Genomic DNA from *Yersinia pestis*, Strain Nepal516

Catalog No. NR-2720

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Contributor:

Centers for Disease Control and Prevention, Division of Vector-Borne Infectious Diseases, Fort Collins, Colorado

Product Description:

Genomic DNA was isolated from a preparation of *Yersinia pestis* (*Y. pestis*), strain Nepal516. The bacterial preparation was produced by propagation of BEI Resources NR-640.

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 virulent *Y. pestis* strains: 1) pMT1 (pFra; ~ 110kb), 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 monomer or ~ 19 kb dimer), 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 Nepal516 was isolated from a human infection in Nepal (possibly from an outbreak of pneumonic plague in 1967).[3] It contains all three virulence plasmids as well as the *pgm* locus.[4] The complete sequences of the genome (4,534,590 bp; GenBank: CP000305), pMT1 (100,918 bp; GenBank: NC_008118), and pPCP1 (10,778 bp; GenBank: NC_008119) from *Y. pestis* Nepal516 have been determined.[3]

The presence of all three plasmids in NR-2720 has been confirmed by PCR amplification of a virulence marker on each plasmid. NR-2720 has been qualified for PCR applications by amplification of ~ 1500 bp of the 16S ribosomal RNA gene as well as virulence marker sequences of ~ 1900, 1200 and 400 bp.

Material Provided:

Each vial contains approximately 5 µg of bacterial genomic DNA in TE buffer (10 mM Tris-HCl, 1 mM EDTA, pH ~ 7.4). The concentration, expressed as µg per µL, is shown on the Certificate of Analysis. The vial should be centrifuged prior to opening.

Packaging/Storage:

NR-2720 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 Nepal516, NR-2720."

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. 4th ed. Washington, DC: U.S. Government Printing Office, 1999. HHS Publication No. (CDC) 93-8395. This text is available online at www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4toc.htm.

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3. Chain, P. S. G., et al. "Complete Genome Sequence of *Yersinia pestis* Strains Antiqua and Nepal516: Evidence of Gene Reduction in an Emerging Pathogen." J. Bacteriol. 188 (2006): 4453–4463. PubMed: 16740952. GenBank: CP000305, NC_008118, and NC_008119.
4. Hinchcliffe, S. J., et al. "Application of DNA Microarrays to Study the Evolutionary Genomics of *Yersinia pestis* and *Yersinia pseudotuberculosis*." Genome Res. 13 (2003): 2018–2029. PubMed: 12952873.
5. Chu, M. C. Laboratory Manual of Plague Diagnostic Tests. Centers for Disease Control and Prevention, Atlanta, 2000.
6. Prentice, M. B., et al. "*Yersinia pestis* pFra Shows Biovar-Specific Differences and Recent Common Ancestry with a *Salmonella enterica* Serovar Typhi Plasmid." J. Bacteriol. 183 (2001): 2586–2594. PubMed: 11274119.

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