

Molecular detection of (E)- β -farnesene by aphids and their predators is mediated by a highly conserved Odorant Binding Protein

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The sesquiterpene (E)-beta-farnesene (EBF) is the principal component of the alarm pheromone of many aphid species. In addition, it serves as kairomone for several aphid natural enemies such as the ladybird *Harmonia axyridis* and the hoverfly *Episyrphus balteatus*, which use it to localize their prey and oviposition sites, respectively. In the context of the development of more efficient and environmentally friendly pest controlling strategies, insect olfactory systems are often exploited or even manipulated and therefore there is considerable interest in a better understanding of the olfactory mechanism of aphids and their natural enemies. We report that the recognition of EBF in aphids and in the aphid predators *H. axyridis* and *E. balteatus* is mediated by a highly conserved OBP (named OBP3) capable to specifically recognize the principal component of the aphid alarm pheromone. To our knowledge this is the first evidence that insect species belonging to distinct Orders display the same discriminatory recognition strategy for a common semiochemical.

Preferred presentation type (please choose one): poster ____ or talk X

Symposium to which your presentation is affiliated (please choose one): 6 or 8

1. Efficient synthesis and new methods for the identification of semiochemicals and natural products
2. Chemical ecology and natural products of marine organisms
3. Multimodal communication (integration of olfaction, taste, vision, acoustics and mechanoreception) in arthropods
4. Chemical ecology of microorganisms, including symbionts and pathogens of plants and animals; soil microorganisms
5. Social insects
6. Neurophysiology and brain development in the perception and/or effects of semiochemicals
7. Chemical ecology in forest ecosystems
8. Genomics and chemical ecology
9. Plant natural products and chemical ecology

Notes:

1) Talks for student competition are 10 min + 5 min for questions. Lecture halls have Power Point and overhead projectors. Poster boards are 42 x 42'' = 97 x 97 cm.

2) If the time slots for talks are full, we may need to switch some talk requests to poster format. Should this be necessary, you will be notified by the organizers of the symposium that you have chosen.