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Biotin Human CD16a F176 (FcγRIIIa) Protein (C-His-Avi)

Catalog Number:	819303, 819304
Size:	25 ug, 100 ug
Target Name:	CD16A, FCGR3A, FCG3, FCGR3, IGFR3
Regulatory Status:	RUO

PRODUCT DETAILS

Application:	ELISA, BLI
Format:	Liquid, Biotinylated
Expression Host:	CHO
Species:	Human
Sources:	Recombinant CD16a F176 (Gly17-Gln208) with C-terminus His-Avi-tag is expressed in CHO cell. This protein was site-specifically labeled with Biotin by BirA ligase.
Accession Number:	P08637
Molecular Weight:	The protein has a predicted molecular weight of 25.7 kDa. Under DTT-reducing conditions, it migrates at approximately 40 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:	Less than 0.1 EU/µg protein as determined by the LAL method
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

CD16, also known as Fc gamma receptor III (FcγRIII), is a low-affinity receptor for the Fc region of immunoglobulin G (IgG) and plays a pivotal role in antibody-mediated immune responses. It is expressed primarily on natural killer (NK) cells, neutrophils, monocytes, and macrophages, with expression patterns and function varying by cell type. In humans, CD16 exists in two closely related forms encoded by distinct genes: CD16a (FcγRIIIA) and CD16b (FcγRIIIB).

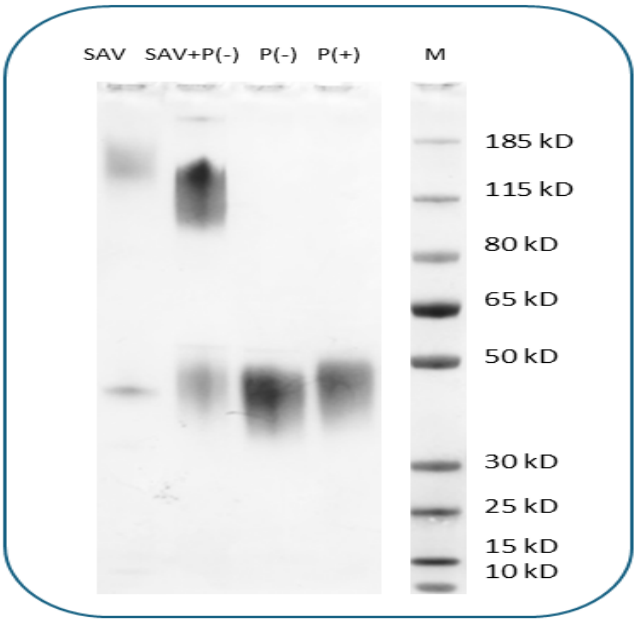
Structurally, CD16 is a type I transmembrane glycoprotein composed of two extracellular immunoglobulin-like domains responsible for IgG binding. CD16a is a transmembrane receptor expressed on NK cells and some myeloid cells, where it associates with signaling adaptor proteins containing immunoreceptor tyrosine-based activation motifs (ITAMs), such as FcεRIγ and CD3ζ. In contrast, CD16b is attached to the cell surface via a glycosylphosphatidylinositol (GPI) anchor and is expressed almost exclusively on neutrophils, lacking direct intracellular signaling capacity.

Functionally, CD16 mediates antibody-dependent cellular cytotoxicity (ADCC) and phagocytosis. Upon binding to IgG-opsonized target cells, CD16a on NK cells triggers activation signals that lead to the release of cytotoxic granules containing perforin and granzymes, resulting in target cell death. On myeloid cells, CD16 engagement promotes phagocytosis, oxidative burst, and cytokine release, contributing to pathogen clearance and inflammation. CD16 preferentially binds IgG1 and IgG3 subclasses, which are commonly elicited during effective immune responses.

CD16 plays important roles in both protective immunity and disease. Genetic polymorphisms in FCGR3A influence IgG binding affinity and have been associated with susceptibility to infections, autoimmune diseases, and cancer outcomes. Excessive or dysregulated CD16 activation contributes to inflammatory and autoimmune conditions such as rheumatoid arthritis and systemic lupus erythematosus, where immune complexes drive tissue damage. In cancer, CD16 expression and function on NK cells are critical determinants of immune surveillance and therapeutic efficacy.

In therapeutics, CD16 is central to the mechanism of action of many antibody-based drugs. Therapeutic monoclonal antibodies used in oncology, such as those targeting tumor antigens, rely on CD16-mediated ADCC for clinical activity. Engineering antibodies with enhanced Fc affinity for CD16 or developing CD16-engaging bispecific antibodies are active areas of drug development. Additionally, adoptive NK cell therapies often aim to optimize CD16 expression and signaling, highlighting CD16 as a key bridge between antibody recognition and cellular immune effector function.

PRODUCT DATA



Human CD16a F176 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 Human CD16a F176 protein exceeds 80%.

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