

## iF647 Anti-Mouse/human CD45R/B220 Antibody

|                           |                     |
|---------------------------|---------------------|
| <b>Catalog Number:</b>    | 200907, 200908      |
| <b>Size:</b>              | 25 tests, 100 tests |
| <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>                | iF647                                                                                                                                                                                                                                                                                       |
| <b>Isotype:</b>               | Rat IgG2a                                                                                                                                                                                                                                                                                   |
| <b>Antibody Type:</b>         | Monoclonal                                                                                                                                                                                                                                                                                  |
| <b>Formulation:</b>           | Phosphate-buffered solution, pH 7.2, containing 0.09% sodium azide and 0.2% (w/v) BSA                                                                                                                                                                                                       |
| <b>Protein Concentration:</b> | Supplied at a lot-specific concentration.                                                                                                                                                                                                                                                   |
| <b>Storage and Handling:</b>  | The antibody solution should be stored undiluted between 2°C and 8°C, and protected from prolonged exposure to light. Do not freeze.                                                                                                                                                        |
| <b>Recommended Usage:</b>     | 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. iF647 has an excitation max at 656 nm and an emission max at 670 nm. |
| <b>Excitation Laser:</b>      | Red Laser (633 nm)                                                                                                                                                                                                                                                                          |
| <b>Isotype Control:</b>       | 300203                                                                                                                                                                                                                                                                                      |

### 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

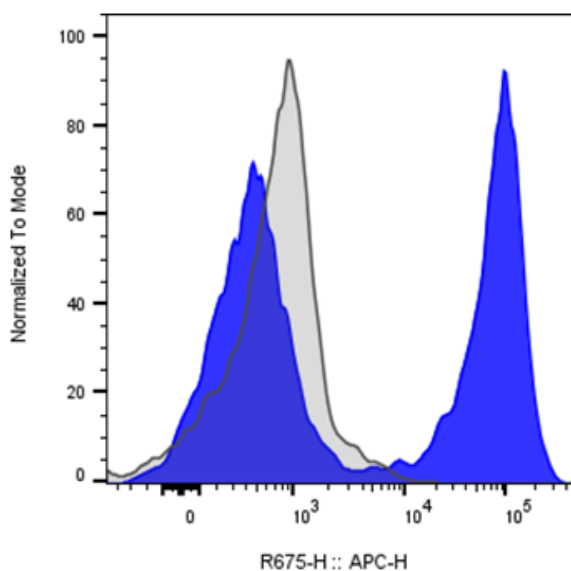
in immune cells. In B cells, B220 modulates B cell receptor (BCR) signaling by dephosphorylating Src family kinases such as Lyn, thereby fine-tuning activation, survival, and tolerance. Through this activity, CD45R/B220 ensures that B cells respond appropriately to antigen stimulation while limiting 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 stained with iF647 Anti-mouse/human CD45R\_B220 clone RA3-6B2 (blue histogram) or an isotype control (gray histogram).

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