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APC Human CD38 Protein (C-His)

Catalog Number:	800103, 800104
Size:	25 ug, 100 ug
Target Name:	CD38, T10, cADPr 1
Regulatory Status:	RUO

PRODUCT DETAILS

Application:	Flow Cytometry
Format:	Liquid, APC
Expression Host:	HEK293
Species:	Human
Sources:	Recombinant Human CD38 (Val43-Ile300) with C-terminus His is expressed in HEK293 cell and conjugated to APC.
Accession Number:	P28907
Molecular Weight:	The protein has a predicted molecular weight of 33kDa. Under DTT-reducing conditions, it migrates at approximately 50 kDa on SDS-PAGE prior to APC 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 0.1mg/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

CD38 is a multifunctional cell surface glycoprotein that plays important roles in immune cell signaling, metabolism, and cell-cell interactions. It is widely expressed on hematopoietic cells, including plasma cells, activated T and B lymphocytes, natural killer (NK) cells, monocytes, and dendritic cells, with expression levels varying depending on cell type and activation state. CD38 is also found on non-hematopoietic tissues, reflecting its broad biological significance.

Structurally, CD38 is a type II transmembrane protein with a short N-terminal cytoplasmic tail, a single transmembrane domain, and a large extracellular C-terminal domain that contains its enzymatic active site. Unlike many CD molecules that function solely as receptors or adhesion molecules, CD38 exhibits ectoenzyme activity. It acts primarily as a NAD^+ glycohydrolase, catalyzing the conversion of nicotinamide adenine dinucleotide (NAD^+) into metabolites such as cyclic ADP-ribose (cADPR), ADP-ribose, and nicotinic acid adenine dinucleotide phosphate (NAADP).

Functionally, CD38 regulates intracellular calcium signaling through the generation of cADPR and NAADP, which act as second

messengers controlling calcium release from intracellular stores. Through this mechanism, CD38 influences cell activation, proliferation, migration, cytokine secretion, and survival. CD38 also participates in cell-cell interactions by associating with other surface molecules and contributing to immunological synapse formation. CD38 has several functional ligands, most notably CD31 (PECAM-1), which mediates adhesion and signaling interactions between immune cells and endothelial cells. In addition, CD38's enzymatic substrates, such as NAD^+, serve as functional ligands that drive its metabolic activity. These interactions integrate immune signaling with cellular metabolism, particularly in inflamed or metabolically stressed environments.

Aberrant CD38 expression and activity are implicated in multiple diseases. CD38 is highly expressed on malignant plasma cells in multiple myeloma and on certain leukemias and lymphomas, making it a valuable diagnostic marker. Elevated CD38 expression is also associated with chronic inflammation, immune exhaustion, and aging, partly due to its role in NAD^+ depletion. In autoimmune and infectious diseases, altered CD38 expression reflects immune activation and disease progression.

CD38 is a major therapeutic target, particularly in hematologic malignancies. Monoclonal antibodies targeting CD38 have transformed the treatment of multiple myeloma by inducing tumor cell death through antibody-dependent cellular cytotoxicity, complement activation, and immune modulation. Beyond oncology, strategies aimed at modulating CD38 enzymatic activity are being explored to restore NAD^+ levels and improve immune or metabolic function, highlighting CD38's growing importance in both immunotherapy and metabolic intervention.