SANTA CRUZ BIOTECHNOLOGY, INC.

PD-L1 siRNA (m): sc-39700

BACKGROUND

Engagement of CD28 by B7-1 (CD80) or B7-2 (CD86) in the presence of antigen promotes T cell proliferation, cytokine production, differentiation of effector T cells, and the induction of Bcl-x, a promoter of T cell survival. Conversely, engagement of CTLA4 by B7-1 or B7-2 may inhibit proliferation and IL-2 production. PD-L1 (programmed cell death ligand-1), also known as B7-H1 or Pdcd-1L1, is 290 amino acid type I transmembrane protein which is 20% and 15% identical to B7-1 and B7-2, respectively. Pdcd-1L2 has immunoglobulin V-like and C-like domains and a 30 amino acid cytoplasmic tail. It does not bind CD28, cytotoxic T-lymphocyte A4 or ICOS (inducible co-stimulator). IL-2, although produced in small amounts, is required for the effect of PD-L1 co-stimulation. The gene which encodes PD-L1 maps to human chromosome 9p24.1. PD-L2 (programmed cell death ligand-2) is a 73 amino acid protein which contains a signal sequence, IgV- and IgC-like domains, a transmembrane region and a cytoplasmic region. The gene which encodes PD-L2 maps to human chromosome 9p24.2. The constitutive expression of PD-L1 and PD-L2 on parenchymal cells of heart, lung and kidney suggests that the Pdcd-1-Pdcd-L system could provide unique negative signaling to help prevent autoimmune disease.

REFERENCES

1. Dong, H., et al. 1999. B7-H1, a third member of the B7 family, co-stimulates T cell proliferation and interleukin-10 secretion. Nat. Med. 5: 1365-1369.
2. Freeman, G.J., et al. 2000. Engagement of the PD-1 immunoinhibitory receptor by a novel B7 family member leads to negative regulation of lymphocyte activation. J. Exp. Med. 192: 1027-1034.

CHROMOSOMAL LOCATION

Genetic locus: Cd274 (mouse) mapping to 19 C1.

PRODUCT

PD-L1 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 PD-L1 shRNA Plasmid (m): sc-39700-SH and PD-L1 shRNA (m) Lentiviral Particles: sc-39700-V as alternate gene silencing products.

For independent verification of PD-L1 (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-39700A, sc-39700B and sc-39700C.

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

PD-L1 siRNA (m) is recommended for the inhibition of PD-L1 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

PD-L1 (D-8): sc-518027 is recommended as a control antibody for monitoring of PD-L1 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 PD-L1 gene expression knockdown using RT-PCR Primer: PD-L1 (m)-PR: sc-39700-PR (20 µl, 416 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Kang, J.H., et al. 2020. Transforming growth factor β induces fibroblasts to express and release the immunomodulatory protein PD-L1 into extracellular vesicles. FASEB J. 34: 2213-2226.
2. Bastaki, S., et al. 2020. Codelivery of Stat3 and PD-L1 siRNA by hyaluronate-TAT trimethyl/thiolated chitosan nanoparticles suppresses cancer progression in tumor-bearing mice. Life Sci. 266: 118847.
3. Ou, W., et al. 2023. *In-situ* cryo-immune engineering of tumor microenvironment with cold-responsive nanotechnology for cancer immunotherapy. Nat. Commun. 14: 392.
4. Chung, M.C., et al. 2025. Multi-step assembly of an RNA-liposome nanoparticle formulation revealed by real-time, single-particle quantitative imaging. Adv. Sci. 12: e2414305.

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.