Store at -20°C

#67677

SignalSilence® OPA1 siRNA I

Support: +1-978-867-2388 (U.S.)
www.cellsignal.com/support

Orders: 877-616-2355 (U.S.)
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Entrez-Gene ID #4976
UniProt ID #O60313

rev. 12/21/15

For Research Use Only. Not For Use In Diagnostic Procedures.

Species Cross-Reactivity: H

Description: SignalSilence® OPA1 siRNA I from Cell Signaling Technology (CST) allows the researcher to specifically inhibit OPA1 expression using RNA interference, a method whereby gene expression can be selectively silenced through the delivery of double stranded RNA molecules into the cell. All SignalSilence® siRNA products from CST are rigorously tested in-house and have been shown to reduce target protein expression by western analysis.

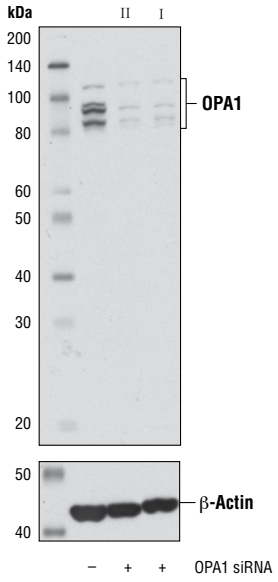
Background: Changes in mitochondrial dynamics regulated by environmental cues affect mitochondrial size and shape and have been shown to dramatically impact mitochondrial metabolism, apoptosis, and autophagy (1). These processes are largely controlled by mitochondrial dynamin-related GTPases, including mitofusin-1, mitofusin-2, OPA1, and DRP1. DRP1 regulates mitochondrial fission, while the mitofusins and OPA1 control fusion at the outer and inner mitochondrial membrane respectively.

OPA1, or Optic Atrophy 1, was originally identified as a genetic cause for Autosomal Dominant Optic Atrophy, a neuropathy resulting in progressive visual loss (2,3). OPA1 is a widely expressed protein localized to the inner mitochondrial membrane, which regulates mitochondrial fusion and cristae morphology and protects against apoptosis (4-6). OPA1 activity is tightly regulated through alternative splicing and post-translational modifications including complex proteolytic processing by multiple proteases (7-12). In addition, OPA1 expression can be induced under conditions of metabolic demand through a pathway involving Parkin induced NF-κB activation (13).

Directions for Use: CST recommends transfection with 100 nM SignalSilence® OPA1 siRNA I 48 to 72 hours prior to cell lysis. For transfection procedure, follow protocol provided by the transfection reagent manufacturer. Please feel free to contact CST with any questions on use.

Each vial contains the equivalent of 100 transfections, which corresponds to a final siRNA concentration of 100 nM per transfection in a 24-well plate with a total volume of 300 µl per well.

Quality Control: Oligonucleotide synthesis is monitored base by base through trityl analysis to ensure appropriate coupling efficiency. The oligo is subsequently purified by affinity-solid phase extraction. The annealed RNA duplex is further analyzed by mass spectrometry to verify the exact composition of the duplex. Each lot is compared to the previous lot by mass spectrometry to ensure maximum lot-to-lot consistency.



Western blot analysis of extracts from HeLa cells, transfected with 100 nM SignalSilence® Control siRNA (Unconjugated) #6568 (-), SignalSilence® OPA1 siRNA I (+), or SignalSilence® OPA1 siRNA II #89128 (+) using OPA1 (D7C1A) Rabbit mAb #67589 (upper) or β-Actin (D6A8) Rabbit mAb #8457 (lower). The OPA1 (D7C1A) Rabbit mAb confirms silencing of OPA1 expression, while the β-Actin (D6A8) Rabbit mAb is used as a loading control.

Storage: SignalSilence® siRNA is supplied in RNAse-free water. *Aliquot and store at -20ºC.*

For product specific protocols and a complete listing of recommended companion products please see the product web page at www.cellsignal.com

Background References:

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(4) Frezza, C. et al. (2006) *Cell* 126, 177-89.
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(6) Griparic, L. et al. (2004) *J Biol Chem* 279, 18792-8.
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(12) Merkwirth, C. et al. (2008) *Genes Dev* 22, 476-88.
(13) Müller-Rischart, A.K. et al. (2013) *Mol Cell* 49, 908-21.

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Applications: **W**—Western **IP**—Immunoprecipitation **IHC**—Immunohistochemistry **ChIP**—Chromatin Immunoprecipitation **IF**—Immunofluorescence **F**—Flow cytometry **E-P**—ELISA-Peptide **Species Cross-Reactivity:** **H**—human **M**—mouse **R**—rat **Hm**—hamster **Mk**—monkey **Mi**—mink **C**—chicken **Dm**—D. melanogaster **X**—Xenopus **Z**—zebrafish **B**—bovine **Dg**—dog **Pg**—pig **Sc**—S. cerevisiae **Ce**—C. elegans **Hr**—Horse **All**—all species expected Species enclosed in parentheses are predicted to react based on 100% homology.