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POSTER ABSTRACT

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Role of IL-2-induced gene expression in CD4 memory cell generation

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Memory T cells are generated during the primary immune response and persist thereafter to establish long-term immunity. The signals that regulate the development of memory T cells during priming remain unknown. We investigated the role of IL-2, a critical T cell growth- and differentiation factor, in memory cell formation. Therefore, we activated IL-2^{-/-} and wild-type DO.11.10 TCR transgenic T cells in vitro under conditions of comparable antigen-induced cell cycling. After adoptive transfer, activated IL-2^{-/-} DO.11 T cells failed to develop into long-lived memory cells. Addition of IL-2 during priming, but not other γ -signaling cytokines, restored the potential of IL-2^{-/-} T cells to become memory cells. Thus, we hypothesized that IL-2 induces a unique genetic programme during priming that is responsible for the successful development of memory cells from antigen-activated T cells. In an attempt to identify IL-2-induced genes involved in memory cell generation, gene expression profiles of naive, memory and IL-2^{-/-} DO.11 T cells activated in the absence or presence of IL-2 were compared with Affymetrix Genechips. Genes that are induced by IL-2 during priming and continue to be expressed in long-lived memory cells are considered important candidates for "memory genes". Functional analysis of selected genes is currently underway.