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P 207 ROLE OF ICAM-3 IN LYMPHOCYTE ADHESION

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Recently ICAM-3 has been identified as third intercellular adhesion molecule that binds LFA-1. Like ICAM-1 and ICAM-2 ICAM-3 belongs to the immunoglobulin superfamily but is expressed solely on lymphoid cells, in contrast to ICAM-1 and ICAM-2. To investigate the role of ICAM-3 in lymphocyte adhesion, mouse L-cells were transfected either with ICAM-1, ICAM-2 or ICAM-3 cDNA alone, or with combinations of cDNA's of the various ICAM's.

We determined whether binding of LFA-1 to ICAM-2 and ICAM-3 requires activation of the LFA-1 molecule as has been reported for adhesion to ICAM-1. This was done by investigating the capacity of different stimuli, known to promote LFA-1/ICAM-1 adhesion, to induce LFA-1 mediated binding to L-ICAM-2 and L-ICAM-3 cells. Different LFA-1 activating stimuli, like CD2 and CD3 triggering, PMA activation, Mn^{2+} , and different LFA-1 activating antibodies were investigated. To determine whether lymphocyte binding to L-ICAM-2 and L-ICAM-3 cells is dependent on cell activation and differentiation, adhesion assays were performed with resting T cells, as well as activated T cells. The results demonstrate that T cells can bind ICAM-2 and ICAM-3, however the strongest adhesion is observed to ICAM-1. Activation of LFA-1 is required for binding to ICAM-2 as well as ICAM-3. Certain LFA-1 activating antibodies induce T cell binding to ICAM-1, whereas they inhibit T cell binding to ICAM-2 and ICAM-3. Furthermore the results demonstrate that clustering of LFA-1 on the cell surface facilitates LFA-1 mediated adhesion to ICAM-1, ICAM-2 and ICAM-3.