

GEPHE SUMMARY

	Gephebase Gene		GephelD
mir-92a (https://www.gephebase.org/search-criteria/?and+Gene Gephebase^mir-92a^#gephebase-summary-title)	GP00000661		
	Entry Status	Martin	Main curator
Published			

PHENOTYPIC CHANGE

	Trait Category
Morphology (https://www.gephebase.org/search-criteria/?and+Trait Category^Morphology^#gephebase-summary-title)	Trait
Trichome pattern (leg) (https://www.gephebase.org/search-criteria/?and+Trait=^Trichome pattern (leg)^#gephebase-summary-title)	Trait State in Taxon A
Drosophila melanogaster	Trait State in Taxon B
Drosophila melanogaster	Ancestral State
Data not curated	Taxonomic Status
Intraspecific (https://www.gephebase.org/search-criteria/?and+Taxonomic Status^Intraspecific^#gephebase-summary-title)	

Taxon A	Latin Name	Taxon B	Latin Name
Drosophila melanogaster (https://www.gephebase.org/search-criteria/?and+Taxon and Synonyms^Drosophila melanogaster^#gephebase-summary-title)		Drosophila melanogaster (https://www.gephebase.org/search-criteria/?and+Taxon and Synonyms^Drosophila melanogaster^#gephebase-summary-title)	
fruit fly	Common Name	fruit fly	Common Name
Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melangaster	Synonyms	Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melangaster	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; Acalyptratae; Ephydriodea; 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; Acalyptratae; Ephydriodea; 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	7227 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7227)	NCBI Taxonomy ID
	is Taxon A an Infraspecies?		is Taxon B an Infraspecies?
No		No	

GENOTYPIC CHANGE

	Generic Gene Name		UniProtKB
-	Synonyms	0	GenebankID or UniProtKB
-	String	NR_048486.1 (https://www.ncbi.nlm.nih.gov/nuccore/NR_048486.1)	
-	Sequence Similarities		
-	GO - Molecular Function		
-	GO - Biological Process		
-	GO - Cellular Component		
-			Presumptive Null

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

Molecular Type

Cis-regulatory ([#gephebase-summary-title\)](https://www.gephebase.org/search-criteria?/and+Molecular+Type=^Cis-regulatory)

Aberration Type

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

Molecular Details of the Mutation

Not identified

Experimental Evidence

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

Main Reference

Evolution of mir-92a underlies natural morphological variation in *Drosophila melanogaster*. (2013) (<https://pubmed.ncbi.nlm.nih.gov/23453955>)

Authors

Arif S; Murat S; Almudi I; Nunes MD; Bortolamiol-Becet D; McGregor NS; Currie JM; Hughes H; Ronshaugen M; Sucena Á‰; Lai EC; SchlÃ¶tterer C; McGregor AP

Abstract

Identifying the genetic mechanisms underlying phenotypic change is essential to understanding how gene regulatory networks and ultimately the genotype-to-phenotype map evolve. It is recognized that microRNAs (miRNAs) have the potential to facilitate evolutionary change [1-3]; however, there are no known examples of natural morphological variation caused by evolutionary changes in miRNA expression. Therefore, the contribution of miRNAs to evolutionary change remains unknown [1, 4]. *Drosophila melanogaster* subgroup species display a portion of trichome-free cuticle on the femur of the second leg called the "naked valley." It was previously shown that Ultrabithorax (*Ubx*) is involved in naked valley variation between *D. melanogaster* and *D. simulans* [5, 6]. However, naked valley size also varies among populations of *D. melanogaster*, ranging from 1,000 up to 30,000 μ m². We investigated the genetic basis of intraspecific differences in the naked valley in *D. melanogaster* and found that neither *Ubx* nor *shavenbaby* (*svb*) [7, 8] contributes to this morphological difference. Instead, we show that changes in mir-92a expression underlie the evolution of naked valley size in *D. melanogaster* through repression of *shavenoid* (*sha*) [9]. Therefore, our results reveal a novel mechanism for morphological evolution and suggest that modulation of the expression of miRNAs potentially plays a prominent role in generating organismal diversity.

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Additional References

RELATED GEPHE

Related Genes

1 (Ultrabithorax (*Ubx*)) ([#gephebase-summary-title\)](https://www.gephebase.org/search-criteria?/or+Taxon+ID=^7227/and+Trait=Trichome+pattern/and+groupHaplotypes=true)

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS