

Characterisation of CD4⁺CD25⁺ cells in parasitic helminth induced regulation

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We have found that a primary infection with the gastrointestinal nematode *Heligmosomoides polygyrus* elicits a potent CD4⁺CD25⁺Foxp3⁺ regulatory T cell population within a generalised Th2 environment. This indicates that long-lived helminth parasites may exploit the host regulatory network to suppress protective immunity.

We followed the expansion of CD4⁺CD25⁺ Treg cells within the mesenteric lymph nodes (MLN) and spleen over 70 days of infection. Over the time course, increased levels of IL-4, IL-13 and IL-10 were detected in both these sites by *in vitro* recall response to parasite antigen. In infected animals, regulatory T cell markers, such as surface bound TGF-β1 and CD103 were upregulated on CD4⁺CD25⁺ MLN cells (from 3.53% to 9.43% and 7.55% to 10.62% respectively) and CD4⁺CD25⁺ spleen cells (from 10.72% to 13.42% and 9.95% to 17.24% respectively), but not in either of the CD4⁺CD25⁻ subset (where levels remained below 1.2%). In naïve, as well as infected animals, the expression levels of both markers were at least 10 fold greater in the CD4⁺CD25⁺ cells than in CD4⁺CD25⁻ cells.

Additionally, we show that this regulatory population has potent *in vitro* suppressive activity. CD4⁺CD25⁺ MLN cells from infected animals (day 28) can suppress mitogen-induced proliferation by both naïve and infected CD4⁺CD25⁻ cells, whilst naïve CD4⁺CD25⁺ MLN cells can only suppress naïve CD4⁺CD25⁻ cells.