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INTERLINK RESEARCH ANALYSIS

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Signalling Chemicals and Insect Activities

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2

Research Paper - Microbiology

ABSTRACT

Pheromones are chemicals produced by one individual which induce a particular behavioral or developmental response in other individuals of the same species. Like hormones, they are produced in small quantities and serve as "chemical messenger", a term which may take on renewed significance following the discovery that in termites juvenile hormone apparently serve also as a pheromone regulating caste differentiation. Pheromone may be volatile and therefore capable of being detected as an odor over considerable distance, or they may be nonvolatile, requiring actual physical contact among individuals for their dissemination. They may be highly specific, even to the extent that only a particular isomer of a substance induces the typical effect in a given species. (As a corollary, closely related species often utilize different isomeric forms of a given chemicals). Pheromones are released only under appropriate condition, that is in response to appropriate environmental stimuli, and example of this are given below. Thus, where as neural and endocrine systems coordinate the



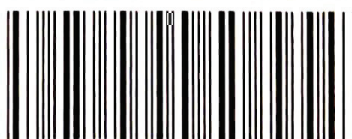
pheromones, there by establishing a "strong" trail to which more worker will be attracted. The chemical nature of only a few trail pheromones is known. In termites they appear to be long-chain acid, alcohol, or hydrocarbon and are cross- specific.

Odor trail have been described in a few species of termites and many ants. They are laid on the ground by successful foragers returning to the nests, and consist usually of short lives, undirected streaks of material secreted from the gut or various epidermal glands. Comparable, pheromones are secreted by the mandibular glands of meliponinae worker and male *Bombus* spp. to mark stationary object on their flight path.

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