SANTA CRUZ BIOTECHNOLOGY, INC.

EF-Ts siRNA (h): sc-77243

BACKGROUND

EF-Ts, also known as TSFM (Ts translation elongation factor, mitochondrial) or COXPD3, is a 325 amino acid protein that is one of 13 mitochondrial-encoded proteins that work together during the elongation phase of protein biosynthesis on the ribosome. Expressed ubiquitously with highest levels present in liver, kidney and skeletal muscle, EF-Ts associates with EF-Tu, a multidomain GTPase with essential functions in translation, and, via this interaction, facilitates the exchange of GDP for GTP, thereby inducing protein elongation. Mutations in the gene encoding EF-Ts are the cause of combined oxidative phosphorylation deficiency type 3 (COXPD3), a condition characterized by defects in the mitochondrial oxidative phosphorylation system and often characterized by severe metabolic acidosis with encephalomyopathy or with hypertrophic cardiomyopathy. Multiple isoforms of EF-Ts exist due to alternative splicing events.

REFERENCES

1. Xin, H., et al. 1995. Cloning and expression of mitochondrial translational elongation factor Ts from bovine and human liver. J. Biol. Chem. 270: 17243-17249.
2. Benkowski, L.A., et al. 1995. Interaction of mitochondrial elongation factors Tu.Ts with aminoacyl-tRNA. Nucleic Acids Symp. Ser. 33: 163-166.
3. Vernon, J.L., et al. 2000. Assignment of the mitochondrial translation elongation factor Ts gene (TSFM) to human chromosome 12 bands q13→q14 by *in situ* hybridization and with somatic cell hybrids. Cytogenet. Cell Genet. 89: 145-146.
4. Smeitink, J.A., et al. 2006. Distinct clinical phenotypes associated with a mutation in the mitochondrial translation elongation factor EF-Ts. Am. J. Hum. Genet. 79: 869-877.
5. Antonicka, H., et al. 2006. The molecular basis for tissue specificity of the oxidative phosphorylation deficiencies in patients with mutations in the mitochondrial translation factor EFG1. Hum. Mol. Genet. 15: 1835-1846.
6. Online Mendelian Inheritance in Man, OMIM™. 2006. Johns Hopkins University, Baltimore, MD. MIM Number: 604723. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/

CHROMOSOMAL LOCATION

Genetic locus: TSFM (human) mapping to 12q14.1.

PRODUCT

EF-Ts 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 EF-Ts shRNA Plasmid (h): sc-77243-SH and EF-Ts shRNA (h) Lentiviral Particles: sc-77243-V as alternate gene silencing products.

For independent verification of EF-Ts (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-77243A, sc-77243B and sc-77243C.

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

EF-Ts siRNA (h) is recommended for the inhibition of EF-Ts 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

EF-Ts (A-10): sc-271588 is recommended as a control antibody for monitoring of EF-Ts 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 EF-Ts gene expression knockdown using RT-PCR Primer: EF-Ts (h)-PR: sc-77243-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.

PROTOCOLS

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