

# PRODUCT INFORMATION



## SARS-CoV-2 nsp4 (recombinant)

Item No. 40880

### Overview and Properties

<b>Synonyms:</b>	SARS-CoV-2 Non-structural Protein 4, Severe Acute Respiratory Syndrome Coronavirus 2 nsp4
<b>Source:</b>	Recombinant SARS-CoV-2 N-terminal GST-tagged nsp4 expressed in <i>E. coli</i>
<b>Amino Acids:</b>	405-500
<b>Uniprot No.:</b>	P0DTD1
<b>Storage:</b>	-80°C (as supplied)
<b>Stability:</b>	≥1 year
<b>Purity:</b>	≥90%
<b>Supplied in:</b>	50 mM Tris, pH 7.5, with 200 mM sodium chloride and 20% glycerol
<b>Endotoxin Testing:</b>	< 1.0 EU/μg, determined by the LAL endotoxin assay
<b>Protein Concentration:</b>	<i>batch specific</i> mg/ml

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Description

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is an enveloped positive-stranded RNA virus, a member of the *Betacoronavirus* genus, and the causative agent of COVID-19.<sup>1-3</sup> The SARS-CoV-2 genome contains approximately 30 kilobases and 14 open reading frames (ORFs) that encode four structural proteins: spike, envelope, membrane, and nucleocapsid, as well as 16 non-structural proteins and nine accessory factors.<sup>4</sup> SARS-CoV-2 non-structural protein 4 (nsp4) is encoded within *ORF1ab* and is involved in host cell membrane reorganization *via* the formation of endoplasmic reticulum-derived double-membrane vesicles (DMVs), which act as replication organelles.<sup>4,5</sup> Ectopic expression of SARS-CoV-2 nsp4 induces the unfolded protein response (UPR), increases the production of mitochondrial reactive oxygen species (mtROS), and decreases the mitochondrial membrane potential in, as well as induces mitochondrial DNA (mtDNA) release from, host cells *in vitro*.<sup>6,7</sup> A tyrosine-to-isoleucine mutation at position 492 in nsp4 (nsp4<sup>T492I</sup>) is present in several SARS-CoV-2 variants, including Delta and Omicron, increases viral infectivity and the cleavage efficiency of main protease (M<sup>pro</sup>), also known as 3C-like protease (3CL<sup>pro</sup>), enhances evasion of the host immune response, and is associated with decreased disease severity.<sup>8</sup>

### References

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4. Romano, M., Ruggiero, A., Squeglia, F., *et al.* *Cells* **9**(5), 1267 (2020).
5. Zimmermann, L., Zhao, X., Makroczyova, J., *et al.* *Nat. Commun.* **14**(1), 7894 (2023).
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7. Faizan, M.I., Chaudhuri, R., Sagar, S., *et al.* *Cells* **11**(19), 2969 (2022).
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WARNING  
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA  
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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