SANTA CRUZ BIOTECHNOLOGY, INC.

METTL3 siRNA (h): sc-92172

BACKGROUND

METTL3 (methyltransferase like 3), also known as M6A, IME4, Spo8 or MT-A70, is a 580 amino acid nuclear speckle protein belonging to the methyltransferase superfamily, which includes DNA methyltransferases (Dnmt), histone methyltransferases and catechol-O-methyl transferases, as well as many others. Members of this family have enzymatic activity that results in the transfer of a methyl group to and from DNA, RNA or amino acids. Widely expressed at low levels, it is suggested that METTL3 may be associated with nuclear pre-mRNA splicing components. Considered a N^6-methyltransferase, METTL3 methylates adenosine residues of some mRNAs. N^6-methyladenosine is present at internal sites of several mRNAs, which may play a role in the efficiency of mRNA splicing, transport or translation. The gene encoding METTL3 is located on human chromosome 14, which houses over 700 genes and comprises nearly 3.5% of the human genome. Produced by alternative splicing events, two isoforms of METTL3 exists.

REFERENCES

1. Bokar, J.A., et al. 1997. Purification and cDNA cloning of the AdoMet-binding subunit of the human mRNA (N^6-adenosine)-methyltransferase. RNA 3: 1233-1247.
2. Bujnicki, J.M., et al. 2002. Structure prediction and phylogenetic analysis of a functionally diverse family of proteins homologous to the MT-A70 subunit of the human mRNA:m^6A methyltransferase. J. Mol. Evol. 55: 431-444.

CHROMOSOMAL LOCATION

Genetic locus: METTL3 (human) mapping to 14q11.2.

PRODUCT

METTL3 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 METTL3 shRNA Plasmid (h): sc-92172-SH and METTL3 shRNA (h) Lentiviral Particles: sc-92172-V as alternate gene silencing products.

For independent verification of METTL3 (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-92172A, sc-92172B and sc-92172C.

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

METTL3 siRNA (h) is recommended for the inhibition of METTL3 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

METTL3 (D-9): sc-518180 is recommended as a control antibody for monitoring of METTL3 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 METTL3 gene expression knockdown using RT-PCR Primer: METTL3 (h)-PR: sc-92172-PR (20 µl, 575 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Ye, F., et al. 2017. Kaposi's sarcoma-associated herpesvirus utilizes and manipulates RNA N^6-adenosine methylation to promote lytic replication. J. Virol. 91: e00466-17.
2. Gu, S., et al. 2018. N^6-methyladenosine mediates the cellular proliferation and apoptosis via microRNAs in arsenite-transformed cells. Toxicol. Lett. 292: 1-11.
3. Uddin, M.B., et al. 2019. An N^6-methyladenosine at the transited codon 273 of p53 pre-mRNA promotes the expression of R273H mutant protein and drug resistance of cancer cells. Biochem. Pharmacol. 160: 134-145.
4. Cheng, C., et al. 2020. METTL3-mediated m^6A modification of ZBTB4 mRNA is involved in the smoking-induced EMT in cancer of the lung. Mol. Ther. Nucleic Acids 23: 487-500.
5. Qiao, K., et al. 2021. RNA m^6A methylation promotes the formation of vasculogenic mimicry in hepatocellular carcinoma via Hippo pathway. Angiogenesis 24: 83-96.
6. Somasekharan, S.P., et al. 2022. Regulation of AR mRNA translation in response to acute AR pathway inhibition. Nucleic Acids Res. 50: 1069-1091.
7. Tian, J., et al. 2023. SLERT, as a novel biomarker, orchestrates endometrial cancer metastasis via regulation of BDNF/TRKB signaling. World J. Surg. Oncol. 21: 27.

RESEARCH USE

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