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InnoCyto Inc.

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PB Anti-Human CD9 Antibody

Catalog Number:	109601, 109602
Size:	25 tests, 100 tests
Target Name:	CD9, MRP-1,Tetraspanin-29, DRAP-24
Regulatory Status:	RUO

PRODUCT DETAILS

Clone:	HI9a
Application:	Flow Cytometry
Reactivity:	Human
Format:	PB
Isotype:	Mouse IgG1
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 µL 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. Pacific Blue has an excitation max at 404 nm and an emission max at 455 nm.
Excitation Laser:	Violet laser (405nm)
Isotype Control:	301427

BACKGROUND INFORMATION

CD9 is a tetraspanin membrane protein that plays diverse roles in cellular adhesion, migration, fusion, and signaling. It is widely expressed on various cell types, including platelets, leukocytes, endothelial cells, and certain epithelial cells. CD9 functions as a molecular organizer of the plasma membrane, regulating the assembly of protein complexes and facilitating communication between the extracellular environment and intracellular signaling pathways. By forming tetraspanin-enriched microdomains with other transmembrane proteins, CD9 influences processes such as immune cell activation, fertilization, and metastasis.

Structurally, CD9 is a 24–27 kDa protein composed of four transmembrane domains, a small intracellular loop, and two extracellular loops - one small (EC1) and one large (EC2). The EC2 loop contains conserved cysteine residues essential for disulfide bond formation and protein stability, while the intracellular termini interact with cytoskeletal and signaling molecules. Like other tetraspanins, CD9 lacks intrinsic enzymatic activity but exerts its effects through associations with integrins, growth factor receptors, and other surface proteins.

CD9 does not have classical ligands but interacts with several membrane and adhesion molecules, including integrins (α3β1, α6β1), EWI-F (CD9P-1), EWI-2, and immunoglobulin superfamily members. These interactions modulate cell adhesion and motility, impacting immune responses, tissue repair, and tumor metastasis. In the immune system, CD9 contributes to immune cell signaling and exosome formation, mediating antigen presentation and intercellular communication. It also plays a crucial role in gamete fusion: CD9 deficiency in oocytes results in infertility due to defective sperm-egg fusion.

In disease, CD9 exhibits context-dependent functions. In many cancers such as breast, pancreatic, and melanoma, CD9 downregulation correlates with enhanced metastasis and poor prognosis, likely due to altered adhesion and migration signaling. Conversely, in some hematologic cancers, overexpression of CD9 supports tumor growth and survival. CD9 has also been implicated in viral infection processes, including serving as a cofactor for viral entry or immune modulation.

Therapeutically, CD9 is being studied as a potential biomarker and target in oncology, fertility treatments, and regenerative medicine. Its role in exosome biology makes it a key marker in extracellular vesicle research, with applications in diagnostics and targeted drug delivery. Modulating CD9 function or expression could thus contribute to interventions aimed at controlling metastasis, immune modulation, and tissue regeneration.

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