

GEPHE SUMMARY

	Gephebase Gene		GepheID
esterase B1 (<a +esterase+b1^"="" href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">#gephebase-summary-title)	GP00000290		
	Entry Status	Martin	Main curator
Published			

PHENOTYPIC CHANGE

	Trait Category		
Physiology (<a +physiology^"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">#gephebase-summary-title)		Trait	
Xenobiotic resistance (insecticide; benzoylurea) (<a +xenobiotic+resistance+(insecticide;+benzoylurea)^"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">#gephebase-summary-title)			
	Trait State in Taxon A		
Culex tritaeniorhynchus - sensitive		Trait State in Taxon B	
Culex tritaeniorhynchus - resistant			
	Ancestral State		
Taxon A		Taxonomic Status	
Intraspecific (<a +intraspecific^"="" href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=">#gephebase-summary-title)			
	Taxon A		Taxon B
	Latin Name		Latin Name
Culex tritaeniorhynchus (<a +culex+tritaeniorhynchus^"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">#gephebase-summary-title)		Culex tritaeniorhynchus (<a +culex+tritaeniorhynchus^"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">#gephebase-summary-title)	
	Common Name		Common Name
-		-	
	Synonyms		Synonyms
Culex tritaeniorhynchus Giles, 1901		Culex tritaeniorhynchus Giles, 1901	
	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; Nematocera; Culicomorpha; Culicoidea; Culicidae; Culicinae; Culicini; Culex; Culex		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	
	Parent		Parent
Culex () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=53527)		Culex () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=53527)	
	NCBI Taxonomy ID		NCBI Taxonomy ID
7178 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7178)		7178 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7178)	
	is Taxon A an Intraspecies?		is Taxon B an Intraspecies?
No		No	

GENOTYPIC CHANGE

	Generic Gene Name		UniProtKB Culex pipiens
B1		P16854 (http://www.uniprot.org/uniprot/P16854)	
	Synonyms		GenebankID or UniProtKB
-		P16854 (https://www.ncbi.nlm.nih.gov/nuccore/P16854)	
	String		
-			
	Sequence Similarities		
Belongs to the type-B carboxylesterase/lipase family.			
	GO - Molecular Function		
GO:0052689 : carboxylic ester hydrolase activity (https://www.ebi.ac.uk/QuickGO/term/GO:0052689)			
	GO - Biological Process		
-			
	GO - Cellular Component		
-			
			Presumptive Null
No (<a +no^"="" href="https://www.gephebase.org/search-criteria?/and+Presumptive+Null=">#gephebase-summary-title)			

Gene Amplification (https://www.gephebase.org/search-criteria?/and+Molecular+Type=~Gene+Amplification~#gephebase-summary-title)	Molecular Type
Complex Change (https://www.gephebase.org/search-criteria?/and+Aberration+Type=~Complex+Change~#gephebase-summary-title)	Aberration Type
Whole gene amplification	Molecular Details of the Mutation
Candidate Gene (https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=~Candidate+Gene~#gephebase-summary-title)	Experimental Evidence
Amplification of a serine esterase gene is involved in insecticide resistance in Sri Lankan <i>Culex tritaeniorhynchus</i> . (1998) (https://pubmed.ncbi.nlm.nih.gov/9723868)	Main Reference
Karunaratne SH; Vaughan A; Paton MG; Hemingway J	Authors
Culex tritaeniorhynchus, the major vector of Japanese encephalitis in Sri Lanka, is resistant to organophosphorus insecticides, with a 10-fold resistance ratio at the LC50 for chlorpyrifos, and a high heterogeneity factor in the insect field population. The major mechanism of resistance in this species, as in the mosquito <i>C. quinquefasciatus</i> , is elevation of esterase activity. Basic biochemical, immunological and molecular analysis suggests that the <i>C. tritaeniorhynchus</i> CtrEstbeta1 gene is orthologous to the <i>C. quinquefasciatus</i> amplified Estbetas. The Estbeta2(1) antiserum cross-reacts strongly with CtrEstbeta1(1). Its corresponding cDNA, over the 545 base pairs sequenced, has approximately 84% identity with the various <i>C. quinquefasciatus</i> Estbetas. The gene is amplified in <i>C. tritaeniorhynchus</i> . Amplification of the same esterase in two independent species, along with multiple amplification events involving this esterase gene in <i>C. quinquefasciatus</i> suggests that the location of this gene within the genome predisposes it to amplification.	Abstract
	Additional References

RELATED GEPHE

2 (Acetylcholinesterase (Ace-1), Acetylcholinesterase (Ace-2)) (https://www.gephebase.org/search-criteria?/or+Taxon+ID=~7178~/and+Trait=Xenobiotic+resistance/and+groupHaplotypes=true#gephebase-summary-title)	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS

Cluster of paralogous genes	
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