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Biotin Anti-Mouse/human CD45R/B220 Antibody

Catalog Number:	200903, 200904
Size:	50 μg, 500 μg
Target Name:	CD45R, B220
Regulatory Status:	RUO

PRODUCT DETAILS

Clone:	RA3-6B2
Application:	Flow Cytometry
Reactivity:	Human, Mouse, Chimpanzee
Format:	Biotin
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:	0.5 mg/mL
Storage and Handling:	The antibody solution should be stored between 2°C and 8°C
Recommended Usage:	For flow cytometric staining, it is recommended to use less than 0.12 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.
Isotype Control:	300206
RRID:	AB_3739011

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.

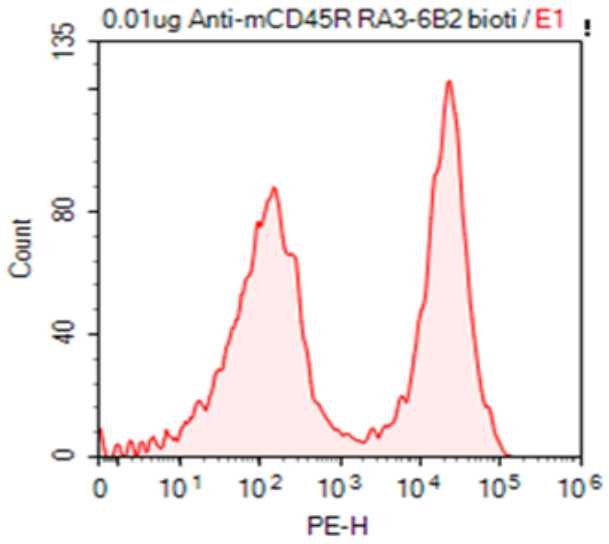
CD45R/B220 does not bind a classical extracellular ligand. Instead, its primary function is enzymatic, regulating signaling thresholds in immune cells. In B cells, B220 modulates B cell receptor (BCR) signaling by dephosphorylating Src family kinases such as Lyn, thereby fine-tuning activation, survival, 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 Biotin Anti-mouse/human CD45R_B220 clone RA3-6B2, followed by SA-PE.

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