Influence of IL-15 on memory-phenotype $CD8^+$ cells

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Unlike naive lymphocytes, murine T cells with a memory ($CD44^{hi}$) phenotype have a relatively rapid rate of turnover (proliferation) *in vivo* and can survive in the absence of MHC ligands. Evidence will be presented that, in marked contrast to $CD44^{hi}$ $CD4^+$ cells, $CD44^{hi}$ $CD8^+$ cells are heavily dependent on contact with a cytokine, IL-15. This finding applies to 1) T cell proliferation induced via interferon-mediated stimulation of the innate immune system ("bystander" proliferation), 2) normal "background" T cell turnover, and 3) T cell survival. By all of these parameters, dependency on IL-15 is restricted to a subset of $CD44^{hi}$ $CD8^+$ cells expressing a high density of CD122 (IL-2Rβ), a component of the receptor for IL-15; for $CD122^{hi}$ cells, IL-15 dependency is especially prominent for cells expressing Ly49, a marker also found on natural killer cells. In contrast to $CD122^{hi}$ cells, the $CD122^{lo}$ subset of $CD44^{hi}$ $CD8^+$ cells is IL-15 independent; likewise, being devoid of $CD122^{hi}$ cells, the large population of $CD44^{hi}$ $CD4^+$ cells is IL-15 independent. Thus, both for proliferation and survival, subsets of memory-phenotype T cells differ radically in their dependence on IL-15.

References

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