SANTA CRUZ BIOTECHNOLOGY, INC.

HDAC1 siRNA (m): sc-29344

BACKGROUND

In the intact cell, DNA closely associates with histones and other nuclear proteins to form chromatin. The remodeling of chromatin is believed to be a critical component of transcriptional regulation and a major source of this remodeling is brought about by the acetylation of nucleosomal histones. Acetylation of lysine residues in the amino-terminal tail domain of histone results in an allosteric change in the nucleosomal conformation and an increased accessibility to transcription factors by DNA. Conversely, the deacetylation of histones is associated with transcriptional silencing. Several mammalian proteins have been identified as nuclear histone acetylases, including GCN5, PCAF (for p300/CBP-associated factor), p300/CBP and the TFIID subunit TAF II p250. Mammalian HDAC1 (also designated HD1), HDAC2 (also designated mammalian RPD3) and HDAC3, all of which are related to the yeast transcriptional regulator Rpd3p, have been identified as histone deacetylases.

REFERENCES

1. Lee, D.Y., et al. 1993. A positive role for histone acetylation in transcription factor access to nucleosomal DNA. Cell 72: 73-82.
2. Braunstein, M., et al. 1993. Transcriptional silencing in yeast is associated with reduced nucleosome acetylation. Genes Dev. 7: 592-604.
3. Bauer, W.R., et al. 1994. Nucleosome structural changes due to acetylation. J. Mol. Biol. 236: 685-690.

CHROMOSOMAL LOCATION

Genetic locus: Hdac1 (mouse) mapping to 4 D2.2.

PRODUCT

HDAC1 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 HDAC1 shRNA Plasmid (m): sc-29344-SH and HDAC1 shRNA (m) Lentiviral Particles: sc-29344-V as alternate gene silencing products.

For independent verification of HDAC1 (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-29344A, sc-29344B and sc-29344C.

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

HDAC1 siRNA (m) is recommended for the inhibition of HDAC1 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

HDAC1 (10E2): sc-81598 is recommended as a control antibody for monitoring of HDAC1 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 HDAC1 gene expression knockdown using RT-PCR Primer: HDAC1 (m)-PR: sc-29344-PR (20 µl, 505 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Evankovich, J., et al. 2010. High mobility group box 1 release from hepatocytes during ischemia and reperfusion injury is mediated by decreased histone deacetylase activity. J. Biol. Chem. 285: 39888-39897.
2. Dobbin, M.M., et al. 2013. SIRT1 collaborates with ATM and HDAC1 to maintain genomic stability in neurons. Nat. Neurosci. 16: 1008-1015.
3. Yashiro, T., et al. 2015. PU.1 suppresses Th2 cytokine expression via silencing of GATA-3 transcription in dendritic cells. PLoS ONE 10: e0137699.
4. Tarapore, R.S., et al. 2016. NFκB has a direct role in inhibiting Bmp- and Wnt-induced matrix protein expression. J. Bone Miner. Res. 31: 52-64.
5. Hu, C., et al. 2017. Frontline science: ATF3 is responsible for the inhibition of TNF-α release and the impaired migration of acute ethanol-exposed monocytes and macrophages. J. Leukoc. Biol. 101: 633-642.
6. Kiweler, N., et al. 2018. The histone deacetylases HDAC1 and HDAC2 are required for the growth and survival of renal carcinoma cells. Arch. Toxicol. 92: 2227-2243.
7. Zhao, J., et al. 2020. Protein C-Ets-2 epigenetically suppresses TLRs-induced interleukin 6 production in macrophages. Biochem. Biophys. Res. Commun. 522: 960-964.
8. Syren, P., et al. 2021. Histone deacetylase 2-dependent ventricular electrical remodeling in a porcine model of early heart failure. Life Sci. 281: 119769.

RESEARCH USE

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