SANTA CRUZ BIOTECHNOLOGY, INC.

Ob-R siRNA (h): sc-36115

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Although there is substantial evidence that body weight is physiologically regulated, the molecular basis of obesity is unknown. Five single-gene mutations in mice that result in an obese phenotype have been identified. The first such recessive obesity mutation, the obese mutation (Ob), was identified in 1950. Mutation of Ob results in profound obesity and type II diabetes as part of a syndrome that resembles morbid obesity in humans. It has been postulated that the Ob gene product may function as a component of a signaling pathway in adipose tissue that functions to regulate body fat depot size. The cloning and sequence analysis of the mouse Ob gene and its human homolog has recently been described. Ob encodes an adipose tissue-specific mRNA with a highly conserved 167 amino acid open reading frame. The predicted amino acid sequence is 84% identical between human and mouse and has the features of a secreted protein. A nonsense mutation in codon 105 has been found in the original congenic C57BL/6J Ob/Ob mouse strain. The Ob gene encodes the protein leptin. The leptin receptor, designated Ob-R, has been shown to be a single membrane-spanning receptor that most resembles the gp130 signal transducing component of the IL-6, G-CSF and LIF receptor. Ob-R mRNA is expressed in the choroid plexus and hypothalamus.

CHROMOSOMAL LOCATION

Genetic locus: LEPR (human) mapping to 1p31.3.

PRODUCT

Ob-R 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 Ob-R shRNA Plasmid (h): sc-36115-SH and Ob-R shRNA (h) Lentiviral Particles: sc-36115-V as alternate gene silencing products.

For independent verification of Ob-R (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-36115A, sc-36115B and sc-36115C.

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

Ob-R siRNA (h) is recommended for the inhibition of Ob-R expression in human cells.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

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

Ob-R (B-3): sc-8391 is recommended as a control antibody for monitoring of Ob-R 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 Ob-R gene expression knockdown using RT-PCR Primer: Ob-R (h)-PR: sc-36115-PR (20 µl, 415 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Choi, E., et al. 2015. Implication of leptin-signaling proteins and Epstein-Barr virus in gastric carcinomas. PLoS ONE 10: e0130839.
2. Qian, Y., et al. 2015. Ob-Rb downregulation increases breast cancer cell sensitivity to tamoxifen. Tumour Biol. 36: 6813-6821.
3. Ghasemi, A., et al. 2017. RhoA/ROCK pathway mediates leptin-induced uPA expression to promote cell invasion in ovarian cancer cells. Cell. Signal. 32: 104-114.
4. Ghasemi, A., et al. 2018. Leptin induces matrix metalloproteinase 7 expression to promote ovarian cancer cell invasion by activating ERK and JNK pathways. J. Cell. Biochem. 119: 2333-2344.
5. Ghasemi, A., et al. 2019. Estrogen-independent role of ERα in ovarian cancer progression induced by leptin/Ob-Rb axis. Mol. Cell. Biochem. 458: 207-217.
6. Tsai, C.F., et al. 2019. Induction of osteoclast-like cell formation by leptin-induced soluble intercellular adhesion molecule secreted from cancer cells. Ther. Adv. Med. Oncol. 11: 1758835919846806.
7. Yan, B., et al. 2020. Effects of the multifunctional hormone leptin on orthodontic tooth movement in rats. Am. J. Transl. Res. 12: 1976-1984.
8. Haddad, B., et al. 2024. The role of leptin in regulation of the soluble amyloid precursor protein α (sAPPα) levels in lung cancer cell media. Sci. Rep. 14: 4921.

RESEARCH USE

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