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Human 4-1BB/TNFRSF9/CD137 Antibody

Recombinant Monoclonal Rabbit IgG Clone # 2356B Catalog Number: MAB8381

RDSYSTEMS

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	
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 either lyophilized or 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	2 µg/mL	See Below			
Flow Cytometry	0.25 µg/10 ⁶ cells	See Below			
Immunocytochemistry	8-25 μg/mL	See Below			
Simple Western	20 µg/mL	HDLM-2 human Hodgkin's lymphoma cells			
CyTOF-ready	Ready to be labeled using established co conjugation.	Ready to be labeled using established conjugation methods. No BSA or other carrier proteins that could interfere with conjugation.			

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DATA



Immunocytochemistry

Human PBMC treated PHA

HEK293

Detection of Human 4-1BB/TNFRSF9/CD137 by Western Blot. Western blot shows lysates of HDLM-2 human Hodgkin's lymphoma cell line and human tonsil tissue. PVDF membrane was probed with 2 µg/mL of Rabbit Anti-Human 4-1BB/TNFRSF9/CD137 Monoclonal Antibody (Catalog # MAB8381) followed by HRPconjugated Anti-Rabbit IgG Secondary Antibody (Catalog # HAF008). Specific bands were detected for 4-1BB/TNFRSF9/CD137 at approximately 32 and 40 kDa (as indicated). This experiment was conducted under reducing conditions and using Immunoblot Buffer Group 1

4-1BB/TNFRSF9/CD137 in

1BB/TNFRSF9/CD137 was

detected in immersion fixed

peripheral blood mononuclear

cells (PBMCs) treated with PHA

(positive control, left panel) and

cell line (negative control, right

4-1BB/TNFRSF9/CD137

stained using the

panel) using Rabbit Anti-Human

Monoclonal Antibody (Catalog #

MAB8381) at 8 µg/mL for 3 hours

NorthernLights™ 557-conjugated

Antibody (red Catalog # NL004) and counterstained with DAPI

Anti-Rabbit IgG Secondary

at room temperature. Cells were

HEK293 human embryonic kidney

Cell Line, 4-

Human PBMCs and HEK293

Flow Cytometry



Detection of 4-1BB/TNFRSF9/CD137 in HEK293 Human Cell Line Transfected with Human 4-1BB/TNFRSF9/CD137 and eGFP by Flow Cytometry. HEK293 human embryonic kidney cell line transfected with either (A) human 4-1BB/TNFRSF9/CD137 or (B) irrelevant protein, and eGFP was stained with Rabbit Anti-Human 4-1BB/TNFRSF9/CD137 Monoclonal Antibody (Catalog # MAB8381) followed by APCconjugated Goat-anti Rabbit IoG secondary antibody (Catalog # F0111). Quadrant markers were set based on control antibody staining (Catalog # MAB1050). View our protocol for Staining Membrane-associated Proteins

Simple Western



Detection of Human 4-1BB/TNFRSF9/CD137 by Simple Western[™]. Simple Western lane view shows lysates of HDLM-2 human Hodgkin's lymphoma cells, loaded at 0.2 mg/mL. Specific bands were detected for 4-1BB/TNFRSF9/CD137 at approximately 49 and 57 kDa (as indicated) using 20 µg/mL of Rabbit Anti-Human 4-1BB/TNFRSF9/CD137 Monoclonal Antibody (Catalog # MAB8381). This experiment was conducted under reducing conditions and using the 12-230 kDa separation system.

	(blue). Specific staining was localized to cell surfaces. View our protocol for Fluorescent ICC Staining of Non-adherent Cells.		
PREPARATION AND	STORAGE		
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	ability & Storage Use a manual defrost freezer and avoid repeated freeze-thaw cycles. • 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.		

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Human 4-1BB/TNFRSF9/CD137 Antibody

RDsystems

Recombinant Monoclonal Rabbit IgG Clone # 2356B Catalog Number: MAB8381

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).

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