

GEPHE SUMMARY

para (kdr) ([https://www.gephebase.org/search-criteria?/and+Gene+Gephebase="+para+\(kdr\)+"#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=))

Gephebase Gene GP00002447 GepheID

Entry Status Courtier Main curator

Published

PHENOTYPIC CHANGE

Physiology ([https://www.gephebase.org/search-criteria?/and+Trait+Category="+Physiology+"#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Trait+Category=))

Trait Category

Xenobiotic resistance (insecticide) ([https://www.gephebase.org/search-criteria?/and+Trait="+Xenobiotic+resistance+\(insecticide\)+"#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Trait=))

Trait

Aedes albopictus

Trait State in Taxon A

Aedes albopictus - resistant from Singapore

Trait State in Taxon B

Taxon A

Ancestral State

Intraspecific ([https://www.gephebase.org/search-criteria?/and+Taxonomic+Status="+Intraspecific+"#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=))

Taxonomic Status

Taxon A	Latin Name	Taxon B	Latin Name
Aedes albopictus (<a +aedes+albopictus+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Aedes+albopictus+"#gephebase-summary-title)	Aedes albopictus (<a +aedes+albopictus+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Aedes+albopictus+"#gephebase-summary-title)	Aedes albopictus (<a +aedes+albopictus+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Aedes+albopictus+"#gephebase-summary-title)	Aedes albopictus (<a +aedes+albopictus+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Aedes+albopictus+"#gephebase-summary-title)
Common Name	Common Name	Common Name	Common Name
Asian tiger mosquito	Asian tiger mosquito	Asian tiger mosquito	Asian tiger mosquito
Synonyms	Synonyms	Synonyms	Synonyms
Stegomyia albopicta; Asian tiger mosquito; forest day mosquito; Aedes albopictus (Skuse, 1894)	Stegomyia albopicta; Asian tiger mosquito; forest day mosquito; Aedes albopictus (Skuse, 1894)	Stegomyia albopicta; Asian tiger mosquito; forest day mosquito; Aedes albopictus (Skuse, 1894)	Stegomyia albopicta; Asian tiger mosquito; forest day mosquito; Aedes albopictus (Skuse, 1894)
Rank	Rank	Rank	Rank
species	species	species	species
Lineage	Lineage	Lineage	Lineage
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Endopterygota; Diptera; Nematocera; Culicomorpha; Culicoidea; Culicidae; Culicinae; Aedini; Aedes; Stegomyia	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Endopterygota; Diptera; Nematocera; Culicomorpha; Culicoidea; Culicidae; Culicinae; Aedini; Aedes; Stegomyia	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Endopterygota; Diptera; Nematocera; Culicomorpha; Culicoidea; Culicidae; Culicinae; Aedini; Aedes; Stegomyia	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Endopterygota; Diptera; Nematocera; Culicomorpha; Culicoidea; Culicidae; Culicinae; Aedini; Aedes; Stegomyia
Parent	Parent	Parent	Parent
Stegomyia () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=53541)	Stegomyia () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=53541)	Stegomyia () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=53541)	Stegomyia () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=53541)
NCBI Taxonomy ID	NCBI Taxonomy ID	NCBI Taxonomy ID	NCBI Taxonomy ID
7160 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7160)	7160 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7160)	7160 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7160)	7160 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7160)
is Taxon A an Infrasppecies?	is Taxon A an Infrasppecies?	is Taxon B an Infrasppecies?	is Taxon B an Infrasppecies?
No	No	No	No

GENOTYPIC CHANGE

para

Generic Gene Name P35500 (<http://www.uniprot.org/uniprot/P35500>) UniProtKB Drosophila melanogaster

Synonyms () GenebankID or UniProtKB

bas; bss; CG9907; Dmel\CG9907; DmNav; DmNav1; DmNa[[v]]; DmNa[[V]]; DmNa[[v]]1; I(1)14Da; I(1)ESHS48; lincRNA.S9469; Nav1; Ocd; olfD; par; sbl; sbl-1; Shu; Shudderer

String

7227.FBpp0303597
(http://string-db.org/newstring.cgi/show_network_section.pl?identifier=7227.FBpp0303597)

Sequence Similarities

Belongs to the sodium channel (TC 1.A.1.10) family. Para subfamily.

GO - Molecular Function

GO:0005509 : calcium ion binding (<https://www.ebi.ac.uk/QuickGO/term/GO:0005509>)

GO:0005244 : voltage-gated ion channel activity (<https://www.ebi.ac.uk/QuickGO/term/GO:0005244>)

GO:0005248 : voltage-gated sodium channel activity (<https://www.ebi.ac.uk/QuickGO/term/GO:0005248>)

GO:0005272 : sodium channel activity
(<https://www.ebi.ac.uk/QuickGO/term/GO:0005272>)

GO - Biological Process

GO:0045433 : male courtship behavior, veined wing generated song production
(<https://www.ebi.ac.uk/QuickGO/term/GO:0045433>)
GO:0001666 : response to hypoxia (<https://www.ebi.ac.uk/QuickGO/term/GO:0001666>)
GO:0009612 : response to mechanical stimulus
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009612>)
GO:0034765 : regulation of ion transmembrane transport
(<https://www.ebi.ac.uk/QuickGO/term/GO:0034765>)
GO:0035725 : sodium ion transmembrane transport
(<https://www.ebi.ac.uk/QuickGO/term/GO:0035725>)
GO:0007638 : mechanosensory behavior
(<https://www.ebi.ac.uk/QuickGO/term/GO:0007638>)
GO:0060078 : regulation of postsynaptic membrane potential
(<https://www.ebi.ac.uk/QuickGO/term/GO:0060078>)

GO - Cellular Component

GO:0005887 : integral component of plasma membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0005887>)
GO:0001518 : voltage-gated sodium channel complex
(<https://www.ebi.ac.uk/QuickGO/term/GO:0001518>)

Presumptive Null

No (<https://www.gephebase.org/search-criteria?/and+Presumptive Null=~No^#gephebase-summary-title>)

Molecular Type

Coding (<https://www.gephebase.org/search-criteria?/and+Molecular Type=~Coding^#gephebase-summary-title>)

Aberration Type

SNP (<https://www.gephebase.org/search-criteria?/and+Aberration Type=~SNP^#gephebase-summary-title>)

SNP Coding Change

Nonsynonymous

Molecular Details of the Mutation

F1534C

Experimental Evidence

Candidate Gene (<https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Candidate Gene^#gephebase-summary-title>)

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	Phe	Cys	1534

Main Reference

First detection of a putative knockdown resistance gene in major mosquito vector, *Aedes albopictus*. (2011) (<https://pubmed.ncbi.nlm.nih.gov/21617306>)

Authors

Kasai S; Ng LC; Lam-Phua SG; Tang CS; Itokawa K; Komagata O; Kobayashi M; Tomita T

Abstract

The Asian tiger mosquito, *Aedes albopictus* (Skuse), is the major vector of Chikungunya fever and the secondary vector of dengue fever. We collected *Ae. albopictus* from Singapore and performed genotyping assay to detect mutations of the voltage-gated sodium channel, which is the target site of pyrethroid insecticides. We detected an amino acid substitution, F1534C, which is suspected to confer knockdown resistance (kdr) to pyrethroid insecticides. Of the collected mosquitoes, 53.8% were homozygous for this mutation, and the allele frequency of this mutation was estimated to be 73.1%. No kdr mutation was detected in the 5 other loci of domains II and IV. This is the first evidence for the presence of the kdr gene in *Ae. albopictus*, and our findings highlight the need for studying the global distribution of this allele in this important vector insect.

Additional References

Pyrethroid resistance in *Aedes aegypti* and *Aedes albopictus*: Important mosquito vectors of human diseases. (2016) (<https://pubmed.ncbi.nlm.nih.gov/27742355>)

RELATED GEPHE

Related Genes

1 (resistance to dieldrin) (<https://www.gephebase.org/search-criteria?/or+Taxon ID=~7160^/and+Trait=Xenobiotic resistance/and+groupHaplotypes=true#gephebase-summary-title>)

Related Haplotypes

2 ([https://www.gephebase.org/search-criteria?/or+Gene Gephebase=~para \(kdr\)^/and+Taxon ID=~7160^/or+Gene Gephebase=~para \(kdr\)^/and+Taxon ID=~7160^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Gene Gephebase=~para (kdr)^/and+Taxon ID=~7160^/or+Gene Gephebase=~para (kdr)^/and+Taxon ID=~7160^#gephebase-summary-title))

EXTERNAL LINKS

COMMENTS

