

## GEPHE SUMMARY

	Gephebase Gene	GephelD
esterase B1 + esterase A ( <a href="https://www.gephebase.org/search-criteria/?and+Gene">https://www.gephebase.org/search-criteria/?and+Gene</a>	GP00000291	
Gephebase=^esterase B1 + esterase A^#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=Xenobiotic+resistance+(insecticide)^#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Trait=Xenobiotic+resistance+(insecticide)^#gephebase-summary-title</a> )	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
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
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
species	Rank	species
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
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> )
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> )
Yes	is Taxon A an Infraspecies?	is Taxon B an Infraspecies?
Culex pipiens quinquefasciatus - sensitive S-LAB	Taxon A Description	Taxon B Description
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)</a>	Presumptive Null
Gene Amplification ( <a href="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)</a>	Aberration Type
Amplification of a region containing both genes	Molecular Details of the Mutation
Candidate Gene ( <a href="https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=^Candidate+Gene">#gephebase-summary-title)</a>	Experimental Evidence
Coamplification of esterase A and B genes as a single unit in <i>Culex pipiens</i> mosquitoes. (1996) ( <a href="https://pubmed.ncbi.nlm.nih.gov/8939022">https://pubmed.ncbi.nlm.nih.gov/8939022</a> )	Main Reference
Rooker S; Guillemaud T; Berg Å; Pasteur N; Raymond M	Authors
In <i>Culex pipiens</i> mosquitoes, resistance to organophosphorous insecticides often results from increased detoxification by two types of esterases, A and B, which are closely linked. Overproduction of all esterase B so far investigated (B1, B2, B4, B5 and B6) is from gene amplification. An esterase A gene (esterase A2) has recently been cloned from mosquitoes with the overproduced esterases A2 and B2, and amplification of this gene has also been reported. We describe the cDNA sequences of three additional esterase genes from insecticide-resistant strains of <i>Culex pipiens</i> originating from France and California which show at least 93 per cent homology with the esterase A2 gene sequence. Restriction enzyme mapping shows that the esterase A gene lies within 2.2 kb of the esterase B gene. In mosquitoes with overproduced esterases A2 and B2, the amplification level of esterase A is equal to that of esterase B suggesting that the genes are coamplified. Furthermore, we show that in one strain with an overproduced A esterase (A1), gene amplification cannot account for the increased protein level. This indicates that overproduction of esterases A can be achieved through two different mechanisms: gene amplification and a regulatory mechanism--the nature of which remains to be identified.	Abstract
	Additional References

## RELATED GEPHE

4 (Cpm1, esterase B1 = esterase beta1, 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)</a>	Related Genes
No matches found.	Related Haplotypes

## EXTERNAL LINKS

## COMMENTS

Cluster of paralogous genes