## **Biological Agent Reference Sheet (BARS)**

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1762 Clifton Road, Suite 1200 Atlanta, Georgia 30322 (404) 727-5922 FAX: (404) 727-9778

## BIOLOGICAL AGENT REFERENCE SHEET Lymphocytic choriomeninigitis virus (LCMV)

CHARACTERISTICS	
Morphology	Member of the Arenaviridae family, enveloped virus,
	ssRNA.
Strain Specific Characteristics	In mice, the Armstrong strain increases viral titers for 3-4 days then declines to clear completely. The clone 13 strain (derived from Armstrong), increases viral titers for months after infection and causes immunosuppression. It is thought that the clone 13 strain is more virulent and it has caused LAIs. The WE strain has been found to be lethal in non-human primates (NHP).
Growth Conditions	Fibroblast or epithelial cell lines (37°C, 5% CO <sub>2</sub> ).

HEALTH HAZARDS		
Host Range	House mice ( <i>Mus musculus</i> ) are natural hosts. LCMV can also infect humans other animals (hamsters, guinea pigs, NHPs, etc).	
Modes of Transmission	LCMV is excreted through mice urine, saliva, and feces. Transmission occurs through inhalation, ingestion, and contact with mucous membranes and cuts or breaks in the skin. Vertical transmission is possible from mother to child. There is no other evidence of human to human transmission.	
Signs and Symptoms	First phase: febrile illness (fever, lack of appetite, muscle aches, nausea, vomiting, headache, and/or malaise).  Second phase: meningeal symptoms, encephalitic symptoms, and myelitis (swelling of the spinal cord).	
Infectious Dose	Unknown.	
Incubation Period	8-13 days.	

MEDICAL PRECAUTIONS / TREATMENT	
Prophylaxis	None available.
Vaccines	None available.
Treatment	None available.
Surveillance	Monitor for symptoms and test using serology and viral isolation.
Emory Requirements	Report any exposures.
Additional Medical Precautions	Women who are pregnant or planning on becoming pregnant should be aware that pregnant women infected with LCMV can transmit the virus to their fetus. This can result in loss of pregnancy or serious birth defects.

LABORATORY HAZARDS	
Laboratory	There have been well documented LAIs from infected
Acquired	animals and contaminated cell lines. 46 cases with 5
Infections (LAIs)	deaths have been documented.
	Urine, saliva, blood, tissues, CSF, nasopharynx
Sources	secretions, and feces from infected humans, animals,
	and contaminated cell lines.

SUPPLEMENTAL REFERENCES	
Canadian MSDS	http://www.phac-aspc.gc.ca/msds-ftss/msds97e-eng.php
BMBL: 5 <sup>th</sup> Edition	http://www.cdc.gov/OD/ohs/biosfty/bmbl5/BMBL_5th_Edition.pdf
CDC LCMV Guidelines	http://www.cdc.gov/ncidod/dvrd/spb/mnpages/dispages/lcmv.htm

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SUPPLEMENTAL REFERENCES (continued)	
Current Protocols	Welsh, RM et Al. (2008). Lymphocytic Choriomeningitis Virus UNIT 15A.1(LCMV): Propagation, Quantitation, and Storage.
in Microbiology	Current Protocols in Microbiology: 15A.1.1.  http://mrw.interscience.wiley.com/emrw/9780471729259/cp/cpmc/article/mc15a01/current/pdf

CONTAINMENT REQUIREMENTS	
BSL-2	Manipulation of known or potentially infected clinical samples and cell cultures of laboratory adapted strains.
BSL-3	Manipulations involving high aerosol potential, high concentrations or volumes of virus, and strains lethal to NHP.
ABSL-2	Work with adult mice infected with BSL-2 strains.
ABSL-3	Work with infected hamsters and work with adult mice infected with BSL-3 strains.

SPILL PROCEDURES	
Small	Notify others working in the lab. Allow aerosols to settle. Don appropriate PPE. Cover area of the spill with paper towels and apply an EPA registered disinfectant, working from the perimeter towards the center. Allow 30 minutes of contact time before disposal and cleanup of spill materials.
Large	Contact Emory's Biosafety Officer (404-727-8863), the EHSO Office (404-727-5922), or The Spill Response Team (404-727-2888).

EXPOSURE PROCEDURES		
Mucous	Flush eyes, mouth or nose for 15 minutes at eyewash	
membrane	station.	
Other Exposures	Wash area with soap and water for 15 minutes.	
Donortina	Immediately report incident to supervisor, complete an	
Reporting	employee incident report in PeopleSoft.	
	7am-4pm (OIM):	After Hours:
	EUH (404-686-7941)	OIM NP On Call
Medical Follow-Up	EUHM (404-686-7106)	404-686-5500
	WW (404-728-6431)	PIC# 50464
	Needle Stick (OIM):	Yerkes: Maureen Thompson
	EUH (404-686-8587)	Office (404-727-8012)
	EUHM (404-686-2352)	Cell (404-275-0963)

VIABILITY	
Disinfection	Susceptible to 1% sodium hypochlorite, 2%
	glutaraldehyde, 70% ethanol, and formaldehyde.
Inactivation	Inactivated by heat.
Survival Outside	Capable of surviving outside of the host (mouse
Host	droppings).

PERSONAL PROTECTIVE EQUIPMENT (PPE)	
	At minimum, personnel are required to don gloves,
Minimum PPE	closed toed shoes, lab coat, and appropriate face and
Requirements	eye protection prior to working with LCMV. Additional
	PPE may be required depending on lab specific SOPs.
Additional Precautions	Due to the modes of transmission, respirators may be
	required when working with LCMV. Fit testing and
	training is required annually per Emory's Respiratory
	Program: http://www.ehso.emory.edu/content-
	manuals/RespiratoryProtectionProgram.pdf