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Mouse Irgm1 Antibody (C-term)

Mouse Monoclonal Antibody (Mab)
Catalog # AM2003b

Product Information

Application	WB, E
Primary Accession	Q60766
Other Accession	NP_032352.1
Reactivity	Mouse
Predicted	Rat
Host	Mouse
Clonality	Monoclonal
Isotype	IgM
Clone Names	403CT8.5.5
Calculated MW	46552

Additional Information

Gene ID	15944
Other Names	Immunity-related GTPase family M protein 1, 365-, Interferon-inducible GTPase 3, Interferon-inducible protein 1, LPS-stimulated RAW 2647 macrophage protein 47, LRG-47, Irgm1, Ifi1, Iigp3, Irgm
Target/Specificity	Purified His-tagged Mouse Irgm1 protein was used to produced this monoclonal antibody.
Dilution	WB~~1:500~1000 E~~Use at an assay dependent concentration.
Format	Purified monoclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is prepared by Euglobin precipitation followed by dialysis against PBS.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	Mouse Irgm1 Antibody (C-term) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	Irgm1 {ECO:0000303|PubMed:17911638, ECO:0000312|MGI:MGI:107567}
Function	Immunity-related GTPase that plays important roles in innate immunity and inflammatory response (PubMed:11457893, PubMed:14576437, PubMed:14707092, PubMed:15908352, PubMed:16339555,

PubMed:17911638, PubMed:17982087, PubMed:19620982, PubMed:19920210). Acts as a dynamin- like protein that binds to intracellular membranes and promotes remodeling and trafficking of those membranes (PubMed:19620982, PubMed:27098192). Required for clearance of acute protozoan and bacterial infections by interacting with autophagy and lysosome regulatory proteins, thereby promoting the fusion of phagosomes with lysosomes for efficient degradation of cargo including microbes (PubMed:11457893, PubMed:14576437, PubMed:14707092, PubMed:15607973, PubMed:15908352, PubMed:16339555, PubMed:17982087, PubMed:19620982, PubMed:19920210, PubMed:21757726, PubMed:22874556, PubMed:24751652, PubMed:32453761). Regulates selective autophagy, including xenophagy and mitophagy, both directly and indirectly (PubMed:15607973, PubMed:21757726). Directly regulates autophagy by acting as a molecular adapter that promotes the coassembly of the core autophagy machinery to mediate antimicrobial defense: Irgm1 (1) activates AMPK, which in turn phosphorylates ULK1 and BECN1 to induce autophagy, (2) promotes the coassembly of ULK1 and BECN1, enhancing BECN1-interacting partners and (3) influences the composition of the BECN1 complex, by competing with the negative regulators BCL2 and RUBCN, to trigger autophagy (By similarity). Also activates autophagy by promoting recruitment of STX17 to autophagosomes (By similarity). In collaboration with ATG8 proteins, regulate lysosomal biogenesis, a fundamental process for any autophagic pathway, by promoting TFEB dephosphorylation (By similarity). Also modulates autophagy by assisting with autophagosome formation and preventing lysosomal deacidification (PubMed:21757726). Regulates autophagy by affecting mitochondrial fusion and fission (PubMed:24751652). Also involved in M1 macrophage activation for the production of proinflammatory cytokines (PubMed:15908352, PubMed:27439214, PubMed:27443879). While activating autophagy, acts as a key negative regulator of the inflammatory and interferon responses both by (1) promoting mitophagy and (2) mediating autophagy-dependent degradation of effectors of the inflammatory response (PubMed:30612879, PubMed:33510463, PubMed:34467632). Promotes degradation of damaged and IFNG/IFN-gamma-stressed mitochondria via mitophagy, preventing cytosolic release of ligands that activate inflammation (PubMed:32715615, PubMed:33510463). Negatively regulates interferon-signaling in hematopoietic stem cells, preserving hematopoietic stem cell number and function (PubMed:18371424, PubMed:21633090). Promotes expansion of activated CD4(+) T-cells by inhibiting IFNG/IFN-gamma signaling, thereby preventing Ifng-mediated cell death of CD4(+) T- cells (PubMed:18806793). Acts as a suppressor of inflammation by promoting recruitment of inflammation effectors, such as CGAS, RIGI/RIG-I and NLRP3, to autophagosome membranes, leading to their SQSTM1/p62-dependent autophagic degradation (By similarity). Also directly inhibits assembly of the NLRP3 inflammasome by preventing the association between NLRP3 and PYCARD (By similarity). Acts as a negative regulator of antiviral innate immune response by suppressing the RIPK2-dependent pro-inflammatory response: mediates recruitment of RIPosomes, composed of RIPK2 and NOD1 or NOD2, to autophagosome membranes, promoting their SQSTM1/p62-dependent autophagic degradation (By similarity).

Cellular Location

Golgi apparatus membrane. Cell membrane. Cytoplasmic vesicle, phagosome membrane Cytoplasmic vesicle, autophagosome membrane. Lysosome membrane. Late endosome membrane. Mitochondrion membrane. Lipid droplet. Cell projection, phagocytic cup. Note=Behaves like an integral membrane protein (PubMed:15294976). Recruited to the plasma membrane around forming phagocytic cups, it remains associated with maturing phagosomes (PubMed:15294976). Association with phagosomes is dependent on nucleotide-binding but is IFNG-independent (PubMed:15294976). Also detected in late endosomes and lysosomes: lysosomal localization is

	IFN-gamma-induced during bacterial infections such as S.typhimurium infection (PubMed:17982087, PubMed:20072621). Associates with lipid droplets and 'self' cytoplasmic vacuoles, while it does not coat 'non- self' pathogen-containing vacuoles (PubMed:23785284)
Tissue Location	Expressed in lung and primary macrophages.

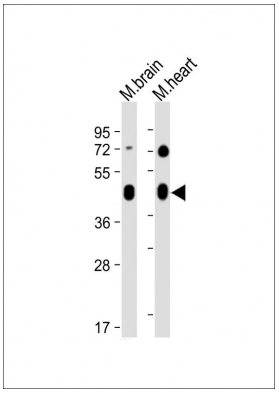
Background

Putative GTPase which is required for IFNG-mediated clearance of acute protozoan and bacterial infections. Functions in innate immune response probably through regulation of autophagy. May regulate proinflammatory cytokine production and prevent endotoxemia upon infection. Required for macrophage motility and possibly also for adhesion.

References

Dhar, N., et al. Proc. Natl. Acad. Sci. U.S.A. 107(27):12275-12280(2010)
Xu, H., et al. FASEB J. 24(5):1583-1592(2010)
Henry, S.C., et al. J. Leukoc. Biol. 87(2):333-343(2010)
Zhao, Y.O., et al. PLoS ONE 5 (1), E8648 (2010) :
Tiwari, S., et al. Nat. Immunol. 10(8):907-917(2009)

Images



All lanes : Anti-Mouse Irgm1 Antibody at 1:2000 dilution Lane 1: Mouse brain lysate Lane 2: Mouse heart lysate Lysates/proteins at 20 µg per lane. Secondary Goat Anti-mouse IgM, (H+L), Peroxidase conjugated at 1/10000 dilution. Predicted band size : 47 kDa Blocking/Dilution buffer: 5% NFDM/TBST.

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