

SEN3 siRNA (h): sc-44451

BACKGROUND

SUMO (small ubiquitin-related modifier), a member of the ubiquitin-like protein family, regulates diverse cellular functions of a variety of target proteins, including transcription, DNA repair, nucleocytoplasmic trafficking and chromosome segregation. SUMO precursor proteins undergo cleavage of the residues after the "GG" region by SUMO-specific proteases in maturation. This cleavage of the precursor is a prerequisite for subsequent sumoylation. The sentrin-specific (or SUMO-specific) protease (SEN) proteins belong to the peptidase C48 family and include SEN1-3 and SEN5-8. SEN1, SEN2 and SEN3 degrade UBL1 and SMT3H2 conjugates and subsequently release the monomers from sumoylated substrates. HIPK2 is a desumoylation target for SEN1 which shuttles between the cytoplasm and the nucleus. Mutation analyses reveal that SEN1 contains the nuclear export sequence (NES) within the extreme carboxyl-terminal region, and SEN1 is exported to the cytoplasm in a NES-dependent manner. SEN2 has been implicated as a downregulator of CTNNB1 levels and may therefore be a modulator of the Wnt pathway. SUMO protease SEN3 reverses the sumoylation of MEF2 to augment its transcriptional and myogenic activities. SEN5 localizes to the nucleolus and preferentially processes SUMO-3. It is thought to play a role in mitosis and/or cytokinesis. SEN6 localizes to the cytoplasm and releases SUMO-1. Expression of SEN6 is higher in reproductive organs, indicating that it may mediate processes related to reproduction. SEN8 is involved in the release of sentrins.

CHROMOSOMAL LOCATION

Genetic locus: SEN3 (human) mapping to 17p13.1.

PRODUCT

SEN3 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 SEN3 shRNA Plasmid (h): sc-44451-SH and SEN3 shRNA (h) Lentiviral Particles: sc-44451-V as alternate gene silencing products.

For independent verification of SEN3 (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-44451A, sc-44451B and sc-44451C.

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

SEN3 siRNA (h) is recommended for the inhibition of SEN3 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

SEN3 (E-7): sc-137219 is recommended as a control antibody for monitoring of SEN3 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 SEN3 gene expression knockdown using RT-PCR Primer: SEN3 (h)-PR: sc-44451-PR (20 μ l, 536 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

- Guo, C., et al. 2013. SEN3-mediated deSUMOylation of Dynamin-related protein 1 promotes cell death following ischaemia. *EMBO J.* 32: 1514-1528.
- Luo, J., et al. 2017. Increased SUMO-2/3-ylation mediated by SEN3 degradation is protective against cadmium-induced caspase 3-dependent cytotoxicity. *J. Toxicol. Sci.* 42: 529-538.
- Guo, C., et al. 2017. SEN3-mediated deSUMOylation of Drp1 facilitates interaction with Mff to promote cell death. *Sci. Rep.* 7: 43811.
- Guo, C., et al. 2021. SEN3 promotes an mff-primed Bcl-x_L-Drp1 interaction involved in cell death following ischemia. *Front. Cell Dev. Biol.* 9: 752260.
- Waters, E., et al. 2022. The SUMO protease SEN3 regulates mitochondrial autophagy mediated by Fis1. *EMBO Rep.* 23: e48754.

RESEARCH USE

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