# Anti-hPD1-Pem-hlgG1NQ

#### Non-glycosylated human IgG1 monoclonal antibody against human PD-1

Catalog # hpd1pe-mab12

http://www.invivogen.com/anti-hpd1-pem-higg1nq

For research use only, not for diagnostic or therapeutic use Version # 17K08-MM

### **PRODUCT INFORMATION**

Content: 100  $\mu$ g anti-hPD1-Pem-hIgG1NQ, purified antibody, provided azide-free and lyophilized

Target: Human programmed cell death 1 (hPD-1) receptor

Specificity: Cells expressing hPD-1

Clonality: Monoclonal antibody

Isotype: Human IgG1

Source: CHO cells

Formulation: 0.2  $\mu$ m filtered solution in a sodium phosphate buffer with glycine, saccharose and stabilizing agents.

Purity: Purified by affinity chromatography with protein G

#### Antibody resuspension

Add 1 ml of sterile water to obtain a concentration of 0.1 mg/ml.

<u>Storage</u>

- Product is shipped at room temperature. Store lyophilized antibody at -20 °C. Lyophilized product is stable for at least 1 year.

- Reconstituted antibody is stable for 1 month when stored at 4°C and for 1 year when aliquoted and stored at -20°C. Avoid repeated freeze-thaw cycles. **Ouality control** 

The recognition of PD1 with this antibody has been tested using flow cytometry.
The absence of bacterial contamination (e.g. lipoproteins and endotoxins) has been confirmed using HEK-Blue<sup>™</sup> TLR2 and HEK-Blue<sup>™</sup> TLR4 cells.

#### DESCRIPTION

Anti-hPD1-Pem-hIgG1NQ features the constant region of the human IgG1 isotype and the variable region of pembrolizumab. Pembrolizumab is a humanized IgG4 monoclonal antibody that contains an engineered hinge region mutation (S228P) designed to prevent exchange of IgG4 molecules. This antibody targets the PD-1 receptor found on activated T cells, B cells, and myeloid cells. Under normal physiological conditions, PD-1 negatively regulates T cell activation thereby preventing autoimmunity<sup>1</sup>. Under pathological conditions, cancer cells produce PD-L1 (programmed cell death 1 ligand 1), the agonist that binds and activates PD-1. Activated PD-1 enables the cancer cells to evade the immune system. Pembrolizumab binds and blocks the activation of the PD-1 receptor, thereby resulting in the activation of T cells<sup>2</sup>. Pembrolizumab has been approved by the FDA for the treatment of metastatic malignant melanoma, and is currently under regulatory review in the EU<sup>3</sup>.

Anti-hPD1-Pem-hIgG1NQ contains a N-glycosylation mutation of the constant region of the human IgG1 where potential asparagine (N) glycosylation sites are substituted by glutamine (Q) residues resulting in the production of a non-glycosylated antibody. Glycosylation of an antibody has no effect on antigen binding but is essential for Fc receptor-mediated activity<sup>4</sup>. In non-glycosylated antibodies the effector mechanisms mediated through the Fc receptors types (Fc $\gamma$ RI, Fc $\gamma$ RII, Fc $\gamma$ RIII) and the C1q component of complement are severely compromised or ablated<sup>5</sup>. It has been produced in CHO cells and purified by affinity chromatography with protein G.

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Tumeh PC. et al., 2014. PD-1 blockade induces responses by inhibiting adaptive immune resistance. Nature. 515(7528):568-71.
Poole RM., 2014. Pernbrolizumab: first global approval. Drugs 4(16):1973-81.
Arnold J. et al., 2007. The impact of glycosylation on the biological function and structure of human immunoglobulins. Annu Rev Immunol 25:21-50.
S. Jefferis R., 2009. Glycosylation as a strategy to improve antibody-based therapeutics. Nat Rev Drug Discov. 8:226-34.

TECHNICAL SUPPORT InvivoGen USA (Toll-Free): 888-457-5873 InvivoGen USA (International): +1 (858) 457-5873 InvivoGen Europe: +33 (0) 5-62-71-69-39 InvivoGen Hong Kong: +852 3622-3480 E-mail: info@invivogen.com

#### **APPLICATIONS**

Anti-hPD1-Pem-hIgG1NQ can be used with Anti-hPD1-Pem-hIgG1 to study the impact of effector functions.

## **ANTIBODY ISOTYPE COLLECTION**

For your research, InvivoGen provides an anti-hPD1-Pem isotype family. This family consists of monoclonal antibodies comprising the variable region of pembrolizumab, and the constant region of different human isotypes; IgG1, IgG2, IgG4 (S228P) and IgA2. The isotypes differ in their functional locations and effector functions, such as complement-dependent cytotoxicity (CDC) and antibody-dependent cell-mediated cytotoxicity (ADCC), as presented in the table below.

| Isotype               | Description  |
|-----------------------|--|
| Human IgG1            | Most abundant IgG present in serum<br>High CDC, high ADCC  |
| Human IgG2            | Second most common IgG present in serum<br>Low CDC, low ADCC   |
| Human IgG4            | Least common IgG present in serum<br>No CDC, low ADCC  |
| Human IgG4<br>(S228P) | Designed to prevent exchange of IgG4 molecules<br>No CDC, low ADCC                                       |
| Human IgA2            | Major class in secretions, oligomeric forms, highly resistant to enzymatic degradation. No CDC, low ADCC |

## **RELATED PRODUCTS**

| Product                                     | Catalog Code |
|---|--------------|
|   |              |
| Anti-hPD1-Pem-hIgG1                         | hpd1pe-mab1  |
| Anti-hPD1-Pem-hIgG2                         | hpd1pe-mab2  |
| Anti-hPD1-Pem-hIgG4 (S228P) (Pembrolizumab) | hpd1pe-mab14 |
| Anti-hPD1-Pem-hIgA2                         | hpd1pe-mab7  |

Isotype collections for other antibodies, including anti-hTNF- $\alpha$ , anti-hCD20 and anti- $\beta$ -Gal (control) are also available.

For more information visit www.invivogen.com/antibody-isotypes

