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Structural Comparison of AHIII TCR Complexed with A2 pMHC Mutants with Different Binding Affinities. Peter J. Miller¹, Brian Conti¹, Yael Pazy-Benhar², Edward J. Collins^{1,2}, ¹Dept. of Biochemistry and Biophysics, ²Dept. of Microbiology and Immunology, Univ. of North Carolina, Chapel Hill, NC 27599.

Activation of immune system T cells occurs when T cell receptor (TCR) binds to major histocompatibility complex presenting a peptide (pMHC). It is still unclear whether affinity or kinetics between TCR and pMHC plays the greater role in that activation. We recently reported the crystal structure of the xenoreactive mouse AHIII TCR complexed with human A2 pMHC. Using surface plasmon resonance (SPR) we have established binding constants for AHIII TCR with a number of human class I A2 pMHC, that have mutations to alanine in the MHC, peptide, TCR interface. The SPR data suggests a linear correlation between affinity and cytotoxic T cell activation. We crystallized complexes of AHIII TCR and a number of the A2 pMHC mutants from representative points along our linear plot. Here we present our binding data and the corresponding x-ray crystal structures of AHIII TCR complexed with the A2 pMHC mutants.