

GEPHE SUMMARY

gfzf (https://www.gephebase.org/search-criteria?/and+Gene Gephebase= [^] gfzf [^] #gephebase-summary-title)	Gephebase Gene	GP00000392	GepheID
Published	Entry Status	Martin	Main curator

PHENOTYPIC CHANGE

Physiology (https://www.gephebase.org/search-criteria?/and+Trait Category= [^] Physiology [^] #gephebase-summary-title)	Trait Category		
Hybrid incompatibility (F1 male lethality) (<a href="https://www.gephebase.org/search-criteria?/and+Trait=<sup>^</sup>Hybrid incompatibility (F1 male lethality)<sup>^</sup>#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait=[^]Hybrid incompatibility (F1 male lethality)[^]#gephebase-summary-title)	Trait		
Drosophila melanogaster	Trait State in Taxon A		
Drosophila simulans	Trait State in Taxon B		
Data not curated	Ancestral State		
Interspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic Status= [^] Interspecific [^] #gephebase-summary-title)	Taxonomic Status		
	Taxon A	Taxon B	
Drosophila melanogaster (<a href="https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=<sup>^</sup>Drosophila melanogaster<sup>^</sup>#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=[^]Drosophila melanogaster[^]#gephebase-summary-title)	Latin Name	Drosophila simulans (<a href="https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=<sup>^</sup>Drosophila simulans<sup>^</sup>#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=[^]Drosophila simulans[^]#gephebase-summary-title)	Latin Name
fruit fly	Common Name	-	Common Name
Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melangaster	Synonyms	-	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; Acalyptera; Ephydroidea; Drosophilidae; Drosophilinae; Drosophilini; Drosophila; 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; Acalyptera; Ephydroidea; Drosophilidae; Drosophilinae; Drosophilini; Drosophila; Sophophora; melanogaster group; melanogaster subgroup	Lineage
melanogaster subgroup () - (Rank: species subgroup) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351)	Parent	melanogaster subgroup () - (Rank: species subgroup) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351)	Parent
7227 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227)	NCBI Taxonomy ID	7240 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7240)	NCBI Taxonomy ID
No	is Taxon A an Intraspecies?	No	is Taxon B an Intraspecies?

GENOTYPIC CHANGE

gfzf	Generic Gene Name	Q6NP69 (http://www.uniprot.org/uniprot/Q6NP69)	UniProtKB Drosophila melanogaster
cg10065; CG10065; CG31329; CG31492; CG33546; dGFZF; Dmel\CG33546; GFZF; l(3)84Cc; Su(Kpn); Dmel_CG33546	Synonyms	()	GenebankID or UniProtKB
7227.FBpp0290855 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=7227.FBpp0290855)	String		
Belongs to the GST superfamily.	Sequence Similarities		
GO:0003676 : nucleic acid binding (https://www.ebi.ac.uk/QuickGO/term/GO:0003676)	GO - Molecular Function		
GO:0043295 : glutathione binding (https://www.ebi.ac.uk/QuickGO/term/GO:0043295)			
GO:0004364 : glutathione transferase activity			

(<https://www.ebi.ac.uk/QuickGO/term/GO:0004364>)

GO - Biological Process

GO:0006749 : glutathione metabolic process

(<https://www.ebi.ac.uk/QuickGO/term/GO:0006749>)

GO - Cellular Component

GO:0005737 : cytoplasm (<https://www.ebi.ac.uk/QuickGO/term/GO:0005737>)

Presumptive Null

Unknown ([https://www.gephebase.org/search-criteria?/and+Presumptive Null="+Unknown`#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Presumptive+Null=))

Molecular Type

Unknown ([https://www.gephebase.org/search-criteria?/and+Molecular Type="+Unknown`#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular+Type=))

Aberration Type

Unknown ([https://www.gephebase.org/search-criteria?/and+Aberration Type="+Unknown`#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration+Type=))

Molecular Details of the Mutation

unknown

Experimental Evidence

Linkage Mapping ([https://www.gephebase.org/search-criteria?/and+Experimental Evidence="+Linkage Mapping`#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=))

Main Reference

An essential cell cycle regulation gene causes hybrid inviability in *Drosophila*. (2015) (<https://pubmed.ncbi.nlm.nih.gov/26680200>)

Authors

Phadnis N; Baker EP; Cooper JC; Frizzell KA; Hsieh E; de la Cruz AF; Shendure J; Kitzman JO; Malik HS

Abstract

Speciation, the process by which new biological species arise, involves the evolution of reproductive barriers, such as hybrid sterility or inviability between populations. However, identifying hybrid incompatibility genes remains a key obstacle in understanding the molecular basis of reproductive isolation. We devised a genomic screen, which identified a cell cycle-regulation gene as the cause of male inviability in hybrids resulting from a cross between *Drosophila melanogaster* and *D. simulans*. Ablation of the *D. simulans* allele of this gene is sufficient to rescue the adult viability of hybrid males. This dominantly acting cell cycle regulator causes mitotic arrest and, thereby, inviability of male hybrid larvae. Our genomic method provides a facile means to accelerate the identification of hybrid incompatibility genes in other model and nonmodel systems.

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Additional References

RELATED GEPHE

Related Genes

6 (Hybrid male rescue, JYalpha, Lethal Hybrid rescue, Nup160, Nup96, tyrosyl-tRNA synthetase (mt-TyrRS)) ([https://www.gephebase.org/search-criteria?/or+Taxon ID="+7227`/and+Trait=Hybrid incompatibility/or+Taxon ID="+7240`/and+Trait=Hybrid incompatibility/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID=))

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

Loss-of-function of *gfzf* sufficient to rescue hybrid viability