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T cell-specific promoter activity of the human NeuAc α 2,3Galβ 1,3GalNAcα 2,6-sialyltransferase (hST6GalNAc IV)

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The mRNA expression of the sialyltransferase genes is regulated in a cell type-specific manner. To characterize the region regulating the transcription activity of the human NeuAc α 2,3Gal β 1,3GalNAc α 2,6-sialyltransferase (hST6GalNAc IV) gene, hST6GalNAc IV promoter fragments containing varying lengths of 5′-flanking sequence were generated by LA-PCR and inserted into pGL3-Basic plasmid, resulting in a series of 5′-deletion constructs. Analysis of promoter activity by luciferase assay revealed a high transcriptional activity in human T cells such as Jurkat and Molt4, but not in human neuroblastoma SK-N-MC cells, suggesting a T cell-specific manner of hST6GalNac IV promoter. In T cells, the progressive removal of fragments stretching between nucleotide residues 1883 and 294 resulted in a gradual increase in transcriptional activity. The maximum activity was obtained with pGL3-294, and reached about 500-fold higher activity than the promoterless and enhancerless construct pGL3-Basic. Further deletion in the 5′ end resulted in a decrease in activity. These results revealed that the -294 to -110 region is important for transcriptional activity of the hST6GalNAc IV gene in human T cells.

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