

## PD-1

Concentrated and Prediluted Monoclonal Antibody  
902-3137-090517

**BIOCARE**  
M E D I C A L

<b>Catalog Number:</b>	<b>ACR 3137 AK, CK</b>	<b>APR 3137 AA</b>
<b>Description:</b>	0.1, 1.0 ml, concentrated	6.0 ml, prediluted
<b>Dilution:</b>	1:100	Ready-to-use
<b>Diluent:</b>	Monet Blue	N/A

### Intended Use:

For Research Use Only. Not for use in diagnostic procedures.

### Summary and Explanation:

Programmed death 1 (PD-1) is a cell surface co-receptor in the CD28/CTLA-4 T cell family and functions as a down regulator of the immune system through a dual mechanism of inhibition (1). PD-1 is expressed on the cell surface of activated T- and B-cells. Anti-tumor immunity may be controlled by the PD-1/PD-L1 signaling pathway. PD-L1, one of the ligands associated with PD-1, provides immunity for tumor cells by inducing apoptosis of activated T cells or by inhibiting cytotoxic T cells (1,2). Therapies that target the PD-1 receptor have shown unprecedented results with high levels of clinical response in patients with various cancer types (3). The presence of PD-1 positive tumor-infiltrating lymphocytes (TIL) has been associated with poor prognosis in human breast cancers and may be useful in antibody therapy targeting the PD-1/PD-L1 signaling pathway (1). Treatments targeting PD-1 and its ligand, PD-L1, have also shown encouraging results in non-small-cell lung cancer, renal cell carcinoma and melanoma (4-6).

### Principle of Procedure:

Antigen detection in tissues and cells is a multi-step immunohistochemical process. The initial step binds the primary antibody to its specific epitope. After labeling the antigen with a primary antibody, a secondary antibody is added to bind to the primary antibody. An enzyme label is then added to bind to the secondary antibody; this detection of the bound antibody is evidenced by a colorimetric reaction.

**Source:** Mouse monoclonal

**Species Reactivity:** Human; others not tested

**Clone:** NAT105

**Isotype:** IgG1/kappa

**Total Protein Concentration:** ~10 mg/ml. Call for lot specific Ig concentration.

**Epitope/Antigen:** PD-1

**Cellular Localization:** Cytoplasmic

**Positive Tissue Control:** Tonsil

### Known Applications:

Immunohistochemistry (formalin-fixed paraffin-embedded tissues)

**Supplied As:** Buffer with protein carrier and preservative  
Monet Blue Diluent (BRR901)

### Storage and Stability:

Store at 2°C to 8°C. Do not use after expiration date printed on vial. If reagents are stored under conditions other than those specified in the package insert, they must be verified by the user. Diluted reagents should be used promptly; any remaining reagent should be stored at 2°C to 8°C.

### Staining Protocol Recommendations:

#### Peroxide Block:

Block for 5 minutes with Biocare's Peroxidized 1.

**Pretreatment:** Perform heat retrieval using Biocare's Diva Decloaker. Refer to the Diva Decloaker data sheet for specific instructions.

**Protein Block (Optional):** Incubate for 5-10 minutes at RT with Biocare's Background Punisher.

**Primary Antibody:** Incubate for 30 minutes at RT.

**Probe:** Incubate for 10 minutes at RT with a secondary probe.

**Polymer:** Incubate for 10-20 minutes at RT with a tertiary polymer.

### Staining Protocol Recommendations Cont'd:

#### Chromogen:

Incubate for 5 minutes at RT with Biocare's DAB – OR – Incubate for 5-7 minutes at RT with Biocare's Warp Red.

#### Counterstain:

Counterstain with hematoxylin. Rinse with deionized water. Apply Tacha's Bluing Solution for 1 minute. Rinse with deionized water.

#### Technical Note:

This antibody has been standardized with Biocare's MACH 4 detection system. Use TBS buffer for washing steps.

#### Limitations:

This product is provided for Research Use Only (RUO) and is not for use in diagnostic procedures. Suitability for specific applications may vary and it is the responsibility of the end user to determine the appropriate application for its use.

#### Precautions:

1. This antibody contains less than 0.1% sodium azide. Concentrations less than 0.1% are not reportable hazardous materials according to U.S. 29 CFR 1910.1200, OSHA Hazard communication and EC Directive 91/155/EC. Sodium azide (NaN<sub>3</sub>) used as a preservative is toxic if ingested. Sodium azide may react with lead and copper plumbing to form highly explosive metal azides. Upon disposal, flush with large volumes of water to prevent azide build-up in plumbing. (Center for Disease Control, 1976, National Institute of Occupational Safety and Health, 1976) (6)

2. Specimens, before and after fixation, and all materials exposed to them should be handled as if capable of transmitting infection and disposed of with proper precautions. Never pipette reagents by mouth and avoid contacting the skin and mucous membranes with reagents and specimens. If reagents or specimens come in contact with sensitive areas, wash with copious amounts of water. (7)

3. Microbial contamination of reagents may result in an increase in nonspecific staining.

4. Incubation times or temperatures other than those specified may give erroneous results. The user must validate any such change.

5. Do not use reagent after the expiration date printed on the vial.

6. The SDS is available upon request and is located at <http://biocare.net>.

#### Technical Support:

Contact Biocare's Technical Support at 1-800-542-2002 for questions regarding this product.

#### References:

1. Muenst S, *et al.* The presence of programmed death 1 (PD-1)-positive tumorinfiltrating lymphocytes is associated with poor prognosis in human breast cancer. *Breast Cancer Res Treat.* 2013 Jun; 139(3):667-76.

2. Kim JW, Eder JP. Prospects for Targeting PD-1 and PD-L1 in Various Tumor Types. *Oncology.* (Williston Park). 2014 Nov; 28(11 Suppl 3).

3. Tumei PC, *et al.* PD-1 blockade induces responses by inhibiting adaptive immune resistance. *Nature.* 2014 Nov 27; 515(7528):568-71.

4. D'Incecco A, *et al.* PD-1 and PD-L1 expression in molecularly selected non-small cell lung cancer patients. *Br J Cancer.* 2015 Jan 6; 112(1):95-102.

5. Tykodi SS. PD-1 as an emerging therapeutic target in renal cell carcinoma: current evidence. *Onco Targets Ther.* 2014 Jul 25; 7:1349-59.



4040 Pike Lane  
Concord, CA 94520  
USA

Rev: 062117

Tel: 800-799-9499 | [www.biocare.net](http://www.biocare.net) | Fax: 925-603-8080

## **PD-1**

Concentrated and Prediluted Monoclonal Antibody  
902-3137-090517

**BIOCARE**  
M E D I C A L

### **References Cont'd:**

6. Center for Disease Control Manual. Guide: Safety Management, NO. CDC-22, Atlanta, GA. April 30, 1976 "Decontamination of Laboratory Sink Drains to Remove Azide Salts."

7. Clinical and Laboratory Standards Institute (CLSI). Protection of Laboratory Workers from Occupationally Acquired Infections; Approved Guideline-Fourth Edition CLSI document M29-A4 Wayne, PA 2014.