

***Simulium vittatum*, Cytospecies IS-7, Eggs**

Catalog No. NR-53890

For research use only. Not for use in humans.

Contributor and Manufacturer:

Darold P. Batzer, Professor, and Elmer W. Gray, Assistant Project Director, Black Fly Research and Resources Center (BFR2), Department of Entomology, The University of Georgia, Athens, Georgia, USA

Product Description:

Classification: Simuliidae, *Simulium*

Species: *Simulium vittatum* sensu stricto (common name: black fly)

Cytospecies: IS-7

Original Source: *Simulium vittatum* (*S. vittatum*), cytospecies IS-7 was collected from Flaxmill Brook in Cambridge, New York by C. A. Tarrant in September of 1981.¹

Comments: This species is a competent vector (biological and mechanical) of vesicular stomatitis New Jersey virus (VSNJV).²

S. vittatum complex is distributed across North America. This species complex consists of two species: *S. tribulatum* (also known as cytospecies IIII-1), found throughout the continent, and *S. vittatum* sensu stricto (also known as cytospecies IS-7), found primarily in the northern and western United States and Canada.³ *S. vittatum* is the vector for VSNJV, the causative agent of vesicular stomatitis in ungulates such as cows, horses and swine. Vesicular stomatitis is characterized by fever and vesicles in the oral cavity and on the muzzle, snout, lips, and coronary bands of feet, teats and prepuce.² *S. vittatum* also transmits the parasitic nematode *Onchocerca* under laboratory conditions.⁴

Material Provided:

NR-53890 contains a suitable number of eggs to establish a stock. Eggs are provided on wet, backlit fabric strips, in sealed Petri dishes including a paper towel moistened with deionized water. The product is shipped on blue ice to keep the eggs cool during shipping. Note: Live *S. vittatum* can also be obtained in larval (NR-53891), pupal (NR-53892) or adult stages (NR-53893).

Packaging/Storage:

NR-53890 is prepared and shipped by the University of Georgia [Black Fly Research and Resource Center](#). Upon arrival, the eggs should be immersed in 20°C to 22°C water to initiate the hatching process. Larvae will begin emerging in 3 to 4 days of receipt. Eggs may be stored in refrigeration (4°C to 8°C) for a short period, but viability will decrease if stored for an extended duration.

Growth Conditions:

Standard *S. vittatum* rearing procedures are recommended.^{5,6} See Appendix I for details on handling *S. vittatum* eggs.

Citation:

Acknowledgment for publications should read “The *Simulium vittatum* cytospecies used in this work were produced with the support of NIH Task Order C-08, Contract No. HHSN2722017000351, Task Order No. 75N93020F00002 and obtained through BEI Resources, NIAID, NIH: *Simulium vittatum*, Cytospecies IS-7, Eggs, NR-53890.”

Biosafety Level: 1

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](#). 6th ed. Washington, DC: U.S. Government Printing Office, 2020; see www.cdc.gov/biosafety/publications/bmbI5/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 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. Brockhouse, C. L. and P. H. Adler. “Cytogenetics of Laboratory Colonies of *Simulium vittatum* Cytospecies

- IS-7 (Diptera: Simuliidae)." J. Med. Entomol. 39 (2002): 293-297. PubMed: 11931029.
2. Reis, J. L., Jr., et al. "Lesion Development and Replication Kinetics During Early Infection in Cattle Inoculated with Vesicular Stomatitis New Jersey Virus via Scarification and Black Fly (*Simulium vittatum*) Bite." Vet. Pathol. 48 (2011): 547-557. PubMed: 20858740.
 3. Adler, P. H., D. C. Currie and D. M. Wood. The Blackflies (Simuliidae) of North America. (2004) New York, New York: ROM Publication in Sciences.
 4. Lehmann, T., M. S. Cupp and E. W. Cupp. "Analysis of Migration Success of *Onchocerca lienalis* Microfilariae in the Haemocoel of *Simulium vittatum*." J. Helminthol. 69 (1995): 47-52. PubMed: 7622790.
 5. Gray, E. W. and R. Noblet. "Black Fly Rearing and Use in Laboratory Information: Bioassays." Rearing Animal and Plant Pathogen Vectors. (2014) Maramorosch K. and F. Mahmood (Eds.) Boca Raton: CRC Press.
 6. Bernardo, M. J., E. W. Cupp and A. E. Kiszewski. "Rearing Black Flies (Diptera: Simuliidae) in the Laboratory: Colonization and Life Table Statistics for *Simulium vittatum*." Ann. Entomol. Soc. Am. 79 (1986): 610-621.
- ATCC® is a trademark of the American Type Culture Collection.



Appendix I: Handling *Simulium vittatum* Eggs

Shipping:

1. Eggs are deposited on wetted cloth (the egg-sheet) as part of the oviposition process within the BFR2 rearing facility. Pieces of the egg-sheet containing the deposited eggs are placed in Petri dishes on damp paper towels and Petri dishes are sealed closed with Parafilm®.
2. Petri dishes containing the eggs are shipped in a Styrofoam cooler with blue ice to keep the eggs cool during shipping.

Procedure Upon Arrival:

1. Upon arrival, open the shipping package and immediately remove the Petri dish.
2. Open the petri dish and make sure the pieces of egg-sheet are on the bottom of the Petri dish and the paper towel beneath the egg-sheet is damp.
3. The eggs should be immersed in 20°C to 22°C water to initiate the hatching process. The Petri dish and eggs can be stored in refrigeration (4°C to 8°C) for a short period, but viability will decrease the longer they remain in storage.
4. The receiving laboratory will need some type of larval rearing apparatus such as bubblers, stir-bar and beaker, gyratory shaker or a flowing water system. It is recommended to use a flowing water system for rearing black flies through a complete life cycle.