Agent Information

* Yersinia pestis is a nonmotile, slow-growing bacteria classified in the family Enterobacteriaceae. It appears as plump, gram-negative coccobacilli that are seen mostly as single cells or pairs, which may exhibit bipolar staining from a direct specimen if stained with Wright stains. This appearance has been referred to as “safety pin-like”.
* *Y. pestis* causes a zoonotic disease of rodents and in humans that can take the form of bubonic, septicemic or pneumonic plague. Humans generally contract the disease through contact with infected rodents or their fleas.
  + Bubonic plague may occur 2-8 days after the bite of an infected flea with rapid onset of symptoms of high fever, severe malaise, headache, myalgias, and sometimes nausea and vomiting. Buboes (swollen and extremely painful infected lymph nodes) usually develop at the same time as symptoms are generally 1-10 cm in diameter.
  + Septicemic plague occurs when the bacteria enter the bloodstream, which occurs in 10-20% of plague cases. This can occur with or without the formation of buboes. Without treatment septicemic plague is 100% fatal. With treatment there is a 30 to 50% survival rate.
  + Pneumonic plague occurs when the lungs become infected from the blood stream or from inhaling the bacteria. An infectious dose is < 100 colony forming units. Patients with primary pneumonic plague develop symptoms within 1- 6 days. Without treatment it is 100% fatal. When treated there is a 60 % mortality rate. Pneumonic plague is the only form of plague which is readily transmissible from person to person. From past plague epidemics the secondary infection rate is estimated to be 1.3 cases per primary case.
* There are no licensed plague vaccines currently available in the United States. Antibiotics Gentamicin and fluoroquinolones (Ciprofloxacin, Levofloxacin) are first-line treatments.
* *Y. pestis* is a Select Biological Agent (SBA) requiring registration with CDC and/or USDA for possession, use, storage and/or transfer and is also a DURC (Dual Use Research of Concern) requiring controlled/registered access.
* *Y. pestis* is susceptible to 1% sodium hypochlorite, 70% ethanol, 2% glutaraldehyde, iodines, phenolics, formaldehyde disinfection and sensitive to moist heat (121° C for at least 15 min) and dry heat (160-170° C for at least 1 hour).
* Primary laboratory hazards include work with bacterial cultures and infectious materials (bubo fluid, blood, sputum, CSF, feces, urine) from humans or rodents; infectious aerosols or droplets generated during manipulation of cultures and infected tissues and in the necropsy of rodents; accidental autoinoculation; ingestion.
* *Y. pestis* is a Risk Group 3 agent. Work with the bacteria or infectious materials from humans or animals requires BSL3 containment, work practices, and disposal of contaminated materials as biohazardous waste.

References:

* Pathogen Safety Data Sheets: Infectious Substances – Yersinia pestis (<https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/yersinia-pestis-material-safety-data-sheets-msds.html>)
* Biosafety in Microbiological and Biomedical Laboratories-6th Edition (BMBL 6). U.S. Department of Health and Human Services, CDC, NIH (<https://www.cdc.gov/labs/pdf/CDC-BiosafetyMicrobiologicalBiomedicalLaboratories-2020-P.pdf>)

Enter the following information:

1. Name of the Principal Investigator: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Applicable IBC protocol number(s) (approved or submitted): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. List the laboratory locations (building/room[s]) for *Y. pestis*, a BSL3 agent:

* Procedures:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and Storage: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. If introducing *Y. pestis* or *Y. pestis* -containing agents into animals, list the animal facility locations (building/room[s]) for these animals. ABSL3 containment is required.

Procedures: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and Housing:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Date of Agent Summary form completion: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_