SANTA CRUZ BIOTECHNOLOGY, INC.

RUNX1 siRNA (h): sc-37677

BACKGROUND

The mammalian Runt-related transcription factor (RUNX) family comprises three members, RUNX1 (also designated AML-1, PEBP2αB, CBFA2), RUNX2 (also designated AML-3, PEBP2αA, CBFA1, Osf2) and RUNX3 (also designated AML-2, PEBPαC, CBFA3). RUNX family members are DNA-binding proteins that regulate the expression of genes involved in cellular differentiation and cell cycle progression. RUNX1 is involved in hematopoiesis and is frequently targeted in human leukemia by chromosomal translocations that fuse the DNA-binding domain of RUNX1 to other transcription factors and corepressor molecules. In addition to its role in leukemogenesis, RUNX1 is also involved in sensory neuron diversification. Specifically, RUNX1 promotes axonal growth, is selectively expressed in neural crest-derived TrkA+ sensory neurons and mediates TrkA transactivation in migratory neural crest cells. Alternative splicing gives rise to several isoforms of RUNX1.

REFERENCES

1. Daga, A., et al. 1992. Leukemia/*Drosophila* homology. Nature 356: 448.
2. Golub, T.R., et al. 1995. Fusion of the TEL gene on 12p13 to the AML1 gene on 21q22 in acute lymphoblastic leukemia. Proc. Natl. Acad. Sci. USA 92: 4917-4921.
3. Miyoshi, H., et al. 1995. Alternative splicing and genomic structure of the AML1 gene involved in acute myeloid leukemia. Nucleic Acids Res. 23: 2762-2769.

CHROMOSOMAL LOCATION

Genetic locus: RUNX1 (human) mapping to 21q22.12.

PRODUCT

RUNX1 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 RUNX1 shRNA Plasmid (h): sc-37677-SH and RUNX1 shRNA (h) Lentiviral Particles: sc-37677-V as alternate gene silencing products.

For independent verification of RUNX1 (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-37677A, sc-37677B and sc-37677C.

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

RUNX1 siRNA (h) is recommended for the inhibition of RUNX1 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

RUNX1 (A-2): sc-365644 is recommended as a control antibody for monitoring of RUNX1 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 RUNX1 gene expression knockdown using RT-PCR Primer: RUNX1 (h)-PR: sc-37677-PR (20 µl, 493 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Kaur, G., et al. 2010. RUNX1/core binding factor A2 regulates platelet 12-lipoxygenase gene (ALOX12): studies in human RUNX1 haplodeficiency. Blood 115: 3128-3135.
2. Ter Elst, A., et al. 2011. Repression of vascular endothelial growth factor expression by the runt-related transcription factor 1 in acute myeloid leukemia. Cancer Res. 71: 2761-2771.
3. Sangpairoj, K., et al. 2017. RUNX1 regulates migration, invasion, and angiogenesis via p38 MAPK pathway in human glioblastoma. Cell. Mol. Neurobiol. 37: 1243-1255.
4. Mao, G.F., et al. 2017. Dysregulation of PLDN (pallidin) is a mechanism for platelet dense granule deficiency in RUNX1 haplodeficiency. J. Thromb. Haemost. 15: 792-801.
5. Mao, G., et al. 2017. Transcription factor RUNX1 regulates platelet PCTP (phosphatidylcholine transfer protein): implications for cardiovascular events: differential effects of RUNX1 variants. Circulation 136: 927-939.
6. Daifu, T., et al. 2021. Suppression of malignant rhabdoid tumors through Chb-M'-mediated RUNX1 inhibition. Pediatr. Blood Cancer 68: e28789.
7. Jalagadugula, G., et al. 2022. Defective RAB31-mediated megakaryocytic early endosomal trafficking of VWF, EGFR, and M6PR in RUNX1 deficiency. Blood Adv. E-published.

RESEARCH USE

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