

Vector pET-11a Containing the SARS-Related Coronavirus 2, Wuhan-Hu-1 Papain-Like Protease Gene

Catalog No. NR-52436

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Contributor:

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Manufacturer:

BEI Resources

Product Description:

The papain-like protease gene (PLpro; amino acids 1564 to 1878; GenPept: [YP_009724389](#)) from severe acute respiratory syndrome-related coronavirus 2 (SARS-CoV-2), Wuhan-Hu-1 (GenBank: [MN908947](#)) was codon optimized, tagged with a thrombin cleavage site and a tobacco etch virus (TEV) cleavable N-terminal hexa-histidine tag, and cloned into the pET-11a plasmid.^{1,2} The beta-lactamase gene, *bla*, provides transformant selection through ampicillin resistance in *Escherichia coli* (*E. coli*). The complete plasmid sequence and map are provided on the BEI Resources webpage. The plasmid was produced in *E. coli* and extracted.

PLpro is located within the non-structural protein 3 (Nsp3) domain of the SARS-CoV-2 ORF1ab. PLpro is a cysteine protease that, together with the 3CL-like protease (3CLpro), processes the viral polyproteins in preparation for viral replication. It is also involved in viral evasion of the host innate immune responses via reversal of the ubiquitin and interferon-stimulated gene 15 (ISG15) post-translational modifications from host-cell proteins.^{3,4}

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 expression studies.

Packaging/Storage:

NR-52436 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: Vector pET-11a Containing the SARS-Related Coronavirus 2, Wuhan-Hu-1 Papain-Like Protease Gene, NR-52436, contributed by the Center for Structural Genomics of Infectious Diseases under HHSN272201700060C.”

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](#), 6th ed. Washington, DC: U.S. Government Printing Office, 2020; see www.cdc.gov/biosafety/publications/bmbl5/index.htm.

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References:

1. Satchell, K. J. and A. Mesecar, Personal Communication.
2. Wu, F., et al. "A New Coronavirus Associated with Human Respiratory Disease in China." *Nature* 579 (2020): 265-269. PubMed: 32015508.
3. Báez-Santos, Y. M., S. E. St. John and A. D. Mesecar. "The SARS-coronavirus Papain-Like Protease: Structure, Function and Inhibition by Designed Antiviral Compounds." *Antiviral Res.* 115 (2015): 21-38. PubMed: 25554382.
4. Freitas, B. T., et al. "Characterization and Noncovalent Inhibition of the Deubiquitinase and deISGylase Activity of SARS-CoV-2 Papain-Like Protease." *ACS Infect. Dis.* 6 (2020): 2099-2109. PubMed: 32428392.

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