

Anti-Spike-RBD-mIgG1e3

Monoclonal mouse IgG1e3 antibody against SARS-CoV and SARS-CoV-2 Spike (CR3022 clone)

Catalog code: srbd-mab15

<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-mIgG1e3, provided azide-free and lyophilized

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

Source: CHO cells

Isotype: Mouse IgG1e3

Light chain type: Kappa

Clonality: Monoclonal (clone CR3022)

Purification: By affinity chromatography with protein A

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 mIgG1e3 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-mIgG1e3 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-mIgG1e3 features the constant region of the mouse IgG1e3 (mIgG1e3) isotype. This antibody was generated by recombinant DNA technology, produced in CHO cells, and purified by affinity chromatography with protein A.

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}.

TECHNICAL SUPPORT

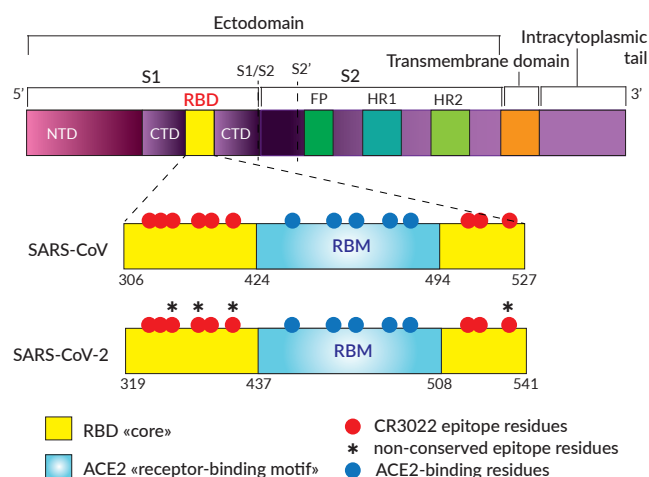
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Simplified schematic of CR3022- and ACE2-binding sites in SARS-CoV and SARS-CoV-2 Spike RBD

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.

mIgG1e3 Isotype effector function

Mouse IgG1e3 is a mIgG1 with an engineered constant region designed to limit effector functions, such as antibody-dependent cellular cytotoxicity (ADCC) and complement-dependent cytotoxicity (CDC). Mouse IgG1e3 constant region contains a point mutation D265A (a replacement of aspartic acid by alanine at position 265), resulting in the complete loss of cytolytic effector functions.

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-mIgG1e3 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.

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-hIgA1 | srbd-mab6 |
| Anti-Spike-RBD-hIgM | srbd-mab5 |
| Anti-Spike-RBD-hIgG1Nq | srbd-mab12 |
| Anti-Spike-RBD-mIgG2a | srbd-mab10 |

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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