# PRODUCT INFORMATION

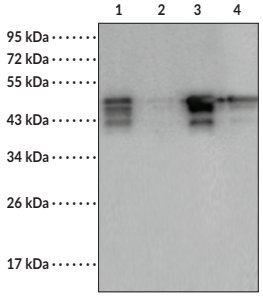
## SARS-CoV/SARS-CoV-2 Nucleocapsid Protein Rabbit Monoclonal Antibody (Clone 004)

*Item No. 31986*

### Overview and Properties

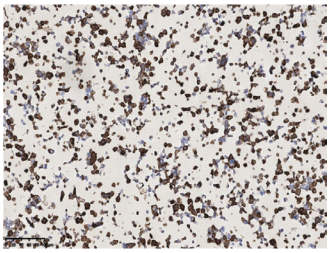
| | |
|---|---|
| **Contents:** | This vial contains 50 or 100 µl of protein A-affinity purified recombinant monoclonal antibody. |
| **Synonyms:** | COVID-19 NP, COVID-19 Nucleocapsid Protein, COVID-19 Nucleoprotein, 2019-nCoV NP, 2019-nCoV Nucleocapsid Protein, 2019-nCoV Nucleoprotein, SARS-CoV-2 NP, SARS-CoV-2 Nucleoprotein, Severe Acute Respiratory Syndrome Coronavirus 2 Nucleocapsid Protein |
| **Immunogen:** | Recombinant SARS-CoV nucleocapsid protein |
| **Cross Reactivity:** | See page 2 |
| **Species Reactivity:** | See page 2 |
| **Molecular Weight:** | 45.6 kDa |
| **Uniprot No.:** | P0DTC9 |
| **Form:** | Liquid |
| **Storage:** | -80°C (as supplied) |
| **Stability:** | ≥1 year |
| **Storage Buffer:** | 0.2 µm filtered solution in PBS |
| **Clone:** | 004 |
| **Host:** | Rabbit |
| **Isotype:** | IgG |
| **Applications:** | ELISA, Flow cytometry (FC), Immunocytochemistry (ICC), Immunofluorescence (IF), Immunohistochemistry-paraffin (IHC-P), and Western blot (WB); the recommended starting dilution is 1:5,000-1:10,000 for ELISA, 1:25-1:100 for FC, 1:20-1:100 for IF, 1:100-1:500 for IHC-P, and 1:1,000-1:10,000 for WB. Other applications were not tested, therefore optimal working concentration/dilution should be determined empirically. |

### Images

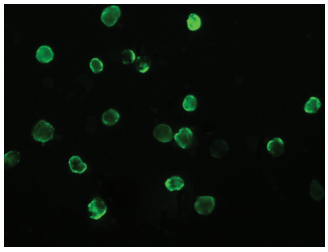



**Lane 1:** SARS-CoV NP Protein (30 ng)
**Lane 2:** SARS-CoV NP Protein (5 ng)
**Lane 3:** SARS-CoV-2 (2019-nCoV) NP Protein (30 ng)
**Lane 4:** SARS-CoV-2 (2019-nCoV) NP Protein (5 ng)

WB of SARS-CoV/SARS-CoV-2 Nucleocapsid Protein Rabbit Monoclonal Antibody (Clone 004) at 1:1,000 dilution.



**Immunochemical analysis of nucleocapsid protein overexpressed in HEK293 cells.** Cells were stained with Cayman's SARS-CoV/SARS-CoV-2 Nucleocapsid Protein Rabbit Monoclonal Antibody (Clone 004), then a HRP-conjugated second step antibody.



**Immunofluorescence analysis of nucleocapsid protein overexpressed in HEK293 cells.** Cells were stained with Cayman's SARS-CoV/SARS-CoV-2 Nucleocapsid Protein Rabbit Monoclonal Antibody (Clone 004), then an AlexaFluor®488-conjugated second step antibody.

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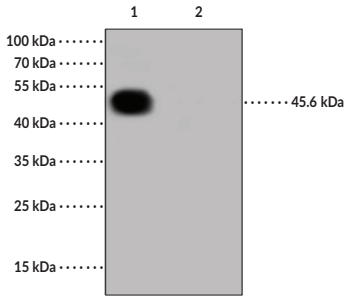
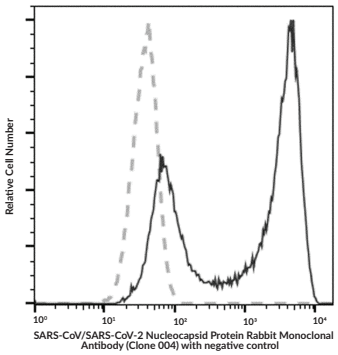



**Lane 1:** SARS-CoV/SARS-CoV-2 nucleocapsid protein overexpressed HEK293 whole cell lysate (10 ng)
**Lane 2:** HEK293 whole cell lysate (10 ng)

WB of SARS-CoV/SARS-CoV-2 Nucleocapsid Protein Rabbit Monoclonal Antibody (Clone 004).




**Flow cytometric analysis of SARS-COV-2 nucleocapsid protein overexpressed in HEK293 Cells.** Cells were stained with purified SARS-CoV/SARS-CoV-2 Nucleocapsid Protein Rabbit Monoclonal Antibody (Clone 004), then a FITC-conjugated second step antibody. The fluorescence histograms were derived from gated events with the forward and side light-scatter characteristics of intact cells.

## Reactivity

**Cross Reactivity:** (+) Nucleocapsid protein,
SARS-CoV-2 Delta (B.1.617) nucleocapsid protein (D377Y),
SARS-CoV-2 Delta (B.1.617) nucleocapsid protein (R230M, D377Y),
SARS-CoV-2 Delta (B.1.617.3) nucleocapsid protein (P67S, R203M, D377Y),
SARS-CoV-2 Alpha (B.1.1.7) nucleocapsid protein (R203K, G204R),
SARS-CoV-2 Alpha (B.1.1.7) nucleocapsid protein (I292T),
SARS-CoV-2 Alpha (B.1.1.7) nucleocapsid protein (D3L, R203K, G204R, S235F),
SARS-CoV-2 Alpha (B.1.1.7) nucleocapsid protein (D3L, S235F),
SARS-CoV-2 Alpha (B.1.1.7/B.1.237) nucleocapsid protein (S194L),
SARS-CoV-2 Alpha/Beta (B.1.1.7/B.1.351/A.2.2) nucleocapsid protein (P13L),
SARS-CoV-2 Beta (B.1.351/B.1.351.2/B.1.351.3/B.1.427/B.1.429) nucleocapsid protein (T205I),
SARS-CoV-2 Gamma (P.1/P.1.1/P.1.2) nucleocapsid protein (P80R),
SARS-CoV-2 Eta (B.1.525) nucleocapsid protein (A12G, T205I)

**Species Reactivity:** (+) SARS-CoV,
SARS-CoV-2,
SARS-CoV-2 Delta (B.1.617),
SARS-CoV-2 Delta (B.1.617.2),
SARS-CoV-2 Omicron (B.1.1.529),
SARS-CoV-2 Omicron (BA.2),
SARS-CoV-2 Omicron XE (BA.1 x BA.2),
SARS-CoV-2 Omicron (BA.4);

(-) MERS-CoV,
HCoV-229E,
HCoV-NL63,
HCoV-HKU1 (isolate N5),
HCoV-OC43

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## Description

Severe acute respiratory syndrome coronavirus (SARS-CoV) and SARS-CoV-2 nucleocapsid proteins are encoded by the N gene in SARS-CoV and SARS-CoV-2 RNA.[1,2] SARS-CoV and SARS-CoV-2 are members of the *Betacoronavirus* genus of viruses that have approximately 79% sequence identity and share 27 T cell epitopes in common.[3-5] The SARS-CoV-2 nucleocapsid protein has greater than 90% similarity to the SARS-CoV nucleocapsid protein and contains two unique B cell epitopes and two T cell epitopes that are structurally stable, non-allergenic, and induce production of IFN-γ.[2,5] SARS-CoV and SARS-CoV-2 nucleocapsid proteins package the viral RNA into a helical ribonucleoprotein complex (RNP), which is a template for viral replication, and are integral for viral self-assembly and involved in regulation of the host cell cycle.[2,6] SARS-CoV and SARS-CoV-2 are the causative agents of SARS and COVID-19, respectively, both of which are primarily respiratory illnesses characterized by fever, cough, and shortness of breath that can lead to life-threatening complications.[7-9] Cayman's SARS-CoV/SARS-CoV-2 Nucleocapsid Protein Rabbit Monoclonal Antibody (Clone 004) can be used for ELISA, flow cytometry (FC), immunocytochemistry (ICC), immunofluorescence (IF), immunohistochemistry-paraffin (IHC-P), and Western blot (WB) applications. This recombinant antibody recognizes wild-type and various mutant nucleocapsid proteins at 45.6 kDa from SARS-CoV, SARS-CoV-2, and several SARS-CoV-2 Alpha, Beta, Gamma, Delta, Eta, and Omicron subvariants.

## References


1. Kandeel, M., Ibrahim, A., Fayez, M., *et al.* From SARS and MERS CoVs to SARS-CoV-2: Moving toward more biased codon usage in viral structural and nonstructural genes. *J. Med. Virol.* **92(6)**, 660-666 (2020).
2. Kwarteng, A., Asiedu, E., Sakyi, S.A., *et al.* Targeting the SARS-CoV2 nucleocapsid protein for potential therapeutics using immuno-informatics and structure-based drug discovery techniques. *Biomed. Pharmacother.* **132**, 110914 (2020).
3. Lu, R., Zhao, X., Li, J., *et al.* Genomic characterisation and epidemiology of 2019 novel coronavirus: Implications for virus origins and receptor binding. *Lancet* **395(10224)**, 565-574 (2020).
4. Meo, S.A., Alhowikan, A.M., Al-Khlaiwi, T., *et al.* Novel coronavirus 2019-nCoV: Prevalence, biological and clinical characteristics comparison with SARS-CoV and MERS-CoV. *Eur. Rev. Med. Pharmacol. Sci.* **24(4)**, 2012-2019 (2020).
5. Ahmed, S.F., Quadeer, A.A., and McKay, M.R. Preliminary identification of potential vaccine targets for the COVID-19 coronavirus (SARS-CoV-2) based on SARS-CoV immunological studies. *Viruses* **12(3)**, E254 (2020).
6. Chang, C.-K., Hou, M.-H., Chang, C.-F., *et al.* The SARS coronavirus nucleocapsid protein – Forms and functions. *Antiviral Res.* **103**, 39-50 (2014).
7. Klok, F.A., Kruip, M.J.H.A., van der Meer, N.J.M., *et al.* Incidence of thrombotic complications in critically ill ICU patients with COVID-19. *Thromb. Res.* **191**, 145-147 (2020).
8. Yang, F., Shi, S., Zhu, J., *et al.* Analysis of 92 deceased patients with COVID-19. *J. Med. Virol.* **92(11)**, 2511-2515 (2020).



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