

Recombinant Mouse IRGM1 Protein

For Research Use Only

1. Basic Product Information

Catalog No.: REP51616

Size: 10ug, 100ug

Protein Name: Immunity-related GTPase family M protein 1 (EC 3.6.5.-) (Interferon-inducible GTPase 3) (Interferon-inducible protein 1) (LPS-stimulated RAW 264.7 macrophage protein 47) (LRG-47)

Synonym: Irgm1, Ifi1, ligp3, Irgm

UniProt ID: Q60766

UniProt Link: www.uniprot.org/uniprotkb/Q60766/entry

Species Source: Mouse

Expression System: HEK293T eukaryotic cell expression system Sequence

Length: 409 AA

Molecular Weight: 47 KD

Protein Tag: C-terminal His6

2. Amino Acid Sequence

MKPSHSSCEAAPLLPNMAETHYAPLSSAFPVTSYQTGSSRLPEVSRSTERALREGKLELVYGIKE
TVATLSQIPVSIFVTGDSGNGMSSFALRVIGHDEDEDASAPTGVVVRTTKTRTEYSSSHFPNVVLWDLP
GLGATAQTVEDYVEEMKFSTCDLFIHASEQFSSNHVKLSKIIQSMGKRFYIVWTKLDRDLSTSVLSEV
RLLQNIQENIRENLQKEKVKYPPVFLVSSLDPLLYDFPKLRDTLHKDLSNIRCCEPLKTLYGTYEKIVG
DKVAVWKQRIANESLKNLGVRRDDNMGECLKVYRLIFGVDDDESQQVAQSMGTVVMEYKDNMKS
QNFYTLRREDWKLRLMTCAIVNAFFRLLRFLPCVCCCLRRLRHKRMLFLVAQDTKNILEKILRDSIFPP
QI

3. Buffer Composition

Liquid format: PBS-based buffer containing 50% glycerol. Glycerol concentration can be customized upon customer request; please state special requirements when placing your order.

Lyophilized format: Buffer before lyophilization is PBS supplemented with 6% trehalose.



4. Storage Conditions

Upon receipt, store the product at -20 °C or -80 °C. Aliquot the product for on-demand use to preserve protein activity and prevent denaturation and inactivation caused by repeated freeze-thaw cycles.

5. Product Description

This product is recombinant Immunity-related GTPase family M protein 1 (EC 3.6.5.-) (Interferon-inducible GTPase 3) (Interferon-inducible protein 1) (LPS-stimulated RAW 264.7 macrophage protein 47) (LRG-47) produced using the HEK293T eukaryotic cell expression system. It is suitable for in-vitro functional assays, protein-protein interaction studies, antibody preparation and other biomedical research applications.

Protein 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).

Subcellular Localization: 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).

6. Notes

- Avoid repeated freeze-thaw cycles to maintain protein stability and biological activity.
- Please specify special buffer-composition requirements at the time of order placement.
- For research use only. Not intended for clinical diagnosis, therapeutic use or commercial manufacturing.