

# Family break-ups lead to domestic violence in fruit fly relationships

August 9 2017

---



Fruit fly face (close-up) Amy Hong. Credit: Amy Hong

Male fruit flies with strong family ties are less likely to become abusive during mating than others, according to new Oxford research.

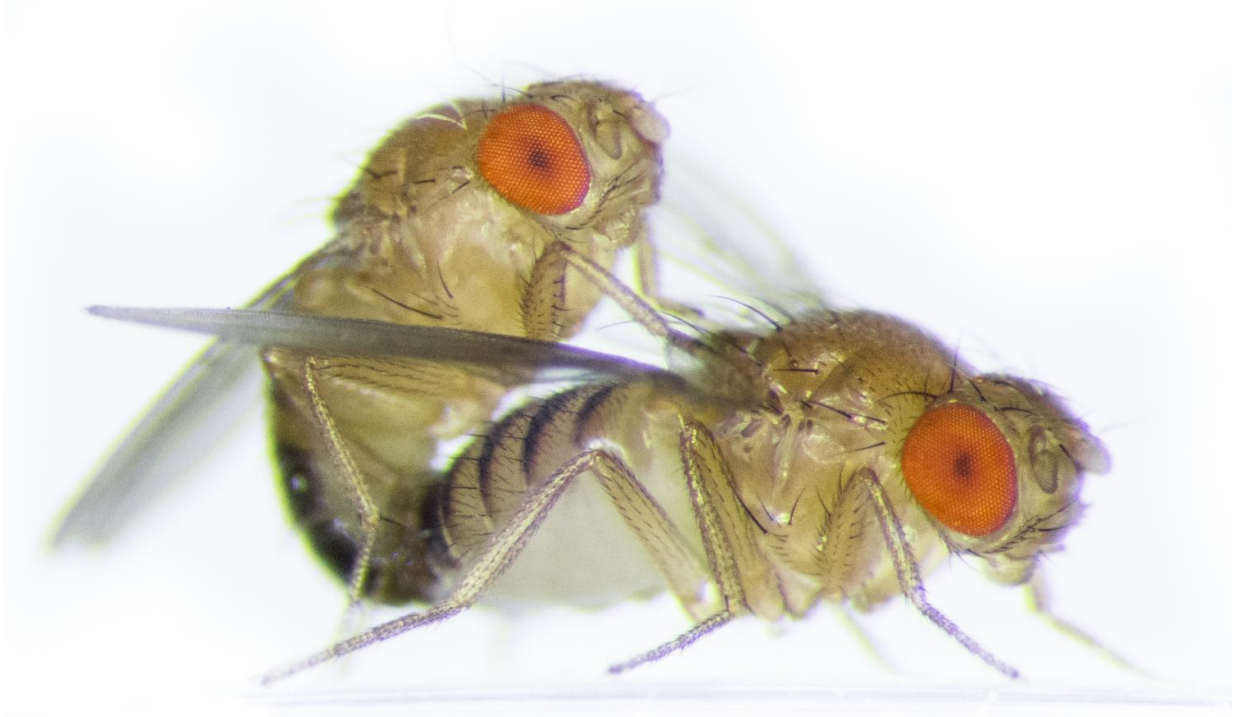
*Drosophila melanogaster* (fruit flies) courtship is known to be a violent affair. Males compete aggressively for a female's attention, attacking each other with their front legs—often harming the object of their affection in the cross fire.

Recent studies have suggested that when two [males](#) are related, this fighting tends to be less intense. As a result, females are much less likely to be harmed and can instead enjoy a longer reproductive lifespan. However, the University of Oxford study, published this week in the *Proceedings of the Royal Society B*, has found that family bonds are not the only factor that affects the ferocity of fly courtship: the rivals have to like each other too.

Sally Le Page, a DPhil student in the Department of Zoology at Oxford University, led the study, testing the role of relatedness and familiarity in the fly mating process. They found that female flies are harmed the least during courtship when the males involved are both related and on good 'familiar' terms i.e., brothers that grew up in the same environment.

The researchers placed trios of virgin male flies with individual virgin females and allowed them to feed and mate freely. They then compared the behaviour and lifespans of the flies in each group, depending on their relatedness and familiarity. They tested brothers that grew up together, brothers that had been separated at birth, unrelated males that grew up together, and unrelated males that never knew each other.

The findings showed that familiarity is as important as relatedness in fly courtship. The brothers that had grown up together were significantly nicer to the female during courtship than the brothers that had grown up apart.



Fruit flies mating. Credit: Amy Hong

By reducing [sexual conflict](#), the research showed that this union had clear benefits for females, who enjoy a longer lifespan and reproductive period as a result.

Lead author Sally Le Page, said: 'Theory suggests that if males are related, then they should be nicer to each other and harm females less as a result, but this is not strictly true. Females are harmed least by males that are both related and familiar, i.e. brothers that grew up together.'

Relatedness is widely understood to play an important role in evolution. Sexual conflict is thought to lead to things like formation of new species,

species going extinct and population health / growth. Moving forward, we want to understand whether being with relatives affects these areas as well.'

The findings have the potential to shed light on the role that familial bonds have on species' social relationships—including humans. But, the researchers are keen to stress that the findings are not directly transferrable. Sally Le Page, said: 'Research has shown that humans show the effects of inclusive fitness, growing up in social groups and developing certain behaviours as a result. But, we are not saying that, based on these findings, as a woman you should sleep with the housemate brother of your previous partner - that is a bit of a stretch. There are species caveats that do not cross over. However, it is testing the same framework that can apply to everything.'

With further research there is scope to use the study's key learnings around the factors that make females produce more or less offspring, in the field of conversation and wider pest controller.

Sally Le Page said; 'Drosophila [fruit flies](#) are an amazing animal for biologists to study. We know so much about their lifestyles, from their genome down to exactly how to grow them. Being able to use such a well understood species to understand social behaviour is really valuable. Now that we understand that relatedness impacts reproductive relationships, we can test to see whether it affects other social interactions throughout their life as well.'

Stuart Wigby, co-author and Research Fellow at Oxford's Department of Zoology, said: 'Any situation where animals are breeding and you care about how much or how little they breed, it is good to know the fundamental theory of what will affect that success. Whether rearing animals on a farm, a small number of tigers in a Zoo, or a batch of fly larvae, you want to know whether relatedness affects the offspring.'

**More information:** Sally Le Page et al. Male relatedness and familiarity are required to modulate male-induced harm to females in *Drosophila*, *Proceedings of the Royal Society B: Biological Sciences* (2017). [DOI: 10.1098/rspb.2017.0441](https://doi.org/10.1098/rspb.2017.0441)

Provided by University of Oxford

Citation: Family break-ups lead to domestic violence in fruit fly relationships (2017, August 9) retrieved 27 April 2024 from <https://phys.org/news/2017-08-family-break-ups-domestic-violence-fruit.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.