SANTA CRUZ BIOTECHNOLOGY, INC.

TGFβ RI siRNA (h): sc-40222

BACKGROUND

A total of three members of the TGFβ family, namely 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 TGFβ receptor type-II (TGFβ RII) with a cytoplasmic serine-threonine kinase domain. For signaling growth inhibition and early gene responses, TGFβ RII requires both its kinase activity and its association with a TGFβ-binding protein, designated TGFβ receptor type-1 (TGFβ RI). TGFβ RI is a 503 amino acid single-pass type I membrane protein that is expressed ubiquitously and, with TGFβ RII, functions as a receptor for TGFβ. Defects in the gene encoding TGFβ RI are the cause of aortic aneurysm familial thoracic type 5 (AAT5), Loeys-Dietz syndrome type 2A (LDS2A) and Loeys-Dietz syndrome type 1A (LDS1A).

REFERENCES

1. Sambucetti, L.C., et al. 1986. The Fos protein complex is associated with DNA in isolated nuclei and binds to DNA cellulose. Science 234: 1417-1419.
2. Bohmann, D., et al. 1987. Human proto-oncogene c-Jun encodes a DNA binding protein with structural and functional properties of transcription factor AP-1. Science 238: 1386-1392.
3. Renz, M., et al. 1987. Chromatin association and DNA-binding properties of the c-Fos proto-oncogene product. Nucleic Acids Res. 15: 277-292.

CHROMOSOMAL LOCATION

Genetic locus: TGFBR1 (human) mapping to 9q22.33.

PRODUCT

TGFβ RI 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 RI shRNA Plasmid (h): sc-40222-SH and TGFβ RI shRNA (h) Lentiviral Particles: sc-40222-V as alternate gene silencing products.

For independent verification of TGFβ RI (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-40222A, sc-40222B and sc-40222C.

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 RI siRNA (h) is recommended for the inhibition of TGFβ RI 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 RI (D-1): sc-518018 is recommended as a control antibody for monitoring of TGFβ RI 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 RI gene expression knockdown using RT-PCR Primer: TGFβ RI (h)-PR: sc-40222-PR (20 µl, 578 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Shang, Y., et al. 2013. Transcriptional corepressors HIPK1 and HIPK2 control angiogenesis via TGFβ-TAK1-dependent mechanism. PLoS Biol. 11: e1001527.
2. Chang, T.P., et al. 2015. Bortezomib inhibits expression of TGFβ1, IL-10, and CXCR4, resulting in decreased survival and migration of cutaneous T cell lymphoma cells. J. Immunol. 194: 2942-2953.
3. Zhang, Y., et al. 2016. Galangin inhibits hypertrophic scar formation via ALK5/Smad2/3 signaling pathway. Mol. Cell. Biochem. 413: 109-118.
4. Abeyrathna, P., et al. 2016. Calpain-2 activates Akt via TGFβ1-mTORC2 pathway in pulmonary artery smooth muscle cells. Am. J. Physiol., Cell Physiol. 311: C24-C34.
5. Buczek, M.E., et al. 2016. Cytoplasmic PML promotes TGFβ-associated epithelial-mesenchymal transition and invasion in prostate cancer. Oncogene 35: 3465-3475.
6. Lee, J.J., et al. 2017. Dipeptidyl peptidase IV as a prognostic marker and therapeutic target in papillary thyroid carcinoma. J. Clin. Endocrinol. Metab. 102: 2930-2940.
7. Zhang, L., et al. 2020. Rab23 promotes hepatocellular carcinoma cell migration via Rac1/TGFβ signaling. Pathol. Oncol. Res. 26: 301-306.
8. Zou, L.L., et al. 2021. TGFβ isoforms inhibit hepatitis C virus propagation in transforming growth factor β/SMAD protein signalling pathway dependent and independent manners. J. Cell. Mol. Med. 25: 3498-3510.

RESEARCH USE

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