

GEPHE SUMMARY

para (kdr) (https://www.gephebase.org/search-criteria?/and+Gene Gephebase='para (kdr)'#gephebase-summary-title)	Gephebase Gene	GephelD
	GP00002496	Main curator
Published	Entry Status	Courtier

PHENOTYPIC CHANGE

	Trait Category	
Physiology (https://www.gephebase.org/search-criteria?/and+Trait Category='Physiology'#gephebase-summary-title)	Trait	
Xenobiotic resistance (insecticide) (https://www.gephebase.org/search-criteria?/and+Trait='Xenobiotic resistance (insecticide)'#gephebase-summary-title)	Trait State in Taxon A	
Thrips tabaci	Trait State in Taxon B	
Thrips tabaci - resistant	Ancestral State	
Taxon A	Taxonomic Status	
Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic Status='Intraspecific'#gephebase-summary-title)		
Taxon A	Latin Name	Taxon B
Thrips tabaci (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms='Thrips tabaci'#gephebase-summary-title)		Latin Name
-	Common Name	
Thrips tabaci Lindeman, 1889	Synonyms	
species	Rank	
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Paraneoptera; Thysanoptera; Terebrantia; Thripoidea; Thripidae; Thripinae; Thrips	Lineage	
Thrips () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 45057)	Parent	
161014 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 161014)	NCBI Taxonomy ID	
No	is Taxon A an Infraspecies?	
	No	is Taxon B an Infraspecies?

GENOTYPIC CHANGE

	Generic Gene Name		
para	Synonyms	UniProtKB Drosophila melanogaster	
bas; bss; CG9907; Dmel\CG9907; DmNav; DmNav1; DmNa[[v]]; DmNa[[V]]; DmNa[[v]]1; l(1)14Da; l(1)ESHS48; lincRNA.S9469; Nav1; Ocd; olfD; par; sbl; sbl-1; Shu; Shudderer	P35500 (http://www.uniprot.org/uniprot/P35500)	GenebankID or UniProtKB	
7227.FBpp0303597 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier= 7227.FBpp0303597)	String	0	
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>)

Mutation #1

Presumptive Null

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

Molecular Type

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

Aberration Type

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

SNP Coding Change

Nonsynonymous

Molecular Details of the Mutation

M918T+L1014F

Experimental Evidence

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

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	Met	Thr	918

Main Reference

Identification of three point mutations on the sodium channel gene in pyrethroid-resistant *Thrips tabaci* (Thysanoptera: Thripidae). (2009)

(<https://pubmed.ncbi.nlm.nih.gov/20069860/>)

Authors

Toda S; Morishita M

Abstract

In the onion thrips, *Thrips tabaci* Lindeman (Thysanoptera: Thripidae), the development of resistance to pyrethroid insecticides has become a problem worldwide. To identify this species' resistance mechanism, we analyzed partial nucleotides and deduced the amino acid sequences of the para-orthologous sodium channel gene by using 10 Japanese strains of *T. tabaci* that have a variety of susceptibility levels to pyrethroids. Six nucleotide substitutions were found in their cDNA sequences. Three of these create amino acid substitutions, M918T, T929I, and L1014F, which are well known to be associated with knockdown resistance in some pest insects. In the five highly resistant strains, two mutations, M918T and L1014F, were always detected with wild-type sequences, suggesting that these strains have both mutations heterozygously. A moderately resistant strain was homozygous for the T929I mutation. This is the first report to identify these three major mutations within the same species.

Additional References

Mutation #2

Presumptive Null

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

Molecular Type

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

Aberration Type

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

SNP Coding Change

Nonsynonymous

Molecular Details of the Mutation

M918T+L1014F

Experimental Evidence

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

Taxon A	Taxon B	Position
Codon	-	-
Amino-acid	Leu	Phe
1014		1014
		Main Reference
Identification of three point mutations on the sodium channel gene in pyrethroid-resistant <i>Thrips tabaci</i> (Thysanoptera: Thripidae). (2009) (https://pubmed.ncbi.nlm.nih.gov/20069860/)		Authors
Toda S; Morishita M		Abstract
In the onion thrips, <i>Thrips tabaci</i> Lindeman (Thysanoptera: Thripidae), the development of resistance to pyrethroid insecticides has become a problem worldwide. To identify this species' resistance mechanism, we analyzed partial nucleotides and deduced the amino acid sequences of the para-orthologous sodium channel gene by using 10 Japanese strains of <i>T. tabaci</i> that have a variety of susceptibility levels to pyrethroids. Six nucleotide substitutions were found in their cDNA sequences. Three of these create amino acid substitutions, M918T, T929I, and L1014F, which are well known to be associated with knockdown resistance in some pest insects. In the five highly resistant strains, two mutations, M918T and L1014F, were always detected with wild-type sequences, suggesting that these strains have both mutations heterozygously. A moderately resistant strain was homozygous for the T929I mutation. This is the first report to identify these three major mutations within the same species.		Additional References

RELATED GEPHE

No matches found.

Related Genes

2 ([https://www.gephebase.org/search-criteria?/or+Gene Gephebase=^para \(kdr\)^/and+Taxon ID=^161014^/or+Gene Gephebase=^para \(kdr\)^/and+Taxon ID=^161014^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Gene Gephebase=^para (kdr)^/and+Taxon ID=^161014^/or+Gene Gephebase=^para (kdr)^/and+Taxon ID=^161014^#gephebase-summary-title))

Related Haplotypes

EXTERNAL LINKS

COMMENTS