THE MAGGOT AND THE ROTTEN FRUIT SMELL

Whereas the fly *Drosophila melanogaster* definitely prefers ripe fruit, and even fruit in the process of fermentation, its Asian relative *Drosophila suzukii* also attacks unripe fruit. This difference can arise from … a single odor!

During the fermentation of fruit, bacteria produce high-volatile odorant molecules, namely short-chain fatty acids such as propionic acid. These components are somewhat repulsive for adult flies, whereas in contrast they are very attractive to *Drosophila melanogaster* larvae.

In a recently published article, the group directed by Yaël Grosjean identified four olfactory receptors responsible for the detection by and attraction of *Drosophila melanogaster* larvae towards short-chain fatty acids. These researchers also showed that propionic acid and the receptors allowing its perception are particularly important in triggering feeding behavior and larval growth. This fatty acid thus supports larval survival in a situation of food shortage. In contrast, propionic acid is much less attractive to *Drosophila suzukii* larvae, and does not induce any striking feeding behavioral pattern.

This study allows a better understanding of the impact of chemical components of bacterial origin on behavior in an animal model, namely Drosophila larva. This is another step towards understanding how two closely related flies, which provoke devastating damage to fruit cultures, detect their food and benefit from it.

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To know more

Depetris-Chauvin A., Galagovsky D., Chevalier C., Manière G., and Grosjean Y. Olfactory detection of a bacterial short-chain fatty acid acts as an orexigenic signal in *Drosophila melanogaster* larvae. Scientific Reports 2017, 7(1):14230.

Mots-clefs

Drosophila; larvae; fruit; short-chain fatty acid; olfaction; odor; food; growth; survival