

# GEPHE SUMMARY

	Gephebase Gene	GephelD
yellow ( <a href="https://www.gephebase.org/search-criteria?/and+Gene">https://www.gephebase.org/search-criteria?/and+Gene</a> Gephebase="yellow">#gephebase-summary-title)	GP00002023	
	Entry Status	Main curator
Published	Courtier	

## PHENOTYPIC CHANGE

	Trait Category
Morphology ( <a href="https://www.gephebase.org/search-criteria?/and+Trait">https://www.gephebase.org/search-criteria?/and+Trait</a> Category="Morphology">#gephebase-summary-title)	Trait
Coloration (abdomen; male) ( <a href="https://www.gephebase.org/search-criteria?/and+Trait=^Coloration%20(abdomen;%20male)%23gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait=^Coloration (abdomen; male)#gephebase-summary-title</a> )	Trait State in Taxon A
dark posterior male abdomen	Trait State in Taxon B
light posterior male abdomen	Ancestral State
Taxon A	Taxonomic Status

Taxon A	Latin Name	Taxon B	Latin Name
Drosophila yakuba ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=%Drosophila+yakuba%23gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=%Drosophila+yakuba#gephebase-summary-title</a> )		Drosophila santomea ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=%Drosophila+santomea%23gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=%Drosophila+santomea#gephebase-summary-title</a> )	
	Common Name		Common Name
-	-	-	-
	Synonyms		Synonyms
Drosophila yakuba Burla, 1954	-	-	-
species	Rank	species	Rank
	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	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) ( <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> )		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> )	
7245 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7245">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7245</a> )	NCBI Taxonomy ID	129105 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=129105">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=129105</a> )	NCBI Taxonomy ID
	is Taxon A an Infraspecies?		is Taxon B an Infraspecies?
No	No		

## GENOTYPIC CHANGE

	Generic Gene Name	UniProtKB Drosophila melanogaster
y	P09957 ( <a href="http://www.uniprot.org/uniprot/P09957">http://www.uniprot.org/uniprot/P09957</a> )	
CG3757; Dmel\CG3757; EG:125H10.2; T6; Y	String	
7227.FBpp0070070 ( <a href="http://string-db.org/newstring_cgi/show_network_section.pl?identifier=7227.FBpp0070070">http://string-db.org/newstring_cgi/show_network_section.pl?identifier=7227.FBpp0070070</a> )	Sequence Similarities	
Belongs to the major royal jelly protein family.	GO - Molecular Function	
-	GO - Biological Process	
GO:0042438 : melanin biosynthetic process ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0042438">https://www.ebi.ac.uk/QuickGO/term/GO:0042438</a> )		
GO:0048082 : regulation of adult chitin-containing cuticle pigmentation		

( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0048082">https://www.ebi.ac.uk/QuickGO/term/GO:0048082</a> )	
GO:0048066 : developmental pigmentation	
( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0048066">https://www.ebi.ac.uk/QuickGO/term/GO:0048066</a> )	
GO:0048067 : cuticle pigmentation ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0048067">https://www.ebi.ac.uk/QuickGO/term/GO:0048067</a> )	
GO:0006583 : melanin biosynthetic process from tyrosine	
( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0006583">https://www.ebi.ac.uk/QuickGO/term/GO:0006583</a> )	
GO:0048065 : male courtship behavior, veined wing extension	
( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0048065">https://www.ebi.ac.uk/QuickGO/term/GO:0048065</a> )	
GO:0060179 : male mating behavior ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0060179">https://www.ebi.ac.uk/QuickGO/term/GO:0060179</a> )	
GO - Cellular Component	
GO:0005737 : cytoplasm ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005737">https://www.ebi.ac.uk/QuickGO/term/GO:0005737</a> )	Presumptive Null
GO:0005576 : extracellular region ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005576">https://www.ebi.ac.uk/QuickGO/term/GO:0005576</a> )	Molecular Type
GO:0070451 : cell hair ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0070451">https://www.ebi.ac.uk/QuickGO/term/GO:0070451</a> )	Aberration Type
No ( <a href="https://www.gephebase.org/search-criteria?/and+Presumptive Null=^No^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Presumptive Null=^No^#gephebase-summary-title</a> )	Molecular Details of the Mutation
Cis-regulatory ( <a href="https://www.gephebase.org/search-criteria?/and+Molecular Type=^Cis-regulatory^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Molecular Type=^Cis-regulatory^#gephebase-summary-title</a> )	Experimental Evidence
Unknown ( <a href="https://www.gephebase.org/search-criteria?/and+Aberration Type=^Unknown^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Aberration Type=^Unknown^#gephebase-summary-title</a> )	Main Reference
change in a cis-regulatory region - exact causing mutation(s) unknown - decreased yellow abdominal expression associated with lighter color	Authors
Linkage Mapping ( <a href="https://www.gephebase.org/search-criteria?/and+Experimental Evidence=^Linkage Mapping^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Experimental Evidence=^Linkage Mapping^#gephebase-summary-title</a> )	Abstract
Changes throughout a Genetic Network Mask the Contribution of Hox Gene Evolution. (2019) ( <a href="https://pubmed.ncbi.nlm.nih.gov/31257142">https://pubmed.ncbi.nlm.nih.gov/31257142</a> )	
Liu Y; Ramos-Womack M; Han C; Reilly P; Brackett KL; Rogers W; Williams TM; Andolfatto P; Stern DL; Rebeiz M	
Hox genes pattern the anterior-posterior axis of animals and are posited to drive animal body plan evolution, yet their precise role in evolution has been difficult to determine. Here, we identified evolutionary modifications in the Hox gene Abd-B that dramatically altered its expression along the body plan of <i>Drosophila santomea</i> . Abd-B is required for pigmentation in <i>Drosophila yakuba</i> , the sister species of <i>D.Â santomea</i> , and changes to Abd-B expression would be predicted to make large contributions to the loss of body pigmentation in <i>D.Â santomea</i> . However, manipulating Abd-B expression in current-day <i>D.Â santomea</i> does not affect pigmentation. We attribute this epistatic interaction to four other genes within the <i>D.Â santomea</i> pigmentation network, three of which have evolved expression patterns that do not respond to Abd-B. Our results demonstrate how body plans may evolve through small evolutionary steps distributed throughout Hox-regulated networks. Polygenicity and epistasis may hinder efforts to identify genes and mechanisms underlying macroevolutionary traits.	
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## RELATED GEPHE

5 (Abdominal-B, ebony, pdm3, tan, bab) ( <a href="https://www.gephebase.org/search-criteria?/or+Taxon ID=^7245^/and+Trait=Coloration/or+Taxon ID=^129105^/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title">https://www.gephebase.org/search-criteria?/or+Taxon ID=^7245^/and+Trait=Coloration/or+Taxon ID=^129105^/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title</a> )	Related Genes
No matches found.	Related Haplotypes

## EXTERNAL LINKS

## COMMENTS

@SexualTrait @SeveralMutationsWithEffect