SANTA CRUZ BIOTECHNOLOGY, INC.

GlnRS siRNA (h): sc-75144

BACKGROUND

Aminoacyl-tRNA synthetases function to catalyze the aminoacylation of tRNAs by their corresponding amino acids, thus linking amino acids with tRNA-contained nucleotide triplets. GlnRS (glutaminyl-tRNA synthetase), also known as QARS, is a 775 amino acid member of the class I amino-acyl-tRNA synthetase family. Localized to the cytoplasm, GlnRS is part of a multi-protein complex composed of nine aminoacyl-tRNA synthetases that are specific for nine amino acids, namely Arg, Asp, Glu, Gln, Ile, Leu, Lys, Met and Pro. In this complex, GlnRS functions to catalyze the ATP-dependent conversion of L-glutamine (Gln) and $tRNA^{Gln}$ to Gln-$tRNA^{Gln}$. While GlnRS is used to synthesize Gln-$tRNA^{Gln}$ in many eukaryotic cells, prokaryotes and organelles, such as mitochondria and chloroplasts, can synthesize Gln-$tRNA^{Gln}$ in a two step process involving misacylation and amidation reactions.

REFERENCES

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2. Lamour, V., et al. 1994. Evolution of the Glx-tRNA synthetase family: the glutaminyl enzyme as a case of horizontal gene transfer. Proc. Natl. Acad. Sci. USA 91: 8670-8674.
3. Durkin, M.E., et al. 1999. Characterization of the human Laminin β-2 chain locus (LAMB2): linkage to a gene containing a nonprocessed, transcribed LAMB2-like pseudogene (LAMB2L) and to the gene encoding glutaminyl tRNA synthetase (QARS). Cytogenet. Cell Genet. 84: 173-178.
4. Quevillon, S., et al. 1999. Macromolecular assemblage of aminoacyl-tRNA synthetases: identification of protein-protein interactions and characterization of a core protein. J. Mol. Biol. 285: 183-195.
5. Online Mendelian Inheritance in Man, OMIM™. 1999. Johns Hopkins University, Baltimore, MD. MIM Number: 603727. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/

CHROMOSOMAL LOCATION

Genetic locus: QARS (human) mapping to 3p21.31.

PRODUCT

GlnRS 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 GlnRS shRNA Plasmid (h): sc-75144-SH and GlnRS shRNA (h) Lentiviral Particles: sc-75144-V as alternate gene silencing products.

For independent verification of GlnRS (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-75144A, sc-75144B and sc-75144C.

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

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

GlnRS (C-1): sc-271078 is recommended as a control antibody for monitoring of GlnRS 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 GlnRS gene expression knockdown using RT-PCR Primer: GlnRS (h)-PR: sc-75144-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.