

GEPHE SUMMARY

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

PHENOTYPIC CHANGE

Trait Category		Trait	
Physiology (https://www.gephebase.org/search-criteria?/and+Trait Category=^Physiology^#gephebase-summary-title)			
Temperature tolerance (https://www.gephebase.org/search-criteria?/and+Trait=^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	Latin Name	Taxon B	Latin Name
Drosophila melanogaster (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Drosophila melanogaster^#gephebase-summary-title)		Drosophila melanogaster (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Drosophila melanogaster^#gephebase-summary-title)	
fruit fly	Common Name	fruit fly	Common Name
Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melangaster	Synonyms	Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melangaster	Synonyms
species	Rank	species	Rank
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; Ephydriodea; Drosophilidae; Drosophilinae; Drosophilini; Drosophila; Sophophora; melanogaster group; melanogaster subgroup	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; Ephydriodea; Drosophilidae; Drosophilinae; Drosophilini; Drosophila; Sophophora; melanogaster group; melanogaster subgroup	Lineage
melanogaster subgroup () - (Rank: species subgroup) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 32351)	Parent	melanogaster subgroup () - (Rank: species subgroup) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 32351)	Parent
7227 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7227)	NCBI Taxonomy ID	7227 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7227)	NCBI Taxonomy ID
No			is Taxon B an Infraspecies?
			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 ([#gephebase-summary-title\)](https://www.gephebase.org/search-criteria?/and+Presumptive Null=^No)

Molecular Type

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

Aberration Type

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

Molecular Details of the Mutation

-

Experimental Evidence

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

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

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>