

OPA1 siRNA (h): sc-106808

BACKGROUND

OPA1 (optic atrophy 1 gene protein), belongs to the Dynamin family. The gene encoding OPA1 localizes to 3q29, is targeted to mitochondria and is involved in mitochondrial biogenesis. Defects in OPA1 are a cause of optic atrophy type 1. OPA1 is mostly expressed in retina but can also be expressed in brain, testis, heart and skeletal muscles.

REFERENCES

- Jonasdottir, A., et al. 1997. Refinement of the dominant optic atrophy locus (OPA1) to a 1.4-cM interval on chromosome 3q28-3q29, within a 3-Mb YAC contig. *Hum. Genet.* 99: 115-120.
- Delettre, C., et al. 2000. Nuclear gene OPA1, encoding a mitochondrial Dynamin-related protein, is mutated in dominant optic atrophy. *Nat. Genet.* 26: 207-210.
- Toomes, C., et al. 2001. Spectrum, frequency and penetrance of OPA1 mutations in dominant optic atrophy. *Hum. Mol. Genet.* 10: 1369-1378.
- Delettre, C., et al. 2001. Mutation spectrum and splicing variants in the OPA1 gene. *Hum. Genet.* 109: 584-591.
- Satoh, M., et al. 2003. Differential sublocalization of the Dynamin-related protein OPA1 isoforms in mitochondria. *Biochem. Biophys. Res. Commun.* 300: 482-493.
- 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.

CHROMOSOMAL LOCATION

Genetic locus: OPA1 (human) mapping to 3q29.

PRODUCT

OPA1 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see OPA1 shRNA Plasmid (h): sc-106808-SH and OPA1 shRNA (h) Lentiviral Particles: sc-106808-V as alternate gene silencing products.

For independent verification of OPA1 (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-106808A, sc-106808B and sc-106808C.

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

OPA1 siRNA (h) is recommended for the inhibition of OPA1 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 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

OPA1 (D-9): sc-393296 is recommended as a control antibody for monitoring of OPA1 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 OPA1 gene expression knockdown using RT-PCR Primer: OPA1 (h)-PR: sc-106808-PR (20 μ l, 544 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

- Sehrawat, A., et al. 2019. Withaferin A-mediated apoptosis in breast cancer cells is associated with alterations in mitochondrial dynamics. *Mitochondrion* 47: 282-293.
- Kim, Y.M., et al. 2021. Mitofusin-2 stabilizes adherens junctions and suppresses endothelial inflammation via modulation of β -catenin signaling. *Nat. Commun.* 12: 2736.

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.