



Charles S. Apperson



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## Arthropod Vector Biology and Management

### Research emphasis:

(Dr. Apperson's research program is focused on the ecology, behavior and control of arthropod vectors of viruses and bacteria of public and veterinary health importance. The arthropods include mosquitoes, ticks and other blood feeding arthropods, and the pathogens include La Crosse virus, spotted fever group rickettsiae, and the Lyme disease spirochete, *Borrelia burgdorferi*. He is also involved in research to develop control methods that exploit the oviposition behavior and biology of container-inhabiting *Aedes* mosquitoes. Additionally, he is interested in understanding how the composition of bacterial microbiomes affect arthropod vector competence.

### Application:

- Detection and identification of tick-transmitted bacterial pathogens<sup>2</sup>
- Characterization of arthropod microbiome
- Mosquito colonization and rearing
- Arthropod behavioral bioassays

### Collaboration potential:

- Development of biology-based management strategies for arthropod vector behavioral bioassays
- Investigations of eco-epidemiology of tick and mosquito-borne diseases
- Field and laboratory investigations of arthropod vector biology and behavior
- Arthropod microbial ecology

### Selected publications:

Kakumanu, M. L., L. Ponnusamy, H. T. Sutton, S. R. Meshnick, W. L. Nicholson, and C. S. Apperson. 2016. Development and validation of an improved PCR method using 23S-5S intergenic spacer for detection of rickettsiae in *Dermacentor variabilis* ticks and tissue samples from humans and laboratory animals. *Journal of Clinical Microbiology* 54:972-979.

Ponnusamy, L., C. Schal, C. Arellano, D.M. Wesson, and C. S. Apperson. 2015. Oviposition responses of *Aedes* mosquitoes to bacterial isolates from attractive bamboo infusions. *Parasites and Vectors* 8:486.

Lee, S., M. L. Kakumanu, L. Ponnusamy, M. Vaughn, S. Funkhouser, H. Thornton, S. R. Meshnick, and C. S. Apperson. 2014. Prevalence of Rickettsiales in ticks removed from the skin of outdoor workers. *Parasites and Vectors* 7:607.

Ponnusamy, L., A. Gonzalez, W. Van Treuren, S. Weiss, C. Parobek, J. J. Juliano, R. Knight, R. M. Roe, C. S. Apperson, and S. R. Meshnick. 2014. Diversity of Rickettsiales in the microbiome of the lone star tick, *Amblyomma americanum*. *Applied and Environmental Microbiology* 80:354-359.