

iF647 Anti-Human/Mouse Integrin β 7 Antibody

Catalog Number:	113203, 113204
Size:	25 tests, 100 tests
Target Name:	Integrin β 7, β 7 Integrin, integrin β p, ITGB7
Regulatory Status:	RUO

PRODUCT DETAILS

Clone:	FIB504
Application:	Flow Cytometry
Reactivity:	Human
Format:	iF647
Isotype:	Rat 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 μ L of this reagent per 0.5-1.0 million cells in a 100 μ L volume. Optimal reagent performance should be determined by titration for each specific application. iF647 has an excitation max at 656 nm and an emission max at 670 nm.
Excitation Laser:	Red Laser (633 nm)
Isotype Control:	300203

BACKGROUND INFORMATION

Integrin β 7 is a transmembrane adhesion molecule that plays a central role in lymphocyte trafficking, particularly to gut-associated lymphoid tissues. It forms heterodimers with α 4 or α E integrin subunits, generating the α 4 β 7 and α E β 7 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 β 7 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, β 7 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 β 7-containing complexes include mucosal addressin cell adhesion molecule-1 (MAdCAM-1), which

binds $\alpha 4\beta 7$, and E-cadherin, which binds $\alpha E\beta 7$. 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 $\beta 7$ -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 $\beta 7$ is also implicated in certain infections and may play a role in tumor immunity within mucosal tissues.

Therapeutically, integrin $\beta 7$ is an established target for treating IBD. Monoclonal antibodies that block $\alpha 4\beta 7$, such as vedolizumab, prevent lymphocyte migration into the gut, thereby reducing inflammation while sparing systemic immunity. This gut-selective mechanism has made $\beta 7$ -targeted therapies an important advancement in managing chronic inflammatory diseases with improved safety profiles compared to broader immunosuppressive agents.

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