

***Rickettsia rickettsii*, Strain Smith**

Catalog No. NR-333

(Derived from ATCC® VR-149™)

For research use only. Not for human use.

Contributor:

ATCC®

Product Description:

Bacteria Classification: *Rickettsiaceae*, *Rickettsia*

Species: *Rickettsia rickettsii*

Type Strain: Smith (Sheila Smith, VR-149)

Original Source: *Rickettsia rickettsii* (*R. rickettsii*), strain

Smith was isolated from a human with Rocky Mountain spotted fever in Missoula, Montana, 1946.¹

Comments: *R. rickettsii*, strain Smith was deposited to the ATCC® from the collection of Dr. F. Marilyn Bozeman.

R. rickettsia is a member of the spotted fever group of Rickettsiae and the etiologic agent of Rocky Mountain spotted fever (RMSF). *R. rickettsia* is an intracellular Gram-negative pathogen that is transmitted to a human host via interaction with an infected tick (commonly *Dermacentor variabilis* and *Dermacentor andersoni* in the USA). The tick acts as both a natural reservoir and a vector for disease transmission. The disease is characterized by a spotted rash and has a high mortality rate if it is not treated. RMSF responds well to treatment with doxycycline if diagnosis is not delayed.²

R. rickettsii, strain Smith is an R-type isolate. R-type isolates are the most pathogenic and cause severe infection accompanied by long-lasting fever and scrotal reactions in guinea pigs. Additionally these isolates caused mortality in 30% of infected animals.³ The complete genome of *R. rickettsii*, strain Smith has been sequenced (GenBank: CP000848).⁴

Material Provided:

Each vial contains approximately 1 mL of cell lysate and supernatant from African green monkey kidney cells (Vero; ATCC® CCL-81™) infected with *R. rickettsii*, strain Smith.

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

Packaging/Storage:

NR-333 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:

Host: Vero cells (ATCC® CCL-81™)

Growth Medium: Minimum Essential Medium with Earle's salts supplemented with 10% irradiated fetal bovine serum, 2 mM L-glutamine and 1 mM sodium pyruvate

Infection: Cells should be 80 to 90% confluent (not 100% confluent)

Incubation: 5 to 10 days at 37°C and 5% CO₂

Cytopathic Effect: Cell rounding and sloughing

Citation:

Acknowledgment for publications should read "The following reagent was obtained through the NIH Biodefense and Emerging Infections Research Resources Repository, NIAID, NIH: *Rickettsia rickettsii*, Strain Smith, NR-333."

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/bmb15/bmb15toc.htm.

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References:

1. Ereemeeva, M. E., et al. "Genetic Analysis of Isolates of *Rickettsia rickettsii* that Differ in Virulence." Ann. N. Y. Acad. Sci. 990 (2003): 717-722. PubMed: 12860712.
2. Karpathy, S. E., G. A. Dasch and M. E. Ereemeeva. "Molecular Typing of Isolates of *Rickettsia rickettsii* by use of DNA Sequencing of Variable Intergenic Regions." J. Clin. Microbiol. 45 (2007): 2545-2553. PubMed: 17553977.
3. Ereemeeva, M. E., G. A. Dasch and D. J. Silverman. "Quantitative Analyses of Variations in the Injury of Endothelial Cells Elicited by 11 Isolates of *Rickettsia rickettsii*." Clin. Diagn. Lab. Immunol. 8 (2001): 788-796. PubMed: 11427428.
4. Ellison, D. W., et al. "Genomic Comparison of Virulent *Rickettsia rickettsii* Sheila Smith and Avirulent *Rickettsia rickettsii* Iowa." Infect. Immun. 76 (2008): 542-550. PubMed: 18025092. GenBank: CP000848.
5. Bell, E. J. and E. G. Pickens. "A Toxic Substance Associated with the *Rickettsias* of the Spotted Fever Group." J. Immunol. 70 (1953): 461-472. PubMed: 13052922.

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