Product Information Sheet for NR-4712

Genomic DNA from *Yersinia pestis*, Strain A12 Derivative 5 (D5)

Catalog No. NR-4712

For research use only. Not for human use.

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Product Description:
Genomic DNA was isolated from a preparation of *Yersinia pestis* (*Y. pestis*), strain A12 derivative 5 (D5).

Y. pestis is an aerobic, non-spore-forming, Gram-negative, rod-shaped bacterium. Virulence-associated genes are located on the chromosome and on three plasmids found in typical *Y. pestis* strains: 1) pMT1 (pFra; ~ 100 kb), which encodes a murine toxin and capsular protein with anti-phagocytic activities, 2) pCD1 (pYV; ~ 70 kb), which encodes a type III secretion system and is essential for virulence and 3) pPCP1 (pPla; ~ 9.5 kb), which encodes a protease that facilitates the initial dissemination of the bacteria to the lymph nodes.[1] Virulence factors on the chromosome are located in an unstable locus, *pgm*.[2]

Y. pestis. strain A12(D5) is an avirulent derivative of the A12 strain, which in turn is a derivative of the avirulent A1122 strain[3], originally isolated in 1939 from a California ground squirrel (*Spermophilus beecheyi*).[4] *Y. pestis*, strain A12(D5) contains the pMT1 plasmid as well as the unstable chromosomal *pgm* locus, but lacks the pCD1 plasmid that is essential for virulence and the pPCP1 plasmid.[5]

The presence of the pMT1 plasmid in NR-4712 has been confirmed by PCR amplification of a virulence marker on this plasmid. NR-4712 has been qualified for PCR applications by amplification of approximately 1500 bp of the 16S ribosomal RNA gene as well as a virulence marker sequence of approximately 1200 bp.

Material Provided:
Each vial contains approximately 4 to 6 µg of bacterial genomic DNA in TE buffer (10 mM Tris-HCl, 1 mM EDTA, pH ~ 7.4). The concentration is shown on the Certificate of Analysis. The vial should be centrifuged prior to opening.

Packaging/Storage:
NR-4712 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 the NIH Biodefense and Emerging Infections Research Resources Repository, NIAID, NIH: Genomic DNA from *Yersinia pestis*, Strain A12 Derivative 5 (D5), NR-4712."

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, 2007; see www.cdc.gov/od/ohs/biosfty/bmbl5/bmbl5toc.htm.

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References:
1. Parkhill, J., et al. "Genome Sequence of *Yersinia pestis*, the Causative Agent of Plague." Nature 413 (2001): 523-527. PubMed: 11586360.

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4. Huang, X. Z., M. C. Chu, D. M. Engelthaler, and L. E. Lindler. "Genotyping of a Homogeneous Group of *Yersinia pestis* Strains Isolated in the United States." J. Clin. Microbiol. 40 (2002): 1164-1173. PubMed: 11923326.
5. Robert R. Brubaker, personal communication.
6. Lucier, T. S. and R. R. Brubaker. "Determination of Genome Size, Macrorestriction Pattern Polymorphism, and Nonpigmentation-Specific Deletion in *Yersinia pestis* by Pulsed-Field Gel Electrophoresis." J. Bacteriol. 174 (1992): 2078-2086. PubMed: 1551830.
7. Brubaker, R. R. "How the Structural Gene Products of *Yersinia pestis* Relate to Virulence." Future Microbiol. 2 (2007): 377-385. PubMed: 17683274.

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