INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE
TUFTS UNIVERSITY & TUFTS MEDICAL CENTER
T:(b) (6) **email:** iacuc-office@tufts.edu
Website: *http://viceprovost.tufts.edu/iacuc/*

2019-2020 Annual Report of Research Facility

Customer ID Number: 628

Explanation for Column E:

In this protocol, the life cycle of tickborne pathogens using simulated natural cycle of transmission is studied. Ticks are obligate parasites, meaning they require blood to develop or reproduce. By bloodfeeding, these arthropods acquire and transmit certain infectious agents. Rodents are the natural hosts for the immature stages of the ticks that we study and these ticks are thus best studied and maintained on these animals. In addition, rodents are the natural hosts for the various infectious agents that we study. Although elements of the life cycles of the infectious agents or their tick hosts might be studied by the use of in vitro methods, the entire life cycles are not achievable by such replacements or refinements. We seek to simulate the natural cycle as much as possible and artificial feeding would not simulate the processes of inflammation, cell recruitment, hormonal milieu, etc. that may be critical for optimal pathogen transmission. Antibiotics or antipyretics cannot be administered because we seek to maintain the infections in as natural a manner as possible. We have yet to be able to efficiently infect ticks and maintain the full life cycle of any of the agents we study without needing a living animal host. Also, we seek to determine whether some strains of Powassan/deer rick virus may be more neurotropic. This requires observation of neurologic disease. There is no known treatment for deer tick virus encephalitis (nor for any other flaviviral encephalitis). It may be possible to partially relieve pain or distress by administration of analgesics, anti-inflammatory or anti-emetic drugs, but this may diminish our ability to detect clinical signs and hence our ability to euthanize as soon as possible.
Species: Hamster Number: 20
Species: Guinea pig Number: 2
Species: Peromyscus Number: 25

In this protocol, a comprehensive study of the transmission dynamics of the infectious agents within these ectoparasites are studied. Because humans and rodents increasingly interact, studies of the natural history of infectious agents that depend on rodents and their ectoparasites may help us devise interventions against those that are known to be a public health burden (e.g. Lyme disease) or whether rare infections (Rocky mountain spotted fever, tularemia, deer tick virus encephalitis) may emerge to become public health burdens. These ticks are natural vectors for spotted fever, tularemia, Master's disease, ehrlichiosis, and Powassan encephalitis. We need to trap animals because they are naturally infected with ectoparasites of public concern,

commonly serve as a source of infection for the ticks or as a source of contamination of peridomestic environments. Animals may be restrained within live traps for several hours without free access to water to reduce risk of hypothermia, but bait such as peanut butter or oats is provided. The presence of humans would not be conducive to successful trapping. Shrews have very high metabolic rates and require a readily accessible food source. Unfortunately, they cannot subsist on the food used as bait for live traps (peanut butter, oats, raisins) and may die before traps are checked, depending on when they are captured (if caught at dusk, they will likely be dead in the morning). We carry canned cat food and provide this within the trap when a live shrew is found. We cannot, however, routinely add cat food to our bait because of issues with fouling the traps as well as the likelihood of repelling rodents and attracting raccoons. Accordingly, there is some trap mortality with shrews that cannot be eliminated. All animals are evaluated immediately on discovery within a trap.

Species: Peromyscus Number: 40
Species: Shrew Number 3
Species: Chipmunk Number: 6
Species: Rabbit Number: 2
Species: Skunk Number: 2
Species: Woodchuck Number: 1

The swine and hamsters are used in this study to establish a model, and evaluate the efficacy of candidate vaccines and therapeutics for infectious diseases caused by *C. difficile, Shigella* sp. *E. coli* sp., and *Cryptosporidium* sp. Infected animals may experience unrelieved pain or distress due to gastrointestinal or systemic illness. While the clinical manifestations of the disease may be treated by administration of antibiotics; anti-diarrheal drugs or analgesics may eliminate diarrhea and/or abdominal /gastrointestinal pain; inflammation resulting from infection may be partially relieved by administration of analgesics or anti-inflammatory drugs, this would resolve the infection and diminish the host immune response we are trying to study or interfere the evaluation for vaccines and therapeutic efficacy, thus negate the purpose of the study.
Species: Swine Number: 21
Species: Hamster Number: 190

INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE
TUFTS UNIVERSITY & TUFTS MEDICAL CENTER
T: (b) (6) email: iacuc-office@tufts.edu
Website: http://viceprovost.tufts.edu/iacuc/

Registration Number: 14-R-0065
Customer Number: 628
November 18, 2020

Death as an endpoint:

No studies to report for October 1, 2019-September 30, 2020.