

TLR4 siRNA (m) : sc-40261

BACKGROUND

Six human homologs of the *Drosophila* Toll receptor were initially identified based on their sequence similarities and designated Toll-like receptors (TLR). Toll receptors are involved in mediating dorsoventral polarization in the developing *Drosophila* embryo and also participate in the host immunity. The TLR family of proteins are characterized by a highly conserved Toll homology (TH) domain, which is essential for Toll-induced signal transduction. TLR1, as well as the other TLR family members, are type I transmembrane receptors that characteristically contain an extracellular domain consisting of several leucine-rich regions along with a single cytoplasmic Toll/IL-1R-like domain. TLR2 and TLR4 are activated in response to lipopolysaccharide (LPS) stimulation, which results in the activation and translocation of NF κ B and suggests that these receptors are involved in mediating inflammatory responses. Expression of TLR receptors is highest in peripheral blood leukocytes, macrophages and monocytes. TLR6 is highly homologous to TLR1, sharing greater than 65% sequence identity, and, like other members of TLR family, it induces NF κ B signaling upon activation.

REFERENCES

1. Gay, N.J. and Keith, F.J. 1991. *Drosophila* Toll and IL-1 receptor. *Nature* 351: 355-356.
2. Medzhitov, R., et al. 1997. A human homologue of the *Drosophila* Toll protein signals activation of adaptive immunity. *Nature* 388: 394-397.

CHROMOSOMAL LOCATION

Genetic locus: Tlr4 (mouse) mapping to 4 C1.

PRODUCT

TLR4 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see TLR4 shRNA Plasmid (m): sc-40261-SH and TLR4 shRNA (m) Lentiviral Particles: sc-40261-V as alternate gene silencing products.

For independent verification of TLR4 (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-40261A, sc-40261B and sc-40261C.

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 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

TLR4 siRNA (m) is recommended for the inhibition of TLR4 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 μ M in 66 μ l. 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

TLR4 (25): sc-293072 is recommended as a control antibody for monitoring of TLR4 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 TLR4 gene expression knockdown using RT-PCR Primer: TLR4 (m) -PR: sc-40261-PR (20 μ l, 434 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Zhang, X., et al. 2006. Toll-like receptor 4 deficiency causes pulmonary emphysema. *J. Clin. Invest.* 116: 3050-3059.
2. Zhang, J., et al. 2014. Paeoniflorin abrogates DSS-induced colitis via a TLR4-dependent pathway. *Am. J. Physiol. Gastrointest. Liver Physiol.* 306: G27-G36.
3. Miao, H., et al. 2015. Stearic acid induces proinflammatory cytokine production partly through activation of lactate-HIF1 α pathway in chondrocytes. *Sci. Rep.* 5: 13092.
4. Chen, Q., et al. 2016. HMGB1 induces secretion of matrix vesicles by macrophages to enhance ectopic mineralization. *PLoS ONE* 11: e0156686.
5. Jiang, L., et al. 2017. Blockade of Notch signaling promotes acetaminophen-induced liver injury. *Immunol. Res.* 65: 739-749.
6. Lai, M., et al. 2018. The NLRP3-Caspase 1 inflammasome negatively regulates autophagy via TLR4-TRIF in prion peptide-infected microglia. *Front. Aging Neurosci.* 10: 116.
7. Hu, T., et al. 2019. TLR4 and nucleolin influence cell injury, apoptosis and inflammatory factor expression in respiratory syncytial virus-infected N2a neuronal cells. *J. Cell. Biochem.* 120: 16206-16218.
8. Theivanthiran, B., et al. 2020. A tumor-intrinsic PD-L1-NLRP3 inflammasome signaling pathway drives resistance to anti-PD-1 immunotherapy. *J. Clin. Invest.* 130: 2570-2586.

RESEARCH USE

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