InnoCyto
www.innocyto.com

InnoCyto Inc.
15375 Barranca Pkwy, Suite I-103
Irvine, CA 92618
Email: info@innocyto.com
Phone: 1-949-418-7543

Biotin Human CD8α Protein (C-His-Avi)

Catalog Number:	803803, 803804
Size:	25 ug, 100 ug
Target Name:	CD8A, CD8, Leu2, MAL, p32
Regulatory Status:	RUO

PRODUCT DETAILS

Application:	ELISA, BLI
Format:	Liquid, Biotinylated
Expression Host:	CHO
Species:	Human
Sources:	Recombinant Human CD8α protein (Ser22-Asp182) with C-terminus His-Avi tag is expressed in CHO cells. This protein was site-specifically labeled with Biotin by BirA ligase.
Accession Number:	P01732
Molecular Weight:	The protein has a predicted molecular weight of 21 kDa. Under DTT-reducing conditions, it migrates at approximately 25-30 kDa on SDS-PAGE prior to conjugation.
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.

BACKGROUND INFORMATION

CD8 is a cell surface glycoprotein that plays a critical role in cellular immunity. It is most commonly expressed on cytotoxic T lymphocytes ($CD8^+$ T cells), although lower levels can also be found on subsets of natural killer (NK) cells and dendritic cells.

Structurally, CD8 exists either as a homodimer of two CD8α chains (CD8αα) or, more commonly on T cells, as a heterodimer composed of CD8α and CD8β chains (CD8αβ). Each chain contains an extracellular immunoglobulin-like domain, a transmembrane region, and a short cytoplasmic tail that associates with intracellular signaling molecules. Functionally, CD8 acts as a co-receptor for the T cell receptor (TCR) during antigen recognition. Its primary ligand is major histocompatibility complex class I (MHC I), which is expressed on nearly all nucleated cells. During immune surveillance, the TCR recognizes peptide antigens presented by MHC I, while CD8 binds to a conserved region of the MHC I molecule. This interaction stabilizes the TCR-peptide-MHC complex and brings the Src-family kinase Lck into proximity with the TCR signaling machinery, thereby enhancing signal transduction and lowering the threshold for T cell activation. Once activated, $CD8^+$ T cells differentiate into cytotoxic effector cells capable of directly killing infected or malignant cells. They mediate target cell death primarily through the release of perforin and granzymes, which induce apoptosis, as well as through engagement of death receptor pathways such as Fas-Fas ligand interactions. $CD8^+$ T cells also secrete cytokines, including interferon-γ (IFN-γ) and tumor necrosis factor-α (TNF-α), which further shape immune responses and inhibit pathogen replication.

$CD8^+$ T cells are essential for protection against viral infections and for immune surveillance against cancer. However, their dysregulation contributes to disease. Insufficient $CD8^+$ T cell responses can result in chronic viral infections or tumor immune evasion, while excessive or misdirected activity can cause tissue damage and contribute to autoimmune diseases, such as type 1 diabetes and multiple sclerosis. In chronic infections and cancer, persistent antigen exposure can drive $CD8^+$ T cell exhaustion, characterized by reduced effector function and sustained expression of inhibitory receptors.

In therapeutics, $CD8^+$ T cells are central to modern immunotherapy. Cancer treatments such as immune checkpoint inhibitors aim to reinvigorate exhausted $CD8^+$ T cells, while adoptive cell therapies, including CAR-T and TCR-engineered T cells, harness or enhance $CD8^+$ cytotoxic activity. $CD8^+$ T cell responses are also a key goal of antiviral vaccines, underscoring their importance in both disease control and therapeutic intervention.