SANTA CRUZ BIOTECHNOLOGY, INC.

Smad7 siRNA (h): sc-36508

BACKGROUND

Smad proteins, the mammalian homologs of the *Drosophila* Mothers against dpp (Mad) have been implicated as downstream effectors of TGFβ/BMP signaling. Smad1 (also designated Madr1 or JV4-1), Smad5 and mammalian Smad8 (also designated Smad9 or MADH6) are effectors of BMP2 and BMP4 function while Smad2 (also designated Madr2 or JV18-1) and Smad3 are involved in TGFβ and activin-mediated growth modulation. Smad4 (also designated DPC4) has been shown to mediate all of the above activities through interaction with various Smad family members. Smad6 and Smad7 regulate the response to activin/TGFβ signaling by interfering with TGFβ-mediated phosphorylation of other Smad family members.

CHROMOSOMAL LOCATION

Genetic locus: SMAD7 (human) mapping to 18q21.1.

PRODUCT

Smad7 siRNA (h) 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Smad7 shRNA Plasmid (h): sc-36508-SH and Smad7 shRNA (h) Lentiviral Particles: sc-36508-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 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

Smad7 siRNA (h) is recommended for the inhibition of Smad7 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.

PROTOCOLS

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

GENE EXPRESSION MONITORING

Smad7 (B-8): sc-365846 is recommended as a control antibody for monitoring of Smad7 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 Smad7 gene expression knockdown using RT-PCR Primer: Smad7 (h)-PR: sc-36508-PR (20 µl, 512 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Camoretti-Mercado, B. and Fernandes, D.J. 2006. Inhibition of transforming growth factor β-enhanced serum response factor-dependent transcription by Smad7. J. Biol. Chem. 281: 20383-20392.
2. Tang, Y., et al. 2008. Smad7 stabilizes β-catenin binding to E-cadherin complex and promotes cell-cell adhesion. J. Biol. Chem. 283: 23956-23963.
3. DiVito, K.A., et al. 2010. Smad7 restricts melanoma invasion by restoring N-cadherin expression and establishing heterotypic cell-cell interactions *in vivo*. Pigment Cell Melanoma Res. 23: 795-808.
4. Datta De, D., et al. 2011. IL1B induced Smad 7 negatively regulates gastrin expression. PLoS ONE 6: e14775.
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6. MohanKumar, K., et al. 2016. Smad7 interrupts TGF-β signaling in intestinal macrophages and promotes inflammatory activation of these cells during necrotizing enterocolitis. Pediatr. Res. 79: 951-961.
7. Zhou, R., et al. 2017. MiR-21 promotes collagen production in keloid via Smad7. Burns 43: 555-561.
8. Yu, M., et al. 2018. *Astragalus* inhibits epithelial-to-mesenchymal transition of peritoneal mesothelial cells by down-regulating β-catenin. Cell. Physiol. Biochem. 51: 2794-2813.
9. Wojtowicz, S., et al. 2020. SMURF2 and Smad7 induce SARA degradation via the proteasome. Cell. Signal. 72: 109627.
10. Li, L., et al. 2021. cMet agonistic antibody prevents acute kidney injury to chronic kidney disease transition by suppressing Smurf1 and activating Smad7. Clin. Sci. 135: 1427-1444.

RESEARCH USE

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