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FOXP3 siRNA (h): sc-43569

BACKGROUND

The FOX family of transcription factors is a large group of proteins that share a common DNA binding domain termed a winged-helix or forkhead domain. During early development, FOXP1 and FOXP2 are expressed abundantly in the lung, with lower levels of expression in neural, intestinal and cardiovascular tissues, where they act as transcription repressors. FOXP1 is widely expressed in adult tissues, while neoplastic cells often exhibit a dramatic change in expression level or localization of FOXP1. The gene encoding human FOXP1 maps to chromosome 3p14.1, and the gene encoding human FOXP2 maps to chromosome 7q31.1. The gene encoding FOXP3, a third member of this family, maps to chromosome Xp11.23. Mutations in this gene cause IPEX, a fatal, X-linked inherited disorder characterized by immune dysregulation. The FOXP3 protein, also known as scurf, is essential for normal immune homeostasis. Specifically, FOXP3 represses transcription through a DNA binding forkhead domain, thereby regulating T cell activation.

REFERENCES

- Lai, C.S., et al. 2000. The SPCH1 region on human 7q31: genomic characterization of the critical interval and localization of translocations associated with speech and language disorder. *Am. J. Hum. Genet.* 67: 357-368.
- Banham, A.H., et al. 2001. The FOXP1 winged helix transcription factor is a novel candidate tumor suppressor gene on chromosome 3p. *Cancer Res.* 61: 8820-8829.
- Bennett, C.L., et al. 2001. The immune dysregulation, polyendocrinopathy, enteropathy, X-linked syndrome (IPEX) is caused by mutations of FOXP3. *Nat. Genet.* 27: 20-21.

CHROMOSOMAL LOCATION

Genetic locus: FOXP3 (human) mapping to Xp11.23.

PRODUCT

FOXP3 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see FOXP3 shRNA Plasmid (h): sc-43569-SH and FOXP3 shRNA (h) Lentiviral Particles: sc-43569-V as alternate gene silencing products.

For independent verification of FOXP3 (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-43569A, sc-43569B and sc-43569C.

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 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

FOXP3 siRNA (h) is recommended for the inhibition of FOXP3 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 μ M in 66 μ l. 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

FOXP3 (2A11G9): sc-53876 is recommended as a control antibody for monitoring of FOXP3 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 FOXP3 gene expression knockdown using RT-PCR Primer: FOXP3 (h)-PR: sc-43569-PR (20 μ l, 529 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

- Yongsheng, Y., et al. 2011. siRNA-mediated knockdown of FOXP3 promotes the ratio of T-helper 1 (Th1) to Th2 in chronic hepatitis B patients. *Turk. J. Gastroenterol.* 22: 587-593.
- Liu, W.H. and Chang, L.S. 2012. Suppression of Akt/FOXP3-mediated miR-183 expression blocks Sp1-mediated ADAM17 expression and TNF α -mediated NF κ B activation in piceatannol-treated human leukemia U937 cells. *Biochem. Pharmacol.* 84: 670-680.
- Singh, A., et al. 2013. Loss of ROR γ t DNA binding activity inhibits IL-17 expression in HIV-1 infected Indian individuals. *Viral Immunol.* 26: 60-67.
- Li, C., et al. 2017. Downregulation of FOXP3 inhibits cell proliferation and enhances chemosensitivity to cisplatin in human lung adenocarcinoma. *Pathol. Res. Pract.* 213: 1251-1256.
- Chen, Y.J., et al. 2017. Hydroquinone-induced FOXP3-ADAM17-Lyn-Akt-p21 signaling axis promotes malignant progression of human leukemia U937 cells. *Arch. Toxicol.* 91: 983-997.
- Skretting, G., et al. 2019. Transcription factor FOXP3: a repressor of the TFPI gene? *J. Cell. Biochem.* 120: 12924-12936.

RESEARCH USE

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