

GEPHE SUMMARY

Jheh1-Jheh2-Jheh3 complex (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^Jheh1-Jheh2-Jheh3 complex #gephebase-summary-title)	Gephebase Gene GP00001782	GephelD Main curator
Published	Entry Status Courtier	

PHENOTYPIC CHANGE

Trait Category		Trait
Physiology (https://www.gephebase.org/search-criteria?/and+Trait Category=^Physiology #gephebase-summary-title)		
Oxidative stress resistance (https://www.gephebase.org/search-criteria?/and+Trait=^Oxidative+stress+resistance#gephebase-summary-title)	Trait State in Taxon A	
Drosophila melanogaster	Trait State in Taxon B	
Drosophila melanogaster	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
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
Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melanogaster	Synonyms	Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melanogaster
species	Rank	species
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
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)
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)
No	is Taxon A an Infraspecies?	is Taxon B an Infraspecies?

GENOTYPIC CHANGE

JHEH	Generic Gene Name Q6U6J0 (http://www.uniprot.org/uniprot/Q6U6J0)	UniProtKB Bombyx mori GenebankID or UniProtKB
JHEH; bommo-JHEH	Synonyms Q7KB18 (https://www.ncbi.nlm.nih.gov/nucore/Q7KB18)	
7091.BGIBMGA013930-TA (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=7091.BGIBMGA013930-TA)	String	
Belongs to the peptidase S33 family.	Sequence Similarities	
GO:0033961 : cis-stilbene-oxide hydrolase activity (https://www.ebi.ac.uk/QuickGO/term/GO:0033961)	GO - Molecular Function	
GO:0019439 : aromatic compound catabolic process	GO - Biological Process	

GO:0016021 : integral component of membrane

(<https://www.ebi.ac.uk/QuickGO/term/GO:0016021>)

GO:0005789 : endoplasmic reticulum membrane

(<https://www.ebi.ac.uk/QuickGO/term/GO:0005789>)

GO:0031090 : organelle membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0031090>)

Presumptive Null

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

Molecular Type

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

Aberration Type

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

Insertion Size

1-10 kb

Molecular Details of the Mutation

insertion of a transposable element Bari-Jheh associated with downregulation of Juvenile hormone epoxy hydroxylase 2 (Jheh2) and Jheh3 in nonstress conditions and with upregulation of Jheh1 and Jheh2 and downregulation of Jheh3 under oxidative stress conditions

Experimental Evidence

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

Main Reference

A recent adaptive transposable element insertion near highly conserved developmental loci in *Drosophila melanogaster*. (2009) (<https://pubmed.ncbi.nlm.nih.gov/19458110>)

Authors

González J; Macpherson JM; Petrov DA

Abstract

A recent genome-wide screen identified 13 transposable elements that are likely to have been adaptive during or after the spread of *Drosophila melanogaster* out of Africa. One of these insertions, Bari-Juvenile hormone epoxy hydrolase (Bari-Jheh), was associated with the selective sweep of its flanking neutral variation and with reduction of expression of one of its neighboring genes: Jheh3. Here, we provide further evidence that Bari-Jheh insertion is adaptive. We delimit the extent of the selective sweep and show that Bari-Jheh is the only mutation linked to the sweep. Bari-Jheh also lowers the expression of its other flanking gene, Jheh2. Subtle consequences of Bari-Jheh insertion on life-history traits are consistent with the effects of reduced expression of the Jheh genes. Finally, we analyze molecular evolution of Jheh genes in both the long- and the short-term and conclude that Bari-Jheh appears to be a very rare adaptive event in the history of these genes. We discuss the implications of these findings for the detection and understanding of adaptation.

Additional References

The dominance effect of the adaptive transposable element insertion Bari-Jheh depends on the genetic background. (2015) (<https://pubmed.ncbi.nlm.nih.gov/25912044>)

RELATED GEPHE

Related Genes

1 (metallothionein (MtnA)) ([#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID=^7227#/and+Trait=Oxidative+stress+resistance/and+groupHaplotypes=true))

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

@TE The transposable element insertion acts on the regulation of the three neighboring genes Jheh1 Jheh2 and Jheh3 - <http://flybase.org/reports/FBal0243312> - <http://flybase.org/reports/FBal0243313>