SANTA CRUZ BIOTECHNOLOGY, INC.

SMYD3 siRNA (m): sc-61576

BACKGROUND

SET and MYND domain-containing 3 (SMYD3), a 428-amino acid protein, is a member of an RNA polymerase complex and plays a role in transcriptional regulation. SMYD3 methylates Lys-4 of Histone H3, a specific tag for epigenetic transcriptional activation. The SMYD3 protein contains an N-terminal MYND-type zinc finger domain, followed by a SET domain, which shows methyltransferase activity. The presence of the heatshock protein HSP 90α greatly enhances SMYD3's methyltransferase activity. SMYD3 is expressed in testis and skeletal muscles and is over-expressed in a majority of colorectal carcinomas (CRCs), hepatocellular carcinomas (HCCs) as well as breast carcinomas (BCs). Inhibition of SMYD3 is a potential chemotherapeutic strategy.

REFERENCES

1. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 608783. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
2. Hamamoto, R., et al. 2004. SMYD3 encodes a histone methyltransferase involved in the proliferation of cancer cells. Nat. Cell Biol. 6: 731-740.
3. Ruden, D.M., et al. 2005. HSP 90 and environmental impacts on epigenetic states: a model for the *trans*-generational effects of diethylstibesterol on uterine development and cancer. Hum. Mol. Genet. 1: R149-R155.
4. Zhou, Z., et al. 2005. SMYD3-NY, a novel SMYD3 mRNA transcript variant, may have a role in human spermatogenesis. Ann. Clin. Lab. Sci. 35: 270-277.
5. Tsuge, M., et al. 2005. A variable number of tandem repeats polymorphism in an E2F-1 binding element in the 5' flanking region of SMYD3 is a risk factor for human cancers. Nat. Genet. 37: 1104-1107.

CHROMOSOMAL LOCATION

Genetic locus: Smyd3 (mouse) mapping to 1 H4.

PRODUCT

SMYD3 siRNA (m) 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 SMYD3 shRNA Plasmid (m): sc-61576-SH and SMYD3 shRNA (m) Lentiviral Particles: sc-61576-V as alternate gene silencing products.

For independent verification of SMYD3 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-61576A, sc-61576B and sc-61576C.

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

SMYD3 siRNA (m) is recommended for the inhibition of SMYD3 expression in mouse 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

SMYD3 (C-3): sc-398085 is recommended as a control antibody for monitoring of SMYD3 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).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor SMYD3 gene expression knockdown using RT-PCR Primer: SMYD3 (m)-PR: sc-61576-PR (20 µl, 559 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Vieira, F.Q., et al. 2015. SMYD3 contributes to a more aggressive phenotype of prostate cancer and targets Cyclin D2 through H4K20me3. Oncotarget 6: 13644-13657.
2. Williams, J.B., et al. 2023. Inhibition of histone methyltransferase SMYD3 rescues NMDAR and cognitive deficits in a tauopathy mouse model. Nat. Commun. 14: 91.

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.