

## GEPHE SUMMARY

**Gephebase Gene**  
Hybrid male rescue

**Entry Status**  
Published

**GepheID**  
GP00000495

**Main curator**  
Martin

## PHENOTYPIC CHANGE

**Trait Category**  
Physiology

**Trait**  
Hybrid incompatibility (F1 male lethality)

**Trait State in Taxon A**  
Drosophila melanogaster

**Trait State in Taxon B**  
Drosophila simulans

**Ancestral State**  
Data not curated

**Taxonomic Status**  
Interspecific

### Taxon A

**Latin Name**  
*Drosophila melanogaster*

**Common Name**  
fruit fly

**Synonyms**  
Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melangaster

**Rank**  
species

**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; Acalytratae; Ephydroidea; Drosophilidae; Drosophilinae; Drosophilini; Drosophila; Sophophora; melanogaster group; melanogaster subgroup

**Parent**  
melanogaster subgroup () - (Rank: species subgroup)

**NCBI Taxonomy ID**  
7227

**is Taxon A an Intraspecies?**  
No

### Taxon B

**Latin Name**  
*Drosophila simulans*

**Common Name**  
-

**Synonyms**  
-

**Rank**  
species

**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; Acalytratae; Ephydroidea; Drosophilidae; Drosophilinae; Drosophilini; Drosophila; Sophophora; melanogaster group; melanogaster subgroup

**Parent**  
melanogaster subgroup () - (Rank: species subgroup)

**NCBI Taxonomy ID**  
7240

**is Taxon B an Intraspecies?**  
No

## GENOTYPIC CHANGE

**Generic Gene Name**  
Hmr

**Synonyms**  
BcDNA:LD22117; CG1619; Dmel\CG1619; hmr; HMR; Hmr-mel; Hmr[[mel]]; Dmel\_CG1619

**String**  
7227.FBpp0071440

**Sequence Similarities**  
-

**GO - Molecular Function**  
GO:0003677 : DNA binding

**GO - Biological Process**  
GO:0006355 : regulation of transcription, DNA-templated  
GO:0006351 : transcription, DNA-templated  
GO:0000070 : mitotic sister chromatid segregation  
GO:0010529 : negative regulation of transposition  
GO:0010528 : regulation of transposition

**UniProtKB Drosophila melanogaster**  
Q86CW5

**GenebankID or UniProtKB**  
KMZ09112

GO:0000723 : telomere maintenance

**GO - Cellular Component**

GO:0005700 : polytene chromosome

GO:0000775 : chromosome, centromeric region

GO:0000792 : heterochromatin

GO:0005854 : nascent polypeptide-associated complex

GO:0005730 : nucleolus

GO:0005701 : polytene chromosome chromocenter

GO:0035012 : polytene chromosome, telomeric region

**Presumptive Null**

No

**Molecular Type**

Unknown

**Aberration Type**

Unknown

**Molecular Details of the Mutation**

Rapid coding divergence

**Experimental Evidence**

[Linkage Mapping](#)

**Main Reference**

Two Dobzhansky-Muller genes interact to cause hybrid lethality in *Drosophila*. (2006)

**Authors**

Brideau NJ; Flores HA; Wang J; Maheshwari S; Wang X; Barbash DA

**Abstract**

The Dobzhansky-Muller model proposes that hybrid incompatibilities are caused by the interaction between genes that have functionally diverged in the respective hybridizing species. Here, we show that Lethal hybrid rescue (*Lhr*) has functionally diverged in *Drosophila simulans* and interacts with Hybrid male rescue (*Hmr*), which has functionally diverged in *D. melanogaster*, to cause lethality in F1 hybrid males. *LHR* localizes to heterochromatic regions of the genome and has diverged extensively in sequence between these species in a manner consistent with positive selection. Rapidly evolving heterochromatic DNA sequences may be driving the evolution of this incompatibility gene.

**Additional References**

**RELATED GEPHE**

**Related Genes**

6 ([gfzf](#), [JYalpha](#), [Lethal Hybrid rescue](#), [Nup160](#), [Nup96](#), [tyrosyl-tRNA synthetase \(mt-TyrRS\)](#))

**Related Haplotypes**

No matches found.

**EXTERNAL LINKS**

**COMMENTS**

*D. melanogaster* *Hmr1* allele suppresses hybrid male lethality of hybrid sons of crosses between *D.melanogaster* females and *D.mauritiana* males. This hybrid rescue is not suppressed if the hybrids also carry *Dsim*\Hmr+t8.6 or *Dmau*\Hmr+t9.4. - <http://flybase.org/reports/FBa0005499>