Anti-Spike-RBD-hIgA1

Monoclonal human IgA1 antibody against SARS-CoV and SARS-CoV-2 Spike (clone CR3022)

Catalog code: srbd-mab6-3

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

For research use only, not for diagnostic or therapeutic use

Version 23L11-MM

PRODUCT INFORMATION

Contents:

• 3 x 100 µg of Anti-Spike-RBD-hIgA1, provided azide-free and lyophilized

Target: SARS-CoV & SARS-CoV-2 Spike receptor binding domain (RBD)
Source: CHO cells
Isotype: Human IgA1
Light chain type: Kappa
Clonality: Monoclonal
Purification: By affinity chromatography with peptide M
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.
- 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

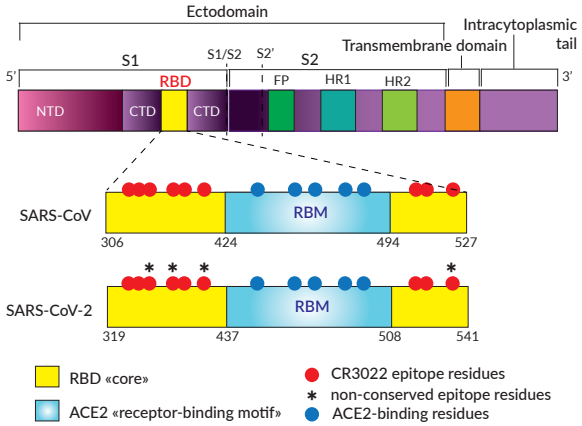
- The complete sequence of the antibody has been verified.
- The antibody isotype has been confirmed by ELISA.
- Anti-Spike-RBD hIgA1 has been functionally validated by ELISA using a coated SARS-CoV-2 Spike-RBD-His fusion peptide.
- Absence of bacterial contamination (e.g. lipoproteins and endotoxins) has been confirmed using HEK-Blue™ TLR2 and TLR4 cellular assays.

PRODUCT DESCRIPTION

Anti-Spike-RBD-hIgA1 is a recombinant monoclonal antibody (mAb) featuring the variable region of CR3022, a SARS-CoV neutralizing antibody[1]. 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-hIgA1 features the constant region of the human IgA1 (hIgA1) isotype. This antibody was generated by recombinant DNA technology, produced in CHO cells, and purified by affinity chromatography with peptide M.

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 format[1]. Modeling and *in vitro* studies have shown that CR3022 is also binding to SARS-CoV-2 RBD[2]. This cross-reactivity is explained by the 86% shared amino acid identity between the CR3022 epitopes from the two viruses[2].



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

However the neutralization potency of CR3022 for SARS-CoV-2 is still unclear[3,4]. Importantly, CR3022 does not interfere with the ACE2 binding motif[1-3]. 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 isolates[5].

IgA1 Isotype effector function

IgA1 plays a critical role in mucosal immunity. IgA1 is present mainly as a monomer in serum, and exists as a dimeric or polymeric complex in mucous secretions in the respiratory, gastrointestinal and urogenital tracts, in saliva, tears, sweat, and maternal milk. IgA1 does not activate the complement-dependent cytotoxicity (CDC), but upon binding to the IgA Fc receptor CD89 on neutrophils, it can mediate antibody-dependent cellular cytotoxicity (ADCC).

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-hIgA1 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-mab1-3
Anti-Spike-RBD-hIgM	srbd-mab5-3
Anti-Spike-RBD-hIgG1NQ	srbd-mab12-3
Anti-Spike-RBD-mIgG2a	srbd-mab10-3
Anti-Spike-RBD-mIgG1e3	srbd-mab15-3

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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