

Product Information Sheet for NR-28796

***Salmonella enterica* subsp. *enterica*, Strain SL480 (Serovar Schwarzengrund)**

Catalog No. NR-28796

For research use only. Not for human use.

Contributor:

Mark K. Mammel, Microbiologist, Division of Molecular Biology, Office of Applied Research and Safety Assessment, Center for Food Safety and Applied Nutrition, U.S. Food and Drug Administration, Laurel, Maryland, USA

Manufacturer:

BEI Resources

Product Description:

Bacteria Classification: *Enterobacteriaceae*, *Salmonella*

Species: *Salmonella enterica*

Subspecies: *Salmonella enterica* subsp. *enterica*

Serovar: Schwarzengrund

Strain: SL480, (also referred to as strain DBS_GA_F25499, CVM35940, AM08915-B and OR000440)^{1,2}

Original Source: *Salmonella enterica* (*S. enterica*) subsp. *enterica*, strain SL480 was isolated in 2000 from a human patient in Oregon, USA.¹

Comments: Strain SL480 is reported to be a multi-drug resistant strain.¹ The complete genome for *S. enterica* subsp. *enterica*, strain SL480 was sequenced at the [J. Craig Venter Institute](#) (GenBank: [ABEJ000000000](#)); strain SL480 is reported to contain a resistance plasmid and two plasmids of unknown function.¹

S. enterica are Gram-negative, rod-shaped, flagellated bacteria. The species is divided into six subspecies (I, II, IIIa, IIIb, IV, VI) where only subspecies I, subsp. *enterica*, is considered of clinical relevance.³ Salmonellosis (non-typhoidal), due to the greater than 1500 serovars of *S. enterica* subsp. *enterica*, is one of the most common food-borne diseases with approximately 1 million cases that occur in the United States every year.⁴ Pathogenicity results from a variety of virulence factors found in plasmids, prophages, and five pathogenicity islands which allow these organisms to colonize and infect host organisms.^{5,6}

S. enterica subsp. *enterica* serovar Schwarzengrund (formerly *Salmonella schwarzengrund*) is a rare serotype, however it is a predominant cause of Salmonellosis in Southeast Asia, a major source of imported food products to the U.S.⁷ Recent evidence suggests that antimicrobial drug (especially quinolone) resistance is emerging in this serovar in different parts of the world.^{8,9} It is particularly prevalent in retail chicken meat and chicken farms in Taiwan.⁹

Material Provided:

Each vial contains approximately 0.5 mL of bacterial culture in 0.5X Nutrient broth supplemented with 10% glycerol.

Note: If homogeneity is required for your intended use, please purify prior to initiating work.

Packaging/Storage:

NR-28796 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:

Tryptic Soy broth or Nutrient broth or equivalent

Tryptic Soy agar with 5% defibrinated sheep blood or Nutrient agar or equivalent

Incubation:

Temperature: 37°C

Atmosphere: Aerobic

Propagation:

1. Keep vial frozen until ready for use; then thaw.
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 tube, slant and/or plate at 37°C for 24 hours.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: *Salmonella enterica* subsp. *enterica*, Strain SL480 (Serovar Schwarzengrund), NR-28796."

Biosafety Level: 2

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, 2009; see www.cdc.gov/biosafety/publications/bmbl5/index.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 makes any warranties or representations as to its accuracy. Citations from scientific literature and patents are provided for informational purposes only. Neither the 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. Fricke, W. F., et al. "Comparative Genomics of 28 *Salmonella enterica* Isolates: Evidence for CRISPR-Mediated Adaptive Sublineage Evolution." *J. Bacteriol.* 193 (2011): 3556-3568. PubMed: 21602358.
2. Dr. M. K. Mammel, Personal Communication.
3. Grimont, P. A. D. and F.-X. Weill. *Antigenic Formulae of the Salmonella Serovars*, 2007, 9th edition. Paris: WHO Collaborating Centre for Reference and Research on *Salmonella*, Pasteur Institute.
4. Scallan, E., et al. "Foodborne Illness Acquired in the United States – Major Pathogens." *Emerg. Infect. Dis.* 17 (2011): 7-15. PubMed: 21192848.
5. Lavigne, J. P. and A. B. Blanc-Potard. "Molecular Evolution of *Salmonella enterica* Serovar Typhimurium and Pathogenic *Escherichia coli*: From Pathogenesis to Therapeutics." *Infect. Genet. Evol.* 8 (2008): 217-226. PubMed: 18226587.
6. Parsons, D. A. and F. Heffron. "*sciS*, an *icmF* Homolog in *Salmonella enterica* Serovar Typhimurium, Limits Intracellular Replication and Decreases Virulence." *Infect. Immun.* 73 (2005): 4338-4345. PubMed: 15972528.
7. Aarestrup, F. M., et al. "International Spread of Multidrug-resistant *Salmonella* Schwarzengrund in Food Products." *Emerg. Infect. Dis.* 13 (2007): 726-731. PubMed: 17553251.
8. Akiyama, T. and A. A. Khan. "Molecular Characterization of Strains of Fluoroquinolone-resistant *Salmonella enterica* Serovar Schwarzengrund Carrying Multidrug Resistance Isolated from Imported Foods." *J. Antimicrob. Chemother.* 67 (2012): 101-110. PubMed: 22010209.
9. Chen, M.-H., et al. "Pulsed Field Gel Electrophoresis (PFGE) Analysis for Multidrug Resistant *Salmonella enterica* Serovar Schwarzengrund Isolates Collected in Six Years (2000-2005) from Retail Chicken Meat in Taiwan." *Food Microbiol.* 28 (2011): 399-405. PubMed: 21356444.
10. Yue, M., et al. "Diversification of the *Salmonella* Fimbriae: A Model of Macro- and Microevolution." *PLoS One* 7 (2012): e38596. PubMed: 22701679.
11. Jacobsen, A., et al. "The *Salmonella enterica* Pan-genome." *Microb. Ecol.* 62 (2011): 487-504. PubMed: 21643699.
12. Centers for Disease Control and Prevention (CDC). "Update: Recall of Dry Dog and Cat Food Products Associated with Human *Salmonella* Schwarzengrund Infections--United States, 2008." *MMWR Morb. Mortal. Wkly. Rep.* 57 (2008): 1200-1202. PubMed: 18987615.

ATCC® is a trademark of the American Type Culture Collection.

