Role of the CD 26 antigen in T cell activation

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The CD 26 antigen was initially defined by the monoclonal antibody (mAb) anti-Ta 1, and was originally described as a T cell activation antigen. We have recently developed anti-1 F 7, a mAb recognizing the CD 26 antigen which is preferentially expressed on the surface of cells belonging to the CD 4 + CD 29 + helper subset. Interestingly, anti-1 F 7 inhibited both tetanus toxoid-induced T cell proliferation and PWM-driven IgG synthesis, while anti-Ta 1 was found to have no such inhibitory effect. In contrast, solid-phase immobilization of anti-1 F 7, but not anti-Ta 1, can induce CD 4 cell proliferation in the presence of submitogenic doses of anti-CD 3, anti-CD 2 or PMA, without requiring the addition of exogenous IL-2 or the presence of accessory cells. Moreover, we showed that anti-CD 26 not only modulated the surface expression of CD 26, but also unexpectedly resulted in the enhanced proliferative activity of human T cells via either

the T cell receptor (TcR/CD 3) or CD 2 pathways. This increased proliferative activity was associated with enhanced calcium mobilization following T cell activation. In addition, we have demonstrated that the 1 F 7 epitope, but not the Ta 1 epitope, of the CD 26 antigen is a functional collagen receptor involved in collagen-induced human CD 4 T cell activation. It has recently been determined that the CD 26 antigen is the enzyme dipeptidyl peptidase IV (DPPIV), a membrane-associated ectoenzyme found on a number of tissue types. Thus, the CD 26 antigen has very unique characteristics. It is a cell surface enzyme, a functional collagen receptor and is involved in T cell activation. In this meeting, I will present our latest data defining the molecular basis of the CD 26 antigen in T cell activation by cDNA cloning and elucidation of the structure of the human CD 26 antigen.