Product Information Sheet for NR-15780

Mycobacterium tuberculosis, Strain CDC1551, Transposon Mutant Knock-Out Pool 8

Catalog No. NR-15780

For research use only. Not for human use.

Contributor:

W. R. Bishai, Professor and Co-Director of the Center for Tuberculosis Research, Department of Medicine, Johns Hopkins School of Medicine, Baltimore MD

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 8 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 8 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-15780 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 8, NR-15780."

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.

Disclaimers:

You are authorized to use this product for research use only. It is not intended for human use.

Use of this product is subject to the terms and conditions of the BEI Resources Material Transfer Agreement (MTA). The MTA is available on our Web site at www.beiresources.org.

While BEI Resources uses reasonable efforts to include accurate and up-to-date information on this product sheet, neither ATCC® nor the U.S. Government make any warranties or representations as to its accuracy. Citations from scientific literature and patents are provided for informational purposes only. Neither ATCC® nor the U.S. Government warrants that such information has been confirmed to be accurate.

This product is sent with the condition that you are responsible for its safe storage, handling, use and disposal. ATCC® and the U.S. Government are not liable for any damages or injuries arising from receipt and/or use of this product. While reasonable effort is made to ensure authenticity and reliability of materials on deposit, the U.S. Government, ATCC®, their suppliers and contributors to BEI

Resources are not liable for damages arising from the misidentification or misrepresentation of products.

Use Restrictions:

This material is distributed for internal research, non-commercial purposes only. This material, its product or its derivatives may not be distributed to third parties. Except as performed under a U.S. Government contract, individuals contemplating commercial use of the material, its products or its derivatives must contact the contributor to determine if a license is required. U.S. Government contractors may need a license before first commercial sale.

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 Subsaturation 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.

Support Provided by NIAID

Table 1. Transposon Mutant Members of Knock-Out Pool 8

Description of Transposon Knock-Out Mutant	Strain CDC1551 Gene	Strain H37Rv Gene[1]	BEI Resources Product Number[2]
PROBABLE LIPOPROTEIN LPQZ	MT1281	Rv1244	NA
CONSERVED HYPOTHETICAL PROTEIN	MT0644	Rv0614	NA
PROBABLE IRON-REGULATED SHORT-CHAIN DEHYDROGENASE/REDUCTASE	MT3321	Rv3224	NR-17572
CONSERVED HYPOTHETICAL PROTEIN	MT3461	Rv3353c	NA
PROBABLE OXIDOREDUCTASE	MT1767	Rv1726	NA
POSSIBLE CONSERVED TRANSMEMBRANE PROTEIN	MT3561	Rv3453	NR-17586
PROBABLE TWO COMPONENT SENSOR HISTIDINE KINASE	MT3218	Rv3132c	NR-15739
PROBABLE CONSERVED INTEGRAL MEMBRANE PROTEIN	MT2795	Rv2723	NR-17578
PUTATIVE ESAT-6 LIKE PROTEIN ESXF (HYPOTHETICAL ALANINE AND GLYCINE RICH PROTEIN) (ESAT-6 LIKE PROTEIN 13)	MT4024	Rv3905c	NA
PUTATIVE ALTERNATIVE RNA POLYMERASE SIGMA FACTOR	MT3431	Rv3328c	NR-18586
PROBABLE METHANOL DEHYDROGENASE TRANSCRIPTIONAL REGULATORY PROTEIN	MT3253	Rv3164c	NR-17574
PROBABLE CONSERVED LIPOPROTEIN LPPV	MT2865	Rv2796c	NA
POSSIBLE OXIDOREDUCTASE	MT3830	Rv3727	NR-14960
HYPOTHETICAL PROTEIN	MT2291	Rv*	NR-17577
PROBABLE GLYCOGEN PHOSPHORYLASE	MT1370	Rv1328	NR-15711
HYPOTHETICAL PROTEIN	MT0487	Rv*	NR-14904
PROBABLE FUMARATE REDUCTASE [MEMBRANE ANCHOR SUBUNIT] FRDC (FUMARATE DEHYDROGENASE) (FUMARIC HYDROGENASE)	MT1605	Rv1554	NA
CONSERVED HYPOTHETICAL PROTEIN	MT0482	Rv0466	NR-15082
POSSIBLE CELL DIVISION TRANSMEMBRANE PROTEIN	MT2819	Rv2748c	NR-17583
PROBABLE ALPHA (1→2) MANNOSYLTRANSFERASE	MT2236	Rv2181	NR-17573

[1]Rv* – In some cases there is no *M. tuberculosis*, strain H37Rv homologue to the *M. tuberculosis*, strain CDC1551 gene
[2]NA – Individual transposon mutant not available from BEI Resources but may be available from TARGET