

## **This information sheet is for the care and use of laboratory rodents (including rats, mice, hamsters, guinea pigs & gerbils).**

**Potential Zoonotic Diseases:** Colony-born rodents are generally docile, but may occasionally inflict injury such as a bite or scratch. While rodents may carry organisms that may be potentially infectious to humans, the major health risk to individuals working with laboratory rodents is the development of an allergy. The development of disease in the human host often requires a preexisting state that compromises the immune system. If you have an immune-compromising medical condition or you are taking medications that impair your immune system (steroids, immunosuppressive drugs, or chemotherapy) you are at higher risk for contracting a rodent disease and should consult your physician. The following is a list of some of the potential rodent zoonoses.



**Lymphocytic choriomeningitis:** Lymphocytic choriomeningitis (LCM) is caused by the arenavirus commonly associated with hamsters, but does infect mice. LCM is rare in laboratory animal facilities, more common in the wild. Transmission to humans is through contact with infected tissues including tumors, feces, urine, or aerosolization of any one of these. Disease in humans is generally flu-like symptoms that range from mild to severe.

**Campylobacter:** This is a gram negative bacterium that has a worldwide distribution. Although most cases of human campylobacteriosis are of unknown origin, transmission is thought to occur by the fecal-oral route through contamination of food or water, or by direct contact with infected fecal material. The organism has also been isolated from houseflies. Campylobacter is shed in the feces for at least six weeks after infection. Symptoms are acute gastrointestinal illness: diarrhea with or without blood, abdominal pain, and fever. It may cause pseudoappendicitis and, rarely, septicemia and arthritis. Usually it is a brief self-limiting disease that can be treated with antibiotics.

**Leptospirosis:** Is bacteria found in many animals but are most commonly associated with livestock and dogs. The source of infection can be from any of the following: rats, mice, voles, hedgehogs, gerbils, squirrels, rabbits, hamsters, reptiles, dogs, sheep, goats, horses, and standing water. Leptospire are in the urine of infected animals and are transmitted through direct contact with urine or tissues via skin abrasions or contact with mucous membranes. Transmission can also occur through inhalation of infectious droplet aerosols and by ingestion. The disease in people is a multi-systemic disease with chronic sequelae. An annular rash is often present with flu like symptoms. Cardiac and neurological disorders may follow and arthritis is a common end result.

**Hantavirus Infection:** Hantavirus occurs mainly among the wild rodent populations in certain portions of the world. Rats and mice have been implicated in outbreaks of the disease. A hantavirus infection from rats has very rarely occurred in laboratory animal facility workers. Rodents shed the virus in their respiratory secretions, saliva, urine and feces. Transmission to humans is via inhalation of infectious aerosols. The form of the disease that has been documented after laboratory animal exposure is characterized by fever, headache, myalgia (muscle aches) and petechiae (rash) and other hemorrhagic symptoms including anemia and gastrointestinal bleeding.

**Other Bacterial Diseases:** There are several other bacterial diseases that are possibly, though rarely spread through working with laboratory rodents. These include *yersinia* and *tularaemia*.

**Allergic Reactions to Rodents:** By far the greatest occupational risk to working with rodents is allergic reaction or developing allergies. Those workers that have other allergies are at greater risk. Animal or animal products such as dander, hair, scales, fur, saliva and body waste, and urine in particular, contain powerful allergens that can cause both skin disorders and respiratory symptoms. The primary symptoms of an allergic reaction are nasal or eye symptoms, skin disorders, and asthma. If you have symptoms you are strongly advised to contact the Occupational Health Coordinator at 949-824-3757 to discuss this issue and arrange for follow-up with an occupational health physician.

**Tell your physician you work with animals:** Whenever you're ill, even if you're not certain that the illness is work related, always mention to your physician that you work with animals. Many zoonotic diseases have flu-like symptoms, and your physician needs this information to make an accurate diagnosis.

**Seek Medical Attention Promptly.** If you are injured on the job, promptly report the accident to your supervisor even if it seems relatively minor. Minor cuts and abrasions should be immediately cleansed with antibacterial soap and then protected from exposure to animals and their housing materials. For more serious injuries seek medical services through Workers Compensation by calling (949) 824-9152 or visiting their website at <http://www.hr.uci.edu/>

For treatment locations <http://www.ehs.uci.edu/MedEmergPoster.pdf>

#### References:

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Laboratory Animal Allergens: <http://www.bu.edu/buohc/files/2009/07/all-laa.pdf>

Prevention of laboratory animal allergy - Occupational Medicine

<http://occm.oxfordjournals.org/content/53/6/371.full.pdf>

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SPECIES	BIOLOGICAL HAZARD/PATHOGEN	ROUTE OF TRANSMISSION	CLINICAL SYMPTOMS	PREVENTION/PROPHYLAXIS	MEDICAL SURVEILLANCE REQUIRED	RISKS FOR EXPOSURE AT UCI
Rats & mice	Argentine hemorrhagic fever	Skin lesions, ingestion of contaminated products, inhalation of aerosols that come in contact with the conjunctiva and the oral or nasal mucosa	Fever, malaise, chills, fatigue, dizziness, cephalalgia, dorsalgia, conjunctival congestion, retro-orbital pain, epigastralgia, halitosis, nausea, vomiting, constipation or diarrhea, increased vascularization of the soft palate, axillary and inguinal adenopathy, petechiae on the skin and palate, congestive halo on the gums, epistaxis, gingival hemorrhaging, slowed mental response, unsteady gait, hypotension, bradycardia, muscular hypotonia, osteotendinous hyporeflexia, hematemesis, melena, muscular tremors in the tongue and hands, confusion or excitability, tonic-clonic convulsive seizures, cerebellar syndrome	Avoid contact with wild animal. Use good personal hygiene and PPE. Vaccine available in endemic areas	No	Field work endemic areas
Rats & mice	Bolivian hemorrhagic fever	Contact with urine, contaminated food and water	Fever, myalgia, conjunctivitis, cephalalgia, cutaneous hypersensitivity, gastrointestinal symptoms, hemorrhaging from gums, nose, stomach, intestines, uterus, hypotension, tremors of tongue, convulsions, coma, leukopenia, hemoconcentration, proteinuria, adenopathy, focal hemorrhages in the gastric and intestinal mucosa, lungs, and brain	Avoid contact with wild animal. Use good personal hygiene and PPE	No	No
Rats & mice	Endemic typhus	Flea bite, contact with conjunctiva, inhalation	Fever, severe cephalalgia, generalized pains, coughing, nervousness, nausea, vomiting, myalgia	Avoid contact with wild animal, good personal hygiene and PPE	No	No
Rats & mice	Francisella tularensis	Ingestion of contaminated water and food, aerosols, scratch, bite, tick	Rising and falling fever, chills, asthenia, joint and muscle pain, cephalalgia, vomiting, ulceroglandular	Medical care for all bites from field animals. Wear protective clothing, protection of food and water. Vaccine available for lab workers	No	No
Rats & mice	Hantavirus Pulmonary Syndrome	Bite, contact with rodent excreta, aerosol	Chills, myalgia, headache, abdominal pain, coughing, rapid development of respiratory insufficiency, hypotension	Use protective face masks and gloves when handling rodents or traps containing rodents or droppings. Personal hygiene, PPE	No	Yes

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Rats & mice	Hemorrhagic Fever with Renal Syndrome	Bite, contact with rodent excreta, aerosol	Fever, chills, generalized discomfort, myalgia, extensive edema of the peritoneum, severe abdominal and lumbar pain, flushing of the face, neck, thorax, congestion of the conjunctiva, palate, pharynx, shock, capillary hemorrhage, elevated blood urea and creatinine levels, hypertension, nausea, vomiting, hemorrhaging	Use protective face masks and gloves when handling rodents or traps containing rodents or droppings. Personal hygiene and PPE	No	No at UCI, only in Asia
Rats & mice	Lassa fever	Aerosols, direct contact with excreta, or skin lesions	Fever, asthenia, muscular pain, cephalgia, vomiting, diarrhea, abdominal pain, edema of face and neck, conjunctivitis, pharyngitis, tonsillitis, cough, stertor, thoracic pain, ulcerative pharyngitis, albuminuria, low serum albumin, elevated urea nitrogen, capillary hemorrhaging, central nervous system involvement, respiratory insufficiency, oliguria, shock, circulatory collapse	Avoid contact with blood or other body fluids, wear masks, gloves, and protective clothing. Good personal hygiene. Contacts who are most exposed can be given ribavirin on a preventative basis.	No	No
Rats & mice	Leptospirosis	Skin abrasions and direct contact with nasal, oral, and conjunctival mucosa, contaminated water and foods	Fever, headache, myalgias, conjunctivitis, nausea, vomiting, diarrhea or constipation, prostration, petechiae on the skin, hemorrhages in the gastrointestinal tract, proteinuria, hepatomegaly and jaundice, renal insufficiency with marked oliguria or anuria, azotemia, electrolyte imbalance, stiffness of neck	Personal hygiene, PPE	No	Yes
Rats & mice	Listeriosis	Contaminated foods, contact	Meningitis, meningococcal meningitis, chills, increased body temperature, cephalgia, slight dizziness, gastrointestinal symptoms	Avoid contact with wild animal, protection of food and water, personal hygiene and PPE	No	Yes
Rats & mice	Lymphocytic choriomeningitis	Contaminated foods, contact, bite	Fever, headache, myalgia, leukopenia, thrombocytopenia, meningitis, stiff neck, cephalgia, malaise, muscle pain, orchitis, myopericarditis, arthritis, alopecia	Personal hygiene and PPE	No	Yes
Rats & mice	Plague	Flea bite, skin abrasions or bites	Fever, chills, cephalgia, nausea, generalized pain, diarrhea, constipation, toxemia, shock, arterial hypotension, rapid pulse, anxiety, staggering gait, slurred speech, mental confusion, prostration	Flea and rodent control, inactivated vaccine, PPE	No	No at UCI; field work; Southwest

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Rats & mice	Rabies	Bite, contact with infected tissue or body fluids	Fever, headache, agitation, confusion, excessive salivation	Avoid contact with wild animal, use appropriate PPE. Medical care for all wild animal bites	Rabies vaccine	None in Lab animals
Rats & mice	Rickettsialpox	Mouse bite, mite bite	Chills, profuse sweating, intermittent fever, cephalalgia, myalgia, nasal discharge, cough, nausea, vomiting, abdominal pain	Avoid contact with wild animal, incinerate trash. Medical care for all wild animal bites	No	No
Rats & mice	Salmonellosis	Fecal/Oral, contaminated food and water	Diarrhea, vomiting, low grade fever	Personal hygiene and PPE	No	Yes
Rats & mice	Spirillum minus	Bite, rat saliva	Fever, headache, chills, myalgia, arthralgia, endocarditis, pneumonia, metastatic abscesses, anemia, vomiting, pharyngitis	Avoid contact with wild animal, protection of food and water. Medical care for all animal bites	No	Yes
Rats & mice	Trichophyton mentagrophytes	Contact with skin, spores contained in the hair and dermal scales shed by the animal	Inflammatory dermatophytosis	Avoid contact with wild animal, isolate sick animal and treat with topical antimycotics or griseofulvin administered orally, and remains of hair and scales should be burned and rooms, stables, and all utensils should be disinfected	No	Yes
Rats & mice	Venezuelan Hemorrhagic Fever	Contact with infected rodent and their excreta	Fever, prostration, cephalalgia, arthralgia, cough, pharyngitis, nausea, vomiting, diarrhea, epistaxis, bleeding gums, menorrhagia, melena, conjunctivitis, cervical adenopathy, facial edema, pulmonary crepitation, petechiae, thrombocytopenia, leukopenia	Avoid contact with wild animal, personal hygiene, PPE	No	No
Rats & mice	Yersinia enterocolitica	Fecal/Oral, contaminated food and water	Fever, hypotension, abdominal pain, diarrhea, vomiting, sore throat, bloody stool, cutaneous eruptions, joint pain	Personal hygiene and PPE	No	Yes
Rats & mice	Allergy: Saliva, Urine, Blood, Dander or Fur	Contact with skin or inhalation	Respiratory irritant, Asthma, Dermatitis	Respiratory protection, gloves	Possible	High with direct contact

Revised 07/2014 information taken from UC Davis.