The mechanism of T cell aging through enhanced CD45RB expression

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Dysfunctions in T cells during aging are associated with the onset and progression of age-related diseases including cancer. Previously we found that elevated expression of phosphatase CD45RB in naïve $CD8^+$ T cells was associated with T cell aging. To elucidate the mechanism of T cell aging through enhanced CD45RB expression, we analyzed microarray data used RNAs from $CD45RB^{high}$ and $CD45RB^{low}$ naïve $CD8^+$ T cells and identified some genes whose expression levels were correlated with CD45RB expression. One of those factors was a co-stimulation molecule which inhibited the growth of $CD8^+$ T cells. Moreover, the suppression of the co-stimulation molecule by the specific antibody recovered anti-tumor activity in aged mouse models for cancer immunotherapy. These results suggest the possibility that the inhibition of the co-stimulation molecule, which is co-expressed with CD45RB, may be linked with recovery of T cell aging.