SANTA CRUZ BIOTECHNOLOGY, INC.

β-2-Microglobulin siRNA (h2): sc-44280

BACKGROUND

Major histocompatibility complex (MHC) class 1 molecules bind to antigens for presentation on the surface of cells. The proteasome is responsible for producing these antigens from the components of foreign pathogens. MHC class 1 molecules consist of an α heavy chain that contains three subdomains (α1, α2, α3), and a non-covalent associating light chain, known as β-2-Microglobulin. β-2-Microglobulin associates with the α3 subdomain of the α heavy chain and forms an immunoglobulin domain-like structure that mediates proper folding and expression of MHC class 1 molecules. The α1 and α2 domains of the α heavy chain form the peptide antigen-binding cleft. Mice that lack β-2-Microglobulin protein show a normal distribution of T cells, yet have no mature CD4-8$^+$ T cells and are defective in CD4-8$^+$ T cell-mediated cytotoxicity. Interferon-γ can stimulate production of β-2-Microglobulin transcripts. The human β-2-Microglobulin gene maps to chromosome 15q21.1 and encodes a 119 amino acid protein. Mutations in the β-2-Microglobulin gene can enhance the progression of malignant melanoma phenotypes.

REFERENCES

1. Skjodt, K., et al. 1987. Isolation and characterization of chicken and turkey β-2-Microglobulin. Mol. Immunol. 23: 1301-1309.
2. Dunon, D., et al. 1990. T cell precursor migration towards β-2-Microglobulin is involved in thymus colonization of chicken embryos. EMBO J. 9: 3315-3322.
3. Zijlstra, M., et al. 1990. β-2-Microglobulin deficient mice lack CD4-8$^+$ cytolytic T cells. Nature 344: 742-746.
4. Solheim, J.C., et al. 1995. Conformational changes induced in the MHC class I molecule by peptide and β-2-Microglobulin. Immunol. Res. 14: 200-217.
5. Pamer, E., et al. 1998. Mechanisms of MHC class I-restricted antigen processing. Annu. Rev. Immunol. 16: 323-358.
6. Tsuyuki, Y., et al. 1998. IFN-γ induces coordinate expression of MHC class I-mediated antigen presentation machinery molecules in adult mouse Schwann cells. Neuroreport 9: 2071-2075.

CHROMOSOMAL LOCATION

Genetic locus: B2M (human) mapping to 15q21.1.

PRODUCT

β-2-Microglobulin siRNA (h2) 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 β-2-Microglobulin shRNA Plasmid (h2): sc-44280-SH and β-2-Microglobulin shRNA (h2) Lentiviral Particles: sc-44280-V as alternate gene silencing products.

For independent verification of β-2-Microglobulin (h2) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-44280A, sc-44280B and sc-44280C.

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

β-2-Microglobulin shRNA (h2) Lentiviral Particles is recommended for the inhibition of β-2-Microglobulin 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

β-2-Microglobulin (G-10): sc-46697 is recommended as a control antibody for monitoring of β-2-Microglobulin 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 β-2-Microglobulin gene expression knockdown using RT-PCR Primer: β-2-Microglobulin (h2)-PR: sc-44280-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

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

PROTOCOLS

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