SANTA CRUZ BIOTECHNOLOGY, INC.

MRP-S22 siRNA (h): sc-78437

BACKGROUND

Mammalian mitochondrial ribosomes (mitoribosomes) are responsible for protein synthesis within the mitochondrion. The mitoribosomes are composed of a 4:1 ratio of protein to RNA, with the proteins forming two subunits, the 28S subunit and the 39S subunit. Across species, the proteins that make up the mitoribosome subunits vary greatly in sequence, preventing easy recognition by sequence homology. MRP-S22 (mitochondrial 28S ribosomal protein S22), also known as S22mt, is a 360 amino acid mitochondrial ribosomal protein. Localized to the mitochondria, MRP-S22 is present in the 28S subunit of the mitoribosomes. Defects of MRP-S22 are the cause of combined oxidative phosphorylation deficiency type 5 (COXPD5). COXPD5 is an antenatal mitochondrial disease characterized by hypotonia, edema, cardiomyopathy and tubulopathy.

REFERENCES

1. Koc, E.C., et al. 2000. A proteomics approach to the identification of mammalian mitochondrial small subunit ribosomal proteins. J. Biol. Chem. 275: 32585-32591.
2. Cavdar Koc, E., et al. 2001. The small subunit of the mammalian mitochondrial ribosome. Identification of the full complement of ribosomal proteins present. J. Biol. Chem. 276: 19363-19374.
3. Zhang, Z. and Gerstein, M. 2003. Identification and characterization of over 100 mitochondrial ribosomal protein pseudogenes in the human genome. Genomics 81: 468-480.
4. Crisponi, L., et al. 2004. FOXL2 inactivation by a translocation 171 kb away: analysis of 500 kb of chromosome 3 for candidate long-range regulatory sequences. Genomics 83: 757-764.
5. Guo, D., et al. 2005. Proteomic analysis of SUMO4 substrates in HEK293 cells under serum starvation-induced stress. Biochem. Biophys. Res. Commun. 337: 1308-1318.
6. Saada, A., et al. 2007. Antenatal mitochondrial disease caused by mitochondrial ribosomal protein (MRPS22) mutation. J. Med. Genet. 44: 784-786.
7. Emdadul Haque, M., et al. 2008. The effect of mutated mitochondrial ribosomal proteins S16 and S22 on the assembly of the small and large ribosomal subunits in human mitochondria. Mitochondrion 8: 254-261.
8. Online Mendelian Inheritance in Man, OMIM™. 2008. Johns Hopkins University, Baltimore, MD. MIM Number: 611719. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/

CHROMOSOMAL LOCATION

Genetic locus: MRPS22 (human) mapping to 3q23.

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.

PRODUCT

MRP-S22 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 MRP-S22 shRNA Plasmid (h): sc-78437-SH and MRP-S22 shRNA (h) Lentiviral Particles: sc-78437-V as alternate gene silencing products.

For independent verification of MRP-S22 (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-78437A, sc-78437B and sc-78437C.

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

MRP-S22 siRNA (h) is recommended for the inhibition of MRP-S22 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor MRP-S22 gene expression knockdown using RT-PCR Primer: MRP-S22 (h)-PR: sc-78437-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.