

PUS4 siRNA (h): sc-90381

BACKGROUND

Pseudouridine is an abundant component of rRNAs and tRNAs and is enzymatically generated by isomerization of uridine by pseudouridine synthase. PUS4, also known as TRUB1 (Probable tRNA pseudouridine synthase 1), is a 349 amino acid protein that belongs to the pseudouridine synthase TruB family and contains one TruB domain. While highly expressed in heart, skeletal muscle and liver, PUS4 is expressed at lower levels in lung, small intestine, kidney and spleen. It has been suggested that PUS4 may be responsible for synthesis of pseudouridine from uracil in transfer RNAs. Phylogenetic analysis showed that PUS4 and TRUB2 group together with the original eubacterial tRNA synthases, distinct from DKC1. Additionally, PUS4 shares 30% identity and 45% similarity with TRUB2. Consisting of eight exons 8 approximately 40 kb, the PUS4 gene is conserved in chimpanzee, canine, mouse, rat, chicken and zebrafish, and maps to human chromosome 10q25.3.

REFERENCES

1. Becker, H.F., Motorin, Y., Planta, R.J. and Grosjean, H. 1997. The yeast gene YNL292w encodes a pseudouridine synthase (Pus4) catalyzing the formation of ψ 55 in both mitochondrial and cytoplasmic tRNAs. *Nucleic Acids Res.* 25: 4493-4499.
2. Grosshans, H., Lecointe, F., Grosjean, H., Hurt, E. and Simos, G. 2001. Pus1p-dependent tRNA pseudouridylation becomes essential when tRNA biogenesis is compromised in yeast. *J. Biol. Chem.* 276: 46333-46339.
3. Zucchini, C., Strippoli, P., Biolchi, A., Solmi, R., Lenzi, L., D'Addabbo, P., Carinci, P. and Valvassori, L. 2003. The human TruB family of pseudouridine synthase genes, including the Dyskeratosis Congenita 1 gene and the novel member TRUB1. *Int. J. Mol. Med.* 11: 697-704.
4. Deloukas, P., Earthrowl, M.E., Grafham, D.V., Rubinfeld, M., French, L., Steward, C.A., Sims, S.K., Jones, M.C., Searle, S., Scott, C., Howe, K., Hunt, S.E., Andrews, T.D., Gilbert, J.G., Swarbreck, D., et al. 2004. The DNA sequence and comparative analysis of human chromosome 10. *Nature* 429: 375-381.
5. Grupe, A., Li, Y., Rowland, C., Nowotny, P., Hinrichs, A.L., Smemo, S., Kauwe, J.S., Maxwell, T.J., Cherny, S., Doil, L., Tacey, K., van Luchene, R., Myers, A., Wavrant-De Vrièze, F., Kaleem, M., Hollingworth, P., et al. 2006. A scan of chromosome 10 identifies a novel locus showing strong association with late-onset Alzheimer disease. *Am. J. Hum. Genet.* 78: 78-88.
6. Roovers, M., Hale, C., Tricot, C., Terns, M.P., Terns, R.M., Grosjean, H. and Droogmans, L. 2006. Formation of the conserved pseudouridine at position 55 in archaeal tRNA. *Nucleic Acids Res.* 34: 4293-4301.
7. Online Mendelian Inheritance in Man, OMIM[™]. 2007. Johns Hopkins University, Baltimore, MD. MIM Number: 610726. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>

CHROMOSOMAL LOCATION

Genetic locus: TRUB1 (human) mapping to 10q25.3.

PROTOCOLS

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

PRODUCT

PUS4 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see PUS4 shRNA Plasmid (h): sc-90381-SH and PUS4 shRNA (h) Lentiviral Particles: sc-90381-V as alternate gene silencing products.

For independent verification of PUS4 (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-90381A, sc-90381B and sc-90381C.

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 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

PUS4 siRNA (h) is recommended for the inhibition of PUS4 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 μ M in 66 μ l. 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor PUS4 gene expression knockdown using RT-PCR Primer: PUS4 (h)-PR: sc-90381-PR (20 μ l). 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.