SANTA CRUZ BIOTECHNOLOGY, INC.

SH-PTP1 siRNA (m): sc-29479

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The Power to Question

BACKGROUND

The steady state of protein tyrosyl phosphorylation in cells is regulated by the opposing action of tyrosine kinases and protein tyrosine phosphatases (PTPs). Several groups have independently identified a non-transmembrane PTP, designated SH-PTP1 (also known as PTP1C, HCP and SHP), which is primarily expressed in hematopoietic cells and characterized by the presence of two SH2 domains N-terminal to the PTP domain. SH2 domains generally mediate the association of regulatory molecules with specific phosphotyrosine-containing sites on autophosphorylated receptors, thereby controlling the initial interaction of receptors with these substrates. A second and much more widely expressed PTP with SH2 domains, SH-PTP2 (also designated PTP1D and Syp), has been identified. Strong sequence similarity between SH-PTP2 and the *Drosophila* gene corkscrew (CSW) and their similar patterns of expression suggest that SH-PTP2 is the human corkscrew homolog.

REFERENCES

1. Chernoff, J., et al. 1990. Cloning of a cDNA for a major human protein-tyrosine-phosphatase. Proc. Natl. Acad. Sci. USA 87: 2735-2739.
2. Shen, S., et al. 1991. A protein-tyrosine phosphatase with sequence similarity to the SH2 domain of the protein-tyrosine kinases. Nature 352: 736-739.
3. Plutzky, J., et al. 1992. Isolation of a Src homology 2-containing tyrosine phosphatase. Proc. Natl. Acad. Sci. USA 89: 1123-1127.

CHROMOSOMAL LOCATION

Genetic locus: Ptpn6 (mouse) mapping to 6 F2.

PRODUCT

SH-PTP1 siRNA (m) is a pool of 4 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 SH-PTP1 shRNA Plasmid (m): sc-29479-SH and SH-PTP1 shRNA (m) Lentiviral Particles: sc-29479-V as alternate gene silencing products.

For independent verification of SH-PTP1 (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-29479A, sc-29479B, sc-29479C and sc-29479D.

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

SH-PTP1 siRNA (m) is recommended for the inhibition of SH-PTP1 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 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

SH-PTP1 (D-11): sc-7289 is recommended as a control antibody for monitoring of SH-PTP1 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).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor SH-PTP1 gene expression knockdown using RT-PCR Primer: SH-PTP1 (m)-PR: sc-29479-PR (20 µl, 491 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Liu, S.Q., et al. 2008. Formation of smooth muscle α-Actin filaments in $CD34^+$ bone marrow cells on arterial elastic laminae: potential role of SH2 domain-containing protein tyrosine phosphatase-1. Matrix Biol. 27: 282-294.
2. Yin, S., et al. 2014. SHP-1 arrests mouse early embryo development through downregulation of Nanog by dephosphorylation of Stat3. PLoS ONE 9: e86330.
3. Sauer, M.G., et al. 2016. SHP-1 acts as a key regulator of alloresponses by modulating LFA-1-mediated adhesion in primary murine T cells. Mol. Cell. Biol. 36: 3113-3127.
4. Chang, H.W., et al. 2020. A common signaling pathway leading to degranulation in mast cells and its regulation by CCR1 ligand. Allergy 75: 1371-1381.
5. Park, H.J., et al. 2022. Morin disrupts cytoskeleton reorganization in osteoclasts through an ROS/SHP1/c-Src axis and grants protection from LPS-induced bone loss. Antioxidants 11: 963.
6. Chang, H.W., et al. 2023. Thalidomide attenuates mast cell activation by upregulating SHP-1 signaling and interfering with the action of CRBN. Cells 12: 469.
7. Chyuan, I.T., et al. 2024. Association of TRAIL receptor with phosphatase SHP-1 enables repressing T cell receptor signaling and T cell activation through inactivating Lck. J. Biomed. Sci. 31: 33.

RESEARCH USE

For research use only, not for use in diagnostic procedures.