IN BRIEF

ALLERGY

Basophils orchestrate chronic allergic dermatitis and protective immunity against helminths

Ohnmacht, C. *et al. Immunity* 1 Sep 2010 (doi:10.1016/j.immuni.2010.08.011)

CD11c depletion severely disrupts Th2 induction and development *in vivo*

Phythian-Adams, A. T. *et al. J. Exp. Med.* 6 Sep 2010 (doi:10.1084/jem.20100734)

Inflammatory dendritic cells — not basophils — are necessary and sufficient for induction of Th2 immunity to inhaled house dust mite allergen

Hammad, H. *et al. J. Exp. Med.* 7 Sep 2010 (doi:10.1084/jem.20101563)

Basophils have recently attracted much interest as an antigen-presenting population, but the overall importance of basophils for T helper 2 (T_H2)-type immunity has remained unclear. These new studies suggest that only dendritic cells (DCs) are crucial for the initiation of T_H2-type immunity; basophils instead seem to be important for promoting chronic and secondary T_H2-type responses. Ohnmacht ***et al.*** generated a transgenic mouse that constitutively lacked most basophils; these mice had normal T_H2 cell responses to allergens and the helminth ***Nippostrongylus brasiliensis*** but showed resistance to IgE-dependent chronic allergic dermatitis and increased susceptibility to secondary helminth infections. However, DC-depleted mice had defective T_H2 cell development following immunization, despite normal basophil recruitment. Similarly, Phythian-Adams ***et al.*** reported that although DC depletion inhibited T_H2 cell development following infection with ***Schistosoma mansoni***, depletion of basophils had no effect. Hammad ***et al.*** showed that only DCs were essential for T_H2 cell responses to house dust mite allergen. High-affinity Fc receptor for IgE ($Fc\varepsilon R1)^+$ inflammatory DCs, but not basophils, presented antigen and induced T_H2 cell development following exposure to allergen. However, basophils did amplify the T_H2-type response following allergen challenge. The description of a role for $Fc\varepsilon R1^+$ DCs may explain why previous studies using $Fc\varepsilon R1$-specific antibodies to deplete basophils suggested that they were crucial for T_H2 cell development.

T CELL RESPONSES

Responses against a subdominant $CD8^+$ T cell epitope protect against immunopathology caused by a dominant epitope

Ruckwardt, T. J. *et al. J. Immunol.* 10 Sep 2010 (doi:10.4049/jimmunol.1001606)

The $CD8^+$ T cell response to respiratory syncytial virus (RSV) in CB6F1 mice is focused on two viral epitopes — the immunodominant epitope H2-K^d–$M2_{82–90}$ and the subdominant epitope H2-D^b–$M_{187–195}$. Although RSV is cleared efficiently by the T cell response, this often results in immunopathology; this study looked at the contribution of these viral epitopes to immunity versus host damage. By mutating MHC-binding anchor residues in the RSV M2 and M proteins, the authors could study the responses to $M2_{82–90}$ and $M_{187–195}$ separately. Absence of the dominant $M2_{82–90}$ epitope was compensated for by an increased response to the subdominant $M_{187–195}$ epitope; this increased response effectively cleared RSV and resulted in less illness. Absence of $M_{187–195}$ resulted in 'overcompensation' by the response to $M2_{82–90}$ and increased illness that correlated with decreased functionality of the dominant T cell population as measured by cytokine production. These results indicate that the subdominant H2-D^b–$M_{187–195}$ response exerts some form of beneficial control over the dominant H2-K^d–$M2_{82–90}$ response.