

Vector VRC4234 Containing the Macaque Anti-Middle East Respiratory Syndrome Coronavirus Spike Monoclonal Antibody JC57-14 Heavy Chain Gene

Catalog No. NR-52024

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Contributor:

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Manufacturer:

BEI Resources

Product Description:

NR-52024 is an expression vector containing a 1416 base pair (VH+CH) insert that encodes a macaque anti-Middle East respiratory syndrome coronavirus (MERS-CoV) spike (S) monoclonal antibody JC57-14 heavy chain gene. The vector contains the regulatory elements CMV enhancer/promoter, CMV IE splicing acceptor and HTLV-1 R region/splicing donor. The macaque Ig heavy chain leader is provided as the targeting sequence. The kanamycin resistance gene, *aph*, provides transformant selection through kanamycin resistance in *Escherichia coli* (*E. coli*). The resulting size of the plasmid is approximately 5800 base pairs. NR-52024 is also referred to as VRC4234-JC57-14H.¹ The complete plasmid sequence and map are provided on the BEI Resources webpage. The plasmid was produced in *E. coli* and extracted.

The neutralizing monoclonal antibody JC57-14 that binds to both the RBD (receptor binding domain) and subunit S1 was isolated from a vaccinated macaque using MERS-CoV specific probes combined with a single B cell cloning strategy.² JC57-14 heavy chain mRNA was reverse-transcribed and amplified by nested PCR and cloned into an expression vector containing the constant region of the macaque Ig heavy chain.²

The S glycoprotein mediates viral binding to the host dipeptidyl-peptidase 4 (DPP4). 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.³

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-52024 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 VRC4234 Containing the Macaque Anti-Middle East Respiratory Syndrome Coronavirus Spike Monoclonal Antibody JC57-14 Heavy Chain Gene, NR-52024.”

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.

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NR-52024 is claimed in U.S. Patent No. 7,094,598 and U.S. Patent Application No. 15/553,466 and the continuations, continuations-in-part, re-issues and foreign counterparts thereof.^{4,5} NR-52024 cannot be transferred to for-profit entities.

References:

1. Graham, B., Personal Communication.
2. Wang, L., et al. "Importance of Neutralizing Monoclonal Antibodies Targeting Multiple Antigenic Sites on the Middle East Respiratory Syndrome Coronavirus Spike Glycoprotein to Avoid Neutralization Escape." *J. Virol.* 92 (2018): e02002-17. PubMed: 29514901.
3. Rabaan, A. A., et al. "SARS-CoV-2, SARS-CoV, and MERS-COV: A Comparative Overview." *Infez. Med.* 1 (2020): 174-184. PubMed: 32275259.
4. Graham, B., et al. "Middle East Respiratory Syndrome Coronavirus Immunogens, Antibodies, and their Use." [U.S. Patent Application 15/553466](#), 2018.
5. Nabel, G. J. and Z. Yang. "Development of a Preventive Vaccine for Filovirus Infection in Primate." [U.S. Patent No. 7094598](#), 2006.

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