

# Anti-hCD20-hIgG4 (S228P)

Engineered monoclonal human IgG4 antibody against human CD20

Catalog # hcd20-mab14

For research use only, not for diagnostic or therapeutic use

Version # 15K10-MM

## PRODUCT INFORMATION

**Content:** 100 µg purified anti-hCD20-hIgG4 (S228P) antibody, provided azide-free and lyophilized

**Specificity:** Human CD20 (hCD20)

**Isotype:** Engineered human IgG4

**Source:** CHO cells

**Formulation:** 0.2 µm filtered solution in 68 mM phosphate buffer with 91 mM glycine, 5% w/v saccharose and stabilizing agents.

### 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. Lyophilized product is stable for 1 year.

- Reconstituted antibody is stable for 1 month at 4 °C and for 6 months when aliquoted and stored at -20 °C. Avoid repeated freeze-thaw cycles.

### Quality control

- The recognition of hCD20 with this antibody 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-hCD20-hIgG4 (S228P) features the variable region of rituximab and a mutated constant region of the human IgG4 isotype reported to reduce Fab-arm exchange<sup>1</sup>. Rituximab is a mouse/human chimeric monoclonal antibody that targets the CD20 antigen found on the surface of malignant and normal B lymphocytes. Binding of rituximab to CD20 results in cell destruction through different mechanisms including direct signaling of apoptosis, complement activation and cell-mediated cytotoxicity. Rituximab has been approved by the FDA for the treatment of various lymphoid malignancies, including B-cell non-Hodgkin's lymphoma and B-cell chronic lymphocytic leukemia.

Anti-hCD20-hIgG4 (S228P) is an engineered human IgG4 isotype. IgG4 antibodies display low antibody-dependent cytotoxicity (CDC). IgG4s are dynamic molecules that exchange Fab arms by swapping a heavy chain and attached light chain (half molecule) with a heavy-light chain pair from another molecule, resulting in bispecific antibodies<sup>1,2</sup>. IgG4 molecules thereby lose their ability to cross-link antigen and to form immune complexes under most conditions<sup>2</sup>. Thus, mutations that prevent Fab-arm exchange *in vivo* should be considered when designing therapeutic IgG4.

The constant region of Anti-hCD20-hIgG4 (S228P) contains the S228P mutation which reduces Fab-arm exchange by stabilizing the disulfides in the core-hinge of the IgG4 molecules<sup>1</sup>. Anti-hCD20-hIgG4 (S228P) was generated by recombinant DNA technology. It has been produced in CHO cells and purified by affinity chromatography with protein G.

1. Labrijn AF, et al., 2009. Therapeutic IgG4 antibodies engage in Fab-arm exchange with endogenous human IgG4 *in vivo*. Nat Biotechnol. 27(8):767-71. 2. van der Neut Kolfshoten M, et al., 2007. Anti-inflammatory activity of human IgG4 antibodies by dynamic Fab arm exchange. Science. 317(5844):1554-7.

## APPLICATIONS

Anti-hCD20-hIgG4 (S228P) can be compared with anti-hCD20-hIgG4 to study the impact of Fab-arm exchange.

## ANTIBODY ISOTYPE COLLECTION

For your research, InvivoGen provides an anti-hCD20 isotype collection. This collection consists of monoclonal antibodies comprising the variable region of rituximab, and the constant region of the most common human and murine isotypes; eight in humans (IgG1, IgG2, IgG3, IgG4, IgM, IgA1, IgA2, IgE) and three in mice (IgG1, IgG2a, IgA). 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.

| Name | Types | Description   |
|------|-------|---|
| IgG  | 4     | Major Ig in serum, placental transfer<br>CDC (hIgG3>hIgG1>hIgG2>hIgG4; mIgG2a>mIgG1)<br>ADCC (hIgG1≥hIgG3>hIgG2≥IgG4; mIgG2a>mIgG1) |
| IgM  | 1     | Third most common serum Ig, first Ig to be made<br>Good CDC, some ADCC  |
| IgA  | 2     | Major class in secretions, second most common serum Ig<br>monomer in serum, dimer in secretions. No CDC, some ADCC                  |
| IgE  | 1     | Least common serum Ig, involved in allergic reaction<br>Strong binding to Fc receptors on basophils, no CDC                         |

## RELATED PRODUCTS

| Product                                    | Catalog Code |
|--|--------------|
| Anti-hCD20-hIgG1                           | hcd20-mab1   |
| Anti-hCD20-hIgG1NQ (non-glycosylated form) | hcd20-mab12  |
| Anti-hCD20-hIgG1fut (non-fucosylated form) | hcd20-mab13  |
| Anti-hCD20-hIgG2                           | hcd20-mab2   |
| Anti-hCD20-hIgG3                           | hcd20-mab3   |
| Anti-hCD20-hIgG4                           | hcd20-mab4   |
| Anti-hCD20-hIgM                            | hcd20-mab5   |
| Anti-hCD20-hIgA1                           | hcd20-mab6   |
| Anti-hCD20-hIgA2                           | hcd20-mab7   |
| Anti-hCD20-hIgE                            | hcd20-mab8   |
| Anti-hCD20-mIgG1                           | hcd20-mab9   |
| Anti-hCD20-mIgG2a                          | hcd20-mab10  |
| Anti-hCD20-mIgA                            | hcd20-mab11  |

Other antibody isotype families are available, such as Anti-HER2, anti-hTNF-α 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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