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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: 28 Wild Mice (Peromyscus) 26

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: 2

The swine and hamsters are used in this study to establish a model, and evaluate the efficacy of candidate vaccines for infectious diseases caused by *C. difficile, 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: 80 Species: Hamster Number: 157