ESRF	**Experiment title:** Structure and Dimerization of a Soluble Form of B7-1	**Experiment number:** LS-1128
Beamline: BM14	**Date of experiment:** Various from: 1998 **to:** 1999	**Date of report:**
Shifts: 3	**Local contact(s):** Vivian Stojanoff	*Received at ESRF:*

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Report:

B7-1 (CD80) and B7-2 (CD86) are glycoproteins expressed on antigen-presenting cells. The binding of these molecules to the T cell homodimers CD28 and CTLA-4 (CD152) generates costimulatory and inhibitory signals in T cells, respectively. The crystal structure of the extracellular region of B7-1 (sB7-1), solved to 3 Å resolution, consists of a novel combination of two Ig-like domains, one characteristic of adhesion molecules nad the other previously seen only in antigen receptors. In the crystal lattice, sB7-1 unexpectedly forms parallel, 2-fold rotationally symmetric homodimers. Analystical ultracentrifugation reveals that sB7-1 also dimerizes in solution. The structural data suggest a mechanism whereby the avidity-enhanced binding of B7-1 and CTLA-4 homodimers, along with the relatively high affinity of these interactions, favours the formation of very stable inhibitory signaling complexes.