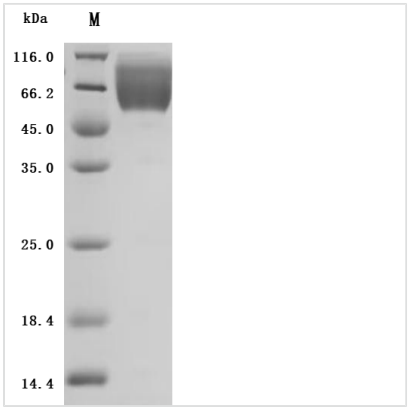
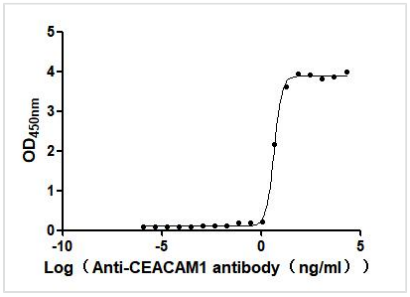
Recombinant Human Carcinoembryonic antigen-related cell adhesion molecule 1(CEACAM1),partial,Biotinylated (Active)

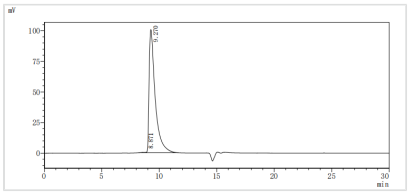
Product Code	CSB-MP005157HU-B
Abbreviation	Recombinant Human CEACAM1 protein, partial, Biotinylated (Active)
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P13688
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 Human CEACAM1 at 2 μg/mL can bind Anti-CEACAM1 recombinant antibody(CSB-RA005157MA1HU). The EC50 is 3.432 - 6.079 ng/mL.
Purity	Greater than 95% as determined by SDS-PAGE. Greater than 95% as determined by SEC-HPLC.
Sequence	QLTTESMPFNVAEGKEVLLLVHNLPQQLFGYSWYKGERVDGNRQIVGYAIGT QQATPGPANSGRETIYPNASLLIQNVTQNDTGFYTLQVIKSDLVNEEATGQFHV YPELPKPSISSNNSNPVEDKDAVAFTCEPETQDTTYLWWINNQSLPVSPRLQL SNGNRTLTLLSVTRNDTGPYECEIQNPVSANRSDPVTLNVTYGPDTPTISPSDT YYRPGANLSLSCYAASNPPAQYSWLINGTFQQSTQELFIPNITVNNSGSYTCH ANNSVTGCNRTTVKTIIVTELSPVVAKPQIKASKTTVTGDKDSVNLTCSTNDTGI SIRWFFKNQSLPSSERMKLSQGNTTLSINPVKREDAGTYWCEVFNPISKNQSD PIMLNVNYNALPQENGLSPG
Source	Mammalian cell
Target Names	CEACAM1
Expression Region	35-428aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4? for up to one week.
Tag Info	C-terminal 10xHis-Avi-tagged
Mol. Weight	48.2 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 Human CEACAM1 at 2 μg/ml can bind Anti-CEACAM1 recombinant antibody(CSB-RA005157MA1HU). The EC_{50} is 3.432 - 6.079 ng/mL.



The purity of CEACAM1 was greater than 95% as determined by SEC-HPLC

Description

This recombinant human CEACAM1, encompassing residues 35-428 of the native CEACAM1 protein, is expressed in mammalian cells with a C-terminal 10×His-Avi tag and site-specific biotinylation. The recombinant CEACAM1 protein exhibits exceptional purity (>95% by SDS-PAGE) and low endotoxin content (<1.0 EU/μg, LAL method). Its activity has been tested through functional ELISA, demonstrating high-affinity binding to anti-CEACAM1 recombinant antibody(CSB-RA005157MA1HU), with the EC_{50} of 3.432–6.079 ng/mL. The Avi tag enables controlled biotinylation for streptavidin-based assays (e.g., flow cytometry, SPR), while the His tag facilitates purification without disrupting functional domains. This biotinylated CEACAM1 is optimized for studying homophilic/heterophilic interactions, immune checkpoint mechanisms, and therapeutic target validation in oncology and inflammatory disease research.

CEACAM1 is a member of the carcinoembryonic antigen (CEA) gene family that plays multifaceted roles in human biology, particularly in cell adhesion, immune response modulation, and regulation of metabolic processes. Evidence suggests that CEACAM1 functions as a signaling receptor that impacts various pathways associated with immune responses and cellular behavior.

One key function of CEACAM1 is its involvement in immune modulation. In human neutrophils, CEACAM1 is known to negatively regulate interleukin-1 beta

production in response to lipopolysaccharide (LPS) activation by recruiting SHP-1 to the SYK-TLR4-CEACAM1 complex, thereby limiting inflammatory responses [1]. Additionally, CEACAM1 exhibits co-inhibitory functions in T cells, affecting both T cell receptor (TCR) signaling and the interaction with other receptors like CTLA-4, operating similarly to inhibitory receptors [2]. Moreover, its expression in CD4+ T cells is observed in conditions such as neonatal sepsis, highlighting its role in immune suppression during such pathological states [3].

CEACAM1 is also integral to vascular physiology, including angiogenesis and endothelial functions. For instance, it promotes endothelial cell migration and sprouting in cooperation with vascular endothelial growth factor (VEGF), enhancing angiogenesis [4]. Deficiency in CEACAM1 has been linked with vascular alterations and disrupted endothelial functions, as shown in studies revealing increased signaling through VEGFR-2 when CEACAM1 is absent [5], [6].

In addition to its roles in immune and vascular systems, CEACAM1 is critically involved in regulating metabolic processes, particularly in the liver. It has been demonstrated that reduced hepatic CEACAM1 levels contribute to insulin resistance and metabolic disorders like non-alcoholic fatty liver disease (NAFLD) [7], [8]. Its involvement in lipid storage regulation has been articulated through interactions with fatty acid transport mechanisms, emphasizing its significance in energy metabolism [9]. CEACAM1's phosphorylation status also determines its functional outcomes, with implications for downstream signaling pathways critical in insulin signaling and lipid metabolism [10].

Furthermore, CEACAM1 has been implicated in tumor biology, where it can function as a tumor suppressor and contribute to processes such as cellular senescence in response to DNA damage, particularly through p53 regulation [11]. Changes in CEACAM1 expression and isoform ratios are noted in various cancers; for example, its overexpression in the context of melanoma progression points to a dual role in promoting tumor growth and immune evasion [12].

References:

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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?/-80?. 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.