

GEPHE SUMMARY

para (kdr) (<a +para+(kdr)+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase="+para+(kdr)+"#gephebase-summary-title)	Gephebase Gene	GP00000832	GepheID
Published	Entry Status	Martin	Main curator

PHENOTYPIC CHANGE

Physiology (<a +physiology+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Physiology+"#gephebase-summary-title)	Trait Category		
Xenobiotic resistance (insecticide) (<a +xenobiotic+resistance+(insecticide)+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Xenobiotic+resistance+(insecticide)+"#gephebase-summary-title)	Trait		
Haematobia irritans	Trait State in Taxon A		
Haematobia irritans - resistant	Trait State in Taxon B		
Taxon A	Ancestral State		
Intraspecific (<a +intraspecific+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status="+Intraspecific+"#gephebase-summary-title)	Taxonomic Status		
	Taxon A		Taxon B
Haematobia irritans (<a +haematobia+irritans+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Haematobia+irritans+"#gephebase-summary-title)	Latin Name	Haematobia irritans (<a +haematobia+irritans+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Haematobia+irritans+"#gephebase-summary-title)	Latin Name
horn fly	Common Name	horn fly	Common Name
Lyperosia irritans; horn fly; Haematobia irritans (Linnaeus, 1758); Haematobia irritans species	Synonyms	Lyperosia irritans; horn fly; Haematobia irritans (Linnaeus, 1758); Haematobia irritans species	Synonyms
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Diptera; Brachycera; Muscomorpha; Eremoneura; Cyclorrhapha; Schizophora; Calypratae; Muscoidea; Muscidae; Muscinae; Stomoxiyini; Haematobia	Lineage	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Diptera; Brachycera; Muscomorpha; Eremoneura; Cyclorrhapha; Schizophora; Calypratae; Muscoidea; Muscidae; Muscinae; Stomoxiyini; Haematobia	Lineage
Haematobia () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7367)	Parent	Haematobia () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7367)	Parent
7368 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7368)	NCBI Taxonomy ID	7368 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7368)	NCBI Taxonomy ID
No	is Taxon A an Infrappecies?	No	is Taxon B an Infrappecies?

GENOTYPIC CHANGE

para	Generic Gene Name	UniProtKB Drosophila melanogaster
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; Shudder	Synonyms	P35500 (http://www.uniprot.org/uniprot/P35500) AAC12796 (https://www.ncbi.nlm.nih.gov/nucleotide/AAC12796)
7227.FBpp0303597 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=7227.FBpp0303597)	String	GenebankID or UniProtKB
Belongs to the sodium channel (TC 1.A.1.10) family. Para subfamily.	Sequence Similarities	
GO:0005509 : calcium ion binding (https://www.ebi.ac.uk/QuickGO/term/GO:0005509)	GO - Molecular Function	
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>)

- No (<https://www.gephebase.org/search-criteria?/and+Presumptive Null=~No^#gephebase-summary-title>) Presumptive Null
- Coding (<https://www.gephebase.org/search-criteria?/and+Molecular Type=~Coding^#gephebase-summary-title>) Molecular Type
- SNP (<https://www.gephebase.org/search-criteria?/and+Aberration Type=~SNP^#gephebase-summary-title>) Aberration Type
- Nonsynonymous SNP Coding Change
- L150F (=L1014F) Molecular Details of the Mutation
- Candidate Gene (<https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Candidate Gene^#gephebase-summary-title>) Experimental Evidence

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	-	-	-

Toxicological and molecular characterization of pyrethroid-resistant horn flies, *Haematobia irritans*: identification of kdr and super-kdr point mutations. (1997 Aug-Sep) Main Reference
(<https://pubmed.ncbi.nlm.nih.gov/9443375>)

Guerrero FD; Jamroz RC; Kammlah D; Kunz SE Authors

Two pyrethroid-resistant strains of horn flies were found to be 17- and 688-fold more resistant to permethrin and 17- and 11,300-fold more resistant to cyhalothrin than a susceptible control strain. Synergism experiments with piperonyl butoxide showed that both target site insensitivity and metabolic resistance mechanisms were present in the Super Resistant strain. Using the reverse transcriptase-polymerase chain reaction (RT-PCR), a 0.9 kb fragment of the putative sodium channel gene from susceptible and resistant flies was cloned and sequenced. Two sequence variants were detected, presumably arising from alternative splicing of transcripts. The amino acid sequences deduced from the resistant and susceptible fly gene fragments were identical except for three amino acid substitutions, two of which have been associated with resistance in house flies. A leucine to phenylalanine substitution associated with knockdown resistance (kdr) was found in both resistant strains. A methionine to threonine substitution associated with super-kdr was found in the Super Resistant strain. Translation of poly(A)+ RNA followed by sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE) detected translation products whose concentrations increased in association with pyrethroid resistance. Random-amplified polymorphic DNA (RAPD)-PCR of genomic DNA with over 260 DNA oligomers yielded one resistance-associated marker, designated HF-77, which was not detected in any susceptible flies but was present in 16% of the resistant individuals. Abstract

The L1014F point mutation in the house fly *Vssc1* sodium channel confers knockdown resistance to pyrethroids. (1997) (<https://pubmed.ncbi.nlm.nih.gov/9474777>) Additional References

RELATED GEPHE

- 2 (Acetylcholinesterase (Ace-2), resistance to dieldrin) (<https://www.gephebase.org/search-criteria?/or+Taxon ID=~7368^/and+Trait=Xenobiotic resistance/and+groupHaplotypes=true#gephebase-summary-title>) Related Genes
- 1 ([https://www.gephebase.org/search-criteria?/or+Gene Gephebase=~para \(kdr\)^/and+Taxon ID=~7368^/or+Gene Gephebase=~para \(kdr\)^/and+Taxon ID=~7368^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Gene Gephebase=~para (kdr)^/and+Taxon ID=~7368^/or+Gene Gephebase=~para (kdr)^/and+Taxon ID=~7368^#gephebase-summary-title)) Related Haplotypes

EXTERNAL LINKS

