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**Differential cytolytic activity of primary versus memory CD8 T cells persisting in the CNS.**

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Infection of mice with the JHM strain of mouse hepatitis virus (JHMV) results in an acute infection that is predominantly controlled by CD8 T cells followed by a chronic phase, primarily regulated by antibody. Effector function of primary and reactivated memory CD8 T cells were compared in both B cell deficient J<sub>H</sub>D and wild type BALB/c mice. Virus specific CD8 T cells were detected phenotypically using tetramer staining and effector function was measured by *ex vivo* CTL assays. Although virus clearance was more rapid in the brains of immunized J<sub>H</sub>D mice, virus nevertheless still reactivated in the CNS albeit at lower levels compared to unprimed J<sub>H</sub>D mice. However, in contrast to the total loss of cytolytic activity in newly primed CD8 T cells following initial control of virus, *ex vivo* CTL activity was maintained in the CNS of immunized J<sub>H</sub>D mice during reactivation. Analogous to this result, JHMV intracerebral challenge of BALB/c mice immunized with a recombinant virus expressing the immunodominant pN peptide resulted in high percentages of pN specific CD8 T cells within the CNS that retained *ex vivo* cytolytic function. Furthermore, persistence of virus specific CD8 T cells correlated with increased expression of the anti-apoptotic marker Bcl-2. Thus, a distinct regulation of effector function in primary and secondary CD8 T cells can be observed in the infected CNS.

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