Title:	Evolution of pathogen-specific improved survivorship post-infection in populations of Drosophila melanogaster adapted to larval crowding
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Abstract:	The environment experienced by individuals during their juvenile stages has an impact on their adult stages. In holometabolous insects like Drosophila melanogaster, most of the resource acquisition for adult stages happens during the larval stages. Larval-crowding is a stressful environment, which exposes the larvae to scarcity of food and accumulation of toxic waste. Since adult traits are contingent upon larval stages, in larval-crowding like conditions, adult traits are prone to get affected. While the effect of resource limited, poor-developmental environment on adult immune response has been widely studied, the effect of adaptation to resource-limited developmental environment has not been studied, therefore in this study we assayed the evolution of ability to survive infection in adult stages as a correlated response to adaptation to larval crowding environments. Using four populations of Drosophila melanogaster adapted to larval crowding for 240 generations and their respective control populations, we show that populations adapted to larval crowding show an improved and evolved post-infection survivorship against a gram-negative bacteria Pseudomonas entomophila. Whereas, against a gram-positive bacteria Enterococcus faecalis, no difference in post-infection survivorship was observed across control and selected populations. In this study, we report the co-related evolution of pathogen-specific increased survivorship post-infection in populations of Drosophila melanogaster as a result of adaptation to larval crowding environment.
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