Recombinant SARS-CoV-2 (N501Y Mutant) Spike Glycoprotein (S1) RBD, His-tagged

Cat. No. HUM-351 **Lot. No.** (See product label)

SPECIFICATION

Product Overview	SARS-CoV-2 (N501Y mutant) spike glycoprotein (S1) RBD is a recombinant antigen manufactured in HEK293 cells to high purity. This antigen contains N501Y amino acid change relative to the Wuhan-Hu-1 isolate. The N501Y mutation has been reported to increase binding affinity to human ACE2. SARS-CoV-2, previously known as the 2019 Novel Coronavirus (2019-nCoV), causes the pandemic COVID-19 disease.
Tag	His
Background	Coronaviruses have a large genome and encode a 3′-to-5′-exoribonuclease that permits high-fidelity replication and a range of tolerated variation by the viral RNA-dependent RNA polymerase (Denison et al., 2011). The coronavirus exonuclease extends the coronavirus genome size through preventing lethal mutagenesis imposed by error rates of viral RNA polymerase (Smith et al., 2014). Therefore, SARS-CoV-2 could acquire rare but favorable mutations with fitness advantages and immunological resistance due to natural selection (Grubaugh et al., 2020) and a number of mutations to the SARS-CoV-2 genome have been observed throughout the COVID-19 pandemic (Erol, 2021). Rapidly spreading variants of SARS-CoV-2 have arisen in the United Kingdom and South Africa and these share the spike N501Y substitution, which is of particular concern because it is located in the receptor-binding domain (RBD) and increases binding to the receptor ACE2 (angiotensin converting enzyme 2). The N501Y mutation is one the key six contact residues within the RBD (Starr et al., 2020). The novel UK variant, known as VUI-202012/01 or lineage B.1.1.7 carries 14 defining

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	mutations in the spike protein (Rambaut et al., 2020); N501Y co-occurs with several mutations of potential biological importance, including P681H and deletion of the amino acid at the 69th and 70th residues (Δ69/Δ70) on the spike protein (Leung et al., 2021). Indeed, an unusually large number of genetic changes, defines this variant with at least 24 mutations including 14 non-synonymous mutations, four deletions and six synonymous mutations in ORF1ab, ORF8, nucleocapsid and spike proteins (Leung et al., 2021). Preliminary epidemiologic, modelling, phylogenetic and clinical findings have suggested that SARS-CoV-2 VOC 202012/01 has increased transmissibility. However, preliminary analyses also indicated that there was no change in disease severity (as measured by length of hospitalization and 28-day case fatality), or occurrence of reinfection between variant cases compared to other SARS-CoV-2 viruses circulating in the UK (WHO, 2020).
Formulation	DPBS
Notes	This product is intended for research and manufacturing uses only. It is not a diagnostic device. The user assumes all responsibility for care, custody and control of the material, including its disposal, in accordance with all regulations.
Type	Recombinant
ClassID 1	Infectious Disease

GENE INFORMATION

Synonyms	SARS-CoV-2 (N501Y Mutant) Spike Glycoprotein (S1) RBD

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