SANTA CRUZ BIOTECHNOLOGY, INC.

DRP1 siRNA (h): sc-43732

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The Power to Question

BACKGROUND

Dynamin-related protein 1 (DRP1) mediates outer mitochondrial membrane fission in mammalian cells. DRP1 is also known as Dynamin-like protein 1, (Dlp1), DVLP or Dymple. DRP1 contains the N-terminal tripartite GTP-binding domain characteristic of the Dynamin superfamily of GTPases. DRP1 exists as a T-shaped dimer which contains a head, leg and stalk. The addition of GTP induces a rearrangement of the head and stalk that generates a force that ultimately results in membrane constriction. DRP1 is ubiquitously expressed with abundant expression in skeletal muscle, heart, kidney and brain. In the cell, DRP1 localized to the perinuclear region. In mouse brain, DRP1 is highly expressed in the cerebellum with particularly high levels in cerebellar Purkinje cells. During apoptosis, DRP1 translocates from the cytosol to mitochondria and localizes to potential sites of organelle division. Cell death is averted upon DRP inhibition, suggesting a critical role for mitochondrial fission in apoptosis.

CHROMOSOMAL LOCATION

Genetic locus: DNM1L (human) mapping to 12p11.21.

PRODUCT

DRP1 siRNA (h) is a target-specific 19-25 nt siRNA 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 DRP1 shRNA Plasmid (h): sc-43732-SH and DRP1 shRNA (h) Lentiviral Particles: sc-43732-V as alternate gene silencing products.

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

DRP1 siRNA (h) is recommended for the inhibition of DRP1 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

DRP1 (C-5): sc-271583 is recommended as a control antibody for monitoring of DRP1 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 DRP1 gene expression knockdown using RT-PCR Primer: DRP1 (h)-PR: sc-43732-PR (20 µl, 597 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

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3. Li, G., et al. 2015. Mitochondrial translocation and interaction of Cofilin and DRP1 are required for erucin-induced mitochondrial fission and apoptosis. Oncotarget 6: 1834-1849.
4. Yin, M., et al. 2016. Silencing DRP1 inhibits glioma cells proliferation and invasion by RHOA/ROCK1 pathway. Biochem. Biophys. Res. Commun. 478: 663-668.
5. Sin, J., et al. 2017. Coxsackievirus B escapes the infected cell in ejected mitophagosomes. J. Virol. 91: e01347-17.
6. Hua, R., et al. 2017. VAPs and ACBD5 tether peroxisomes to the ER for peroxisome maintenance and lipid homeostasis. J. Cell Biol. 216: 367-377.
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8. De, R., et al. 2018. Macrophage migration inhibitory factor regulates mitochondrial dynamics and cell growth of human cancer cell lines through CD74-NFκB signaling. J. Biol. Chem. 293: 19740-19760.
9. Lin, H.Y., et al. 2018. The causal role of mitochondrial dynamics in regulating Insulin resistance in diabetes: link through mitochondrial reactive oxygen species. Oxid. Med. Cell. Longev. 2018: 7514383.
10. Jin, X., et al. 2018. Fragmentation level determines mitochondrial damage response and subsequently the fate of cancer cells exposed to carbon ions. Radiother. Oncol. 129: 75-83.
11. Hoque, A., et al. 2018. Mitochondrial fission protein DRP1 inhibition promotes cardiac mesodermal differentiation of human pluripotent stem cells. Cell Death Discov. 4: 39.

RESEARCH USE

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