DESCRIPTION

|	
Species Reactivity	SARS-CoV-2
Specificity	Detects SARS-CoV-2 NSP9 in direct ELISAs.
Source	Monoclonal Mouse IgG$_{2B}$ Clone # 1044215
Purification	Protein A or G purified from hybridoma culture supernatant
Immunogen	*E. coli*-derived SARS-CoV-2 NSP9 Asn1-Gln113 Accession # YP_009725305.1
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details. *Small pack size (-SP) is supplied either lyophilized or as a 0.2 µm filtered solution in PBS.

APPLICATIONS

Please Note: *Optimal dilutions should be determined by each laboratory for each application.* General Protocols *are available in the Technical Information section on our website.*

	Recommended Concentration	Sample
Western Blot	1 µg/mL	Recombinant SARS-CoV-2 NSP9

DATA

Western Blot
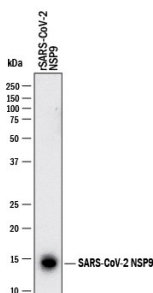
Detection of SARS-CoV-2 NSP9 by Western Blot. Western blot shows recombinant SARS-CoV-2 NSP9. PVDF membrane was probed with 2 µg/mL of Mouse Anti-SARS-CoV-2 NSP9 Monoclonal Antibody (Catalog # MAB11063) followed by HRP-conjugated Anti-Mouse IgG Secondary Antibody (Catalog # HAF018). A specific band was detected for NSP9 at approximately 14 kDa (as indicated). This experiment was conducted under reducing conditions and using Western Blot Buffer Group 1.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 0.5 mg/mL in sterile PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below. *Small pack size (-SP) is shipped with polar packs. Upon receipt, store it immediately at -20 to -70 °C
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** • 12 months from date of receipt, -20 to -70 °C as supplied. • 1 month, 2 to 8 °C under sterile conditions after reconstitution. • 6 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

Non-structural protein 9 (NSP9) is one of several functional proteins released by ORF1a-encoded protease cleavage of the pp1a and pp1ab replicase polyproteins expressed from the coronavirus (CoV) genome (1). The NSPs are involved in the replication and transcription of the viral RNA and not incorporated within the virion particles. Coronaviruses include various highly pathogenic strains such as SARS-CoV, MERS-CoV and SARS-CoV2 that have had significant impact on humans as well as strains that have negatively impacted livestock. NSP9 is a small 113 amino acid protein that forms a biologically active homodimer where each monomer consists of a beta barrel and C-terminal helical domain motif that promotes obligate dimerization (2,3). NSP9 is capable of binding nucleic acids in a nonsequence-specific manner with a preference of a single stranded RNA (4,5) although disruption of the dimeric interface appears to impact RNA binding (6). The NSP9 sequence is conserved across coronaviruses (3). NSP9 was shown to interact with other viral NSP proteins including NSP7, NSP8, and NSP12 (5,7,8). In addition, NSP9 has been shown to bind host cell proteins including DEAD-box RNA helicase 5 (DDX5), the ubiquitin E3 ubiquitin ligase MIB1, and elongation factor eIF4H in SARS-CoV2 and related viruses (9,10). The interactions of NSP9 with these host cell proteins promote viral replication (9,10) supporting the conclusion that NSP9 is important for virulence (2,3).

References:

1. Snijder, E.J. *et al*. (2016) Adv. Virus Res. **96**:59.
2. Miknis, Z.J. *et al*. (2009) J. Virol. **83**:3007.
3. Littler, D.R. *et al*. (2020) iScience **23**:101258
4. Egloff, M.P. *et al*. (2004) Proc. Nat. Acad. Sci. U.S.A. **101**:3792.
5. Sutton, G. et. al. (2004) Structure **12**:341.
6. Hu, T. *et al*. (2017) Protein Sci. **26**:1037.
7. von Brunn, A. *et al*. (2007) PLoS One **2**:e459.
8. Chen, J. *et al*. (2017) Front. Microbiol. **8**:853.
9. Zhao, S. *et al*. (2015) Virus Res. **195**:217.
10. Gordon, D.E. *et al*. (2020) Nature **583**:459.