

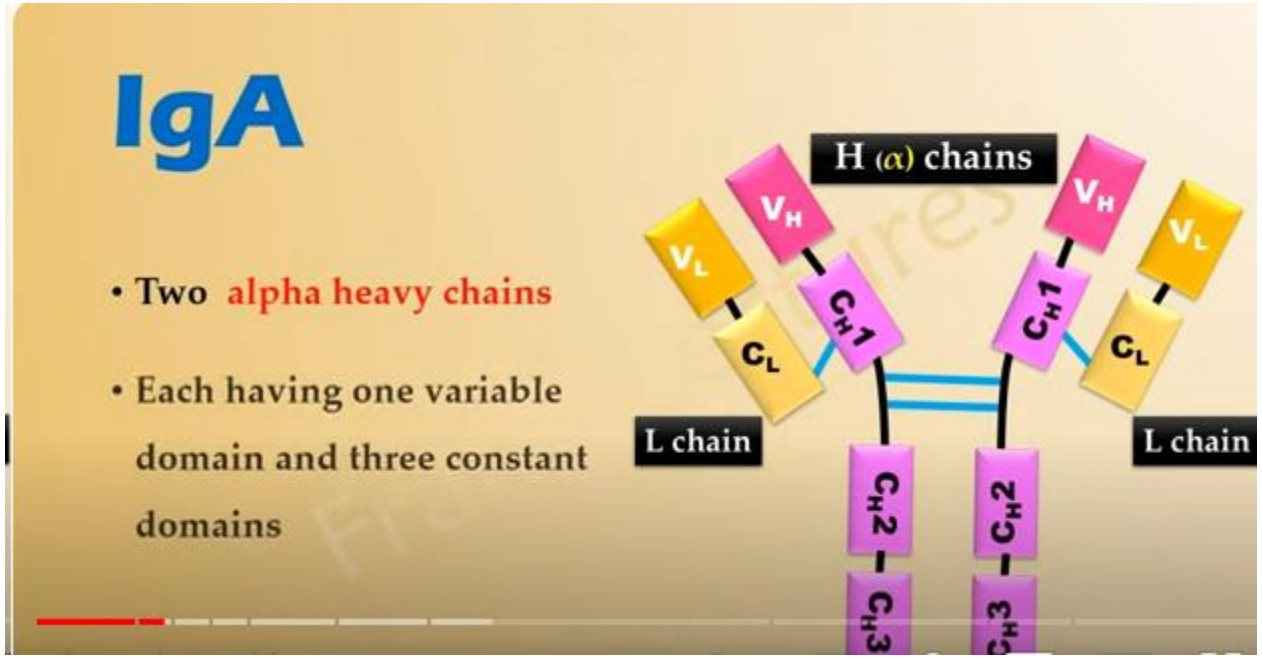
IgA

- IgA


IgA
We will discuss…
• Structure, properties and function
• Difference between secreted IgA and secretory IgA

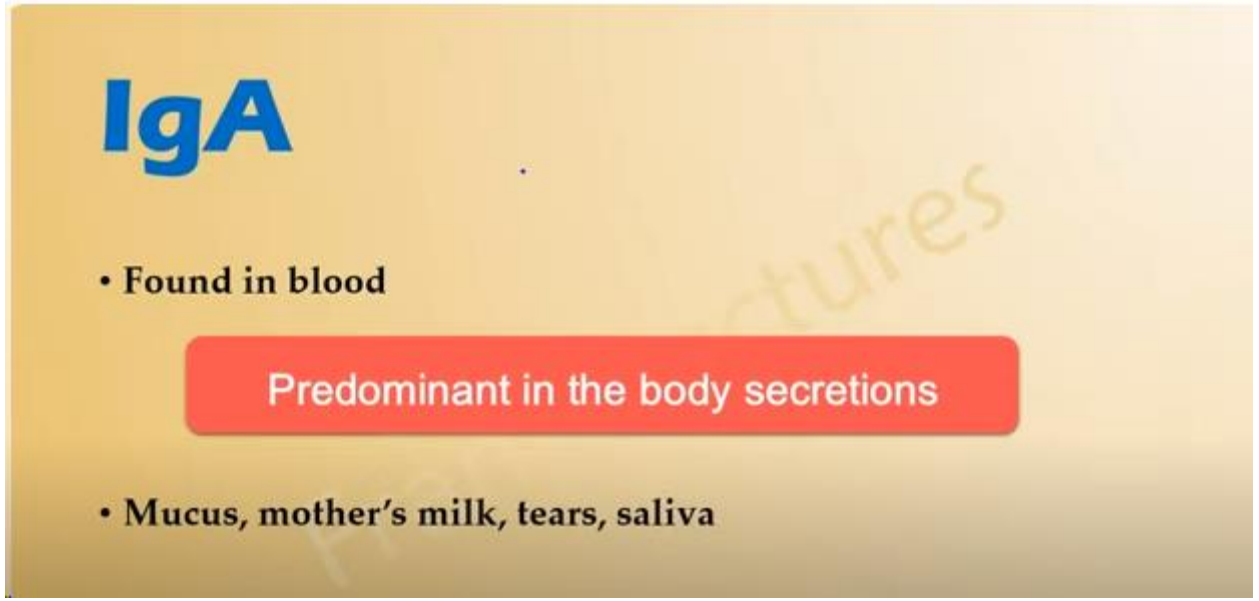
IgA

- IgA


IgA
• Two alpha heavy chains
• Each having one variable domain and three constant domains
H (α) chains
L chain
L chain

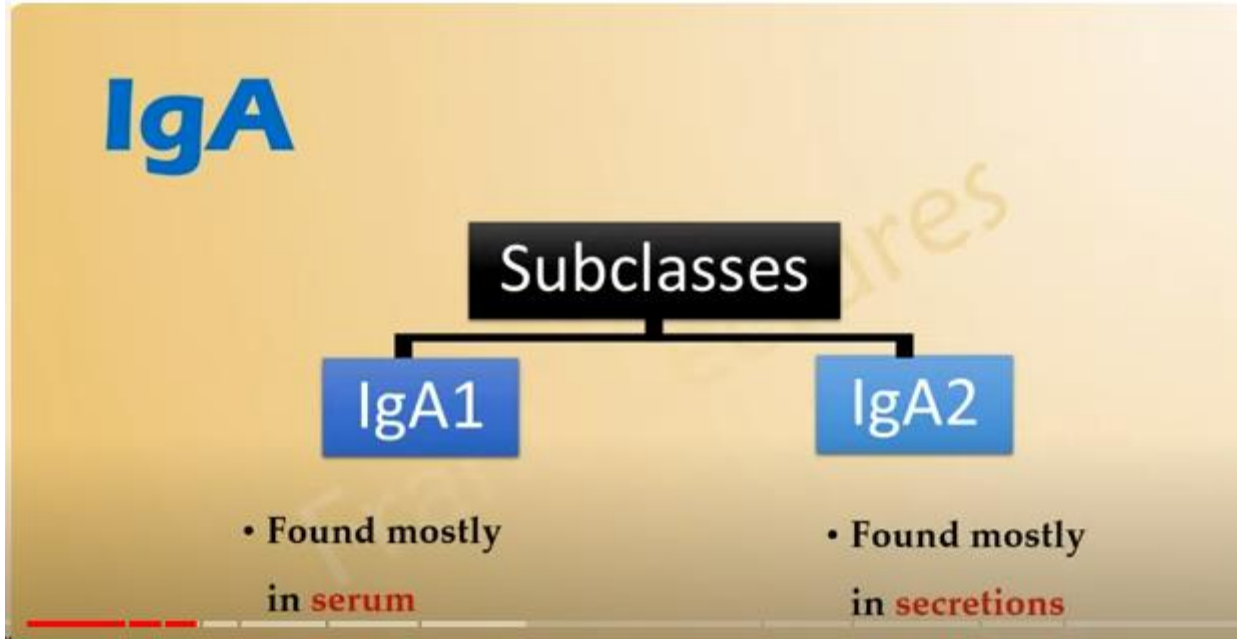
IgA

- IgA


IgA
• Found in blood
Predominant in the body secretions
• Mucus, mother's milk, tears, saliva

IgA

- IgA


IgA
Subclasses
IgA1
IgA2
• Found mostly in serum
• Found mostly in secretions

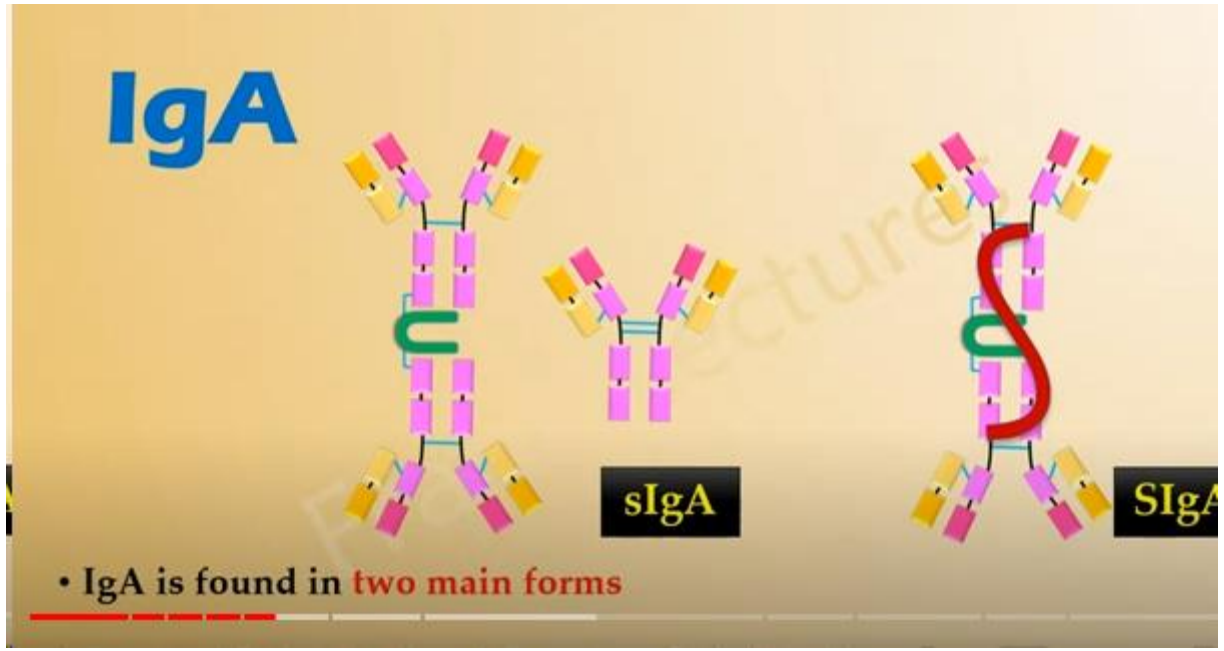
IgA

- IgA


IgA1
IgA2
Differ in the hinge region
Hinge region of IgA1 is longer that IgA2

IgA

- IgA



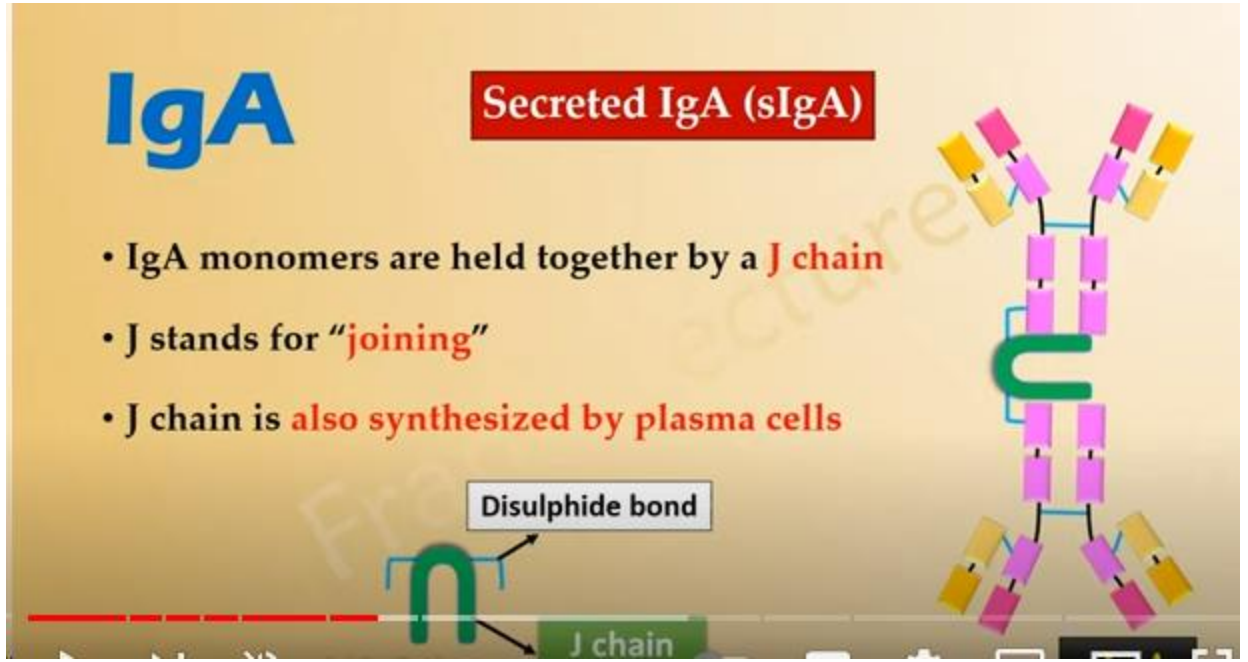
IgA

- IgA


IgA
Secreted IgA (sIgA)
• Serum IgA, circulates in blood
• Monomer, dimer or rarely trimer

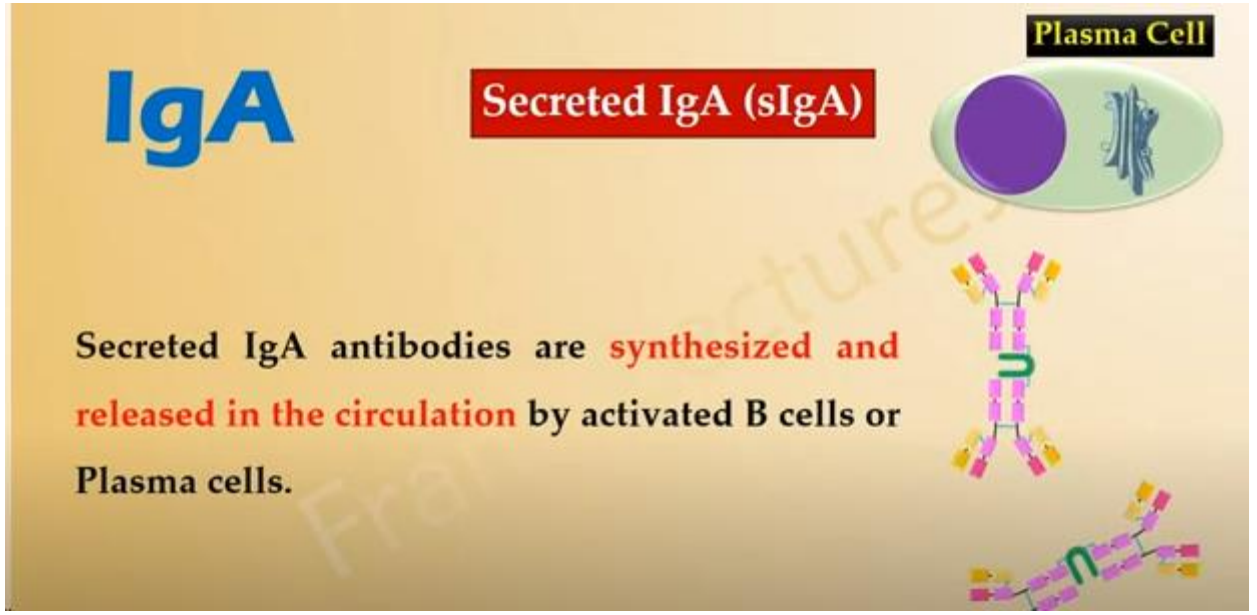
IgA

- IgA


IgA
Secreted IgA (sIgA)
• IgA monomers are held together by a J chain
• J stands for "joining"
• J chain is also synthesized by plasma cells
Disulphide bond
J chain

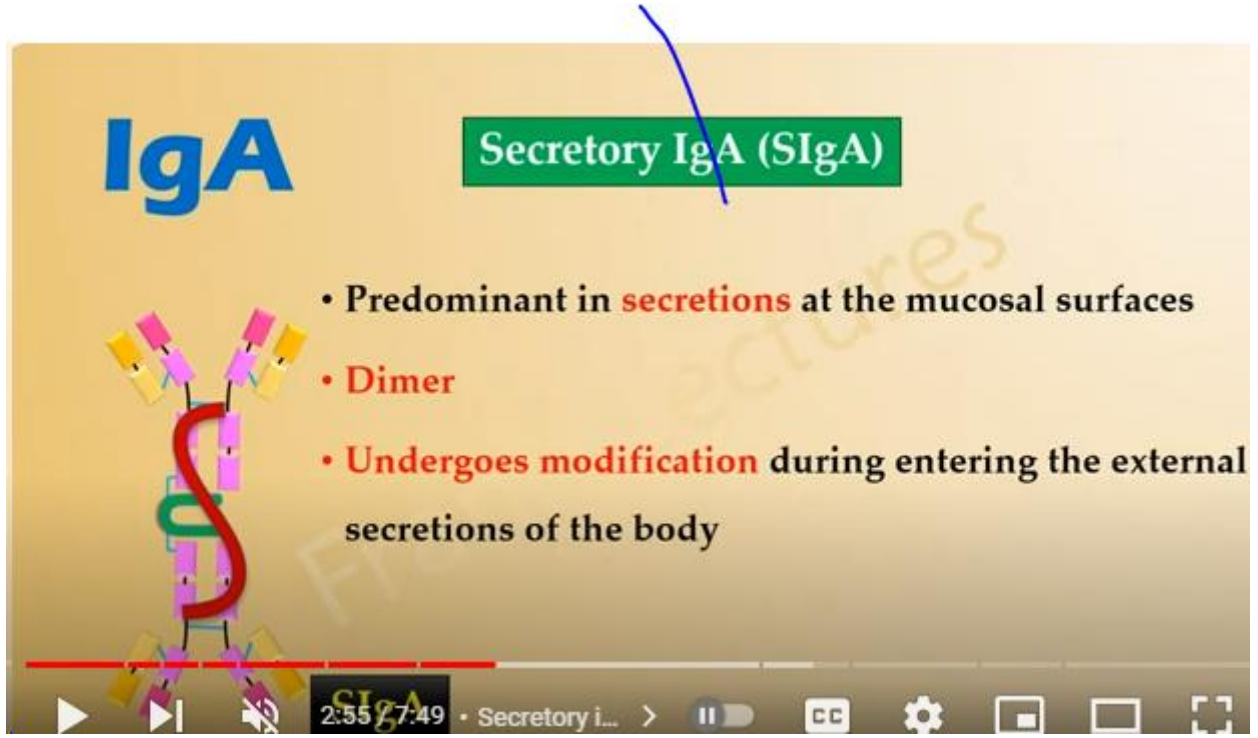
IgA

- Secreted IgA



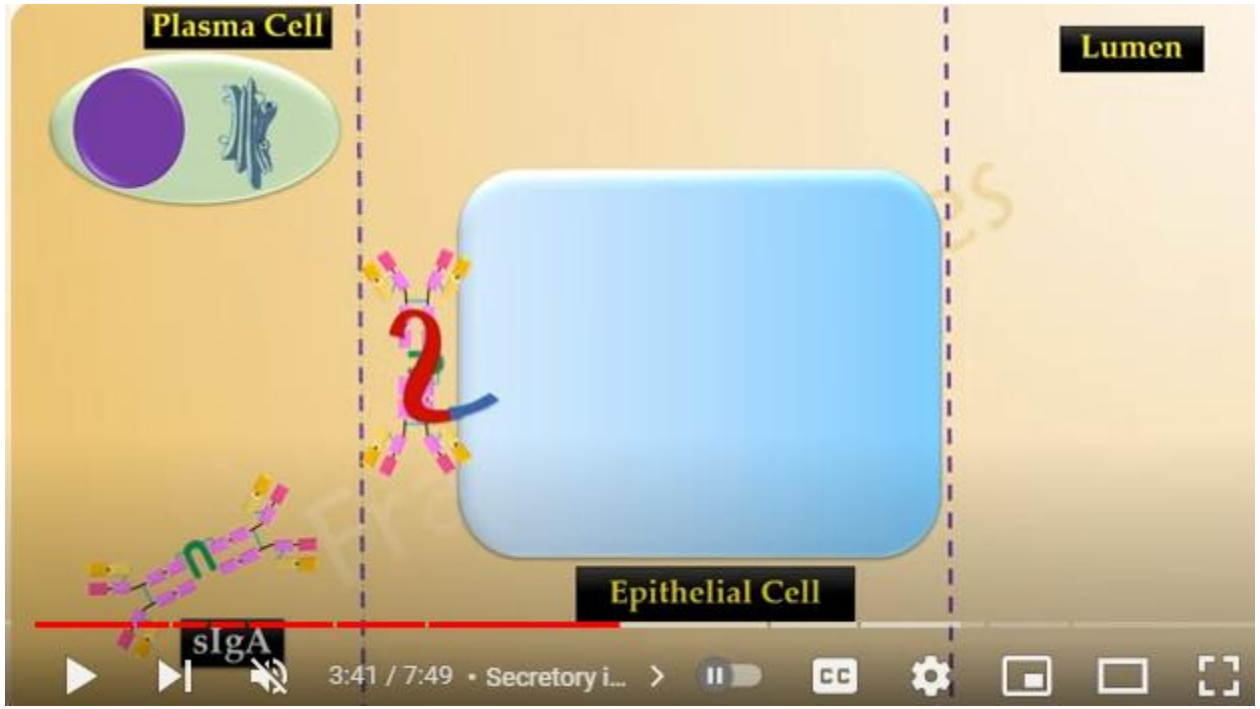
IgA

- Secretory IgA



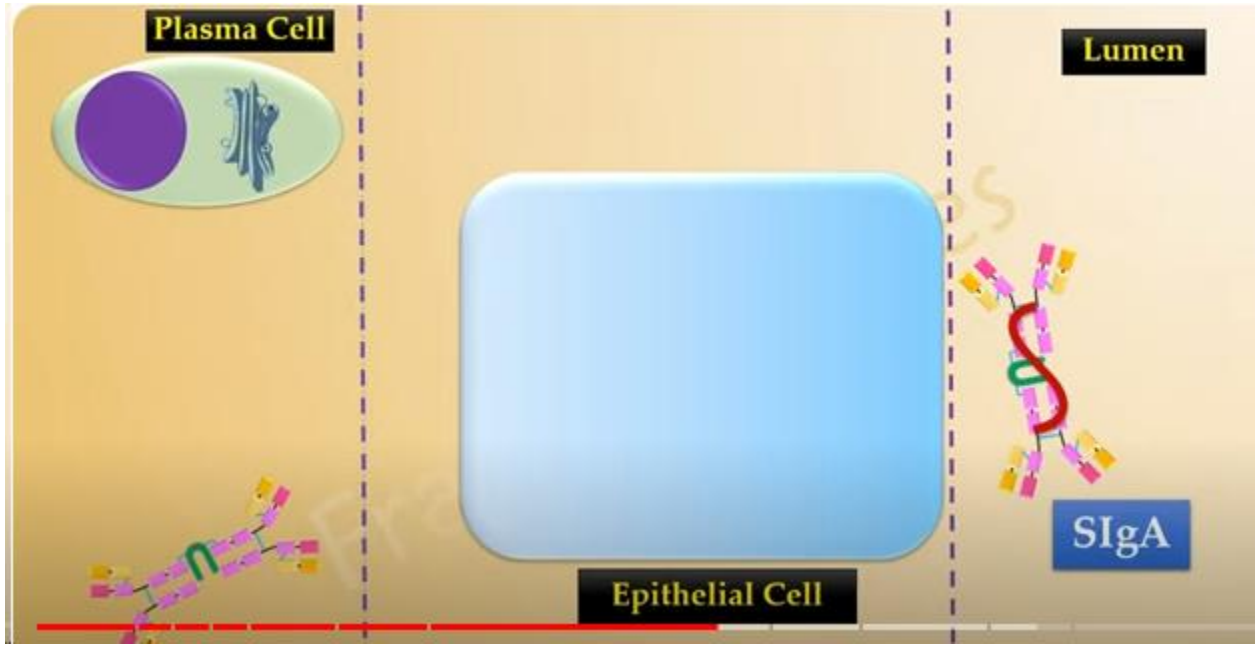
IgA

- Secretory IgA



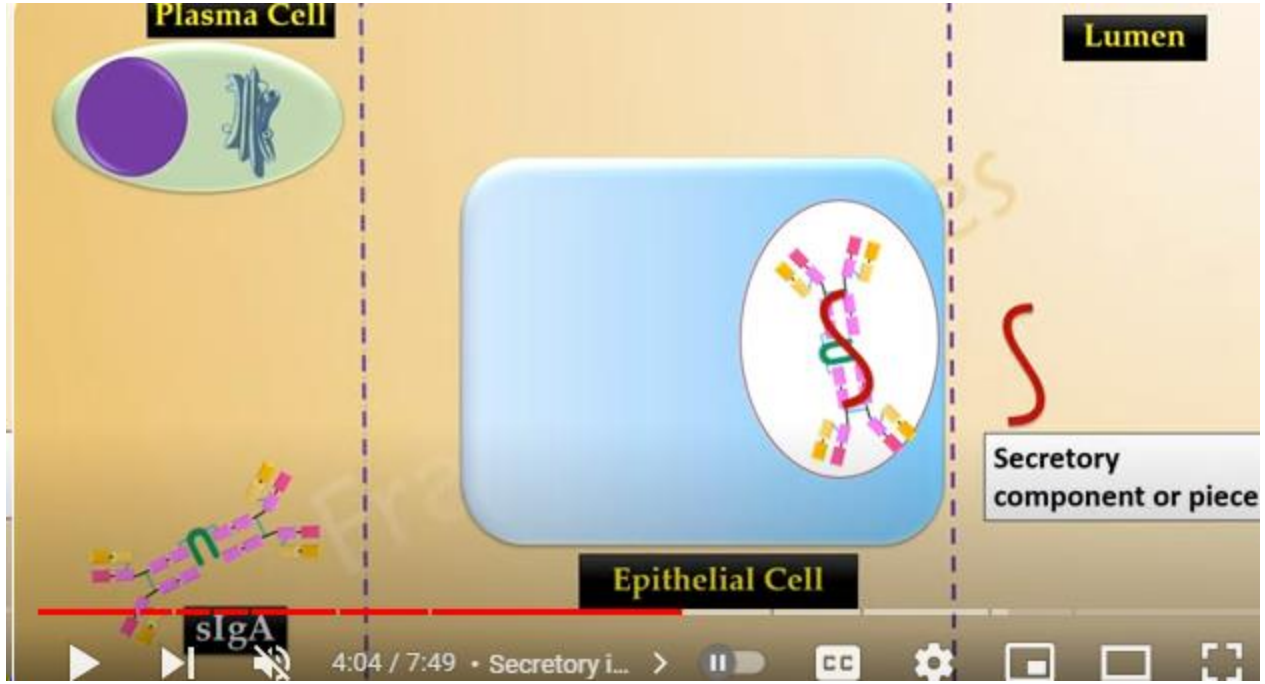
IgA

- Secretory IgA



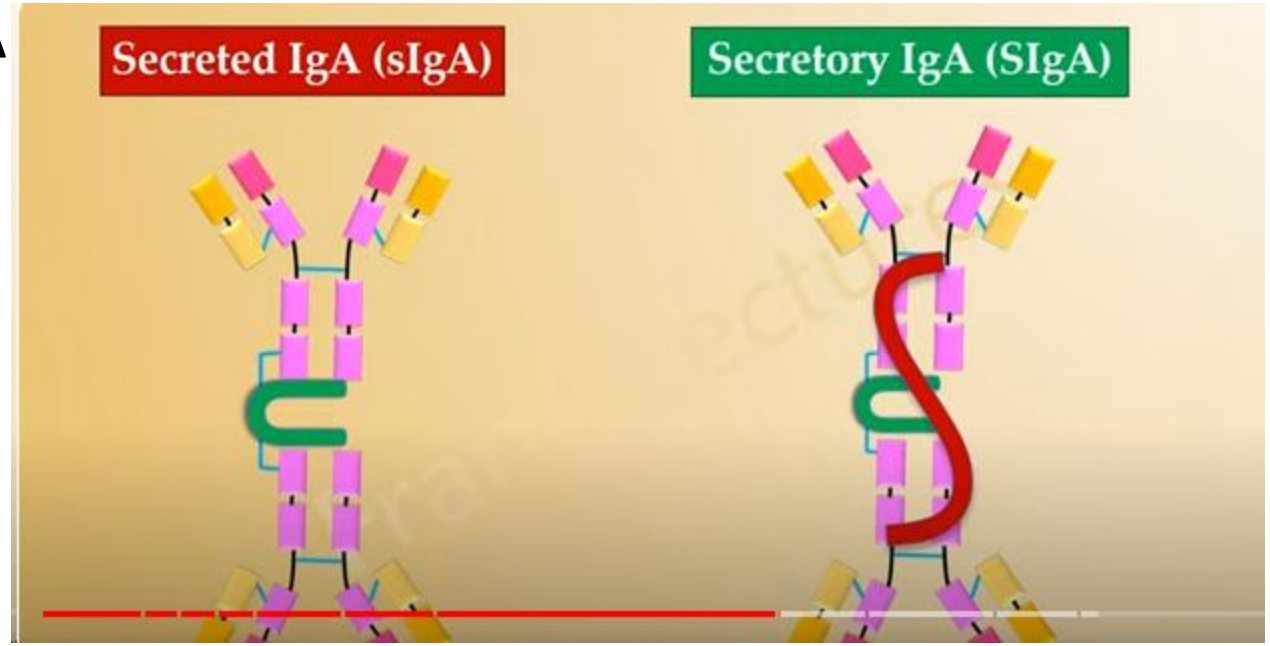
IgA

- Secretory IgA



IgA

- sIgA and SIgA



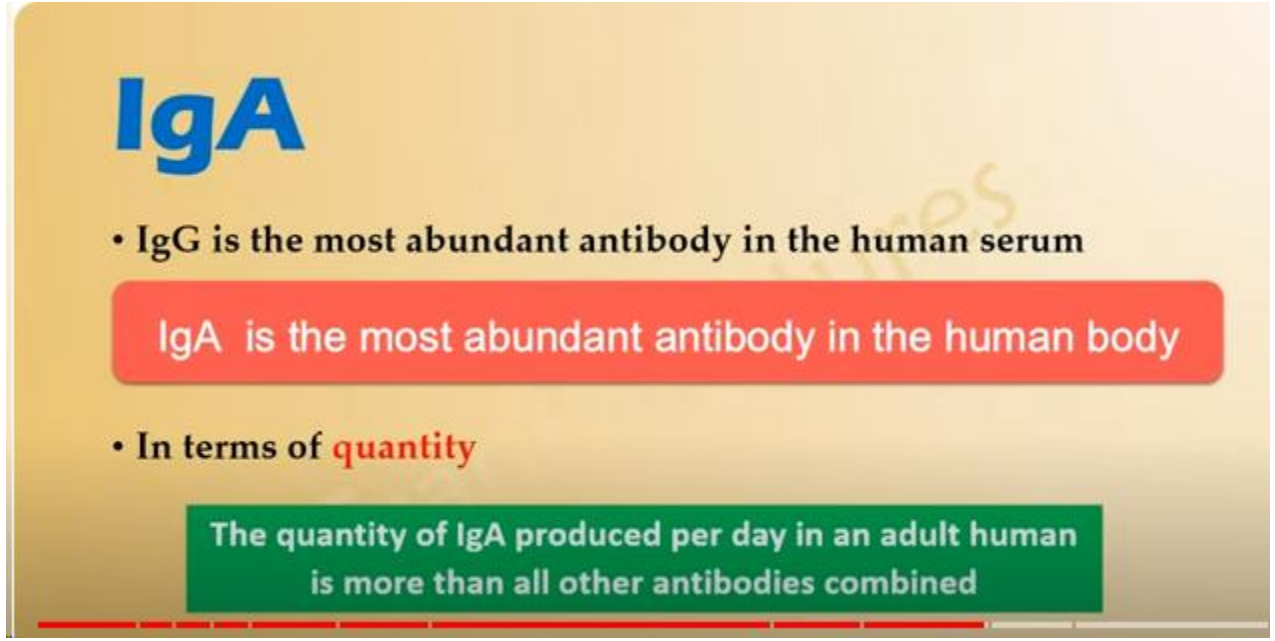
IgA

- IgA


IgA
Guards the mucosal surfaces
• Serum concentration of IgA is about 5-15%
• Major immunoglobulin in external secretions
• Half-life of about 6 days

IgA

- IgA


IgA
• IgG is the most abundant antibody in the human serum
IgA is the most abundant antibody in the human body
• In terms of quantity
The quantity of IgA produced per day in an adult human is more than all other antibodies combined

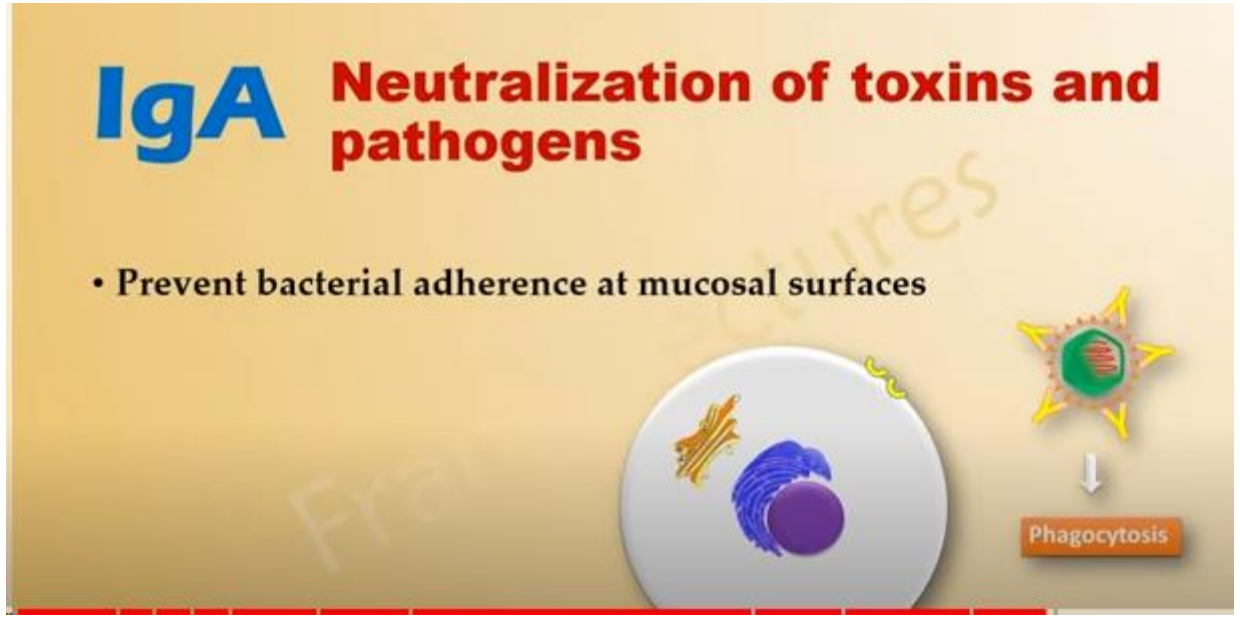
IgA

- IgA


IgA
Present in mother's milk
• Provides passive immunity to the infant
• Protects from gastrointestinal infections during first few weeks after birth

IgA

- IgA


IgA
Neutralization of toxins and pathogens
• Prevent bacterial adherence at mucosal surfaces
Phagocytosis

IgA

- IgA


IgA
Triggers degranulation of granulocytes
ADCC: Specific Fc receptors are present on the killer cells
Poor complement fixers and opsonins

IgA

- IgA summary