SANTA CRUZ BIOTECHNOLOGY, INC.

Qa-1 siRNA (m): sc-42923

BACKGROUND

Major histocompatibility complex (MHC) molecules, which include human leukocyte antigens (HLAs), are cell-surface receptors that bind foreign peptides and present them to cytotoxic T lymphocytes (CTLs). MHC class I molecules consist of two polypeptide chains, an a or heavy chain, and a non-covalently associated protein, β-2-Microglobulin. Antigens that bind to MHC class I molecules are typically 8-10 residues in length, and are stabilized in a peptide binding groove. Qa-1, a murine MHC class Ib molecule, presents the Qa-1 determinant modifier (Qdm) peptide to the CD94/NKG2A receptor on natural killer (NK) cells. This interaction participates in protecting self cells by inhibiting NK cytotoxicity, and may be mediated by CD8, since the Qa-1 protein preferentially binds to $CD8^+$, but not $CD4^+$, T cells. The gene encoding murine Qa-1 maps to chromosome 17 B1.

REFERENCES

1. Soloski, M.J., et al. 1981. Qa-2, H-2K, and H-2D alloantigens evolved from a common ancestral gene. J. Exp. Med. 153: 1080-1093.
2. Soloski, M.J., et al. 1981. Biochemical analysis of an MHC-linked hematopoietic cell surface antigen, Qa-2. J. Supramol. Struct. Cell. Biochem. 16: 167-177.
3. Wolf, P.R. and Cook, R.G. 1995. The class I-b molecule Qa-1 forms heterodimers with H-2Ld and a novel 50-kD glycoprotein encoded centromeric to I-E β. J. Exp. Med. 181: 657-668.
4. Janeway, C.A., et al. 1997. Immunobiology: the immune system in health and disease 3rd edition (New York: Garland Publishing).
5. Kraft, J.R., et al. 2000. Analysis of $Qa\text{-}1^b$ peptide binding specificity and the capacity of CD94/NKG2A to discriminate between Qa-1-peptide complexes. J. Exp. Med. 192: 613-624.
6. Blumberg, R.S., et al. 2001. The multiple roles of major histocompatibility complex class-I-like molecules in mucosal immune function. Acta Odontol. Scand. 59: 139-144.
7. Toyama-Sorimachi, N., et al. 2001. Mouse CD94 participates in Qa-1-mediated self recognition by NK cells and delivers inhibitory signals independent of Ly-49. J. Immunol. 166: 3771-3779.

CHROMOSOMAL LOCATION

Genetic locus: H2-T23 (mouse) mapping to 17 B1.

PRODUCT

Qa-1 siRNA (m) 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 Qa-1 shRNA Plasmid (m): sc-42923-SH and Qa-1 shRNA (m) Lentiviral Particles: sc-42923-V as alternate gene silencing products.

For independent verification of Qa-1 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-42923A, sc-42923B and sc-42923C.

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

Qa-1 siRNA (m) is recommended for the inhibition of Qa-1 expression in mouse 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

Qa-1 (6A8.6F10): sc-23889 is recommended as a control antibody for monitoring of Qa-1 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 Qa-1 gene expression knockdown using RT-PCR Primer: Qa-1 (m)-PR: sc-42923-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. Tripathi, D., et al. 2016. A TLR9 agonist promotes IL-22-dependent pancreatic islet allograft survival in type 1 diabetic mice. Nat. Commun. 7: 13896.

RESEARCH USE

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