SANTA CRUZ BIOTECHNOLOGY, INC.

IL-31R siRNA (h): sc-60839

BACKGROUND

IL-31 is a T cell cytokine that is preferentially produced by T helper type 2 cells. IL-31 signals through a heterodimeric receptor composed of the IL-31 receptor (IL-31R) and the oncostatin M receptor (OSM). This receptor complex recruits JAK1, JAK2, Stat1, Stat3 and Stat5 signaling pathways, as well as the PI3 kinase/AKT cascade. SHP-2 and Shc adapter molecules are also recruited and contribute to an increased activation of the MAP kinase pathway in response to IL-31. Overexpression of IL-31 in mice results in pruritus and skin dermatitis resembling human atopic dermatitis (AD). Comparisons between skin from patients with AD and healthy skin showed IL-31R expression at higher levels on epidermal keratinocytes in AD samples. Infiltrating cells, more numerous in skin from patients with AD compared with that of healthy individuals, expressed IL-31 mRNA. IL-31 may participate in the cause of itch sensation and promote scratching behavior in NC/Nga mice with atopic dermatitis, and may represent a novel target for antipruritic drug development.

REFERENCES

1. Diveu, C., et al. 2004. Predominant expression of the long isoform of gp130-like (GPL) receptor is required for interleukin-31 signaling. Eur. Cytokine Netw. 15: 291-302.
2. Dreuw, A., et al. 2004. Characterization of the signaling capacities of the novel gp130-like cytokine receptor. J. Biol. Chem. 279: 36112-36120.
3. Dillon, S.R., et al. 2004. Interleukin-31, a cytokine produced by activated T cells, induces dermatitis in mice. Nat. Immunol. 5: 752-760.
4. Takaoka, A., et al. 2005. Expression of IL-31 gene transcripts in NC/Nga mice with atopic dermatitis. Eur. J. Pharmacol. 516: 180-181.
5. Takaoka, A., et al. 2006. Involvement of IL-31 on scratching behavior in NC/Nga mice with atopic-like dermatitis. Exp. Dermatol.15: 161-167.
6. Sonkoly, E., et al. 2006. IL-31: a new link between T cells and pruritus in atopic skin inflammation. J. Allergy Clin. Immunol. 117: 411-417.
7. Bilsborough, J., et al. 2006. IL-31 is associated with cutaneous lymphocyte antigen-positive skin homing T cells in patients with atopic dermatitis. J. Allergy Clin. Immunol. 117: 418-425.

CHROMOSOMAL LOCATION

Genetic locus: IL31RA (human) mapping to 5q11.2.

PRODUCT

IL-31R 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 IL-31R shRNA Plasmid (h): sc-60839-SH and IL-31R shRNA (h) Lentiviral Particles: sc-60839-V as alternate gene silencing products.

For independent verification of IL-31R (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-60839A, sc-60839B and sc-60839C.

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

IL-31R siRNA (h) is recommended for the inhibition of IL-31R 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

IL-31R (A-12): sc-515465 is recommended as a control antibody for monitoring of IL-31R 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 IL-31R gene expression knockdown using RT-PCR Primer: IL-31R (h)-PR: sc-60839-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. Kuzumi, A., et al. 2021. Interleukin-31 promotes fibrosis and T helper 2 polarization in systemic sclerosis. Nat. Commun. 12: 5947.

RESEARCH USE

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