LSC 2013 abstract - Lung-resident CD4\(^+\)T cells are sufficient for IL-4R\(\alpha\) dependent recall immunity to nippostrongylus brasiliensis infection

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Body: Murine reinfection studies with the parasitic nematode Nippostrongylus brasiliensis have shown development of T helper 2 (T\(_{\text{h}2}\)) CD4\(^+\) T cell responses in the lung to be essential for immunity to secondary N. brasiliensis infection. We examined if secondary lymphoid recruited or lung-resident CD4\(^+\) T cell populations coordinated this immunity. Fingolimod (FTY720) blocking of T cell egress from lymph nodes (LN) to peripheral tissues impaired host ability to resolve a primary infection, but did not effect recall immunity. A pre-existing pulmonary CD4\(^+\) T cell population with increased expression of the T\(_{\text{h}2}\) associated T1/ST2 receptor and heightened parasite specific T\(_{\text{h}2}\) cytokine responses in the lung was associated with this protective immunity. Adoptive transfer of N. brasiliensis experienced pulmonary CD4\(^+\) T cells from FTY720 treated wild type and T cell IL-4Ra deficient mice demonstrated this protection to be IL-4R\(\alpha\) dependent. These results establish that lung-resident CD4\(^+\)T cells can drive effective recall immunity to N. brasiliensis independently of T cell recruitment from secondary lymphoid organs.