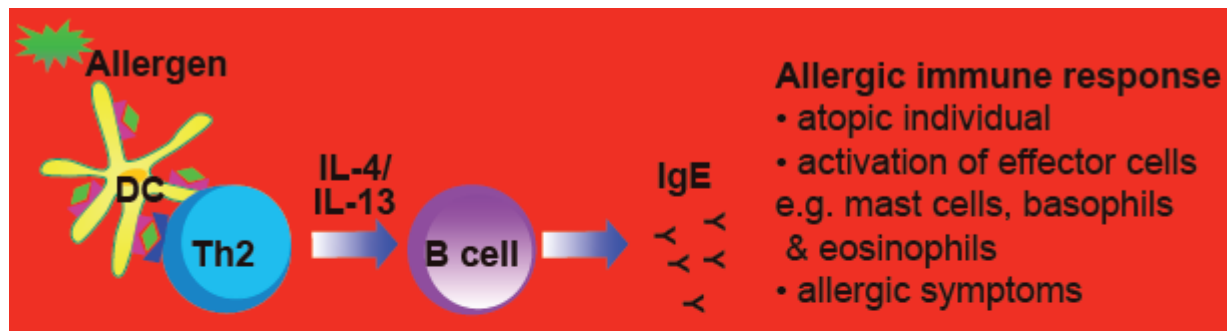


The T cell is a central mediator of which way you will respond to a pathogen. If you are prone to allergy (atopic) then Th2 phenotype is stimulated. In the case that you are not prone to allergy (nonatopic) then this allergen won't cause the release of Ig but will cause a mild Th1 response which will cause the release of Th1 cytokines $\text{IFN}\gamma$ which will stimulate B cells to release IgG not IgE. You will have circulating IgG circulating around the blood and opsonising this antigen. Although you are responding to it you are not producing a massive response.



Allergens are prone to eliciting Th2 responses- why is partly unknown but there are good hypothesis:

- 1) Physical characteristics, a lot of them are enzymatically active (they have the ability to penetrate), low molecular weight, highly soluble and stable (so you inhale or ingest them) and they have the ability to migrate into your tissues and cause a response.
- 2) Route of admission- if you inhale deeply you get them deep in your alveolar spaces from where they can diffuse into the mucosa
- 3) Dose- you will get an allergen in a low dose you will initiate Th2 rather than Th1 response

In susceptible individuals these characteristics will initiate an allergic reaction.

Susceptible individuals are those who are genetically predisposed. Very hereditary. Allergic reactions- half is due to genetic factors half to environment. Some polymorphisms in certain genes are involved in having better or worse outcomes in response to allergens. Some are involved in structural components of smooth muscle others are in the promoters regulating expression of Th2 cytokines, FcR receptor, MHC (certain MHCs are linked to better recognising certain allergens).

e.g. FOXP3 is involved in T regulatory cell control. If there are haplotypes then your T reg control isn't as good so potentially you can't balance the Th1 and Th2 needed.