SANTA CRUZ BIOTECHNOLOGY, INC.

NDUFA1 siRNA (h): sc-90892

BACKGROUND

NDUFA1 (NADH dehydrogenase (ubiquinone) 1 α subcomplex, 1), also known as ZNF183 or MWFE, is one of about 45 subunits comprising Complex I of the oxidative phosphorylation electron transport chain. Consisting of 70 amino acids and expressed predominantly in skeletal muscle and heart, NDUFA1 functions as an accessory subunit of the multi-protein mitochondrial membrane respiratory chain NADH dehydrogenase complex (known as Complex I). Complex I plays an important role in the transfer of electrons from NADH to the respiratory chain, a process that is essential for cellular respiration. As a single-pass membrane protein, NDUFA1 localizes to the matrix side of the mitochondrial inner membrane and is a member of the complex I NDUFA1 subunit family. The gene encoding NDUFA1 maps to human chromosome Xq24 and mouse chromosome X A2. NDUFA1 defects may cause mitochondrial Complex I deficiency, a mitochondrial disorder with wide symptoms ranging from cardiomyopathy, myopathy, liver disease and neurological disorders.

REFERENCES

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2. Au, H.C., et al. 1999. The NDUFA1 gene product (MWFE protein) is essential for activity of complex I in mammalian mitochondria. Proc. Natl. Acad. Sci. USA 96: 4354-4359.
3. Gaikwad, J.S., et al. 2001. Identification of tooth-specific downstream targets of Runx2. Gene 279: 91-97.
4. Yadava, N., et al. 2002. Species-specific and mutant MWFE proteins. Their effect on the assembly of a functional mammalian mitochondrial complex I. J. Biol. Chem. 277: 21221-21230.
5. Qi, X., et al. 2004. SOD2 gene transfer protects against optic neuropathy induced by deficiency of complex I. Ann. Neurol. 56: 182-191.
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7. Pagliarini, D.J., et al. 2008. A mitochondrial protein compendium elucidates complex I disease biology. Cell 134: 112-123.
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CHROMOSOMAL LOCATION

Genetic locus: NDUFA1 (human) mapping to Xq24.

PRODUCT

NDUFA1 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 NDUFA1 shRNA Plasmid (h): sc-90892-SH and NDUFA1 shRNA (h) Lentiviral Particles: sc-90892-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

NDUFA1 siRNA (h) is recommended for the inhibition of NDUFA1 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

NDUFA1 (3B9-1A1): sc-517006 is recommended as a control antibody for monitoring of NDUFA1 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 NDUFA1 gene expression knockdown using RT-PCR Primer: NDUFA1 (h)-PR: sc-90892-PR (20 µl). 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.