

GEPHE SUMMARY

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

<p>Physiology (https://www.gephebase.org/search-criteria?/and+Trait+Category=^Physiology^#gephebase-summary-title)</p> <p>Xenobiotic resistance (insecticide; benzoylurea) (https://www.gephebase.org/search-criteria?/and+Trait=^Xenobiotic+resistance+(insecticide;+benzoylurea)^#gephebase-summary-title)</p> <p>Culex tritaeniorynchus - sensitive</p> <p>Culex tritaeniorynchus - resistant</p> <p>Taxon A</p> <p>Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=^Intraspecific^#gephebase-summary-title)</p>	<p>Trait Category</p> <p>Trait</p> <p>Trait State in Taxon A</p> <p>Trait State in Taxon B</p> <p>Ancestral State</p> <p>Taxonomic Status</p>	<p>Taxon A</p> <p>Latin Name</p> <p>Culex tritaeniorynchus (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Culex+tritaeniorynchus^#gephebase-summary-title)</p> <p>Common Name</p> <p>-</p> <p>Synonyms</p> <p>Culex tritaeniorynchus Giles, 1901</p> <p>Rank</p> <p>species</p> <p>Lineage</p> <p>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</p> <p>Parent</p> <p>Culex () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=53527)</p> <p>NCBI Taxonomy ID</p> <p>7178 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7178)</p> <p>is Taxon A an Intraspecies?</p> <p>No</p>	<p>Taxon B</p> <p>Latin Name</p> <p>Culex tritaeniorynchus (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Culex+tritaeniorynchus^#gephebase-summary-title)</p> <p>Common Name</p> <p>-</p> <p>Synonyms</p> <p>Culex tritaeniorynchus Giles, 1901</p> <p>Rank</p> <p>species</p> <p>Lineage</p> <p>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</p> <p>Parent</p> <p>Culex () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=53527)</p> <p>NCBI Taxonomy ID</p> <p>7178 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7178)</p> <p>is Taxon B an Intraspecies?</p> <p>No</p>
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GENOTYPIC CHANGE

<p>B1</p> <p>-</p> <p>-</p> <p>Belongs to the type-B carboxylesterase/lipase family.</p> <p>GO:0052689 : carboxylic ester hydrolase activity (https://www.ebi.ac.uk/QuickGO/term/GO:0052689)</p> <p>-</p> <p>-</p> <p>No (https://www.gephebase.org/search-criteria?/and+Presumptive+Null=^No^#gephebase-summary-title)</p>	<p>Generic Gene Name</p> <p>Synonyms</p> <p>String</p> <p>Sequence Similarities</p> <p>GO - Molecular Function</p> <p>GO - Biological Process</p> <p>GO - Cellular Component</p>	<p>P16854 (http://www.uniprot.org/uniprot/P16854)</p> <p>P16854 (https://www.ncbi.nlm.nih.gov/nuccore/P16854)</p>	<p>UniProtKB Culex pipiens</p> <p>GenebankID or UniProtKB</p> <p>Presumptive Null</p>
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Gene Amplification ([https://www.gephebase.org/search-criteria?/and+Molecular Type=%5E+Gene Amplification%5E#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular+Type=%5E+Gene+Amplification%5E#gephebase-summary-title))

Molecular Type

Complex Change ([https://www.gephebase.org/search-criteria?/and+Aberration Type=%5E+Complex Change%5E#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration+Type=%5E+Complex+Change%5E#gephebase-summary-title))

Aberration Type

Whole gene amplification

Molecular Details of the Mutation

Candidate Gene ([https://www.gephebase.org/search-criteria?/and+Experimental Evidence=%5E+Candidate Gene%5E#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=%5E+Candidate+Gene%5E#gephebase-summary-title))

Experimental Evidence

Amplification of a serine esterase gene is involved in insecticide resistance in Sri Lankan *Culex tritaeniorhynchus*. (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 *C. quinquefasciatus*, is elevation of esterase activity. Basic biochemical, immunological and molecular analysis suggests that the *C. tritaeniorhynchus* CtrEstbeta1 gene is orthologous to the *C. quinquefasciatus* 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 *C. quinquefasciatus* Estbetas. The gene is amplified in *C. tritaeniorhynchus*. Amplification of the same esterase in two independent species, along with multiple amplification events involving this esterase gene in *C. quinquefasciatus* 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=%5E7178%5E/and+Trait=Xenobiotic resistance/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID=%5E7178%5E/and+Trait=Xenobiotic+resistance/and+groupHaplotypes=true#gephebase-summary-title))

Related Genes

No matches found.

Related Haplotypes

EXTERNAL LINKS

COMMENTS

Cluster of paralogous genes