I. PURPOSE
   A. The following SOP details the procedures to follow at the University of Michigan in the event that a dog, cat, or ferret bites someone. This SOP follows the May 2008 "Rabies Protocol for Mammals Which Have Bitten People or Pets" and associated information, as distributed by the Michigan Veterinary Medical Association.

II. DEFINITIONS
   A. Rabies – A viral disease transmitted from animals (e.g. dogs, cats, ferrets, skunks, bats, raccoons) to other animals or humans. Rabies infects the central nervous system, ultimately causing disease in the brain and death if early treatment is not provided.
   B. Cat scratch disease – A bacterial disease transmitted from cats to humans usually via a bite or scratch that can cause a range of clinical signs in humans (lymph node enlargement to sepsis; skin lesions in AIDS patients). This disease is usually caused by Bartonella henselae or Bartonella quintana which are organisms found in the oral cavity of most cats.
   C. PCAR – Pathology Cores for Animal Research

III. GENERAL RECOMMENDATIONS
   A. Dogs and cats that are used in research at the University of Michigan are not routinely vaccinated for rabies upon arrival since exposure is extremely unlikely while on campus. Dogs and cats are presumed not to have been vaccinated prior to arrival.
      1. Purpose-bred dogs and cats are unlikely to have been exposed to rabies prior to arrival. If a bite incident occurs involving a purpose-bred dog or cat, the animal should be held in quarantine for 10 days (see IV.B. below). Euthanasia is probably not warranted.
      2. Random source dogs and cats have an opportunity for exposure to rabies prior to arrival. For this reason, bites from these animals should be considered more significant.
   B. All ULAM employees that have contact with random source dogs and cats, and any member of a laboratory staff that has significant contact with these species, should be vaccinated against rabies and have their titers checked every two years. They must be enrolled in the University of Michigan Occupational Health Program for Animal Handlers.

IV. PROCEDURES
   A. If an individual gets bitten or scratched by a dog, cat, or ferret:
      1. Following a scratch - The injured employee should immediately wash the affected area thoroughly with soap and water, and contact his/her
supervisor. If the scratch is severe or from a cat (due to the possibility of cat scratch disease), the injured employee should proceed directly to the UM Occupational Health Services for care of the wound(s). UM Occupational Health Services phone number is (734) 764-8021. They should be notified of the injury and expected visit. For after hours, weekend, and holiday exposures proceed to the Emergency Room after initial first aid. The Emergency Room phone number is (734) 936-6666.

2. Following a bite - The injured employee should immediately wash the affected area thoroughly with soap and water, contact his/her supervisor, and proceed directly to the UM Occupational Health Services for care of the wound(s). UM Occupational Health Services phone number is (734) 764-8021. They should be notified of the injury and expected visit. For after hours, weekend, and holiday exposures proceed to the Emergency Room after initial first aid. The Emergency Room phone number is (734) 936-6666. In addition to the concern regarding rabies transmission, bacterial infection is clearly a possibility and requires prompt medical attention.

3. Following a bite - The injured employee's supervisor is to immediately notify the ULAM veterinary technicians, who should immediately notify the veterinary resident, the faculty veterinarian, and the principal investigator (PI).

4. All work related illnesses and injuries must be reported to Work Connections, by the supervisor within 24 hours by faxing the completed Illness and Injury Report Form to (734) 936-1913. This form is available at www.umich.edu/~connect in the Forms section.

5. The animal involved in the incident should be identified immediately by the veterinary technicians and housed individually (see IV.B below). The following plan is a guideline for the veterinary staff with regard to the further disposition of the animal:
   a. If the animal is showing clinical signs of rabies (see section IV.B.4 below)
      i. The animal should be euthanized immediately. Please consult the following PCAR SOP “Submission and Shipping of Rabies Specimens to MDCH” for appropriate sample submission information.
      ii. The clinical resident or faculty veterinarian should immediately do the following:
          1) Notify the principal investigator and all affected employee(s) of the clinical evidence indicative of rabies.
          2) Notify the Washtenaw County Department of Public Health at (734) 544-6700, or after hours at (734) 891-4327
          3) Notify Occupational Safety and Environmental Health (OSEH) at (734) 647-1143.

   b. If the animal is healthy, or has an illness which is clearly not rabies, three options are available:
      i. The animal can be euthanized immediately (see 5.a.i)
The animal can be used in a terminal experiment by the investigator with the written permission of ULAM faculty veterinarian.

1) At the conclusion of the experiment the animal’s head must be submitted for testing (see 5.a.i). If an experiment is not conducted immediately, the animal must be quarantined (!see section IV.B below) until the terminal procedure is performed.

2) The experiment cannot involve the inoculation of hazardous agents (e.g., radioisotopes, infectious pathogens) into the animal.

iii The animal can be confined for a 10-day quarantine period (see IV.B below).

6. All class B dogs and cats are candidates for 10-day confinement, as they are generally used in studies with intermediate- to long-term housing expectations. Participation of these animals in studies should be suspended during the 10-day quarantine period, if possible. If suspension of study participation is not possible, the use of conditioned class B animals involved in bite incidents during the 10-day quarantine period must be approved by the ULAM faculty veterinarian. If study-related euthanasia is required before the end of the 10-day quarantine, the animal’s carcass, including the head must be submitted (see 5.a.i)

B. 10 Day Quarantine Period

1. It is routine veterinary practice to quarantine dogs and cats for 10 days if they have bitten a human being (!see Figure 1). The purpose of this quarantine is to observe the animal for the development of the clinical signs of rabies. Dogs and cats actively shedding the rabies virus in their saliva at the time of the bite will develop clinical illness within five days. The 10 day quarantine provides added assurance that any animal shedding the rabies virus at the time of the incident will be detected.

2. During quarantine, the animal must be housed individually. The veterinary technician is responsible for ensuring the proper housing arrangement, and for clearly posting a notice on the animal's cage or pen, reading "10-day Quarantine - Rabies Suspect," with the start and end dates of the quarantine noted. There should also be space provided on the notice for permission by the ULAM veterinary staff to release the animal for a terminal experiment to be noted directly on the cage. The animal can be quarantined in its original housing room, as long as no other animals can come in direct contact with it. For example, neighboring pens are kept empty and other animals are not allowed access to the aisle for exercise.

3. The veterinary technician will be responsible for providing daily husbandry care, including feeding. The husbandry staff must not handle or come in contact with the animal during the quarantine period. The veterinary technician must be rabies vaccinated and up-to-date on titer checks (every two years).

4. The animal must be observed twice daily by the ULAM veterinary technicians to monitor for the clinical signs of rabies infection (see section IV.B.4 below). It is recommended that a rabies vaccine NOT be
administered during the confinement period to avoid potential confusion of clinical signs of rabies with possible side effects of vaccine administration.

5. Clinical Signs of Rabies in Dogs and Cats
   a. Prodromal stage: Usually lasts 1-3 days. Clinical signs are often non-specific and variable. Signs may include behavioral changes including increased anxiety or aggression, increased sensitivity to light or noise, refusal to eat or drink, frequent urination, +/- excessive salivation.
   b. Excitative stage: This stage rarely lasts more than several days before progressing to the paralytic stage, and may be very short or absent altogether. Clinical signs include extreme aggression, disorientation; attempts to bite, eat, or swallow non-food objects; dilated pupils; muscle tremors, flaccidity, or incoordination progressing to seizures. Dogs rarely live more than 10 days after the onset of the excitative phase.
   c. Paralytic stage: Initial paralysis is of the throat and jaw muscles, which results in the inability to swallow and the characteristic hypersalivation. Paralysis rapidly extends to all parts of the body and ultimately results in coma and death.

6. If the animal exhibits such clinical signs consistent with rabies, it must be euthanized immediately and the head be submitted (see A.5.a.i)
   a. The veterinary technician should notify the investigator immediately, as well as the affected employee(s).
   b. The affected employee(s) should notify his/her physician and supervisor.
   c. The clinical resident or faculty veterinarian should notify the Washtenaw County Department of Public Health immediately at (734) 544-6700, or after hours at (734) 891-4327 and Occupational Safety and Environmental Health (OSEH) at (734) 647-1143.

6. If an animal fails to exhibit any clinical signs of rabies for the duration of the 10-day quarantine, the quarantine will be lifted and the twice-daily observations discontinued.

7. The Principal Investigator is responsible for all per diem and associated charges accumulated during the quarantine period.

C. Ferrets and Other Species
   1. Ferrets used in biomedical research are typically vaccinated for rabies at the vendor and raised in a confined indoor-outdoor facility. Thus they are not likely to contract or be exposed to rabies before or after arrival at the University of Michigan. Therefore:
      a. If a purpose-bred ferret obtained from a commercial dealer is involved in a bite incident, it must be quarantined for 10 days, like dogs and cats (see IV.B).
      b. If a ferret with no previous vaccination history is involved in a bite incident, it may be euthanized immediately and the carcass (including the head) submitted (see A.5.a.i) or it can be quarantined for 10 days, like dogs and cats (see IV.B).
2. The following laboratory animal species are NOT considered likely to carry rabies, and they will NOT be tested in the event of a bite incident, except by special arrangement with the Michigan Dept. of Community Health [(517) 355-8165; (517) 355-9030 after 5:00 PM and weekends]:
   a. Chipmunk
   b. Gerbil
   c. Gopher
   d. Guinea pig
   e. Hamster
   f. Mole
   g. Mouse
   h. Muskrat
   i. Prairie dog
   j. Rabbit
   k. Rat
   l. Shrew
   m. Squirrel
   n. Vole

VI. REFERENCES

VII. ATTACHMENTS

Figure 1: Rabies Protocol (Michigan Rabies Working Group and MVMA)