

# Anti-hPD1-Ni-hIgG1NQ

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

Catalog # hpd1ni-mab12

<http://www.invivogen.com/anti-hpd1-higg1nq>

For research use only, not for diagnostic or therapeutic use

Version # 17J16-MM

## PRODUCT INFORMATION

**Content:** 100 µg anti-hPD1-Ni-hIgG1NQ, purified antibody, provided azide-free and lyophilized

**Specificity:** Targets cells expressing human programmed cell death 1 (hPD-1) receptor

**Clonality:** Monoclonal

**Isotype:** Human IgG1

**Source:** CHO cells

**Formulation:** 0.2 µm 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.

### Storage

- Product is shipped at room temperature. Store lyophilized antibody at -20 °C.
- 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.

### Quality control

- Binding to human PD1 has been tested using flow cytometry.
- The complete sequence of this antibody has been verified.
- The absence of bacterial contamination (e.g. lipoproteins and endotoxins) has been confirmed using HEK-Blue™ TLR2 and HEK-Blue™ TLR4 cells.

## DESCRIPTION

Anti-hPD1-Ni-hIgG1NQ features a mutated constant region of the human IgG1 isotype and the variable region of nivolumab. Nivolumab is a fully human IgG4 (S228P) monoclonal antibody that contains an engineered hinge region mutation (S228P) designed to prevent exchange of IgG4 molecules. It targets the PD-1 receptor found on activated T cells, B cells, and myeloid cells. PD-1 negatively regulates T cell activation thereby preventing autoimmunity<sup>1</sup>. However, under pathological conditions, cancer cells produce PD-L1 (programmed cell death 1 ligand 1), the agonist that binds and activates PD-1 enabling the cancer cells to evade the immune system. Nivolumab binds and blocks the activation of the PD-1 receptor, thereby resulting in the activation of T cells and cell-mediated immune responses<sup>2, 3</sup>. It has been approved by the FDA for the treatment of melanoma and squamous non-small cell lung cancer.

Anti-hPD1-Ni-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 (FcγRI, FcγRII, FcγRIII) 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.

1. McDermott D. & Atkins M. 2013. PD-1 as a potential target in cancer therapy. *Cancer Med.* 2: 662-73. 2. Wang C. *et al.*, 2014. In vitro characterization of the anti-PD-1 antibody nivolumab, BMS-936558, and in vivo toxicology in non-human primates. *Cancer Immunol Res.* 2:846-56. 3. Gunturi A. & McDermott DF., 2015. Nivolumab for the treatment of cancer. *Expert Opin Investig Drugs.* 24:253-60. 4. Arnold J. *et al.*, 2007. The impact of glycosylation on the biological function and structure of human immunoglobulins. *Annu Rev Immunol* 25:21-50. 5. Jefferis R., 2009. Glycosylation as a strategy to improve antibody-based therapeutics. *Nat Rev Drug Discov.* 8:226-34.

## APPLICATIONS

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

## ANTIBODY ISOTYPE FAMILY

For your research, InvivoGen provides an anti-hPD1-Ni isotype family. This family consists of monoclonal antibodies comprising the variable region of Nivolumab, and the constant region of different human isotypes; IgG1, IgG2, IgG4 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 High CDC, high ADCC
Human IgG2	Second most common IgG present in serum Low CDC, low ADCC
Human IgG4	Least common IgG present in serum No CDC, low ADCC
Human IgG4 (S228P)	Designed to prevent exchange of IgG4 molecules 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-Ni-hIgG1	hpd1ni-mab1
Anti-hPD1-Ni-hIgG1 fut (non-fucosylated)	hpd1ni-mab13
Anti-hPD1-Ni-hIgG2	hpd1ni-mab2
Anti-hPD1-Ni-hIgG4 (S228P) (Nivolumab)	hpd1ni-mab114
Anti-hPD1-Ni-hIgA2	hpd1ni-mab7

Other antibody isotype families are available, such as Anti-hCD20, Anti-HER2 and Anti-β-Gal (control).

For more information visit [www.invivogen.com/antibody-isotypes](http://www.invivogen.com/antibody-isotypes)

## TECHNICAL SUPPORT

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