# Human 4-1BB/TNFRSF9/CD137
# Alexa Fluor® 488-conjugated Antibody

Monoclonal Mouse $IgG_{2B}$ Clone # 145501

Catalog Number: FAB838G

100 µg

## DESCRIPTION

| | |
|---|---|
| **Species Reactivity** | Human |
| **Specificity** | Detects human 4-1BB/TNFRSF9/CD137 in direct ELISAs and Western blots. In direct ELISAs and Western blots, no cross-reactivity with recombinant mouse (rm) 4-1BB, recombinant human (rh) CD27, rmCD27, rhCD30, rmCD30, rhCD40, rmCD40, rhDR3, rhDR6, rhEDAR, rmEDAR, rhFas, rmFas, rhGITR, rmGITR, rhHVEM, rhLTRβ, rmLTRβ, rhNGFR, rhOPG, rmOPG, rhRANK, rmRANK, rhTAJ, rhTNF RI, rmTNF RI, rhTNF RII, or rmTNF RII is observed. |
| **Source** | Monoclonal Mouse $IgG_{2B}$ Clone # 145501 |
| **Purification** | Protein A or G purified from hybridoma culture supernatant |
| **Immunogen** | Mouse myeloma cell line NS0-derived recombinant human 4-1BB/TNFRSF9/CD137<br>Leu24-Gln186<br>Accession # Q07011 |
| **Conjugate** | Alexa Fluor 488<br>Excitation Wavelength: 488 nm<br>Emission Wavelength: 515-545 nm |
| **Formulation** | Supplied 0.2 mg/mL in a saline solution containing BSA and Sodium Azide. See Certificate of Analysis for details.<br><br>*Contains <0.1% Sodium Azide, which is not hazardous at this concentration according to GHS classifications. Refer to the Safety Data Sheet (SDS) for additional information and handling instructions. |

## 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 |
|---|---|---|
| **Flow Cytometry** | 0.25-1 µg/$10^6$ cells | Human $CD3^+$ peripheral blood mononuclear cells treated with PHA |

## PREPARATION AND STORAGE

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| **Shipping** | The product is shipped with polar packs. Upon receipt, store it immediately at the temperature recommended below. |
| **Stability & Storage** | **Protect from light. Do not freeze.**<br>● 12 months from date of receipt, 2 to 8 °C as supplied. |

## BACKGROUND

4-1BB is an inducible T cell surface protein belonging to the TNF receptor superfamily. It is alternatively known as TNFRSF9, CD137, and ILA. The 255 amino acid human 4-1BB is a type I transmembrane protein having in its extracellular domain four of the cysteine-rich motifs that are characteristic of the TNF receptor superfamily. The 30 KD glycoprotein exists both as a monomer and as a dimer on T cells. The human and mouse proteins share 60% amino acid identity. 4-1BB is absent from naive T cells, but it is upregulated and continually expressed following T cell activation. The natural ligand, 4-1BBL, is a member of the TNF superfamily and is expressed on activated antigen presenting cells including dendritic cells, macrophages, and B cells. Cross-linking of 4-1BB by 4-1BBL or by agonistic antibodies transmits a potent co-stimulatory signal that enhances the effect of other activating signals such as PHA or anti-CD3 antibodies. 4-1BB signals through the TFAF2-NIK pathway resulting in activation of NF-κB and ultimately promoting proliferation and survival of T cells.

**References:**


1. Vinay, D. and B. Kwon (1998) Semin. Immunol. **10**:481.
2. Sica, G. and L. Chen (2000) Adv. Exp. Med. Biol. **465**:355.


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