SANTA CRUZ BIOTECHNOLOGY, INC.

Smad2/3 siRNA (m): sc-37239

BACKGROUND

Smad proteins, the mammalian homologs of the *Drosophila* mothers against decapentaplegic (Mad), have been implicated as downstream effectors of TGFβ/BMP signaling. Smad1 (also designated Madr1 or JV4-1) and Smad5 are effectors of BMP-2 and BMP-4 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 proteins.

CHROMOSOMAL LOCATION

Genetic locus: Smad2 (mouse) mapping to 18 E3, Smad3 (mouse) mapping to 9 C.

PRODUCT

Smad2/3 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 Smad2/3 shRNA Plasmid (m): sc-37239-SH and Smad2/3 shRNA (m) Lentiviral Particles: sc-37239-V as alternate gene silencing products.

For independent verification of Smad2/3 (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-37239A, sc-37239B, sc-37239C and sc-37239D.

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

Smad2/3 siRNA (m) is recommended for the inhibition of Smad2/3 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

Smad2/3 (C-8): sc-133098 is recommended as a control antibody for monitoring of Smad2/3 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).

SELECT PRODUCT CITATIONS

1. Erdogan, M., et al. 2008. Transforming growth factor-β (TGF-β) and TGF-β-associated kinase 1 are required for R-Ras-mediated transformation of mammary epithelial cells. Cancer Res. 68: 6224-6231.
2. Wang, M., et al. 2009. Smad2/3 is involved in growth inhibition of mouse embryonic palate mesenchymal cells induced by all-*trans* retinoic acid. Birth Defects Res. A Clin. Mol. Teratol. 85: 780-790.
3. Li, G., et al. 2013. Gremlin aggravates hyperglycemia-induced podocyte injury by a TGFβ/Smad dependent signaling pathway. J. Cell. Biochem. 114: 2101-2113.
4. Villar, A.V., et al. 2013. BAMBI (BMP and activin membrane-bound inhibitor) protects the murine heart from pressure-overload biomechanical stress by restraining TGF-β signaling. Biochim. Biophys. Acta 1832: 325-335.
5. García, R., et al. 2015. p-SMAD2/3 and DICER promote pre-miR-21 processing during pressure overload-associated myocardial remodeling. Biochim. Biophys. Acta 1852: 1520-1530.
6. Coricor, G. and Serra, R. 2016. TGF-β regulates phosphorylation and stabilization of Sox9 protein in chondrocytes through p38 and Smad dependent mechanisms. Sci. Rep. 6: 38616.
7. Chavez, R.D., et al. 2017. SOX9 protein is stabilized by TGF-β and regulates PAPSS2 mRNA expression in chondrocytes. Osteoarthritis Cartilage 25: 332-340.
8. Jung, M.Y., et al. 2018. Fatty Acid Synthase is required for profibrotic TGF-β signaling. FASEB J. 32: 3803-3815.
9. Zhang, Y., et al. 2018. TGF-β3 promotes MUC5AC hyper-expression by modulating autophagy pathway in airway epithelium. EBioMedicine 33: 242-252.
10. Kang, J.H., et al. 2019. B7-1 drives TGF-β stimulated pancreatic carcinoma cell migration and expression of EMT target genes. PLoS ONE 14: e0222083.
11. Kang, J.H., et al. 2020. Transforming growth factor β induces fibroblasts to express and release the immunomodulatory protein PD-L1 into extracellular vesicles. FASEB J. 34: 2213-2226.
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RESEARCH USE

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