

RNase L siRNA (h): sc-45965

BACKGROUND

RNase L encodes a component of the interferon-regulated 2-5A system that functions in the antiviral and antiproliferative roles of interferons. Mutations in this gene have been associated with predisposition to prostate cancer and this gene is a candidate for the hereditary prostate cancer 1 (HPC1) allele. Interferon treatment enhances levels of both RNase L and a group of synthetases that produce 5'-triphosphorylated, 2',5'-oligoadenylates (2-5A) from ATP. The role of the 2-5A system in the control of viral and cellular growth suggests that defects in the 2-5A-dependent RNase gene could result in reduced immunity to virus infections and cancer.

CHROMOSOMAL LOCATION

Genetic locus: RNASEL (human) mapping to 1q25.3.

PRODUCT

RNase L 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 RNase L shRNA Plasmid (h): sc-45965-SH and RNase L shRNA (h) Lentiviral Particles: sc-45965-V as alternate gene silencing products.

For independent verification of RNase L (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-45965A, sc-45965B and sc-45965C.

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

RNase L siRNA (h) is recommended for the inhibition of RNase L 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

RNase L (E-9): sc-74405 is recommended as a control antibody for monitoring of RNase L 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 RNase L gene expression knockdown using RT-PCR Primer: RNase L (h)-PR: sc-45965-PR (20 μ l, 537 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

- Siddiqui, M.A. and Malathi, K. 2012. RNase L induces autophagy via c-Jun N-terminal kinase and double-stranded RNA-dependent protein kinase signaling pathways. *J. Biol. Chem.* 287: 43651-43664.
- Chakrabarti, A., et al. 2012. RNase L triggers autophagy in response to viral infections. *J. Virol.* 86: 11311-11321.
- Harashima, N., et al. 2014. Transfection of poly(I:C) can induce reactive oxygen species-triggered apoptosis and interferon- β -mediated growth arrest in human renal cell carcinoma cells via innate adjuvant receptors and the 2-5A system. *Mol. Cancer* 13: 217.
- Zhang, A., et al. 2014. RNase L restricts the mobility of engineered retrotransposons in cultured human cells. *Nucleic Acids Res.* 42: 3803-3820.
- Machitani, M., et al. 2017. Inhibition of CRISPR/Cas9-mediated genome engineering by a type I interferon-induced reduction in guide RNA expression. *Biol. Pharm. Bull.* 40: 272-277.
- Costales, M.G., et al. 2019. Targeted degradation of a hypoxia-associated non-coding RNA enhances the selectivity of a small molecule interacting with RNA. *Cell Chem. Biol.* 26: 1180-1186.e5.
- Yin, H., et al. 2019. IFN- γ restores the impaired function of RNase L and induces mitochondria-mediated apoptosis in lung cancer. *Cell Death Dis.* 10: 642.
- Yin, H., et al. 2019. Actinomycin D-activated RNase L promotes H2A.X/H2B-mediated DNA damage and apoptosis in lung cancer cells. *Front. Oncol.* 9: 1086.

RESEARCH USE

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