SANTA CRUZ BIOTECHNOLOGY, INC.

GUF1 siRNA (m): sc-145840

BACKGROUND

GUF1 (GUF1 GTPase), also known as EF-4 (elongation factor 4 homolog), translation factor GUF1 (mitochondrial), ribosomal back-translocase or GTPase of unknown function 1, is a 669 amino acid protein belonging to the GTP-binding elongation factor family and the LepA subfamily. Localizing to the mitochondrion inner membrane, GUF1 is thought to promote mitochondrial protein synthesis and binds to mitochondrial ribosomes in a GTP-dependent manner. GUF1 is suggested to catalyze a one-codon backward translocation of tRNAs on improperly translocated ribosomes, thereby acting as a fidelity factor of the translation reaction. GUF1 is encoded by a gene located on human chromosome 4p12, which encodes nearly 6% of the human genome and has the largest gene desert (regions of the genome with no protein encoding genes) of all of the human chromosomes. Defects in some of the genes located on chromosome 4 are associated with Huntington's disease, Ellis-van Creveld syndrome, methylmalonic acidemia and polycystic kidney disease.

REFERENCES

1. Kiser, G.L. and Weinert, T.A. 1995. GUF1, a gene encoding a novel evolutionarily conserved GTPase in budding yeast. Yeast 11: 1311-1316.
2. Hillier, L.W., et al. 2005. Generation and annotation of the DNA sequences of human chromosomes 2 and 4. Nature 434: 724-731.
3. Yamanaka, R., et al. 2006. Identification of expressed genes characterizing long-term survival in malignant glioma patients. Oncogene 25: 5994-6002.
4. Stack, E.C., et al. 2007. Neuroprotective effects of synaptic modulation in Huntington's disease R6/2 mice. J. Neurosci. 27: 12908-12915.
5. Versteegh, F.G., et al. For the EvC Working Party. 2007. Growth hormone analysis and treatment in Ellis-van Creveld syndrome. Am. J. Med. Genet. A 143A: 2113-2121.
6. Bauerschmitt, H., et al. 2008. The membrane-bound GTPase GUF1 promotes mitochondrial protein synthesis under suboptimal conditions. J. Biol. Chem. 283: 17139-17146.
7. Prestele, M., et al. 2009. Mrpl36 is important for generation of assembly competent proteins during mitochondrial translation. Mol. Biol. Cell 20: 2615-2625.

CHROMOSOMAL LOCATION

Genetic locus: Guf1 (mouse) mapping to 5 C3.1.

PRODUCT

GUF1 siRNA (m) is a target-specific 19-25 nt siRNA 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 GUF1 shRNA Plasmid (m): sc-145840-SH and GUF1 shRNA (m) Lentiviral Particles: sc-145840-V as alternate gene silencing products.

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

GUF1 siRNA (m) is recommended for the inhibition of GUF1 expression in mouse 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

GUF1 (B-7): sc-514604 is recommended as a control antibody for monitoring of GUF1 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 GUF1 gene expression knockdown using RT-PCR Primer: GUF1 (m)-PR: sc-145840-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.