

## GEPHE SUMMARY

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

## PHENOTYPIC CHANGE

Morphology ( <a href="https://www.gephebase.org/search-criteria?/and+Trait+Category+Morphology+Gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+Category+Morphology+Gephebase-summary-title</a> )	Trait Category		
Coloration (body; wing) ( <a href="https://www.gephebase.org/search-criteria?/and+Trait+Coloration+Gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+Coloration+Gephebase-summary-title</a> )	Trait		
population of <i>Drosophila melanogaster</i> from Uman (Ukraine) - wild-type	Trait State in Taxon A		
population of <i>Drosophila melanogaster</i> from Uman (Ukraine) - yellow body and yellow wings	Trait State in Taxon B		
	Ancestral State		
	Taxon A		
Intraspecific ( <a href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status+Intraspecific+Gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status+Intraspecific+Gephebase-summary-title</a> )	Taxonomic Status		
	Taxon A		Taxon B
<i>Drosophila melanogaster</i> ( <a href="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</a> )	Latin Name	<i>Drosophila melanogaster</i> ( <a href="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</a> )	Latin Name
fruit fly	Common Name	fruit fly	Common Name
<i>Sophophora melanogaster</i> ; fruit fly; <i>Drosophila melanogaster</i> Meigen, 1830; <i>Sophophora melanogaster</i> (Meigen, 1830); <i>Drosophila melangaster</i>	Synonyms	<i>Sophophora melanogaster</i> ; fruit fly; <i>Drosophila melanogaster</i> Meigen, 1830; <i>Sophophora melanogaster</i> (Meigen, 1830); <i>Drosophila melangaster</i>	Synonyms
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; Acalypratae; Ephydroidea; Drosophilidae; Drosophilinae; Drosophilini; <i>Drosophila</i> ; <i>Sophophora</i> ; 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; Acalypratae; Ephydroidea; Drosophilidae; Drosophilinae; Drosophilini; <i>Drosophila</i> ; <i>Sophophora</i> ; melanogaster group; melanogaster subgroup	Lineage
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> )	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> )	Parent
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> )	NCBI Taxonomy ID	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> )	NCBI Taxonomy ID
No	is Taxon A an Intraspecies?	No	is Taxon B an Intraspecies?

## GENOTYPIC CHANGE

y	Generic Gene Name	P09957 ( <a href="http://www.uniprot.org/uniprot/P09957">http://www.uniprot.org/uniprot/P09957</a> )	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		
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>