- The IgG-pIgR complex is endocytosed, transported across the cytoplasm and secreted to the mucosal (apical) surface.
- Cleavage of the receptor releases the secretory IgA, but still attached to part of the receptor known as the secretory component, which is thought to protect the secretory IgA from proteases that would otherwise destroy the IgA in the gut environment, where there are lots of digestive enzymes.

## Functions of secretory IgA

- IgA prevents adhesion of pathogens to mucosal surfaces.
- It can also can help opsonise infectious agents for phagocytosis, because phagocytic cells express Fcα receptors to bind IgA (just like they express Fc γreceptors for IgG).

## IgE also plays a role in mucosal immunity

- IgA can be thought of as the first line of defence at mucosal surfaces. IgE also plays a role, mainly as a back up mechanism if pathogens get pass IgA.
- IgE, secreted by plasma cells, can bind to mast cells which have an FccR. Upon encounter with an infectious agent, IgE activates the mast cell, culminating in the release of vasoactive and chemotactic factors that will recruit and allow neutrophils and eosinophils to squeeze through the endothelial cells, along with molecules like compensat and IgG, the combinatorial effect of which would capid of the pathogen.

## Gut immune responses are influded in lymphoid redules referred to as Peyer's patches

- Gut immune responses are in recearch lymphoid nodules called Peyer's purches, which occurrin determina propria, which lies under the epithelial layer ad contains large numbers of B-cells, plasma cells, activated Th-cells and macrophages in loose clusters.
  - Specialized epithelia, M (microfold) cells sample antigen from the gut and pass it to the immune system cells, which lie in pockets under the M cells. The M-cells are locates in inductive sites, which are small regions of a mucous membrane that lie over organized lymphoid follicles.
  - M cells contain small pockets, which are full of lymphocytes and Interdigitating dendritic cells and macrophages.

## Lymphocyte homing to intestine

Activated lymphocytes can specifically home to the gut by using the integrin adhesion molecule  $\alpha_4\beta_7$  on their surface to recongise the mucosal vascular addressin molecule MADCAM-1, expressed at high levels on the vascular endothelium of Peyer's patches blood vessels.