The role of the B7-1/2, LFA-3 and ICAM-1 costimulatory molecules in the modulation of T cell responses

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The physiological activation of T cells to proliferation and cytokine production requires at least two signals. Occupancy of the T cell receptor by antigen/MHC complexes delivers the first signal to T cell, while the second signal is provided by interaction with costimulatory ligands on antigen presenting cells (APC). CD2, LFA-1 and CD28 are the major costimulatory and adhesive molecules on T cells and bind to the LFA-3, ICAM-1 and B7 ligands respectively on APC. LFA-3 seems to play a central role for expansion of naive T helper cells, while memory cells seem to preferentially respond to the LFA-1/ICAM-1 pathway. The LFA-3 pathway is characterised by a strong adhesive function, induces strong production of TNF-? and IFN-? in both CD4+ and CD8+ T cells, but is a poor inducer of IL-2, while B7-1 is the most efficient inducer of IL-2 and supports long-lasting T cell proliferation. B7-1 costimulates induction of AP-1, NF-?B, CD28 and NF-AT and confirms the preferential induction of CD28RE