SANTA CRUZ BIOTECHNOLOGY, INC.

SerRSmt siRNA (h): sc-97305

BACKGROUND

The fidelity of protein synthesis requires efficient discrimination of amino acid substrates by aminoacyl-tRNA synthetases. Aminoacyl-tRNA synthetases function to catalyze the aminoacylation of tRNAs by their corresponding amino acids, thus linking amino acids with tRNA-contained nucleotide triplets. SerRSmt (seryl-tRNA synthetase, mitochondrial), also known as SARS2 or SARSM, is a 518 amino acid member of the class-II aminoacyl-tRNA synthetase family that catalyzes the tRNASer-serine aminoacylation reaction. Localized to the mitochondria, SerRSmt exists as a homodimer and contains a core catalytic domain and a tRNA-binding domain. SerRSmt catalyzes the attachment of serine to tRNA(Ser) and is also able to aminoacylate tRNA (Sec) with serine, to form the misacylated tRNA L-seryl-tRNA(Sec). Via this interaction, SerRSmt is implicated in selenocysteine (Sec) biosynthesis.

REFERENCES

1. Miseta, A., Woodley, C.L., Greenberg, J.R. and Slobin, L.I. 1991. Mammalian seryl-tRNA synthetase associates with mRNA *in vivo* and has homology to elongation factor 1 α. J. Biol. Chem. 266: 19158-19161.
2. Wu, X.Q. and Gross, H.J. 1993. The long extra arms of human tRNA[(Ser)Sec] and tRNA(Ser) function as major identify elements for serylation in an orientation-dependent, but not sequence-specific manner. Nucleic Acids Res. 21: 5589-5594.
3. Vincent, C., Tarbouriech, N. and Härtlein, M. 1997. Genomic organization, cDNA sequence, bacterial expression, and purification of human seryl-tRNA synthase. Eur. J. Biochem. 250: 77-84.
4. Heckl, M., Busch, K. and Gross, H.J. 1998. Minimal tRNA(Ser) and tRNA(Sec) substrates for human seryl-tRNA synthetase: contribution of tRNA domains to serylation and tertiary structure. FEBS Lett. 427: 315-319.
5. Yokogawa, T., Shimada, N., Takeuchi, N., Benkowski, L., Suzuki, T., Omori, A., Ueda, T., Nishikawa, K., Spremulli, L.L. and Watanabe, K. 2000. Characterization and tRNA recognition of mammalian mitochondrial seryl-tRNA synthetase. J. Biol. Chem. 275: 19913-19920.

CHROMOSOMAL LOCATION

Genetic locus: SARS2 (human) mapping to 19q13.2.

PRODUCT

SerRSmt 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 SerRSmt shRNA Plasmid (h): sc-97305-SH and SerRSmt shRNA (h) Lentiviral Particles: sc-97305-V as alternate gene silencing products.

For independent verification of SerRSmt (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-97305A, sc-97305B and sc-97305C.

RESEARCH USE

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

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

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

SerRSmt (C-11): sc-514991 is recommended as a control antibody for monitoring of SerRSmt 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 SerRSmt gene expression knockdown using RT-PCR Primer: SerRSmt (h)-PR: sc-97305-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.