SANTA CRUZ BIOTECHNOLOGY, INC.

RUNX3 siRNA (h): sc-37679

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), and belongs to the acute myeloid leukemia (AML) family. RUNX family members are DNA-binding proteins that regulate the expression of genes involved in cellular differentiation and cell cycle progression. RUNX3 is expressed in cells of hematopoietic origin, including myeloid and B-cell lines and spleen. By playing a role in controlling the growth and differentiation of gastric epithelial cells, RUNX3 is a strong candidate as a gastric cancer tumor suppressor. Specifically, hypermethylation inactivates the gene encoding RUNX3. The detection of hypermethylation at multiple regions within the RUNX3 CpG island may aid in the diagnosis and risk assessment of gastric cancer.

REFERENCES

1. Bae, S.C., et al. 1995. Cloning, mapping and expression of PEBP2αC, a third gene encoding the mammalian Runt domain. Gene 159: 245-248.
2. Speck, N.A., et al. 1995. A new transcription factor family associated with human leukemias. Crit. Rev. Eukaryot. Gene Expr. 5: 337-364.
3. Meyers, S., et al. 1996. AML-2 is a potential target for transcriptional regulation by the t(8;21) and t(12;21) fusion proteins in acute leukemia. Oncogene 13: 303-312.

CHROMOSOMAL LOCATION

Genetic locus: RUNX3 (human) mapping to 1p36.11.

PRODUCT

RUNX3 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 RUNX3 shRNA Plasmid (h): sc-37679-SH and RUNX3 shRNA (h) Lentiviral Particles: sc-37679-V as alternate gene silencing products.

For independent verification of RUNX3 (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-37679A, sc-37679B and sc-37679C.

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

RUNX3 siRNA (h) is recommended for the inhibition of RUNX3 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

RUNX3 (R3-5G4): sc-101553 is recommended as a control antibody for monitoring of RUNX3 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 RUNX3 gene expression knockdown using RT-PCR Primer: RUNX3 (h)-PR: sc-37679-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. Kang, K.A., et al. 2013. Oxidative stress induces proliferation of colorectal cancer cells by inhibiting RUNX3 and activating the Akt signaling pathway. Int. J. Oncol. 43: 1511-1516.
2. Gan, H., et al. 2016. Interferon-γ promotes double-stranded RNA-induced TLR3-dependent apoptosis via upregulation of transcription factor RUNX3 in airway epithelial cells. Am. J. Physiol. Lung Cell. Mol. Physiol. 311: L1101-L1112.
3. Chakraborty, S., et al. 2017. Transcriptional regulation of FOXP3 requires integrated activation of both promoter and CNS regions in tumor-induced $CD8^+$ Treg cells. Sci. Rep. 7: 1628.
4. Dedoni, S., et al. 2019. Down-regulation of TrkB expression and signalling by valproic acid and other histone deacetylase inhibitors. J. Pharmacol. Exp. Ther. 370: 490-503.
5. Kim, B.R., et al. 2020. RUNX3 suppresses metastasis and stemness by inhibiting hedgehog signaling in colorectal cancer. Cell Death Differ. 27: 676-694.
6. Dedoni, S., et al. 2021. The neurotrophin receptor TrkC as a novel molecular target of the antineuroblastoma action of valproic acid. Int. J. Mol. Sci. 22: 7790.
7. Kim, H.Y., et al. 2021. RUNX3 regulates iron metabolism via modulation of BMP signalling. Cell Prolif. 54: e13138.

RESEARCH USE

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