

## GEPHE SUMMARY

	Gephebase Gene	GephelD
esterase B1 = esterase beta1 ( <a href="https://www.gephebase.org/search-criteria?/and+Gene">https://www.gephebase.org/search-criteria?/and+Gene</a>	GP00000292	
Gephebase=^ esterase B1 = esterase beta1^#gephebase-summary-title)		Main curator
	Entry Status	Martin
Published		

## PHENOTYPIC CHANGE

	Trait Category		
Physiology ( <a href="https://www.gephebase.org/search-criteria?/and+Trait">https://www.gephebase.org/search-criteria?/and+Trait</a>	Trait		
Category="Physiology^#gephebase-summary-title)			
Xenobiotic resistance (insecticide) ( <a href="https://www.gephebase.org/search-criteria?/and+Trait">https://www.gephebase.org/search-criteria?/and+Trait</a> =^Xenobiotic resistance (insecticide)^#gephebase-summary-title)	Trait State in Taxon A		
Culex pipiens quinquefasciatus - sensitive S-LAB	Trait State in Taxon B		
Culex pipiens quinquefasciatus- resistant Tem-R	Ancestral State		
Taxon A	Taxonomic Status		
Intraspecific ( <a href="https://www.gephebase.org/search-criteria?/and+Taxonomic">https://www.gephebase.org/search-criteria?/and+Taxonomic</a>			
Status="Intraspecific^#gephebase-summary-title)			
Taxon A	Latin Name	Taxon B	Latin Name
Culex quinquefasciatus ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Culex+quinquefasciatus^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Culex+quinquefasciatus^#gephebase-summary-title</a> )		Culex quinquefasciatus ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Culex+quinquefasciatus^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Culex+quinquefasciatus^#gephebase-summary-title</a> )	
southern house mosquito	Common Name	southern house mosquito	Common Name
Culex fatigans; Culex pipiens fatigans; Culex pipiens quinquefasciatus; southern house mosquito; Culex fatigan; Culex pipiens quiquefasciatus; Culex quinquefasciatus; Culex quinquefasciatus; Culex quiquefasciatus	Synonyms	Culex fatigans; Culex pipiens fatigans; Culex pipiens quinquefasciatus; southern house mosquito; Culex fatigan; Culex pipiens quiquefasciatus; Culex quinquefasciatus; Culex quinquefasciatus; Culex quiquefasciatus	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; Nematocera; Culicomorpha; Culicoidea; Culicidae; Culicinae; Culicini; Culex; Culex; Culex pipiens complex	Lineage	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Diptera; Nematocera; Culicomorpha; Culicoidea; Culicidae; Culicinae; Culicini; Culex; Culex; Culex pipiens complex	Lineage
Culex pipiens complex () - (Rank: no rank) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 518105">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 518105</a> )	Parent	Culex pipiens complex () - (Rank: no rank) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 518105">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 518105</a> )	Parent
7176 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7176">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7176</a> )	NCBI Taxonomy ID	7176 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7176">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7176</a> )	NCBI Taxonomy ID
Yes	Taxon A Description	Yes	Taxon B Description
Culex pipiens quinquefasciatus - sensitive S-LAB		Culex pipiens quinquefasciatus- resistant Tem-R	

## GENOTYPIC CHANGE

B1	Generic Gene Name	UniProtKB Culex pipiens
-	Synonyms	GenebankID or UniProtKB
-	String	
Belongs to the type-B carboxylesterase/lipase family.	Sequence Similarities	
GO:0052689 : carboxylic ester hydrolase activity ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0052689">https://www.ebi.ac.uk/QuickGO/term/GO:0052689</a> )	GO - Molecular Function	
-	GO - Biological Process	
-	GO - Cellular Component	

No ( <a href="https://www.gephebase.org/search-criteria?/and+Presumptive+Null=%No%#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Presumptive+Null=%No%#gephebase-summary-title</a> )	Presumptive Null
Gene Amplification ( <a href="https://www.gephebase.org/search-criteria?/and+Molecular+Type=%Gene+Amplification%#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Molecular+Type=%Gene+Amplification%#gephebase-summary-title</a> )	Molecular Type
Complex Change ( <a href="https://www.gephebase.org/search-criteria?/and+Aberration+Type=%Complex+Change%#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Aberration+Type=%Complex+Change%#gephebase-summary-title</a> )	Aberration Type
Amplification of esterase B1 only	Molecular Details of the Mutation
Candidate Gene ( <a href="https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=%Candidate+Gene%#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=%Candidate+Gene%#gephebase-summary-title</a> )	Experimental Evidence
Amplification of an esterase gene is responsible for insecticide resistance in a California Culex mosquito. (1986) ( <a href="https://pubmed.ncbi.nlm.nih.gov/3755546">https://pubmed.ncbi.nlm.nih.gov/3755546</a> )	Main Reference
Mouchaïs C; Pasteur N; Bergâo JB; Hyrien O; Raymond M; de Saint Vincent BR; de Silvestri M; Georgiou GP	Authors
An esterase gene from the mosquito <i>Culex quinquefasciatus</i> that is responsible for resistance to a variety of organophosphorus (OP) insecticides was cloned in lambda gt11 phage. This gene was used to investigate the genetic mechanism of the high production of the esterase B1 it encodes in OP-resistant <i>Culex quinquefasciatus</i> Say (Tem-R strain) from California. Adults of the Tem-R strain were found to possess at least 250 times more copies of the gene than adults of a susceptible strain (S-Lab). The finding that selection by pesticides may result in the amplification of genes encoding detoxifying enzymes in whole, normally developed, reproducing insects emphasizes the biological importance of this mechanism and opens new areas of investigation in pesticide resistance management.	Abstract
Quantitative variation and selection of esterase gene amplification in <i>Culex pipiens</i> . (1999) ( <a href="https://pubmed.ncbi.nlm.nih.gov/10447707">https://pubmed.ncbi.nlm.nih.gov/10447707</a> )	Additional References
Characterization of amplification core and esterase B1 gene responsible for insecticide resistance in <i>Culex</i> . (1990) ( <a href="https://pubmed.ncbi.nlm.nih.gov/2320576">https://pubmed.ncbi.nlm.nih.gov/2320576</a> )	
Testing the unique amplification event and the worldwide migration hypothesis of insecticide resistance genes with sequence data. (1996) ( <a href="https://pubmed.ncbi.nlm.nih.gov/8939020">https://pubmed.ncbi.nlm.nih.gov/8939020</a> )	

## RELATED GEPHE

4 (Cpm1, esterase B1 + esterase A, para (kdr), resistance to dieldrin) ( <a href="https://www.gephebase.org/search-criteria?/or+Taxon+ID=%7176%/and+Trait=Xenobiotic+resistance/and+groupHaplotypes=true#gephebase-summary-title">https://www.gephebase.org/search-criteria?/or+Taxon+ID=%7176%/and+Trait=Xenobiotic+resistance/and+groupHaplotypes=true#gephebase-summary-title</a> )	Related Genes
No matches found.	Related Haplotypes

## EXTERNAL LINKS

## COMMENTS

Cluster of paralogous genes