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IRGM Antibody (C-term)

Affinity Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP11128b

Product Information

Application	WB, IHC-P, E
Primary Accession	A1A4Y4
Other Accession	NP_001139277.1
Reactivity	Human
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Clone Names	RB20841
Calculated MW	20142
Antigen Region	151-179

Additional Information

Gene ID	345611
Other Names	Immunity-related GTPase family M protein, 365-, Immunity-related GTPase family M protein 1, Interferon-inducible protein 1, LPS-stimulated RAW 2647 macrophage protein 47 homolog, LRG-47, IRGM, IFI1, IRGM1, LRG47
Target/Specificity	This IRGM antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 151-179 amino acids from the C-terminal region of human IRGM.
Dilution	WB~~1:2000 IHC-P~~1:100~500 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein A column, followed by peptide affinity purification.
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	IRGM Antibody (C-term) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	IRGM {ECO:0000303|PubMed:19266026, ECO:0000312|HGNC:HGNC:29597}
Function	Immunity-related GTPase that plays important roles in innate immunity and inflammatory response (PubMed:16888103, PubMed:19165925,

PubMed:25891078). Acts as a dynamin-like protein that binds to intracellular membranes and promotes remodeling and trafficking of those membranes (By similarity). 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:16888103, PubMed:25891078, PubMed:29420192, PubMed:32939830). Regulates selective autophagy, including xenophagy and mitophagy, both directly and indirectly (PubMed:16888103, PubMed:25891078, PubMed:29420192, PubMed:32939830). Directly regulates autophagy by acting as a molecular adapter that promotes the coassembly of the core autophagy machinery to mediate antimicrobial defense: IRGM (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 (PubMed:25891078). Also activates autophagy by promoting recruitment of STX17 to autophagosomes (PubMed:29420192). In collaboration with ATG8 proteins, regulate lysosomal biogenesis, a fundamental process for any autophagic pathway, by promoting TFEB dephosphorylation (PubMed:32753672). Also modulates autophagy by assisting with autophagosome formation and preventing lysosomal deacidification (By similarity). 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:32715615, PubMed:36221902). Promotes degradation of damaged and IFNG/IFN-gamma-stressed mitochondria via mitophagy, preventing cytosolic release of ligands that activate inflammation (PubMed:32715615). 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 (PubMed:30612879, PubMed:32715615). Also directly inhibits assembly of the NLRP3 inflammasome by preventing the association between NLRP3 and PYCARD (PubMed:30612879). 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 (PubMed:34467632, PubMed:36221902).

Cellular Location

Golgi apparatus membrane. Cell membrane {ECO:0000250|UniProtKB:Q60766}. Cytoplasmic vesicle, phagosome membrane {ECO:0000250|UniProtKB:Q60766}. Cytoplasmic vesicle, autophagosome membrane. Lysosome membrane {ECO:0000250|UniProtKB:Q60766}. Late endosome membrane {ECO:0000250|UniProtKB:Q60766}. Mitochondrion membrane {ECO:0000250|UniProtKB:Q60766}. Cell projection, phagocytic cup {ECO:0000250|UniProtKB:Q60766}. Note=Behaves like an integral membrane protein. Recruited to the plasma membrane around forming phagocytic cups, it remains associated with maturing phagosomes. Association with phagosomes is dependent on nucleotide-binding but is IFNG-independent Also detected in late endosomes and lysosomes {ECO:0000250|UniProtKB:Q60766}

Tissue Location

Widely expressed (at protein level) (PubMed:16888103). Expressed in several tissues including colon, small bowel and peripheral blood leukocytes (PubMed:17554261)

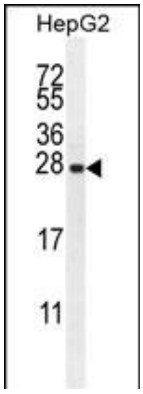
Background

This gene encodes a member of the p47 immunity-related GTPase family. The encoded protein may play a role in the innate immune response by regulating autophagy formation in response to intracellular pathogens. Polymorphisms that affect the normal expression of this gene are associated with a susceptibility to Crohn's disease and tuberculosis.

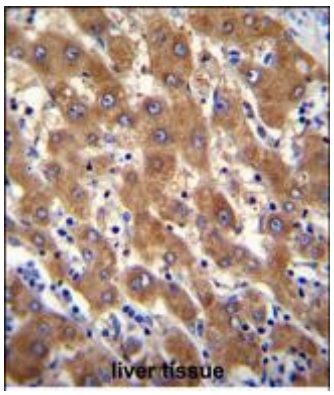
References

Che, N., et al. Clin. Chim. Acta 411 (21-22), 1645-1649 (2010) :
Wolfkamp, S.C., et al. Eur J Gastroenterol Hepatol 22(8):933-937(2010)
Latiano, A., et al. Inflamm. Bowel Dis. 16(7):1108-1117(2010)
Prescott, N.J., et al. Hum. Mol. Genet. 19(9):1828-1839(2010)
Bekpen, C., et al. PLoS Genet. 5 (3), E1000403 (2009) :

Images



IRGM Antibody (C-term) (Cat. #AP11128b) western blot analysis in HepG2 cell line lysates (35ug/lane).This demonstrates the IRGM antibody detected the IRGM protein (arrow).



IRGM Antibody (C-term) (Cat. #AP11128b)immunohistochemistry analysis in formalin fixed and paraffin embedded human liver tissue followed by peroxidase conjugation of the secondary antibody and DAB staining.This data demonstrates the use of IRGM Antibody (C-term) for immunohistochemistry. Clinical relevance has not been evaluated.

Citations

- Interferon-γ activated T-cell IRGM-autophagy axis in oral lichen planus
- Caveolin-1 promotes radioresistance via IRGM-regulated autophagy in lung cancer