

## Recombinant Human PDCD1 protein, His-tagged (HPLC verified)

Cat. No. PDCD1-332H Lot. No. (See product label)

### SPECIFICATION

#### Product Overview

Recombinant Human PDCD1 (Leu25-Gln167) protein (HPLC verified) was fused to His-tag at C-terminus and expressed in human 293 cells (HEK293).

#### Species

Human

#### Source

HEK293

#### ProteinLength

Leu25-Gln167

#### Description

Programmed cell death protein 1 (PD-1) is also known as CD279 and PDCD1, is a type I membrane protein and is a member of the extended CD28/CTLA-4 family of T cell regulators. PDCD1 is expressed on the surface of activated T cells, B cells, macrophages, myeloid cells and a subset of thymocytes. PD-1 has two ligands, PD-L1 and PD-L2, which are members of the B7 family. PD-L1 is expressed on almost all murine tumor cell lines, including PA1 myeloma, P815 mastocytoma, and B16 melanoma upon treatment with IFN- $\gamma$ . PD-L2 expression is more restricted and is expressed mainly by DCs and a few tumor lines. PD1 inhibits the T-cell proliferation and production of related cytokines including IL-1, IL-4, IL-10 and IFN- $\gamma$  by suppressing the activation and transduction of PI3K/AKT pathway. In addition, coligation of PD1 inhibits BCR-mediated signal by dephosphorylating key signal transducer. In vitro, treatment of anti-CD3 stimulated T cells with PD-L1-Ig results in reduced T cell proliferation and IFN- $\gamma$  secretion. Monoclonal antibodies targeting PD-1 that boost the immune system are being developed for the treatment of cancer.

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<b>Predicted N Terminal</b>	Leu25
<b>Form</b>	Lyophilized from 0.22 µm filtered solution in PBS, pH7.4, 10% trehalose.
<b>Molecular Mass</b>	The protein has a calculated MW of 16.8 kDa. The protein migrates as 31-44 kDa under reducing (R) condition (SDS-PAGE) due to glycosylation.
<b>Endotoxin</b>	Less than 1.0 EU per µg by the LAL method.
<b>Purity</b>	>95% as determined by SDS-PAGE.
<b>Storage</b>	<p>For long term storage, the product should be stored at lyophilized state at -20 centigrade or lower.</p> <p>Please avoid repeated freeze-thaw cycles.</p> <p>This product is stable after storage at:</p> <ul style="list-style-type: none"> <li>-20 to -70 centigrade for 12 months in lyophilized state;</li> <li>-70 centigrade for 3 months under sterile conditions after reconstitution.</li> </ul>
<b>Reconstitution</b>	It is recommended that sterile water be added to the vial to prepare a stock solution of 0.2 ug/ul. Centrifuge the vial at 4°C before opening to recover the entire contents.

## GENE INFORMATION

<b>Gene Name</b>	PDCD1
<b>Official Symbol</b>	PDCD1
<b>Synonyms</b>	PDCD1; programmed cell death 1; programmed cell death protein 1; CD279; PD1; protein PD-1; PD-1; SLEB2; hPD-1; hPD-I
<b>Gene ID</b>	5133

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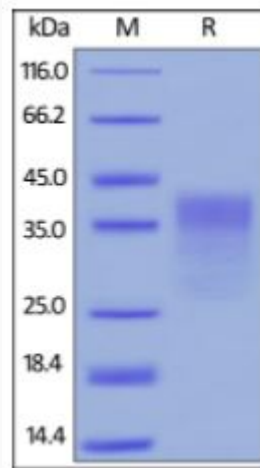
mRNA Refseq [NM\\_005018](#)

Protein Refseq [NP\\_005009](#)

MIM [600244](#)

UniProt ID [Q15116](#)

**SDS-PAGE of  
PDCD1-332H**



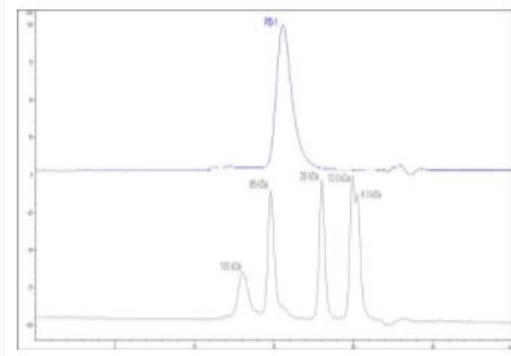
Human PD-1, His Tag (HPLC verified) on SDS-PAGE under reducing (R) condition.  
The gel was stained overnight with Coomassie Blue. The purity of the protein is  
greater than 95%.

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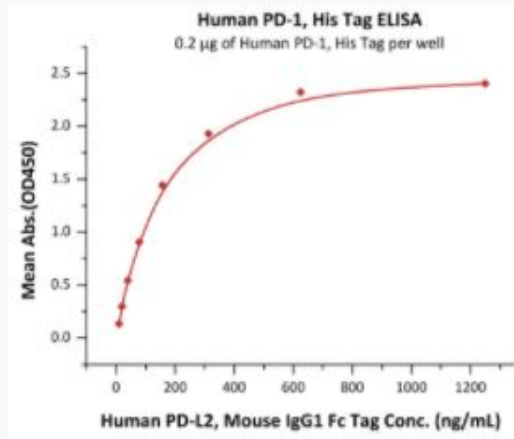
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**SEC-HPLC of  
PDCD1-332H**



The purity of Human PD-1, His Tag (HPLC verified) was greater than 90% as determined by SEC-HPLC.

**Bioactivity-ELISA**



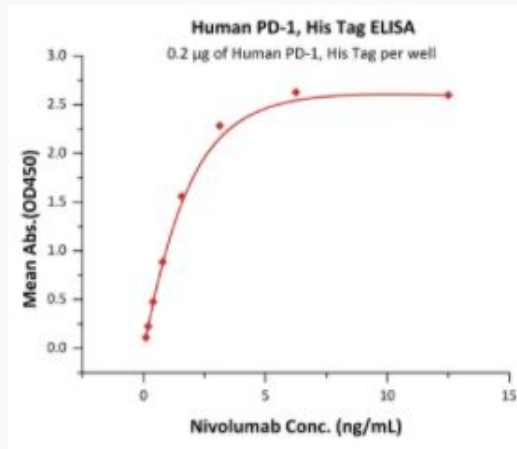
Immobilized Human PD-1, His Tag (HPLC verified) at 2 µg/mL (100 µL/well) can bind Human PD-L2, Mouse IgG1 Fc Tag with a linear range of 10-156 ng/mL (Routinely tested).

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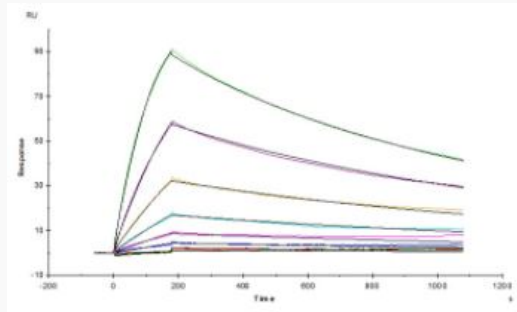
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**Bioactivity-ELISA of  
PDCD1-332H**




Immobilized Human PD-1, His Tag (HPLC verified) at 2 µg/mL (100 µL/well) can bind Nivolumab with a linear range of 0.1-3 ng/mL (Routinely tested).


**Bioactivity-SPR of  
PDCD1-332H**



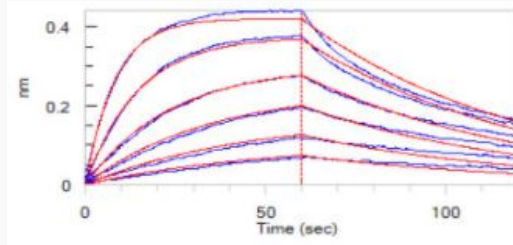
Opdivo (Nivolumab) captured on CM5 chip via anti-human IgG Fc antibodies surface, can bind Human PD-1, His Tag (HPLC verified) with an affinity constant of 4.94 nM as determined in a SPR assay (Biacore T200) (Routinely tested).

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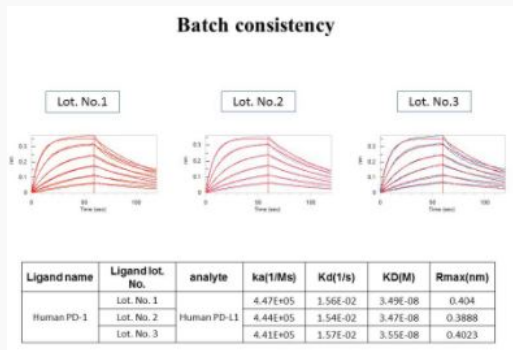
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**Bioactivity-BLI of  
PDCD1-332H**



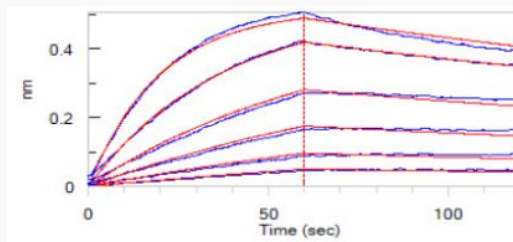
Loaded Human PD-1, His Tag (HPLC verified) on HIS1K Biosensor, can bind Human PD-L1, Fc Tag (HPLC verified) with an affinity constant of 38.9 nM as determined in BLI assay (ForteBio Octet Red96e) (QC tested).

**Bioactivity-BLI of  
PDCD1-332H**



Batch consistency of Bioactivity-BLI

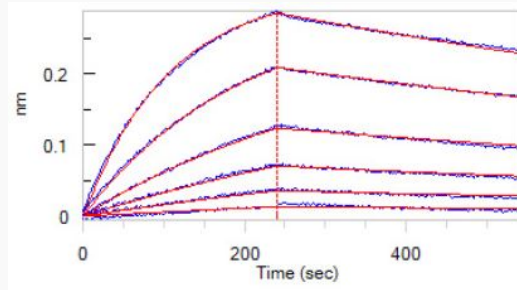
**Bioactivity-BLI of  
PDCD1-332H**



Loaded Human PD-1, His Tag (HPLC verified) on HIS1K Biosensor, can bind

Human PD-L2, Fc Tag (HPLC verified) with an affinity constant of 16.3 nM as determined in BLI assay (ForteBio Octet Red96e) (QC tested).

**Bioactivity-BLI of  
PDCD1-332H**



Loaded Human PD-1, His Tag (HPLC verified) on HIS1K Biosensor, can bind Human PD-L2, Fc Tag (HPLC verified) with an affinity constant of 16.3 nM as determined in BLI assay (ForteBio Octet Red96e) (QC tested).

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