

$\gamma\delta$ TCR recognition of the MHC class Ib molecule T22 is encoded by somatic rearrangement

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Little is known about $\gamma\delta$ TCR recognition. Although the $\gamma\delta$ TCR has the greatest theoretical CDR3 diversity of all antigen receptors, a correlation between V gene usage and function in several experimental settings suggests that recognition may be germline-encoded. However, in many of these systems, the ligand recognized by the $\gamma\delta$ TCR is not known. To dissect the principles underlying $\gamma\delta$ TCR recognition, we analyzed the TCR features of the $\gamma\delta$ T cell repertoire specific for the MHC class Ib molecule T22. We found that T22-specific $\gamma\delta$ TCRs used a wide variety of V genes, indicating that T22 reactivity is not determined by V gene usage. Instead, a majority of the TCRs contained a consensus CDR3 δ motif utilizing the D δ 2 segment in a single reading frame followed by a P-nucleotide-encoded residue. This junctional motif is also present in two $\gamma\delta$ TCR clones, G8 and KN6, that have been previously reported to recognize T22. These results indicate a crucial role for the CDR3 δ region in determining $\gamma\delta$ TCR-mediated recognition of T22.