

Secret wing colours attract female fruit flies

October 22 2014



The WIP on a fly wing. Credit: Natsu Katayama

Bright colours appear on a fruit fly's transparent wings against a dark background as a result of light refraction. Researchers from Lund University in Sweden have now demonstrated that females choose a mate based on the males' hidden wing colours.

"Our experiment shows that this newly-discovered trait is important in

female [choice](#) in [fruit flies](#), and is the first evidence that wing [interference patterns](#) have a biological signalling function between the sexes during [sexual selection](#)", said Jessica Abbott, a biologist at Lund University.

The extremely thin wings of the fruit fly are transparent and apparently colourless. However, a few years ago researchers at Lund University discovered that the wings shimmer with beautiful colours thanks to a refraction phenomenon known as thin-film [interference](#).

"Because the wings are transparent, these colours are only visible against a dark background", said Jessica Abbott.

The Lund researchers have now studied the significance of these interference colours on the wings of fruit flies. In the present study, the researchers have investigated whether the colours influence choice of partner, i.e. to what extent females use these colours to select a mate. The results show that the colours are important.

Wing interference colours are determined by the thickness of the wing. The colours are only found in small insects, particularly flies and wasps, which have [wings](#) that are only nanometres thick, i.e. not much thicker than a millionth of a millimetre.



A male *Drosophila melanogaster* fruit fly. Credit: Qinyang Li

Fruit flies have been used as laboratory animals in genetics research for almost 100 years and intensive studies have been carried out on sexual selection in the species, yet despite this the characteristics used in mate choice have remained uncertain.

"Our results will hopefully stimulate more research on wing interference patterns in other species, and increase interest in the role that the light environment plays in mate choice", said Professor Erik Svensson from Lund University.



A male courting a female. Credit: Qinyang Li

More information: "Sexual selection on wing interference patterns in *Drosophila melanogaster*." *PNAS* Vol. 111 no. 42 > Natsu Katayama, 15144–15148, [DOI: 10.1073/pnas.1407595111](https://doi.org/10.1073/pnas.1407595111)

Provided by Lund University

Citation: Secret wing colours attract female fruit flies (2014, October 22) retrieved 20 March 2024 from <https://phys.org/news/2014-10-secret-wing-colours-female-fruit.html>

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