

MTERFD2 siRNA (h): sc-94555

BACKGROUND

Members of the MTERF (mitochondrial transcription termination factor) family, including MTERF, MTERFD1, MTERFD2 and MTERFD3, are mitochondrial proteins that are thought to be transcription termination factors. MTERF (mitochondrial transcription termination factor 1) is composed of three leucine zippers that form a three-stranded coiled-coil that binds to DNA. It is suggested that only the phosphorylated form of MTERF has transcription termination activity. MTERFD1 (MTERF domain containing 1) may play a role as a mitochondrial transcription regulator and is expressed as two isoforms produced by alternative splicing. MTERFD2 is a 381 amino acid protein that is encoded by a gene located on human chromosome 2q37.3. MTERFD3 is believed to be involved in cell cycle regulation and cell growth by modulating mitochondrial transcription. MTERFD3 is expressed in heart, skeletal muscle, pancreas and liver.

REFERENCES

1. Fernandez-Silva, P., Martinez-Azorin, F., Micol, V. and Attardi, G. 1997. The human mitochondrial transcription termination factor (mTERF) is a multi-zipper protein but binds to DNA as a monomer, with evidence pointing to intramolecular leucine zipper interactions. *EMBO J.* 16: 1066-1079.
2. Prieto-Martín, A., Montoya, J. and Martínez-Azorín, F. 2004. Phosphorylation of rat mitochondrial transcription termination factor (mTERF) is required for transcription termination but not for binding to DNA. *Nucleic Acids Res.* 32: 2059-2068.
3. Kelsell, D.P., Norgett, E.E., Unsworth, H., Teh, M.T., Cullup, T., Mein, C.A., Dopping-Hepenstal, P.J., Dale, B.A., Tadini, G., Fleckman, P., Stephens, K.G., Sybert, V.P., Mallory, S.B., North, B.V., Witt, D.R., Sprecher, E., et al. 2005. Mutations in ABCA12 underlie the severe congenital skin disease harlequin ichthyosis. *Am. J. Hum. Genet.* 76: 794-803.
4. Chen, Y., Zhou, G., Yu, M., He, Y., Tang, W., Lai, J., He, J., Liu, W. and Tan, D. 2005. Cloning and functional analysis of human mTERFL encoding a novel mitochondrial transcription termination factor-like protein. *Biochem. Biophys. Res. Commun.* 337: 1112-1118.
5. Horvath, J.E., Gulden, C.L., Vallente, R.U., Eichler, M.Y., Ventura, M., McPherson, J.D., Graves, T.A., Wilson, R.K., Schwartz, S., Rocchi, M. and Eichler, E.E. 2005. Punctuated duplication seeding events during the evolution of human chromosome 2p11. *Genome Res.* 15: 914-927.
6. Roberti, M., Polosa, P.L., Bruni, F., Manzari, C., Deceglie, S., Gadaleta, M.N. and Cantatore, P. 2009. The MTERF family proteins: mitochondrial transcription regulators and beyond. *Biochim. Biophys. Acta* 1787: 303-311.
7. Hyvärinen, A.K., Kumanto, M.K., Marjavaara, S.K. and Jacobs, H.T. 2010. Effects on mitochondrial transcription of manipulating mTERF protein levels in cultured human HEK293 cells. *BMC Mol. Biol.* 11: 72.
8. Hyvärinen, A.K., Pohjoismäki, J.L., Holt, I.J. and Jacobs, H.T. 2011. Overexpression of MTERFD1 or MTERFD3 impairs the completion of mitochondrial DNA replication. *Mol. Biol. Rep.* 38: 1321-1328.
9. Kim, D.U., Cho, S.G., Kim, K.L. and Cho, H.S. 2011. Human MTERF3 crystal structure forms a left-handed superhelix. *Mol. Cells*. E-published.

CHROMOSOMAL LOCATION

Genetic locus: MTERF4 (human) mapping to 2q37.3.

PRODUCT

MTERFD2 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 MTERFD2 shRNA Plasmid (h): sc-94555-SH and MTERFD2 shRNA (h) Lentiviral Particles: sc-94555-V as alternate gene silencing products.

For independent verification of MTERFD2 (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-94555A, sc-94555B and sc-94555C.

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

MTERFD2 siRNA (h) is recommended for the inhibition of MTERFD2 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 MTERFD2 gene expression knockdown using RT-PCR Primer: MTERFD2 (h)-PR: sc-94555-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.