

Name: *Listeria monocytogenes*

BSL: 2+

1. Mode of Transmission to Humans (e.g. inhalation, inoculation, mucous membrane exposure, etc.):

Ingestion is the most common route of exposure, but direct contact with the organism can also cause eye and skin infections. and direct contact with infectious material including contaminated soil. Other routes of exposure include inhalation or skin puncture/injection/bite. Inhalation is a possible route.

Listeria is ubiquitous in the environment. Fewer than 1,000 total organisms may cause disease. It has the ability to grow at temperatures as

low as 0 degrees C.

2. Description of the Human Disease associated with this agent or vector (including instances of laboratory acquired infections):

Highest risk to fetus, newborns, immunocompromised persons, and the elderly. Risk to adults continues to increase after age 40. Pregnant women are about 20 times more likely than other healthy adults to get listeriosis. About 1/3 of Listeriosis cases happen during pregnancy. Newborns rather than pregnant women themselves suffer the serious effects of infection in pregnancy.

Listeriosis can present in healthy adults with symptoms of fever, muscle aches, and sometimes gastrointestinal symptoms such as nausea or diarrhea. If infection spreads to the nervous system, symptoms such as headache, stiff neck, confusion, loss of balance, or convulsions can occur. Infected pregnant women may experience only a mild, flu-like illness; however, infections during pregnancy can lead to miscarriage or stillbirth, premature delivery, or infection of the newborn. Pregnant women and their fetuses, newborns, and persons with impaired immune function are at greatest risk of developing severe infections including sepsis, meningitis, and fetal demise.

There have been few documented laboratory acquired infections. Cutaneous listeriosis, characterized by pustular or papular lesions on the arms and hands, has been described in veterinarians and farmers. Asymptomatic carriage has been reported in laboratorians.

Persons with hemochromatosis are especially susceptible to infection with *Vibrio vulnificus*, *Listeria monocytogenes*, *Yersinia enterocolitica*, and *Yersinia pseudotuberculosis*. Hemochromatosis, an iron-overload disease, is characterized by increased iron absorption and progressive iron storage in multiple organs. Bacteria attenuated as a result of defects in iron acquisition may pose an increased risk for persons with hemochromatosis; animal studies have shown that the virulence of these type of attenuated *Y. pestis* strains can be enhanced by the simultaneous injection of iron into experimental animals. Conceivably, hemochromatosis-induced iron overload might have a similar effect, enhancing the virulence of an infecting attenuated strain by compensating for its iron-acquisition defects

3. Personnel Protection Required (minimum requirement):

	Laboratory	Vivarium		Laboratory	Vivarium
Safety Glasses	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Shoe Covers	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Lab Coat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Face Shield	<input type="checkbox"/>	<input type="checkbox"/>
Gloves	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Cap/Head Cover	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Goggles	<input type="checkbox"/>	<input type="checkbox"/>	Mask	<input type="checkbox"/>	<input type="checkbox"/>
Disposal Gowns	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other - Describe:	N-95 respirator is required for work with BSL-2 agents in animals outside a BSC				

4. Engineering Controls (minimum requirement):

	Laboratory	Vivarium		Laboratory	Vivarium
Autoclave	<input type="checkbox"/>	<input type="checkbox"/>	Engineered Sharps Protection	<input type="checkbox"/>	<input type="checkbox"/>
BioSafety Cabinets	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sharps Containers	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Closed Centrifuge Rotors	<input type="checkbox"/>	<input type="checkbox"/>	Closed Centrifuge Tubes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Other	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Other - Describe:	A Biosafety Cabinet must be used for all manipulations of Listeria.				

5. Disposal Procedures:

Liquids: add bleach to a final concentration of 10% bleach solution (Clorox or other bleach with Cal EPA registration number), let sit for 30 minutes, dispose of in sink (best while running water). Aspirator flasks: bleach is added to aspirator flasks initially so that the final concentration will be 10%. These must be emptied at least weekly.

Solids: disposed of in labeled, double red biohazard bags held in labeled, rigid, covered containers. Transport to biohazard collection area in a closed rigid container for final disposal by EH&S. These must be emptied at least weekly.

6. Disinfection Procedures:

Surface: 10% household bleach solution made up fresh daily (Clorox or other bleach with Cal EPA registration number) allowing 5-minutes contact time.

OR

Surface: 75 ppm of CA EPA approved iodophor (e.g. Wescodyne) allowing 5-minutes contact time.

7. Recommended/Required Vaccinations or other Medical Surveillance:

Prior to the use of *Listeria monocytogenes* in the laboratory, the PI and individuals doing the research must verify that everyone is aware when *Listeria* is going to be used. This includes all members of the laboratory as well as individuals from other laboratory groups using that space.

All personnel in the laboratory, are required to document that they have read the *Listeria* ECP and have the option to be counseled through Center for Occupational and Environmental Medicine (COEM) or the campus Occupational Health Nurse (x48225) as to the increased risk to a fetus and newborn.

All women in the laboratory with childbearing potential working with *Listeria monocytogenes*, are required to be counseled through Center for Occupational and Environmental Medicine (COEM) or the campus Occupational Health Nurse (x48225) as to the increased risk to a fetus and newborn."

8. Employee Exposures- first aid procedures:

- a. Eye exposure from splash or aerosols - rinse a minimum of 15 minutes in eye wash or flush area with water.
- b. Skin exposure - wash area with soap and water for 15 minutes
- c. Needle stick and/or sharps exposure - wash wound area with soap and water for 15 minutes
- d. Contamination of clothing - remove the contaminated clothing and place in biohazard bag, shower with the emergency douse shower, and put on clean clothes.
- e. Spill or release - Monday through Friday, 8a - 4:30p call EH&S; after hours call Campus Police

9. Employee Exposure - seek medical follow-up from the following medical providers: (TAKE THIS ECP WITH YOU)

24-hour walk-in service:

Hospital Emergency Room Or nearest Medical Center Emergency Room

Call your campus Occupational Health contact to determine if a follow up visit is required. Most exposures will require a visit to Occupational Health.

Monday - Friday, 8a - 4:30p

10. Report All Injuries, Illnesses, and Exposures to EH&S:

Report the injury incident to their immediate supervisor and complete your campus injury report form

11. Required Biosafety Training:

Laboratory specific training on hazards, exposure evaluations, and the required precautions for experimental procedures used with this agent - provided by Principal Investigator

12. Lab specific instructions: