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# SIRP- $\beta$ 1 siRNA (m): sc-153472

## BACKGROUND

SIRPs (signal-regulatory proteins) are a family of transmembrane glycoproteins that were identified by their association with the Src homology 2 domain-containing protein-tyrosine phosphatase SHP-2 in response to Insulin. The SIRP family negatively regulates the PI 3-K pathway, which may diminish EGFR-mediated motility and survival phenotypes that contribute to transformation of certain cell types. SIRP- $\alpha$ 1 is a transmembrane protein which contains an extracellular portion with three immunoglobulin-like structures and a cytoplasmic region with four potential tyrosine phosphorylation sites. SIRP- $\alpha$ 1 is a substrate for activated receptor tyrosine kinases. In its tyrosine phosphorylated form, SIRP- $\alpha$ 1 binds to SH-PTP2 through SH2 interactions and acts as an SH-PTP2 substrate. SIRP- $\alpha$ 1 has been shown to have negative regulatory effects on cellular responses induced by growth factors, oncogenes and Insulin. SIRP- $\beta$ 1 shares extensive sequence homology with SIRP- $\alpha$ 1 in its extracellular portion but lacks the cytoplasmic portion. SIRP- $\gamma$ , originally designated SIRP- $\beta$ 2 (SIRP-B2, CD172 $\gamma$ ) has unique characteristics from both the  $\alpha$  and  $\beta$  versions. SIRP- $\gamma$  is expressed on the majority of T cells and a proportion of B cells. CD47 associates with SIRP- $\gamma$ , and this interaction signals unidirectionally only.

## REFERENCES

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2. Fujioka, Y., et al. 1996. A novel membrane glycoprotein, SHPS-1, that binds the SH2-domain-containing tyrosine phosphatase SHP-2 in response to mitogens and cell adhesion. *Mol. Cell. Biol.* 16: 6887-6899.
3. Kharitonov, A., et al. 1997. A family of proteins that inhibit signalling through tyrosine kinase receptors. *Nature* 386: 181-186.
4. Stofega, M.R., et al. 1998. Growth hormone regulation of SIRP and SHP-2 tyrosyl phosphorylation and association. *J. Biol. Chem.* 273: 7112-7117.
5. Wu, C.J., et al. 2000. Inhibition of EGFR-mediated phosphoinositide-3-OH kinase (PI-3 K) signaling and glioblastoma phenotype by signal-regulatory proteins (SIRPs). *Oncogene* 19: 3999-4010.
6. Latour, S., et al. 2001. Bidirectional negative regulation of human T and dendritic cells by CD47 and its cognate receptor signal-regulator protein- $\alpha$ : downregulation of IL-12 responsiveness and inhibition of dendritic cell activation. *J. Immunol.* 167: 2547-2554.
7. Brooke, G., et al. 2004. Human lymphocytes interact directly with CD47 through a novel member of the signal regulatory protein (SIRP) family. *J. Immunol.* 173: 2562-2570.
8. Kapoor, G.S., et al. 2004. Transcriptional regulation of signal regulatory protein  $\alpha$ 1 inhibitory receptors by epidermal growth factor receptor signaling. *Cancer Res.* 64: 6444-6452.
9. Liu, Y., et al. 2005. SIRP- $\beta$ 1 is expressed as a disulfide-linked homodimer in leukocytes regulates neutrophil transepithelial migration. *J. Biol. Chem.* 280: 36132-36140.

## CHROMOSOMAL LOCATION

Genetic locus: Sirpb1a (mouse) mapping to 3 A1.

## PRODUCT

SIRP- $\beta$ 1 siRNA (m) is a target-specific 19-25 nt siRNA designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see SIRP- $\beta$ 1 shRNA Plasmid (m): sc-153472-SH and SIRP- $\beta$ 1 shRNA (m) Lentiviral Particles: sc-153472-V as alternate gene silencing products.

## 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  $\mu$ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330  $\mu$ l of RNase-free water makes a 10  $\mu$ M solution in a 10  $\mu$ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

## APPLICATIONS

SIRP- $\beta$ 1 siRNA (m) is recommended for the inhibition of SIRP- $\beta$ 1 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  $\mu$ M in 66  $\mu$ 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.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor SIRP- $\beta$ 1 gene expression knockdown using RT-PCR Primer: SIRP- $\beta$ 1 (m)-PR: sc-153472-PR (20  $\mu$ 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](http://www.scbt.com) for detailed protocols and support products.