

DESCRIPTION

Species Reactivity	Human
Specificity	Detects human 4-1BB/TNFRSF9/CD137 in direct ELISAs.
Source	Recombinant Monoclonal Rabbit IgG Clone # 2356B
Purification	Protein A or G purified from cell culture supernatant
Immunogen	Chinese hamster ovary cell line CHO-derived recombinant human 4-1BB/TNFRSF9/CD137 Leu24-His183 Accession # Q07011
Conjugate	Alexa Fluor 488 Excitation Wavelength: 488 nm 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. *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	HEK293 Human Cell Line Transfected with Human 4-1BB/TNFRSF9/CD137 and eGFP

PREPARATION AND STORAGE

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. <ul style="list-style-type: none"> 12 months from date of receipt, 2 to 8 °C as supplied.

BACKGROUND

4-1BB, also known as CD137 and TNFRSF9, is an approximately 30 kDa transmembrane glycoprotein in the TNF receptor superfamily. 4-1BB functions in the development and activation of multiple immune cells (1). Mature human 4-1BB consists of a 163 amino acid (aa) extracellular domain (ECD) with four TNFR cysteine-rich repeats, a 27 aa transmembrane segment, and a 42 aa cytoplasmic domain (2, 3). Within the ECD, human 4-1BB shares 60% aa sequence identity with mouse and rat 4-1BB. 4-1BB is expressed as a disulfide-linked homodimer on various populations of activated T cell including CD4⁺, CD8⁺, memory CD8⁺, NKT, and regulatory T cells (4-7) as well as on myeloid and mast cell progenitors, dendritic cells, mast cells, and bacterially infected osteoblasts (8-11). It binds with high affinity to the transmembrane 4-1BB Ligand/TNFSF9 which is expressed on antigen presenting cells and myeloid progenitor cells (3, 8). This interaction costimulates the proliferation, activation, and/or survival of the 4-1BB expressing cell (3-7). It can also enhance the activation-induced cell death of repetitively stimulated T cells (3). Mice lacking 4-1BB show augmented T cell activation, perhaps due to its absence on regulatory T cells (12). 4-1BB can associate with OX40 on activated T cells, forming a complex that responds to either ligand and inhibits Treg and CD8⁺ T cell proliferation (13). Reverse signaling through 4-1BB Ligand inhibits the development of dendritic cells, B cells, and osteoclasts (8, 11) but supports mature dendritic cell survival and costimulates the proliferation and activation of mast cells (9, 10). 4-1BB activation enhances CD8⁺ T cell and NK cell mediated anti-tumor immunity (14). It also contributes to the development of inflammation in high fat diet-induced metabolic syndrome (15). Soluble forms of 4-1BB and 4-1BB Ligand circulate at elevated levels in the serum of rheumatoid arthritis and hematologic cancer patients, respectively (16, 17).

References:

1. Wang, C. *et al.* (2009) *Immunol. Rev.* **229**:192.
2. Schwarz, H. *et al.* (1993) *Gene* **134**:295.
3. Alderson, M.R. *et al.* (1994) *Eur. J. Immunol.* **24**:2219.
4. Wen, T. *et al.* (2002) *J. Immunol.* **168**:4897.
5. Pulle, G. *et al.* (2006) *J. Immunol.* **176**:2739.
6. Zheng, G. *et al.* (2004) *J. Immunol.* **173**:2428.
7. Kim, D. *et al.* (2008) *J. Immunol.* **180**:2062.
8. Lee, S. *et al.* (2008) *Nat. Immunol.* **9**:917.
9. Choi, B.K. *et al.* (2009) *J. Immunol.* **182**:4107.
10. Nishimoto, H. *et al.* (2005) *Blood* **106**:4241.
11. Saito, K. *et al.* (2004) *J. Biol. Chem.* **279**:13555.
12. Lee, S. *et al.* (2005) *J. Immunol.* **174**:6803.
13. Ma, B.Y. *et al.* (2005) *Blood* **106**:2002.
14. Choi, B.K. *et al.* (2010) *J. Immunol.* **185**:1404.
15. Kim, C. *et al.* (2011) *Diabetes* **60**:3159.
16. Michel, J. *et al.* (1998) *Eur. J. Immunol.* **28**:290.
17. Salih, H.R. *et al.* (2001) *J. Immunol.* **167**:4059.

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

Recombinant Monoclonal Rabbit IgG Clone # 2356B

Catalog Number: FAB8381G

100 µg, 25 Tests

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