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MR1 Antibody (C-term)

Affinity Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP17332B

Product Information

Application	WB, E
Primary Accession	Q95460
Other Accession	NP_001181929.1, NP_001181928.1
Reactivity	Human
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Clone Names	RB37199
Calculated MW	39366
Antigen Region	312-341

Additional Information

Gene ID	3140
Other Names	Major histocompatibility complex class I-related gene protein, MHC class I-related gene protein, Class I histocompatibility antigen-like protein, MR1
Target/Specificity	This MR1 antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 312-341 amino acids from the C-terminal region of human MR1.
Dilution	WB~~1:500 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.05% (V/V) Proclin 300. 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	MR1 Antibody (C-term) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	MR1 {ECO:0000303|PubMed:19416870, ECO:0000312|HGNC:HGNC:4975}
Function	Antigen-presenting molecule specialized in displaying microbial pyrimidine-based metabolites to alpha-beta T cell receptors (TCR) on innate-type mucosal-associated invariant T (MAIT) cells (PubMed:19416870,

PubMed:23457030, PubMed:22692454, PubMed:23051753, PubMed:24101382, PubMed:23846752, PubMed:26795251). In complex with B2M preferentially presents riboflavin-derived metabolites to semi- invariant TRAV1.2 TCRs on MAIT cells, guiding immune surveillance of the microbial metabolome at mucosal epithelial barriers (PubMed:20581831, PubMed:24101382, PubMed:24695216, PubMed:26795251). Signature pyrimidine-based microbial antigens are generated via non- enzymatic condensation of metabolite intermediates of the riboflavin pathway with by-products arising from other metabolic pathways such as glycolysis. Typical potent antigenic metabolites are 5-(2-oxoethylideneamino)-6-D-ribitylaminouracil (5-OE-RU) and 5-(2-oxopropylideneamino)-6-D-ribitylaminouracil (5-OP-RU), products of condensation of 5-amino-6-D-ribityaminouracil (5-A-RU) with glyoxal or methylglyoxal by-products, respectively (PubMed:24695216, PubMed:32958637, PubMed:32709702). May present microbial antigens to various TRAV1-2-negative MAIT cell subsets, providing for unique recognition of diverse microbes, including pathogens that do not synthesize riboflavin (PubMed:27527800, PubMed:31113973). Upon antigen recognition, elicits rapid innate-type MAIT cell activation to eliminate pathogenic microbes by directly killing infected cells (PubMed:23846752, PubMed:24695216, PubMed:27527800). During T cell development, drives thymic selection and post-thymic terminal differentiation of MAIT cells in a process dependent on commensal microflora (By similarity). Acts as an immune sensor of cancer cell metabolome (PubMed:31959982). May present a tumor-specific or -associated metabolite essential for cancer cell survival to a 'pan- cancer' TCR consisting of TRAV38.2-DV8*TRAJ31 alpha chain paired with a TRBV25.1*TRBJ2.3 beta chain on a non-MAIT CD8-positive T cell clone (MC.7.G5), triggering T cell-mediated killing of a wide range of cancer cell types (PubMed:31959982).

Cellular Location

Cell membrane; Single-pass type I membrane protein Endoplasmic reticulum membrane; Single-pass type I membrane protein. Golgi apparatus membrane; Single-pass type I membrane protein. Early endosome membrane; Single-pass type I membrane protein. Late endosome membrane; Single-pass type I membrane protein. Note=In the absence of antigen remains within the endoplasmic reticulum where it acts as a metabolite sensor. Antigen binding triggers trafficking of the ternary complex to the plasma membrane. After presentation, most of these complexes are rapidly internalized and degraded via endocytosis. A small subset recycles via endosomes back to the plasma membrane and may thus acquire and present new antigens that do not efficiently reach the endoplasmic reticulum. [Isoform 3]: Cell membrane; Single-pass type I membrane protein. Endoplasmic reticulum membrane; Single-pass membrane protein. Note=The larger proportion remains in the ER in an immature state. The subset that reach cell surface does it through a B2M-independent pathway.

Tissue Location

Ubiquitous (PubMed:7624800, PubMed:9780177). Low expression is detected in peripheral blood B cells, T cells, monocytes and in bronchial epithelial cells (at protein level) (PubMed:27043408) Expressed in plasmablasts or plasma B cells in the lamina propria of ileum, appendix and colon (at protein level) (PubMed:19760593). Highly expressed on a subset of CD45-positive CD3-positive thymocytes (at protein level) (PubMed:22692454).

Background

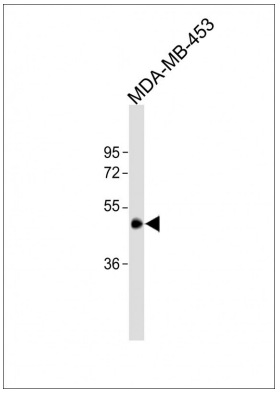
MR1 has antigen presentation function. Involved in the development and expansion of a small population of T cells expressing an invariant T cell receptor alpha chain called mucosal-associated invariant T cells (MAIT). MAIT cells are preferentially located in the gut lamina propria and therfore may be involed in monitoring commensal flora or serve as a distress signal. Expression and MAIT cell recognition seem to be

ligand-dependent.

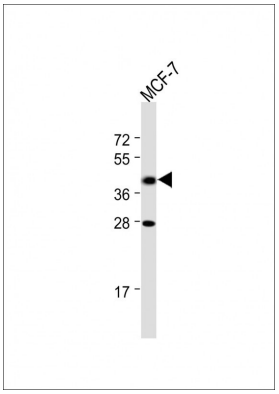
References

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Stumpf, A.N., et al. Blood 114(17):3684-3692(2009)
Huang, S., et al. Proc. Natl. Acad. Sci. U.S.A. 106(20):8290-8295(2009)
Aldemir, H. Biochem. Biophys. Res. Commun. 366(2):328-334(2008)
Miley, M.J., et al. J. Immunol. 170(12):6090-6098(2003)

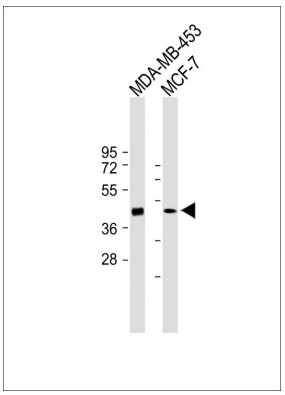
Images



All lanes: Anti-MR1 Antibody (C-term) at 1:2000 dilution + MDA-MB-453 whole cell lysate Lysates/proteins at 20 µg per lane. Secondary: Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated (ASP1615) at 1/15000 dilution. Observed band size: 48 KDa Blocking/Dilution buffer: 5% NFDM/TBST.

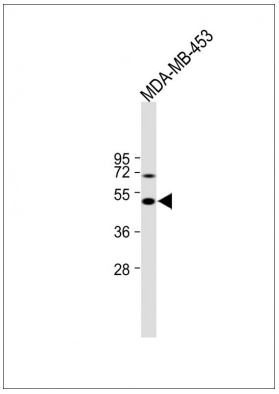


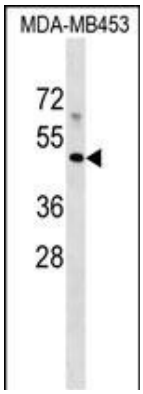
All lanes : Anti-MR1 Antibody (C-term) at 1:1000 dilution Lane 1: MCF-7 whole cell lysate Lysates/proteins at 20 µg per lane. Secondary Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated at 1/15000 dilution. Observed band size : 42kDa Blocking/Dilution buffer: 5% NFDM/TBST.



All lanes : Anti-MR1 Antibody (C-term) at 1:1000 dilution Lane 1: MDA-MB-453 whole cell lysate Lane 2: MCF-7 whole cell lysate Lysates/proteins at 20 µg per lane. Secondary Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated (ASP1615) at 1/15000 dilution. Observed band size : 48kDa Blocking/Dilution buffer: 5% NFDM/TBST.

All lanes : Anti-MR1 Antibody (C-term) at 1:1000 dilution Lane 1: MDA-MB-453 whole cell lysate Lysates/proteins at 20 µg per lane. Secondary Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated at 1/15000 dilution. Observed band size : 48kDa Blocking/Dilution buffer: 5% NFDM/TBST.





MR1 Antibody (C-term) (Cat. #AP17332b) western blot analysis in MDA-MB453 cell line lysates (35ug/lane).This demonstrates the MR1 antibody detected the MR1 protein (arrow).

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.