SANTA CRUZ BIOTECHNOLOGY, INC.

SH-PTP1 siRNA (h): sc-29478

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. Yi, T., et al. 1992. Protein tyrosine phosphatase containing SH2 domains: characterization, preferential expression in hematopoietic cells, and localization to human chromosome 12p12-p13. Mol. Cell. Biol. 12: 836-846.

CHROMOSOMAL LOCATION

Genetic locus: PTPN6 (human) mapping to 12p13.31.

PRODUCT

SH-PTP1 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see SH-PTP1 shRNA Plasmid (h): sc-29478-SH and SH-PTP1 shRNA (h) Lentiviral Particles: sc-29478-V as alternate gene silencing products.

For independent verification of SH-PTP1 (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-29478A, sc-29478B and sc-29478C.

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 (h) is recommended for the inhibition of SH-PTP1 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 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 (h)-PR: sc-29478-PR (20 µl, 564 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Bhattacharya, R., et al. 2008. Src homology 2 (SH2) domain containing protein tyrosine phosphatase-1 (SHP-1) dephosphorylates VEGF receptor-2 and attenuates endothelial DNA synthesis, but not migration. J. Mol. Signal. 3: 8.
2. Rajendran, P., et al. 2012. Honokiol inhibits signal transducer and activator of transcription-3 signaling, proliferation, and survival of hepatocellular carcinoma cells via the protein tyrosine phosphatase SHP-1. J. Cell. Physiol. 227: 2184-2195.
3. Subramaniam, A., et al. 2013. Emodin inhibits growth and induces apoptosis in an orthotopic hepatocellular carcinoma model by blocking activation of Stat3. Br. J. Pharmacol. 170: 807-821.
4. Lee, J.H., et al. 2014. Capillarisin inhibits constitutive and inducible Stat3 activation through induction of SHP-1 and SHP-2 tyrosine phosphatases. Cancer Lett. 345: 140-148.
5. Shanmugam, M.K., et al. 2015. Abrogation of Stat3 signaling cascade by zerumbone inhibits proliferation and induces apoptosis in renal cell carcinoma xenograft mouse model. Mol. Carcinog. 54: 971-985.
6. Sakurai, T., et al. 2017. The oncoprotein gankyrin promotes the development of colitis-associated cancer through activation of STAT3. Oncotarget 8: 24762-24776.
7. Koh, J.S., et al. 2018. Inhibition of Stat3 in gastric cancer: role of pantoprazole as SHP-1 inducer. Cell Biosci. 8: 50.

RESEARCH USE

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