RECRUITMENT AND GENE EXPRESSION PROFILES OF IL-4 EXPRESSING CELLS DURING HELMINTH INFECTION

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Infection of mice with the parasitic nematode, *Nippostrongylus brasiliensis*, induces a strong type 2 immune response that can lead to lung pathology. We used IL-4 gene-targeted reporter mice (4get mice), which express GFP from a bicistronic IL-4/GFP mRNA, allowing the recovery and identification of IL-4-expressing cells in vivo. Three major IL-4-expressing cells - eosinophils, basophils and Th2 cells - were recruited to the tissues during parasite migration. Eosinophils and Th2 cells required Stat6 expression by a bone marrow-derived cell for efficient tissue recruitment. Stat6 expression by non-bone marrow-derived cells was not necessary for immune cell recruitment, but was required for worm expulsion from the intestine. Tissue recruitment of basophils was Stat6-independent, but, unlike eosinophils, was completely dependent on T cells. Unexpectedly, both eosinophils and basophils expressed GFP early during their development in the bone marrow, suggesting that control of IL-4 translation and/or protein secretion may represent critical checkpoints in regulating type 2 immunity. The capacity to isolate viable IL-4-expressing innate immune cells facilitated analysis using cell surface markers on eosinophils and basophils. Oligonucleotide microarrays were used to identify genes differentially expressed in eosinophils and basophils that might be involved in tissue-specific recruitment and effector activation during type 2 immune responses.