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Undergrad and master's at the University of Cincinnati-Ohio

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Another postdoc at the University of Cincinnati before starting his group at the University of East Anglia-England, in 2023

Dominance reversal and the maintenance of sexually antagonistic genetic variation

Mercredi 4 décembre 2024 à 12 h 30

Pavillon Charles-Eugène Marchand, salle Hydro-Québec (1210)

Abstract:

Explaining the maintenance of genetic variance in fitness remains one of the most longstanding challenges for evolutionary biology.

We know that mutation-selection balance cannot account for all of the genetic variance observed in nature, meaning that the remainder likely owes to various forms of balancing selection. One potentially widespread form is sexually antagonistic selection, which can maintain alternative alleles that have opposite fitness effects in opposite sexes. But there remains little consensus on the number, nature, and location of sexually antagonistic polymorphisms in any organism's genome.

Theory suggests they should be enriched for sex-specific dominance reversals, where alleles are dominant in the sex they benefit but recessive in the sex they harm.

I will first present quantitative genetic evidence of sex-specific dominance reversal of sexually antagonistic genetic variance for fitness in the seed beetle *Callosobruchus maculatus*. I will then present a biophysically explicit mathematical model of gene regulation that sheds light on how dominance reversals can evolve, and the transcriptomic patterns generated.

Finally, I will present evidence of genes in the *Drosophila melanogaster* transcriptome that exhibit the sex-reversed allele-specific expression pattern predicted by that theoretical model.

Investigating antagonistic genetic variation through the lens of dominance reversal will provide new insights to old questions in evolutionary biology.

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