



Vesicular Stomatitis Virus (VSV) Vector

General Information

Vesicular stomatitis virus is a member of the Vesiculovirus genus and Rhabdoviridae family. VSV is an enveloped single-stranded negative-sense RNA virus that is bullet shaped (approximately 70 nm in diameter by 170 nm in length). VSV has two major serotypes; New Jersey (most common) and Indiana. Recombinant VSV vectors are used to study the mechanisms of viral entry into host cells, the identification of cellular receptors utilized by viruses for cell entry, the screening of viral entry inhibitors, and vaccine development research.

Host Range

Wide host range including humans, horses, cattle, pigs, rodents, and insects.

Incubation Period

30 hours to 6 days in animals, and 1-6 days in humans.

Survival Outside Host

Can survive 3 to 4 days in infected saliva and dried on glass, plastic, or stainless steel for 1-6 days. Can survive for extended periods of time in a liquid medium containing organic material.

Laboratory Hazards

Percutaneous, direct contact, mucous membranes, aerosols, vector transmission, autoinoculation

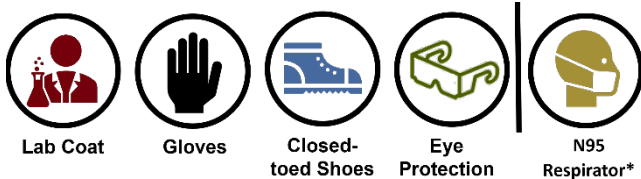
Symptoms of Exposure

Flu-like symptoms (fever, muscle aches, headache, and malaise), enlarged lymph nodes, and conjunctivitis. Vesicles can also develop in the mouth or on the lips or hands.

Lab Acquired Infections (LAIs)

At least 4 LAIs have been reported.

Personal Protective Equipment



Disinfection & Inactivation

1-10% bleach, 70% ethanol, isopropanol, aldehydes, phenol, and detergents. VSV can be inactivated by low pH (below 2), UV light, and autoclaving (121°C, 30min).

Waste Management

Refer to [USC's Biological and Infectious Waste Management Plan](#).

Lab Containment

[Biosafety Level 2 \(BSL-2\)](#) for activities with materials and cultures known or reasonably expected to contain VSV.

Animal Containment

*[Animal Biosafety Level 2 \(ABSL-2\)](#) for activities with experimentally infected animals, an N95 respirator is required for procedures done outside a BSC or other containment device. Enrollment in the Respiratory Protection Program is required for N95 respirator use.

Medical Surveillance/Treatment

Surveillance: VSV infections confirmed by virus isolation from throat swabs or blood. Other detection methods include PCR, ELISA, neutralization, complement fixation, immunofluorescence, and electron microscopy.

Prophylaxis: None

Vaccines: None are currently available for use in humans

Treatment: Supportive therapy is symptom-based

Spill Procedures

See [USC Biological Spill Procedures](#)

Exposure Procedures

See [USC Protocol for Post Exposure Evaluation and Follow-up](#). Use of sharps should be strictly limited. All procedures with the potential for creating aerosols and droplets should be performed in a biosafety cabinet.

References

Public Health Agency of Canada (2012) Pathogen Safety Data Sheets: Infectious Substances – Vesicular stomatitis virus (VSV). Pathogen Regulation Directorate, Public Health Agency of Canada

N. J. M. a. E. J. Dubovi, "Chapter 18: Rhabdoviridae," in Fenner's Veterinary Virology, 2016, pp. 368-370.

A. R. Spickler, "Vesicular Stomatitis," The Center for Food Security and Public Health, Iowa, 2016.

USDA, "Factsheet: Vesicular Stomatitis," July 2019.

https://www.aphis.usda.gov/publications/animal_health/fs-vesicular-stomatitis.pdf