

GEPHE SUMMARY

	Gephebase Gene	GepheID
resistance to dieldrin (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=%5Cresistance+to+dieldrin%5C#gephebase-summary-title)	GP00000970	Main curator
Published	Entry Status: Martin	

PHENOTYPIC CHANGE

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
Anopheles gambiae		Trait State in Taxon A
Anopheles gambiae - 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
Taxon A		Taxon B
Anopheles gambiae (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Anopheles+gambiae^#gephebase-summary-title)		Anopheles gambiae (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Anopheles+gambiae^#gephebase-summary-title)
African malaria mosquito		African malaria mosquito
Anopheles gambiae S; African malaria mosquito; Anopheles gambiae Giles, 1902; Anopheles gambia		Anopheles gambiae S; African malaria mosquito; Anopheles gambiae Giles, 1902; Anopheles gambia
species		species
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Diptera; Nematocera; Culicomorpha; Culicoidea; Culicidae; Anophelinae; Anopheles; Cellia; Pyretophorus; gambiae species complex		cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Diptera; Nematocera; Culicomorpha; Culicoidea; Culicidae; Anophelinae; Anopheles; Cellia; Pyretophorus; gambiae species complex
gambiae species complex () - (Rank: no rank) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 44542)		gambiae species complex () - (Rank: no rank) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 44542)
NCBI Taxonomy ID		NCBI Taxonomy ID
7165 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7165)		7165 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7165)
is Taxon A an Intraspecies?		is Taxon B an Intraspecies?
No		No

GENOTYPIC CHANGE

RdI	Generic Gene Name	UniProtKB Drosophila melanogaster
	Synonyms	GenebankID or UniProtKB
CG10537; CT29555; Dmel\CG10537; DmRdl; DmRDL; gaba; GABA; GABA-R; GABA _R ; GABA[[A]]; GABA[[A]] receptor; GABA[[A]]-R; GABA[[A]]R; LCCH1; Rdl; rdl; RDL		P25123 (http://www.uniprot.org/uniprot/P25123) AAV87219 (https://www.ncbi.nlm.nih.gov/nuccore/AAV87219)
	String	
7227.FBpp0305970 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier= 7227.FBpp0305970)		
	Sequence Similarities	
	Belongs to the ligand-gated ion channel (TC 1.A.9) family. Gamma-aminobutyric acid receptor (TC 1.A.9.5) subfamily.	
	GO - Molecular Function	
	GO:0004890 : GABA-A receptor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0004890)	
	GO:0022851 : GABA-gated chloride ion channel activity	

(<https://www.ebi.ac.uk/QuickGO/term/GO:0022851>)
GO:0030594 : neurotransmitter receptor activity
(<https://www.ebi.ac.uk/QuickGO/term/GO:0030594>)

GO - Biological Process

GO:0007165 : signal transduction (<https://www.ebi.ac.uk/QuickGO/term/GO:0007165>)
GO:0007268 : chemical synaptic transmission
(<https://www.ebi.ac.uk/QuickGO/term/GO:0007268>)
GO:0034220 : ion transmembrane transport
(<https://www.ebi.ac.uk/QuickGO/term/GO:0034220>)
GO:0042493 : response to drug (<https://www.ebi.ac.uk/QuickGO/term/GO:0042493>)
GO:0050877 : nervous system process
(<https://www.ebi.ac.uk/QuickGO/term/GO:0050877>)
GO:0042391 : regulation of membrane potential
(<https://www.ebi.ac.uk/QuickGO/term/GO:0042391>)
GO:0006811 : ion transport (<https://www.ebi.ac.uk/QuickGO/term/GO:0006811>)
GO:0042048 : olfactory behavior (<https://www.ebi.ac.uk/QuickGO/term/GO:0042048>)
GO:0030431 : sleep (<https://www.ebi.ac.uk/QuickGO/term/GO:0030431>)
GO:0009612 : response to mechanical stimulus
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009612>)
GO:0002121 : inter-male aggressive behavior
(<https://www.ebi.ac.uk/QuickGO/term/GO:0002121>)
GO:0050805 : negative regulation of synaptic transmission
(<https://www.ebi.ac.uk/QuickGO/term/GO:0050805>)
GO:0042749 : regulation of circadian sleep/wake cycle
(<https://www.ebi.ac.uk/QuickGO/term/GO:0042749>)
GO:0090328 : regulation of olfactory learning
(<https://www.ebi.ac.uk/QuickGO/term/GO:0090328>)

GO - Cellular Component

GO:0016021 : integral component of membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0016021>)
GO:0005886 : plasma membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0005886>)
GO:0005887 : integral component of plasma membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0005887>)
GO:0030054 : cell junction (<https://www.ebi.ac.uk/QuickGO/term/GO:0030054>)
GO:0030425 : dendrite (<https://www.ebi.ac.uk/QuickGO/term/GO:0030425>)
GO:0043005 : neuron projection (<https://www.ebi.ac.uk/QuickGO/term/GO:0043005>)
GO:0030424 : axon (<https://www.ebi.ac.uk/QuickGO/term/GO:0030424>)
GO:0045211 : postsynaptic membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0045211>)
GO:0045202 : synapse (<https://www.ebi.ac.uk/QuickGO/term/GO:0045202>)
GO:0034707 : chloride channel complex
(<https://www.ebi.ac.uk/QuickGO/term/GO:0034707>)
GO:0032589 : neuron projection membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0032589>)
GO:0032809 : neuronal cell body membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0032809>)

			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
Ala302Gly			
			Experimental Evidence
Linkage Mapping	(https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Linkage Mapping~#gephebase-summary-title)		

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

		Main Reference
Independent mutations in the Rdl locus confer dieldrin resistance to Anopheles gambiae and An. arabiensis. (2005)	(https://pubmed.ncbi.nlm.nih.gov/15796751)	
		Authors
Du W; Awolola TS; Howell P; Koekemoer LL; Brooke BD; Benedict MQ; Coetzee M; Zheng L		
		Abstract
Substitutions of a conserved alanine residue in the Rdl locus coding for a gamma-aminobutyric acid (GABA) receptor subunit with serine or glycine confer resistance to dieldrin in various insect species. Here, we show that alanine to glycine substitution in the Rdl locus of the malaria vector, Anopheles gambiae, is genetically linked to resistance to dieldrin. An alanine to serine substitution developed independently in a dieldrin resistant strain of An. arabiensis. An allele-specific polymerase chain reaction (PCR) assay was able to differentiate dieldrin resistant and susceptible mosquitoes.		
		Additional References

RELATED GEPHE

3 (Acetylcholinesterase (Ace-1), para (kdr), SAP-2) (<https://www.gephebase.org/search-criteria?/or+Taxon ID=~7165~/and+Trait=Xenobiotic resistance/and+groupHaplotypes=true#gephebase-summary-title>)

No matches found.

Related Genes

Related Haplotypes

EXTERNAL LINKS

COMMENTS