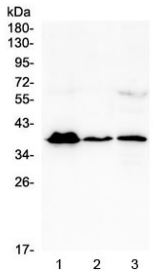
# MR1 Antibody / MHC class I related protein 1 (RQ4943)

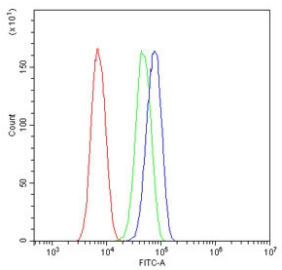
| Catalog No. | Formulation | Size |
|---|---|---|
| RQ4943 | 0.5mg/ml if reconstituted with 0.2ml sterile DI water | 100 ug |

**Bulk quote request**

| | |
|---|---|
| **Availability** | 1-3 business days |
| **Species Reactivity** | Human |
| **Format** | Antigen affinity purified |
| **Host** | Rabbit |
| **Clonality** | Polyclonal (rabbit origin) |
| **Isotype** | Rabbit IgG |
| **Purity** | Antigen affinity purified |
| **Buffer** | Lyophilized from 1X PBS with 2% Trehalose and 0.025% sodium azide |
| **UniProt** | Q95460 |
| **Applications** | Western Blot : 0.5-1ug/ml<br>Flow Cytometry : 1-3ug/million cells<br>Direct ELISA : 0.1-0.5ug/ml |
| **Limitations** | This MR1 antibody is available for research use only. |




Western blot testing of human 1) T-47D, 2) U937 and 3) A431 cell lysate with MR1 antibody at 0.5ug/ml. Predicted molecular weight ~39 kDa.




Flow cytometry testing of human SiHa cells with MR1 antibody at 1ug/10^6 cells (blocked with goat sera); Red=cells alone, Green=isotype control, Blue= MR1 antibody.

## Description

MR1 antibody targets MHC class I related protein 1, encoded by the MR1 gene. MHC class I related protein 1 is a non-classical MHC class I molecule that plays a specialized role in antigen presentation rather than broad peptide display. Unlike classical MHC class I proteins, MR1 presents small-molecule metabolites derived from microbial vitamin B biosynthesis pathways, enabling immune surveillance of microbial activity rather than conventional protein antigens.

Functionally, MHC class I related protein 1 is best known for its role in activating mucosal-associated invariant T (MAIT) cells. MR1 binds riboflavin-derived metabolites produced by bacteria and fungi and presents these ligands at the cell surface for recognition by MAIT cell T cell receptors. Through this mechanism, MR1 links innate-like T cell responses to microbial metabolism. An MR1 antibody supports studies focused on antigen presentation, MAIT cell biology, and host-microbe immune interactions.

MR1 is expressed intracellularly in many cell types but is tightly regulated at the cell surface, where stable expression depends on ligand binding. This controlled trafficking allows cells to rapidly display microbial-derived antigens during infection while limiting surface expression under homeostatic conditions. MR1 localizes primarily to intracellular compartments involved in antigen processing and can transiently appear at the plasma membrane following ligand loading.

From a disease-relevance perspective, MHC class I related protein 1 has been implicated in infectious disease, inflammatory disorders, and immune-mediated pathology. MR1-MAIT cell interactions contribute to immune responses against bacterial and fungal infections and have also been studied in the context of autoimmunity, cancer, and tissue inflammation. Altered MR1 expression or antigen presentation dynamics can influence MAIT cell activation and downstream immune outcomes.

At the molecular level, MHC class I related protein 1 shares structural features with classical MHC class I molecules, including association with beta-2-microglobulin, but contains a distinct antigen-binding groove optimized for small-molecule ligands. Ligand binding and cellular context can influence MR1 stability and apparent behavior in biochemical assays without changes to its primary sequence. MR1 antibody reagents support research applications focused on immune recognition, antigen presentation, and MAIT cell signaling, with NSJ Bioreagents providing reagents intended for research use.

## Application Notes

Optimal dilution of the MR1 antibody should be determined by the researcher.

## Immunogen

Amino acids R23-D269 from the human protein were used as the immunogen for the MR1 antibody.

## Storage

After reconstitution, the MR1 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.