SANTA CRUZ BIOTECHNOLOGY, INC.

MAVS siRNA (h): sc-75755

BACKGROUND

MAVS (mitochondrial antiviral signaling protein), also known as IPS1, KIAA1271, VISA or CARDIF, is a 540 amino acid protein that contains one CARD domain and several transmembrane domains, and localizes to the outer mitochondrial membrane. Expressed throughout the body with highest expression in liver, heart, placenta, skeletal muscle and peripheral blood leukocytes, MAVS functions downstream of proteins such as RIG-I, that detect double-stranded (ds) viral replication, and is required for proper immune response against ds viral infection. MAVS is thought to activate pathways that lead to the induction of antiviral cytokines and may protect the cells from viral-induced apoptosis. MAVS function can be inactivated via cleavage by a protease complex that degrades the CARD and transmembrane domains, thereby preventing MAVS from interacting with other proteins. Three isoforms of MAVS are expressed due to alternative splicing events.

REFERENCES

1. Li, X.D., et al. 2005. Hepatitis C virus protease NS3/4A cleaves mitochondrial antiviral signaling protein off the mitochondria to evade innate immunity. Proc. Natl. Acad. Sci. USA 102: 17717-17722.
2. Saha, S.K., et al. 2006. Regulation of antiviral responses by a direct and specific interaction between TRAF3 and Cardif. EMBO J. 25: 3257-3263.

CHROMOSOMAL LOCATION

Genetic locus: MAVS (human) mapping to 20p13.

PRODUCT

MAVS siRNA (h) 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 MAVS shRNA Plasmid (h): sc-75755-SH and MAVS shRNA (h) Lentiviral Particles: sc-75755-V as alternate gene silencing products.

For independent verification of MAVS (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-75755A, sc-75755B and sc-75755C.

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

MAVS siRNA (h) is recommended for the inhibition of MAVS expression in human 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

MAVS (E-3): sc-166583 is recommended as a control antibody for monitoring of MAVS 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 MAVS gene expression knockdown using RT-PCR Primer: MAVS (h)-PR: sc-75755-PR (20 µl, 591 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Jin, R., et al. 2013. Japanese encephalitis virus activates autophagy as a viral immune evasion strategy. PLoS ONE 8: e52909.
2. Webster Marketon, J.I., et al. 2014. The respiratory syncytial virus (RSV) nonstructural proteins mediate RSV suppression of glucocorticoid receptor transactivation. Virology 449: 62-69.
3. Olagnier, D., et al. 2014. Inhibition of dengue and chikungunya virus infections by RIG-I-mediated type I interferon-independent stimulation of the innate antiviral response. J. Virol. 88: 4180-4194.
4. Spengler, J.R., et al. 2015. RIG-I mediates an antiviral response to Crimean-Congo hemorrhagic fever virus. J. Virol. 89: 10219-10229.
5. Sung, P.S., et al. 2017. CXCL10 is produced in hepatitis A virus-infected cells in an IRF3-dependent but IFN-independent manner. Sci. Rep. 7: 6387.
6. Li, Y., et al. 2018. Characterization of signaling pathways regulating the expression of pro-inflammatory long form thymic stromal lymphopoietin upon human metapneumovirus infection. Sci. Rep. 8: 883.
7. Sheikh, T.N., et al. 2021. Growth inhibition and induction of innate immune signaling of chondrosarcomas with epigenetic inhibitors. Mol. Cancer Ther. 20: 2362-2371.
8. Wickramage, I., et al. 2023. SINE RNA of the imprinted miRNA clusters mediates constitutive type III interferon expression and antiviral protection in hemochorial placentas. Cell Host Microbe 31: 1185-1199.e10.

RESEARCH USE

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