Sublethal Effects of Invasive Fire Ant Venom on a Native Lizard

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It can be tough getting along with a new neighbor—particularly if it happens to be the poisonous fire ant *Solenopsis invicta*. But like many other species that have long been comfortably established in a given environment, the eastern rail lizard *Sceloporus undulatus* has recently found itself confronted with the problem of adapting to an invasive—and deadly—species. The two species have coexisted for decades now, a brief tick on the evolutionary time-scale but potentially long enough for the lizard to acquire some adaptive advantage to avoid or resist attack by *S. invicta*. In an effort to characterize these adaptations, Boronow and Langkilde (pp. 17-23) compared the sublethal effects of fire ant poison on populations of *S. undulatus* that had been invaded by *S. invicta* for over 35 generations versus their naïve counterparts. Across all four metrics assessed in this study—poison-induced hemolysis, bite force, righting ability and sprint speed—there were no significant differences between these two populations, even after exposure to near-lethal doses of venom. The absence of acquired internal resistance suggests that invaded populations may instead have developed behavioral or morphological attributes that help these animals avoid ant bites.

Adult Heat Tolerance Variation in *Drosophila Melanogaster* is not Related to Hsp70 Expression

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Heat shock proteins (Hsps) play an important role in countering the damaging effects of high temperature by preventing protein misfolding, and studies in organisms ranging from yeast to cattle have suggested that variations in Hsp levels may provide an informative indicator of resistance to heat-induced stress. At the same time, experiments in various *Drosophila* species have yielded ambiguous or even contradictory results with regard to the association between expression of one key Hsp, Hsp70, and heat adaptation. To clarify the situation, Jensen *et al.* (pp. 35-44) performed a trio of studies using independent sets of isofemale lines of *Drosophila melanogaster*, derived from flies collected in three different geographic locations in Australia. They used two different biochemical techniques to quantify Hsp70 levels and characterize their association with a variety of phenotypic characteristics, including heat shock survival, fecundity and heat knockdown response. Remarkably, although the authors noted considerable variability in adult Hsp70 levels between lines, they observed no meaningful association with heat resistance in these various studies. Similarly, there was no clear association among larvae between Hsp70 expression levels and heat shock survival in either heat-hardened or non-hardened specimens—although the authors leave open the possibility of life-stage specific effects of Hsp70 expression.