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APC Human CD64 (FcγRI) Protein (C-His)

Catalog Number:	800503, 800504
Size:	25 ug, 100 ug
Target Name:	CD64, FCGR1A, FCG1, FCGR1, IGFR1
Regulatory Status:	RUO

PRODUCT DETAILS

Application:	Flow Cytometry
Format:	Liquid, APC
Expression Host:	CHO
Species:	Human
Sources:	Recombinant human CD64 (Gln16–Thr287) with a C-terminal His tag is expressed in CHO cells and conjugated to APC.
Accession Number:	P12314
Molecular Weight:	The protein has a predicted molecular weight of 32kDa. Under DTT-reducing conditions, it migrates at approximately 50–60 kDa on SDS-PAGE prior to conjugation.
Affinity Tag:	C-His
Formulation:	1xPBS buffer, pH7.4, 0.09% NaN3 with a carrier protein
Endotoxin level:	Not tested
Protein Concentration:	25μg size is bottled at 0.2 mg/mL concentration. 100 μg size is bottled at lot specific concentration.
Storage and Handling:	Briefly centrifuge the vial upon receipt. An unopened vial may be stored at 2–8°C for up to six months.

BACKGROUND INFORMATION

CD64, also known as Fc gamma receptor I (FcγRI), is a high-affinity receptor for immunoglobulin G (IgG) and plays a central role in antibody-mediated immune responses. It is primarily expressed on myeloid lineage cells, including monocytes, macrophages, dendritic cells, and activated neutrophils. Through its ability to bind IgG-opsonized targets, CD64 enables these cells to detect, internalize, and eliminate pathogens and immune complexes, making it a key link between the adaptive humoral immune response and innate effector functions.

Structurally, CD64 is a type I transmembrane glycoprotein belonging to the immunoglobulin superfamily. Its extracellular region consists of three Ig-like domains, which confer its uniquely high affinity for the Fc portion of IgG, allowing it to bind monomeric IgG in addition to immune complexes. CD64 has a short cytoplasmic tail that lacks intrinsic signaling motifs and therefore associates non-covalently with the Fc receptor common γ-chain (FcRγ). This accessory chain contains immunoreceptor tyrosine-based activation motifs (ITAMs) that are essential for signal transduction following receptor engagement.

The principal ligands for CD64 are IgG antibodies, with particularly strong binding to human IgG1 and IgG3 subclasses. When CD64 binds IgG-coated microbes, tumor cells, or immune complexes, it triggers intracellular signaling through FcRγ, leading to phagocytosis, antibody-dependent cellular cytotoxicity (ADCC), production of reactive oxygen species, and secretion of pro-inflammatory cytokines. Through these mechanisms, CD64 contributes to host defense against infection and to the clearance of antibody-tagged targets.

CD64 expression and function are implicated in several disease contexts. In infectious and inflammatory diseases, CD64 is strongly upregulated on neutrophils and monocytes in response to cytokines such as interferon-γ. Neutrophil CD64 expression has become a widely used biomarker for systemic bacterial infection and sepsis, reflecting heightened innate immune activation. In autoimmune diseases, excessive engagement of CD64 by immune complexes can contribute to chronic inflammation and tissue damage. CD64 is also expressed on tumor-associated macrophages, where it may influence antibody-based antitumor immunity.

Therapeutically, CD64 has attracted interest as both a biomarker and a potential target. Its restricted expression pattern on myeloid cells makes it an appealing target for antibody-drug conjugates or immunotoxins aimed at selectively depleting pathogenic macrophages in cancer or inflammatory disease. In addition, the effectiveness of many therapeutic antibodies relies in part on Fcγ receptor engagement, and CD64 expression levels can influence clinical responses. As a result, CD64 remains an important focus in immunology, diagnostics, and the design of next-generation antibody therapies.

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