

***Mycobacterium tuberculosis*, Strain CDC1551, Transposon Mutant Knock-Out Pool 13**

Catalog No. NR-15785

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 13 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 13 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-15785 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 13, NR-15785."

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*

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 13

Description of Transposon Knock-Out Mutant	Strain CDC1551 Gene	Strain H37Rv Gene ¹	BEI Resources Product Number ²
PROBABLE CONSERVED INTEGRAL MEMBRANE PROTEIN	MT2465	Rv2395	NR-15059
POSSIBLE TRANSCRIPTIONAL REGULATORY PROTEIN (PROBABLY TETR-FAMILY)	MT3249	Rv3160c	NR-15064
PROBABLE ACETYL-/PROPIONYL-CoA CARBOXYLASE (BETA SUBUNIT) ACCD2	MT1002	Rv0974c	NR-18248
PROBABLE [NAD] DEPENDENT MALATE OXIDOREDUCTASE MEZ (MALIC ENZYME) (NAD-MALIC ENZYME) (MALATE DEHYDROGENASE (OXALOACETATE DECARBOXYLATING)) (PYRUVIC-MALIC CARBOXYLASE) (NAD-ME)	MT2394	Rv2332	NR-15723
CONSERVED HYPOTHETICAL PROTEIN	MT0625	Rv0595c	NR-18265
PROBABLE PROTEASE TRANSMEMBRANE PROTEIN HEAT SHOCK PROTEIN HTPX	MT0589	Rv0563	NR-15092
PROBABLE HEAT SHOCK PROTEIN	MT1117	Rv1085c	NR-18399
PPE FAMILY PROTEIN	MT2423	Rv*	NA
PROBABLE ENOYL-COA HYDRATASE ECHA1 (ENOYL HYDRASE) (UNSATURATED ACYL-COA HYDRATASE) (CROTONASE)	MT0232	Rv0222	NA
PROBABLE CONSERVED INTEGRAL MEMBRANE PROTEIN	MT1254	Rv1216c	NA
CONSERVED HYPOTHETICAL PROTEIN	MT3302	Rv3207c	NA
PPE FAMILY PROTEIN	MT2959	Rv2892c	NA
CONSERVED HYPOTHETICAL PROTEIN	MT1326	Rv1288	NR-15097
PROBABLE POLYKETIDE SYNTHASE	MT2108	Rv2048c	NR-13483
PROBABLE CONSERVED LIPOPROTEIN	MT2594	Rv2518c	NR-15098
PROBABLE DAUNORUBICIN-DIM-TRANSPORT ATP-BINDING PROTEIN ABC TRANSPORTER DRRA	MT3006	Rv2936	NA
PROBABLE METHYLTRANSFERASE	MT1258	Rv1220c	NA
CONSERVED HYPOTHETICAL PROTEIN	MT3985	Rv3871	NR-15162
PROBABLE O-METHYLTRANSFERASE	MT0197	Rv0187	NA
PROBABLE CONSERVED INTEGRAL MEMBRANE TRANSPORT PROTEIN	MT1238	Rv1200	NA

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](#)