Title:	Enemies make you stronger: Coevolution between fruit fly host and bacterial pathogen increases postinfection survivorship in the host
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Abstract:	Multiple laboratory studies have evolved hosts against a nonevolving pathogen to address questions about evolution of immune responses. However, an ecologically more relevant scenario is one where hosts and pathogens can coevolve. Such coevolution between the antagonists, depending on the mutual selection pressure and additive variance in the respective populations, can potentially lead to a different pattern of evolution in the hosts compared to a situation where the host evolves against a nonevolving pathogen. In the present study, we used Drosophila melanogaster as the host and Pseudomonas entomophila as the pathogen. We let the host populations either evolve against a nonevolving pathogen or coevolve with the same pathogen. We found that the coevolving hosts on average evolved higher survivorship against the coevolving pathogen and ancestral (nonevolving) pathogen relative to the hosts evolving against a nonevolving pathogen. The coevolving pathogens evolved greater ability to induce host mortality even in nonlocal (novel) hosts compared to infection by an ancestral (nonevolving) pathogen. Thus, our results clearly show that the evolved traits in the host and the pathogen under coevolution can be different from one-sided adaptation. In addition, our results also show that the coevolving host–pathogen interactions can involve certain general mechanisms in the pathogen, leading to increased mortality induction in nonlocal or novel hosts.
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