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Indirect Genetic Effects in dyads and groups of Drosophila melanogaster

Indirect genetic effects (IGEs) describe how genetic variation among social partners may drive behavioral variation in a focal individual. Despite longstanding theory suggesting that IGEs should shape the evolution of behavior, including in unexpected ways, scant empirical studies focus almost exclusively on IGEs during dyadic social interactions. Here, I will discuss how my lab has used the fruit fly, D. melanogaster, to think about and study new mechanisms of IGEs and their implications for the evolution of behavior. In particular, I will discuss (i) how IGEs shape social networks and their fitness consequences; (ii) how IGEs shape the development of behavior across subsequent aggressive contests; and (iii) how IGEs shape the rate and direction of phenotypic evolution. My goal is to identify and validate novel processes that can be studied across diverse systems to understand behavioral variation and its evolution.