

DESCRIPTION

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|---------------------------|---|
| Species Reactivity | Mouse |
| Specificity | Detects mouse 4-1BB in direct ELISAs and Western blots. Does not cross-react with recombinant human (rh) 4-1BB, rhCD27, recombinant mouse (rm) CD27, rhCD30, rmCD30, rhCD40, rmCD40, rhDR3, rhDR6, rhEDAR, rmEDAR, rhFas, rmFas, rhGITR, rmGITR, rhHVEM, rhLTRβ, rhNGF R, rhOPG, rmOPG, rhRANK, rmRANK, rhTROY, rmTROY, rhTNF sRI, rhTNF sRII, or rmTNF sRII. |
| Source | Monoclonal Rat IgG _{2A} Clone # 158332 |
| Purification | Protein A or G purified from hybridoma culture supernatant |
| Immunogen | Mouse myeloma cell line NS0-derived recombinant mouse 4-1BB Val24-Leu187 Accession # P20334 |
| Formulation | Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details. *Small pack size (-SP) is supplied as a 0.2 µm filtered solution in PBS. |

APPLICATIONS

Please Note: Optimal dilutions should be determined by each laboratory for each application. *General Protocols* are available in the *Technical Information* section on our website.

| | Recommended Concentration | Sample |
|---|--|--|
| Western Blot | 1 µg/mL | Recombinant Mouse 4-1BB/TNFRSF9/CD137 Fc Chimera (Catalog # 937-4B) under non-reducing conditions only |
| Flow Cytometry | 0.25 µg/10 ⁶ cells | See Below |
| Mouse 4-1BB/TNFRSF9/CD137 Sandwich Immunoassay | | Reagent |
| ELISA Capture | 2-8 µg/mL | Mouse 4-1BB/TNFRSF9/CD137 Antibody (Catalog # MAB937) |
| ELISA Detection | 0.1-0.4 µg/mL | Mouse 4-1BB/TNFRSF9/CD137 Biotinylated Antibody (Catalog # BAF937) |
| Standard | | Recombinant Mouse 4-1BB/TNFRSF9/CD137 Fc Chimera (Catalog # 937-4B) |
| CyTOF-ready | Ready to be labeled using established conjugation methods. No BSA or other carrier proteins that could interfere with conjugation. | |

DATA

Flow Cytometry

Detection of 4-1BB/TNFRSF9/CD137 in Activated Mouse Splenocytes by Flow Cytometry. Activated mouse splenocytes were stained with Rat Anti-Mouse ICOS APC-conjugated Monoclonal Antibody (Catalog # FAB168A) and either (A) Rat Anti-Mouse 4-1BB/TNFRSF9/CD137 Monoclonal Antibody (Catalog # MAB937) or (B) Rat IgG_{2A} Isotype Control (Catalog # MAB006) followed by Phycoerythrin-conjugated Anti-Rat IgG Secondary Antibody (Catalog # F0105B). View our protocol for [Staining Membrane-associated Proteins](#).

Flow Cytometry

Detection of 4-1BB/TNFRSF9/CD137 in Resting Mouse Splenocytes by Flow Cytometry. Resting mouse splenocytes were stained with Rat Anti-Mouse ICOS APC-conjugated Monoclonal Antibody (Catalog # FAB168A) and either (A) Rat Anti-Mouse 4-1BB/TNFRSF9/CD137 Monoclonal Antibody (Catalog # MAB937) or (B) Rat IgG_{2A} Isotype Control (Catalog # MAB006) followed by Phycoerythrin-conjugated Anti-Rat IgG Secondary Antibody (Catalog # F0105B). View our protocol for [Staining Membrane-associated Proteins](#).

PREPARATION AND STORAGE

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|--------------------------------|--|
| Reconstitution | Reconstitute at 0.5 mg/mL in sterile PBS. |
| Shipping | The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below. *Small pack size (-SP) is shipped with polar packs. Upon receipt, store it immediately at -20 to -70 °C |
| Stability & Storage | Use a manual defrost freezer and avoid repeated freeze-thaw cycles. <ul style="list-style-type: none"> ● 12 months from date of receipt, -20 to -70 °C as supplied. ● 1 month, 2 to 8 °C under sterile conditions after reconstitution. ● 6 months, -20 to -70 °C under sterile conditions after reconstitution. |

BACKGROUND

4-1BB, also known as CD137 and ILA (induced by lymphocyte activation), is a TNF receptor superfamily member and has been designated TNFRSF9. Mouse 4-1BB cDNA encodes a 256 amino acid (aa) residues type I transmembrane protein with a putative 23 aa signal peptide, a 164 aa extracellular domain, a 21 aa transmembrane domain and a 48 aa cytoplasmic region (1 - 3). A soluble 4-1BB is released from surfaces of cells expressing the transmembrane protein (4). Mouse 4-1BB shares approximately 60% aa sequence identity with its human counterpart. 4-1BB is expressed on activated CD4⁺ and CD8⁺ T cells, thymocytes, and NK cells. It is also expressed on monocytes, neutrophils, DCs and eosinophils (5). The ligand for 4-1BB (4-1BBL), also named TNFSF9, belongs to the TNF ligand superfamily. 4-1BBL is predominantly expressed on activated antigen presenting cells (APCs) such as B cells, macrophages and dendritic cells (DCs). It is also expressed on most T and B lymphoma cell lines. In response to 4-1BBL binding, 4-1BB transduce a T cell costimulatory signal in both CD4⁺ and CD8⁺ T cells to promote survival and enhance proliferation, cytokine production and effector function. *In vivo*, the costimulatory activity of 4-1BB has been shown to be important in graft-v-host disease and antiviral CTL responses. On dendritic cells, 4-1BB is a DC-activating molecules that enhances cytokine production and upregulates expression of B7-1 and B7-2 costimulatory molecules, resulting in an improved ability to stimulate T cell responses (1 - 5).

References:

1. Goodwin, R.G. *et al.* (1993) *Eur. J. Immunol.* **23**:2631.
2. Alderson, M.R. *et al.* (1994) *Eur. J. Immunol.* **24**:2219.
3. Kwon, B.S. and S.M. Weissman (1989) *Proc. Nat. Acad. Sci. USA* **86**:1963.
4. Wilcox, R.A. *et al.* (2002) *J. Immunol.* **168**:4262.
5. Kwon, B. *et al.* (2002) *TRENDS in Immunology* **23**:378.