Title:	Male-limited evolution suggests no extant intralocus sexual conflict over the sexually dimorphic cuticular hydrocarbons of Drosophila melanogaster
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Abstract:	Sexually dimorphic traits are likely to have evolved through sexually antagonistic selection. However, recent empirical data suggest that intralocus sexual conflict often persists, even when traits have diverged between males and females. This implies that evolved dimorphism is often incomplete in resolving intralocus conflict, providing a mechanism for the maintenance of genetic variance in fitness-related traits. We used experimental evolution in Drosophila melanogaster to directly test for ongoing conflict over a suite of sexually dimorphic cuticular hydrocarbons (CHCs) that are likely targets of sex-specific selection. Using a set of experimental populations in which the transmission of genetic material had been restricted to males for 82 generations, we show that CHCs did not evolve, providing experimental evidence for the absence of current intralocus sexual conflict over these traits. The absence of ongoing conflict could indicate that CHCs have never been the target of sexually antagonistic selection, although this would require the existing dimorphism to have evolved via completely sex-linked mutations or as a result of former, but now absent, pleiotropic effects of the underlying loci on another trait under sexually antagonistic selection. An alternative interpretation, and which we believe to be more likely, is that the extensive CHC sexual dimorphism is the result of past intralocus sexual conflict that has been fully resolved, implying that these traits have evolved genetic independence between the sexes and that genetic variation in them is therefore maintained by alternative mechanisms. This latter interpretation is consistent with the known roles of CHCs in sexual communication in this species and with previous studies suggesting the genetic independence of CHCs between males and females. Nevertheless, direct estimates of sexually antagonistic selection will be important to fully resolve these alternatives.
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