

INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE

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Explanation for Column E:

In this protocol, the life cycle of tickborne pathogens using simulated natural cycle of transmission is studied. 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.

Species: Hamster Number: 51 Peromyscus 20

The goals of this protocol are to stimulate production of antibodies against selected antigens derived from bacteria, protozoa, bacterial toxins, viruses, fungi, guinea pig proteins and shrimp protein; harvest serum from animals producing antibodies as a source of these antibodies; and isolate the B cells capable of producing these antibodies. Rabbits which will be used for antiserum production under this protocol. The in vivo effects of antiserum generation are often responsive to administration of specific antiserum if administered early enough following exposure. However, treatment with antiserum would eliminate the immune system activity and thus interfere with the ability to stimulate the immune system to produce antiserum. Anxiolytics may be useful in minimizing the stress associated with the sensation of intoxication. However, it is unknown what effect these substances may have and what effect they may have on the immune response. Thus, such substances will not be used.

Species: Rabbit Number: 4

Adult hard ticks that are endemic to New England will not feed on rodents. Adult ticks are the reproductive stage; maintaining a flourishing colony of ticks requires efficiently feeding adult ticks so that they will lay eggs and perpetuate the colony. We seek to increase our production of deer ticks that may be considered specific pathogen free, and the only means of doing so is to feed them on rabbits. Our colonies of specific pathogen free deer ticks are in increasing demand due to clinical trials. Current studies seek to understand the biological basis of Post Treatment Lyme Disease Syndrome (PTLDS), the safety of feeding colony-derived larval deer ticks on human volunteers, and other studies that need pathogen free deer ticks. Tick feeding may be distressful to rabbits. Sedation or analgesia may alleviate this distress, but it is to be avoided due to the possibility of disrupting tick feeding, which is the goal of this protocol.

Species: Rabbit Number: 1

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Animals may be restrained within live traps for several hours (no more than 12); during months of reduced daylight, traps are checked approximately 2 hours after dark and any captures are removed to a warm location for examination before being released at the point of capture. Accordingly, such animals may become distressed and will not have free access to water. Bait comprises peanut butter or oats (adding raisins if the weather is cold) and the quantity would suffice for one night. Water is not provided. Snap traps efficiently kill small mammals, but the possibility that an occasional capture will not be killed outright and will suffer overnight, cannot be excluded. In the PI's 20 year experience, an estimate of no more than 1 in 100 rodents may be caught and not immediately killed in a snap trap. Such animals are immediately euthanized when discovered. Traps cannot be monitored continuously during all hours of the night. Species: *Peromyscus* (wild mice) Number: 90

The swine and cattle are used in this study to establish a model, and evaluate the efficacy of candidate vaccines for infectious diseases caused by *Shigella* 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, and pain and 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 response we are trying to study, and would thus negate the purpose of the study.

Species: Swine Number: 133 Species: Cattle Number: 1

Pigs infected with Zika and/or Dengue may experience unrelieved pain or distress due to fever and additional symptoms. There are currently no therapeutic treatments available for Zika or Dengue virus infection. It may be possible to partially relieve pain or distress by administration of analgesics or anti-inflammatory drugs, however this may diminish the host response that is being studied, and would thus negate the purpose of the study.

Species: Swine Number: 16

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Death as an endpoint:

No studies to report for October 1, 2016-September 30, 2017.