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Biotin Human SECTM1 Protein (C-His-Avi)

Catalog Number:	806903, 806904
Size:	25 ug, 100 ug
Target Name:	SECTM1, K12
Regulatory Status:	RUO

PRODUCT DETAILS

Application:	ELISA, BLI
Format:	Liquid, Biotinylated
Expression Host:	CHO
Species:	Human
Sources:	Recombinant Human SECTM1 (Gln29-Gly145) with C-terminus His-Avi tag is expressed in CHO cell. This protein was site-specifically labeled with Biotin by BirA ligase.
Accession Number:	Q8WVN6
Molecular Weight:	The protein has a predicted molecular weight of 16.3 kDa. Under DTT-reducing conditions, it migrates at approximately 20 kDa on SDS-PAGE.
Affinity Tag:	C-His-Avi
Purity:	>95% based on SDS-PAGE under reducing condition
Formulation:	1xPBS buffer, pH7.4, 0.22 µm filtered
Endotoxin level:	Not tested
Protein Concentration:	25µg size is bottled at 0.2mg/mL concentration. 100 µg size is supplied at a lot-specific concentration.
Storage and Handling:	Briefly centrifuge the vial upon receipt. An unopened vial can be stored at 4°C for up to 2 weeks, or at -20°C or below for up to six months. The protein may be further diluted to 0.1 mg/mL using 0.22 µm-filtered PBS buffer (pH 7.4). For long-term storage, the diluted stock solution should be aliquoted and stored at ≤ –70°C to minimize freeze-thaw cycles. If additional dilution is required, carrier proteins such as FBS or BSA should be added to maintain protein stability.
Recommended Usage:	For detection, use a secondary reagent with this product.

BACKGROUND INFORMATION

SECTM1 (secreted and transmembrane 1), also known as K12, is a type I transmembrane glycoprotein that functions as an important immunoregulatory molecule in the immune system. SECTM1 serves as the natural ligand for CD7, a surface marker expressed on T cells and natural killer (NK) cells, and plays a crucial role in T cell costimulation and activation. The protein exists in both membrane-bound and soluble forms, with the soluble form generated through proteolytic cleavage or alternative splicing. SECTM1 is expressed on activated monocytes, dendritic cells, and certain epithelial cells, where it participates in immune cell

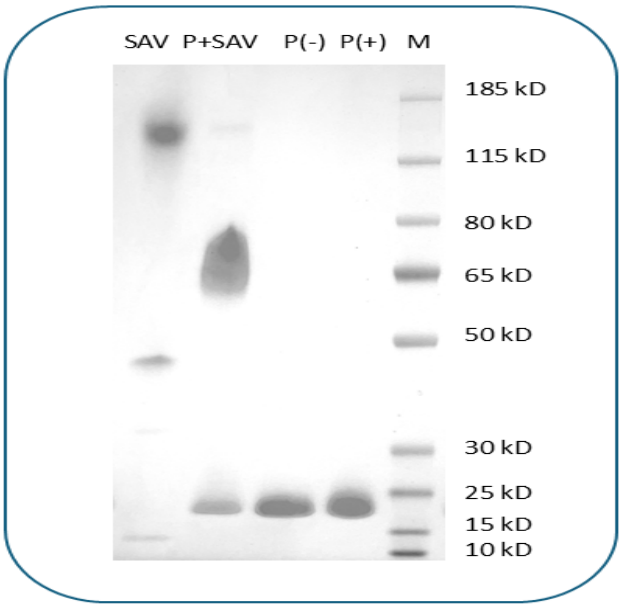
interactions and inflammatory responses. Upon binding to CD7, SECTM1 delivers costimulatory signals that enhance T cell proliferation, cytokine production, and effector functions.

Structurally, SECTM1 is a glycoprotein of approximately 30-35 kDa consisting of an extracellular domain, a transmembrane region, and a short cytoplasmic tail. The extracellular domain contains the CD7-binding region and is heavily glycosylated, which influences its stability and binding properties. The protein can be cleaved by metalloproteases to release a soluble form that retains CD7-binding activity and can function as a paracrine signaling molecule. The membrane-bound form is anchored to the cell surface and mediates direct cell-cell interactions, while the soluble form can act at a distance to modulate immune responses.

The primary and best-characterized ligand interaction for SECTM1 is with CD7 on T cells and NK cells. This SECTM1-CD7 interaction is critical for immune cell activation and has been shown to enhance antitumor immunity. SECTM1 may also interact with other immune receptors, though CD7 remains its principal binding partner. The protein's expression is upregulated during immune activation and inflammation, suggesting a role in amplifying immune responses during infection or tissue damage.

In disease contexts, SECTM1 expression patterns have implications for cancer immunology and autoimmunity. Reduced SECTM1 expression in the tumor microenvironment may contribute to immune evasion by limiting T cell costimulation. Conversely, enhanced SECTM1 expression or administration could potentially boost antitumor immunity. Therapeutically, the SECTM1-CD7 axis is being exploited in novel immunotherapy approaches. K12/SECTM1-based chimeric antigen receptor (CAR) T cells are under development for treating CD7-positive hematologic malignancies, particularly T cell acute lymphoblastic leukemia (T-ALL) and peripheral T cell lymphomas. This approach leverages the natural SECTM1-CD7 interaction to create CAR-T cells that can target CD7-expressing tumor cells while potentially reducing fratricide effects compared to conventional anti-CD7 CAR-T therapies. Additionally, recombinant SECTM1 or SECTM1-based fusion proteins are being investigated as immune adjuvants to enhance T cell responses in cancer immunotherapy and vaccine development.

PRODUCT DATA



Human SECTM1 Protein (C-His-Avi) was biotinylated in vitro using BirA ligase. SDS-PAGE analysis under reducing (P+) and non-reducing (P−) conditions shows the protein has a purity greater than 95%. A gel shift assay using co-incubation with streptavidin indicates that the biotinylation efficiency of the SECTM1 protein exceeds 95%.

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