

# Immunology (Antibody Isotypes)

## IgA (Immunoglobulin A)

- 10-15% of total serum immunoglobulin
- predominant in **external secretions** like breastmilk, saliva, tears, mucus
- primarily a **monomer**, but polymeric forms are also found, all containing a J-chain

## Secretory IgA

- IgA of external secretions - polymeric
- consists of a dimer & tetramer + J chain + secretory component  
↳ produced by epithelial cells of mucous memb.
- most produced immunoglobulin daily
- produced from subepithelial B cells and released in mucosal secretions
- on mucous memb. surfaces, IgA (secretory) polymers **crosslink large antigens with multiple epitopes**
- binding to sec. IgA prevents bacterial and viral surface antigens from binding to mucosal surfaces - **inhibiting viral infection and colonisation**
- complexes of secretory IgA-antigen trapped by mucus and eliminated
- found in breastmilk, provides passive immunity to newborns

## Migration of secretory IgA

plasma cells producing IgA migrate to subepithelial tissue

↓  
secreted IgA binds tightly to poly-Ig receptors

↓  
receptor-IgA complex transported across epithelial barrier to lumen by receptor-mediated endocytosis

↓  
Poly-Ig receptor cleaved enzymatically → secretory comp.

↓  
secretory component masks sites in the hinge region of immunoglobulin A from protease, allowing it to last longer in the protease rich mucosal environment

## Immunoglobulin E (IgE)

- extremely low average serum conc. but still identified because of func.
- mediate immediate hypersensitivity reactions responsible for symptoms of hay fever, asthma, hives, anaphylactic shock.
- IgE binds to  $Fc$  receptors on the surface of basophils and tissue mast cells and activate them → allergic response and sometimes, localised antiparasitic response

## Immunoglobulin D (IgD)

- conc. of 30  $\mu\text{g/ml}$  in serum & 0.2% of total serum Ig
- primary function  $\rightarrow$  antigen receptors on B cells + regulating B-cell func. on antigen encounter
- major memb.-bound Ig expressed by mature B cells