SANTA CRUZ BIOTECHNOLOGY, INC.

SIRT2 siRNA (h): sc-40988

BACKGROUND

The silent information regulator (SIR2) family of genes are highly conserved from prokaryotes to eukaryotes and are involved in diverse processes, including transcriptional regulation, cell cycle progression, DNA-damage repair and aging. In *S. cerevisiae,* Sir2p deacetylates histones in a NAD-dependent manner, which regulates silencing at the telomeric, rDNA and silent mating-type loci. Sir2p is the founding member of a large family, designated sirtuins, which contain a conserved catalytic domain. The human homologs, which include SIRT1–7, are divided into four main branches: SIRT1-3 are class I, SIRT4 is class II, SIRT5 is class III and SIRT6–7 are class IV. SIRT proteins may function via mono-ADP-ribosylation of proteins. SIRT2 contains a 323 amino acid catalytic core domain with a NAD-binding domain and a large groove which is the likely site of catalysis.

REFERENCES

1. Frye, R.A. 1999. Characterization of five human cDNAs with homology to the yeast SIR2 gene: Sir2-like proteins (sirtuins) metabolize NAD and may have protein ADP-ribosyltransferase activity. Biochem. Biophys. Res. Commun. 260: 273-279.
2. Sherman, J.M., et al. 1999. The conserved core of a human Sir2 homologue functions in yeast silencing. Mol. Biol. Cell 10: 3045-3059.
3. Frye, R.A. 2000. Phylogenetic classification of prokaryotic and eukaryotic SIR2-like proteins. Biochem. Biophys. Res. Commun. 273: 793-798.

CHROMOSOMAL LOCATION

Genetic locus: SIRT2 (human) mapping to 19q13.2.

PRODUCT

SIRT2 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 SIRT2 shRNA Plasmid (h): sc-40988-SH and SIRT2 shRNA (h) Lentiviral Particles: sc-40988-V as alternate gene silencing products.

For independent verification of SIRT2 (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-40988A, sc-40988B and sc-40988C.

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

SIRT2 siRNA (h) is recommended for the inhibition of SIRT2 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

SIRT2 (A-5): sc-28298 is recommended as a control antibody for monitoring of SIRT2 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 SIRT2 gene expression knockdown using RT-PCR Primer: SIRT2 (h)-PR: sc-40988-PR (20 µl, 460 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Ota, H, et al. 2007. Sirt1 modulates premature senescence-like phenotype in human endothelial cells. J. Mol. Cell. Cardiol. 43: 571-579.
2. Zuo, Q., et al. 2012. HDAC6 and SIRT2 promote bladder cancer cell migration and invasion by targeting cortactin. Oncol. Rep. 27: 819-24.
3. Wang, Y.L., et al. 2016. EWSR1 regulates mitosis by dynamically influencing microtubule acetylation. Cell Cycle 15: 2202-2215.
4. Kosciuczuk, E.M., et al. 2019. Sirtuin 2-mediated deacetylation of cyclin-dependent kinase 9 promotes STAT1 signaling in type I interferon responses. J. Biol. Chem. 294: 827-837.
5. Shao, Y., et al. 2021. Pterostilbene attenuates RIPK3-dependent hepatocyte necroptosis in alcoholic liver disease via SIRT2-mediated NFATc4 deacetylation. Toxicology 461: 152923.
6. Kim, M., et al. 2022. Dual effects of korean red ginseng on astrocytes and neural stem cells in traumatic brain injury: the HO-1-Tom20 axis as a putative target for mitochondrial function. Cells 11: 892.
7. Shin, D.H., et al. 2023. Oncogenic KRAS mutation confers chemoresistance by upregulating SIRT1 in non-small cell lung cancer. Exp. Mol. Med. 55: 2220-2237.
8. Su, C.C., et al. 2025. Tubulin acetylation enhances microtubule stability in trabecular meshwork cells under mechanical stress. Invest. Ophthalmol. Vis. Sci. 66: 43.

RESEARCH USE

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