

GEPHE SUMMARY

<p>esterase B4 (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase+esterase+B4+Gephebase-summary-title)</p> <p>Published</p>	<p>Gephebase Gene</p> <p>Entry Status</p>	<p>GP00002639</p> <p>Courtier</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; chlorpyrifos) (https://www.gephebase.org/search-criteria?/and+Trait+Xenobiotic+resistance+(insecticide;+chlorpyrifos)+Gephebase-summary-title)</p> <p>Culex pipiens - sensitive</p> <p>Culex pipiens - resistant from France</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 pipiens (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+Culex+pipiens+Gephebase-summary-title)</p> <p>Common Name</p> <p>northern house mosquito</p> <p>Synonyms</p> <p>Culex agilis; Culex autogenicus; Culex azoriensis; Culex bicolor; Culex bifurcatus; Culex calcitrans; Culex calloti; Culex comitatus; Culex consobrinus; Culex dipseticus; Culex disjunctus; Culex doliorum; Culex domesticus; Culex erectus; Culex fasciatus; Culex haematophagus; Culex longefurcatus; Culex luteus; Culex marginalis; Culex melanorhinus; Culex meridionalis; Culex osakaensis; Culex pallipes; Culex phytophagus; Culex quasimodestus; Culex rufinus; Culex rufus; Culex sternopunctatus; Culex thoracicus; Culex torridus; Culex trifurcatus; Culex unistriatus; Culex varioannulatus; northern house mosquito; Culex pipiens Linnaeus, 1758</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; Culex pipiens complex</p> <p>Parent</p> <p>Culex pipiens complex () - (Rank: no rank) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=518105)</p> <p>NCBI Taxonomy ID</p> <p>7175 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7175)</p> <p>is Taxon A an Intraspecies?</p> <p>No</p>	<p>Taxon B</p> <p>Latin Name</p> <p>Culex pipiens (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+Culex+pipiens+Gephebase-summary-title)</p> <p>Common Name</p> <p>northern house mosquito</p> <p>Synonyms</p> <p>Culex agilis; Culex autogenicus; Culex azoriensis; Culex bicolor; Culex bifurcatus; Culex calcitrans; Culex calloti; Culex comitatus; Culex consobrinus; Culex dipseticus; Culex disjunctus; Culex doliorum; Culex domesticus; Culex erectus; Culex fasciatus; Culex haematophagus; Culex longefurcatus; Culex luteus; Culex marginalis; Culex melanorhinus; Culex meridionalis; Culex osakaensis; Culex pallipes; Culex phytophagus; Culex quasimodestus; Culex rufinus; Culex rufus; Culex sternopunctatus; Culex thoracicus; Culex torridus; Culex trifurcatus; Culex unistriatus; Culex varioannulatus; northern house mosquito; Culex pipiens Linnaeus, 1758</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; Culex pipiens complex</p> <p>Parent</p> <p>Culex pipiens complex () - (Rank: no rank) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=518105)</p> <p>NCBI Taxonomy ID</p> <p>7175 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7175)</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</p>	<p>Generic Gene Name</p> <p>Synonyms</p> <p>String</p> <p>Sequence Similarities</p> <p>GO - Molecular Function</p>	<p>P16854 (http://www.uniprot.org/uniprot/P16854)</p> <p>()</p> <p>UniProtKB Culex pipiens</p> <p>GenebankID or UniProtKB</p>
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(<https://www.ebi.ac.uk/QuickGO/term/GO:0052689>)

GO - Biological Process

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GO - Cellular Component

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Presumptive Null

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

Molecular Type

Gene Amplification ([#gpebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular+Type+Gene+Amplification))

Aberration Type

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

Insertion Size

-

Molecular Details of the Mutation

The production of the esterase B is approximately 50- and 500-fold higher in mosquitoes from France and Cyprus (respectively) than in susceptible insects whereas the number of gene copies is about 25 and 250. Differences of about 7- and 95-fold were also found in the degree of chlorpyrifos resistance.

Experimental Evidence

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

Main Reference

Identification of two distinct amplifications of the esterase B locus in *Culex pipiens* (L.) mosquitoes from Mediterranean countries. (1992) (<https://pubmed.ncbi.nlm.nih.gov/1520252>)

Authors

Poiri M; Raymond M; Pasteur N

Abstract

Two new highly active esterases were detected by starch electrophoretic studies in *Culex pipiens* mosquitoes from the area of Montpellier (France) and from Cyprus. We demonstrate here that both the French and the Cyprus esterases B are overproduced due to amplification of the coding gene. The production of the esterase B is approximately 50- and 500-fold higher in mosquitoes from France and Cyprus, respectively, than in susceptible insects, whereas the number of gene copies is about 25 and 250. Differences of about 7- and 95-fold were also found in the degree of chlorpyrifos resistance. RFLP comparison of the amplified region containing the esterase B gene revealed large differences between French and Cyprus mosquitoes. It thus appears that two distinct haplotypes with an esterase B gene coding an enzyme with identical electrophoretic mobility have been amplified. We therefore named the haplotypes in mosquitoes from France and Cyprus B4 and B5, respectively. The estimated genetic distance between these two haplotypes is not smaller than those observed in all pair comparisons of other known esterase B haplotypes. These results are discussed in the context of amplification phenomena.

Additional References

RELATED GEPHE

Related Genes

5 (Acetylcholinesterase (Ace-1), Cpm1, esterase A8 and B8, esterase B5, para (kdr)) ([https://www.gephebase.org/search-criteria?/or+Taxon ID=7175+and+Trait=Xenobiotic resistance+and+groupHaplotypes=true#gpebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID+7175+and+Trait=Xenobiotic+resistance+and+groupHaplotypes=true#gpebase-summary-title))

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

@Parrallelism