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CXCL16 is a pivotal role of touching mediator in lymphoid network of mouse

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Lymph node in immune system is secondary lymphoid organ for immune reaction between innate immune system and adaptive immune system. So far now, it has been well established for immune cell interactions. However, the factors that mediate the interaction between lymphocytes and microorganenviroment surrounding immune cells are poorly understood. Stromal cells in lymphoid tissues play a role as microenvironmental fields or immune-platform required for the triggering of efficient immune responses. Fibroblastic reticular cells (FRCs) are one of the components of such stromal structures they construct the reticular network, keep the shape of organ and may control immune cells' behavior. We show that a mouse lymph node-derived FRC cell line, BLS4, expresses CXC chemokine ligand (CXCL) 16in membrane of cell stimulated by TNF and IFN. Expression of CXCL16 triggered by TNF is related to NFB, p38 MAPK, and PKA. IL-12 enhances the expression of CXCR6 in anti-CD3/CD28-stimulated CD8+ T cells and their adhesion to the BLS4 cell surface in a TNF-dependent fashion. When these cells are blocked with both anti-CXCL16 and anti-VCAM-1 antibodies, the adherence is significantly reduced. Collectively, these findings suggest that CXCL16 is an critical role of touching mediator of lymphocyte-stromal interaction within lymphoid space.

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Improving Transglycosylation Activity of *Thermotoga neapolitana* β-glucosidase by Site-directed mutagenesis

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β-glucosidases are industrially useful enzymes which hydrolyzes a broad variety of aryl- and alkyl-β-D-glucoside as well as glucosides with only a carbohydrate moiety. In previous studies β-glucosidase of *Thermotoga neapolitana* (GghA) could synthesize various oligosaccharides and arbutin derivatives efficiently by transferring the carbohydrate moiety to oligosaccharide and arbutin acceptors. Based on the mutant study of β-glycosidase of *Thermus thermophilus*, the homologous amino acids, N291, F412, of GghA was mutated to examine the changes of the transferring activity for the synthesis of various types of oligosaccharides. Three mutant enzymes, N291T, F412S, and N291T/F412S, which expect to decrease the hydrolytic activity, but increase the transglycosylation activity were created and purified by mutagenesis PCR and Ni-NTA affinity chromatography. The N291T, F412S, and N291T/F412S mutant enzymes showed 14-, 300-, and 4000-fold less hydrolytic activity compared to the wild-type enzyme, respectively. When arbutin and *p*NPG were used as an acceptor and a donor, all three mutant enzymes showed the enhanced transglycosylation activity over the wild-type enzyme.