Zoonosis = an infection or infestation which is shared in nature by man and lower vertebrate animals.

For the purposes of this presentation, "zoonotic disease" will be defined as a disease that is caused by the transmission of an organism from animal to man.

Some organisms are transmitted both ways
There are organisms, which are transmitted from animals to man and man to animals. The following are some examples of organisms, which can be transmitted both ways. Persons infected with these organisms should not come in contact with the species listed during their illness.

Measles virus (man - nonhuman primates)
Influenza (man - ferrets)
Shigella (man - nonhuman primates)
Mycobacterium (man - nonhuman primates)
DISEASE:  **Tetanus**

**NAME OF ORGANISM:**  Clostridium tetani

**TYPE OF ORGANISM:**  Bacteria

**MAIN SOURCE:**  soil and animal feces

**MAIN ROUTE OF INFECTION:**  injury (bite, scratch, cut, poke)

**SIGNS SEEN IN INFECTED ANIMALS:**  asymptomatic, muscle spasms

**SIGNS/SYMPTOMS IN INFECTED PERSON:**  muscle spasms, terminal asphyxia (suffocation)

**HOW TO PREVENT INFECTION:**

- proper handling/restraint to prevent injury
- proper first aid
- report injury and receive medical evaluation
- vaccination
DISEASE:  *Salmonellosis, Campylobacteriosis, Shigellosis*

**NAME OF ORGANISM:**  
- *Salmonella enteritidis*  
- *Campylobacter jejuni*  
- *Shigella flexneri*

**TYPE OF ORGANISM:**  *bacteria*

**MAIN SOURCE:**

*Salmonella*
- Contaminated food, water
- Farm animals
- Reptiles - soft shelled turtles
- Dog, cat
- Guinea pig
  (others not listed)

*Campylobacter*
- Contaminated food and water (especially poultry)
- Dog, cat
- Sheep, goat
- Nonhuman primate
- Hamster
- Ferret

*Shigella*
- Nonhuman primate
- Dog
- Cat

**MAIN ROUTE OF INFECTION:**  ingestion of contaminated food and/or water, and contaminated hands (from contact with animals) to mouth

**SIGNS SEEN IN INFECTED ANIMALS:**
Salmonella
asymptomatic
Diarrhea +/- blood, anorexia, lethargy

Campylobacter
Asymptomatic
Diarrhea +/- blood

Shigella
Asymptomatic
Diarrhea +/- blood
Anorexia

SIGNS/ SYMPTOMS IN INFECTED PERSON:
Asymptomatic, diarrhea +/- blood, abdominal pain, fever and septicemia (salmonella)

HOW TO PREVENT INFECTION:

Personal Protective Equipment (PPE)
Wash your hands
(prepare food properly)
DISEASE:  Giardiasis

NAME OF ORGANISM:  Giardia lamblia

TYPE OF ORGANISM:  Protozoa

MAIN SOURCE:
Other humans, contaminated water, dogs, farm animals, nonhuman primates (others not listed)

MAIN ROUTE OF INFECTION:
Ingestion of cysts

SIGNS SEEN IN INFECTED ANIMALS:
asymptomatic, diarrhea, vomiting and weight loss

SIGNS/SYMPTOMS IN INFECTED PERSON:
Asymptomatic, and diarrhea

HOW TO PREVENT INFECTION:
PPE
Wash Your Hands
DISEASE: Lymphocytic Choriomeningitis

NAME OF ORGANISM: Lymphocytic choriomeningitis virus

TYPE OF ORGANISM: virus

MAIN SOURCE: mouse, hamster, guinea pig, dog and nonhuman primate

MAIN ROUTE OF INFECTION: direct contact with infectious urine, and inhalation of dust from contaminated bedding

SIGNS SEEN IN INFECTED ANIMALS: asymptomatic, rough hair coat, facial edema, and seizures

SIGNS/SYMPTOMS IN INFECTED PERSON:

"flu-like illness", very stiff, sore neck (meningitis), nervous system signs (encephalitis)

HOW TO PREVENT INFECTION:

PPE
Wash Your Hands
SPECIAL SITUATIONS

There are times when animals are inoculated with organisms for research purposes; this species would normally not be considered a source of that organism.

Check with the primary investigator to find out what organisms are being used and which PPE and other procedures may be necessary while working with these animals.
Medical conditions that may result in immunosuppression

- Acquired immunodeficiency syndrome (AIDS)
- Cancer patients on Chemotherapy treatment
- Organ transplant patients (on immunosuppressive therapy)
- Splenectomy (spleen has been removed)
- "Pregnancy"

Follow Proper Safety Procedures

- Use Proper Personal Protective Equipment (PPE)
- Wash Your Hands
- Get Proper First Aid
- Report Injuries

Routes of organism transmission discussed in this handout

- Penetration through skin (injury) = bite, scratch, needle stick, scalpel cut, contamination of previous wound
- Direct contact to skin, mucous membranes
- Ingestion (direct ingestion of contaminated food/water is a common route; in the research environment, contaminated hands contacting the mouth, with subsequent ingestion of the organism would be the more likely route)
- Inhalation
DISEASE: RAT BITE FEVER

NAME OF ORGANISM: Streptobacillus moniliformis
                   Spirillum minus

TYPE OF ORGANISM: Bacteria

MAIN SOURCE: rat, mouse, and other rodents

MAIN ROUTE OF INFECTION: bite

SIGNS SEEN IN INFECTED ANIMALS: asymptomatic

SIGNS/SYMPOMTS IN INFECTED PERSON:
Fever, headache, chills, rash, pneumonia, liver infection (hepatitis)
heart infection (endocarditis)

HOW TO PREVENT INFECTION:

Proper handling/restraint to prevent injury
Proper fist aid
Report injury and receive medical evaluation
ALL THE ANIMALS HOUSED AND MAINTAINED IN WESTERN MICHIGAN UNIVERSITY'S ANIMAL FACILITY HAVE BEEN PURCHASED FROM REPUTABLE, VIRAL ANTIBODY FREE (V.A.F.), DEALERS. A COPY OF THE HEALTH REPORTS CAN BE OBTAINED FROM THE ANIMAL FACILITY MANAGER. RISKS OF ANY INFECTION ARE VERY MINIMAL GIVEN THESE FACTORS.

WHEN ALL PERSONAL PROTECTION INSTRUCTIONS ARE FOLLOWED, THE CHANCE OF INFECTION IS NEGLIGIBLE.