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MDA5 Antibody

Catalog # ASC10501

Product Information

Application	WB, IF, E, IHC-P
Primary Accession	Q9BYX4
Other Accession	NP_071451, 27886568
Reactivity	Human, Mouse
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	116689
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	MDA5 antibody can be used for detection of MDA5 by Western blot at 1 - 4 g/mL. Antibody can also be used for immunohistochemistry starting at 5 g/mL. For immunofluorescence start at 20 g/mL.

Additional Information

Gene ID	64135
Other Names	MDA5 Antibody: Hlcd, MDA5, MDA-5, RLR-2, IDDM19, RH116, Interferon-induced helicase C domain-containing protein 1, Clinically amyopathic dermatomyositis autoantigen 140 kDa, CADM-140 autoantigen, interferon induced with helicase C domain 1
Target/Specificity	IFIH1;
Reconstitution & Storage	MDA5 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.
Precautions	MDA5 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	IFIH1 (HGNC:18873)
Function	Innate immune receptor which acts as a cytoplasmic sensor of viral nucleic acids and plays a major role in sensing viral infection and in the activation of a cascade of antiviral responses including the induction of type I interferons and pro-inflammatory cytokines (PubMed:28594402, PubMed:32169843, PubMed:33727702). Its ligands include mRNA lacking 2'-O-methylation at their 5' cap and long-dsRNA (>1 kb in length) (PubMed:22160685). Upon ligand binding it associates with mitochondria antiviral signaling protein

	(MAVS/IPS1) which activates the IKK-related kinases: TBK1 and IKBKE which phosphorylate interferon regulatory factors: IRF3 and IRF7 which in turn activate transcription of antiviral immunological genes, including interferons (IFNs); IFN-alpha and IFN-beta. Responsible for detecting the Picornaviridae family members such as encephalomyocarditis virus (EMCV), mengo encephalomyocarditis virus (ENMG), and rhinovirus (PubMed:28606988). Detects coronavirus SARS-CoV-2 (PubMed:33440148, PubMed:33514628). Can also detect other viruses such as dengue virus (DENV), west Nile virus (WNV), and reovirus. Also involved in antiviral signaling in response to viruses containing a dsDNA genome, such as vaccinia virus. Plays an important role in amplifying innate immune signaling through recognition of RNA metabolites that are produced during virus infection by ribonuclease L (RNase L). May play an important role in enhancing natural killer cell function and may be involved in growth inhibition and apoptosis in several tumor cell lines.
Cellular Location	Cytoplasm. Nucleus. Mitochondrion. Note=Upon viral RNA stimulation and ISGylation, translocates from cytosol to mitochondrion. May be found in the nucleus, during apoptosis
Tissue Location	Widely expressed, at a low level. Expression is detected at slightly highest levels in placenta, pancreas and spleen and at barely levels in detectable brain, testis and lung

Background

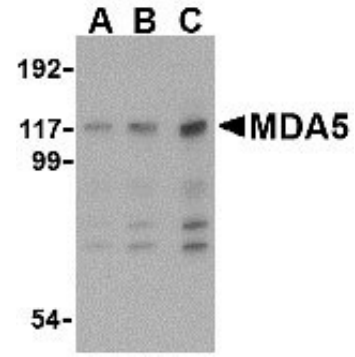
MDA5 Antibody: The innate immune system detects viral infection by recognizing various viral components and triggers antiviral responses. Like the toll-like receptor 3 (TLR3), the melanoma differentiation-associated protein 5 (MDA5) recognizes double-stranded (ds) RNA, a molecular pattern associated with viral infection. MDA5, a member of the DEAD/DEAH-box RNA helicase family, consists of an amino-terminal caspase recruitment domain (CARD) and a carboxyl-terminal RNA helicase domain similar to that of the related protein RIG-1. When stimulated by dsRNA, MDA5 recruits the adaptor protein VISA and ultimately causes the activation of IRF-3 and NF-κB. MDA5 and RIG-1 recognize different types of dsRNA, with MDA5 recognizing poly (I:C). MDA5-null mice were highly susceptible to infection with picornaviruses, which possess such sequences, demonstrating the importance of MDA5 in innate immunity.

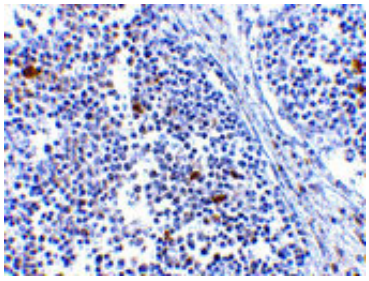
References

Akira S, Uematsu S, and Takeuchi O. Pathogen recognition and innate immunity. Cell 2006; 124:783-801.
Hiscott J, Nguyen T-LA, Arguello M, et al. Manipulation of the nuclear factor-kappaB pathway and the innate immune response by viruses. Oncogene 2006; 25:6844-67.
Kang D, Gopalrishnan RV, Lin L, et al. Expression analysis and genomic characterization of human melanoma differentiation associated gene-5, mda-5: a novel type I interferon-responsive apoptosis-inducing gene. Oncogene 2004; 23:1789-800.
Andrejeva J, Childs KS, Young DF, et al. The V proteins of the paramyxoviruses bind the IFN-inducible RNA helicase, mda-5, and inhibit its activation of the IFN-beta promoter. Proc. Natl. Acad. Sci. USA 2004; 101:17264-9.

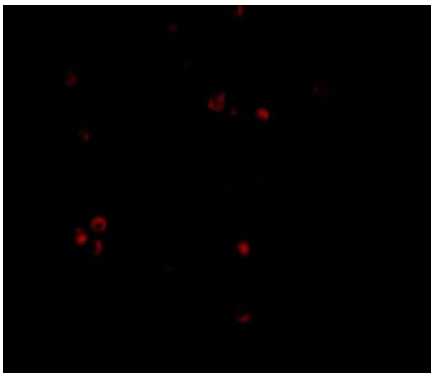
Images

Western blot analysis of MDA5 in Daudi cell lysate with MDA5 antibody at (A) 1, (B) 2 and (C) 4 µg/mL.





Immunohistochemistry of MDA5 in human lymph node tissue with MDA5 antibody at 5 µg/mL.



Immunofluorescence of MDA5 in Human Lymph Node cells with MDA5 antibody at 20 µg/mL.

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