SANTA CRUZ BIOTECHNOLOGY, INC.

IF2 siRNA (m): sc-146149

BACKGROUND

The initiation of protein synthesis in eukaryotic cells is regulated by interactions between protein initiation factors and RNA molecules. IF2, also known as MTIF2 (mitochondrial translational initiation factor 2), is a 727 amino acid protein that localizes to mitochondria and is expressed ubiquitously, with highest expression in skeletal muscle. Functioning as a monomer, IF2 exists as an essential component of protein synthesis, specifically promoting the GTP-dependent binding of initiator tRNA to the ribosome and possibly playing a role in the formation of the 70S ribosomal complex. The gene encoding IF2 maps to human chromosome 2, which houses over 1,400 genes and comprises nearly 8% of the human genome. Harlequin icthyosis, a rare and morbid skin deformity, is associated with mutations in the ABCA12 gene, while the lipid metabolic disorder sitosterolemia is associated with defects in the ABCG5 and ABCG8 genes. Additionally, an extremely rare recessive genetic disorder, Alström syndrome, is caused by mutations in the ALMS1 gene, which maps to chromosome 2.

REFERENCES

1. Ma, L., et al. 1995. Cloning and sequence analysis of the human mitochondrial translational initiation factor 2 cDNA. J. Biol. Chem. 270: 1859-1865.
2. Bonner, D.S., et al. 1998. Assignment1 of the mitochondrial translational initiation factor 2 gene (MTIF2) to human chromosome 2 bands p16→p14 by *in situ* hybridization and with somatic cell hybrids. Cytogenet. Cell Genet. 83: 80-81.
3. Online Mendelian Inheritance in Man, OMIM™. 1999. Johns Hopkins University, Baltimore, MD. MIM Number: 603766. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
4. Gehin, M., et al. 2002. The function of TIF2/GRIP1 in mouse reproduction is distinct from those of SRC-1 and p/CIP. Mol. Cell. Biol. 22: 5923-5937.
5. Overman, R.G., et al. 2003. The human mitochondrial translation initiation factor 2 gene (MTIF2): transcriptional analysis and identification of a pseudogene. Biochim. Biophys. Acta 1628: 195-205.
6. Le Roy, F., et al. 2007. Regulation of mitochondrial mRNA stability by RNase L is translation-dependent and controls IFNα-induced apoptosis. Cell Death Differ. 14: 1406-1413.

CHROMOSOMAL LOCATION

Genetic locus: Mtif2 (mouse) mapping to 11 A4.

PRODUCT

IF2 siRNA (m) 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 IF2 shRNA Plasmid (m): sc-146149-SH and IF2 shRNA (m) Lentiviral Particles: sc-146149-V as alternate gene silencing products.

For independent verification of IF2 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-146149A, sc-146149B and sc-146149C.

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

IF2 siRNA (m) is recommended for the inhibition of IF2 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

IF2 (H-5): sc-365477 is recommended as a control antibody for monitoring of IF2 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 IF2 gene expression knockdown using RT-PCR Primer: IF2 (m)-PR: sc-146149-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.