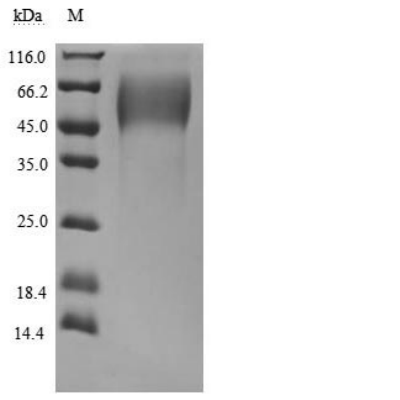
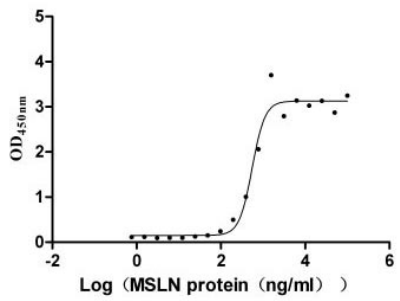
Recombinant Human Mucin-16 (MUC16), partial (Active)

Product Code	CSB-MP704410HU3c7
Abbreviation	Recombinant Human MUC16 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.	Q8WXI7
Form	Lyophilized powder
Storage Buffer	Lyophilized from a 0.2 μm filtered 20 mM Tris-HCl, 0.5 M NaCl, 6% Trehalose, pH 8.0
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Biological Activity	Measured by its binding ability in a functional ELISA. Immobilized MUC16 at 10 μg/ml can bind MSLN(CSB-MP015044HUc9), the EC_{50} is 460.7-662.2 ng/ml.
Purity	Greater than 95% as determined by SDS-PAGE.
Sequence	GFTHWIPVPTSSTPGTSTVDLGSGTPSSLPSPTTAGPLLVPFTLNFTITNLKYEE DMHCPGSRKFNTTERVLQSLLGPMFKNTSVGPLYSGCRLTLLRSEKDGAATG VDAICTHRLDPKSPGVDREQLYWELSQLTNGIKELGPYTLDRNSLYVNGFTHQ TSAPNTSTPGTSTVDLGTSGTPSSLPSPTSAGPLLVPFTLNFTITNLQYEEDMH HPGSRKFNTTERVLQGLLGPMFKNTSVGLLYSGCRLTLLRPEKNGAATGM
Source	Mammalian cell
Target Names	MUC16
Expression Region	12660-12923aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	C-terminal 6xHis-tagged
Mol. Weight	30.5 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 MUC16 at 10 μg/ml can bind MSLN(CSB-MP015044HUc9), the EC_{50} is 460.7-662.2 ng/ml.

Description

This biologically active recombinant human Mucin-16 (MUC16) protein contains a specific fragment (amino acids 12660-12923) of the human MUC16, produced in mammalian cells with C-terminal 6×His tagging. The recombinant MUC16 protein demonstrates exceptional purity (>95% by SDS-PAGE) and meets stringent endotoxin specifications (<1.0 EU/μg, LAL method), ensuring research-grade quality for sensitive applications. Functional characterization reveals its specific binding capacity to MSLN (CSB-MP015044HUc9) in ELISA formats, with an EC_{50} range of 460.7-662.2 ng/ml when immobilized at 10 μg/ml. The mammalian expression system ensures proper post-translational modifications critical for maintaining MUC16's native structural characteristics. Presented as lyophilized powder, this preparation offers enhanced stability and convenient reconstitution properties. The C-terminal 6×His tag facilitates straightforward purification and detection procedures while preserving protein functionality. This recombinant MUC16 protein is an essential tool for investigating mucin-mediated cellular interactions, particularly in studies of cancer biomarkers, tumor microenvironment modulation, and the development of diagnostic or therapeutic approaches targeting MUC16-associated pathways.

Human MUC16, also known as the ovarian cancer antigen CA125, is a member of the mucin family of glycoproteins, characterized by its large molecular weight ranging from 3 to 5 million Daltons [1][2]. MUC16 is predominantly expressed on the surface of epithelial cells, particularly in the ovaries, and plays multiple roles in normal physiology and disease processes, including cancer [3]. The MUC16 protein consists of three primary regions: a large N-terminal domain, a central domain with numerous glycosylated tandem repeats, and a C-terminal domain that anchors it to the cell membrane [2][3].

Functionally, MUC16 is involved in cell signaling and contributes to tumor

biology in several malignancies, particularly ovarian cancer. It serves as a biomarker for ovarian cancer, where high serum levels of CA125 can be indicative of disease presence or progression [4][5]. Moreover, MUC16 interacts with other proteins, including mesothelin, which further promotes cancer cell adhesion to mesothelial surfaces and enhances metastatic potential [3][6]. Evidence suggests that MUC16 may also modulate immune responses by engaging receptors on immune cells, which can lead to immune evasion by cancer cells [5][7].

Additionally, MUC16's structural attributes include substantial glycosylation, which not only affects its interaction profiles but also may impact immune recognition and response [8]. Alterations in MUC16 expression and glycosylation patterns can correlate with more aggressive cancer phenotypes and poorer prognoses [9]. Recent studies have further elucidated the roles of MUC16 in cell transformation and invasion, indicating that it may promote epithelial-to-mesenchymal transition (EMT) processes [10].

References:

[1] A. Shimizu, S. Hirono, et al. Coexpression of muc16 and mesothelin is related to the invasion process in pancreatic ductal adenocarcinoma. Cancer Science, vol. 103, no. 4, p. 739-746, 2012. https://doi.org/10.1111/j.1349-7006.2012.02214.x
[2] B. White, M. Patterson, S. Karnwal, & C. Brooks. Crystal structure of a human muc16 sea domain reveals insight into the nature of the ca125 tumor marker. Proteins Structure Function and Bioinformatics, vol. 90, no. 5, p. 1210-1218, 2022. https://doi.org/10.1002/prot.26303
[3] S. Das and S. Batra. Understanding the unique attributes of muc16 (ca125): potential implications in targeted therapy. Cancer Research, vol. 75, no. 22, p. 4669-4674, 2015. https://doi.org/10.1158/0008-5472.can-15-1050
[4] T. Imamura, Y. Okamura, et al. Overview and clinical significance of multiple mutations in individual genes in hepatocellular carcinoma. BMC Cancer, vol. 22, no. 1, 2022. https://doi.org/10.1186/s12885-022-10143-z
[5] Y. Huang, X. Huang, J. Zeng, & J. Lin. Knockdown of muc16 (ca125) enhances the migration and invasion of hepatocellular carcinoma cells. Frontiers in Oncology, vol. 11, 2021. https://doi.org/10.3389/fonc.2021.667669
[6] S. Chen, M. Dallas, E. Balzer, & K. Κωνσταντ?πουλος. Mucin 16 is a functional selectin ligand on pancreatic cancer cells. The Faseb Journal, vol. 26, no. 3, p. 1349-1359, 2011. https://doi.org/10.1096/fj.11-195669
[7] J. Belisle, S. Horibata, et al. Identification of siglec-9 as the receptor for muc16 on human nk cells, b cells, and monocytes. Molecular Cancer, vol. 9, no. 1, 2010. https://doi.org/10.1186/1476-4598-9-118
[8] C. Wang, E. Hanson, L. Minkoff, & R. Whelan. Individual recombinant repeats of muc16 display variable binding to ca125 antibodies. Cancer Biomarkers, vol. 37, no. 2, p. 85-94, 2023. https://doi.org/10.3233/cbm-220191
[9] X. Yang, S. Zhu, et al. Identification of differentially expressed genes and signaling pathways in ovarian cancer by integrated bioinformatics analysis. Oncotargets and Therapy, vol. Volume 11, p. 1457-1474, 2018. https://doi.org/10.2147/ott.s152238
[10] M. Comamala, M. Pinard, et al. Downregulation of cell surface ca125/muc16 induces epithelial-to-mesenchymal transition and restores egfr

signalling in nih:ovcar3 ovarian carcinoma cells. British Journal of Cancer, vol. 104, no. 6, p. 989-999, 2011. https://doi.org/10.1038/bjc.2011.34

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	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.