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Biotin Human HER2 (CD340) Protein (C-His-Avi)

Catalog Number:	804103, 804104
Size:	25 ug, 100 ug
Target Name:	HER2, HER-2, ERBB2, CD340, neu, MLN19, NEU, NGL, TKR1
Regulatory Status:	RUO

PRODUCT DETAILS

Application:	ELISA, BLI
Format:	Liquid, Biotinylated
Expression Host:	CHO
Species:	Human
Sources:	Recombinant Human Her2 protein (Thr23-Thr652) with C-terminus His-Avi tag is expressed in CHO cells. This protein was site-specifically labeled with Biotin by BirA ligase.
Accession Number:	P04626
Molecular Weight:	The protein has a predicted molecular weight of 73 kDa. Under DTT-reducing conditions, it migrates at approximately 85 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

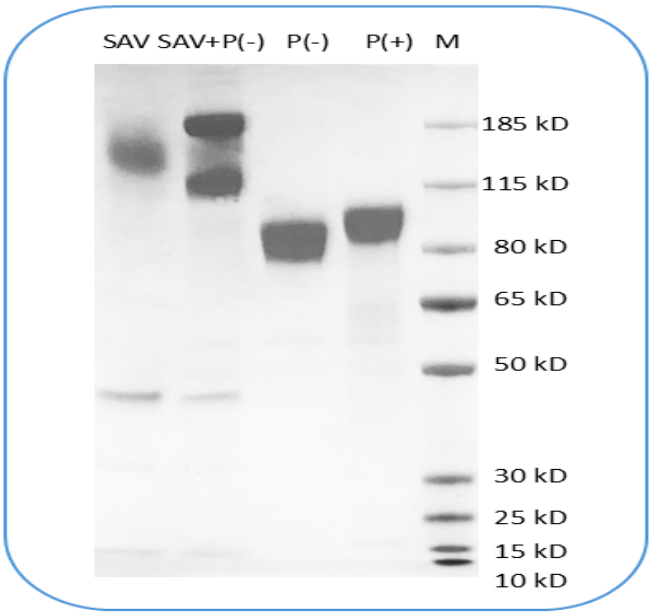
HER2 (Human Epidermal Growth Factor Receptor 2), also known as ERBB2 or CD340, is a transmembrane protein that plays a pivotal role in normal cell growth and differentiation. It is a member of the epidermal growth factor receptor (EGFR/ERBB) family of receptor tyrosine kinases. Under normal physiological conditions, HER2 is expressed at low levels on the surface of epithelial cells, where it helps regulate cell proliferation and survival signals. However, its primary fame in medicine comes from its potent ability to drive uncontrolled cell growth when the gene encoding it is amplified or the protein is overexpressed.

Structurally, HER2 consists of an extracellular ligand-binding domain, a transmembrane spanning region, and an intracellular tyrosine kinase domain. A unique and critical feature of HER2 is that it is an "orphan receptor," meaning it has no known direct ligand. Unlike other family members (EGFR, HER3, HER4) that require a growth factor to bind and activate them, HER2 exists in a constitutively open conformation, ready to interact. It functions by forming heterodimers with other ligand-bound members of the HER family. This makes HER2 the preferred dimerization partner for all other ERBB receptors, amplifying the signaling strength of the network significantly.

In the context of disease, HER2 is a major driver of tumorigenesis. Gene amplification leads to the overexpression of HER2 proteins on the cell surface, sometimes up to 100 times the normal level. This results in spontaneous dimerization and continuous, ligand-independent firing of growth signals, leading to aggressive cell division and resistance to apoptosis. HER2 overexpression is most notably observed in approximately 15-20% of breast cancers and a significant subset of gastric and gastroesophageal cancers, classifying them as "HER2-positive."

Therapeutically, HER2 is one of the most successful targets in the history of precision oncology. The development of trastuzumab (Herceptin), a monoclonal antibody that binds to the extracellular domain of HER2, revolutionized treatment by blocking downstream signaling and flagging cells for immune destruction. Therapy has since evolved to include dimerization inhibitors like pertuzumab, small-molecule tyrosine kinase inhibitors (TKIs) like lapatinib that work inside the cell, and antibody-drug conjugates (ADCs) like T-DM1 and trastuzumab deruxtecan. These ADCs use the HER2 antibody as a "Trojan horse" to deliver potent chemotherapy directly into the cancer cell, sparing healthy tissue.

PRODUCT DATA



Human Her2 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 Her2 protein exceeds 95%.

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