Genomic DNA from *Yersinia pestis*, Strain K25 Derivative 80 (D80)

Catalog No. NR-4727

For research use only. Not for human use.

Contributor:

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Product Description:

Genomic DNA was isolated from a preparation of *Yersinia pestis* (*Y. pestis*), strain K25 Derivative 80 (D80).

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 K25(D80) is an avirulent derivative of the K25 strain, a purine-auxotroph mutant of strain KIM-10.[3] *Y. pestis*, strain K25(D80) contains the pMT1 and pPCP1 plasmids, but lacks the pCD1 plasmid that is essential for virulence, as well as the unstable chromosomal *pgm* locus.[4]

The presence of the pMT1 and pPCP1 plasmids in NR-4727 has been confirmed by PCR amplification of a virulence marker on each plasmid. NR-4727 has been qualified for PCR applications by amplification of approximately 1500 bp of the 16S ribosomal RNA gene, 800 bp of a *Y. pestis* specific sequence, as well as virulence marker sequences of approximately 1200 and 400 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-4727 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 K25 Derivative 80 (D80), NR-4727."

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.
2. Hare, J. M. and K. A. McDonough. "High-Frequency

RecA-Dependent and -Independent Mechanisms of Congo Red Binding Mutations in *Yersinia pestis*." J. Bacteriol. 181 (1999): 4896-4904. PubMed: 10438760.
3. Brubaker, R. R. "Interconversion of Purine Mononucleotides in *Pasteurella pestis*." Infect. Immun. 1 (1970): 446-454. PubMed: 16557756.
4. Robert R. Brubaker, personal communication.

Support Provided by NIAID

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