

GEPHE SUMMARY

	Gephebase Gene	GephelD
Dopa-decarboxylase (https://www.gephebase.org/search-criteria/?and+Gene)	GP00000232	Main curator
Gephebase=^Dopa-decarboxylase^#gephebase-summary-title)		
Published	Entry Status	Martin

PHENOTYPIC CHANGE

	Trait Category	
Morphology (https://www.gephebase.org/search-criteria/?and+Trait)		
Category=^Morphology^#gephebase-summary-title)		
Bristle number (abdomen) (https://www.gephebase.org/search-criteria/?and+Trait=Bristle)	Trait	
number (abdomen)^#gephebase-summary-title)		
Drosophila melanogaster	Trait State in Taxon A	
Drosophila melanogaster	Trait State in Taxon B	
Data not curated	Ancestral State	
Intraspecific (https://www.gephebase.org/search-criteria/?and+Taxonomic)	Taxonomic Status	
Status=^Intraspecific^#gephebase-summary-title)		
Taxon A		Taxon B
	Latin Name	Latin Name
Drosophila melanogaster	(https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=Drosophila+melanogaster #gephebase-summary-title)	(https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=Drosophila+melanogaster #gephebase-summary-title)
	Common Name	Common Name
fruit fly	Synonyms	Synonyms
Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melanogaster		Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melanogaster
	Rank	Rank
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; Ephydriodea; 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; Ephydriodea; Drosophilidae; Drosophilinae; Drosophilini; Drosophila; Sophophora; melanogaster group; melanogaster subgroup	
	Parent	Parent
melanogaster subgroup () - (Rank: species subgroup)	(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351)	(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351)
5-HT; AADC; CG10697; ddc; DDC; DdcDm; Dmel\CG10697; fDDC; l(2)37Bl; l(2)37Ch; l(2)k02104	NCBI Taxonomy ID	NCBI Taxonomy ID
7227		7227
(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227)	is Taxon A an Infraspecies?	is Taxon B an Infraspecies?
No		No

GENOTYPIC CHANGE

	Generic Gene Name	UniProtKB Drosophila melanogaster
Ddc	Synonyms	GenebankID or UniProtKB
5-HT; AADC; CG10697; ddc; DDC; DdcDm; Dmel\CG10697; fDDC; l(2)37Bl; l(2)37Ch; l(2)k02104	P05031 (http://www.uniprot.org/uniprot/P05031)	X04661 (https://www.ncbi.nlm.nih.gov/nuccore/X04661)
	String	
7227.FBpp0080710 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=7227.FBpp0080710)		
	Sequence Similarities	
Belongs to the group II decarboxylase family.		
	GO - Molecular Function	
GO:0030170 : pyridoxal phosphate binding (https://www.ebi.ac.uk/QuickGO/term/GO:0030170)		
GO:0004058 : aromatic-L-amino-acid decarboxylase activity		

GO - Biological Process

GO:0007616 : long-term memory (<https://www.ebi.ac.uk/QuickGO/term/GO:0007616>)
GO:0048085 : adult chitin-containing cuticle pigmentation
(<https://www.ebi.ac.uk/QuickGO/term/GO:0048085>)
GO:0007615 : anesthesia-resistant memory
(<https://www.ebi.ac.uk/QuickGO/term/GO:0007615>)
GO:0006585 : dopamine biosynthetic process from tyrosine
(<https://www.ebi.ac.uk/QuickGO/term/GO:0006585>)
GO:0048082 : regulation of adult chitin-containing cuticle pigmentation
(<https://www.ebi.ac.uk/QuickGO/term/GO:0048082>)
GO:0009611 : response to wounding (<https://www.ebi.ac.uk/QuickGO/term/GO:0009611>)
GO:0006587 : serotonin biosynthetic process from tryptophan
(<https://www.ebi.ac.uk/QuickGO/term/GO:0006587>)
GO:0040040 : thermosensory behavior
(<https://www.ebi.ac.uk/QuickGO/term/GO:0040040>)
GO:0043052 : thermotaxis (<https://www.ebi.ac.uk/QuickGO/term/GO:0043052>)
GO:0035220 : wing disc development
(<https://www.ebi.ac.uk/QuickGO/term/GO:0035220>)

GO - Cellular Component

-	Presumptive Null
Unknown (https://www.gephebase.org/search-criteria?/and+Presumptive Null=%5EUnknown%23gephebase-summary-title)	Molecular Type
Cis-regulatory (https://www.gephebase.org/search-criteria?/and+Molecular Type=%5ECis-regulatory%23gephebase-summary-title)	Aberration Type
Unknown (https://www.gephebase.org/search-criteria?/and+Aberration Type=%5EUnknown%23gephebase-summary-title)	Molecular Details of the Mutation
Promoter variation	Experimental Evidence
Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=%5ELinkage Mapping%23gephebase-summary-title)	Main Reference
Drosophila bristles and the nature of quantitative genetic variation. (2005) (https://pubmed.ncbi.nlm.nih.gov/16108138)	Authors
Mackay TF; Lyman RF	Abstract
Numbers of Drosophila sensory bristles present an ideal model system to elucidate the genetic basis of variation for quantitative traits. Here, we review recent evidence that the genetic architecture of variation for bristle numbers is surprisingly complex. A substantial fraction of the Drosophila genome affects bristle number, indicating pervasive pleiotropy of genes that affect quantitative traits. Further, a large number of loci, often with sex- and environment-specific effects that are also conditional on background genotype, affect natural variation in bristle number. Despite this complexity, an understanding of the molecular basis of natural variation in bristle number is emerging from linkage disequilibrium mapping studies of individual candidate genes that affect the development of sensory bristles. We show that there is naturally segregating genetic variance for environmental plasticity of abdominal and sternopleural bristle number. For abdominal bristle number this variance can be attributed in part to an abnormal abdomen-like phenotype that resembles the phenotype of mutants defective in catecholamine biosynthesis. Dopa decarboxylase (Ddc) encodes the enzyme that catalyses the final step in the synthesis of dopamine, a major Drosophila catecholamine and neurotransmitter. We found that molecular polymorphisms at Ddc are indeed associated with variation in environmental plasticity of abdominal bristle number.	Additional References

RELATED GEPHE

Related Genes

7 (achaete-scute complex, Delta, hairy (h), poils au dos (pad), scabrous, smooth, Catecholamines up) ([https://www.gephebase.org/search-criteria?/or+Taxon ID=%5E7227%23Trait=Bristle number%23groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+TaxonID=%5E7227%23Trait=Bristle%20number%23groupHaplotypes=true#gephebase-summary-title))

Related Haplotypes

1 ([https://www.gephebase.org/search-criteria?/or+Gene Gephebase=%5EDopa-decarboxylase%23and+Taxon ID=%5E7227%23or+Gene Gephebase=%5EDopa-decarboxylase%23and+Taxon ID=%5E7227%23gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Gene%20Gephebase=%5EDopa-decarboxylase%23and+Taxon%20ID=%5E7227%23or+Gene%20Gephebase=%5EDopa-decarboxylase%23and+Taxon%20ID=%5E7227%23gephebase-summary-title))

EXTERNAL LINKS

COMMENTS

@GxE

