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iF647 Anti-Mouse CD172a Antibody

Catalog Number:	202802, 202803
Size:	25 μg, 100 μg
Target Name:	CD172a, P84, SHPS-1, PTPNS1
Regulatory Status:	RUO

PRODUCT DETAILS

Clone:	P84
Application:	Flow Cytometry
Reactivity:	Mouse
Format:	iF647
Isotype:	Rat 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 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:	300103

BACKGROUND INFORMATION

CD172a, also known as signal regulatory protein alpha (SIRPα), is an immunoregulatory cell surface receptor that plays a key role in controlling innate immune responses, particularly phagocytosis and cell-cell interactions. CD172a is predominantly expressed on myeloid cells such as macrophages, monocytes, dendritic cells, and neutrophils, and is also found on some neuronal and endothelial cells. Its primary function is to deliver inhibitory signals that help distinguish self from non-self and prevent inappropriate immune activation.

Structurally, CD172a is a type I transmembrane glycoprotein belonging to the immunoglobulin superfamily. Its extracellular region is composed of three Ig-like domains, including a membrane-distal V-like domain that mediates ligand binding and two C1-like domains closer to the membrane. The cytoplasmic tail contains conserved immunoreceptor tyrosine-based inhibitory motifs (ITIMs), which are essential for intracellular signaling. Upon receptor engagement, these ITIMs become phosphorylated and recruit the phosphatases SHP-1 and SHP-2, leading to inhibition of activating signaling pathways.

The principal ligand for CD172a is CD47, a ubiquitously expressed cell surface protein often referred to as a “don’t eat me” signal. Interaction between CD47 on target cells and CD172a on phagocytes suppresses phagocytosis by delivering inhibitory signals to the myeloid cell. This mechanism is critical for maintaining self-tolerance and protecting healthy cells, such as red blood cells, from immune-mediated clearance. CD172a can also engage in cis interactions on the same cell surface, further modulating signaling thresholds.

CD172a plays an important role in disease, particularly in cancer and inflammatory disorders. Many tumors overexpress CD47 to exploit the CD47-CD172a pathway and evade macrophage-mediated phagocytosis. Dysregulation of CD172a signaling has also been implicated in chronic inflammation, autoimmunity, and impaired clearance of apoptotic cells. In hematologic settings, CD172a expression is used as a phenotypic marker to distinguish myeloid cell subsets.

Therapeutically, the CD47-CD172a axis has become a major focus in cancer immunotherapy. Blocking antibodies or engineered proteins that disrupt CD47-CD172a interactions are designed to remove inhibitory signals and promote phagocytosis of tumor cells by macrophages. Such approaches are being evaluated in both solid tumors and hematologic malignancies. Beyond oncology, modulation of CD172a signaling may have applications in enhancing clearance of infected or apoptotic cells, highlighting its significance as a therapeutic target and immunological checkpoint.

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