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APC/Cyanine7 Anti-Human CD29 (integrin β1) Antibody

Catalog Number:	107215, 107216
Size:	25 tests, 100 tests
Target Name:	CD29, Integrin β1 chain, VLA-β chain, gpIIa, ITGB1
Regulatory Status:	RUO

PRODUCT DETAILS

Clone:	K20
Application:	Flow Cytometry
Reactivity:	Human
Format:	APC/Cyanine7
Isotype:	Mouse IgG2a
Antibody Type:	Monoclonal
Formulation:	Phosphate-buffered solution, pH 7.2, containing 0.09% sodium azide and 0.2% (w/v) BSA
Protein Concentration:	Supplied at a lot-specific concentration.
Storage&Handling:	The antibody solution should be stored undiluted between 2°C and 8°C, and protected from prolonged exposure to light. Do not freeze.
Recommended Usage:	For flow cytometric staining, it is recommended to use 5 uL of this reagent per 0.5-1.0 million cells in a 100 µL volume. Optimal reagent performance should be determined by titration for each specific application.
Excitation Laser:	Red Laser (633 nm)

BACKGROUND INFORMATION

CD29, also known as integrin β1 (ITGB1), is a widely expressed cell surface adhesion molecule that plays a fundamental role in cell-cell and cell-extracellular matrix (ECM) interactions. CD29 is expressed on most cell types, including leukocytes, endothelial cells, epithelial cells, fibroblasts, and stem cells, and it partners with multiple integrin α subunits to form distinct functional receptors. Through these heterodimeric complexes, CD29 regulates cell adhesion, migration, survival, and signaling.

Structurally, CD29 is a type I transmembrane glycoprotein composed of a large extracellular domain, a single transmembrane helix, and a short cytoplasmic tail. The extracellular domain contains multiple conserved motifs, including an I-like domain and metal ion-dependent adhesion sites that are critical for ligand binding and conformational regulation. CD29 pairs with at least twelve different α integrin subunits (such as α1-α11 and αv) to form receptors including VLA-4 (α4β1), VLA-5 (α5β1), and VLA-6 (α6β1). The cytoplasmic tail of CD29 lacks intrinsic enzymatic activity but interacts with adaptor proteins such as talin and kindlin, linking integrins to the actin cytoskeleton and enabling bidirectional “inside-out” and “outside-in” signaling. The ligands of CD29-containing integrins are primarily ECM proteins, including fibronectin, collagen, laminin, and vitronectin, as well as certain cell surface counter-receptors such as VCAM-1. Ligand engagement regulates cell adhesion strength and initiates signaling pathways involving focal adhesion kinase (FAK), PI3K, and MAP kinases, influencing cell proliferation, differentiation, and survival.

CD29 plays important roles in disease. Dysregulated integrin β1 signaling contributes to cancer progression, invasion, and metastasis by promoting tumor cell adhesion, migration, and resistance to apoptosis. In immune-mediated diseases, CD29-containing integrins regulate leukocyte trafficking and tissue retention, influencing inflammatory responses and autoimmune pathology. CD29 expression has also been associated with fibrosis and abnormal wound healing due to its role in fibroblast activation and ECM remodeling.

Therapeutically, CD29 is relevant both as a target and as a biomarker. Integrin-directed therapies that block specific αβ1 complexes are used or under investigation to modulate immune cell trafficking and tumor-stromal interactions. In immunotherapy, high CD29 expression has been associated with cytotoxic and memory T cell subsets, making it a useful marker for selecting potent T cells in adoptive cell therapies. Additionally, targeting CD29-mediated adhesion pathways is being explored to overcome tumor immune evasion and therapy resistance, underscoring its broad relevance in translational medicine.

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