

Anti-Spike-RBD-hIgG1NQ

Non-glycosylated monoclonal human IgG1 antibody against SARS-CoV and SARS-CoV-2 Spike (CR3022 clone)

Catalog code: srbd-mab12

<https://www.invivogen.com/sars2-spike-cr3022-mab-isotypes>

For research use only, not for diagnostic or therapeutic use

Version 20G03-NJ

PRODUCT INFORMATION

Contents:

• 100 µg of Anti-Spike-RBD-hIgG1NQ, provided azide-free and lyophilized

Target: SARS-CoV and SARS-CoV-2 Spike receptor binding domain (RBD)

Source: CHO cells

Isotype: Human IgG1NQ (non-glycosylated hIgG1)

Light chain type: Kappa

Clonality: Monoclonal (clone CR3022)

Purification: By affinity chromatography with protein G

Formulation: 0.2 µm filtered solution in a sodium phosphate buffer with glycine, saccharose, and stabilizing agents

Storage

- 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.

Quality control

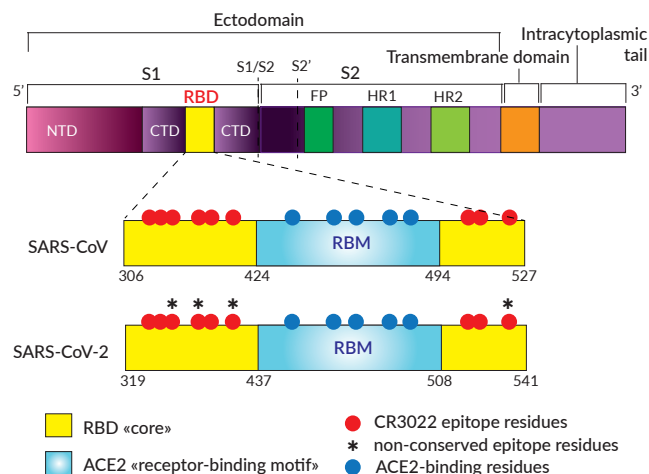
- The antibody isotype has been confirmed by ELISA.
- Anti-Spike-RBD-hIgG1NQ has been functionally validated by ELISA using a coated SARS-CoV-2 Spike-RBD-His fusion peptide.
- Absence of bacterial contamination (e.g. lipoproteins and endotoxins) has been confirmed using HEK-Blue™ TLR2 and TLR4 cellular assays.

PRODUCT DESCRIPTION

Anti-Spike-RBD-hIgG1NQ is a recombinant monoclonal antibody (mAb) featuring the variable region of CR3022, a SARS-CoV neutralizing antibody¹. CR3022 variable region cross-reacts with the receptor binding domain (RBD) of the Spike protein of SARS-CoV and SARS-CoV-2. Anti-Spike-RBD-hIgG1NQ features the constant region of the human IgG1NQ (hIgG1NQ) isotype. This antibody was generated by recombinant DNA technology, produced in CHO cells, and purified by affinity chromatography with protein G.

CR3022 scientific background

Spike RBD is a privileged candidate for vaccination and treatment strategies in the context of COVID-19. The anti-Spike RBD clone CR3022 is a SARS-CoV neutralizing antibody that was obtained from the screening of an antibody-phage library and converted to a human IgG1 format¹. Modeling and *in vitro* studies have shown that CR3022 is also binding to SARS-CoV-2 RBD². This cross-reactivity is explained by the 86% shared amino acid identity between the CR3022 epitopes from the two viruses². However the neutralization potency of CR3022 for SARS-CoV-2 is still unclear^{3,4}.



Simplified schematic of CR3022- and ACE2-binding sites in SARS-CoV and SARS-CoV-2 Spike RBD

Importantly, CR3022 does not interfere with the ACE2 binding motif¹⁻³. Thus, CR3022 could be used alone or in combination with other antibodies or soluble ACE2 to maximize the neutralization of SARS-CoV-2 (Wuhan-Hu-1, D614) and mutant isolates⁵.

IgG1NQ Isotype effector function

Anti-Spike-RBD-hIgG1NQ contains a N-glycosylation mutation in the constant region of human IgG1. Thus, 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. Therefore, the effector function of Anti-Spike-RBD-hIgG1NQ is severely compromised (see reverse side).

1. ter Meulen J. *et al.*, 2006. Human monoclonal antibody combination against SARS coronavirus: synergy and coverage of escape mutants. *PLoS Med.* 3(7):e237. 2. Yuan M. *et al.*, 2020. A highly conserved cryptic epitope in the receptor-binding domains of SARS-CoV-2 and SARS-CoV. *Science*. DOI: 10.1126/science.abb7269. 3. Huo J. *et al.*, 2020. Neutralization of SARS-CoV-2 by destruction of the prefusion Spike. *bioRxiv*. DOI:10.1101/2020.05.05.079202. 4. Tian X. *et al.*, 2020. Potent binding of 2019 novel coronavirus spike protein by a SARS coronavirus-specific human monoclonal antibody. *Emerging Microbes & Infections.* 9(1):382-385. 5. Korber B. *et al.*, 2020. Spike mutation pipeline reveals the emergence of a more transmissible form of SARS-CoV-2. *bioRxiv*. DOI:10.1101/2020.04.29.069054..

METHODS

Anti-Spike-RBD-hIgG1NQ resuspension (200 µg/ml)

Note: Ensure you see the lyophilized pellet before resuspension.

- Add 500 µl of sterile water to the vial and gently pipette until completely resuspended.

- Prepare aliquots and store at 4°C or -20°C until required.

TECHNICAL SUPPORT

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ANTIBODY ISOTYPE COLLECTION

For your research, InvivoGen provides an **Anti-Spike-RBD isotype family**. This collection consists of mAbs comprising the variable region of the CR3022 clone, and differing constant regions of both **native** and **engineered human** or **murine** isotypes. The isotypes differ in their functional and effector functions, such as antibody-dependent cell-mediated cytotoxicity (ADCC), antibody-dependent cellular phagocytosis (ADCP), and complement dependent cytotoxicity (CDC), as presented in the table below. The Anti-Spike-RBD isotype family will assist you in studying the various effector functions of the different isotypes, and help you determine which isotype is the most suited for your application.

Effector functions of native and engineered human isotypes

Effector functions	Native			Engineered
	IgG1	IgM	IgA1	IgG1Nq
ADCC	++	+	+	-
ADCP	+++	-	+	-
CDC	++	+++	-	+/-

Effector functions of native and engineered murine isotypes

Effector functions	Native	Engineered
	IgG2a	IgG1e3
ADCC	++	-
ADCP	+++	-
CDC	++	-

RELATED PRODUCTS

Product	Catalog Code
Anti-Spike-RBD-hIgG1	srbd-mab1
Anti-Spike-RBD-hIgM	srbd-mab5
Anti-Spike-RBD-hIgA1	srbd-mab6
Anti-Spike-RBD-mIgG2a	srbd-mab10
Anti-Spike-RBD-mIgG1e3	srbd-mab15

Note: For human or murine isotype controls, please visit our website <https://www.invivogen.com/antibodies>

Spike-RBD-Fc	fc-sars2-rbd
Spike-RBD-His	his-sars2-rbd

Note: For more products related to COVID-19 research, please visit our website <https://www.invivogen.com/covid-19>

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