SANTA CRUZ BIOTECHNOLOGY, INC.

LONP1 siRNA (h): sc-97290

BACKGROUND

LONP1 (lon peptidase 1, mitochondrial), also known as LON, PIM1 or PRSS15, is a 959 amino acid mitochondrial matrix protein belonging to the peptidase S16 family. As an ATP-powered protease, LONP1 has been found to preferentially bind a G-rich single-stranded DNA sequence of light and heavy chain promoters of the mitochondrial genome, which play a role in DNA transcription and replication. LONP1 is required for intramitochondrial proteolysis and is involved in catalysis of the first steps of protein degradation. While ubiquitously expressed, LONP1 is expressed at highest levels in heart, brain, duodenum, lung, liver and skeletal muscle. LONP1 protects mitochondrial function and cellular viability by degrading the oxidized, hydrophobic form of aconitase following oxidative modification. LONP1 contains one lon domain, and is encoded by a gene that maps to human chromosome 19p13.3 and mouse chromosome 17 D.

REFERENCES

1. Wang, N., et al. 1993. A human mitochondrial ATP-dependent protease that is highly homologous to bacterial Lon protease. Proc. Natl. Acad. Sci. USA 90: 11247-11251.
2. Amerik AYu, G.V., et al. 1994. Cloning and sequence analysis of cDNA for a human homolog of eubacterial ATP-dependent Lon proteases. FEBS Lett. 340: 25-28.
3. Korenberg, J.R., et al. 1995. Toward a cDNA map of the human genome. Genomics 29: 364-370.
4. Bota, D.A. and Davies, K.J. 2002. Lon protease preferentially degrades oxidized mitochondrial aconitase by an ATP-stimulated mechanism. Nat. Cell Biol. 4: 674-680.

CHROMOSOMAL LOCATION

Genetic locus: LONP1 (human) mapping to 19p13.3.

PRODUCT

LONP1 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see LONP1 shRNA Plasmid (h): sc-97290-SH and LONP1 shRNA (h) Lentiviral Particles: sc-97290-V as alternate gene silencing products.

For independent verification of LONP1 (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-97290A, sc-97290B and sc-97290C.

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

LONP1 siRNA (h) is recommended for the inhibition of LONP1 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

LONP1 (3B2): sc-293244 is recommended as a control antibody for monitoring of LONP1 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 LONP1 gene expression knockdown using RT-PCR Primer: LONP1 (h)-PR: sc-97290-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Wang, X., et al. 2022. Inhibition of LONP1 induces mitochondrial remodeling and autophagy suppression in cervical cancer cells. Acta Histochem. 125: 151986.

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.