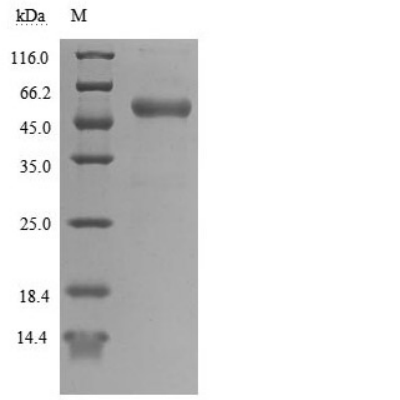
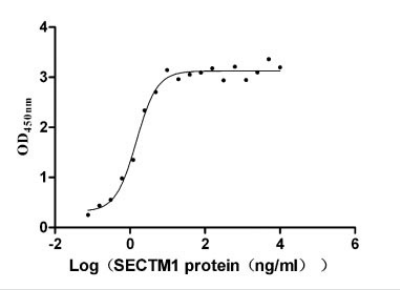
Recombinant Human T-cell antigen CD7 (CD7), partial (Active)

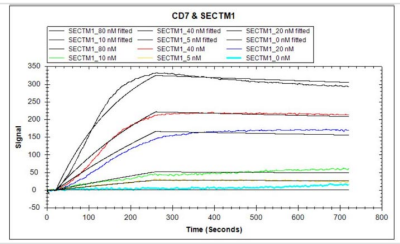
Product Code	CSB-MP004953HU
Abbreviation	Recombinant Human CD7 protein, partial (Active)
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P09564
Form	Lyophilized powder
Storage Buffer	Lyophilized from a 0.2 μm 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 CD7 at 5 μg/ml can bind SECTM1 (CSB-MP819898HU), the EC_{50} is 1.236-1.773 ng/ml. Human CD7 protein hFc and Myc tag (CSB-MP004953HU) captured on COOH chip can bind Human SECTM1 protein hFc tag (CSB-MP819898HU) with an affinity constant of 1.84 nM as detected by LSPR Assay.
Purity	Greater than 90% as determined by SDS-PAGE. Greater than 95% as determined by SEC-HPLC.
Sequence	AQEVQQSPHCTTVPVGASVNITCSTSGGLRGIYLRQLGPQPQDIIYYEDGVVP TTDRRFRGRIDFSGSQDNLTITMHRLQLSDTGTYTCQAITEVNVYGSGTLVLVT EEQSQGWHRCSDAPPRASALPAPPTGSALPDPQTASALPDPPAASALP
Source	Mammalian cell
Target Names	CD7
Expression Region	26-180aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	C-terminal hFc1-Myc-tagged
Mol. Weight	46.5 kDa
Protein Length	Partial
Image	



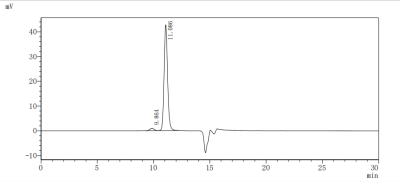
(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.



Activity
Measured by its binding ability in a functional ELISA. Immobilized CD7 at 5 μg/ml can bind SECTM1 (CSB-MP819898HU), the EC_{50} is 1.236-1.773 ng/ml.



Activity
Human CD7 protein hFc and Myc tag (CSB-MP004953HU) captured on COOH chip can bind Human SECTM1 protein hFc tag (CSB-MP819898HU) with an affinity constant of 1.84 nM as detected by LSPR Assay.



The purity of CD7 was greater than 95% as determined by SEC-HPLC

Description

The recombinant human CD7 protein is expressed in mammalian cells using a plasmid carrying the target gene. The target gene encodes the 26-180aa of the human CD7 protein. The target gene is also labeled with a C-terminal hFc-Myc-tag gene. The resulting recombinant CD7 protein's purity is over 90% as measured by SDS-PAGE. The SEC-HPLC determines its purity exceeding 95%. Its endotoxin level is less than 1.0 EU/μg as accessed by the LAL method. Its biological activity is verified via ELISA, where this human CD7 protein specifically binds to the SECTM1 (CSB-MP819898HU) with an EC_{50} ranging from 1.236 to 1.773 ng/mL. In the LSPR assay, this CD7 protein captured on the COOH chip binds to the human SECTM1 protein (CSB-MP819898HU) with an affinity constant of 1.84 nM.

Human CD7 is a cell surface glycoprotein primarily expressed on T cells, NK cells, and some hematopoietic progenitor cells. It plays a significant role in the

immune system, particularly in T lymphocytes. It is involved in various cellular processes, including T-cell activation, differentiation, and apoptosis. The expression of CD7 is notably high in T-cell acute lymphoblastic leukemia (T-ALL), making it an attractive target for therapeutic interventions. Research has shown that CD7 is expressed on the majority of T-ALL cells, as well as on leukemia-initiating cells, which underscores its potential as a target for antibody-drug conjugates and other immunotherapeutic strategies [1].

CD7 is also involved in signaling pathways that influence T-cell behavior. CD7 activation has been shown to deliver pro-apoptotic signals during galectin-1-induced T cell death, indicating its involvement in regulating T cell survival and apoptosis [2]. Additionally, CD7 interacts with SECTM1, a ligand that can activate the PI3K signaling pathway in monocytes, further illustrating its role in immune cell signaling [3]. This interaction is particularly relevant in the context of systemic sclerosis, where CD7 activation is associated with enhanced cytotoxic responses [4].

References:
[1] J. Zhang, A. Jain, S. Milhas, D. Williamson, J. Mysliwy, A. Lodge, et al. An antibody-drug conjugate with intracellular drug release properties showing specific cytotoxicity against cd7-positive cells, Leukemia Research, vol. 108, p. 106626, 2021. https://doi.org/10.1016/j.leukres.2021.106626
[2] K. Pace, H. Hahn, M. Pang, J. Nguyen, & L. Baum. Cutting edge: cd7 delivers a pro-apoptotic signal during galectin-1-induced t cell death, The Journal of Immunology, vol. 165, no. 5, p. 2331-2334, 2000. https://doi.org/10.4049/jimmunol.165.5.2331
[3] T. Wang, Y. Ge, M. Xiao, A. López-Coral, L. Li, A. Roesch, et al. Sectm1 produced by tumor cells attracts human monocytes via cd7-mediated activation of the pi3k pathway, Journal of Investigative Dermatology, vol. 134, no. 4, p. 1108-1118, 2014. https://doi.org/10.1038/jid.2013.437
[4] T. Papadimitriou. Cd7 activation regulates cytotoxicity-driven pathology in systemic sclerosis, yielding a target for selective cell depletion, Annals of the Rheumatic Diseases, vol. 83, no. 4, p. 488-498, 2023. https://doi.org/10.1136/ard-2023-224827

Endotoxin

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

Reconstitution

We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.

Shelf Life

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