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InnoCyto Inc.

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Anti-Human/Mouse Integrin β7 Antibody

Catalog Number:	113201, 113202
Size:	25 ug, 100 ug
Target Name:	Integrinβ7, β7 Integrin, integrin βp, ITGB7
Regulatory Status:	RUO

PRODUCT DETAILS

Clone:	FIB504
Application:	Flow Cytometry
Reactivity:	Human
Format:	Purified
Isotype:	Rat IgG2a
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:	303501
Recommended usage:	For flow cytometric staining, it is recommended to use less than 0.5 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

Integrin β7 is a transmembrane adhesion molecule that plays a central role in lymphocyte trafficking, particularly to gut-associated lymphoid tissues. It forms heterodimers with α4 or αE integrin subunits, generating the α4β7 and αEβ7 integrins. These complexes are critical for directing immune cells to specific tissue sites, especially the intestinal mucosa, where they contribute to immune surveillance and mucosal immunity.

Structurally, integrin β7 is a type I transmembrane protein composed of a large extracellular domain, a single-pass transmembrane segment, and a short cytoplasmic tail. The extracellular region participates in ligand binding and undergoes conformational changes that regulate affinity and signaling. Like other integrins, β7 does not function alone but pairs with α subunits to form functional receptors. These heterodimers can switch between inactive and active conformations, allowing dynamic regulation of cell adhesion and migration.

The primary ligands for integrin β7-containing complexes include mucosal addressin cell adhesion molecule-1 (MAdCAM-1), which binds α4β7, and E-cadherin, which binds αEβ7. Interaction with MAdCAM-1 facilitates lymphocyte homing to the gut, while binding to E-cadherin promotes retention of lymphocytes within epithelial tissues. These ligand interactions are essential for maintaining immune balance in mucosal environments.

In disease, dysregulation of integrin β7-mediated trafficking is strongly associated with inflammatory bowel diseases (IBD), such as Crohn's disease and ulcerative colitis. Excessive recruitment of lymphocytes to the intestinal mucosa contributes to chronic inflammation and tissue damage. Integrin β7 is also implicated in certain infections and may play a role in tumor immunity within mucosal tissues.

Therapeutically, integrin β7 is an established target for treating IBD. Monoclonal antibodies that block α4β7, such as vedolizumab, prevent lymphocyte migration into the gut, thereby reducing inflammation while sparing systemic immunity. This gut-selective mechanism has made β7-targeted therapies an important advancement in managing chronic inflammatory diseases with improved safety profiles compared to broader immunosuppressive agents.

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