Title:	Investigating the interaction between inter-locus and intra-locus sexual conflict using hemiclonal analysis in Drosophila melanogaster
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Abstract:	Background: Divergence in the evolutionary interests of males and females leads to sexual confict. Traditionally, sexual confict has been classifed into two types: inter-locus sexual confict (IeSC) and intra-locus sexual confict (IaSC). IeSC is modeled as a confict over outcomes of intersexual reproductive interactions mediated by loci that are sex-limited in their efects. IaSC is thought to be a product of selection acting in opposite directions in males and females on traits with a common underlying genetic basis. While in their canonical formalisms IaSC and IeSC are mutually exclusive, there is growing support for the idea that the two may interact. Empirical evidence for such interactions, however, is limited. Results: Here, we investigated the interaction between IeSC and IaSC in Drosophila melanogaster. Using hemiclonal analysis, we sampled 39 hemigenomes from a laboratory-adapted population of D. melanogaster. We measured the contribution of each hemigenome to adult male and female ftness at three diferent intensities of IeSC, obtained by varying the operational sex ratio. Subsequently, we estimated the intensity of IaSC at each sex ratio by calculating the intersexual genetic correlation (rw,g,mf) for ftness and the proportion of sexually antagonistic ftness-variation. We found that the intersexual genetic correlation for ftness was positive at all three sex ratios. Additionally, at male biased and equal sex ratios the rw,g,mf was higher, and the proportion of sexually antagonistic ftness variation lower, relative to the female biased sex ratio, although this trend was not statistically signifcant. Conclusion: Our results indicate a statistically non-signifcant trend suggesting that increasing the strength of IeSC ameliorates IaSC in the population. Keywords: Sex ratio, Sexually antagonistic coevolution, Intersexual genetic correlation for ftness, Sexual antagonism, Male and female heritability, Fitness, Intersexual genetic correlation for ftness
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