SANTA CRUZ BIOTECHNOLOGY, INC.

TGFβ RII siRNA (h): sc-36657

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 (TGFβ RII) transmembrane protein with a cytoplasmic serine-threonine kinase domain. TGFβ RII (TGF-β receptor type-2), also known as TGFBR2, is a 567 amino acid single-pass type I membrane protein that contains one protein kinase domain and is a member of the protein kinase superfamily, TKL Ser/Thr protein kinase family and TGFB receptor subfamily. For signaling growth inhibition and early gene responses, TGFβ RII requires both its kinase activity and association with a TGFβ-binding protein, designated the type I receptor. TGFβ RII exists as two alternatively spliced isoforms that are encoded by a gene that maps to human chromosome 3.

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.

CHROMOSOMAL LOCATION

Genetic locus: TGFBR2 (human) mapping to 3p24.1.

PRODUCT

TGFβ RII 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see TGFβ RII shRNA Plasmid (h): sc-36657-SH and TGFβ RII shRNA (h) Lentiviral Particles: sc-36657-V as alternate gene silencing products.

For independent verification of TGFβ RII (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-36657A, sc-36657B and sc-36657C.

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 RII siRNA (h) is recommended for the inhibition of TGFβ RII 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.

GENE EXPRESSION MONITORING

TGFβ RII (C-4): sc-17791 is recommended as a control antibody for monitoring of TGFβ RII 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 TGFβ RII gene expression knockdown using RT-PCR Primer: TGFβ RII (h)-PR: sc-36657-PR (20 µl, 379 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Jiang, X., et al. 2012. MicroRNA-590-5p regulates proliferation and invasion in human hepatocellular carcinoma cells by targeting TGF-β RII. Mol. Cells 33: 545-551.
2. Chang, T.P., et al. 2015. Bortezomib inhibits expression of TGF-β1, IL-10, and CXCR4, resulting in decreased survival and migration of cutaneous T cell lymphoma cells. J. Immunol. 194: 2942-2953.
3. Yang, X. and Wu, X. 2016. miRNA expression profile of vulvar squamous cell carcinoma and identification of the oncogenic role of miR-590-5p. Oncol. Rep. 35: 398-408.
4. Pan, R., et al. 2017. Hydroxysafflor yellow A suppresses MRC-5 cell activation induced by TGF-β1 by blocking TGF-β1 binding to TβRII. Front. Pharmacol. 8: 264.
5. Choi, S.H., et al. 2018. Tumour-vasculature development via endothelial-to-mesenchymal transition after radiotherapy controls CD44v6^{+} cancer cell and macrophage polarization. Nat. Commun. 9: 5108.
6. Okamoto, M., et al. 2020. Growth differentiation factor 15 promotes progression of esophageal squamous cell carcinoma via TGF-β type II receptor activation. Pathobiology 87: 100-113.
7. Tomela, K., et al. 2021. Influence of TGFBR2, TGFB3, DNMT1, and DNMT3A knockdowns on CTGF, TGFBR2, and DNMT3A in neonatal and adult human dermal fibroblasts cell lines. Curr. Issues Mol. Biol. 43: 276-285.

RESEARCH USE

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