

## In Vivo Star Anti-Human CD20 Antibody

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|---------------------------|------------------------|
| <b>Catalog Number:</b>    | 518001, 518002, 518003 |
| <b>Size:</b>              | 1 mg, 5 mg, 25 mg      |
| <b>Target Name:</b>       | CD20, MS4A-1           |
| <b>Regulatory Status:</b> | RUO                    |

### PRODUCT DETAILS

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| <b>Clone:</b>               | 2H7  |
| <b>Application:</b>         | Direct ELISA, functional assay, Flow Cytometry   |
| <b>Reactivity:</b>          | Human  |
| <b>Format:</b>              | Liquid   |
| <b>Product Description:</b> | In vivo Grade Recombinant Anti-Human CD20 Monoclonal Antibody  |
| <b>Isotype:</b>             | Mouse IgG2b Kappa  |
| <b>Antibody Type:</b>       | Recombinant  |
| <b>Purity:</b>              | >95% by reducing SDS-PAGE  |
| <b>Endotoxin:</b>           | < 1 EU per 1 mg of the protein by the LAL method.  |
| <b>Storage Conditions:</b>  | 4°C  |
| <b>Grade:</b>               | In vivo  |
| <b>Recommended Usage:</b>   | This product is suitable in in vitro functional assays or in vivo on human cells used in animal models. Optimal amounts need to be determined empirically for each experiment. |
| <b>Hidden Synonyms:</b>     | InVivoMab, InVivoPlus, GoInVivo, In Vivo Gold  |

### BACKGROUND INFORMATION

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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<sup>+</sup> 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.

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