

Choosy female fruit flies reproduce anyway

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Drosophila. Credit: Wikipedia

Choosiness will lead to the best offspring. Being too choosy, however, could in the end result in no offspring at all. Female fruit flies have a solution to this dilemma.

Across most [animal species](#), females invest more resources into offspring production than males and thus prefer to mate with high quality males that will sire high quality offspring. However, this high choosiness can become problematic if high quality males become rare,

as females might be too choosy to mate with the available males and thus die without reproducing. How can females resolve this issue? Female [fruit flies](#) (*Drosophila melanogaster*, a widely used [model organism](#) for [genetic studies](#)) have the answer.

A study now shows that in fruit flies, virgin females select their first mating partner unselectively and then become choosier regarding male attractiveness after the first mating. This plasticity in choosiness allows females to reduce the risk of not reproducing by mating with the first male they encounter; high offspring quality is maintained as most eggs are fertilized by the last male a female mated with.

The mechanisms that regulate this shift in choosiness is linked to the release of a hormone after the first mating. This hormone directly binds to the female olfactory system and specifically desensitizes one class of olfactory neurons that detects a male pheromone. As a result of this post-mating desensitization, only males that produce large quantities of pheromones can activate these neurons and are accepted for mating by the female.



Credit: Netherlands Organisation for Scientific Research (NWO)

This research result has been published in *Nature Ecology & Evolution* on 21 June 2021.

More information: Philip Kohlmeier et al, Mating increases *Drosophila melanogaster* females' choosiness by reducing olfactory sensitivity to a male pheromone, *Nature Ecology & Evolution* (2021).
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