SANTA CRUZ BIOTECHNOLOGY, INC.

NFATc2 siRNA (h): sc-36055

BACKGROUND

The NFAT (nuclear factor of activated T cells) family of transcription factors regulates cytokine expression in T cells. Members of the family include NFATc1 (NFATc), NFATc2 (NFATp), NFATn, NFATc3 (NFAT4, NFATx) and NFATc4 (NFAT3). Recognition of antigen by the T cell receptor (TCR) eventually activates the calcium-dependent protein phosphatase calcineurin. Once activated, calcineurin stimulates the translocation of NFATc1 (cytoplasmic) from the cytoplasm to the nucleus where it associates with NFATn (nuclear). Like NFATc1, NFATc2 resides in the cytoplasm and translocates to the nucleus subsequent to activation of calcineurin. Once in the nucleus, NFATc2 synergizes with AP-1 transcription factors to initiate transcription of cytokine genes. NFATc3 and NFATc4 share 65% sequence identity with other members of the NFAT family. They are similar to NFATc2 in that they also synergize with the AP-1 family of proteins.

REFERENCES

1. Emmel, E.A., et al. 1989. Cyclosporin A specifically inhibits function of nuclear proteins involved in T cell activation. Science 246: 1617-1620.
2. Flanagan, W.M., et al. 1991. Nuclear association of a T cell transcription factor blocked by FK-506 and Cyclosporin A. Nature 352: 803-807.
3. Liu, J., et al. 1991. Calcineurin is a common target of Cyclophilin-Cyclosporin A and FKBP-FK506 complexes. Cell 66: 807-815.

CHROMOSOMAL LOCATION

Genetic locus: NFATC2 (human) mapping to 20q13.2.

PRODUCT

NFATc2 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 NFATc2 shRNA Plasmid (h): sc-36055-SH and NFATc2 shRNA (h) Lentiviral Particles: sc-36055-V as alternate gene silencing products.

For independent verification of NFATc2 (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-36055A, sc-36055B and sc-36055C.

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

NFATc2 siRNA (h) is recommended for the inhibition of NFATc2 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

NFATc2 (4G6-G5): sc-7296 is recommended as a control antibody for monitoring of NFATc2 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 NFATc2 gene expression knockdown using RT-PCR Primer: NFATc2 (h)-PR: sc-36055-PR (20 µl, 440 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Eriksson, J., et al. 2016. Gene expression analyses of primary melanomas reveal CTHRC1 as an important player in melanoma progression. Oncotarget 7: 15065-15092.
2. Wang, X., et al. 2019. Increased HERV-E clone 4-1 expression contributes to DNA hypomethylation and IL-17 release from $CD4^+$ T cells via miR-302d/MBD2 in systemic lupus erythematosus. Cell Commun. Signal. 17: 94.
3. Rohini, M., et al. 2021. TGF-β1-stimulation of NFATC2 and ATF3 proteins and their interaction for matrix metalloproteinase 13 expression in human breast cancer cells. Int. J. Biol. Macromol. 192: 1325-1330.
4. Zhou, L., et al. 2021. Identification of ascomycin against Zika virus infection through screening of natural product library. Antiviral Res. 196: 105210.
5. Nguyen, A., et al. 2022. Chronic alcohol exposure promotes cancer stemness and glycolysis in oral/oropharyngeal squamous cell carcinoma cell lines by activating NFAT signaling. Int. J. Mol. Sci. 23: 9779.

RESEARCH USE

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