Table 1, 2, 3. CD4 T cell lines selected against the same pMHC under Th1, Th2 and Th17 polarizing conditions evolve the expansion of highly distinct, dominant TCR α usage. CDR3 length for Th2>Th1>Th17

Figure 1. Th1, Th2 and Th17 polarized T cell lines have distinct cytokine profiles. Th1 and Th2 cells have different expression of co-stimulatory molecules (Th1>Th2 for OX40, ICAM-1, CD5, and CD40L; Th2>Th1 for ICOS) which supports the hypothesis that they interact at differing avidities

Additional File 3. Lack of support for an alternative model whereby Th2 polarization is a stochastic outcome of thymocyte depletion following a peptide-induced cytokine storm: no evidence of cytokine storm or thymocyte depletion.

Figures 3. TCR transgenics with elongated CDR3 α show impaired IFN-γ responses and select a preferred TCR β partner chain. Figure 4. Restimulation in vitro shows progressive focusing of favored TCRV β usage correlating with the adoption of a Th2 cell phenotype (IL-4, IL-5, IL-13 and no IFN-γ plus GATA-3 transcription progressively up-regulated).

Figure 5 TCR transgenic with elongated CDR3 α and β partner chains – TCR αβ: primed with IFA make enhanced T cell responses to peptide and Th2 cytokines (IL-4, 5, 9, 10, 13), but no IFN-γ or IL-17.

Figure 6 and 7. Th2 derived TCR αβ has low avidity. Tetramer binding studies of cells from Th1/Th2/Th17 polarized T cell lines and TCR α/β transgenics/non-transgenic controls: while either Th2 polarized lines or cells from Th2 derived -TCR αβ transgenics respond by making cytokine, binding studies indicate an avidity spectrum Th17>Th1>>Th2.

Figure 8 and 9. While transgenic expression of a Th2-derived, 'elongated' TCR-CDR3 α and the TCR αβ pair, clearly generated a program shifted away from Th1 immunity and with low binding avidity, cytokine-skewing could be over-ridden by altering peptide priming/challenge dose.