Product Information Sheet for NR-15773

Mycobacterium tuberculosis, Strain CDC1551, Transposon Mutant Knock-Out Pool 1

Catalog No. NR-15773

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 1 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 1 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-15773 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 1, NR-15773."

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:

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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 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 1

Description of Transposon Knock-Out Mutant	Strain CDC1551 Gene	Strain H37Rv Gene[1]	BEI Resources Product Number[2]
PUTATIVE ACETYL HYDROLASE	MT2453	Rv2385	NA
ENHANCED INTRACELLULAR SURVIVAL PROTEIN	MT2489	Rv2416c	NR-17913
HYPOTHETICAL PROTEIN	MT2285.2	Rv2226	NR-14708
PROBABLE TRANSMEMBRANE SERINE/THREONINE-PROTEIN KINASE	MT2149	Rv2088	NR-14741
HYPOTHETICAL PROTEIN	MT1854	Rv1804c	NR-14706
POSSIBLE FORMATE HYDROGENLYASE	MT0091	Rv0084	NR-17915
PUTATIVE AMINO ACID PERMEASE	MT2764	Rv2690c	NR-15006
OXIDOREDUCTASE	MT0156	Rv0148	NR-17918
PROBABLE PHIRV1 PHAGE PROTEIN	MT3573.3	Rv1582c	NA
PROBABLE CONSERVED INTEGRAL MEMBRANE TRANSPORT PROTEIN	MT2395	Rv2333c	NA
CONSERVED HYPOTHETICAL PROTEIN	MT0523	Rv0502	NA
PROBABLE FATTY-ACID CoA LIGASE	MT1222	Rv1185c	NA
TRANSALDOLASE	MT1495	Rv1448c	NR-15011
HYPOTHETICAL PROTEIN	MT0992.1	Rv0964c	NR-15014
PROBABLE MEMBRANE SUGAR TRANSFERASE	MT0723	Rv0696	NA
HYPOTHETICAL PROTEIN	MT1814.2	Rv*	NR-15017
CONSERVED HYPOTHETICAL PROTEIN	MT2804	Rv2735c	NR-15019
HYPOTHETICAL PROTEIN	MT2316	Rv*	NR-15020
HYPOTHETICAL PROTEIN	MT0472.1	Rv*	NA
PROTEIN-EXPORT MEMBRANE PROTEIN	MT2665	Rv2588c	NR-14707

[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