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# PE Human PD1 (CD279) Protein (C-His)

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|---|---|
| **Catalog Number:** | 803001, 803002 |
| **Size:** | 25 ug, 100 ug |
| **Target Name:** | PD1, PDCD1, CD279, SLEB2 |
| **Regulatory Status:** | RUO |

## PRODUCT DETAILS

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| **Application:** | Flow Cytometry |
| **Format:** | Liquid, PE |
| **Expression Host:** | HEK293 |
| **Species:** | Human |
| **Sources:** | Human PD-1 protein (NP_005009.2) (Leu25-Gln167) with C-terminus His tag is expressed in HEK293 cells and conjugated to PE |
| **Accession Number:** | Q15116 |
| **Molecular Weight:** | The protein has a predicted molecular weight of 17 kDa. Under DTT-reducing conditions, it migrates at approximately 30-45 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 0.1mg/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

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.

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