

Product Specification Sheet

**Recombinant Humanized Anti-human CD20 (MS4A1) Antibodies and controls**

□ Cat. # CD20-23-M Humanized (chimeric) Anti-Human CD20/MS4A1 IgG (rituximab biosimilar), pure **SIZE:** 100 ul

CD20 is a 33- to 36-kDa transmembrane phosphoprotein involved in the activation, proliferation, and differentiation of B lymphocytes. The amino acid sequence of human CD20 is 297 aa in length, while that of mouse CD20 is 291 aa in length. The predicted amino acid sequence of the CD20 suggests 4 transmembrane-spanning regions with both N and C-termini located in the cytoplasm and 2 extracellular regions: large 44-amino acid loop (aa 142-184), which is the contact site of most anti-CD20 monoclonal antibodies (mAbs) available, including rituximab, and small loop (aa 72-80), which is the contact site of human anti-CD20 mAbs. The sequence of the CD20 protein indicates that this molecule is tightly bound to the cell surface membrane.

CD20 appears ideal as a target for unconjugated mAbs. It is highly expressed in the plasma membrane of almost all B cells, but not hematological stem cells; it normally remains at the cell surface even after cross-linking with mAbs; and it is not shed from the surface to block binding by mAbs. Significant levels of circulating CD20 (cCD20) can be detected in the plasma of patients with chronic lymphocytic leukemia (CLL).

The mouse/human chimeric CD20 mAb rituximab was the first cancer therapeutic mAb to be given Food and Drug Administration (FDA) approval and since then has become the most important new treatment for B cell malignancies in the last decade. Rituximab is now fully integrated into the management of non-Hodgkin's lymphoma patients, with most receiving mAb either as a single agent or more often given in combination with chemotherapy. It is also producing encouraging results when combined with chemotherapy in the treatment of chronic lymphocytic leukemia (CLL), particularly in patients without prior therapy. Rituximab is furthermore finding use in autoimmune diseases, such as rheumatoid arthritis, where it has been shown to markedly improve symptoms and has recently been approved by the FDA for patients with moderate to advanced disease. Two amino acid sequences of the CD20 antigen, ANPS and YCYSI at positions 170 to 173 and 182 to 185, were recently determined to be the critical binding sites for rituximab.

**Source of Antigen and Antibodies**

|                        |  |
|------------------------|--|
| <b>Antigen</b>         | Purified human CD20 protein  |
| <b>Ab Host/type</b>    | Humanize (human-mouse chimera), Monoclonal, IgG1, (cat # CD20-23-M) in PBS, pH 7.5 containing 0.05% azide,                       |
| <b>2-ab</b>            | Goat Anti-human IgG-HRP conjugate Cat # 10120 (AP, biotin, FITC conjugates also available) or mouse anti-human IgG1-HRP (#10121) |
| <b>-ve control IgG</b> | Human IgG1 (non-immune) #20007-G1-1  |

**Form & Storage**

solution       lyophilized powder  
Buffer: PBS pH 7.4 and 0.05% azide  
**Reconstitute powder** in the PBS

**Suggested use:**

Western Blot: used at 1:500-1:2000  
ELISA: dilute 1:1000-1:10,000 using 100-200 ng coated antigen  
IHC/IF: 1:200-1:1000

**Specificity**

Humanized antibody #CD20-23-M binds to portion of the extracellular domain on CD20. ADI has recombinant human CD20-ECD protein that can be used as positive controls (#CD20-141-R and #CD20-146-R). CD20-ECD domain is 100% conserved in human, chimp, monkey, baboon, mouse, hamster (87%), Ferret, rabbit, canine (80%) CD20 ECDs. Antibody crossreactivity in various species is not established.

**General References:** Teeling J. L. et al. (2006) J. Immunol., 177, 362-371; Roberts W. K. et al. (2002) Blood, 99, 3748-3755; Binder M. et al. (2006) Blood, 108, 1975-1978; Polyak M. J., and Deans J. P. (2002) Blood, 99, 3256-3262.

*\*This product is for In vitro research use only.*

**Related Items**

| Catalog#    | ProdDescription   |
|-------------|---|
| 200-210-RAG | Rituximab/Rituxan/Anti-CD20 (Active) ELISA Kit (Human/mouse/rat),96 tests   |
| CD20-141-R  | Recombinant Human CD20/MS4A1-mFC fusion Protein (141-184, 44-aa, ECD, rituximab-binding peptide)                          |
| CD20-142-P  | Human CD20/MS4A1 linear peptide (142-184, 43-aa, extracellular domain) rituximab-binding peptide, >95% pure               |
| CD20-145-R  | Recombinant (HEK cells) purified human CD20/MS4A1 (213-297 aa) his tag Protein  |
| CD20-146-R  | Recombinant (HEK cells) human CD20/MS4A1 (141-184 aa) hFc- fusion Protein   |
| CD20-147-R  | Recombinant (HEK cells) purified Ferret CD20/MS4A1 (213-297 aa) his tag Protein   |
| CD20-165-P  | human CD20/MS4A1 linear peptide (165-184, 20-aa, extracellular domain) broad reactivity with CD20-specific antibodies     |
| CD20-1731-P | Human CD20/MS4A1 peptide (Acetyl-cPYaNPPLc, 9-aa, Cyclic Cys1-Cys9); contains ANPS motif and reactivity with Rituximab    |
| CD20-1732-P | Human CD20/MS4A1 cyclic peptide (Acetyl-cWAANPSMAc, 11 aa, Cys1-Cys11); contains the ANPS motif and avidity for rituximab |
| CD20-1733-P | Human CD20/MS4A1 cyclic peptide (Acetyl-cPYsNPPLc; 9aa, Cys1-Cys9; contains NPS motif and react with rituximab            |
| CD20-182-P  | Human CD20/MS4A1 linear peptide (CWWEWTIGC, 9-aa) contains motif WEWTI of human CD-20 for rituximab                       |
| CD20-22-A   | Anti-Human CD20/MS4A1 peptide (EC-domain, rituximab binding domain) IgG, aff pure   |
| CD20-23-M   | Humanized (chimeric) Anti-Human CD20/MS4A1 IgG (rituximab biosimilar), pure   |
| CD20-23-M   | 130221A   |