



## **Chemosensory processing in the ant brain**

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The complex social behavior of ants is mostly orchestrated via pheromones, secreted chemicals that trigger physiological and/or behavioral responses in other individuals of the same species. While the glandular sources, chemical nature, and social effects of pheromones have been studied for decades, relatively little has been known about how ants perceive and process pheromones. Recent work has uncovered massive expansions of odorant receptor (OR) genes in ant genomes, suggesting that some of these receptors are indeed involved in pheromone perception. These expansions are mirrored by similarly striking elaborations of the ant antennal lobe, the primary olfactory processing center in the ant brain. The first functional genetic studies in ants using CRISPR technology then showed that ORs are indeed required for pheromone communication. Furthermore, these studies found that, in the absence of functional ORs, the antennal lobe shows striking morphological deficits, opening the exciting possibility of activity dependence during ant brain development. These results contrast with what is known from *Drosophila*, where a variety of chemosensory gene families have been implicated in pheromone perception, and antennal lobe development is not affected by the loss of OR function. In this talk I will review some of the recent advances in ant pheromone perception, and I will present some of our ongoing work that aims to further refine our understanding of antennal lobe development and neural processing of social information in the ant brain.