

## TASK-RELATED ENVIRONMENT ALTERS THE CUTICULAR HYDROCARBON COMPOSITION OF HARVESTER ANTS

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**Abstract**—Within a colony of harvester ants (*Pogonomyrmex barbatus*), workers in different task groups differ in the hydrocarbon composition of the cuticle. Foragers and patrollers, which spend extended periods of time outside the nest, have a higher proportion of saturated, unbranched hydrocarbons (*n*-alkanes) on the cuticle than nest maintenance workers, which spend only short periods of time outside the nest. We tested whether these task-related differences in ant cuticular chemistry arise from exposure to conditions outside the nest. Nest maintenance workers experiencing daily, short-term outside exposure developed a higher proportion of *n*-alkanes on the cuticle than workers kept inside the lab. Independent manipulations of ultraviolet radiation, relative humidity, and temperature revealed that only the combination of high temperature (ca. 38°C) and low relative humidity (ca. 8%) increased the proportion of cuticular *n*-alkanes. The results indicate that warm dry conditions, such as those encountered when an ant leaves the nest, trigger changes in cuticular chemistry.