

***Mycobacterium tuberculosis*, Strain CDC1551, Transposon Mutant Knock-Out Pool 11**

Catalog No. NR-15783

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 11 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 11 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-15783 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 11, NR-15783."

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 11

Description of Transposon Knock-Out Mutant	Strain CDC1551 Gene	Strain H37Rv Gene	BEI Resources Product Number ¹
PROBABLE NUCLEOTIDE-SUGAR EPIMERASE EPIA	MT1562	Rv1512	NA
PROBABLE POLYKETIDE BETA-KETOACYL SYNTHASE PKS4	MT1218	Rv1181	NA
PROBABLE PEPTIDE METHIONINE SULFOXIDE REDUCTASE MSRA (PROTEIN-METHIONINE-S-OXIDE REDUCTASE) (PEPTIDE MET(O) REDUCTASE)	MT0145	Rv0137c	NA
CONSERVED HYPOTHETICAL PROTEIN	MT1820	Rv1769	NA
CONSERVED HYPOTHETICAL PROTEIN	MT1622.1	Rv1572c	NA
ARABINOSYL TRANSFERASE	MT3900	Rv3793	NA
PPE FAMILY PROTEIN	MT0469	Rv0453	NA
PROBABLE AMIDASE AMIB2 (AMINOHYDROLASE)	MT1301	Rv1263	NA
CONSERVED HYPOTHETICAL PROTEIN	MT2273	Rv2216	NA
CONSERVED HYPOTHETICAL PROTEIN	MT2160	Rv2100	NA
PROBABLE TETRONASIN-TRANSPORT INTEGRAL MEMBRANE PROTEIN ABC TRANSPORTER	MT1255	Rv1217c	NA
HYPOTHETICAL PROTEIN	MT3511	Rv3403c	NA
MCE-FAMILY PROTEIN MCE1B	MT0179	Rv0170	NA
CONSERVED HYPOTHETICAL PROTEIN	MT3590	Rv3486	NA
CONSERVED HYPOTHETICAL PROTEIN	MT3753	Rv3651	NA
POSSIBLE MAGNESIUM CHELATASE	MT2916	Rv2850c	NA
POSSIBLE Mg ²⁺ TRANSPORT P-TYPE ATPASE C MGTC	MT1859	Rv1811	NA
PPE FAMILY PROTEIN	MT1234	Rv1196	NA
CONSERVED HYPOTHETICAL PROTEIN	MT3721	Rv3619c	NR-15136
POSSIBLE 8-AMINO-7-OXONONANOATE SYNTHASE BIOF2 (AONS) (8-AMINO-7-KETOPELARGONATE SYNTHASE) (7-KETO-8-AMINOPELARGONIC ACID SYNTHETASE) (7-KAP SYNTHETASE) (L-ALANINE--PIMELYL CoA LIGASE)	MT0037	Rv0032	NA

¹NA – Individual transposon mutant not available from BEI Resources but may be available from [TARGET](#)