SANTA CRUZ BIOTECHNOLOGY, INC.

TLR3 siRNA (m): sc-40259

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. Expression of TLR receptors is highest in peripheral blood leukocytes, macrophages and monocytes. 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 NFκB and suggests that these receptors are involved in mediating inflammatory responses. TLR3 is highly expressed in placenta and pancreas, and is limited to the dendritic subpopulation of leukocytes. TLR3 recognizes dsRNA associated with viral infection and induces activation of NFκB and production of type I interferons, which suggests that it may play a role in host defense against viruses. TLR6 is highly homologous to TLR1, sharing greater than 65% sequence identity. Like other members of TLR family, TLR6 induces NFκB signaling upon activation.

REFERENCES

1. Muzio, M., et al. 2000. Differential expression and regulation of Toll-like receptors (TLR) in human leukocytes: selective expression of TLR3 in dendritic cells. Mol. Biol. 11: 5998-6004.
2. Tissari, J., et al. 2005. IFN-α enhances TLR3-mediated antiviral cytokine expression in human endothelial and epithelial cells by upregulating TLR3 expression. J. Immunol. 174: 4289-4294.
3. Schröder, M., et al. 2005. TLR3 in antiviral immunity: key player or bystander? Trends Immunol. 26: 462-468.
4. Wang, J., et al. 2005. TLR3 ligand-induced accumulation of activated splenic natural killer cells into liver. Cell. Mol. Immunol. 2: 449-453.
5. Kulka, M., et al. 2006. TLR3 activation inhibits human mast cell attachment to Fibronectin and Vitronectin. Mol. Immunol. 43: 1579-1586.

CHROMOSOMAL LOCATION

Genetic locus: Tlr3 (mouse) mapping to 8 B1.1.

PRODUCT

TLR3 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 TLR3 shRNA Plasmid (m): sc-40259-SH and TLR3 shRNA (m) Lentiviral Particles: sc-40259-V as alternate gene silencing products.

For independent verification of TLR3 (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-40259A, sc-40259B and sc-40259C.

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

TLR3 siRNA (m) is recommended for the inhibition of TLR3 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor TLR3 gene expression knockdown using RT-PCR Primer: TLR3 (m)-PR: sc-40259-PR (20 µl, 464 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Hu, F., et al. 2011. ER stress and its regulator X-box-binding protein-1 enhance polyIC-induced innate immune response in dendritic cells. Eur. J. Immunol. 41: 1086-1097.
2. Chen, J., et al. 2017. TRIF-dependent Toll-like receptor signaling suppresses Scd1 transcription in hepatocytes and prevents diet-induced hepatic steatosis. Sci. Signal. 10: eaal3336.
3. Wang, Q., et al. 2021. Differential effects of viral nucleic acid sensor signaling pathways on testicular Sertoli and Leydig cells. Endocrinology 162: bqab180.
4. Deng, S., et al. 2023. Cryptosporidium uses CSpV1 to activate host type I interferon and attenuate antiparasitic defenses. Nat. Commun. 14: 1456.

RESEARCH USE

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