

## Modified pαH Vector Containing the SARS-Related Coronavirus 2, Wuhan-Hu-1 Spike Glycoprotein

### Catalog No. NR-52564

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### For research use only. Not for human use.

#### Contributor:

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#### Manufacturer:

BEI Resources

#### Product Description:

Note: The label on the vial is incorrect; the expressed protein is untagged.<sup>1,2</sup>

NR-52564 expresses the full-length, unmodified S glycoprotein, and is intended for producing pseudotyped particles/pseudovirions.<sup>1</sup> NR-52564 is not intended for recombinant protein expression.

The vector for the spike (S) glycoprotein gene from severe acute respiratory syndrome-related coronavirus 2 (SARS-CoV-2), Wuhan-Hu-1 (GenBank: [MN908947](#)) was designed by codon optimizing the full-length S sequence (residues 1 to 1273) for mammalian expression and subcloning into the pαH mammalian expression vector, which was modified by subcloning a T4 foldon trimerization domain, HRV3C protease cleavage site, and the tags Twin-Strep-tag® (TST) and octa-histidine downstream of the open reading frame.<sup>1,2</sup> However, NR-52564 expresses the full-length S protein without any additional tags or modifications. NR-52564 contains the beta-lactamase gene, *bla*, to provide transformant selection through ampicillin resistance in *Escherichia coli* (*E. coli*). NR-52564 is also referred to as VRC7475.<sup>1</sup> The resulting size of the plasmid is approximately 8570 base pairs. The complete plasmid sequence and map (Figure 1) are provided on the BEI Resources webpage. The plasmid was produced in *E. coli* and extracted.

The S glycoprotein mediates viral binding to the host angiotensin converting enzyme 2 (ACE2). This protein forms a trimer, and when bound to a host receptor allows fusion of the viral and cellular membranes. The S protein is a target for neutralizing antibodies.<sup>3</sup>

#### Material Provided:

Each vial contains plasmid DNA in TE buffer (10 mM Tris-HCl, 1 mM EDTA, pH 8.0). The DNA concentration and volume provided are shown on the Certificate of Analysis. The vial should be centrifuged prior to opening. Note: The contents of

the vial should be used to replicate the plasmid in *E. coli* prior to mammalian expression.

#### Packaging/Storage:

NR-52564 was packaged aseptically in screw-capped plastic cryovials. The product is provided frozen on dry ice and should be stored at -20°C or colder immediately upon arrival. Freeze-thaw cycles should be minimized.

#### Citation:

Acknowledgment for publications should read “The following reagent was obtained through BEI Resources, NIAID, NIH: Modified pαH Vector Containing the SARS-Related Coronavirus 2, Wuhan-Hu-1 Spike Glycoprotein, NR-52564.”

#### Biosafety Level: 1

Appropriate safety procedures should always be used with this material. Laboratory safety is discussed in the following publication: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, and National Institutes of Health. Biosafety in Microbiological and Biomedical Laboratories. 5th ed. Washington, DC: U.S. Government Printing Office, 2009; see [www.cdc.gov/biosafety/publications/bmb15/index.htm](http://www.cdc.gov/biosafety/publications/bmb15/index.htm).

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**References:**

1. Graham, B., Personal Communication.
2. Wrapp, D., et al. "Cryo-EM Structure of the 2019-nCoV Spike in the Prefusion Conformation." *Science* 367 (2020): 1260-1263. PubMed: 32075877.

3. Hulswit, R. J. G., C. A. M. de Haan and B.-J. Bosch. "Coronavirus Spike Protein and Tropism Changes." *Adv. Virus Res.* 96 (2016): 29-57. PubMed: 27712627.

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Figure 1: Plasmid Map of NR-52564

