SANTA CRUZ BIOTECHNOLOGY, INC.

Fis1 siRNA (h): sc-60643

BACKGROUND

Fis1 localizes to the outer mitochondrial membrane and, along with Dynamin-related protein (DRP1), participates in mitochondrial fission. Fission and fusion mechanisms regulate mitochondrial morphology within the cell. Fission frequency is determined by the level of Fis1 molecules at the mitochondrial surface. Fis1 contains a C-terminal domain, which is required for mitochondrial localization, and an N-terminal domain, which is necessary for mitochondrial fission. Fragmentation of the mitochondrial network by Fis1 leads to cytochrome c release and apoptosis. The mitochondrial fission mechanisms may be involved in positively and negatively regulating apoptosis.

REFERENCES

1. James, D.I., et al. 2003. hFis1, a novel component of the mammalian mitochondrial fission machinery. J. Biol. Chem. 278: 36373-36379.
2. Yoon, Y., et al. 2003. The mitochondrial protein hFis1 regulates mitochondrial fission in mammalian cells through an interaction with the Dynamin-like protein DLP1. Mol. Cell. Biol. 23: 5409-5420.
3. Arai, R., et al. 2004. Establishment of stable hFis1 knockdown cells with an siRNA expression vector. J. Biochem. 136: 421-425.
4. Lee, Y.J., et al. 2004. Roles of the mammalian mitochondrial fission and fusion mediators Fis1, DRP1 and OPA1 in apoptosis. Mol. Biol. Cell 15: 5001-5011.
5. Dohm, J.A., et al. 2004. Cytosolic domain of the human mitochondrial fission protein Fis1 adopts a TPR fold. Proteins 54: 153-156.

CHROMOSOMAL LOCATION

Genetic locus: FIS1 (human) mapping to 7q22.1.

PRODUCT

Fis1 siRNA (h) is a pool of 2 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 Fis1 shRNA Plasmid (h): sc-60643-SH and Fis1 shRNA (h) Lentiviral Particles: sc-60643-V as alternate gene silencing products.

For independent verification of Fis1 (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-60643A and sc-60643B.

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

Fis1 siRNA (h) is recommended for the inhibition of Fis1 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

Fis1 (B-5): sc-376447 is recommended as a control antibody for monitoring of Fis1 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).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Fis1 gene expression knockdown using RT-PCR Primer: Fis1 (h)-PR: sc-60643-PR (20 µl, 496 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. 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.
2. 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.
3. Chang, Y.H., et al. 2020. The causal role of mitochondrial dynamics in regulating innate immunity in diabetes. Front. Endocrinol. 11: 445.

RESEARCH USE

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