

iF647 Anti-Human CD20 Antibody

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| Catalog Number: | 101305, 101306 |
| Size: | 25 tests, 100 tests |
| Target Name: | CD20, MS4A-1 |
| Regulatory Status: | RUO |

PRODUCT DETAILS

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| Clone: | 020AR1 |
| Application: | Flow Cytometry |
| Reactivity: | Human |
| 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 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. |
| Excitation Laser: | Red Laser (633 nm) |
| Isotype Control: | 300103 |
| RRID: | AB_3738609 |

BACKGROUND INFORMATION

CD20 is a B cell-specific surface molecule that plays a key role in B cell activation and regulation and is best known as one of the most successful therapeutic targets in immunology and oncology. It is expressed on B cells from the late pre-B cell stage through mature and memory B cells but is absent on early pro-B cells and terminally differentiated plasma cells. This expression pattern makes CD20 an ideal marker for identifying and targeting the majority of circulating and tissue-resident B cells.

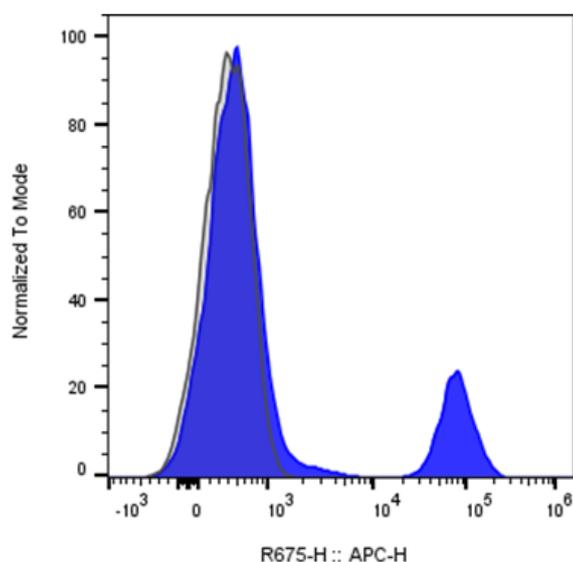
Structurally, CD20 is a small, non-glycosylated integral membrane protein with four transmembrane helices, two extracellular loops, and intracellular N- and C-terminal domains. Unlike many CD molecules, CD20 does not belong to the immunoglobulin superfamily and lacks a long cytoplasmic signaling motif. Instead, CD20 is thought to function as part of a membrane complex involved in ion transport, particularly calcium flux, which is critical for B cell activation and proliferation. Functionally, CD20 contributes to the regulation of B cell receptor (BCR) signaling by influencing calcium entry following antigen engagement. Through modulation of

intracellular calcium levels, CD20 affects B cell activation, cell cycle progression, and differentiation. While CD20 is not essential for B cell development, it plays an important role in optimizing B cell responses during immune activation. A notable feature of CD20 is that it does not have a clearly defined natural ligand. Its activity appears to be mediated through homotypic interactions, association with other membrane proteins, and organization within lipid rafts rather than classical ligand-receptor binding. This lack of ligand has not limited its therapeutic utility, as CD20 is stably expressed and poorly internalized, properties that are advantageous for antibody-based targeting.

CD20 is implicated in a range of diseases characterized by pathological B cell activity. It is highly expressed on most B cell non-Hodgkin lymphomas and chronic lymphocytic leukemia, making it a valuable diagnostic marker. In autoimmune diseases such as rheumatoid arthritis, multiple sclerosis, and systemic lupus erythematosus, autoreactive CD20⁺ B cells contribute to disease progression through autoantibody production and antigen presentation.

Therapeutically, CD20 has revolutionized the treatment of B cell-mediated diseases. Monoclonal antibodies targeting CD20 deplete B cells through mechanisms including antibody-dependent cellular cytotoxicity, complement-dependent cytotoxicity, and induction of apoptosis. CD20-targeted therapies are widely used in hematologic malignancies and autoimmune disorders and have established B cell depletion as a powerful and durable therapeutic strategy.

PRODUCT DATA



Human peripheral blood lymphocytes was stained with iF647 Anti-Human CD20 clone 020AR1 (color-filled) or an isotype control (gray histogram).

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