

Complexity of Expression Control of HSP70 Genes in Extremophilic Midges

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Abstract

© 2016, Springer Science+Business Media New York. Heat shock proteins, including HSP70, are universal well-known agents of protecting cells and entire organism from negative effects of elevated temperature, as well as wide range of other abiotic stresses. Having highly conservative amino acid sequences, in different species they vary in copy number, expression patterns and other molecular and genetic traits. Taking all these notions into consideration, we can perceive the family of HSP70 as a good model for study evolutionary history and differences in stress response of closely relative species. In our study, we focused on comparing the number and specific behaviour of HSP70 genes in response to stress in four non-biting midges from Chironomidae family, including those which can survive extremely hard conditions and one which cannot. Our research proved the high conservatism of the HSP70 group, whereas the behaviour of almost each tetrad of orthologous genes was different among species, and not each one of included genes showed significant response to heat shock and desiccation.

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Keywords

Differential expression, Heat shock protein 70 (HSP70), Orthoclaudiinae acuticauda, Parabornia tonnoiri, Polypedilum nubifer, Polypedilum vanderplanki