

# Abstract

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A trade-off between organismal traits competing for shared resources is a fundamental assumption of the life-history theories. Investment into reproduction vs. immunity has been a topic of much discussion in the literature (Lawniczak et al., 2006). Reproduction-immunity trade-offs are considered to be condition dependent (McKean and Nunnery, 2001) with an overarching hormonal control (Lazzaro et al., 2017). The ubiquity of such trade-off has been questioned too (Fedorka et al., 2007). In this study we describe the evolution of the correlation between reproduction and immunity, using replicate *Drosophila melanogaster* populations having a common ancestor. The study is unique because of its use of lab adapted, outbred populations harbouring substantial genetic variation. We measured immunocompetence of virgin and mated flies of both sexes; immunocompetence being defined as the survivorship post infection with a live pathogen. Two Gram-positive (*Enterococcus faecalis* and *Staphylococcus succinus*) and two Gram-negative (*Pseudomonas entomophila* and *Providencia rettgeri*) bacteria were used as pathogens. We did not find any evidence of trade-offs. The results indicate that, for either sex, mating improves postinfection survivorship of flies, irrespective of the pathogen used. This study adds to the work done previously on the ancestors of the present populations (Gupta et al., 2013)