

GEPHE SUMMARY

	Gephebase Gene		GepheID
yellow (<a +yellow+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase="+yellow+"#gephebase-summary-title)		GP00001220	
	Entry Status	Martin	Main curator
Published			

PHENOTYPIC CHANGE

	Trait Category		
Morphology (<a +morphology+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Morphology+"#gephebase-summary-title)			
	Trait		
Coloration (abdomen) (<a +coloration+(abdomen)+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Coloration+(abdomen)+"#gephebase-summary-title)			
	Trait State in Taxon A		
Drosophila melanogaster			
	Trait State in Taxon B		
Drosophila kikkawai			
	Ancestral State		
Data not curated			
	Taxonomic Status		
Interspecific (<a +interspecific+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status="+Interspecific+"#gephebase-summary-title)			

Taxon A		Taxon B	
	Latin Name		Latin Name
Drosophila melanogaster (<a +drosophila+melanogaster+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Drosophila+melanogaster+"#gephebase-summary-title)		Drosophila kikkawai (<a +drosophila+kikkawai+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Drosophila+kikkawai+"#gephebase-summary-title)	
	Common Name		Common Name
fruit fly		-	
	Synonyms		Synonyms
Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melangaster		-	
	Rank		Rank
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; montium subgroup	
	Parent		Parent
melanogaster subgroup () - (Rank: species subgroup) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351)		montium subgroup () - (Rank: species subgroup) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32352)	
	NCBI Taxonomy ID		NCBI Taxonomy ID
7227 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227)		30033 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=30033)	
	is Taxon A an Infraspecies?		is Taxon B an Infraspecies?
No		No	

GENOTYPIC CHANGE

	Generic Gene Name		UniProtKB Drosophila melanogaster
y		P09957 (http://www.uniprot.org/uniprot/P09957)	
	Synonyms		GenebankID or UniProtKB
CG3757; Dmel\CG3757; EG:125H10.2; T6; Y		XP_017030366 (https://www.ncbi.nlm.nih.gov/nuccore/XP_017030366)	
	String		
7227.FBpp0070070 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=7227.FBpp0070070)			
	Sequence Similarities		
Belongs to the major royal jelly protein family.			
	GO - Molecular Function		
-			
	GO - Biological Process		
GO:0042438 : melanin biosynthetic process (https://www.ebi.ac.uk/QuickGO/term/GO:0042438)			

GO:0048082 : regulation of adult chitin-containing cuticle pigmentation
(<https://www.ebi.ac.uk/QuickGO/term/GO:0048082>)
GO:0048066 : developmental pigmentation
(<https://www.ebi.ac.uk/QuickGO/term/GO:0048066>)
GO:0048067 : cuticle pigmentation (<https://www.ebi.ac.uk/QuickGO/term/GO:0048067>)
GO:0006583 : melanin biosynthetic process from tyrosine
(<https://www.ebi.ac.uk/QuickGO/term/GO:0006583>)
GO:0048065 : male courtship behavior, veined wing extension
(<https://www.ebi.ac.uk/QuickGO/term/GO:0048065>)
GO:0060179 : male mating behavior (<https://www.ebi.ac.uk/QuickGO/term/GO:0060179>)
GO - Cellular Component
GO:0005737 : cytoplasm (<https://www.ebi.ac.uk/QuickGO/term/GO:0005737>)
GO:0005576 : extracellular region (<https://www.ebi.ac.uk/QuickGO/term/GO:0005576>)
GO:0070451 : cell hair (<https://www.ebi.ac.uk/QuickGO/term/GO:0070451>)

No (https://www.gephebase.org/search-criteria?/and+Presumptive Null=~No~#gephebase-summary-title)	Presumptive Null
Cis-regulatory (https://www.gephebase.org/search-criteria?/and+Molecular Type=~Cis-regulatory~#gephebase-summary-title)	Molecular Type
Unknown (https://www.gephebase.org/search-criteria?/and+Aberration Type=~Unknown~#gephebase-summary-title)	Aberration Type
indel and/or SNP located within a cis-regulatory element	Molecular Details of the Mutation
Candidate Gene (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Candidate Gene~#gephebase-summary-title)	Experimental Evidence
Regulation of body pigmentation by the Abdominal-B Hox protein and its gain and loss in Drosophila evolution. (2006) (https://pubmed.ncbi.nlm.nih.gov/16814723)	Main Reference
Jeong S; Rokas A; Carroll SB	Authors
Hox genes have been implicated in the evolution of many animal body patterns, but the molecular events underlying trait modification have not been elucidated. Pigmentation of the posterior male abdomen is a recently acquired trait in the Drosophila melanogaster lineage. Here, we show that the Abdominal-B (ABD-B) Hox protein directly activates expression of the yellow pigmentation gene in posterior segments. ABD-B regulation of pigmentation evolved through the gain of ABD-B binding sites in a specific cis-regulatory element of the yellow gene of a common ancestor of sexually dimorphic species. Within the melanogaster species group, male-specific pigmentation has subsequently been lost by at least three different mechanisms, including the mutational inactivation of a key ABD-B binding site in one lineage. These results demonstrate how Hox regulation of traits and target genes is gained and lost at the species level and have general implications for the evolution of body form at higher taxonomic levels.	Abstract
	Additional References

RELATED GEPHE

5 (bab, bab1, ebony, tan, wingless (wg)) (https://www.gephebase.org/search-criteria?/or+Taxon ID=~7227~/and+Trait=Coloration/or+Taxon ID=~30033~/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title)	Related Genes
1 (https://www.gephebase.org/search-criteria?/or+Gene Gephebase=~yellow~/and+Taxon ID=~7227~/or+Gene Gephebase=~yellow~/and+Taxon ID=~30033~#gephebase-summary-title)	Related Haplotypes

EXTERNAL LINKS

COMMENTS

@SexualTrait