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Title:	Evolution of sex-specific heat stress tolerance and larval Hsp70 expression in populations of <i>Drosophila melanogaster</i> adapted to larval crowding
Authors:	Kapila, Rohit (/jspui/browse?type=author&value=Kapila%2C+Rohit) Kashyap, Mayank (/jspui/browse?type=author&value=Kashyap%2C+Mayank) Aakanksha, Gulati (/jspui/browse?type=author&value=Aakanksha%2C+Gulati) Narasimhan, Aaditya (/jspui/browse?type=author&value=Narasimhan%2C+Aaditya) Poddar, Soumyadip (/jspui/browse?type=author&value=Poddar%2C+Soumyadip) Mukhopadhyaya, Arunika (/jspui/browse?type=author&value=Mukhopadhyaya%2C+Arunika) Prasad, Nagaraj Guru (/jspui/browse?type=author&value=Prasad%2C+Nagaraj+Guru)
Keywords:	sex-specific heat stress tolerance Hsp70 <i>Drosophila melanogaster</i>
Issue Date:	2021
Publisher:	Wiley
Citation:	Journal of Evolutionary Biology, 34(9), 1376-1385.
Abstract:	The ability to tolerate temperature stress is an important component of adult fitness. In holometabolous insects like <i>Drosophila melanogaster</i> , adult stress resistance can be affected by growth conditions experienced during the larval stages. Although evolution under crowded larval conditions is known to lead to the correlated evolution of many adult traits, its consequences on adult heat stress tolerance have not been investigated. Therefore, in the present study, we assessed the adult heat stress tolerance in populations of <i>D. melanogaster</i> adapted to a stressful larval crowding environment. We used replicate populations of <i>D. melanogaster</i> , selected for adaptation to larval crowding stress (MCUs), for more than 230 generations, and their respective controls (MBs). Larvae from selected and control populations were grown under crowded and uncrowded conditions, and their adult heat shock resistance at two different temperatures was measured. Further, we compared Hsp70 expression in crowded and uncrowded larvae of both populations and also measured the Hsp70 expression after a mild heat treatment in adults of selected and control populations. Our results showed that adaptation to larval crowding leads to the evolution of Hsp70 gene expression in larval stages and improves adult heat stress tolerance ability in males, but not in females.
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