

The 'in-law effect': Male fruit flies sleep around but females keep it in the family

September 24 2013



fruit fly

Male fruit flies like to have a variety of sexual partners, whereas females prefer to stick with the same mate – or move on to his brothers.

An Oxford University study of mating preferences in fruit flies (*Drosophila*) has found that [males and females](#) respond to the sexual familiarity of potential mates in fundamentally different ways.

While male fruit flies preferred to court an unknown female over their previous mate or her sisters, female fruit flies displayed a [predilection](#) for their 'brothers-in-law'.

These responses were significantly weaker in mutated flies with no sense of smell, suggesting smell plays an important role in the mating choices

highlighted in the study.

The findings, which could have an impact on how we view mating preferences in other species, are published in the journal *Proceedings of the Royal Society B*.

First author Dr Cedric Tan, of Oxford University's Department of Zoology, said: 'The aim of the research was to test whether fruit fly males and [females](#) prefer to mate with the same partners repeatedly, or whether they prefer to mate with different individuals each time. In addition, we aimed to test whether males and females show [mating preferences](#) for the [siblings](#) of their previous mates.

'First, we found that males prefer to court novel females. This is a widespread phenomenon in many species, particularly [mammals](#), but this is the first evidence of this phenomenon in fruit flies. More importantly, though, we discovered that females don't share this preference – if anything they go for a familiar partner.

'Furthermore, these preferences extend to the "in-laws" – males avoid their "sisters-in-law" (their previous partner's sisters) whereas females prefer their "brothers-in-law" (their previous partner's brothers) compared with a random potential partner. Males and females seem to detect the siblings of their previous partners using smell, because these preferences are much weaker in mutant flies that can't smell.'

Using a species of fruit fly known as *Drosophila melanogaster*, the researchers conducted two experiments in which a single male or female was exposed to two potential partners.

In the first experiment, one potential partner was new and one was their previous mate. In the second experiment, one potential partner was new and one was from the same family and rearing environment as the

previous mate.

The experiments were then recreated with the mutated [fruit flies](#) that had no [sense of smell](#).

Dr Tan said: 'Sibling relationships are important in sexual interactions, and many scientific studies have focused largely on two things: male-female relatedness and male-male relatedness.

'With the former, brothers and sisters are expected to avoid mating with one another as inbred offspring suffer a higher mortality. With the latter, brothers are predicted to act less aggressively with each other when competing for females. In this study, we show that sibling relationships can alter sexual behaviour in a novel way – that is, the "in-law effect".'

While the reasons behind the findings are not entirely clear, potential explanations include males benefiting from mating with dissimilar females through the higher genetic diversity of their offspring. Females, on the other hand, may prefer to mate with familiar males to avoid the health risks posed by allowing sperm from multiple partners into their bodies.

Discussing the possibilities opened up by the findings, Dr Tan said: 'First, it would be interesting to see if this sexual preference extends to other species of animal. Second, we could examine why males and females behave in opposite manners – that is, what the benefit is of males avoiding "sisters-in-law" and females preferring "brothers-in-law". For example, it could be that males are avoiding "sisters-in-law" because they look or smell like their first partners when they would prefer a novel female.

'Third, our study showed that both sexes use smell in detecting which individuals to sexually pursue or resist. This opens the door to

investigating whether other senses such as vision and hearing could mediate recognition of "in-laws" in this key genetic model organism.'

More information: 'Sex-specific responses to sexual familiarity, and the role of olfaction in *Drosophila*' by Cedric K. W. Tan et al.

Proceedings of the Royal Society B 25 September 2013.

rsob.royalsocietypublishing.org/doi/10.1098/rsob.2013.1691

Provided by Oxford University

Citation: The 'in-law effect': Male fruit flies sleep around but females keep it in the family (2013, September 24) retrieved 28 April 2024 from <https://phys.org/news/2013-09-in-law-effect-male-fruit-flies.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.