# Certificate of Analysis for NR-4695

## *Yersinia pestis*, Strain Kimberley Derivative 13 (D13)

## Catalog No. NR-4695

**Product Description:** *Yersinia pestis* (*Y. pestis*) is an aerobic, non-spore-forming, Gram-negative rod-shaped bacterium. *Y. pestis* Kimberley(D13) is a derivative of the Kimberley strain which contains the pMT1 and pPCP1 plasmids, but lacks the pCD1 plasmid that is essential for virulence as well as the unstable chromosomal *pgm* locus.

**Lot[1]: 58152443** **Manufacturing Date: 16APR2008**

| TEST | SPECIFICATIONS | RESULTS |
|---|---|---|
| **Phenotypic Analysis** | | |
| Cellular morphology | Gram-negative rods | Gram-negative rods |
| Colony morphology[2] | Report results | Circular, low convex, entire, opaque (Figure 1) |
| Congo red (CR) agar[3,4] | No red colonies ($crb^-$) | No red colonies ($crb^-$) |
| Biochemical Analyses | | |
| Analytical profile index (API 20 E®) | Consistent with *Y. pestis* | Consistent with *Y. pestis* |
| Nitrate reduction | Positive | Positive |
| Fermentation of glycerol | Negative | Negative |
| Urease | Negative | Negative |
| **Genotypic Analysis** | | |
| Sequencing of 16S ribosomal RNA gene (~ 1470 bp) | Consistent with *Y. pestis* | Consistent with *Y. pestis*[5] |
| **PCR Assay of Extracted DNA** | | |
| 16S ribosomal RNA gene | ~ 1500 bp amplicon | ~ 1500 bp amplicon |
| Presence of virulence-associated plasmids | | |
| pMT1 (pFra; 100 kb plasmid) | ~ 1200 bp amplicon | ~ 1200 bp amplicon |
| pCD1 (pYV; 70 kb plasmid) | None detected | None detected |
| pPCP1 (pPla; 9.5 kb plasmid) | ~ 400 bp amplicon | ~ 400 bp amplicon |
| **Viability (post-freeze)[2]** | Growth on agar | Growth on agar |

[1] *Y. pestis*, strain Kimberley(D13) was deposited by Professor Robert R. Brubaker of the Department of Microbiology and Molecular Genetics at Michigan State University, East Lansing, Michigan. NR-4695 was prepared by broth (Tryptic Soy Broth; BD 211768) culture of the deposited material for 48 hours at 28°C and aerobic atmosphere.

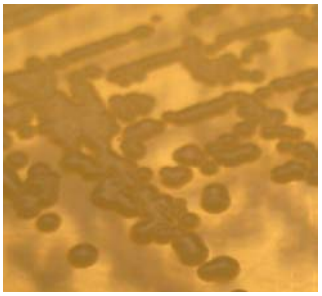
[2] 48 hours at 28°C and aerobic atmosphere on Tryptic Soy Agar (BD 236950)

[3] 7 days at 28°C and aerobic atmosphere on CR agar

[4] 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.

[5] Also consistent with other *Yersinia* species

**Figure 1**



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# Certificate of Analysis for NR-4695

**Date:** 03SEP2008 **Signature:** Signature on file

**Title:** Technical Manager, BEI Authentication or designee

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