SANTA CRUZ BIOTECHNOLOGY, INC.

PRMT1 siRNA (h): sc-41069

BACKGROUND

A class of proteins termed type 1 protein arginine N-methyltransferase (PRMT) enzymes contribute to posttranslational modification of RNA-binding proteins, but differ in substrate specificities, oligomerization properties and subcellular localization. PRMT1, the predominant form in mammalian cells, is located in the nucleus, while PRMT3 is present in the cytoplasm. At the carboxy-terminus, interleukin enhancer-binding factor 3 (ILF3) binds PRMT1, thereby regulating PRMT1 activitiy. Alternative mRNA splicing of the PRMT gene results in three isoforms of PRMT1 that differ in their amino-terminus regions. All three splice variants of PRMT1 are enzymatically active. PRMT3 recognizes and binds to RNA-associated substrates with a zinc-finger domain in its amino-terminus. The zinc-liganded form of this domain is required for the enzyme to recognize RNA-associated substrates.

CHROMOSOMAL LOCATION

Genetic locus: PRMT1 (human) mapping to 19q13.33.

PRODUCT

PRMT1 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 PRMT1 shRNA Plasmid (h): sc-41069-SH and PRMT1 shRNA (h) Lentiviral Particles: sc-41069-V as alternate gene silencing products.

For independent verification of PRMT1 (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-41069A, sc-41069B and sc-41069C.

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

PRMT1 siRNA (h) is recommended for the inhibition of PRMT1 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

PRMT1 (B-2): sc-166963 is recommended as a control antibody for monitoring of PRMT1 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 PRMT1 gene expression knockdown using RT-PCR Primer: PRMT1 (h)-PR: sc-41069-PR (20 µl, 534 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Yamaguchi, A. and Kitajo, K. 2012. The effect of PRMT1-mediated arginine methylation on the subcellular localization, stress granules, and detergent-insoluble aggregates of FUS/TLS. PLoS ONE 7: e49267.
2. Avasarala, S., et al. 2015. PRMT1 is a novel regulator of epithelial-mesenchymal-transition in non-small cell lung cancer. J. Biol. Chem. 290: 13479-13489.
3. Kim, D.I., et al. 2015. PRMT1 and PRMT4 regulate oxidative stress-induced retinal pigment epithelial cell damage in SIRT1-dependent and SIRT1-independent manners. Oxid. Med. Cell. Longev. 2015: 617919.
4. Zakrzewicz, D., et al. 2015. Elevated protein arginine methyltransferase 1 expression regulates fibroblast motility in pulmonary fibrosis. Biochim. Biophys. Acta 1852: 2678-2688.
5. Albrecht, L.V., et al. 2018. Arginine methylation is required for canonical Wnt signaling and endolysosomal trafficking. Proc. Natl. Acad. Sci. USA 115: E5317-E5325.
6. Albrecht, L.V., et al. 2019. Canonical Wnt is inhibited by targeting one-carbon metabolism through methotrexate or methionine deprivation. Proc. Natl. Acad. Sci. USA 116: 2987-2995.
7. Amano, G., et al. 2020. SCYL1 arginine methylation by PRMT1 is essential for neurite outgrowth via Golgi morphogenesis. Mol. Biol. Cell 31: 1963-1973.
8. Shimomura, M., et al. 2021. PRMT1 expression predicts response to neoadjuvant chemotherapy for locally advanced uterine cervical cancer. Oncol. Lett. 21: 150.
9. Cho, G., et al. 2023. Arginine 65 methylation of Neurogenin 3 by PRMT1 is required for pancreatic endocrine development of hESCs. Exp. Mol. Med. 55: 1506-1519.

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.