

## GEPHE SUMMARY

		Gephebase Gene	GepheID
alcohol dehydrogenase (Adh) ( <a href="https://www.gephebase.org/search-criteria?/and+Gene">https://www.gephebase.org/search-criteria?/and+Gene</a> )		GP00001989	
Gephebase="alcohol dehydrogenase (Adh)"#gephebase-summary-title)			Main curator
Published		Entry Status	Courtier

## PHENOTYPIC CHANGE

		Trait Category	
Physiology ( <a href="https://www.gephebase.org/search-criteria?/and+Trait">https://www.gephebase.org/search-criteria?/and+Trait</a> )			
Category="Physiology"#gephebase-summary-title)		Trait	
Xenobiotic resistance (alcohol) ( <a (alcohol)"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=" resistance="" xenobiotic="">https://www.gephebase.org/search-criteria?/and+Trait="Xenobiotic resistance (alcohol)"#gephebase-summary-title</a> )			
Drosophila melanogaster - low enzyme activity		Trait State in Taxon A	
Drosophila melanogaster - RI-42 allele - extremely low enzyme activity		Trait State in Taxon B	
Taxon A		Ancestral State	
Intraspecific ( <a href="https://www.gephebase.org/search-criteria?/and+Taxonomic">https://www.gephebase.org/search-criteria?/and+Taxonomic</a> )		Taxonomic Status	
Status="Intraspecific"#gephebase-summary-title)			
Taxon A		Taxon B	
		Latin Name	Latin Name
Drosophila melanogaster		Drosophila melanogaster	Drosophila melanogaster
( <a drosophila="" href="https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=" melanogaster"#gephebase-summary-title"="">https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms="Drosophila melanogaster"#gephebase-summary-title</a> )		( <a drosophila="" href="https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=" melanogaster"#gephebase-summary-title"="">https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms="Drosophila melanogaster"#gephebase-summary-title</a> )	( <a drosophila="" href="https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=" melanogaster"#gephebase-summary-title"="">https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms="Drosophila melanogaster"#gephebase-summary-title</a> )
fruit fly		Common Name	Common Name
fruit fly		fruit fly	fruit fly
		Synonyms	Synonyms
Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melangaster		Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melangaster	Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melangaster
species		Rank	Rank
species		species	species
		Lineage	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; Acalyptratae; Ephydroidea; Drosophilidae; Drosophilinae; Drosophilini; Drosophila; Sophophora; melanogaster group; melanogaster subgroup		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; Acalyptratae; Ephydroidea; Drosophilidae; Drosophilinae; Drosophilini; Drosophila; Sophophora; melanogaster group; melanogaster subgroup	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; Acalyptratae; Ephydroidea; Drosophilidae; Drosophilinae; Drosophilini; Drosophila; Sophophora; melanogaster group; melanogaster subgroup
melanogaster subgroup () - (Rank: species subgroup)		Parent	Parent
melanogaster subgroup () - (Rank: species subgroup)		melanogaster subgroup () - (Rank: species subgroup)	melanogaster subgroup () - (Rank: species subgroup)
( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351</a> )		NCBI Taxonomy ID	NCBI Taxonomy ID
7227		7227	7227
( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227</a> )		( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227</a> )	( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227</a> )
No		is Taxon A an Intraspecies?	is Taxon B an Intraspecies?
No		No	No

## GENOTYPIC CHANGE

		Generic Gene Name	UniProtKB Drosophila melanogaster
Adh		P00334 ( <a href="http://www.uniprot.org/uniprot/P00334">http://www.uniprot.org/uniprot/P00334</a> )	GenebankID or UniProtKB
		Synonyms	
adh; ADH; Adh3; BG:DS01486.8; CG32954; CG3481; dADH; DM-ADH; DmADH; Dmel\CG3481; Dreg-1; Reg-1; T16		M22210 ( <a href="https://www.ncbi.nlm.nih.gov/nucore/M22210">https://www.ncbi.nlm.nih.gov/nucore/M22210</a> )	
7227.FBpp0100048		String	
( <a href="http://string-db.org/newstring.cgi/show_network_section.pl?identifier=7227.FBpp0100048">http://string-db.org/newstring.cgi/show_network_section.pl?identifier=7227.FBpp0100048</a> )			
		Sequence Similarities	
Belongs to the short-chain dehydrogenases/reductases (SDR) family.			
		GO - Molecular Function	
GO:0042803 : protein homodimerization activity			
( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0042803">https://www.ebi.ac.uk/QuickGO/term/GO:0042803</a> )			
GO:0008774 : acetaldehyde dehydrogenase (acetylating) activity			

(<https://www.ebi.ac.uk/QuickGO/term/GO:0008774>)  
GO:0004022 : alcohol dehydrogenase (NAD) activity  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0004022>)  
GO:0016491 : oxidoreductase activity (<https://www.ebi.ac.uk/QuickGO/term/GO:0016491>)  
GO - Biological Process

GO:0006117 : acetaldehyde metabolic process  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0006117>)  
GO:0046164 : alcohol catabolic process  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0046164>)  
GO:0006066 : alcohol metabolic process  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0006066>)  
GO:0048149 : behavioral response to ethanol  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0048149>)  
GO:0006067 : ethanol metabolic process  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0006067>)  
GO:0006069 : ethanol oxidation (<https://www.ebi.ac.uk/QuickGO/term/GO:0006069>)  
GO:0055114 : oxidation-reduction process  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0055114>)

GO - Cellular Component

GO:0005829 : cytosol (<https://www.ebi.ac.uk/QuickGO/term/GO:0005829>)  
GO:0032991 : protein-containing complex  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0032991>)

No ([https://www.gephebase.org/search-criteria?/and+Presumptive Null="+No^"#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Presumptive+Null=))

Presumptive Null

Cis-regulatory ([https://www.gephebase.org/search-criteria?/and+Molecular Type="+Cis-regulatory^"#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular+Type=))

Molecular Type

Insertion ([https://www.gephebase.org/search-criteria?/and+Aberration Type="+Insertion^"#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration+Type=))

Aberration Type

1-10 kb

Insertion Size

insertion of a complete 5.2kb copia retroviral-like transposable element 240 bp upstream from the distal (adult) adh transcriptional start site

Molecular Details of the Mutation

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

Experimental Evidence

Insertion of a copia element 5' to the *Drosophila melanogaster* alcohol dehydrogenase gene (*adh*) is associated with altered developmental and tissue-specific patterns of expression. (1989)  
(<https://pubmed.ncbi.nlm.nih.gov/2470641>)

Main Reference

Strand DJ; McDonald JF

Authors

The *Drosophila melanogaster* alcohol dehydrogenase gene (*adh*) is under the control of two separate promoters (proximal and distal) which are preferentially utilized at the larval and adult life stages, respectively. A variant alcohol dehydrogenase allele (RI-42) isolated from a natural population contains a copia retroviral-like transposable element inserted 240 bp upstream from the distal (adult) *adh* transcriptional start site. Levels of *adh* transcripts in the RI-42 variant are reduced in tissues and at life stages where copia is actively expressed and are affected in trans- by mutant alleles at the suppressor-of-white-apricot (*su(wa)*) and suppressor-of-forked (*su(f)*) loci. These suppressor genes have no effect on *adh* expression in wild-type *Drosophila*.

Abstract

Additional References

## RELATED GEPHE

Related Genes

19 (Acetylcholinesterase (*Ace-2*), Aldehyde dehydrogenase (*Aldh*), CG11699, *Cyp12d1*, *Cyp28d1*, *Cyp28d1-Cyp28d2*, *cyp6d2*, *cyp6g1*, glutamate-gated chloride channel (*GluCl*), GSS (glutathione synthetase), GSTE1-E10 cluster, kin of irre (*kire*), para (*kdr*), PHGPx, resistance to dieldrin, *RnrS*, SOD1, Ugt86Dd, *CHKov1*) ([https://www.gephebase.org/search-criteria?/or+Taxon ID="+7227^"/and+Trait=Xenobiotic resistance/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID=))

Related Haplotypes

4 ([https://www.gephebase.org/search-criteria?/or+Gene Gephebase="+alcohol dehydrogenase \(Adh\)^"/and+Taxon ID="+7227^"/or+Gene Gephebase="+alcohol dehydrogenase \(Adh\)^"/and+Taxon ID="+7227^"#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Gene+Gephebase=))

## EXTERNAL LINKS

## COMMENTS

<http://flybase.org/reports/FBa0000376>

