SANTA CRUZ BIOTECHNOLOGY, INC.

SIRT6 siRNA (h): sc-63028

BACKGROUND

Sirtuins (SIRT1-7) are human homologs of the yeast Sir2 (silent information regulator-2) protein and are divided into four main classes: SIRT1-3 are class I, SIRT4 is class II, SIRT5 is class III and SIRT6-7 are class IV. In *S. cerevisiae,* Sir2 deacetylates histones in a NAD-dependent manner, which regulates silencing at the telomeric, rDNA (ribosomal DNA) and silent mating-type loci. The human SIRT proteins are NAD-dependent deacetylases that act as intracellular regulators and are thought to have ribosyltransferase activity. SIRT6 (sirtuin 6), also known as SIR2L6, is a 355 amino acid protein that contains one deacetylase sirtuin-type domain and belongs to the sirtuin family. Localized to the nucleus, SIRT6 functions as an NAD^+-dependent Histone H3 lysine 9 (H3K9) deacetylase that modulates telomeric chromatin and is involved in DNA repair and telomeric longevity. SIRT6 binds zinc as a cofactor and is expressed as four isoforms that are produced as a result of alternative splicing events.

REFERENCES

1. Frye, R.A. 2000. Phylogenetic classification of prokaryotic and eukaryotic Sir2-like proteins. Biochem. Biophys. Res. Commun. 273: 793-798.
2. Liszt, G., et al. 2005. Mouse Sir2 homolog SIRT6 is a nuclear ADP-ribosyltransferase. J. Biol. Chem. 280: 21313-21320.
3. Michishita, E., et al. 2005. Evolutionarily conserved and nonconserved cellular localizations and functions of human SIRT proteins. Mol. Biol. Cell 16: 4623-4635.

CHROMOSOMAL LOCATION

Genetic locus: SIRT6 (human) mapping to 19p13.3.

PRODUCT

SIRT6 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 SIRT6 shRNA Plasmid (h): sc-63028-SH and SIRT6 shRNA (h) Lentiviral Particles: sc-63028-V as alternate gene silencing products.

For independent verification of SIRT6 (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-63028A, sc-63028B and sc-63028C.

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

SIRT6 siRNA (h) is recommended for the inhibition of SIRT6 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

SIRT6 (2G1H1): sc-517196 is recommended as a control antibody for monitoring of SIRT6 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 SIRT6 gene expression knockdown using RT-PCR Primer: SIRT6 (h)-PR: sc-63028-PR (20 µl, 548 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Wu, M., et al. 2014. Expression and function of SIRT6 in muscle invasive urothelial carcinoma of the bladder. Int. J. Clin. Exp. Pathol. 7: 6504-6513.
2. Wu, M., et al. 2015. E2F1 enhances glycolysis through suppressing SIRT6 transcription in cancer cells. Oncotarget 6: 11252-11263.
3. Rizzo, A., et al. 2017. SIRT6 interacts with TRF2 and promotes its degradation in response to DNA damage. Nucleic Acids Res. 45: 1820-1834.
4. Hu, X., et al. 2018. SIRT6 deficiency impairs corneal epithelial wound healing. Aging 10: 1932-1946.
5. Yang, Y., et al. 2019. SIRT6 protects vascular endothelial cells from Angiotensin II-induced apoptosis and oxidative stress by promoting the activation of Nrf2/ARE signaling. Eur. J. Pharmacol. 859: 172516.
6. Li, D.J., et al. 2021. NAD^+-boosting therapy alleviates nonalcoholic fatty liver disease via stimulating a novel exerkine Fndc5/irisin. Theranostics 11: 4381-4402.
7. Wang, Y., et al. 2022. SIRT4-catalyzed deacetylation of Axin1 modulates the Wnt/β-catenin signaling pathway. Front. Oncol. 12: 872444.
8. Sun, J.L., et al. 2024. CTRP4 ameliorates inflammation, thereby attenuating the interaction between HUVECs and THP-1 monocytes through SIRT6/Nrf2 signaling. Biochem. Biophys. Res. Commun. 691: 149293.

RESEARCH USE

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