

The Molecular Bases of $\Delta\beta$ T-Cell Mediated Antigen Recognition

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Abstract : $\alpha\beta$ and $\gamma\delta$ T-cells are disparate T-cell lineages that, via their use of either $\alpha\beta$ or $\gamma\delta$ T-cell antigen receptors (TCRs) respectively, can respond to distinct antigens. Here we characterise a new population of human T-cells, term $\delta\beta$ T-cells, that express TCRs comprising a TCR- δ variable gene fused to a Joining- α /Constant- α domain, paired with an array of TCR- β chains. We characterised the cellular, functional, biophysical and structural characteristic feature of this new T-cells population that reveal some new insight into TCR diversity. We provide molecular bases of how $\delta\beta$ T-cells can recognise viral peptide presented by Human Leukocyte Antigen (HLA) molecule. Our findings highlight how components from $\alpha\beta$ and $\gamma\delta$ TCR gene loci can recombine to confer antigen specificity thus expanding our understanding of T-cell biology and TCR diversity.

Keywords : new delta-beta TCR, HLA, viral peptide, structural immunology

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