

A model for the study of MHC II presentation to antigen specific T cells in non-lymphoid tissue

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Antigen specific effector CD4⁺ T cells accumulate preferentially at non-lymphoid sites of antigen deposition. While we expect that the inflammatory milieu in the tissue initiates the entry of effector T cells equally, we hypothesize that in order for maximal accumulation, sequestration, and sustained activation to occur, antigen-specific T cells must recognize cognate antigen in the context of MHC II at the actual site of antigen deposition. Using TEa transgenic T cells specific for the E α peptide presented in the context of MHC II we have determined that antigen specific T cells accumulate at sites of cognate antigen injected into the ears of mice on one side but do not accumulate equally in the contra-lateral ear where non-cognate antigen is present although the inflammatory conditions are similar. Analysis of effector T cells at sites of antigen deposition reveals differential cell surface expression of CD11a, CD27, functional PSGL-1, IL-2R β , CD62L, CD44, ICOS, CD103, CD45RB and CD90 when compared with the activated TEa T cells in the draining lymph node or naive T cells. Additionally there appears to be increased production of IFN- γ by TEa T cells where cognate antigen is present. The presence of TEa cells diminishes over time as antigen is depleted from the site. Additionally, blocking antigen presentation with the Y-Ae antibody reduces the accumulation of TEa cells in the ear although this may be due in part to a reduction in seeding of the tissue. These data indicate that active antigen presentation to TEa T cells is ongoing. As such, we expect that this model will allow us to further examine the role for MHC II presentation in non-lymphoid tissue in the sequestration of antigen specific T cells.