SANTA CRUZ BIOTECHNOLOGY, INC.

MRP-L13 siRNA (h): sc-77761

BACKGROUND

Mitochondrial ribosomes are made of a 28S subunit and a larger 39S subunit. These ribosomes have an approximate composition of 75% protein to rRNA as compared to prokaryotic ribosomes, where reverse proportions are found. MRP-L13 (39S ribosomal protein L13, mitochondrial) is a 178 amino acid protein that exists as a component of the 39S ribosomal subunit and works in conjunction with other MRPs to mediate protein synthesis. MRP-L13 contains an amino-terminal leucine zipper and a carboxy-terminal basic leucine zipper domain. MRP-L13 that is released from the 60S ribosomal subunit binds to γ-interferon-activated inhibitor of translation (GAIT) element in the 3' UTR of ceruloplasmin (Cp), thereby silencing the translation of Cp. With this evidence, it has been suggested that MRP-L13 functions both as a protein synthesis machine and acts as a station for regulatory proteins that modulate translation.

REFERENCES

1. Price, S.R., et al. 1992. Conservation of a 23-kDa human transplantation antigen in mammalian species. Genomics 14: 959-964.
2. Grohmann, L., et al. 1994. The yeast nuclear gene MRP-L13 codes for a protein of the large subunit of the mitochondrial ribosome. Curr. Genet. 26: 8-14.
3. Kenmochi, N., et al. 2001. The human mitochondrial ribosomal protein genes: mapping of 54 genes to the chromosomes and implications for human disorders. Genomics 77: 65-70.
4. Suzuki, T., et al. 2001. Structural compensation for the deficit of rRNA with proteins in the mammalian mitochondrial ribosome. Systematic analysis of protein components of the large ribosomal subunit from mammalian mitochondria. J. Biol. Chem. 276: 21724-21736.
5. Mazumder, B., et al. 2003. Regulated release of L13a from the 60S ribosomal subunit as a mechanism of transcript-specific translational control. Cell 115: 187-198.
6. Kapasi, P., et al. 2007. L13a blocks 48S assembly: role of a general initiation factor in mRNA-specific translational control. Mol. Cell 25: 113-126.

CHROMOSOMAL LOCATION

Genetic locus: MRPL13 (human) mapping to 8q24.12.

PRODUCT

MRP-L13 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-L13 shRNA Plasmid (h): sc-77761-SH and MRP-L13 shRNA (h) Lentiviral Particles: sc-77761-V as alternate gene silencing products.

For independent verification of MRP-L13 (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-77761A, sc-77761B and sc-77761C.

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-L13 siRNA (h) is recommended for the inhibition of MRP-L13 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-L13 gene expression knockdown using RT-PCR Primer: MRP-L13 (h)-PR: sc-77761-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. Tao, Z., et al. 2020. MRPL13 is a prognostic cancer biomarker and correlates with immune infiltrates in breast cancer. Onco Targets Ther. 13: 12255-12268.

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.