

GEPHE SUMMARY

	Gephebase Gene		GepheID
lncRNA:Hsr omega (https://www.gephebase.org/search-criteria?/and+Gene)		GP00001999	
Gephebase= [^] lncRNA:Hsr omega [^] #gephebase-summary-title)			Main curator
	Entry Status	Courtier	
Published			

PHENOTYPIC CHANGE

	Trait Category		
Physiology (https://www.gephebase.org/search-criteria?/and+Trait)			
Category= [^] Physiology [^] #gephebase-summary-title)	Trait		
Temperature tolerance (https://www.gephebase.org/search-criteria?/and+Trait)			
criteria= [^] Temperature tolerance [^] #gephebase-summary-title)	Trait State in Taxon A		
Drosophila melanogaster - wild-type tolerance			
	Trait State in Taxon B		
Drosophila melanogaster - increased tolerance			
	Ancestral State		
Taxon A			
	Taxonomic Status		
Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic)			
Status= [^] Intraspecific [^] #gephebase-summary-title)			
	Taxon A	Taxon B	
	Latin Name		Latin Name
Drosophila melanogaster		Drosophila melanogaster	
(https://www.gephebase.org/search-criteria?/and+Taxon)		(https://www.gephebase.org/search-criteria?/and+Taxon)	
and Synonyms= [^] Drosophila melanogaster [^] #gephebase-summary-title)	Common Name	and Synonyms= [^] Drosophila melanogaster [^] #gephebase-summary-title)	Common Name
fruit fly		fruit fly	
	Synonyms		Synonyms
Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melangaster		Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melangaster	
	Rank		Rank
species		species	
	Lineage		Lineage
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Diptera; Brachycera; Muscomorpha; Eremoneura; Cyclorrhapha; Schizophora; Acalyptratae; Ephydroidea; Drosophilidae; Drosophilinae; Drosophilini; Drosophila; Sophophora; melanogaster group; melanogaster subgroup		cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Diptera; Brachycera; Muscomorpha; Eremoneura; Cyclorrhapha; Schizophora; Acalyptratae; Ephydroidea; Drosophilidae; Drosophilinae; Drosophilini; Drosophila; Sophophora; melanogaster group; melanogaster subgroup	
	Parent		Parent
melanogaster subgroup () - (Rank: species subgroup)		melanogaster subgroup () - (Rank: species subgroup)	
(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351)	NCBI Taxonomy ID	(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351)	NCBI Taxonomy ID
7227		7227	
(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227)		(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227)	
	is Taxon A an Intraspecies?		is Taxon B an Intraspecies?
No		No	

GENOTYPIC CHANGE

	Generic Gene Name		UniProtKB
-		0	
	Synonyms		GenebankID or UniProtKB
-		0	
	String		
-			
	Sequence Similarities		
-			
	GO - Molecular Function		
-			
	GO - Biological Process		
-			
	GO - Cellular Component		
-			
			Presumptive Null

No (<https://www.gephebase.org/search-criteria?/and+Presumptive Null=^No^#gephebase-summary-title>)

Molecular Type

Unknown (<https://www.gephebase.org/search-criteria?/and+Molecular Type=^Unknown^#gephebase-summary-title>)

Aberration Type

Unknown (<https://www.gephebase.org/search-criteria?/and+Aberration Type=^Unknown^#gephebase-summary-title>)

Molecular Details of the Mutation

-

Experimental Evidence

Linkage Mapping (<https://www.gephebase.org/search-criteria?/and+Experimental Evidence=^Linkage Mapping^#gephebase-summary-title>)

Main Reference

Both allelic variation and expression of nuclear and cytoplasmic transcripts of Hsr-omega are closely associated with thermal phenotype in *Drosophila*. (1998) (<https://pubmed.ncbi.nlm.nih.gov/9482901>)

Authors

McKechnie SW; Halford MM; McColl G; Hoffmann AA

Abstract

Inducible heat shock genes are considered a major component of the molecular mechanisms that confer cellular protection against a variety of environmental stresses, in particular high temperature extremes. We have tested the association between expression of the heat shock RNA gene hsr-omega and thermoresistance by generating thermoresistant lines of *Drosophila melanogaster* after application of two distinct regimes of laboratory selection. One set of lines was selected for resistance to knockdown by heat stress and the other was similarly selected but before selection a mild heat exposure known to increase resistance (heat hardening) was applied. A cross between resistant and susceptible lines confirmed our earlier observation that increased thermal tolerance cosegregates with allelic variation in the hsr-omega gene. This cosegregating variation is attributed largely to two haplotype groups. Using quantitative reverse transcription-PCR, we find evidence for divergent phenotypic responses in the two selection regimes, involving both structural and regulatory changes in hsr-omega. Lines selected after hardening showed increased levels of the cytoplasmic transcript but decreased levels of the nuclear transcript. Lines selected without hardening showed decreased levels of the cytoplasmic transcript. The allelic frequency changes at hsr-omega could not by themselves account for the altered transcription patterns. Our results support the idea that the functional RNA molecules transcribed from hsr-omega are an important and polymorphic regulatory component of an insect thermoresistance phenotype.

Additional References

The *Drosophila* heat shock hsr-omega gene: an allele frequency cline detected by quantitative PCR. (1999) (<https://pubmed.ncbi.nlm.nih.gov/10555288>)

RELATED GEPHE

Related Genes

1 (hsp70Ba) (<https://www.gephebase.org/search-criteria?/or+Taxon ID=^7227^/and+Trait=Temperature tolerance/and+groupHaplotypes=true#gephebase-summary-title>)

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

No UniProtKB entry for this long non-coding RNA - <http://flybase.org/reports/FBal0052269> - <http://flybase.org/reports/FBal0052270>