Biological Agent Reference Sheet (BARS)

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Research Administration

BIOLOGICAL AGENT REFERENCE SHEET

Oropouche Virus (OROV)

CHARACTERISTICS	
Background and Morphology	Oropouche virus (OROV) is an arbovirus belonging to the Simbu serogroup of the genus *Orthobunyavirus* in the *Peribunaviridae* family. Spherical, enveloped virus measuring 80 – 120nm with a segmented, negative-sense single stranded RNA genome.
Growth Conditions	Cell culture. The virus for example can infect HeLa cells by clathrin-mediated endocytosis and is released to the cytoplasm through acidification of the endosome.

HEALTH HAZARDS	
Host Range	OROV infects humans, monkeys, sloths, rodents and birds.
Special Precautions	Risk of vertical transmission during pregnancy, and possible adverse impacts on the fetus, including fetal death or congenital abnormalities.
Modes of Exposure	The virus is primarily transmitted by the culicoides midge as well as the culex and aedes mosquitoes. Accidental air-borne infection has been reported in laboratory conditions, which suggests that infection may occur as a result of inhalation of aerosols.
Signs and Symptoms	OROV fever is an acute febrile illness that generally lasts 2-7 days, with some symptoms (weakness and malaise) persisting up to 2-4 weeks. In 60% of patients, symptoms can reoccur a few days or even weeks later. Typically, disease symptoms start with the abrupt onset of fever with headache (often severe), chills, myalgia, and arthralgia. Other signs and symptoms include photophobia, dizziness, retroorbital or eye pain, nausea/vomiting, or maculopapular rash starting on trunk and goes to extremities. The symptoms of OROV disease can resemble l symptoms of dengue, chikungunya, or Zika viruses, or malaria.
Infectious Dose	Unknown
Incubation Period	Average 3-10 days.

MEDICAL PRECAUTIONS / TREATMENT	
Vaccines / Prophylaxis	No commercial vaccine available. Avoid midge or mosquito bites in endemic areas by using repellants or full body clothing (long sleeves and pants) during field work.
Diagnosis & Treatment	Evidence of the virus can be detected in serum samples during the first week of infection. Real-time reverse transcription-polymerase chain reaction (RT-PCR) can be performed to detect viral RNA in serum and cerebrospinal fluid (CSF) during the acute phase of illness. Plaque reduction neutralization tests (PRNTs) can be performed to detect virus-specific neutralizing antibodies in serum and CSF. Contact state or local health department for assistance with determining if samples need to be sent for testing. There are no medicines to treat OROV disease. Supportive care is recommended for clinical management of patients. Patients who develop more severe symptoms should be hospitalized for close observation and supportive treatment.
Surveillance	Self-report any acquired influenza-like symptoms, daily temperature recording, and self-isolate for further medical evaluation.
Emory Requirements	Report any accidents/exposures.

LABORATORY HAZARDS	
Laboratory Acquired Infections (LAIs)	Pre-1981, one laboratory worker was accidentally infected orally and another worker was most likely infected by the respiratory route.

SUPPLEMENTAL REFERENCES	
CDC BMBL	Biosafety in Microbiological and Biomedical Laboratories, 6th Edition
CDC	https://www.cdc.gov/oropouche/hcp/clinical-overview/index.html
Government of Canada	https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/oropouche-virus.html

CONTAINMENT	
BSL3/ABSL3	OROV requires BSL3/ABSL3 containment.

SPILL PROCEDURES	
Small	Contain the spill by covering with paper towels or damming to prevent spread. Don appropriate PPE. Apply an appropriate disinfectant working from the perimeter towards the center. Allow 30 minutes of contact time before disposal and cleanup of spill materials.
Large	Contain the spill, notify and evacuate others in the area, then contact Emory's Biosafety Officer (404-357-1821) or the EHSO Spill Response Team (404-727-2888).

EXPOSURE PROCEDURES		
Mucous membrane	Flush eyes, mouth, or nose for 15 minutes at an eyewash station.	
Other Exposures	Wash area with soap and water for 15 minutes.	
Seek Medical Attention	7:30 am - 4:00 pm (OHS): 404-686-8587	After Hours: APP On Call 404-686-5500, PIC# 50464
	Needle Stick: EUH (404-686-8587) EUHM (404-686-2352)	ENPRC: Contact ENPRC Safety Office
Reporting	Immediately report incidents to supervisor. Accidents/Exposures must be reported in H.O.M.E. via HR Self-Service portal. Emory HR website > Self-Service > Workplace Health > Report	

VIABILITY	
Disinfection	OROV can be inactivated by 2% glutaraldehyde, formalin, paraformaldehyde, 1% sodium hypochlorite, hydrogen peroxide, non-ionic surfactants (Tween-20 and Tween-80), ethyl alcohol, isopropyl alcohol, peracetic acid, quaternary ammonium compounds, and iodophor compounds.
Inactivation	Specific parameters of inactivation are unknown for OROV, but in general, viral genomic RNA becomes denatured at temperatures higher than 60°C.
Survival Outside Host	The viability of OROV outside of the host is unknown, but *Puumala hantavirus*, which belongs to the same order as OROV, remained infectious in bank vole cage beddings for 12-15 days at room temperature after removal of the infected animals.

PERSONAL PROTECTIVE EQUIPMENT (PPE)	
Minimum PPE Requirements	Minimum PPE for personnel working with OROV in A/BSL3 facilities: • All personnel will change from street clothes into facility-dedicated scrubs and shoes. Solid front gown or Tyvek® suit will be worn over the scrubs. • Tie-back cover gowns with long sleeves will be worn over Tyvek® suits when working with infected animals. • Double gloves with inner layer taped to solid front gown or Tyvek® suit and two pairs of shoe covers are required for all personnel. • N-95 respirator, hair cover and eye protection powered air purifying respirators (PAPR) (preferred) or controlled air purifying respirators (CAPR®).

PERMIT REQUIREMENTS	
USDA/APHIS	Contact USDA/APHIS for additional guidance. OROV is included on the US DOC Commerce Control Listing, researchers must contact ORA RCRA Export Controls for review and guidance on obtaining DOC Permits.