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RIG-1 Antibody
Catalog # ASC10467

Specification

RIG-1 Antibody - Product Information

Application	**WB, IHC-P, E**
Primary Accession	O95786
Other Accession	O95786, 81170421
Reactivity	**Human, Mouse, Rat**
Host	**Rabbit**
Clonality	**Polyclonal**
Isotype	**IgG**
Application Notes	**RIG-1 antibody can be used for the detection of RIG-1 by Western blot at 0.5 - 2 µg/mL. Antibody can also be used for immunohistochemistry starting at 5 µg/mL.**

RIG-1 Antibody - Additional Information

Gene ID **23586**

Other Names
RIG-1 Antibody: RIGI, RIG-I, RLR-1, Probable ATP-dependent RNA helicase DDX58, DEAD box protein 58, DEAD (Asp-Glu-Ala-Asp) box polypeptide 58

Target/Specificity
DDX58;

Reconstitution & Storage
RIG-1 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
RIG-1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

RIG-1 Antibody - Protein Information

Name RIGI (HGNC:19102)

Synonyms DDX58

Function
Innate immune receptor that senses cytoplasmic viral nucleic acids and activates a downstream signaling cascade leading to the production of type I interferons and pro-inflammatory cytokines (PubMed:15208624, PubMed:15708988, PubMed:16125763,

PubMed:16127453, PubMed:16153868, PubMed:17190814, PubMed:18636086, PubMed:19122199, PubMed:19211564, PubMed:24366338, PubMed:28469175, PubMed:29117565, PubMed:31006531, PubMed:34935440, PubMed:35263596, PubMed:36793726). Forms a ribonucleoprotein complex with viral RNAs on which it homooligomerizes to form filaments (PubMed:15208624, PubMed:15708988). The homooligomerization allows the recruitment of RNF135 an E3 ubiquitin-protein ligase that activates and amplifies the RIG-I- mediated antiviral signaling in an RNA length-dependent manner through ubiquitination-dependent and -independent mechanisms (PubMed:28469175, PubMed:31006531). Upon activation, associates with mitochondria antiviral signaling protein (MAVS/IPS1) that activates the IKK-related kinases TBK1 and IKBKE which in turn phosphorylate the interferon regulatory factors IRF3 and IRF7, activating transcription of antiviral immunological genes including the IFN-alpha and IFN-beta interferons (PubMed:28469175, PubMed:31006531). Ligands include 5'- triphosphorylated ssRNAs and dsRNAs but also short dsRNAs (<1 kb in length) (PubMed:15208624, PubMed:15708988, PubMed:19576794, PubMed:19609254, PubMed:21742966). In addition to the 5'-triphosphate moiety, blunt-end base pairing at the 5'-end of the RNA is very essential (PubMed:15208624, PubMed:15708988, PubMed:19576794, PubMed:19609254, PubMed:21742966). Overhangs at the non- triphosphorylated end of the dsRNA RNA have no major impact on its activity (PubMed:15208624, PubMed:15708988, PubMed:19576794, PubMed:19609254, PubMed:21742966). A 3'overhang at the 5'triphosphate end decreases and any 5'overhang at the 5' triphosphate end abolishes its activity (PubMed:15208624, PubMed:15708988, PubMed:19576794, PubMed:19609254, PubMed:21742966). Detects both positive and negative strand RNA viruses including members of the families Paramyxoviridae: Human respiratory syncytial virus and measles virus (MeV), Rhabdoviridae: vesicular stomatitis virus (VSV), Orthomyxoviridae: influenza A and B virus, Flaviviridae: Japanese encephalitis virus (JEV), hepatitis C virus (HCV), dengue virus (DENV) and west Nile virus (WNV) (PubMed:<a href="http://www.uniprot.org/citations/21616437"

target="_blank">21616437, PubMed:21884169). It also detects rotaviruses and reoviruses (PubMed:21616437, PubMed:21884169). Detects and binds to SARS-CoV-2 RNAs which is inhibited by m6A RNA modifications (Ref.74). Also involved in antiviral signaling in response to viruses containing a dsDNA genome such as Epstein-Barr virus (EBV) (PubMed:19631370). Detects dsRNA produced from non-self dsDNA by RNA polymerase III, such as Epstein-Barr virus-encoded RNAs (EBERs). May play important roles in granulocyte production and differentiation, bacterial phagocytosis and in the regulation of cell migration.

Cellular Location
Cytoplasm. Cell projection, ruffle membrane. Cytoplasm, cytoskeleton. Cell junction, tight junction Note=Colocalized with TRIM25 at cytoplasmic perinuclear bodies Associated with the actin cytoskeleton at membrane ruffles

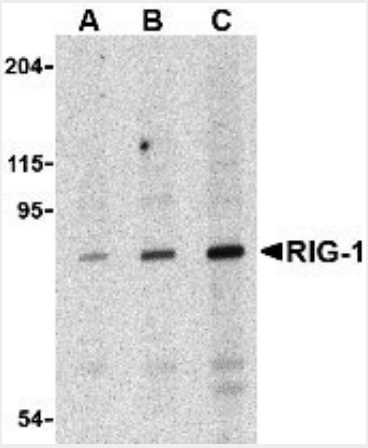
Tissue Location
Present in vascular smooth cells (at protein level).

RIG-1 Antibody - Protocols

Provided below are standard protocols that you may find useful for product applications.

- Western Blot
- Blocking Peptides
- Dot Blot
- Immunohistochemistry
- Immunofluorescence
- Immunoprecipitation
- Flow Cytomety
- Cell Culture

RIG-1 Antibody - Images



Western blot analysis of RIG-1 in C2C12 cell lysate with RIG-1 antibody at (A) 0.5, (B) 1 and (C) 2 µg/mL.

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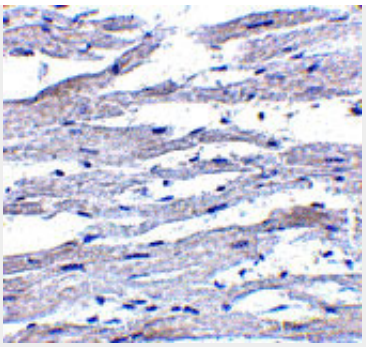

Immunohistochemistry of RIG-1 in human heart tissue with RIG-1 antibody at 5 µg/mL.

RIG-1 Antibody - Background

RIG-1 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 cytoplasmic helicase retinoic acid inducible gene protein 1 (RIG-1) recognizes double-stranded (ds) RNA, a molecular pattern associated with viral infection. Unlike TLR3 however, RIG-1 activates the kinases TBK1 and IKKε through the adaptor protein IPS-1. These kinases then phosphorylate the transcription factors IRF-3 and IRF-7 which are essential for the expression of type-I interferons. RIG-1 is required for the production of interferons in response to RNA viruses including paramyxoviruses, influenza virus, and Japanese encephalitis virus.

RIG-1 Antibody - References

Akira S, Uematsu S, and Takeuchi O. Pathogen recognition and innate immunity. Cell 2006; 124:783-801.
Yoneyama M, Kikuchi M, Natsukawa T, et al. The RNA helicase RIG-I has an essential function in double-stranded RNA-induced innate antiviral responses. Nat. Immunol. 2004; 5:730-7.
Alexopoulou L, Holt AC, Medzhitov R, et al. Recognition of double-stranded RNA and activation of NF-kappaB by Toll-like receptor 3. Nature 2001; 413:732-8.
Sharma S, tenOever BR, Grandvaux N, et al. Triggering the interferon antiviral response through an IKK-related pathway. Science 2003; 300:1148-51.