SANTA CRUZ BIOTECHNOLOGY, INC.

FucT-IV siRNA (h): sc-40585

BACKGROUND

Fucosyltransferases (FucTs) catalyze the covalent association of fucose to different positional linkages on sugar acceptor molecules. The carbohydrate moieties that are generated are covalently attached to cell surfaces and are necessary to ensure a surface contour that satisfies a variety of physiological roles. FucT-IV, α-(1,3)-fucosyltransferase 4), also known as FUT4, FCT3A or ELFT, is a 405 amino acid single-pass type II membrane protein that localizes to Golgi stacks. During embryogenesis, FucT-IV is highly expressed in skin, liver, kidney, muscle and small intestine where it functions to catalyze the glycosidic attachment of α-Fucose to various molecules, such as N-acetyl-lactosamines. Via its catalytic activity, FucT-IV participates in the synthesis of carbohydrate molecules like the cell-adhesion antigen CD15 (also known as Lewis X), thereby playing a role in cell cycle events such as apoptosis and cell-cell binding. Overexpression of FucT-IV is implicated in epithelial cancers, suggesting a possible role for FucT-IV in carcinogenesis.

REFERENCES

1. Stocks, S.C., et al. 1990. Expression of the CD15 differentiation antigen (3-fucosyl-N-acetyl-lactosamine, LeX) on putative neutrophil adhesion molecules CR3 and NCA-160. Biochem. J. 268. 275-280.
2. Wagers, A.J. and Kansas, G.S. 2000. Potent induction of α (1,3)-fucosyltransferase VII in activated $CD4^+$ T cells by TGF-β1 through a p38 mitogen-activated protein kinase-dependent pathway. J. Immunol. 165: 5011-5016.
3. Huang, M.C., et al. 2000. P-Selectin glycoprotein ligand-1 and E-Selectin ligand-1 are differentially modified by fucosyltransferases FucT-IV and FucT-VII in mouse neutrophils. J. Biol. Chem. 275: 31353-31360.
4. Withers, D.A. and Hakomori, S.I. 2000. Human α (1,3)-fucosyltransferase IV (FucT-IV) gene expression is regulated by Elk-1 in the U-937 cell line. J. Biol. Chem. 275: 40588-40593.
5. Taniguchi, A., et al. 2000. Expression and transcriptional regulation of the human α1,3-fucosyltransferase 4 (FUT4) gene in myeloid and colon adenocarcinoma cell lines. Biochem. Biophys. Res. Commun. 273: 370-376.
6. Nakayama, F., et al. 2001. CD15 expression in mature granulocytes is determined by α 1,3-fucosyltransferase IX, but in promyelocytes and monocytes by α 1,3-fucosyltransferase IV. J. Biol. Chem. 276: 16100-16106.

CHROMOSOMAL LOCATION

Genetic locus: FUT4 (human) mapping to 11q21.

PRODUCT

FucT-IV siRNA (h) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see FucT-IV shRNA Plasmid (h): sc-40585-SH and FucT-IV shRNA (h) Lentiviral Particles: sc-40585-V as alternate gene silencing products.

For independent verification of FucT-IV (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-40585A, sc-40585B and sc-40585C.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

FucT-IV siRNA (h) is recommended for the inhibition of FucT-IV expression in human cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

GENE EXPRESSION MONITORING

FucT-IV (MY-1): sc-59531 is recommended as a control antibody for monitoring of FucT-IV gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor FucT-IV gene expression knockdown using RT-PCR Primer: FucT-IV (h)-PR: sc-40585-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Zhang, D., et al. 2011. Difucosylated oligosaccharide Lewis Y is contained within Integrin $\alpha_v\beta_3$ on RL95-2 cells and required for endometrial receptivity. Fertil. Steril. 95: 1446-1451.e1.
2. Chachadi, V.B., et al. 2015. Glycosyltransferases involved in the synthesis of MUC-associated metastasis-promoting selectin ligands. Glycobiology 25: 963-975.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.