SANTA CRUZ BIOTECHNOLOGY, INC.

IARS2 siRNA (m): sc-146128

BACKGROUND

The fidelity of protein synthesis requires efficient discrimination of amino acid substrates by aminoacyl-tRNA synthetases. Proteins belonging to this family function to catalyze the aminoacylation of tRNAs by their corresponding amino acids, thus linking amino acids with tRNA-contained nucleotide triplets. IARS2 (Isoleucyl-tRNA synthetase), also known as IleRS (Isoleucine-tRNA ligase), is a 1,012 amino acid protein that is localized within the mitochondrial matrix. Specifically belonging to the class I mitochondrial aminoacyl-tRNA synthetase family, IARS2 contains a characteristic Rossman fold, which is found in proteins that typically bind nucleotides. The gene encoding IARS2 maps to human chromosome 1q41, which is the largest human chromosome spanning about 260 million base pairs and making up 8% of the human genome.

REFERENCES

1. Degoul, F., et al. 1998. Isoleucylation properties of native human mitochondrial tRNAIle and tRNAIle transcripts. Implications for cardiomyopathy-related point mutations (4269, 4317) in the tRNAIle gene. Hum. Mol. Genet. 7: 347-354.
2. Bonnefond, L., et al. 2005. Toward the full set of human mitochondrial aminoacyl-tRNA synthetases: characterization of AspRS and TyrRS. Biochemistry 44: 4805-4816.
3. Pelliccia, F., et al. 2007. Transcriptional profiling of genes at the human common fragile site FRA1H in tumor-derived cell lines. Cancer Genet. Cytogenet. 178: 144-150.
4. Salowe, S.P., et al. 2009. The catalytic flexibility of tRNAIle-lysidine synthetase can generate alternative tRNA substrates for isoleucyl-tRNA synthetase. J. Biol. Chem. 284: 9656-9662.
5. Berglund, A.K., et al. 2009. Defining the determinants for dual targeting of amino acyl-tRNA synthetases to mitochondria and chloroplasts. J. Mol. Biol. 393: 803-814.
6. Yu, Z., et al. 2009. Search for primitive *Methanopyrus* based on genetic distance between Val- and Ile-tRNA synthetases.J. Mol. Evol. 69: 386-394.
7. Choudhary, C., et al. 2009. Lysine acetylation targets protein complexes and co-regulates major cellular functions. Science 325: 834-840.

CHROMOSOMAL LOCATION

Genetic locus: Iars2 (mouse) mapping to 1 H5.

PRODUCT

IARS2 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 IARS2 shRNA Plasmid (m): sc-146128-SH and IARS2 shRNA (m) Lentiviral Particles: sc-146128-V as alternate gene silencing products.

For independent verification of IARS2 (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-146128A, sc-146128B and sc-146128C.

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

IARS2 siRNA (m) is recommended for the inhibition of IARS2 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

IARS2 (E-2): sc-393641 is recommended as a control antibody for monitoring of IARS2 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 IARS2 gene expression knockdown using RT-PCR Primer: IARS2 (m)-PR: sc-146128-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.