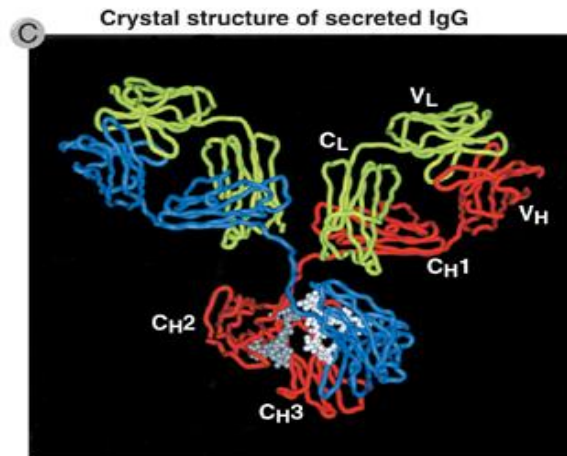
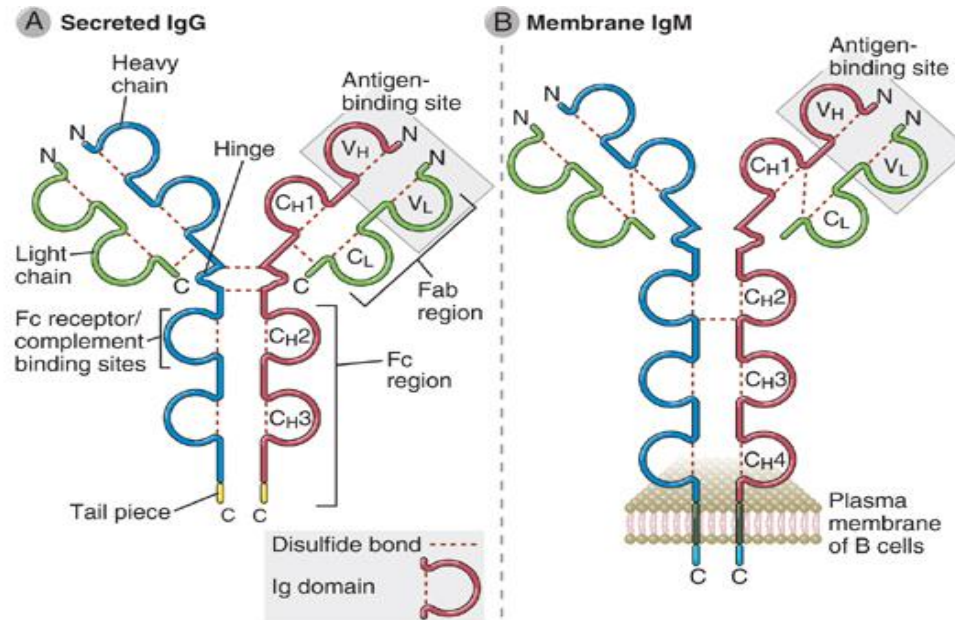
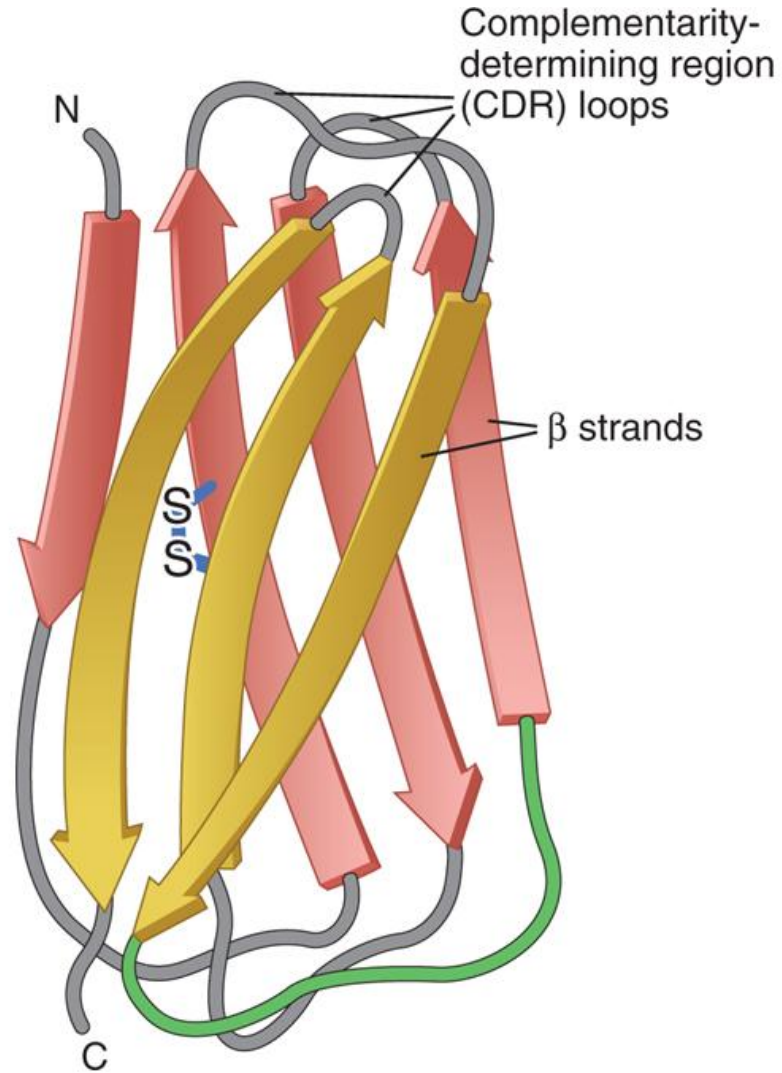


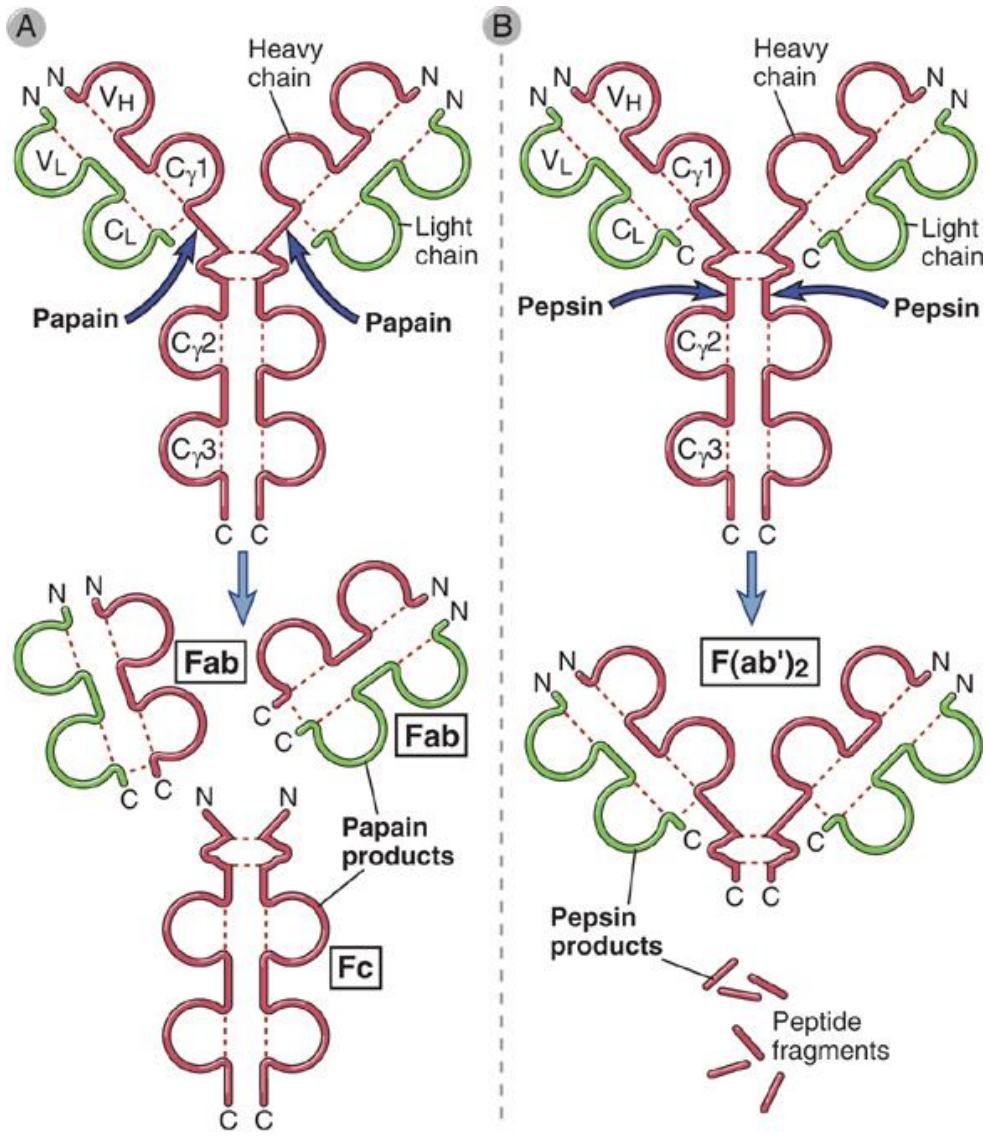
Antibodies and Antigens (Abbas Chapter 5)



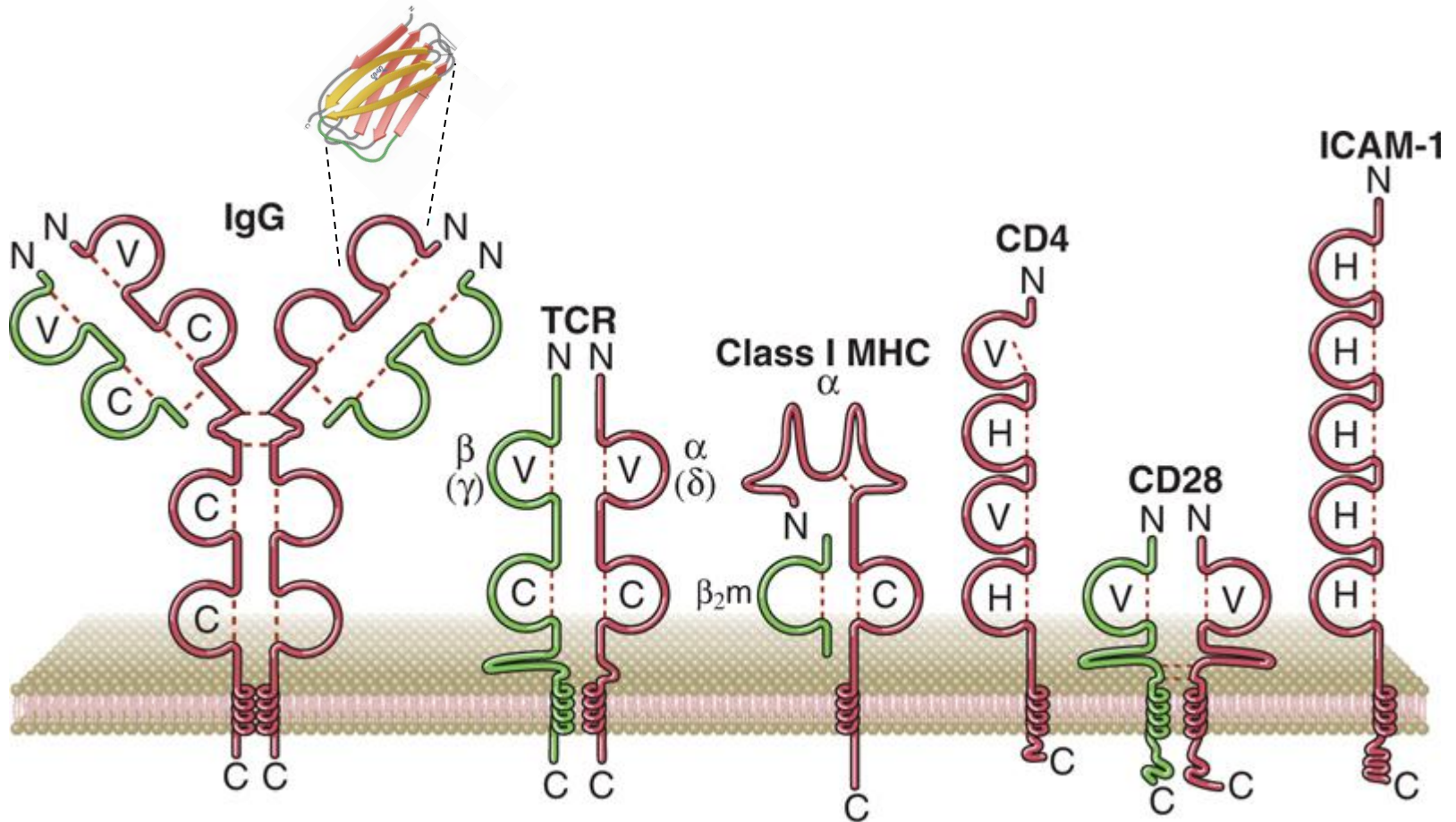
Structure of an Ig Domain (Abbas Chapter 5)



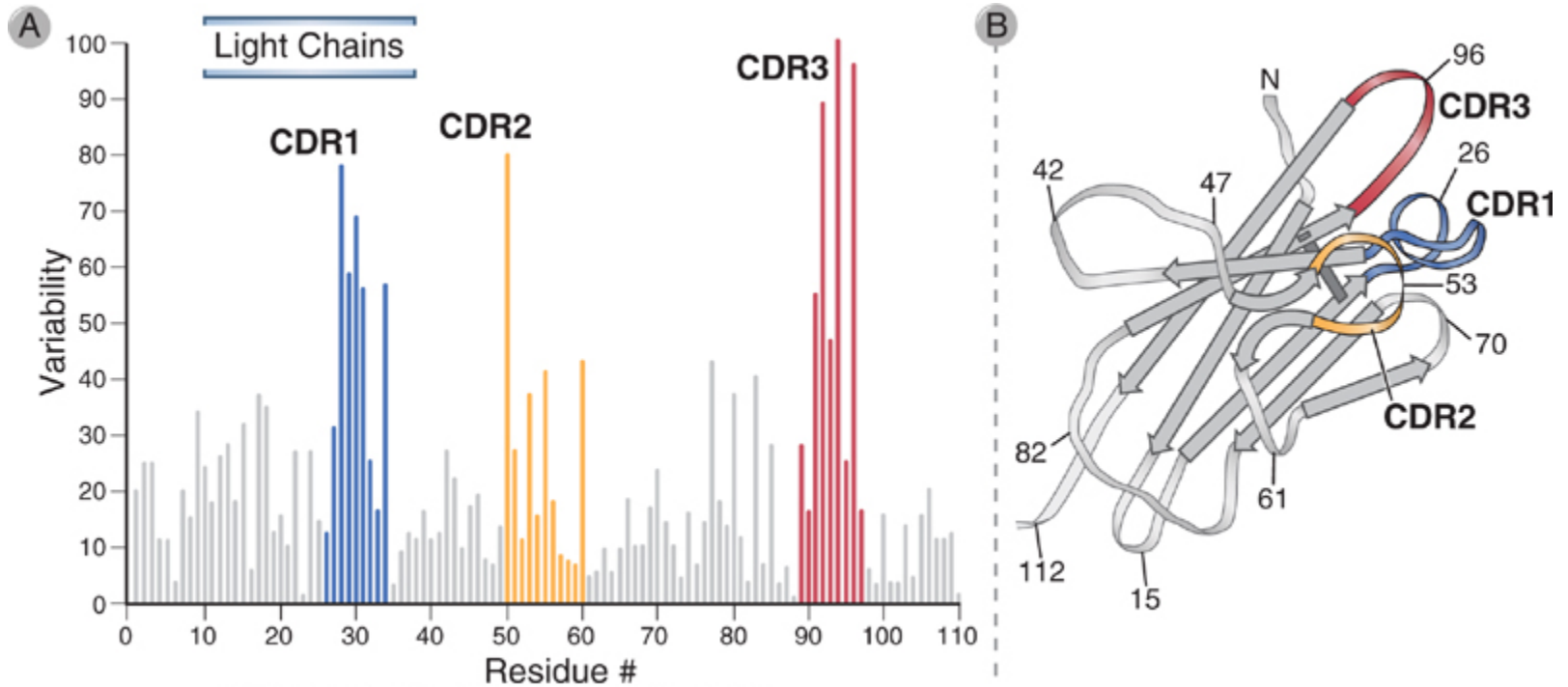
Proteolytic Fragments of IgG (Abbas Chapter 5)



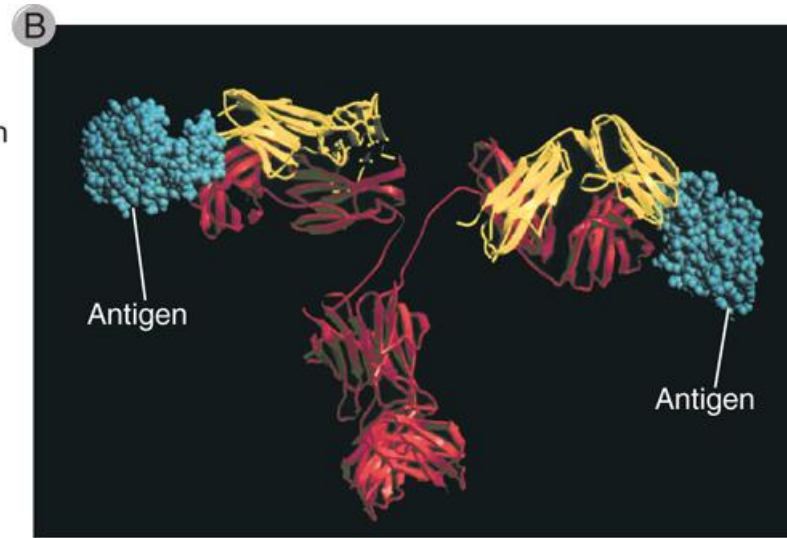
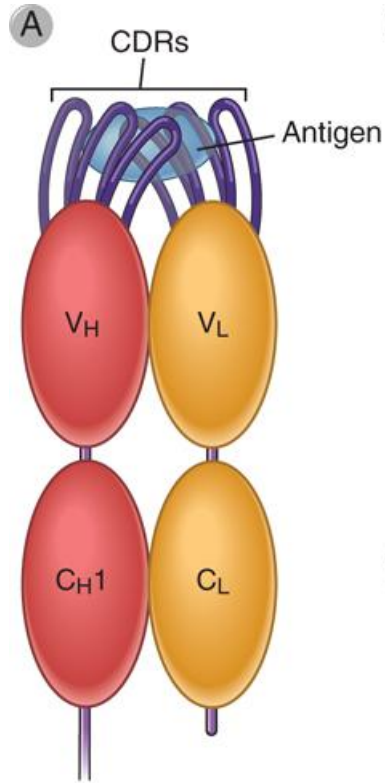
Ig Superfamily Members (Abbas Chapter 5)



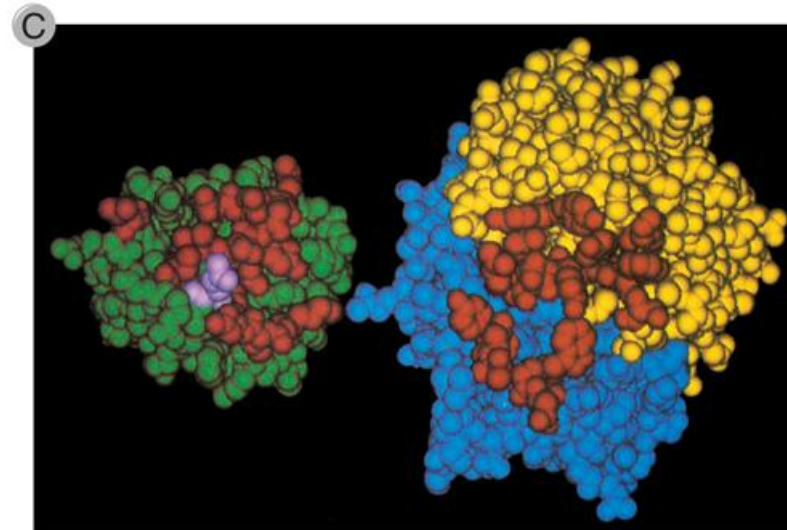
Hypervariable Regions in IgG (Abbas Chapter 5)



Antibody-Antigen Interaction (Abbas Chapter 5)



**HEL (blue)
and antibody**



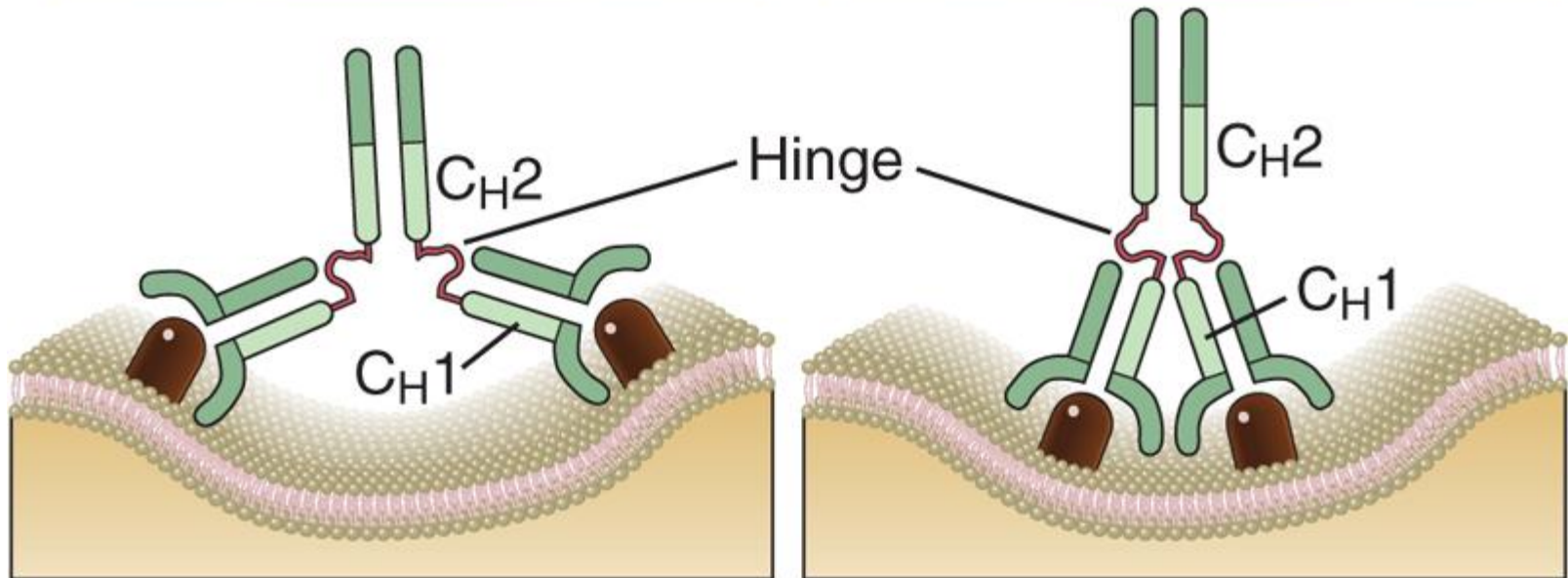
**HEL (green)
and V_H and V_L**

**V_H = blue
V_L = yellow**

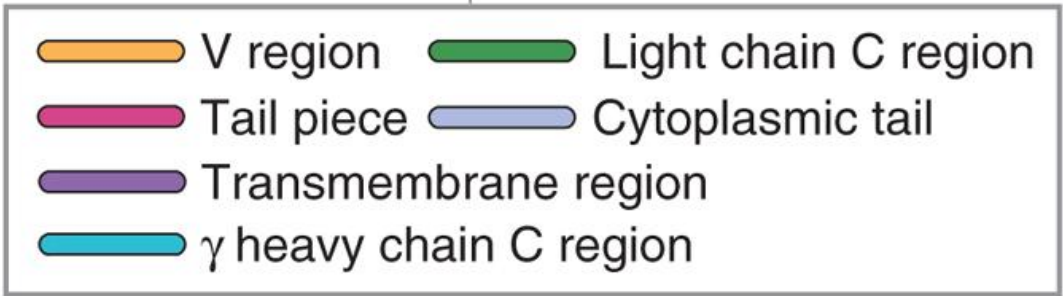
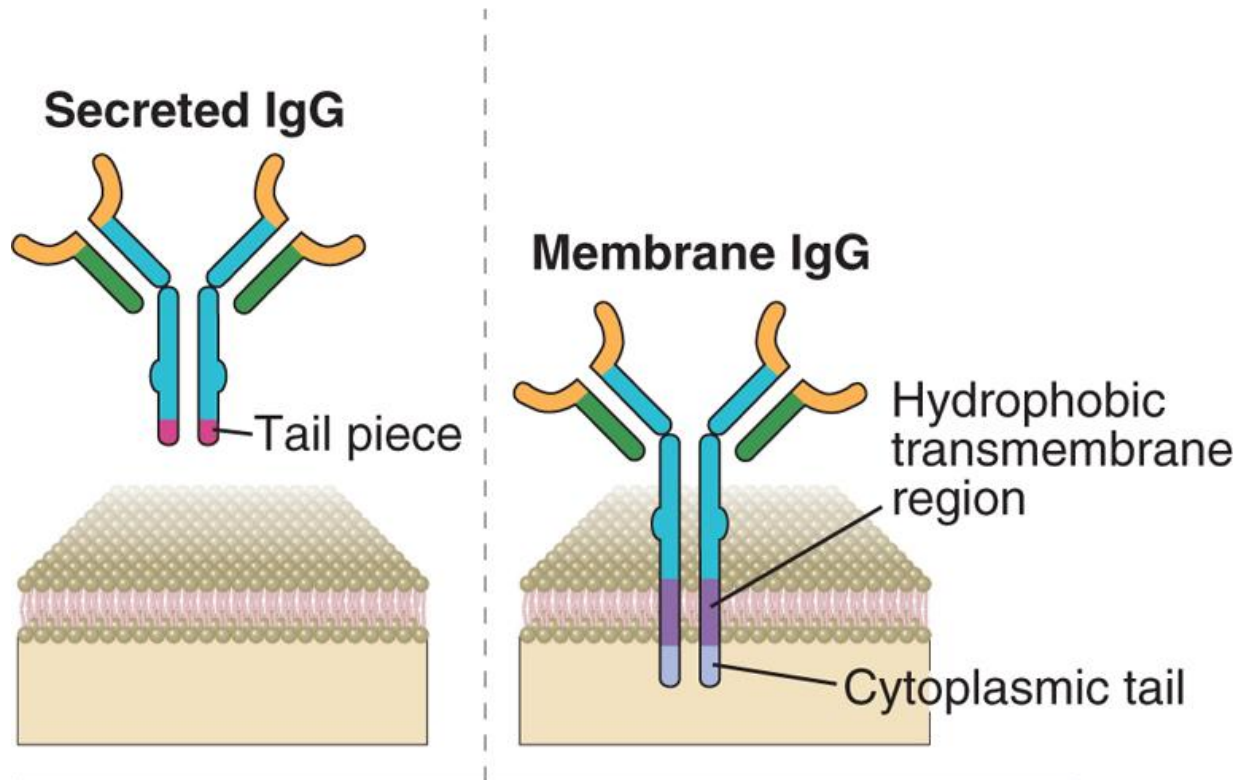
Flexibility of Antibodies (Abbas Chapter 5)

A Widely spaced cell surface determinants

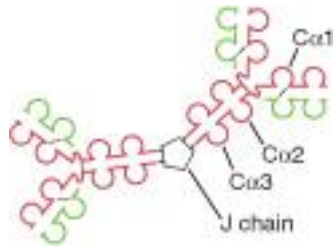
B Closely spaced cell surface determinants



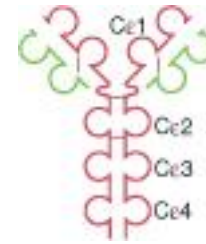
Membrane and Secreted Forms (Abbas Chapter 5)



Antibody Subclasses (Abbas Chapter 5)



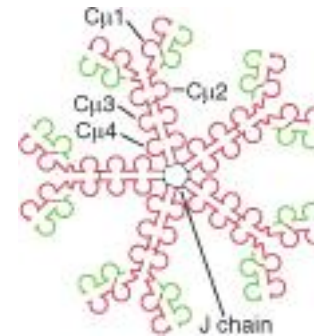
IgA



IgE

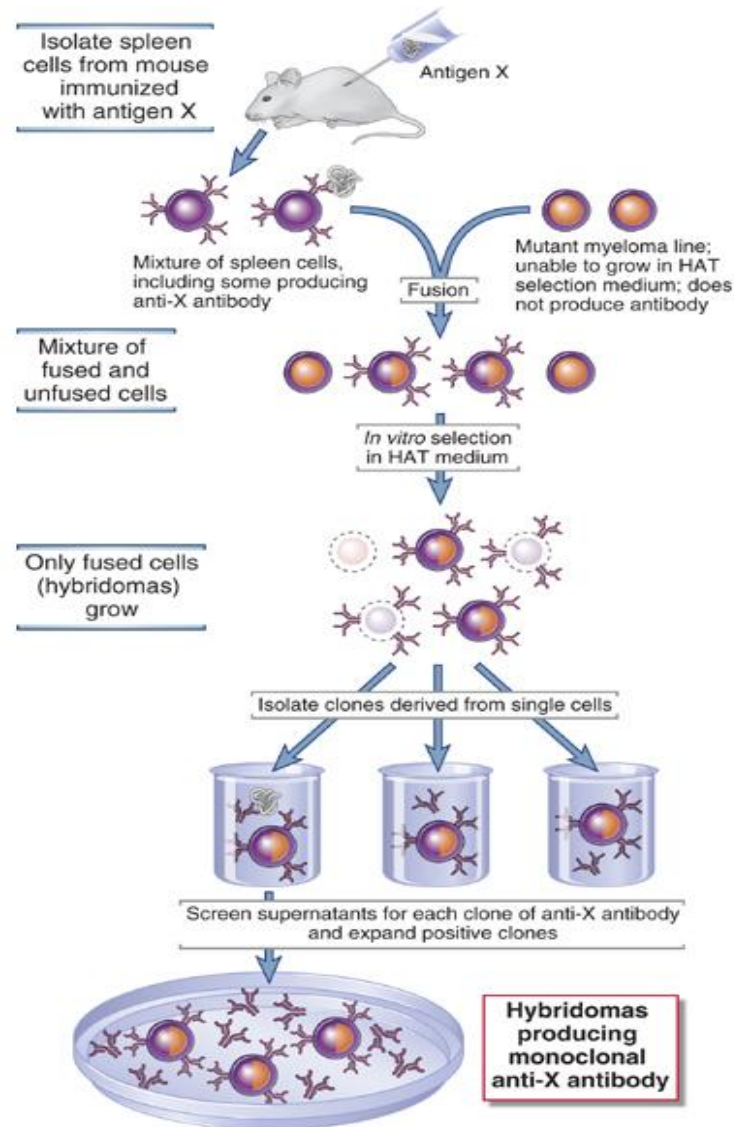


IgG



IgM

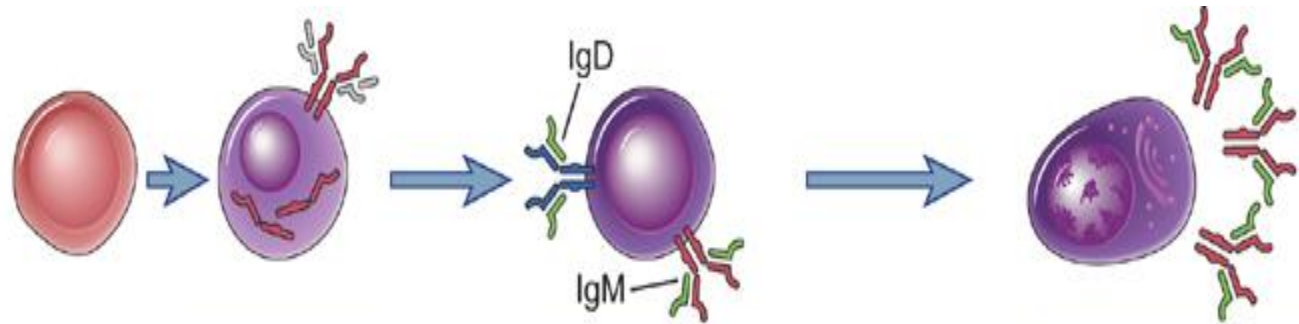
Generation of Monoclonal Antibodies (Abbas Chapter 5)



Monoclonal Antibodies of Therapeutic Significance

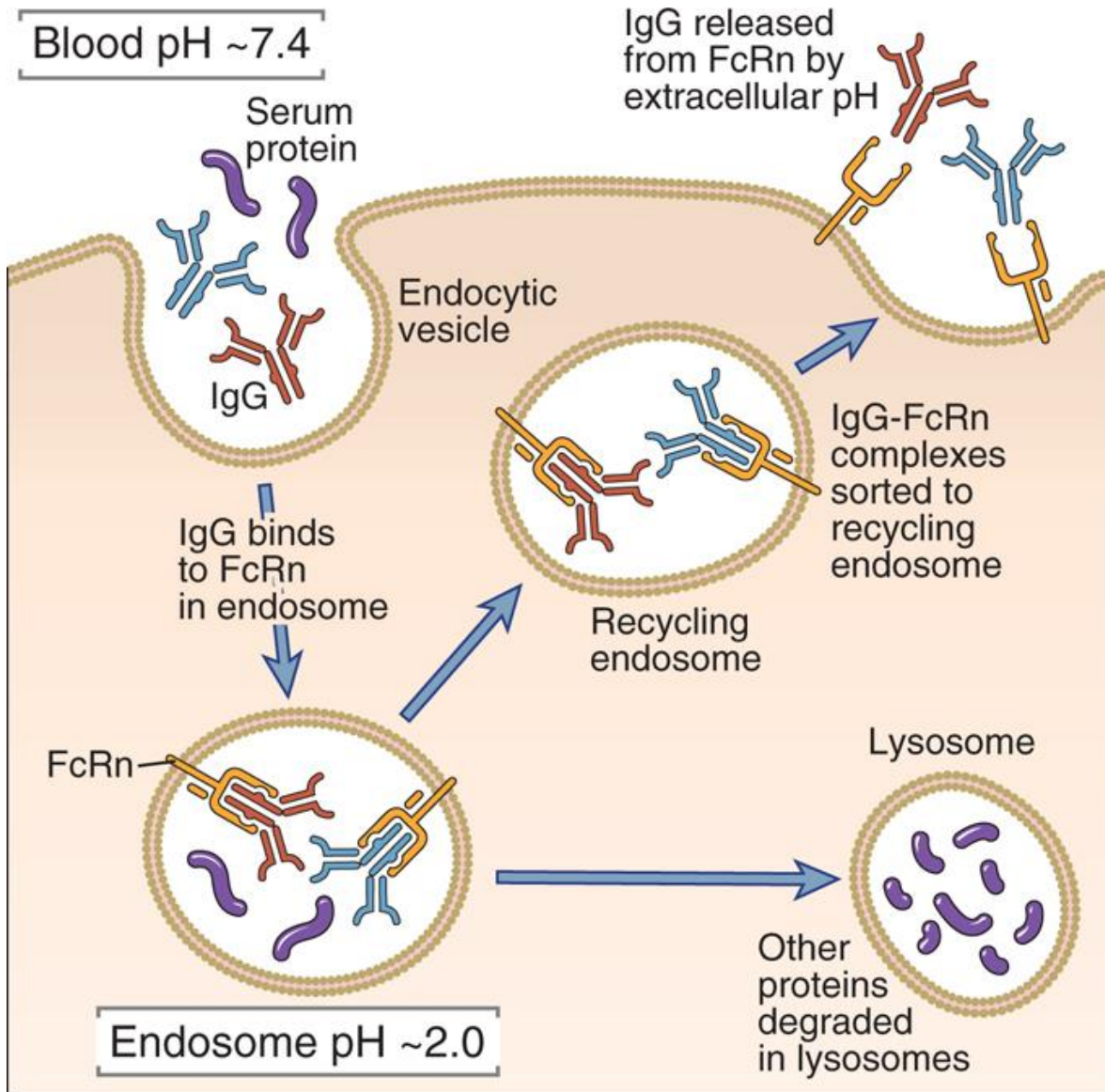
Target	Effect	Diseases
CD20	B cell depletion	Rheumatoid arthritis, multiple sclerosis, other autoimmune diseases
VEGF	Blocking of tumor angiogenesis	Breast cancer, colon cancer
HER2/Neu	Depletion of tumor cells with HER2 amplification	Breast cancer
TNF	Inhibition of T cell–mediated inflammation	Rheumatoid arthritis, Crohn's disease

Ig Expression during B cell maturation (Abbas Chapter 5)



Stage of maturation	Stem cell	Pre-B cell	Immature B cell	Mature B cell	Activated B cell	Antibody-secreting cell
Pattern of immunoglobulin production	None	Cytoplasmic μ heavy chain and pre-B receptor	Membrane IgM	Membrane IgM, IgD	Low rate Ig secretion; heavy chain isotype switching; affinity maturation	High rate Ig secretion; reduced membrane Ig

Increasing the Half-Life of IgG (Abbas Chapter 5)



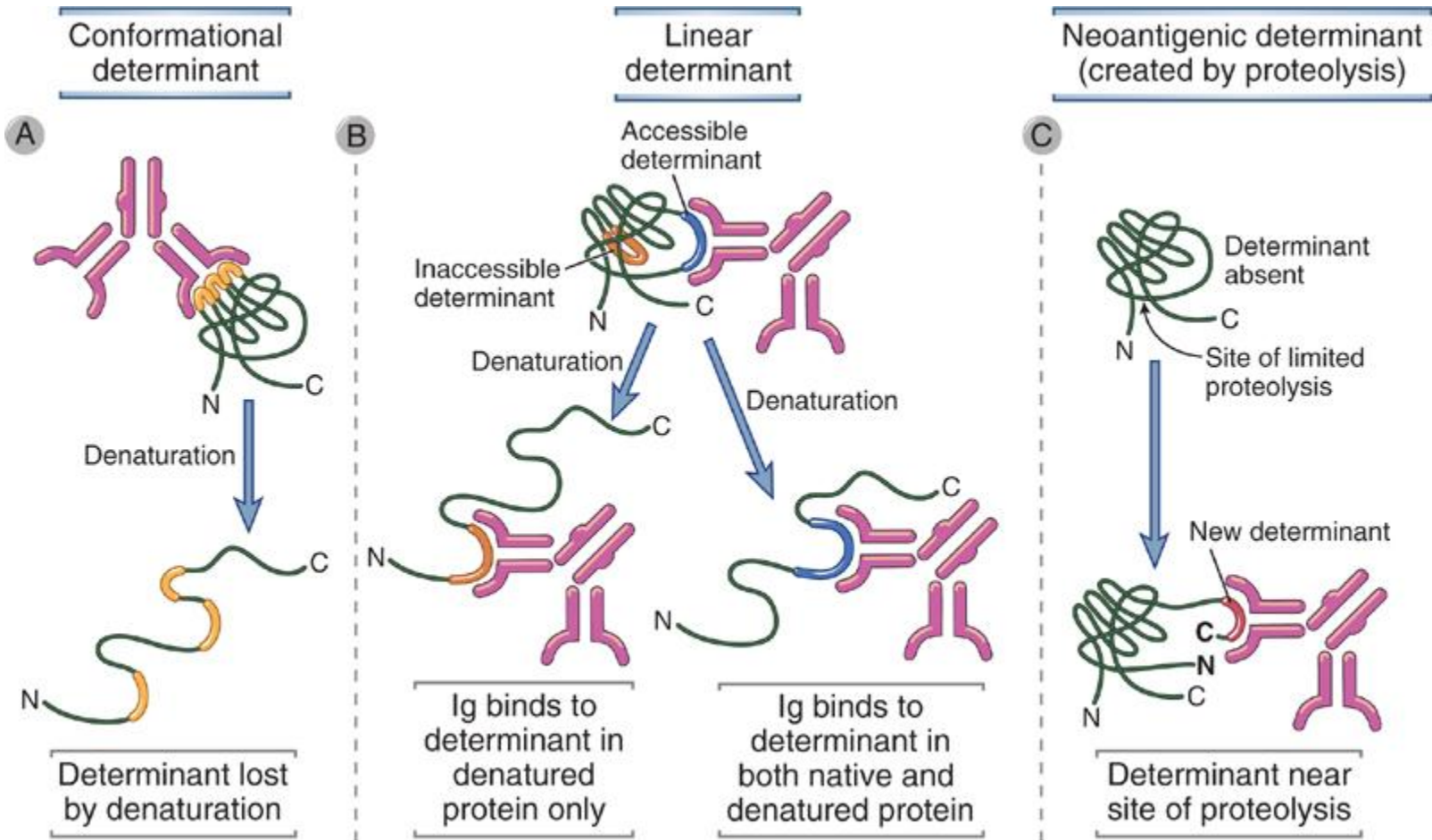
FcRn=neonatal FcReceptor (like MHC-I without groove)

Transports IgG across cells without targeting them to lysosomes

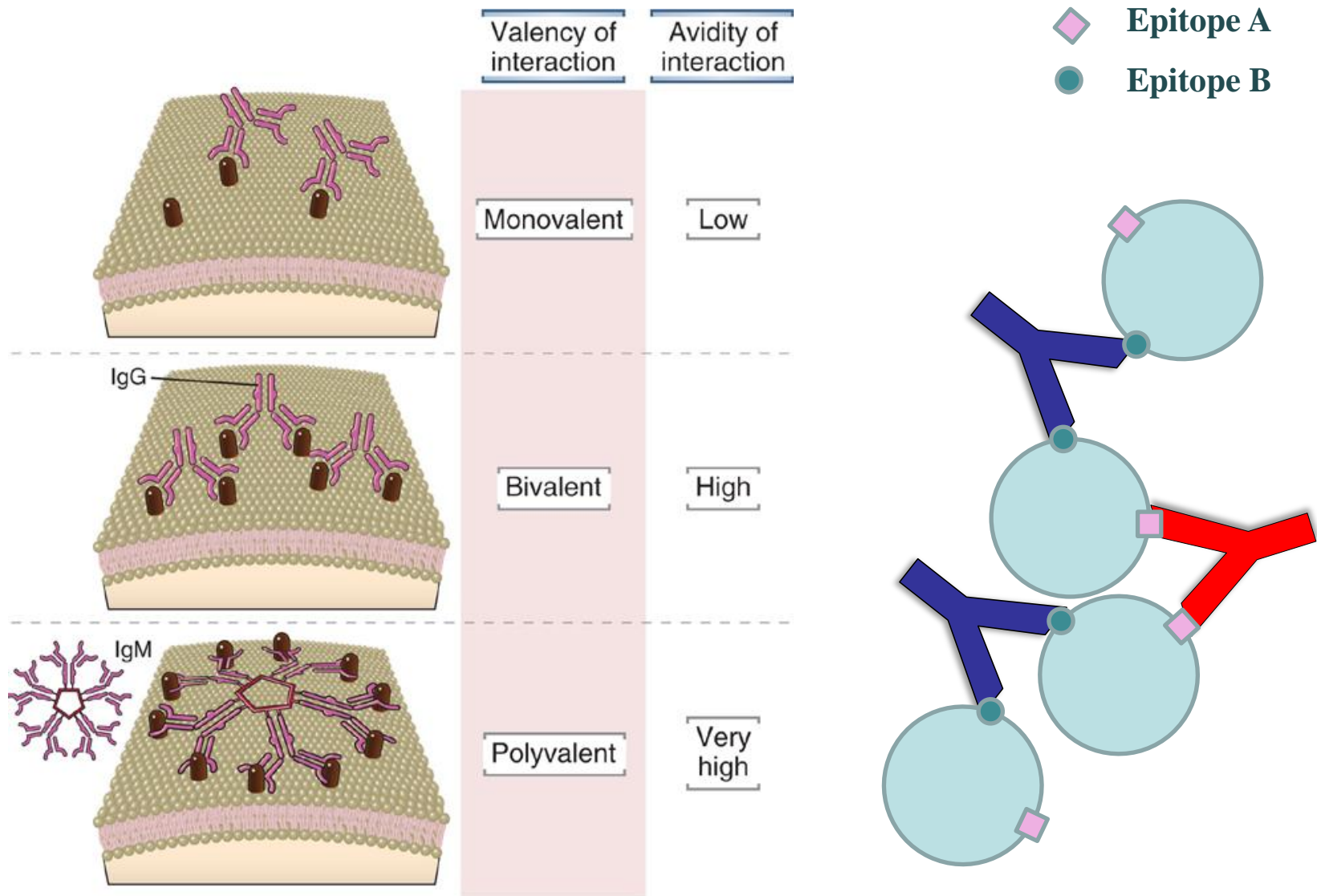
Important for the transfer of maternal antibodies across the placental barrier and the intestine in neonates

In the adult FcRn helps to circumvent degradation and to return IgG to circulation

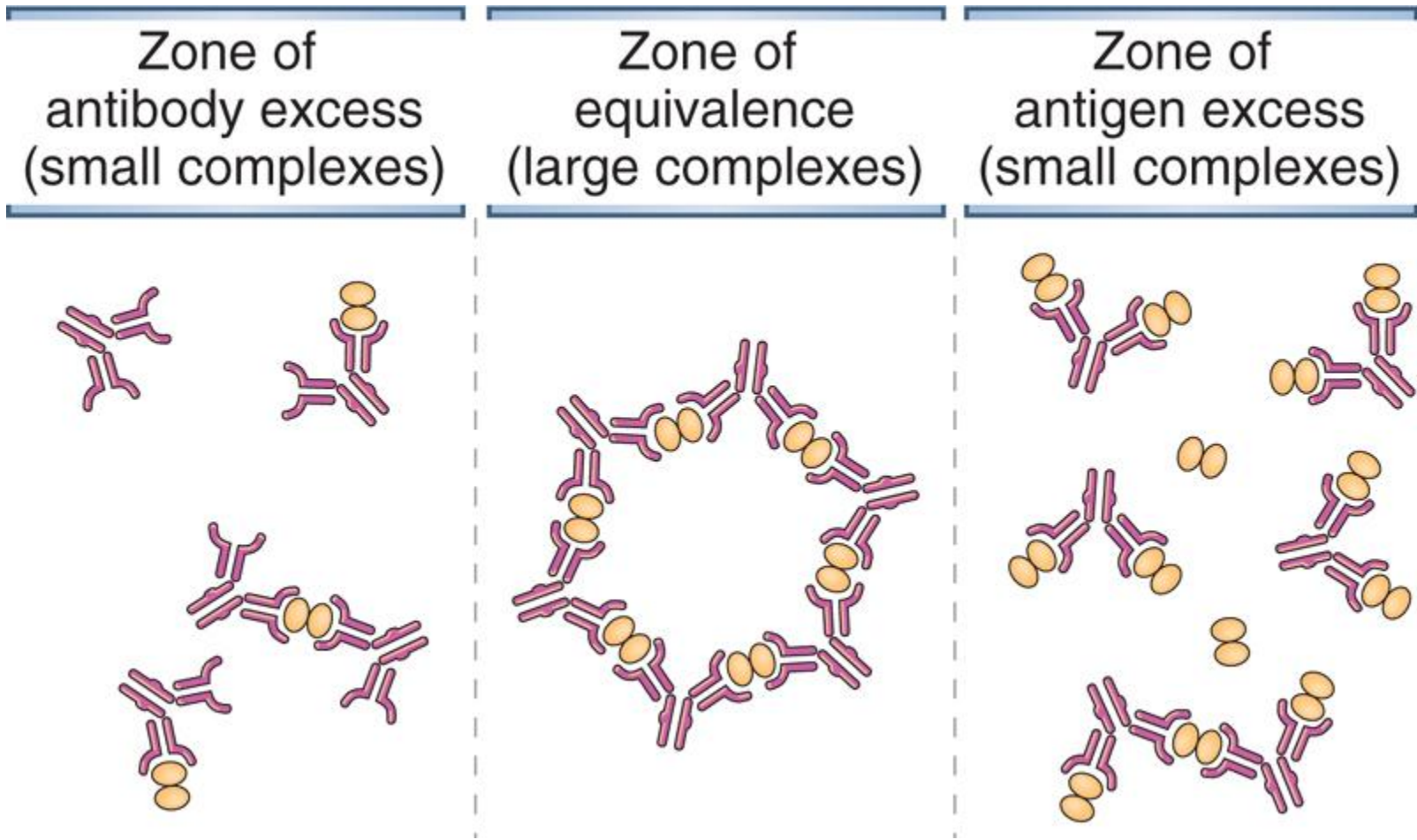
The Nature of Antigenic Determinants (Abbas Chapter 5)



Valency and Avidity (Abbas Chapter 5)



Antibody-Antigen Complexes (Abbas Chapter 5)



Maturation, Secretion and Switching (Abbas Chapter 5)

!!! starting point = IgM

