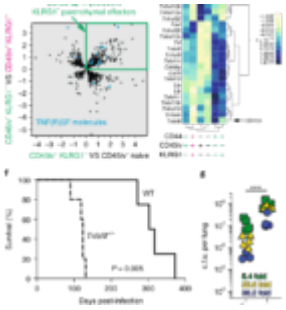
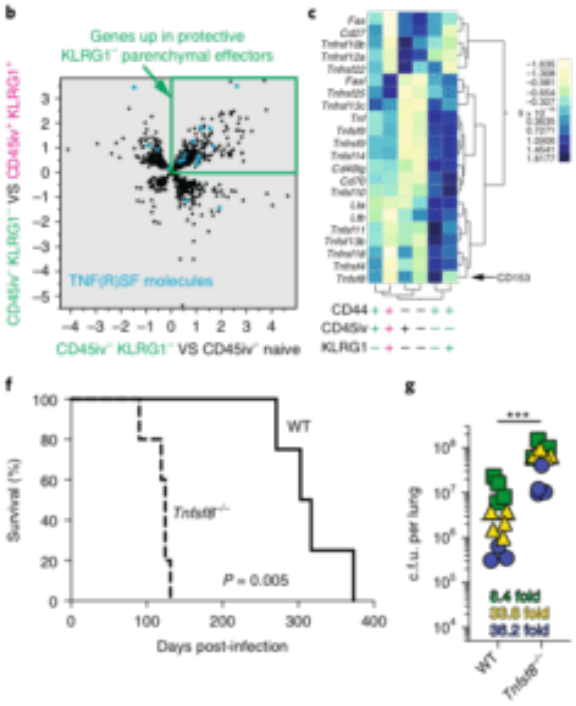
Is CD153 essential for M.tb control ?





Sallin et al 2018 Figure 1 b,c,f & g.

CD4 T cells, particularly those that express IFN-γ have been shown to be essential for control of *Mycobacterium tuberculosis* (M.tb) infection in both animal models and humans. However, numerous studies have shown that IFN-γ expression by CD4 T cells is not the sole mediator of host protection.

Previous studies have shown that lung-resident KLRG1- CD4 T cells compared to non-lung resident KLRG1+ CD4 T cells confer

superior protection demonstrated by reduced bacterial growth upon M.tb challenge. However, research has not been extensively conducted to determine what other functional features beyond Th1 cytokine, PD-1, CXCR3 and CX3CR1 co-expression are associated with the "protective" KLRG1- CD4 T cell phenotype. Thus, Sallin *et al.,* aimed to determine molecules that are associated with the "host-protective [in mice]" KLRG1- CD4 T cell phenotype.

Sallin *et al.,* demonstrated that the *Tnfsf8* (CD153) knock out mice were highly susceptible to M.tb infection demonstrated by higher lung bacterial burden and reduced survival compared to wild type mice. Adoptive transfer of both *IFN-γ-/-* and *Tnfsf8-/-* CD4 T cells to T cell deficient mice resulted in similar survival against M.tb infection compared with wild type. Suggesting that in addition to IFN-γ, CD153 is also required to control M.tb infection. Researchers also showed that CD153 expression by M.tb-specific CD4 T cells in in rhesus macaques is associated with low bacterial burden per granuloma, and is enriched in lung resident CD4 T cells compared with PBMC. Similarly, in humans CD153 expression by functional (Th1 cytokine+) CD4 T cells is lower in active TB patients compared with healthy M.tb-sensitized individuals.

In summary, using samples from mice, rhesus macaques and humans , Sallin *et al.*, demonstrated that CD153 plays a role in mediating host control of pulmonary M.tb infection. Thus, warranting further studies that determine CD153s mechanism of action.

Journal Article: Sallin *et al*,. 2018. Host resistance to pulmonary Mycobacterium tuberculosis infection requires CD153 expression. Nat. Microbiology

Article by Cheleka AM Mpande