SANTA CRUZ BIOTECHNOLOGY, INC.

IRAK-M siRNA (m): sc-146282

BACKGROUND

Interleukin-1 receptor (IL-1R)-associated kinases (IRAKs) are important mediators in the signal transduction of Toll-like receptor (TLR) and IL-1R family members, collectively referred to as TIRs. Binding of IL-1 to its cognate receptor results in the activation of the NFκB signaling pathway. An IL-1-dependent kinase termed IRAK-1 (for IL-1 receptor-associated kinase 1) coimmunoprecipitates with activated IL-1RI and is implicated as an upstream mediator of NFκB activation. A related *Drosophila* protein, Pelle, is a known upstream activator of Dorsal, the *Drosophila* homolog of NFκB. IRAK-2 is a proximal mediator of IL-1, a component of the IL-1R signaling complex, and is required for IL-1R-induced NFκB activation. IRAK-4, like IRAK-1 and Pelle, has auto- and cross-phosphorylation kinase activity. IRAK-4 is strongly expressed in kidney and is also found in lung, testis, small intestine, breast, liver and placenta. In contrast to the other IRAKs that are expressed in most cell types, IRAK-M is restricted to monocytic cells. IRAK-M mRNA transcripts are found predominantly in PBL and the monocytic cell lines U-937 and THP-1.

REFERENCES

1. Croston, G.E., et al. 1995. NFκB activation by interleukin-1 (IL-1) requires an IL-1 receptor-associated protein kinase activity. J. Biol. Chem. 270: 16514-16517.
2. Cao, Z., et al. 1996. IRAK: a kinase associated with the interleukin-1 receptor. Science 271: 1128-1131.
3. Muzio, M., et al. 1997. IRAK (Pelle) family member IRAK-2 and MyD88 as proximal mediators of IL-1 signaling. Science 278: 1612-1615.
4. Scanlan, M.J., et al. 1999. Antigens recognized by autologous antibody in patients with renal-cell carcinoma. Int. J. Cancer 83: 456-464.
5. Wesche, H., et al. 1999. IRAK-M is a novel member of the Pelle/interleukin-1 receptor-associated kinase (IRAK) family. J. Biol. Chem. 274: 19403-19410.
6. Li, S., et al. 2002. IRAK-4: a novel member of the IRAK family with the properties of an IRAK-kinase. Proc. Natl. Acad. Sci. USA 99: 5567-5572.

CHROMOSOMAL LOCATION

Genetic locus: Irak3 (mouse) mapping to 10 D2.

PRODUCT

IRAK-M 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 IRAK-M shRNA Plasmid (m): sc-146282-SH and IRAK-M shRNA (m) Lentiviral Particles: sc-146282-V as alternate gene silencing products.

For independent verification of IRAK-M (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-146282A, sc-146282B and sc-146282C.

RESEARCH USE

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

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

IRAK-M siRNA (m) is recommended for the inhibition of IRAK-M 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 IRAK-M gene expression knockdown using RT-PCR Primer: IRAK-M (m)-PR: sc-146282-PR (20 µl, 568 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Chadha, A., et al. 2015. Suppressive role of neddylation in dendritic cells during *Mycobacterium tuberculosis* infection. Tuberculosis 95: 599-607.
2. Vashishta, M., et al. 2015. Pneumococal surface protein A (PspA) regulates programmed death ligand 1 expression on dendritic cells in a Toll-like receptor 2 and calcium dependent manner. PLoS ONE 10: e0133601.
3. Parmar, N., et al. 2018. *Leishmania donovani* exploits tollip, a multitasking protein, to impair TLR/IL-1R signaling for its survival in the host. J. Immunol. 201: 957-970.
4. Zhang, X., et al. 2022. Erythropoietin mediates re-programming of endotoxin-tolerant macrophages through PI3K/Akt signaling and protects mice against secondary infection. Front. Immunol. 13: 938944.

PROTOCOLS

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