

Recombinant Mouse GBP1 Protein

For Research Use Only

1. Basic Product Information

Catalog No.: REP51548

Size: 10ug, 100ug

Protein Name: Guanylate-binding protein 1 (EC 3.6.1.-) (EC 3.6.5.-) (GTP-binding protein 1) (GBP-1) (mGBP-1) (mGBP1) (Guanine nucleotide-binding protein 1) (Interferon-gamma-inducible protein MAG-1) (Interferon-induced guanylate-binding protein 1)

Synonym: Gbp1, Gbp-1, Mag-1, Mpa1

UniProt ID: Q01514

UniProt Link: www.uniprot.org/uniprotkb/Q01514/entry

Species Source: Mouse

Expression System: HEK293T eukaryotic cell expression system Sequence

Length: 589 AA

Molecular Weight: 68 KD

Protein Tag: C-terminal His6

2. Amino Acid Sequence

MASEIHMSEPMCLIENTEAQLVINQEALRILSAITQPVVVVAIVGLYRTGKSYLMNKLAKGRTGFSLGS
TVQSHTKGIWMWCVPHPKAGQTLVLLDTEGLEDEKGDNQNDWCWIFALAVLLSSTFIYNSIGTINQ
QAMDQLHYVTELTDLIKSKSSPDQSDVDNSANFVGFFPIFVWTLRDFSLDLEFDGESITPDEYLETSL
ALRKGTDENTKKFNMPRLCIRKFFPKRKCFIFDRPGDRKQLSKLEWIQEDQLNKEFVEQVAEFTSYIF
SYSGVKTLSSGGITVNGPRLKSLVQTYVSAICSGELPCMENAVLTLAQIENSAAVQKAITYYEEQMNQK
IHMPPTETLQELLDLHRTCEREAIEVFMKNSFKDVDQKFQEELGAQLEAKRDAFVKKNMDMSSAHCS
DLLEGLFAHLEEEVKQGTFFYKPGGYLFLQRKQELEKKYIQTGKGLQAEVMLRKYFESKEDLADTL
LKMDQSLTEKEKQIEMERIKAEAAEAANRALAEMQKKHEMLMEQKEQSYQEHEMKQLTEKMEQERK
ELMAEQQRISLKLQEQERLLKQGFQNESLQLRQEIEKIKNMPPPRSCTIL

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 Guanylate-binding protein 1 (EC 3.6.1.-) (EC 3.6.5.-) (GTP-binding protein 1) (GBP-1) (mGBP-1) (mGBP1) (Guanine nucleotide-binding protein 1) (Interferon-gamma-inducible protein MAG-1) (Interferon-induced guanylate-binding protein 1) 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: Interferon (IFN)-inducible GTPase that plays important roles in innate immunity against a diverse range of bacterial, viral and protozoan pathogens (PubMed:18025219, PubMed:21551061, PubMed:24715728, PubMed:24739961). Hydrolyzes GTP to GMP in two consecutive cleavage reactions: GTP is first hydrolyzed to GDP and then to GMP in a processive manner (By similarity). Following infection, recruited to the pathogen-containing vacuoles or vacuole-escaped bacteria and promotes both inflammasome assembly and autophagy (PubMed:21551061, PubMed:24715728, PubMed:24739961). Acts as a positive regulator of inflammasome assembly by facilitating the detection of inflammasome ligands from pathogens (PubMed:24715728, PubMed:24739961). Involved in the lysis of pathogen-containing vacuoles, releasing pathogens into the cytosol (PubMed:24715728, PubMed:24739961). Following pathogen release in the cytosol, forms a protein coat in a GTPase-dependent manner that encapsulates pathogens and promotes the detection of ligands by pattern recognition receptors (By similarity). Plays a key role in inflammasome assembly in response to infection by Gram-negative bacteria: following pathogen release in the cytosol, forms a protein coat that encapsulates Gram-negative bacteria and directly binds to lipopolysaccharide (LPS), disrupting the O-antigen barrier and unmasking lipid A that is that detected by the non-canonical inflammasome effector CASP4/CASP11 (PubMed:24715728, PubMed:24739961). Also promotes recruitment of proteins that mediate bacterial cytolysis, leading to release double-stranded DNA (dsDNA) that activates the AIM2 inflammasome (PubMed:24715728, PubMed:24739961). Involved in autophagy by regulating bacteriolytic peptide generation via its interaction with ubiquitin-binding protein SQSTM1, which delivers monoubiquitinated proteins to autolysosomes for the generation of bacteriolytic peptides (PubMed:21551061). Confers protection to several pathogens, including the bacterial pathogens *L.monocytogenes* and *M.bovis* BCG as well as the protozoan pathogen *T.gondii* (PubMed:18025219, PubMed:21551061). Exhibits antiviral activity against influenza virus (By similarity).

Subcellular Localization: Cytoplasmic vesicle membrane ; Lipid-anchor ; Cytoplasmic side . Golgi apparatus membrane ; Lipid-anchor ; Cytoplasmic side . Cell membrane ; Lipid-anchor ; Cytoplasmic side . Cytoplasm, cytosol . Secreted . Note=Localizes to pathogen-containing vacuoles or to the cell surface of bacteria that escaped vacuoles. Secreted from endothelial cells in the cerebrospinal fluid, upon bacterial challenge and independently of IFNG induction. Golgi membrane localization requires isoprenylation and the presence of another IFNG-induced factor. Sequestered in the cytosol following phosphorylation by PIM1 and subsequent interaction with 14-3-3 protein sigma (SFN).

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.



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- For research use only. Not intended for clinical diagnosis, therapeutic use or commercial manufacturing.