SANTA CRUZ BIOTECHNOLOGY, INC.

GBP1 (M-18): sc-10586

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The Power to Question

BACKGROUND

GBP1 (guanylate binding protein 1) is a 592 amino acid protein member of the GTPase protein family and is able to bind specifically to guanine nucleotides such as GMP, GDP and GTP. GMP is hydrolyzed to GTP in two consecutive cleavage steps, both of which are carried out by GBP1. Localized to the cytoplasm, GBP1 is expressed in endothelial cells of the vascular system and is induced by IFN-γ during macrophage induction. GBP1 is thought to regulate the expression of MMP-1, which mediates the proliferation and invasiveness of endothelial cells. GBP1 plays a key role in regulating inflammatory cytokines and provides protection against vesicular stomatitis and encephalo-myocarditis viruses. GBP1 expression is highly induced in the vessels of skin diseases such as psoriasis and Kaposi's sarcoma, making it a novel cellular activation marker that characterizes inflammatory cytokines of endothelial cells.

REFERENCES

1. Anderson, S.L., et al. 1999. Interferon-induced guanylate binding protein 1 (GBP1) mediates an antiviral effect against vesicular stomatitis virus and encephalomyocarditis virus. Virology 256: 8-14.
2. Anderson, S.L., et al. 1999. Genomic organization and chromosomal localization of a new member of the murine interferon-induced guanylate-binding protein family. J. Interferon Cytokine Res. 19: 487-494.
3. Praefcke, G.J., et al. 1999. Nucleotide-binding characteristics of human guanylate-binding protein 1 (hGBP1) and identification of the third GTP-binding motif. J. Mol. Biol. 292: 321-332.
4. Prakash, B., et al. 2000. Structure of human GBP1 representing a unique class of GTP-binding proteins. Nature 403: 567-571.
5. Guenzi, E., et al. 2001. The helical domain of GBP1 mediates the inhibition of endothelial cell proliferation by inflammatory cytokines. EMBO J. 20: 5568-5577.
6. Lubeseder-Martellato, et al. 2002. GBP1 expression is selectively induced by inflammatory cytokines and is an activation marker of endothelial cells during inflammatory diseases. Am. J. Pathol. 161: 1749-1759.
7. Guenzi, E., et al. 2003. The guanylate binding protein-1 GTPase controls the invasive and angiogenic capability of endothelial cells through inhibition of MMP-1 expression. EMBO J. 22: 3772-3782.
8. Ghosh, A., et al. 2006. How guanylate-binding proteins achieve assembly-stimulated processive cleavage of GTP to GMP. Nature 440: 101-104.
9. Kunzelmann, S., et al. 2006. Transient kinetic investigation of GTP hydrolysis catalyzed by interferon-γ-induced hGBP1 (human guanylate binding protein 1). J. Biol. Chem. 281: 28627-28635.

CHROMOSOMAL LOCATION

Genetic locus: Gbp1 (mouse) mapping to 3 H1.

SOURCE

GBP1 (M-18) is an affinity purified goat polyclonal antibody raised against a peptide mapping at the C-terminus of GBP1 of mouse origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-10586 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

GBP1 (M-18) is recommended for detection of GBP1 of mouse and rat origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for GBP1 siRNA (m): sc-41707, GBP1 shRNA Plasmid (m): sc-41707-SH and GBP1 shRNA (m) Lentiviral Particles: sc-41707-V.

Molecular Weight of GBP1: 67 kDa.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

SELECT PRODUCT CITATIONS

1. Yamamoto, M., et al. 2012. A cluster of interferon-γ-inducible p65 GTPases plays a critical role in host defense against *Toxoplasma gondii*. Immunity 37: 302-313.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.