

PTPMT1 siRNA (m): sc-62907

BACKGROUND

Protein tyrosine phosphatases, or PTPs, are type I transmembrane proteins, membrane associated proteins or proteins localized in nuclei. Examples of transmembrane PTPs are LAR, PTP α , PTP β , PTP γ , PTP δ , PTP ϵ , PTP ζ , PTP κ and PTP μ . Transmembrane PTPs play diverse roles in a variety of cellular processes during development and in adult tissues. PTPMT1 (protein tyrosine phosphatase mitochondrial 1), also known as MOSP or PLIP (phosphoinositide lipid phosphatase) and previously known as DUSP23, is a widely expressed PTP membrane protein with high expression levels in pancreatic β cells. PTPMT1 exclusively localizes to the matrix face of the inner membrane of the mitochondrion. It is responsible for dephosphorylating mitochondrial proteins and therefore plays a significant role in the production of ATP and secretion of Insulin. For its substrate, PTPMT1 displays a specific preference for the lipid signaling molecule, phosphatidylinositol 5-phosphate (PI(5)P).

REFERENCES

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- Boisclair, Y., et al. 2005. Firing up mitochondrial activities with PTPMT1. *Mol. Cell* 19: 291-292.
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- Salvi, M., et al. 2007. Identification of the flavoprotein of succinate dehydrogenase and aconitase as *in vitro* mitochondrial substrates of Fgr tyrosine kinase. *FEBS Lett.* 581: 5579-5585.
- Lu, G., et al. 2007. A novel mitochondrial matrix serine/threonine protein phosphatase regulates the mitochondria permeability transition pore and is essential for cellular survival and development. *Genes Dev.* 21: 784-796.

CHROMOSOMAL LOCATION

Genetic locus: Ptpmt1 (mouse) mapping to 2 E1.

PRODUCT

PTPMT1 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see PTPMT1 shRNA Plasmid (m): sc-62907-SH and PTPMT1 shRNA (m) Lentiviral Particles: sc-62907-V as alternate gene silencing products.

For independent verification of PTPMT1 (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-62907A, sc-62907B and sc-62907C.

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

PTPMT1 siRNA (m) is recommended for the inhibition of PTPMT1 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 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.

GENE EXPRESSION MONITORING

PTPMT1 (B-3): sc-390901 is recommended as a control antibody for monitoring of PTPMT1 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-IgG κ BP-HRP: sc-516102 or m-IgG κ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz MarkerTM Molecular Weight Standards: sc-2035, UltraCruz[®] Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgG κ BP-FITC: sc-516140 or m-IgG κ 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 PTPMT1 gene expression knockdown using RT-PCR Primer: PTPMT1 (m)-PR: sc-62907-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.

PROTOCOLS

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