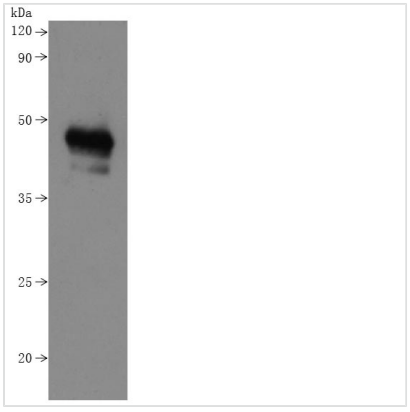
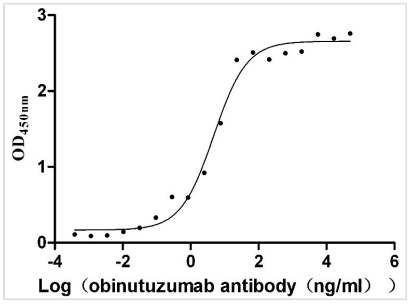
Recombinant Human B-lymphocyte antigen CD20 (MS4A1)-VLPs (Active)

Product Code	CSB-MP015007HU
Abbreviation	Recombinant Human MS4A1 protein-VLPs (Active)
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P11836
Form	Lyophilized powder
Storage Buffer	Lyophilized from a 0.2 μm sterile filtered PBS, 6% Trehalose, pH 7.4
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Biological Activity	Measured by its binding ability in a functional ELISA. Immobilized human CD20 at 2 μg/mL can bind Anti-CD20 recombinant antibody (CSB-RA015007A1HU), the EC_{50} is 3.243-7.085 ng/mL.
Purity	Greater than 90% as determined by SEC-HPLC.
Sequence	MTTPRNSVNGTFPAEPMKGPIAMQSGPKPLFRRMSSLVGPTQSFFMRESKTL GAVQIMNGLFHIALGGLLMIPAGIYAPICVTVWYPLWGGIMYIISGSLLAATEKNS RKCLVKGKMIMNSLSLFAAISGMILSIMDILNIKISHFLKMESLNFIRAHTPYINIYN CEPANPSEKNSPSTQYCYSIQSLFLGILSVMLIFAFFQELVIAGIVENEWKRTCS RPKSNIVLLSAEEKKEQTIEIKEEVVGLTETSSQPKNEEDIEIIPIQEEEEEETETN FPEPPQDQESSPIENDSSP
Research Area	Cancer
Source	Mammalian cell
Target Names	MS4A1
Expression Region	1-297aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	C-terminal 10xHis-tagged (This tag can be tested only under denaturing conditions)
Mol. Weight	34.4 kDa
Protein Length	Full Length
Image	



Western Blot
CSB-MP015007HU is detected by Mouse anti-6*His monoclonal antibody.



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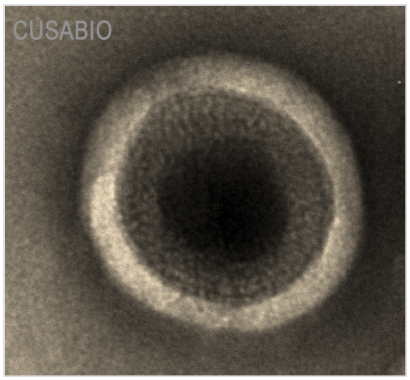
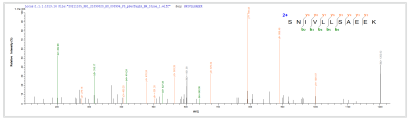
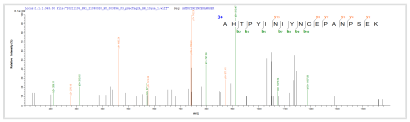


The presence of VLP-like structures was confirmed by TEM



Based on the SEQUEST from database of Mammalian Cell host and target protein, the LC-MS/MS Analysis result of CSB-MP015007HU could indicate that this peptide derived from Mammalian Cell-expressed Homo sapiens (Human) CD20.



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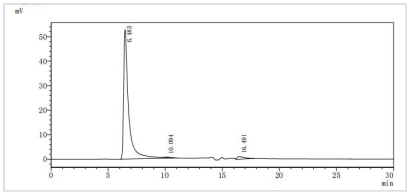

The purity of VLPs was greater than 90% as determined by SEC-HPLC

Description

This recombinant human CD20 (MS4A1) protein is produced as a virus-like particle (VLP) in mammalian cells, encompassing the full-length (amino acids 1-297) with a C-terminal 10×His tag for enhanced purification and detection. The VLP formulation mimics native membrane presentation while maintaining excellent purity (>90% by SDS-PAGE) and low endotoxin levels (<1.0 EU/μg, LAL method).

Functional analysis demonstrates that the recombinant MS4A1 protein specifically binds to the anti-CD20 recombinant antibody (CSB-RA015007A1HU) in ELISA format (EC_{50}: 3.243-7.085 ng/mL), validating its structural integrity and biological relevance. The VLP structure provides multiple CD20 epitopes in their native conformation, making this preparation particularly valuable for the development and evaluation of CD20-targeting therapeutics, vaccine research against B-cell malignancies, structural studies of antibody-CD20 interactions, and B-cell immunology research.

The mammalian expression system ensures proper post-translational modifications, while the lyophilized form offers convenient storage and handling. This MS4A1 VLP represents an advanced tool for cancer research, particularly in studies of B-cell lymphomas and therapeutic antibody development, combining the benefits of recombinant protein technology with native-like membrane presentation.

Human CD20 protein, also known as MS4A1, is a transmembrane protein predominantly expressed on B-lymphocytes. It has significant implications in both normal immune function and pathological conditions, particularly in hematological malignancies such as lymphomas. Structurally, CD20 is composed of four hydrophobic transmembrane domains, with both N- and C-termini located in the cytoplasm, which is critical for its role in cellular signaling and receptor organization on the B-cell surface [1][2][3].

CD20 functions primarily as a regulator of B-cell activation, influencing processes such as cell proliferation, differentiation, and immunoglobulin secretion. Unlike many surface proteins, CD20 does not have a known natural ligand, suggesting its function is primarily cell-intrinsic [3][4]. It has been identified as a calcium-permeable cation channel that plays a vital role in calcium signaling, essential for B-cell activation [5][6]. The involvement of CD20 in calcium mobilization indicates its crucial role in initial B-cell activation, which subsequently regulates various downstream signaling pathways essential for immune responses [4][7].

The presence of CD20 on B cells makes it an important target for therapeutic interventions, particularly in the form of monoclonal antibodies like rituximab.

The binding of these antibodies to CD20 induces the death of B cells through mechanisms such as complement-dependent cytotoxicity (CDC) and antibody-dependent cellular cytotoxicity (ADCC) [8][9]. These effects are particularly relevant in the context of treatments for B-cell malignancies, where anti-CD20 therapies have shown significant efficacy [10][11]. For instance, studies have shown that anti-CD20 antibodies can profoundly impact the clinical outcomes in B-cell neoplasms by depleting CD20-positive cells, leading to therapeutic remission in many patients [12][10].

Furthermore, CD20 expression is relatively restricted, absent in terminally differentiated plasma cells and expressed at various stages of B-cell development, including pre-B, immature, mature, and activated B cells [1][13]. This selective expression pattern makes CD20 a useful biomarker for identifying B-cell populations in clinical diagnostics and research settings. Understanding the functional implications of CD20's activity and its interaction with therapeutic antibodies continues to drive research aimed at improving outcomes in B-cell-related diseases [14].

References:

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Endotoxin	Less than 1.0 EU/ug as determined by LAL method.
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