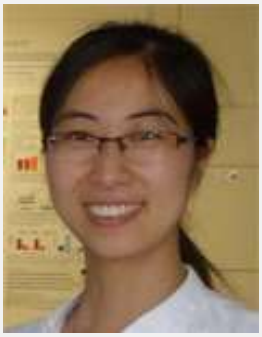
ImmunoTools IT-Box-Cy55M-Award 2013



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Investigation of the role of CD26 in immune regulation

CD26, also known as dipeptidyl peptidase IV (EC 3.4.14.5), is a ubiquitous, multifunctional protein which involved in several biological processes. A great number of observations have linked CD26 to the functions of the immune system and, in particular to the functions of T cells. As a co-stimulator CD26 play an important role in T cell activation (Fleischer, 1987; Dang et al., 1990a). Only $CD4^+$ cells that co-express CD26 can provide helper functions to activate cytotoxic T cells (Dang et al., 1990a) and induce immunoglobulin synthesis by B cells (Gruber et al., 1988).

In order to investigate of the role of CD26 in immune response, CD26 knockout mice are used. In our AG it has been found that $CD26^{-/-}$ mice display an apparently normal phenotype, but in their spleen lymphocyte population, the percentage of $CD4^+$ T cells are lower and that of NK cells are higher than in $CD26^{+/+}$ mice. In their peripheral blood, $CD26^{-/-}$ mice presented a conspicuously decreased proportion of $CD4^+$ NKT lymphocytes. *In vitro,* compared with $CD26^{+/+}$ mice, the IL-4 production stimulated by PWM in $CD26^{-/-}$ mice was decreased by 60 – 80% in the supernatants of spleen lymphocytes, whereas the production of IL-10 and IFN-γ were increased. After immunization of mice with PWM *in vivo*, serum concentrations of total IgG, IgG1, IgG2a and IgE were markedly lower in $CD26^{-/-}$ mice than those in $CD26^{+/+}$ mice, while no difference was found in IgM production. After ovalbumin immunization *in vivo*, both IgM and IgG production were lower in $CD26^{-/-}$ mouse. But IgE production was not affected. Aerosol challenge with OVA resulted in a much more severe eosinophilia and inflammation in the lung of $CD26^{-/-}$ mice, which was caused by the significant increment of the local Th2 cytokines IL-4, IL-5 and IL-13.

For better understanding of the underlying molecular mechanisms of CD26 function lymphocytes will be isolated from both wild type and knockout mice. After stimulation with different cytokines (rm IFN-g, rm IL-2, rm IL-4, IL-6, rm IL-1ß, rm IL-10 and rm GM-CSF) the cell differentiation and immune response of different cells will be analysed. The recombinant proteins from the *IT-Box-Cy55M* are useful as a standard for the analysis of different cytokine secretion during lymphocytes activation, proliferation and differentiation. In addition, a series of cytokines are substrates of DPPIV, such as SDF-1a, SDF-1b, RANTES, Eotaxin, MCP-1, MCP-2, MCP-3 and IP-10. By treatment of such recombinant cytokines the different responses of $CD26^{+/+}$- and $CD26^{-/-}$-lymphocytes for migration and invasion will be studied.

ImmunoTools *IT-Box-Cy55M* for **Xiangli Zhao** includes 55 recombinant cytokines

rm EGF, rm Eotaxin / CCL11, rm FGF-a / FGF-1, rm FGF-b / FGF-2, rm FGF-8, rm Flt3L / CD135, rm G-CSF, rm GM-CSF, rm GRO-a / CXCL1, rm GRO-b / CXCL2, rm IFNgamma, rm IL-1alpha, rm IL-1beta, rm IL-2, rmIL-3, rm IL-4, rm IL-5, rm IL-6, rm IL-7, rm IL-9, rm IL-10, rm IL-11, rm IL-13, rm IL-15, rm IL-16, rm IL-17A, rm IL-17C, rm IL-17F, rm IL-19, rm IL-20, rm IL-21, rm IL-22, rm IL-25 / IL-17E, rm IL-27, rm IL-31, rm IL-33, rm IP-10 / CXCL10, rm LIF, rm MCP1 / CCL2, rm M-CSF, rm MIP-1α/ CCL3, rm MIP-1β / CCL4, rm MIP3α / CCL20, rm MIP3β / CCL19, rm NGF-beta, rm PDGF-AA, rm PDGF-BB, rm RANTES / CCL5, rm sCD40L / CD154, rm SCF, rm SDF-1α / CXCL12a, rm SDF-1β / CXCL12b, rm TNFα, rm TPO, rm VEGF DETAILS

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