

## GEPHE SUMMARY

yellow ( <a href="https://www.gephebase.org/search-criteria?/and+GeneGephebase=%22yellow%22#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+GeneGephebase=%22yellow%22#gephebase-summary-title</a> )	Gephebase Gene	GP00001961	GepheID
Published	Entry Status	Courtier	Main curator

## PHENOTYPIC CHANGE

Trait Category	
Morphology ( <a href="https://www.gephebase.org/search-criteria?/and+TraitCategory=%22Morphology%22#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+TraitCategory=%22Morphology%22#gephebase-summary-title</a> )	Trait
Coloration (body; wing) ( <a href="https://www.gephebase.org/search-criteria?/and+Trait=%22Coloration+(body%3B+wing)%22#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait=%22Coloration+(body%3B+wing)%22#gephebase-summary-title</a> )	Trait State in Taxon A
population of <i>Drosophila melanogaster</i> from Uman (Ukraine) - wild-type	Trait State in Taxon B
population of <i>Drosophila melanogaster</i> from Uman (Ukraine) - yellow body and yellow wings	Ancestral State
Taxon A	Taxonomic Status
Intraspecific ( <a href="https://www.gephebase.org/search-criteria?/and+TaxonomicStatus=%22Intraspecific%22#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+TaxonomicStatus=%22Intraspecific%22#gephebase-summary-title</a> )	

Taxon A	Latin Name	Taxon B	Latin Name
<i>Drosophila melanogaster</i> ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=%22Drosophila+melanogaster%22#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=%22Drosophila+melanogaster%22#gephebase-summary-title</a> )	Common Name	<i>Drosophila melanogaster</i> ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=%22Drosophila+melanogaster%22#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=%22Drosophila+melanogaster%22#gephebase-summary-title</a> )	Common Name
fruit fly	Synonyms	fruit fly	Synonyms
Sophophora melanogaster; fruit fly; <i>Drosophila melanogaster</i> Meigen, 1830; Sophophora melanogaster (Meigen, 1830); <i>Drosophila melanogaster</i>		Sophophora melanogaster; fruit fly; <i>Drosophila melanogaster</i> Meigen, 1830; Sophophora melanogaster (Meigen, 1830); <i>Drosophila melanogaster</i>	
species	Rank	species	Rank
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; Ephydrioidea; Drosophilidae; Drosophilinae; Drosophilini; <i>Drosophila</i> ; Sophophora; melanogaster group; melanogaster subgroup	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; Ephydrioidea; Drosophilidae; Drosophilinae; Drosophilini; <i>Drosophila</i> ; Sophophora; melanogaster group; melanogaster subgroup	Lineage
melanogaster subgroup () - (Rank: species subgroup)	Parent	melanogaster subgroup () - (Rank: species subgroup)	Parent
( <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	( <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
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> )	is Taxon A an Infraspecies?	( <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> )	is Taxon B an Infraspecies?
No		No	

## GENOTYPIC CHANGE

y	Generic Gene Name	UniProtKB <i>Drosophila melanogaster</i>
CG3757; Dmel\CG3757; EG:125H10.2; T6; Y	Synonyms	GenebankID or UniProtKB
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> )	String	0
Belongs to the major royal jelly protein family.	Sequence Similarities	
-	GO - Molecular Function	
GO:0042438 : melanin biosynthetic process	GO - Biological 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>)

Presumptive Null

No (<https://www.gephebase.org/search-criteria?/and+Presumptive+Null=%No%#gephebase-summary-title>)

Molecular Type

Cis-regulatory (<https://www.gephebase.org/search-criteria?/and+Molecular+Type=%Cis-regulatory%#gephebase-summary-title>)

Aberration Type

Inversion (<https://www.gephebase.org/search-criteria?/and+Aberration+Type=%Inversion%#gephebase-summary-title>)

Inversion Size

100-1000 kb

Molecular Details of the Mutation

y[2-717] - Inversion that occurred between two hobo elements: one located 129 bp from the start site of yellow transcription and the other in the distal telomere region. The yellow phenotype is caused by the separation of the body and wing enhancers from the transcription unit.

Experimental Evidence

Candidate Gene (<https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=%Candidate+Gene%#gephebase-summary-title>)

Main Reference

hobo-induced rearrangements are responsible for mutation bursts at the yellow locus in a natural population of *Drosophila melanogaster*. (2000) (<https://pubmed.ncbi.nlm.nih.gov/10778753>)

Authors

Zakharenko LP; p6acheva EM; Romanova OA; Zakharov IK; Voloshina MA; Kochieva EZ; Simonova OB; Golubovsky MD; Georgiev P

Abstract

In 1981 recurrent local bursts of mutability of the yellow gene were observed in a natural population of *Drosophila melanogaster* from Uman' (Ukraine). A series of y2-like mutations in the yellow gene were recovered during the period 1982 to 1991. Most of the mutants display the y2-phenotype, i.e. mutant yellow color of wings and body cuticle. Ninety-nine y2 mutants were shown to be generated by an inversion that occurred between two hobo elements, one located 129 bp from the start site of yellow transcription, and the other in the distal telomere region. The y2 phenotype was caused by the separation of the body and wing enhancers from the transcription unit. Many of the y2-like alleles were highly unstable and reverted to y+, which again, gave rise to y2-like mutants. We found that the y2-->y+->y2 transitions were generated by repeated inversions between the two hobo elements mentioned. The y2 and y+ alleles lost their instability after deletion of the hobo element present at the tip of the X chromosome.

Additional References

## RELATED GEPHE

### Related Genes

5 (bab, bab1, ebony, tan, wingless (wg)) (<https://www.gephebase.org/search-criteria?/or+Taxon+ID=%7227%and+Trait=Coloration/and+groupHaplotypes=true%#gephebase-summary-title>)

Related Haplotypes

1 (<https://www.gephebase.org/search-criteria?/or+Gene+Gephebase=%yellow%and+Taxon+ID=%7227%or+Gene+Gephebase=%yellow%and+Taxon+ID=%7227%#gephebase-summary-title>)

## EXTERNAL LINKS

## COMMENTS

@TE hobo element <http://flybase.org/reports/FBAl0104919>