SANTA CRUZ BIOTECHNOLOGY, INC.

MTP18 siRNA (r): sc-270568

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The Power to Question

BACKGROUND

Mitochondria are eukaryotic organelles that convert organic materials into energy in the form of ATP via the process of oxidative phosphorylation. Mitochondria also play important roles in apoptosis, cellular proliferation, regulation of the cellular redox state, heme and steroid synthesis, and glutamate-mediated excitotoxic neuronal injury. A typical cell has hundreds to thousands of mitochondria, each of which contain their own sets of DNA. Mitochondria also have unique proteins that can be used as mitochondrial markers. MTP18 (mitochondrial 18 kDa protein), also known as HSPC242, is a 166 amino acid protein essential for cell viability. MTP18 may also have a role in maintaining the integrity of the mitochondrial network. Localized to the mitochonrion, expression of MTP18 is regulated by the PI 3-kinase pathway. Loss of function of MTP18 results in the release of cytochrome c, which subsequently activates the caspase cascade and leads to apoptosis.

REFERENCES

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2. Collins, J.E., Wright, C.L., Edwards, C.A., Davis, M.P., Grinham, J.A., Cole, C.G., Goward, M.E., Aguado, B., Mallya, M., Mokrab, Y., Huckle, E.J., Beare, D.M. and Dunham, I. 2004. A genome annotation-driven approach to cloning the human ORFeome. Genome Biol. 5: R84.
3. Tondera, D., Santel, A., Schwarzer, R., Dames, S., Giese, K., Klippel, A. and Kaufmann, J. 2004. Knockdown of MTP18, a novel phosphatidylinositol 3-kinase-dependent protein, affects mitochondrial morphology and induces apoptosis. J. Biol. Chem. 279: 31544-31555.
4. Cheng, J., Kapranov, P., Drenkow, J., Dike, S., Brubaker, S., Patel, S., Long, J., Stern, D., Tammana, H., Helt, G., Sementchenko, V., Piccolboni, A., Bekiranov, S., Bailey, D.K., Ganesh, M., Ghosh, S., Bell, I., et al. 2005. Transcriptional maps of 10 human chromosomes at 5-nucleotide resolution. Science 308: 1149-1154.

CHROMOSOMAL LOCATION

Genetic locus: Mtfp1 (rat) mapping to 14q21.

PRODUCT

MTP18 siRNA (r) 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 MTP18 shRNA Plasmid (r): sc-270568-SH and MTP18 shRNA (r) Lentiviral Particles: sc-270568-V as alternate gene silencing products.

For independent verification of MTP18 (r) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-270568A, sc-270568B and sc-270568C.

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

MTP18 siRNA (r) is recommended for the inhibition of MTP18 expression in rat 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor MTP18 gene expression knockdown using RT-PCR Primer: MTP18 (r)-PR: sc-270568-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Xiao, T., Sun, J., Xing, Z., Xie, F., Yang, L. and Ding, W. 2019. MTFP1 overexpression promotes the growth of oral squamous cell carcinoma by inducing ROS production. Cell Biol. Int. E-published.

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.