

## Biotin Human PD1 (CD279) Protein (C-His-Avi)

<b>Catalog Number:</b>	802803, 802804
<b>Size:</b>	25 ug, 100 ug
<b>Target Name:</b>	PD1, PDCD1, CD279, SLEB2
<b>Regulatory Status:</b>	RUO

### PRODUCT DETAILS

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<b>Application:</b>	ELISA, BLI
<b>Format:</b>	Liquid, Biotinylated
<b>Expression Host:</b>	HEK293
<b>Species:</b>	Human
<b>Sources:</b>	Human PD-1 protein (NP_005009.2) (Leu25-Gln167) with C-terminus His-Avi tag is expressed in HEK293 cells. This protein was site-specifically labeled with Biotin by BirA ligase.
<b>Accession Number:</b>	Q15116
<b>Molecular Weight:</b>	The protein has a predicted molecular weight of 19.5 kDa. Under DTT-reducing conditions, it migrates at approximately 30-45 kDa on SDS-PAGE.
<b>Affinity Tag:</b>	C-His-Avi
<b>Purity:</b>	>95% based on SDS-PAGE under reducing condition
<b>Formulation:</b>	1xPBS buffer, pH7.4, 0.22 µm filtered
<b>Endotoxin level:</b>	Not tested
<b>Protein Concentration:</b>	25µg size is bottled at 0.2mg/mL concentration. 100 µg size is supplied at a lot-specific concentration.
<b>Storage and Handling:</b>	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

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CD279, also known as Programmed Cell Death Protein 1 (PD-1), is a crucial immune checkpoint receptor that regulates T cell activation and prevents autoimmunity. This transmembrane protein plays a pivotal role in maintaining immune homeostasis by delivering inhibitory signals that dampen excessive immune responses.

PD-1 is a type I transmembrane glycoprotein belonging to the immunoglobulin superfamily. It contains an extracellular immunoglobulin variable (IgV)-like domain, a transmembrane region, and an intracellular tail with two tyrosine-based signaling motifs: an immunoreceptor tyrosine-based inhibitory motif (ITIM) and an immunoreceptor tyrosine-based switch motif (ITSM). When

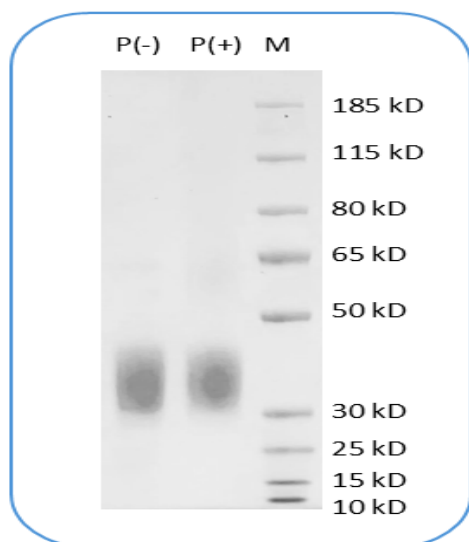
engaged, these motifs recruit phosphatases that inhibit T-cell receptor signaling, effectively suppressing T-cell activation, proliferation, and cytokine production.

PD-1 interacts with two primary ligands: PD-L1 (B7-H1/CD274) and PD-L2 (B7-DC/CD273). PD-L1 is widely expressed on various cell types, including tumor cells, antigen-presenting cells, and non-hematopoietic tissues, while PD-L2 expression is more restricted to antigen-presenting cells. These ligand-receptor interactions serve as critical brakes on immune responses. In cancer, tumor cells exploit the PD-1/PD-L1 pathway to evade immune surveillance. By upregulating PD-L1 expression, tumors effectively "turn off" infiltrating T-cells, preventing effective anti-tumor immunity. This mechanism contributes to tumor progression and immune escape across multiple cancer types.

The discovery of PD-1's role in cancer has revolutionized oncology through immune checkpoint inhibitors. Monoclonal antibodies targeting PD-1 (pembrolizumab, nivolumab) or PD-L1 (atezolizumab, durvalumab) block this inhibitory pathway, reinvigorating anti-tumor T-cell responses. These therapies have demonstrated remarkable success in treating melanoma, non-small cell lung cancer, renal cell carcinoma, and numerous other malignancies, fundamentally transforming cancer treatment paradigms and offering durable responses in previously untreatable cancers.

## PRODUCT DATA

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Human PD-1 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%.

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