

## iF488 Anti-mouse CD279 (PD-1) Antibody

<b>Catalog Number:</b>	205009, 205010
<b>Size:</b>	25 tests, 100 tests
<b>Target Name:</b>	CD279, Programmed Death-1, PD 1, PDCD1, PD-1
<b>Regulatory Status:</b>	RUO

### PRODUCT DETAILS

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<b>Clone:</b>	29F.1A12
<b>Application:</b>	Flow Cytometry, IHC-F
<b>Reactivity:</b>	Mouse
<b>Format:</b>	iF488
<b>Isotype:</b>	Rat IgG2a
<b>Antibody Type:</b>	Monoclonal
<b>Formulation:</b>	Phosphate-buffered solution, pH 7.2, containing 0.09% sodium azide and 0.2% (w/v) BSA
<b>Protein Concentration:</b>	Supplied at a lot-specific concentration.
<b>Storage&amp;Handling:</b>	The antibody solution should be stored undiluted between 2°C and 8°C, and protected from prolonged exposure to light. Do not freeze.
<b>Recommended Usage:</b>	For flow cytometric staining, it is recommended to use 5 µL of this reagent per 0.5-1.0 million cells in a 100 µL volume. Optimal reagent performance should be determined by titration for each specific application. iF488 has an excitation max at 491 nm and an emission max at 516 nm
<b>Excitation Laser:</b>	Blue Laser (488 nm)
<b>Isotype Controls:</b>	303513
<b>Antibody Family:</b>	Mouse Antibodies

### BACKGROUND INFORMATION

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Mouse CD279, more commonly known as programmed cell death protein 1 (PD-1), is an inhibitory immune checkpoint receptor expressed primarily on activated T cells, as well as B cells and some myeloid populations. It plays a critical role in maintaining peripheral tolerance and preventing excessive immune activation by downregulating T cell responses during chronic antigen exposure, such as infection or inflammation. PD-1 is rapidly induced following T cell receptor engagement and acts as a key regulator of immune homeostasis.

Structurally, PD-1 is a type I transmembrane protein belonging to the immunoglobulin superfamily. It contains a single extracellular IgV-like domain responsible for ligand binding, a transmembrane region, and a cytoplasmic tail with immunoreceptor tyrosine-based inhibitory (ITIM) and switch (ITSM) motifs. Upon ligand engagement, these motifs recruit phosphatases such as SHP-2, which attenuate proximal T cell receptor signaling pathways.

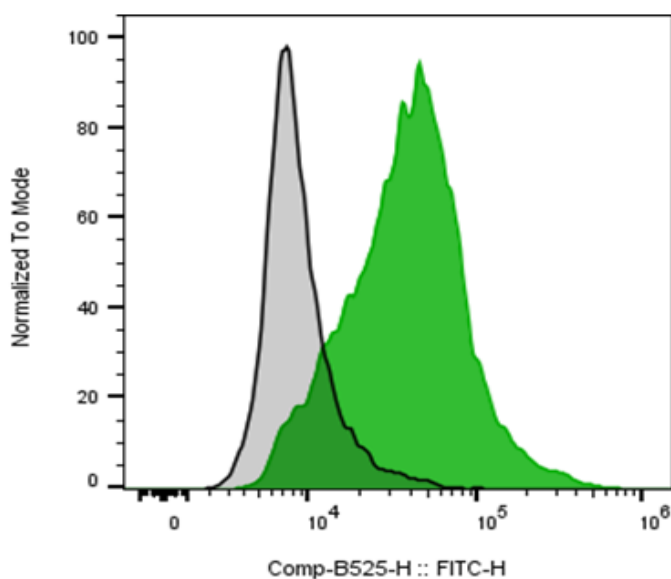
The primary ligands of PD-1 are PD-L1 (CD274) and PD-L2 (CD273), which are expressed on antigen-presenting cells and various non-hematopoietic tissues. Interaction of PD-1 with its ligands suppresses T cell proliferation, cytokine production, and survival, promoting an exhausted T cell phenotype during chronic immune stimulation.

PD-1 signaling is implicated in chronic infections, cancer, and autoimmune diseases. In tumors, PD-1-mediated inhibition allows cancer cells to evade immune surveillance by suppressing anti-tumor T cell activity.

Therapeutically, blockade of the PD-1/PD-L1 axis using monoclonal antibodies has revolutionized cancer immunotherapy by restoring T cell function. Conversely, enhancing PD-1 signaling may be beneficial in treating autoimmune diseases and preventing transplant rejection, making it a versatile target in immune modulation.

## PRODUCT DATA

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Con A-stimulated mouse splenocytes were stained with iF488 anti-Mouse CD279 (PD-1) clone 29F.1A12 (color-filled histogram) or isotype control (gray histogram).

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