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PD-1 Antibody [8A4]

Catalog # ASC12037

Product Information

Application	WB, IHC-P, IF, ICC, E
Primary Accession	Q15116
Other Accession	145559515, NP_005009, 5133
Reactivity	Human
Host	Mouse
Clonality	Monoclonal
Isotype	IgG1
Calculated MW	31647
Application Notes	PD-1 antibody can be used for detection of PD-1 by Western blot at 0.5 - 1 □g/mL. Antibody can also be used for immunohistochemistry starting at 5 □g/mL. For immunofluorescence start at 20 □g/mL.

Additional Information

Gene ID	5133
Other Names	PD-1 Antibody: PD1, PD-1, CD279, SLEB2, hPD-1, hPD-l, hSLE1, PD1, Programmed cell death protein 1, Protein PD-1, PDCD1, PDCD-1
Precautions	PD-1 Antibody [8A4] is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	PDCD1 {ECO:0000303|PubMed:7851902, ECO:0000312|HGNC:HGNC:8760}
Function	Inhibitory receptor on antigen activated T-cells that plays a critical role in induction and maintenance of immune tolerance to self (PubMed:21276005, PubMed:31754127, PubMed:32184441, PubMed:37208329). Delivers inhibitory signals upon binding to ligands CD274/PDCD1L1 and CD273/PDCD1LG2 (PubMed:21276005, PubMed:26602187). Following T-cell receptor (TCR) engagement, PDCD1 associates with TCR-CD3 in the immunological synapse and directly inhibits T-cell activation (PubMed:32184441). Suppresses T-cell activation through the recruitment of PTPN11/SHP-2: following ligand-binding, PDCD1 is phosphorylated within the ITSM motif, leading to the recruitment of the protein tyrosine phosphatase PTPN11/SHP-2 that mediates dephosphorylation of key TCR proximal signaling molecules, such as ZAP70, PRKCQ/PKCtheta and CD247/CD3zeta (PubMed:32184441).
Cellular Location	Cell membrane; Single-pass type I membrane protein

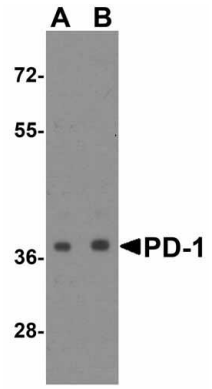
Background

Cell-mediated immune responses are initiated by T lymphocytes that are themselves stimulated by cognate peptides bound to MHC molecules on antigen-presenting cells (APC). T-cell activation is generally self-limited as activated T cells express receptors such as PD-1 (also known as PDCD-1) that mediate inhibitory signals from the APC. PD-1 can bind two different but related ligands, PDL-1 and PDL-2. Upon binding to either of these ligands, signals generated by PD-1 inhibit the activation of the immune response in the absence of "danger signals" such as LPS or other molecules associated with bacteria or other pathogens. Evidence for this is seen in PD-1-null mice who exhibit hyperactivated immune systems and autoimmune diseases. PD-1 is thus one of a growing number of immune checkpoint proteins.

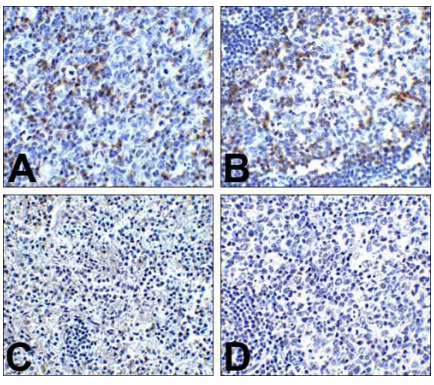
References

Holling TM, Schooten E, and van Den Elsing PJ. Function and regulation of MHC class II molecules in T-lymphocytes: of mice and men. Hum. Immunol. 2004; 65:282-90.;Ishida Y, Agata Y, Shibahara K, et al. Induced expression of PD-1, a novel member of the immunoglobulin gene superfamily, upon programmed cell death. EMBO J. 1992; 11:3887-95.;Zhong X, Bai C, Gao W, et al. Suppression of expression and function of negative immune regulator PD-1 by certain pattern recognition and cytokine receptor signals associated with immune system danger. Int. Immunol. 2004; 16:1181-8.;Nishimura H, Nose M, Hiai H, et al. Development of lupus-like autoimmune diseases by the disruption of the PD-1 gene encoding an ITIM motif-carrying immunoreceptor. Immunity 1999; 11:141-51.

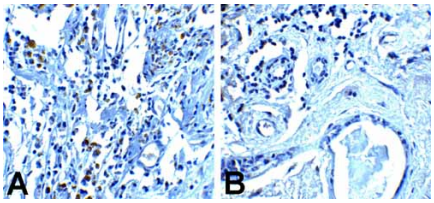
Images



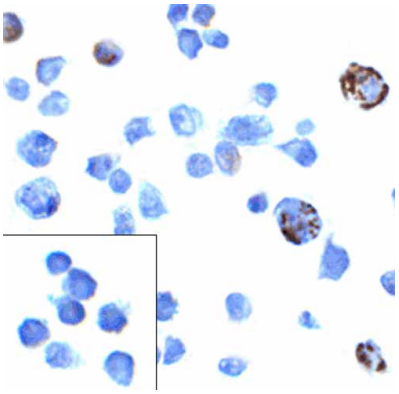
Western blot analysis of PD-1 in transfected 293 cell lysate with PD-1 antibody at (A) 0.5 and (B) 1 µg/mL.



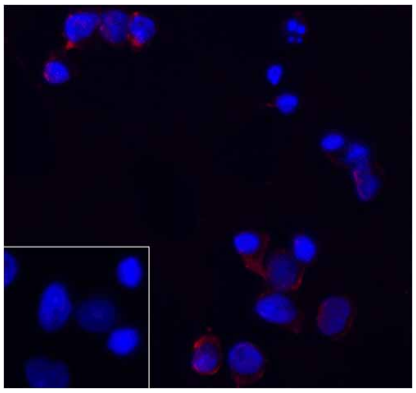
Immunohistochemistry of PD-1 in (A) human tonsil tissue, (B) human lymph node tissue, and (C) human spleen tissue with PD-1 antibody at 5 µg/mL. (D) Immunohistochemistry in human tonsil tissue with control mouse IgG staining at 5 µg/mL.



Immunohistochemistry of PD-1 in (A) human breast cancer tissue and (B) human normal breast tissue with PD-1 antibody at 5 µg/mL.



Immunocytochemistry of PD-1 in transfected 293 cells with PD-1 antibody at 5 µg/mL. Lower left: Immunocytochemistry in transfected 293 cells with control mouse IgG antibody at 5 µg/mL.



Immunofluorescence of PD-1 in transfected 293 cells with PD-1 antibody at 5 µg/mL. Lower left: Immunofluorescence in transfected 293 cells with control mouse IgG antibody at 5 µg/mL.

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