

para (kdr) (https://www.gephebase.org/search-criteria?/and+Gene Gephebase="para (kdr)"#gephebase-summary-title)	Gephebase Gene	GP00000845	GepheID
Published	Entry Status	Martin	Main curator

Physiology (https://www.gephebase.org/search-criteria?/and+Trait+Category=^Physiology^#gephebase-summary-title)	Trait Category
Xenobiotic resistance (insecticide) (https://www.gephebase.org/search-criteria?/and+Trait=^Xenobiotic resistance (insecticide)^#gephebase-summary-title)	Trait
Myzus persicae	Trait State in Taxon A
Myzus persicae - resistant	Trait State in Taxon B
Taxon A	Ancestral State
Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=^Intraspecific^#gephebase-summary-title)	Taxonomic Status

GENOTYPIC CHANGE

para	Generic Gene Name	UniProtKB Drosophila melanogaster
	Synonyms	GenebankID or UniProtKB
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) CAM98294 (https://www.ncbi.nlm.nih.gov/nuccore/CAM98294)
7227.FBpp0303597 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier= 7227.FBpp0303597)	String	
	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>)

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

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

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

Nonsynonymous

(=M918T)

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

Presumptive Null

Molecular Type

Aberration Type

SNP Coding Change

Molecular Details of the Mutation

Experimental Evidence

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

High-throughput detection of knockdown resistance in Myzus persicae using allelic discriminating quantitative PCR. (2004) (<https://pubmed.ncbi.nlm.nih.gov/15262290>)

Anstead JA; Williamson MS; Eleftherianos I; Denholm I

The peach-potato aphid Myzus persicae (Sulzer) has developed resistance to pyrethroid insecticides as a result of a mechanism conferring reduced nervous system sensitivity, termed knockdown resistance (kdr). This reduced sensitivity is caused by two mutations, L1014F (kdr) and M918T (super-kdr), in the para-type voltage-gated sodium channel. We have developed a diagnostic dose bioassay to detect kdr and provide preliminary information on the genotype present. We also developed two allelic discrimination PCR assays to determine precisely the genotypes of the two mutations (L1014F and M918T) in individual M. persicae using fluorescent Taqman MGB probes. In combination with assays for elevated carboxylesterase levels and modified acetylcholinesterase (MACE), this suite of assays allows for rapid high-throughput diagnosis, in individual aphids, of the three main resistance mechanisms of practical importance in the UK.

Main Reference

Authors

Abstract

Additional References

RELATED GEPHE

8 (acetyl-CoA carboxylase (ACC), Acetylcholinesterase (Ace-1), CYP6CY3, CYP6CY3-CYP6CY4, esterase E4, esterase FE4, nAChR, resistance to dieldrin)
(<https://www.gephebase.org/search-criteria?/or+Taxon ID=~13164~/and+Trait=Xenobiotic resistance/and+groupHaplotypes=true#gephebase-summary-title>)

7 ([https://www.gephebase.org/search-criteria?/or+Gene Gephebase=~para \(kdr\)~/and+Taxon ID=~13164~/or+Gene Gephebase=~para \(kdr\)~/and+Taxon ID=~13164~#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Gene Gephebase=~para (kdr)~/and+Taxon ID=~13164~/or+Gene Gephebase=~para (kdr)~/and+Taxon ID=~13164~#gephebase-summary-title))

Related Genes

Related Haplotypes

EXTERNAL LINKS

COMMENTS

