

NDUFS3 siRNA (r): sc-270622

BACKGROUND

NDUFS3 (NADH dehydrogenase ubiquinone iron-sulfur protein 3) is one of about 45 subunits comprising complex I of the oxidative phosphorylation electron transport chain. The multisubunit NADH: ubiquinone oxidoreductase (complex I) is the first enzyme complex in the electron transport chain of the mitochondria. NDUFS3 is the last subunit of the seven subunits that make up the core of complex I. Through use of chaotropic agents, complex I can be separated into three different fractions: a flavoprotein fraction, an iron-sulfur protein (IP) fraction, and a hydrophobic protein (HP) fraction. The IP fraction includes NDUFS1-7. NDUFS3 contains a highly conserved casein kinase II phosphorylation site. Mutations in the NDUFS3 gene may cause optic atrophy, Leigh syndrome and complex I deficiency.

REFERENCES

1. Chow, W., et al. 1991. Determination of the cDNA sequence for the human mitochondrial 75-kDa Fe-S protein of NADH-coenzyme Q reductase. *Eur. J. Biochem.* 201: 547-550.
2. Loeffen, J., et al. 1998. cDNA sequence and chromosomal localization of the remaining three human nuclear encoded iron sulphur protein (IP) subunits of complex I: the human IP fraction is completed. *Biochem. Biophys. Res. Commun.* 247: 751-758.
3. Benit, P., et al. 2004. Mutant NDUFS3 subunit of mitochondrial complex I causes Leigh syndrome. *J. Med. Genet.* 41: 14-17.
4. Karahan, O.I., et al. 2005. Ultrasound evaluation of peritoneal catheter tunnel in catheter related infections in CAPD. *Int. Urol. Nephrol.* 37: 363-366.
5. Martin, M.A., et al. 2005. Leigh syndrome associated with mitochondrial complex I deficiency due to a novel mutation in the NDUFS1 gene. *Arch. Neurol.* 62: 659-661.
6. Smeitink, J.A., et al. 2005. Cell biological consequences of mitochondrial NADH: ubiquinone oxidoreductase deficiency. *Curr. Neurovasc. Res.* 1: 29-40.
7. Sparks, L.M., et al. 2005. A high-fat diet coordinately downregulates genes required for mitochondrial oxidative phosphorylation in skeletal muscle. *Diabetes* 54: 1926-1933.

CHROMOSOMAL LOCATION

Genetic locus: *Ndufs3* (mouse) mapping to 3q24.

PRODUCT

NDUFS3 siRNA (r) 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see NDUFS3 shRNA Plasmid (r): sc-270622-SH and NDUFS3 shRNA (r) Lentiviral Particles: sc-270622-V as alternate gene silencing products.

For independent verification of NDUFS3 (r) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-270622A and sc-270622B.

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 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

NDUFS3 siRNA (r) is recommended for the inhibition of NDUFS3 expression in rat 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 μ M in 66 μ l. 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

NDUFS3 (D-4): sc-374282 is recommended as a control antibody for monitoring of NDUFS3 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-IgG κ BP-HRP: sc-516102 or m-IgG κ 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-IgG κ BP-FITC: sc-516140 or m-IgG κ 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 NDUFS3 gene expression knockdown using RT-PCR Primer: NDUFS3 (r)-PR: sc-270622-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

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

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.