abcam

ab308503

Anti-MR1 antibody [EPR25671-79] - BSA and Azide free

Recombinant | RabMAb

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	EPR25671-79
Purification technique	Affinity purification Protein A
Concentration	0.994 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

Flow Cyt

Tested

Species	Human
Dilution info	-

Notes	-

Not recommended

Species	Mouse, Rat
Dilution info	-
Notes	-

WB

Not recommended

Species	Human, Mouse, Rat
Dilution info	-
Notes	-

IHC-P

Not recommended

Species	Human, Mouse, Rat
Dilution info	-
Notes	-

ICC/IF

Not recommended

Species	Human, Mouse, Rat
Dilution info	-
Notes	-

IP

Not recommended

Species	Human, Mouse, Rat
Dilution info	-

Notes	-

Target data

See full target information MR1

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). Allele MR1*01: Presents microbial-derived metabolite 5-OP-RU to semi-invariant TRAV1.2-TRAJ33-TRBV6.1 (A-F7) TCR on MAIT cells (PubMed:39589872). Presents nucleobase carbonyl adducts generated during oxidative stress. Captures M3Ade, a nucleobase adduct composed of one adenine modified by a malondialdehyde trimer, for recognition by MR1-restricted T cell clones expressing a polyclonal TCR repertoire (PubMed:39701104). Displays moderate binding affinity toward tumor-enriched pyridoxal and pyridoxal 5'-phosphate antigens (PubMed:39589872). Allele MR1*04: Presents tumor-enriched metabolite pyridoxal to pan-cancer 7.G5 TCR on T cells enabling preferential recognition of cancer cells. May act as an alloantigen.

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C

Appropriate long-term storage conditions	+4°C

Notes

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Conjugation ready
Our carrier-free antibodies are typically supplied in a PBS-only formulation, purified and free of BSA, sodium azide and glycerol. This conjugation-ready format is designed for use with fluorochromes, metal isotopes, oligonucleotides, and enzymes, which makes them ideal for antibody labelling, functional and cell-based assays, flow-based assays (e.g. mass cytometry) and Multiplex Imaging applications.

Use our conjugation kits for antibody conjugates that are ready-to-use in as little as 20 minutes with 1 minute hands-on-time and 100% antibody recovery: available for fluorescent dyes, HRP, biotin and gold.

Compatibility
This product is compatible with the Maxpar® Antibody Labeling Kit from Fluidigm, without the need for antibody preparation. Maxpar® is a trademark of Fluidigm Canada Inc.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	MR1 also known as the MR1 receptor or MR1 protein is an important player in the immune system. It weighs around 37 kilodaltons. This protein expresses prominently in many tissues such as the liver lymphoid tissues and the intestine. MR1 binds a range of small molecules derived from vitamin B metabolites. It presents these metabolites to a specific group of immune cells known as mucosal-associated invariant T (MAIT) cells leading to their activation.
Biological function summary	MR1 varies its mechanism by forming complexes with antigens that lack traditional peptide structure. It performs a major role in the immune response particularly through its interactions with MAIT cells. These cells represent an important intersection between innate and adaptive immunity responding rapidly to many pathogen-associated metabolites presented by MR1. This response contributes importantly to host protection especially against microbial infections.

Pathways	MR1 is an integral component in the vitamin B antigen presentation pathway. It interacts significantly with other molecules involved in antigen presentation. MR1's function anchors it within the host-pathogen interaction pathways and connects with proteins like beta-2-microglobulin (β2M) which is important for surface expression. Its activity complements classical MHC pathways although it operates independently in presenting non-peptide antigens.
Associated diseases and disorders	MR1 contributes to understanding certain autoimmune conditions and infectious diseases. It connects to infectious diseases such as tuberculosis where MAIT cell activation plays a critical role in the immune response. Additionally MR1 has links to inflammatory bowel disease (IBD) a condition where gut microbiota activation of MAIT cells through MR1 may influence the disease outcome. Understanding its role in these diseases can provide insights into how MR1 or related proteins might be targeted for therapeutic interventions.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

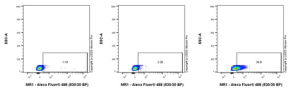
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

1 product image



Flow Cytometry - Anti-MR1 antibody [EPR25671-79] - BSA and Azide free (ab308503)

This data was developed using ab308502, the same antibody clone in a different buffer formulation. Flow cytometric analysis of Isotype control (Left) / Untreated Human PBMC (human peripheral blood mononuclear cell) (Middle) / Human PBMC treated with 10uM Ac-6-FP for 16h (Right) cells labelling MR1 with ab308502 at 1/50 dilution (1ug)/ Middle and Right compared with a Rabbit monoclonal IgG (ab172730) / Left isotype control and an unlabelled control (cells without incubation with primary antibody and secondary antibody) (Blue). Goat Anti-Rabbit IgG (Alexa Fluor® 488, ab150081) at 1/5000 dilution was used as the secondary antibody. Gated on viable cells.

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