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iF647 Anti-Mouse CD11a Antibody

Catalog Number:	203403, 203404
Size:	25 μg, 100 μg
Target Name:	CD11a, integrin alpha L (ITGAL), Ly-15, Ly-21, LFA-1 α subunit,
Regulatory Status:	RUO

PRODUCT DETAILS

Clone:	M17/4
Application:	Flow Cytometry
Reactivity:	Mouse
Format:	iF647
Isotype:	Rat IgG2a
Antibody Type:	Monoclonal
Formulation:	Phosphate-buffered solution, pH 7.2, containing 0.09% sodium azide
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 less than 0.3 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. iF647 has an excitation max at 656 nm and an emission max at 670 nm.
Excitation Laser:	Red Laser (633 nm)
Isotype Control:	303407

BACKGROUND INFORMATION

Mouse CD11a, also known as integrin αL, is a cell surface adhesion molecule that plays a critical role in immune cell interactions and migration. CD11a pairs with the β2 integrin subunit CD18 to form **LFA-1 (lymphocyte function–associated antigen-1)**, a heterodimeric integrin expressed on most leukocytes, including T cells, B cells, natural killer cells, neutrophils, and monocytes. LFA-1 is essential for immune surveillance, enabling leukocytes to adhere to other cells and migrate into tissues during immune responses.

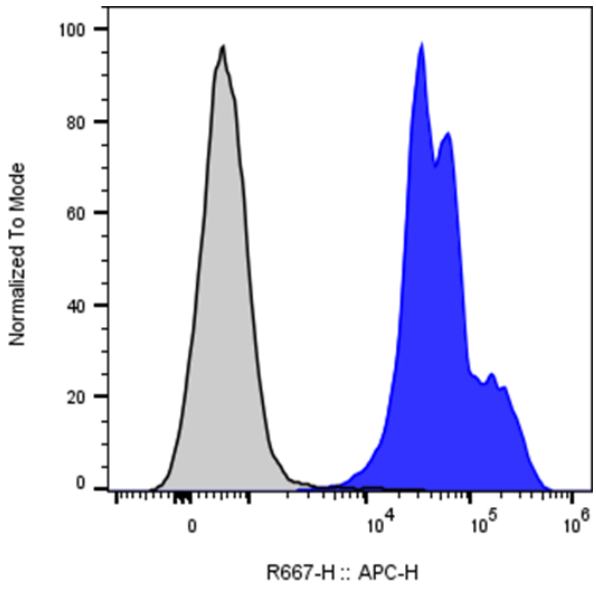
Structurally, CD11a is a large transmembrane glycoprotein of roughly 180 kDa that contains an extracellular ligand-binding domain, a single transmembrane region, and a short cytoplasmic tail. When associated with CD18, the heterodimer undergoes conformational changes that regulate its affinity for ligands. Like other integrins, LFA-1 can switch between low- and high-affinity states through “inside-out” signaling triggered by cellular activation. This regulation allows immune cells to rapidly adjust adhesion strength during processes such as antigen recognition, immune synapse formation, and leukocyte trafficking.

The primary ligands for CD11a/LFA-1 are members of the **intercellular adhesion molecule (ICAM)** family, particularly ICAM-1 (CD54), ICAM-2, and ICAM-3. Binding between LFA-1 and ICAMs mediates firm adhesion between leukocytes and endothelial cells, allowing immune cells to exit the bloodstream and enter sites of infection or inflammation. LFA-1 is also crucial for stable interactions between T cells and antigen-presenting cells, which are necessary for effective T-cell activation and immune signaling.

Dysregulation of CD11a/LFA-1 function has been associated with several diseases. Defects in the β2 integrin complex, including CD11a/CD18, contribute to **leukocyte adhesion deficiency**, a rare immunodeficiency characterized by impaired leukocyte migration and recurrent infections. Conversely, excessive LFA-1 activity can contribute to autoimmune and inflammatory diseases by promoting inappropriate immune cell infiltration into tissues.

Because of its central role in immune cell adhesion and activation, the LFA-1 pathway has been explored as a therapeutic target. Agents that block LFA-1 interactions can reduce pathological immune responses and inflammation. In research models, antibodies against CD11a are commonly used to study leukocyte trafficking, T-cell activation, and immune regulation, making CD11a an important molecule in immunology and therapeutic development.

PRODUCT DATA



Mouse splenocytes were stained with iF647 anti-mouse CD11a clone M17/4 (color-filled histogram) or an isotype control (gray histogram).

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