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InnoCyto Inc.

15375 Barranca Pkwy, Suite I-103
Irvine, CA 92618
Email: info@innocyto.com
Phone: 1-949-418-7543

Anti-Mouse/Rat CD29 Antibody

Catalog Number:	207101, 207102
Size:	25 μg, 100 μg
Target Name:	CD29, Integrin β1 chain, VLA-β chain, gpIIa, ITGB1
Regulatory Status:	RUO

PRODUCT DETAILS

Clone:	HMβ1-1
Application:	Flow Cytometry, IHC-F, IP, blocking
Reactivity:	Mouse
Format:	Purified
Isotype:	Armenian Hamster IgG
Antibody Type:	Monoclonal
Formulation:	Phosphate-buffered solution, pH 7.2, containing 0.09% sodium azide
Protein Concentration:	0.5 mg/mL
Storage & Handling:	The antibody solution should be stored between 2°C and 8°C
Isotype Control:	300501
Recommended Usage:	For flow cytometric staining, it is recommended to use less than 0.1 µg 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.

BACKGROUND INFORMATION

CD29, also known as integrin β1 (ITGB1), is a ubiquitously expressed transmembrane adhesion receptor that forms the β1 subunit of at least 12 different integrin heterodimers through pairing with distinct α integrin subunits (including α1–α11 and αV). These heterodimers mediate cell adhesion to the extracellular matrix (ECM) and neighboring cells, regulating processes such as cell migration, proliferation, survival, differentiation, and tissue organization. CD29 is expressed on nearly all cell types, including leukocytes, epithelial cells, endothelial cells, fibroblasts, and stem cells, where it serves as a key mediator of tissue homeostasis and immune cell trafficking.

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 undergoes conformational changes that switch the receptor between inactive and high-affinity states, while the cytoplasmic tail interacts with adaptor proteins such as talin and kindlin to connect integrins to the actin cytoskeleton. CD29-containing integrins bind numerous extracellular ligands, including fibronectin, collagen, laminin, vitronectin, thrombospondin, and vascular cell adhesion molecule-1 (VCAM-1), depending on the associated α subunit. These interactions enable bidirectional signaling, whereby extracellular ligand binding influences intracellular signaling ("outside-in" signaling) and intracellular signals regulate ligand affinity ("inside-out" signaling).

Dysregulation of CD29 contributes to numerous diseases. Increased β1 integrin signaling promotes tumor growth, invasion, metastasis, resistance to chemotherapy, and survival of cancer stem cells. CD29 also plays important roles in fibrosis, chronic inflammation, autoimmune diseases, cardiovascular disease, and wound healing. In immune cells, β1 integrins regulate leukocyte adhesion and migration into inflamed tissues, making them important mediators of inflammatory responses.

Because of its central role in cell adhesion and signaling, CD29 has emerged as an important therapeutic target. Inhibitors of β1 integrins, blocking antibodies, peptides, and small molecules are being investigated to suppress tumor progression, reduce fibrosis, and limit inflammatory cell recruitment. Conversely, CD29 is widely used as a marker for mesenchymal stem cells and activated lymphocytes, and modulation of β1 integrin signaling is being explored to improve stem cell engraftment, tissue regeneration, and adoptive cell therapies such as CAR-T cell treatment.

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