

***Mycobacterium tuberculosis*, Strain CDC1551, Transposon Mutant Knock-Out Pool 15**

Catalog No. NR-15787

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 15 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 15 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-15787 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 15, NR-15787."

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 15

| Description of Transposon Knock-Out Mutant | Strain CDC1551 Gene | Strain H37Rv Gene ¹ | BEI Resources Product Number ² |
|---|---------------------|--------------------------------|---|
| POSSIBLE 3-METHYLADENINE DNA GLYCOSYLASE MPG | MT1727.1 | Rv1688 | NR-15056 |
| POSSIBLE RNA METHYLTRANSFERASE | MT2178 | Rv2118c | NA |
| CONSERVED HYPOTHETICAL PROTEIN WITH PIN DOMAIN | MT3492 | Rv3384c | NR-15065 |
| PROBABLE SHORT-CHAIN TYPE DEHYDROGENASE/REDUCTASE | MT1980 | Rv1928c | NR-18583 |
| CONSERVED HYPOTHETICAL PROTEIN MEMBER OF YABO/YCEC/FIL FAMILY | MT1592 | Rv1540 | NA |
| PROBABLE MEMBRANE BOUND POLYKETIDE SYNTHASE PKS6 | MT0418 | Rv0405 | NR-18244 |
| HYPOTHETICAL PROTEIN | MT2405 | Rv* | NR-18252 |
| PROBABLE OXIDOREDUCTASE | MT0074 | Rv0068 | NA |
| PROBABLE BIFUNCTIONAL NUCLEOSIDASE | MT0100 | Rv0091 | NA |
| PROBABLE TRANSPOSASE FOR INSERTION SEQUENCE ELEMENT IS1533 | MT3015 | Rv2943 | NR-18406 |
| PROBABLE O-METHYLTRANSFERASE OMT | MT1187 | Rv1153c | NA |
| PROBABLE COBALAMIN BIOSYNTHESIS PROTEIN COBN | MT2121 | Rv2062c | NA |
| POSSIBLE CONSERVED TRANSMEMBRANE PROTEIN | MT0534 | Rv0513 | NA |
| CONSERVED HYPOTHETICAL PROTEIN | MT1550 | Rv1501 | NA |
| HYPOTHETICAL PROTEIN | MT3974.1 | Rv* | NA |
| PPE FAMILY PROTEIN | MT1406 | Rv1361c | NA |
| CONSERVED HYPOTHETICAL TRANSMEMBRANE PROTEIN | MT1567 | Rv1517 | NA |
| PPE FAMILY PROTEIN | MT3636 | Rv3532 | NA |
| CONSERVED HYPOTHETICAL PROTEIN | MT1354 | Rv1314c | NA |
| PE FAMILY PROTEIN | MT0168 | Rv0159c | 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](#)