

## Anti-Mouse/human CD45R/B220 Antibody

<b>Catalog Number:</b>	200901, 200902
<b>Size:</b>	100 ug, 500 ug
<b>Target Name:</b>	CD45R, B220
<b>Regulatory Status:</b>	RUO

### PRODUCT DETAILS

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<b>Clone:</b>	RA3-6B2
<b>Application:</b>	Flow Cytometry
<b>Reactivity:</b>	Human, Mouse
<b>Format:</b>	Purified
<b>Isotype:</b>	Rat IgG2a
<b>Antibody Type:</b>	Monoclonal
<b>Formulation:</b>	Phosphate-buffered solution, pH 7.2, containing 0.09% sodium azide
<b>Protein Concentration:</b>	0.5 mg/mL
<b>Storage&amp;Handling:</b>	The antibody solution should be stored between 2°C and 8°C
<b>Recommended Usage:</b>	For flow cytometric staining, it is recommended to use less than 0.2 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
<b>Isotype Control:</b>	300201
<b>RRID:</b>	AB_3739010

### BACKGROUND INFORMATION

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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

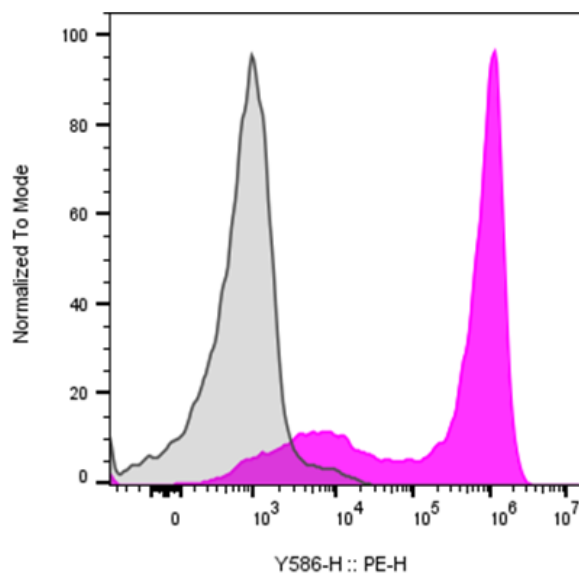
to antigen stimulation while limiting aberrant activation.

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

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Mouse splenocytes were stained with purified Anti-Human/Mouse CD45R/B220 clone RA3-6B2 (color-filled histogram) or an isotype control (gray histogram), followed by PE anti-rat IgG 2nd antibody.

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