SANTA CRUZ BIOTECHNOLOGY, INC.

TGFβ RIII siRNA (m): sc-40225

BACKGROUND

A total of three members of the TGFβ family, TGFβ1, TGFβ2 and TGFβ3, have been identified in mammals. Each is synthesized as a latent precursor that is subsequently cleaved forming the 112 amino acid growth factor which becomes active upon dimerization. TGFβs mediate their activity by high affinity binding to the type II receptor transmembrane protein with a cytoplasmic serine-threonine kinase domain. TGFβ RIII (transforming growth factor β receptor type 3), also known as TGFBR3 or TGFR-3, is an 850 amino acid secreted and single-pass type I membrane protein that contains one ZP domain and may assist in capturing TGFβ for presentation to signaling receptors. TGFβ RIII undergoes post-translational modification by glycosaminoglycan groups (GAG) and is encoded by a gene that maps to human chromosome 1p22.1.

REFERENCES

1. Anzano, M.A., et al. 1983. Sarcoma growth factor from conditioned medium of virally transformed cells is composed of both type α and type β transforming growth factors. Proc. Natl. Acad. Sci. USA 80: 6264-6268.
2. Derynck, R., et al. 1985. Human transforming growth factor-β cDNA sequence and expression in tumor cell lines. Nature 316: 701-705.
3. ten Dijke, P., et al. 1988. Identification of a new member of the transforming growth factor type β gene family. Proc. Natl. Acad. Sci. USA 85: 4715-4719.
4. Cheifetz, S., et al. 1990. Distinct transforming growth factor-β receptor subsets as determinants of cellular responsiveness to three TGF-β isoforms. J. Biol. Chem. 265: 20533-20538.
5. Massague, J. 1992. Receptors for the TGF-β family. Cell 69: 1067-1070.

CHROMOSOMAL LOCATION

Genetic locus: Tgfbr3 (mouse) mapping to 5 E5.

PRODUCT

TGFβ RIII siRNA (m) 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 TGFβ RIII shRNA Plasmid (m): sc-40225-SH and TGFβ RIII shRNA (m) Lentiviral Particles: sc-40225-V as alternate gene silencing products.

For independent verification of TGFβ RIII (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-40225A, sc-40225B and sc-40225C.

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

TGFβ RIII siRNA (m) is recommended for the inhibition of TGFβ RIII 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

TGFβ RIII (A-4): sc-74511 is recommended as a control antibody for monitoring of TGFβ RIII 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).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor TGFβ RIII gene expression knockdown using RT-PCR Primer: TGFβ RIII (m)-PR: sc-40225-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Schwartze, J.T., et al. 2014. Glucocorticoids recruit Tgfbr3 and Smad1 to shift transforming growth factor-β signaling from the Tgfbr1/Smad2/3 axis to the Acvrl1/Smad1 axis in lung fibroblasts. J. Biol. Chem. 289: 3262-3275.
2. Allison, P., et al. 2015. Type III TGFβ receptor and Src direct hyaluronan-mediated invasive cell motility. Cell. Signal. 27: 453-459.
3. He, X., et al. 2019. A schistosome miRNA promotes host hepatic fibrosis by targeting transforming growth factor β receptor III. J. Hepatol. 72: 519-527.
4. Kleefeldt, J.M., et al. 2020. Commercially available transfection reagents and negative control siRNA are not inert. Anal. Biochem. 606: 113828.

RESEARCH USE

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