# Brilliant Violet 421™ anti-mouse CD279 (PD-1) Antibody

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| **Catalog# / Size** | 135217 / 125 µL<br>135221 / 50 µg<br>135218 / 500 µL |
| **Clone** | 29F.1A12 |
| **Regulatory Status** | RUO |
| **Other Names** | PD-1, Programmed Death-1 |
| **Isotype** | Rat IgG2a, κ |
| **Description** | CD279, also known as programmed death-1 (PD-1), is a 50-55 kD glycoprotein belonging to the CD28 family of the Ig superfamily. PD-1 is expressed on activated splenic T and B cells and thymocytes. It is induced on activated myeloid cells as well. PD-1 is involved in lymphocyte clonal selection and peripheral tolerance through binding its ligands, B7-H1 (PD-L1) and B7-DC (PD-L2). It has been reported that PD-1 and PD-L1 interactions are critical to positive selection and play a role in shaping the T cell repertoire. PD-L1 negative costimulation is essential for prolonged survival of intratesticular islet allografts. |

## Product Details

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| **Verified Reactivity** | Mouse |
| **Antibody Type** | Monoclonal |
| **Host Species** | Rat |
| **Immunogen** | PD-1 cDNA followed by PD-1-Ig fusion protein |
| **Formulation** | Phosphate-buffered solution, pH 7.2, containing 0.09% sodium azide and BSA (origin USA). |
| **Preparation** | The antibody was purified by affinity chromatography and conjugated with Brilliant Violet 421™ under optimal conditions. |
| **Concentration** | µg sizes: 0.2 mg/mL<br>µL sizes: lot-specific (to obtain lot-specific concentration, please enter the lot number in our Concentration and Expiration Lookup or Certificate of Analysis online tools.) |
| **Storage & Handling** | The antibody solution should be stored undiluted between 2°C and 8°C, and protected from prolonged exposure to light. **Do not freeze.** |
| **Application** | FC - Quality tested<br>SB - Reported in the literature, not verified in house |
| **Recommended Usage** | Each lot of this antibody is quality control tested by immunofluorescent staining with flow cytometric analysis. For immunofluorescent staining using the µg size, the suggested use of this reagent is ≤0.125 µg per million cells in 100 µl volume. For immunofluorescent staining using µl sizes, the suggested use of this reagent is 5 µl per million cells in 100 µl staining volume or 5 µl per 100 µl of whole blood. It is recommended that the reagent be titrated for optimal performance for each application.<br><br>Brilliant Violet 421™ excites at 405 nm and emits at 421 nm. The standard bandpass filter 450/50 nm is recommended for detection. Brilliant Violet 421™ is a trademark of Sirigen Group Ltd.<br><br>Learn more about Brilliant Violet™.<br><br>This product is subject to proprietary rights of Sirigen Inc. and is made and sold under license from Sirigen Inc. The purchase of this product conveys to the buyer a non-transferable right to use the purchased product for research purposes only. This product may not be resold or incorporated in any manner into another product for resale. Any use for therapeutics or diagnostics is strictly prohibited. This product is covered by U.S. Patent(s), pending patent applications and foreign equivalents. |
| **Excitation Laser** | Violet Laser (405 nm) |

**Application Notes**

Additional reported applications (for the relevant formats) include: immunohistochemical staining of acetone-fixed frozen tissue[3], *in vivo* blocking of PD-1 binding to its ligands[2,3], and spatial biology (IBEX)[5,6].

**Additional Product Notes**

Iterative Bleaching Extended multi-pleXity (IBEX) is a fluorescent imaging technique capable of highly-multiplexed spatial analysis. The method relies on cyclical bleaching of panels of fluorescent antibodies in order to image and analyze many markers over multiple cycles of staining, imaging, and, bleaching. It is a community-developed open-access method developed by the Center for Advanced Tissue Imaging (CAT-I) in the National Institute of Allergy and Infectious Diseases (NIAID, NIH).

**Application References**

**(PubMed link indicates BioLegend citation)**


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**Product Citations**


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**RRID**

AB_10900085 (BioLegend Cat. No. 135217)
AB_2562568 (BioLegend Cat. No. 135221)
AB_2561447 (BioLegend Cat. No. 135218)

## Antigen Details

**Structure**

A 50-55 kD glycoprotein belonging to the CD28 family of the Ig superfamily.

**Distribution**

Induced on splenic T and B lymphocytes, thymocytes, and myeloid cells after stimulation.

**Function**

Involved in lymphocyte clonal selection and peripheral tolerance, prolonged survival of allografts.

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| **Ligand/Receptor** | B7-H1 (PD-L1) and B7-DC (PD-L2) |
| **Cell Type** | B cells, T cells |
| **Biology Area** | Cancer Biomarkers, Immunology, Inhibitory Molecules |
| **Molecular Family** | CD Molecules, Immune Checkpoint Receptors |
| **Antigen References** | 1. Nishimura H, *et al.* 2001. *Science* 291:319<br>2. Agata Y, *et al.* 1996. *Int. Immunol.* 8:765<br>3. Liang SC, *et al.* 2003. *Eur. J. Immunol.* 33:2706<br>4. Barber DL, *et al.* 2006. *Nature* 439:682<br>5. Keir ME, *et al.* 2005. *J. Immunol.* 175:7372<br>6. Koehn BH. et al. 2008. J Immunol. 181:5313 |
| **Gene ID** | 18566 |

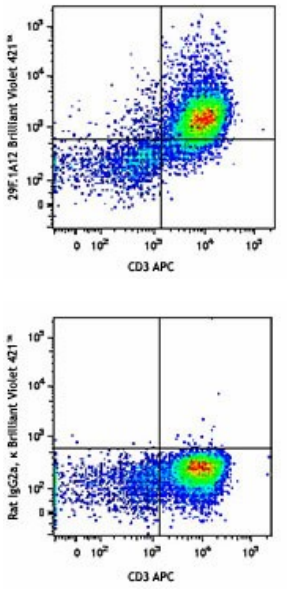
## Related Protocols

Cell Surface Flow Cytometry Staining Protocol

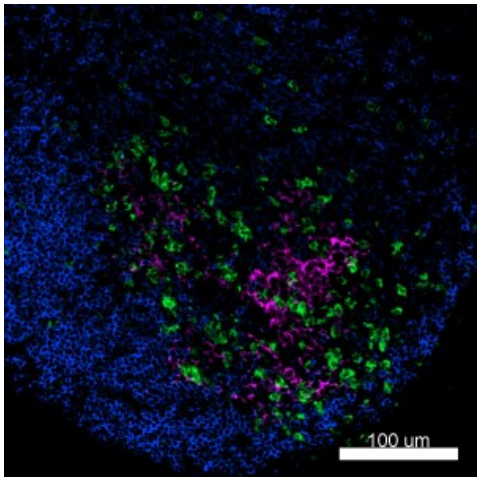
## Other Formats

PE anti-mouse CD279 (PD-1), Purified anti-mouse CD279 (PD-1), PerCP/Cyanine5.5 anti-mouse CD279 (PD-1), APC anti-mouse CD279 (PD-1), Biotin anti-mouse CD279 (PD-1), FITC anti-mouse CD279 (PD-1), PE/Cyanine7 anti-mouse CD279 (PD-1), Brilliant Violet 421™ anti-mouse CD279 (PD-1), Brilliant Violet 605™ anti-mouse CD279 (PD-1), APC/Cyanine7 anti-mouse CD279 (PD-1), Brilliant Violet 785™ anti-mouse CD279 (PD-1), PE/Dazzle™ 594 anti-mouse CD279 (PD-1), Alexa Fluor® 647 anti-mouse CD279 (PD-1), Brilliant Violet 711™ anti-mouse CD279 (PD-1), GolnVivo™ Purified anti-mouse CD279 (PD-1), APC/Fire™ 750 anti-mouse CD279 (PD-1), Brilliant Violet 510™ anti-mouse CD279 (PD-1), Ultra-LEAF™ Purified anti-mouse CD279 (PD-1), APC/Fire™ 810 anti-mouse CD279 (PD-1) Antibody, PE/Fire™ 810 anti-mouse CD279 (PD-1) Antibody, PE/Cyanine5 anti-mouse CD279 (PD-1), PE/Fire™ 640 anti-mouse CD279 (PD-1)

## Product Data




Con-A and IL-2 stimulated C57BL/6 splenocytes (3 days) were stained with CD3 APC and CD279 (clone 29F.1A12) Brilliant Violet 421™ (top), or rat IgG2a, κ Brilliant Violet 421™ isotype control (bottom).




Mice were injected subcutaneously with sheep red blood cells in a volume of 25 µl per site on days 0 and 4 and harvested on day 11. Confocal image of C57BL/6 mouse lymph node acquired using the IBEX method of highly multiplexed antibody-based imaging: PD-1 (green) in Cycle 1, CD23 (magenta) in Cycle 7, and IgD (blue) in Cycle 10. Tissues were prepared using ~1% (vol/vol) formaldehyde and a detergent. Following fixation, samples are immersed in 30% (wt/vol) sucrose for cryoprotection. Images are courtesy of Drs. Andrea J. Radtke and Ronald N. Germain of the Center for Advanced Tissue Imaging (CAT-I) in the National Institute of Allergy and Infectious Diseases (NIAID, NIH).



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