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iF488 Anti-Mouse/human CD45R/B220 Antibody

Catalog Number:	200905, 200906
Size:	25 tests, 100 tests
Target Name:	CD45R, B220
Regulatory Status:	RUO

PRODUCT DETAILS

Clone:	RA3-6B2
Application:	Flow Cytometry
Reactivity:	Human, Mouse
Format:	iF488
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 and 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. iF488 has an excitation max at 491 nm and an emission max at 516 nm.
Excitation Laser:	Blue Laser (488 nm)
Isotype Control:	300202
RRID:	AB_3739012

BACKGROUND INFORMATION

CD45R/B220 is a widely used immunological marker that represents a specific isoform of the protein tyrosine phosphatase CD45 (PTPRC). B220 is most commonly associated with B lymphocytes, particularly in mice, where it is expressed throughout much of B cell development and maturation. While B220 is often referred to as a “B cell marker,” it is also expressed on subsets of activated T cells, dendritic cells, and certain leukemic populations, reflecting its role in immune regulation rather than lineage restriction.

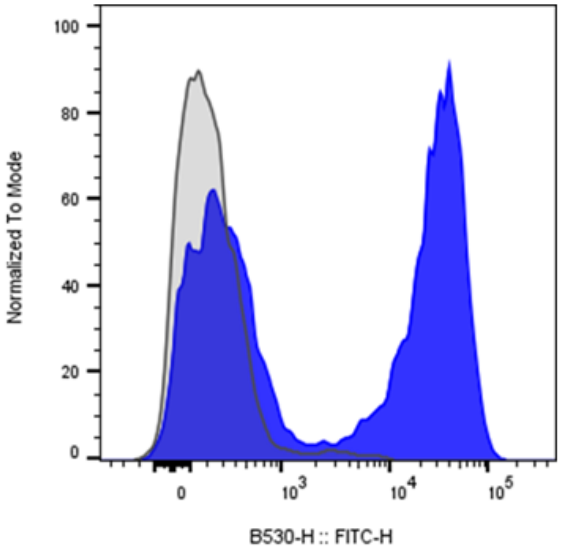
Structurally, CD45R/B220 is a type I transmembrane glycoprotein generated through alternative splicing of the CD45 extracellular domain. The B220 isoform includes exon A and produces a high–molecular weight extracellular region compared with other CD45 isoforms such as CD45RO. Like all CD45 family members, B220 contains a single transmembrane domain and a cytoplasmic tail with two protein tyrosine phosphatase domains, of which the membrane-proximal domain is catalytically active. The extracellular domain is heavily glycosylated, contributing to its size and antibody recognition.

CD45R/B220 does not bind a classical extracellular ligand. Instead, its primary function is enzymatic, regulating signaling thresholds in immune cells. In B cells, B220 modulates B cell receptor (BCR) signaling by dephosphorylating Src family kinases such as Lyn, thereby fine-tuning activation, survival, and tolerance. Through this activity, CD45R/B220 ensures that B cells respond appropriately to antigen stimulation while limiting aberrant activation.

CD45R/B220 plays important roles in disease. Altered expression of B220 is observed in autoimmune models, where dysregulated B cell signaling contributes to loss of tolerance and autoantibody production. In murine models of lupus-like disease, abnormal B220 expression is associated with expanded populations of atypical B cells. B220 is also a key diagnostic marker in hematologic malignancies, particularly B cell leukemias and lymphomas, where it aids in immunophenotypic classification. Additionally, aberrant B220 expression on T cells can be a feature of lymphoproliferative disorders.

Therapeutically, CD45R/B220 is primarily used as a biomarker and experimental tool rather than a direct drug target. Antibodies against B220 are routinely employed to identify, isolate, or deplete B cells in research and preclinical studies. In translational contexts, targeting CD45 isoforms, including B220-expressing cells, has been explored in conditioning regimens for bone marrow transplantation and in antibody-based approaches for hematologic disease, highlighting its enduring importance in immunology.

PRODUCT DATA



Mouse splenocytes stained with iF488 Anti-mouse/human CD45R_B220 clone RA3-6B2 (blue histogram) or an isotype control (gray histogram).