

Fire Ant Cuticular Hydrocarbons: A Research Tool and Nestmate Recognition Cues?**Vander Meer RK, Choi MY, and Anderson JA**USDA-ARS-CMAVE, Gainesville, FL (RKVM, MYC); Center for Wetland and Water Resources,
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PARALLEL SESSION 4

Social insects use complex pheromone systems to maintain sociality, and, in most ant species, colony integrity. Colony integrity is expressed as nestmate recognition, where colony members can discriminate between nestmates and conspecific non-nestmates by matching an experience based neural template of their colony odor with the cues detected on the cuticle of an intruder. If the cues and template do not match, e.g., a non-nestmate intruder, then aggression occurs. There is a large body of correlative data linking nestmate recognition and cuticular hydrocarbons, but little evidence of direct cuticular hydrocarbon involvement. Multivariate analyses of hydrocarbon patterns can differentiate one colony from another; however, it is not clear whether the ants also can differentiate colonies based on cuticular hydrocarbons. We present a review of the use of fire ant cuticular hydrocarbons as models for heritable nestmate recognition cues and as tools for monitoring movement of cuticular hydrocarbons in a colony. We then describe a new method for putting physiologically relevant amounts of treatment hydrocarbons on the cuticle of workers, which we used to evaluate the role of hydrocarbons in fire ant nestmate recognition.

2. Vander Meer, R.K., Choi, M.Y., Anderson, J.A. 2008. Fire Ant Cuticular Hydrocarbons: A research tool and nestmate recognition cues? (Abstract). International Society of Chemical Ecology. Paper No. 139.

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