GEPHE SUMMARY

Gephebase Gene
alcohol dehydrogenase (Adh) (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^alcohol dehydrogenase (Adh)^#gephebase-summary-title)

GepheID
GP00001988

Entry Status
Published

Main curator
Courtier

PHENOTYPIC CHANGE

Trait Category
Physiology (https://www.gephebase.org/search-criteria?/and+Trait Category=^Physiology^#gephebase-summary-title)

Trait
Xenobiotic resistance (alcohol) (https://www.gephebase.org/search-criteria?/and+Trait=^Xenobiotic resistance (alcohol)^#gephebase-summary-title)

Trait State in Taxon A
Drosophila melanogaster - slow allele - lower enzyme activity

Trait State in Taxon B
Drosophila melanogaster - temperature-sensitive allele - high enzyme activity at high temperature and low enzyme activity at low temperature

Ancestral State
Taxon A

Taxonomic Status
Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic Status=^Intraspecific^#gephebase-summary-title)

Taxon A

Latin Name
Drosophila melanogaster (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Drosophila melanogaster^#gephebase-summary-title)

Common Name
fruit fly

Synonyms
Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melangaster

Rank
species

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

Parent
melanogaster subgroup () - (Rank: species subgroup) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 32351)

NCBI Taxonomy ID
7227 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7227)

is Taxon A an Infraspecies?
No

Taxon B

Latin Name
Drosophila melanogaster (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Drosophila melanogaster^#gephebase-summary-title)

Common Name
fruit fly

Synonyms
Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melangaster

Rank
species

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

Parent
melanogaster subgroup () - (Rank: species subgroup) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 32351)

NCBI Taxonomy ID
7227 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7227)

is Taxon B an Infraspecies?
No

GENOTYPIC CHANGE

Generic Gene Name
Adh

Synonyms
adh; ADH; Adh3; BG:DS01486.8; CG32954; CG3481; dADH; DM-ADH; DmADH; Dmel\CG3481; Dreg-1; Reg-1; T16

String
7227.FBpp0100048 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier= 7227.FBpp0100048)

Sequence Similarities
Belongs to the short-chain dehydrogenases/reductases (SDR) family.

GO - Molecular Function
GO:0042803 : protein homodimerization activity (https://www.ebi.ac.uk/QuickGO/term/GO:0042803)

UniProtKB Drosophila melanogaster
P00334 (http://www.uniprot.org/uniprot/P00334)

GenebankID or UniProtKB
M22210 (https://www.ncbi.nlm.nih.gov/nuccore/M22210)

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)

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

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

Molecular Details of the Mutation

Activity of the purified enzyme is temperature-sensitive; as opposed to the other allele which is not. Exact coding mutation(s) unknown.

Experimental Evidence

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

Main Reference

Adh-n5: a temperature-sensitive mutant at the Adh locus in Drosophila. (1974) (https://pubmed.ncbi.nlm.nih.gov/4210301)

Authors

Vigue C; Sofer W

Abstract

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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)

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)

EXTERNAL LINKS

COMMENTS

http://flybase.org/reports/FBal0000346