

***Mycobacterium tuberculosis*, Strain CDC1551, Transposon Mutant Knock-Out Pool 3**

Catalog No. NR-15775

For research use only. Not for human use.

Contributor:

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Product Description:

Bacteria Classification: *Mycobacteriaceae*; *Mycobacterium*

Species: *Mycobacterium tuberculosis*

Strain: CDC1551 (also referred to as CSU93 or Oshkosh)

Original Source: *Mycobacterium tuberculosis* (*M. tuberculosis*), strain CDC1551 is a clinical isolate that exhibited high levels of infectivity and virulence during a tuberculosis outbreak that occurred in rural Kentucky and Tennessee from 1994 to 1996.¹ In 2002, **TARGET** (Tuberculosis Animal Research and Gene Evaluation Taskforce) was formed to enable the modeling of human tuberculosis in multiple animal species using defined protocols and testing defined mutants of *M. tuberculosis*. In addition to animal modeling activities, a library of intragenic transposon mutants has been created and characterized.²

Comments: There are 20 transposon mutant knock-out pools available from BEI Resources (NR-15773 to NR-15792) that are companion products to the DeADMAN DNA Microarray (available from BEI Resources as NR-18958). The DeADMAN DNA Microarray is used for identification of genes essential for the survival of a stress condition in an *in vivo* model system infection.³

M. tuberculosis, strain CDC1551 transposon mutant knock-out pool 3 is reported to be a mixture of 20 genetically defined *M. tuberculosis* transposon mutants described in Table 1. Some of the transposon mutants in knock-out pool 3 are available individually as indicated in Table 1.

Material Provided:

Each vial contains approximately 1 mL of bacterial culture in Middlebrook 7H9 broth with OADC enrichment containing 100 µg/mL cycloheximide and 20 µg/mL kanamycin.

Packaging/Storage:

NR-15775 was packaged aseptically, in screw-capped plastic cryovials. The product is provided frozen and should be stored at -60°C or colder immediately upon arrival. For long-term storage, the vapor phase of a liquid nitrogen freezer is recommended. Freeze-thaw cycles should be avoided.

Growth Conditions:

Media:

Middlebrook 7H9 Broth with OADC enrichment containing 100 µg/mL cycloheximide and 20 µg/mL kanamycin

[Middlebrook 7H10](#) Agar with OADC enrichment 100 µg/mL cycloheximide and 20 µg/mL kanamycin

Incubation:

Temperature: 37°C

Atmosphere: Aerobic

Propagation:

1. Keep vial frozen until ready for use; thaw slowly.
2. Transfer the entire thawed aliquot into a single tube of broth.
3. Use several drops of the suspension to inoculate an agar slant and/or plate.
4. Incubate the tubes and plate at 37°C for 2 to 4 weeks.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through the NIH Biodefense and Emerging Infections Research Resources Repository, NIAID, NIH: *Mycobacterium tuberculosis*, Strain CDC1551, Transposon Mutant Knock-Out Pool 3, NR-15775."

Biosafety Level: 3

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. Valway, S. E., et al. "An Outbreak Involving Extensive Transmission of a Virulent Strain of *Mycobacterium tuberculosis*." *N. Engl. J. Med.* 338 (1998): 633-639. PubMed: 9486991.
2. Lamichhane, G., et al. "A Postgenomic Method for Predicting Essential Genes at Subsaturating Levels of Mutagenesis: Application to *Mycobacterium*

tuberculosis." *Proc. Natl. Acad. Sci. U. S. A.* 100 (2003): 7213-7218. PubMed: 12775759.

3. Lamichhane, G., S. Tyagi and W. R. Bishai. "Designer Arrays for Defined Mutant Analysis to Detect Genes Essential for Survival of *Mycobacterium tuberculosis* in Mouse Lungs." *Infect. Immun.* 73 (2005): 2533-2540. PubMed: 15784600.
4. Cole, S. T., et al. "Deciphering the Biology of *Mycobacterium tuberculosis* from the Complete Genome Sequence." *Nature* 393 (1998): 537-544. PubMed: 9634230. Erratum in: *Nature* 396 (1998): 190-198.

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Table 1. Transposon Mutant Members of Knock-Out Pool 3

Description of Transposon Knock-Out Mutant	Strain CDC1551 Gene	Strain H37Rv Gene ¹	BEI Resources Product Number ²
CONSERVED HYPOTHETICAL PROTEIN	MT3085	Rv3005c	NA
PROBABLE CONSERVED INTEGRAL MEMBRANE PROTEIN	MT0119	Rv0110	NA
PE-PGRS FAMILY PROTEIN	MT2812	Rv2741	NR-15040
PROBABLE MONOOXYGENASE	MT3134	Rv3049c	NR-15041
POSSIBLE RNA METHYLTRANSFERASE	MT2178	Rv2118c	NA
POSSIBLE LIPOPROTEIN LPRL	MT1593	Rv1541c	NR-15434
PROBABLE INTEGRASE/RECOMBINASE XERC	MT2962	Rv2894c	NA
PROBABLE CONSERVED INTEGRAL MEMBRANE PROTEIN	MT2945	Rv2877c	NR-15043
PROBABLE ACETOLACTATE SYNTHASE	MT3613	Rv3509c	NR-18239
HYPOTHETICAL PROTEIN	MT1560	Rv*	NA
PROBABLE GLYCEROL-3-PHOSPHATE DEHYDROGENASE [NAD(P)+] GPDA2 (NAD(P)H- DEPENDENT GLYCEROL-3-PHOSPHATE DEHYDROGENASE)	MT3060	Rv2892c	NA
CONSERVED HYPOTHETICAL PROTEIN	MT1247	Rv1209	NA
CONSERVED HYPOTHETICAL PROTEIN	MT1937	Rv1889c	NR-15044
PROBABLE EXONUCLEASE V, ALPHA SUBUNIT	MT0657	Rv0629c	NR-15045
CONSERVED HYPOTHETICAL PROTEIN	MT1884	Rv1836c	NA
POSSIBLE EXPORTED PROTEIN	MT0213	Rv0203	NA
PROBABLE CONSERVED TRANSMEMBRANE PROTEIN	MT0981	Rv0954	NA
POSSIBLE TRANSCRIPTIONAL ACTIVATOR PROTEIN	MT1500	Rv1453	NR-15046
RECOMBINASE A (recA), INTEIN-CONTAINING	MT2806	Rv2737c	NR-15047
CONSERVED HYPOTHETICAL PROTEIN	MT2261	Rv2205c	NR-15048

¹Rv* – In some cases there is no *M. tuberculosis*, strain H37Rv homologue to the *M. tuberculosis*, strain CDC1551 gene

²NA – Individual transposon mutant not available from BEI Resources but may be available from [TARGET](#)