Sexual selection on a cryptic wing pattern trait in *Drosophila*

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What are WIPs?

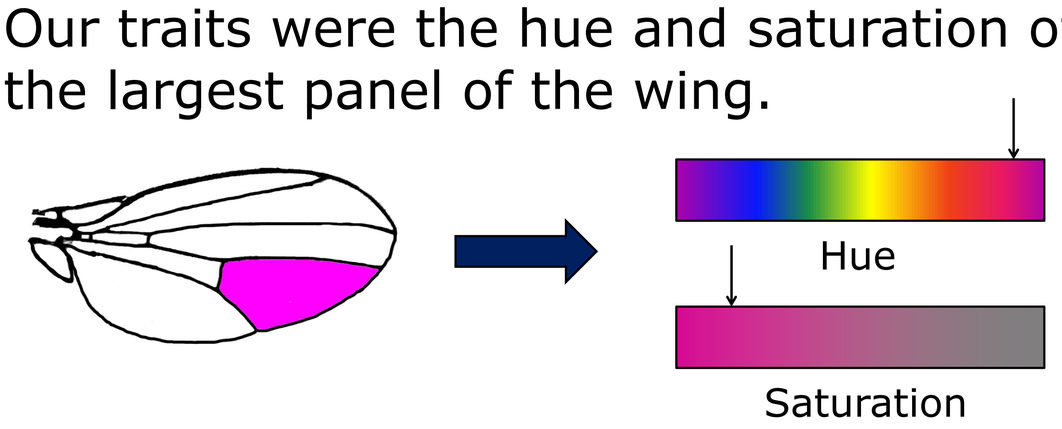
Wing interference patterns (WIPs) are recently-discovered iridescent colour patterns caused by the reflection of light from the upper and lower surfaces of small insect wings.[1] WIP colours are determined by the thickness of the wing, similar to the colours of a soap bubble. Just 10-12% of the incident light on the wing is reflected as a WIP, so these patterns are only visible against a dark background.

Thin-film interference on a fly wing and a soap bubble

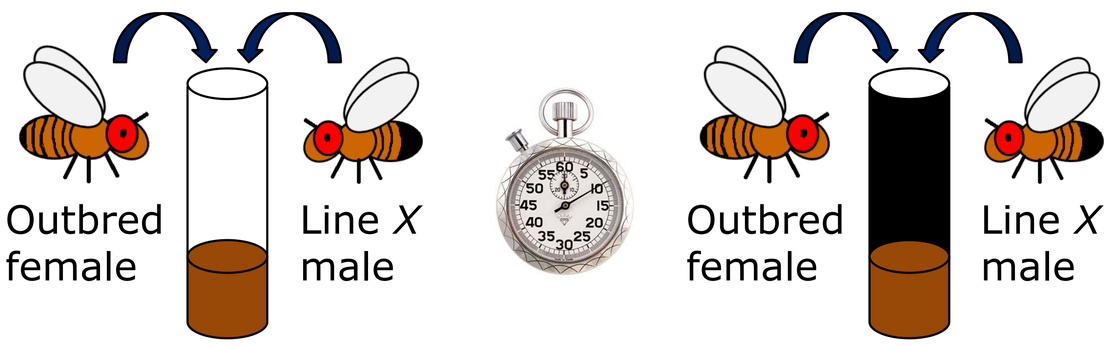
Interference chart

What did we do?

We measured the heritability of WIPs in a set of 34 inbred *D. melanogaster* lines. Our traits were the hue and saturation of the largest panel of the wing.

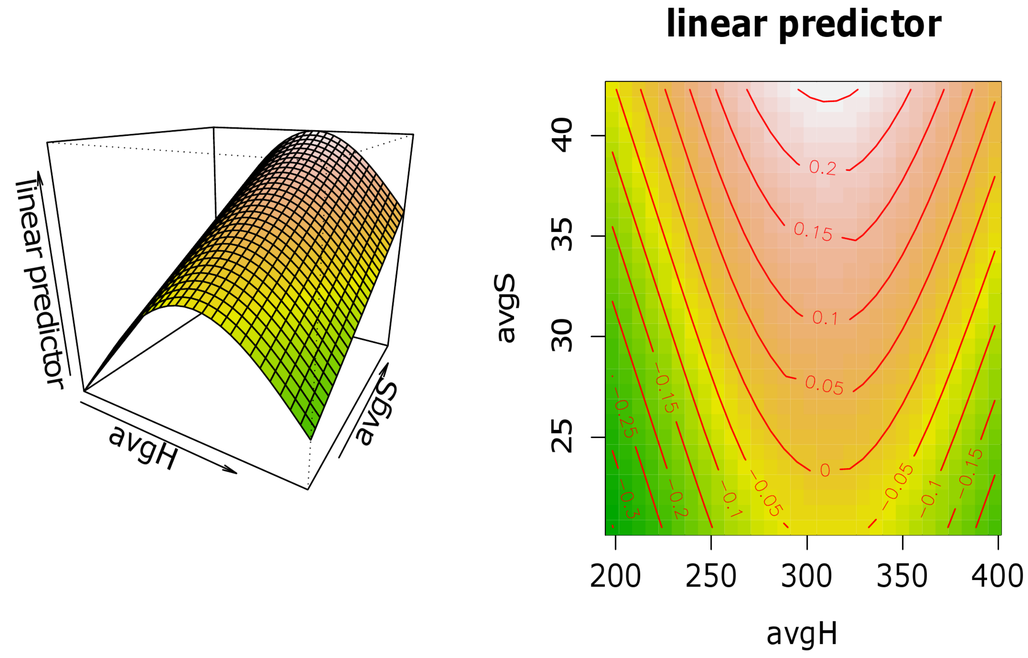


We then tested whether female mate preference (time to mating) was influenced by WIP visibility or not.



What did we find?

Wing Interference patterns (WIPs) have a broad-sense heritability H^2 = 40%.



A GAM (General Additive Model) analysis showed that female preference depended on background, and that females preferred higher saturation values and intermediate values of hue.

Can WIPs be important in sexual selection?

Yes, WIPs may indeed be important in sexual selection! We have confirmed that WIPs have a large genetic component, and that WIP visibility affects female mate preference. WIP variation and its effect on sexual selection in an outbred fly population are currently under investigation.

Wing display during courtship

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References

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