



P002-EN.01

# **Human Anti-PD-1 Antibody IgG Titer Serologic ELISA Assay Kit**

**Pack Size: 96 tests**

**Catalog Number: RAB-P002**

**IMPORTANT: Please carefully read this manual before performing your experiment.**

**For Research Use Only. Not For Use In Diagnostic Or Therapeutic Procedure**

[HTTP://WWW.ACROBIOSYSTEMS.COM](http://www.acrobiosystems.com)

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**INTENDED USE**

The kit is developed for titer measurement of Anti-PD-1 Antibody IgG in Human serum.

It is intended for research use only (RUO).

**PRINCIPLE OF THE ASSAY**

Programmed cell death protein 1 (PD-1) is an inhibitory receptor that is expressed on some tumor cells and causes down regulation of the immune system by reducing T-cell activity. Anti-PD-1 monoclonal antibodies block the PD-1 receptor so the T cells are no longer inhibited and therefore activates the immune response against the tumor.

This assay kit is used to measure the titer of Anti- PD-1 Antibody IgG by employing an indirect ELISA. Immobilize Human PD-1 on the microplate. Then add the samples, incubate and wash the wells. Next add Secondary antibody HRP-Anti-Human IgG to the plate, incubate and wash the wells. Lastly load the substrate into the wells and monitor color development in proportion with the amount of antibody present. The reaction is stopped by the addition of a stop solution and the intensity of the absorbance can be measured at 450 nm and 630 nm. The OD Value reflects the amount of antibody bound.

**MATERIALS PROVIDED**

**TABLE 1. MATERIALS PROVIDED**

Catalog	Components	Size (96 tests)	Format	Storage	
				Unopened	Opened
RAB002-C01	Pre-coated Human PD-1 Microplate	1 plate	Solid	2-8°C	2-8°C
RAB002-C02	Positive Control	100 µL	Liquid	2-8°C	2-8°C
RAB002-C03	Negative Control	100 µL	Liquid	2-8°C	2-8°C
RAB002-C04	HRP-Anti-Human IgG	100 µL	Liquid	2-8°C, avoid light	2-8°C, avoid light
RAB002-C05	10 x Washing Buffer	50 mL	Liquid	2-8°C	2-8°C
RAB002-C06	Dilution Buffer	50 mL	Liquid	2-8°C	2-8°C
RAB002-C07	Substrate Solution	12 mL	Liquid	2-8°C, avoid light	2-8°C, avoid light
RAB002-C08	Stop Solution	7 mL	Liquid	2-8°C	2-8°C

## **STORAGE AND VALIDITY INSTRUCTIONS**

The unopened kit is stable for 12 months from the date of manufacture if stored at 2°C to 8°C.

The opened kit should be stored per TABLE 1. The shelf life is 30 days from the date of opening.

*Note:* a. Do not use reagents past their expiration date.

b. Find the expiration date on the outside packaging.

## **MATERIALS REQUIRED BUT NOT PROVIDED**

Single or dual wavelength microplate reader with 450 nm and 630 nm filter;

Centrifuge;

37 °C Incubator;

Single channel or multichannel pipettes with 10 µL, 200 µL and 1000 µL precision;

10 µL, 200 µL and 1000 µL pipette tips;

Test Tubes;

Graduated cylinder;

Deionized or distilled water for dilution;

## **REAGENT PREPARATION**

Bring all reagents and samples to room temperature (20°C-25°C) before use.

## **RECOMMENDED SAMPLE PREPARATION**

### **1. Working fluid preparation**

1.1 Preparation of 1×Washing Buffer:

Dilute 50 mL 10×Washing Buffer with ultrapure water/deionized water to 500 mL.

1.2 Preparation of Positive Control and Negative Control working fluid and pre-treatment of samples:

#### **a. For qualitative detection of antibodies:**

Dilute the samples, Positive Control and Negative Control at 1:200 with Dilution Buffer.

#### **b. For determination of antibody titer:**

It is recommended to dilute the samples, Positive Control and Negative Control from 1:200-1:51200 with Dilution

Buffer.

## 2. Plate set up

Number the diluted samples corresponding to the wells of the Pre-coated Human PD-1 Microplate. Each experiment requires a set of Positive Control and Negative Control working fluid.

## 3. Add Samples

Add 100  $\mu$ L diluted samples, Positive Control and Negative Control working fluid to the corresponding wells. Add 100  $\mu$ L Dilution Buffer to blank control. Seal the plate with microplate sealing film and incubate at 37°C for 1.0 h.

## 4. Washing

Remove the remaining solution by aspiration, add 300  $\mu$ L of 1 $\times$ Washing Buffer to each well, gently tap the plate for 1 min, remove any remaining 1 $\times$ Washing Buffer: by aspirating or decanting, invert the plate and blot it against paper towels. Repeat the wash step above for three times.

## 5. Add HRP-Anti-Human IgG

Dilute HRP-Anti-Human IgG at 1:1000 with Dilution Buffer to make a working solution. The prepared working fluid should be stored away from light.

For all wells, add 100  $\mu$ L HRP-Anti-Human IgG working solution. Seal the plate with microplate sealing film and incubate at 37°C for 1.0 h, avoid light.

## 6. Washing

Repeat step 4.

## 7. Substrate Reaction

Add 100  $\mu$ L **Substrate Solution** to each well. Seal the plate with microplate sealing film and incubate at 37°C for 20 min, avoid light.

## 8. Termination

Add 50  $\mu$ L **Stop Solution** to each well, and tap the plate gently for 3 min to allow thorough mixing.

*Note: the color in the wells should change from blue to yellow.*

## 9. Data Recording

Read the absorbance at 450 nm and 630 nm using UV/Vis microplate spectrophotometer.

*Note:* To reduce the background noise, subtract the value read at  $OD_{450\text{ nm}}$  with the value read at  $OD_{630\text{ nm}}$ .

### **CUT-OFF VALUE IDENTIFICATION**

Cut-off value =0.1

Normal range of Negative control (1:200):  $OD_{450\text{ nm}}-OD_{630\text{ nm}} < 0.1$

Normal range of Positive control (1:3200):  $OD_{450\text{ nm}}-OD_{630\text{ nm}} \geq 1.6$

*Note:* The cut-off value can be determined by the end user.

### **INTERPRETION OF RESULTS**

#### **a. For qualitative detection of antibodies:**

Positive reading:  $OD_{450\text{ nm}}-OD_{630\text{ nm}}$  of sample  $\geq$  Cut-off value means Anti-PD-1 Antibody IgG are detected.

Negative reading:  $OD_{450\text{ nm}}-OD_{630\text{ nm}}$  of sample  $<$  Cut-off value means Anti-PD-1 Antibody IgG are not detected.

#### **b. For determination of antibody titer:**

Determination of antibody titer: the positive sample was diluted with a gradient, and the antibody titer of the sample corresponds to the highest dilution factor that still yields a positive reading.

### **LIMITATIONS OF THE PROCEDURE**

The kit cannot be used for quantitative detection.

### **PRECAUTIONS**

1. This kit is for research use only and is not for use in diagnostic or therapeutic applications.
2. This kit should be used according to the provided instructions.
3. Do not mix reagents from different lots.
4. Bring all reagents and samples to room temperature (20°C-25°C) before use. If crystals have formed in the buffer solution, incubate until the crystals have completely dissolved. Before use, bring the solution back to room temperature.
5. This kit should be stored at 2°C -8°C.
6. Please prepare the working solution of each component according to the needs of the experiment. Except for 10x Washing Buffer, all prepared working solution is for one-time use and cannot be stored.

**TYPICAL DATA**

*Note: The Typical data is for reference only.*

**a. For qualitative detection of antibodies:**

Value Result in units	Result	Test Result Interpretation
OD <sub>450 nm</sub> - OD <sub>630 nm</sub> =0.048	Negative	Human Anti-PD-1 Antibody IgG are not detected
OD <sub>450 nm</sub> - OD <sub>630 nm</sub> =1.062	Positive	Human Anti-PD-1 Antibody IgG are detected

**b. For determination of antibody titer:**

*Note: Quality control data between different plates should not be mixed, and negative and positive controls should be set for each test.*

Ratio of Dilution	OD <sub>450 nm</sub> - OD <sub>630 nm</sub> ( <b>Samples</b> )	Result
200	3.225	The titer level of antibody is 51200
400	3.074	
800	3.164	
1600	2.836	
3200	2.202	
6400	1.349	
12800	0.669	
25600	0.376	
<b>51200</b>	<b>0.181</b>	
102400	0.072	
Blank	0.038	