SANTA CRUZ BIOTECHNOLOGY, INC.

MDA5 siRNA (m): sc-61011

BACKGROUND

The gene that encodes MDA5 (interferon induced with helacase C domain protein 1, IFIH1, melanoma differentiation-associated gene 5) is induced during differentiation, cancer reversion, and programmed cell death (apoptosis) and contains both a caspase recruitment domain and supposed DExH group RNA helicase domains. The irregular helicase motifs of MDA5 avert from consensus sequences but are well conserved in a potentially new group of cloned and hypothetical proteins. MDA5 is an early response gene which is activated by IFN and tumor necrosis factor α, and responds primarily to IFN-β. Expression of MDA5 is upregulated in the presence of MEZ (a protein kinase C activating compound). Expression of MDA5 in tissues is low overall, with highest levels observed in the placenta, pancreas and spleen; MDA5 is undetectable in brain, lung and testis tissues. MDA5 also recognizes polyinosine-polycytidylic acid and RNA viruses while playing a critical role in picornavirus detection.

REFERENCES

1. Kang, D.C., et al. 2002. MDA5: an interferon-inducible putative RNA helicase with double-stranded RNA-dependent ATPase activity and melanoma growth-suppressive properties. Proc. Natl. Acad. Sci. USA 99: 637-642.
2. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 606951. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/

CHROMOSOMAL LOCATION

Genetic locus: Ifih1 (mouse) mapping to 2 C1.3.

PRODUCT

MDA5 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 MDA5 shRNA Plasmid (m): sc-61011-SH and MDA5 shRNA (m) Lentiviral Particles: sc-61011-V as alternate gene silencing products.

For independent verification of MDA5 (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-61011A, sc-61011B and sc-61011C.

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

MDA5 siRNA (m) is recommended for the inhibition of MDA5 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 MDA5 gene expression knockdown using RT-PCR Primer: MDA5 (m)-PR: sc-61011-PR (20 µl, 503 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Li, J., et al. 2010. Murine coronavirus induces type I interferon in oligodendrocytes through recognition by RIG-I and MDA5. J. Virol. 84: 6472-6482.
2. 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.
3. Yan, K., et al. 2013. Toll-like receptor 3 and RIG-I-like receptor activation induces innate antiviral responses in mouse ovarian granulosa cells. Mol. Cell. Endocrinol. 372: 73-85.
4. Zhu, W., et al. 2013. RIG-I-like receptors mediate innate antiviral response in mouse testis. Mol. Endocrinol. 27: 1455-1467.
5. Yang, C.S., et al. 2013. TLR3-triggered reactive oxygen species contribute to inflammatory responses by activating signal transducer and activator of transcription-1. J. Immunol. 190: 6368-6377.
6. Yan, K., et al. 2014. Polyinosinic-polycytidylic acid initiates ovarian innate antiviral response and inhibits steroidogenesis in female mice. Biol. Reprod. 90: 11.
7. Yu, L., et al. 2014. Pattern recognition receptor-initiated innate antiviral response in mouse adipose cells. Immunol. Cell Biol. 92: 105-115.
8. Wang, Q., et al. 2016. Mumps virus induces innate immune responses in mouse ovarian granulosa cells through the activation of Toll-like receptor 2 and retinoic acid-inducible gene I. Mol. Cell. Endocrinol. 436: 183-194.
9. Wu, H., et al. 2016. Mumps virus-induced innate immune responses in mouse sertoli and Leydig cells. Sci. Rep. 6: 19507.
10. Kim, K.S., et al. 2021. Estrogen-related receptor γ increases poly(I:C)-mediated type I IFN expression in mouse macrophages. J. Leukoc. Biol. 109: 865-875.

RESEARCH USE

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