

SHP siRNA (h): sc-44101

BACKGROUND

SHP (short heterodimer partner and small heterodimer partner) is an orphan nuclear receptor containing the dimerization and ligand-binding domains found in other nuclear receptors, but lacking the conserved DNA binding domain. SHP is specifically expressed in liver and other tissues, including fetal liver and adrenal gland, as well as adult spleen and small intestine. In addition, SHP is highly expressed in the murine macrophage cell line RAW 264.7 but suppressed by oxLDL and 13-HODE, which is a ligand for PPAR γ . SHP interacts with nuclear receptors, including thyroid receptor, retinoic acid receptors (RAR and RXR) and estrogen receptors (ER α and ER β). SHP functions as a negative regulator of these receptors by at least three mechanisms: inhibition of DNA binding via dimerization, direct antagonism of coactivator function through competition and possibly transrepression via recruitment of putative corepressors. In oxLDL-treated, resting macrophage cells, SHP acts as a transcription coactivator of NF κ B, suggesting that SHP is a modulatory component in the regulation of the transcriptional activities of NF κ B. Lastly, negative feedback regulation of a hepatic bile acid transporter, NTCP, is controlled by bile acid-activated FXR via induction of SHP to protect the hepatocyte from bile acid-mediated damage in cholestatic conditions.

CHROMOSOMAL LOCATION

Genetic locus: NR0B2 (human) mapping to 1p36.11.

PRODUCT

SHP 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 SHP shRNA Plasmid (h): sc-44101-SH and SHP shRNA (h) Lentiviral Particles: sc-44101-V as alternate gene silencing products.

For independent verification of SHP (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-44101A, sc-44101B and sc-44101C.

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

SHP siRNA (h) is recommended for the inhibition of SHP expression in human cells.

PROTOCOLS

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

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

SHP (H-5): sc-271511 is recommended as a control antibody for monitoring of SHP 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 SHP gene expression knockdown using RT-PCR Primer: SHP (h)-PR: sc-44101-PR (20 μ l, 437 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

- Mittal, Y., et al. 2011. Src homology domain 2-containing protein-tyrosine phosphatase-1 (SHP-1) binds and dephosphorylates G α_i -interacting, vesicle-associated protein (GIV)/Girdin and attenuates the GIV-phosphatidylinositol 3-kinase (PI3K)-Akt signaling pathway. *J. Biol. Chem.* 286: 32404-32415.
- Mima, A., et al. 2012. Glomerular VEGF resistance induced by PKC δ /SHP-1 activation and contribution to diabetic nephropathy. *FASEB J.* 26: 2963-2974.
- Pei, T., et al. 2016. (-)-oleocanthol inhibits growth and metastasis by blocking activation of STAT3 in human hepatocellular carcinoma. *Oncotarget* 7: 43475-43491.
- Yamaguchi, R., et al. 2017. Surfactant protein D inhibits interleukin-12p40 production by macrophages through the SIRP α /ROCK/ERK signaling pathway. *Am. J. Med. Sci.* 353: 559-567.
- Zhang, Y., et al. 2019. Chrysin inhibits sphere formation in SMMC-7721 cells via modulation of SHP-1/STAT3 signaling pathway. *Cancer Manag. Res.* 11: 2977-2985.
- Kim, E.O., et al. 2020. CCR4-NOT transcription complex subunit 2 regulates TRAIL sensitivity in non-small-cell lung cancer cells via the STAT3 pathway. *Int. J. Mol. Med.* 45: 324-332.
- Fu, Y., et al. 2022. Alisol B 23-acetate adjusts bile acid metabolism via hepatic FXR-BSEP signaling activation to alleviate atherosclerosis. *Phytomedicine* 101: 154120.

RESEARCH USE

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