SANTA CRUZ BIOTECHNOLOGY, INC.

MTO1 siRNA (h): sc-95318

BACKGROUND

MTO1 (mitochondrial translation optimization 1), also known as CGI-02, is a 717 amino acid mitochondrial protein that belongs to the mnmG family. Expressed ubiquitously with highest expression in tissues which have an elevated metabolic rate, MTO1 is involved in mitochondrial tRNA modification, specifically in the 5-carboxymethylaminomethyl modification of wobble uridine bases. Additionally, MTO1 is thought to participate in the expression of the aminoglycoside-induced and non-syndromic deafness phenotypes associated with mutations in the 12S rRNA gene, suggesting a possible role for MTO1 in the pathogenesis of these deafness-associated conditions. MTO1 exists as multiple isoforms that are produced by alternative splicing events.

REFERENCES

1. Colby, G., Wu, M. and Tzagoloff, A. 1998. MTO1 codes for a mitochondrial protein required for respiration in paromomycin-resistant mutants of *Saccharomyces cerevisiae*. J. Biol. Chem. 273: 27945-27952.
2. Li, X., Li, R., Lin, X. and Guan, M.X. 2002. Isolation and characterization of the putative nuclear modifier gene MTO1 involved in the pathogenesis of deafness-associated mitochondrial 12 S rRNA A1555G mutation. J. Biol. Chem. 277: 27256-27264.
3. Li, X. and Guan, M.X. 2002. A human mitochondrial GTP binding protein related to tRNA modification may modulate phenotypic expression of the deafness-associated mitochondrial 12S rRNA mutation. Mol. Cell. Biol. 22: 7701-7711.
4. Li, R., Li, X., Yan, Q., Qin Mo, J. and Guan, M.X. 2003. Identification and characterization of mouse MTO1 gene related to mitochondrial tRNA modification. Biochim. Biophys. Acta 1629: 53-59.
5. Bykhovskaya, Y., Mengesha, E., Wang, D., Yang, H., Estivill, X., Shohat, M. and Fischel-Ghodsian, N. 2004. Phenotype of non-syndromic deafness associated with the mitochondrial A1555G mutation is modulated by mitochondrial RNA modifying enzymes MTO1 and GTPBP3. Mol. Genet. Metab. 83: 199-206.

CHROMOSOMAL LOCATION

Genetic locus: MTO1 (human) mapping to 6q13.

PRODUCT

MTO1 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 MTO1 shRNA Plasmid (h): sc-95318-SH and MTO1 shRNA (h) Lentiviral Particles: sc-95318-V as alternate gene silencing products.

For independent verification of MTO1 (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-95318A, sc-95318B and sc-95318C.

PROTOCOLS

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

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

MTO1 siRNA (h) is recommended for the inhibition of MTO1 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

MTO1 (H-5): sc-398386 is recommended as a control antibody for monitoring of MTO1 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 MTO1 gene expression knockdown using RT-PCR Primer: MTO1 (h)-PR: sc-95318-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

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