

GEPHE SUMMARY

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

PHENOTYPIC CHANGE

| | | | |
|---|-----------------------------|---|-----------------------------|
| | Trait Category | | |
| Morphology (https://www.gephebase.org/search-criteria?/and+Trait+Category=~Morphology^#gepbase-summary-title) | | | |
| | Trait | | |
| Trichome pattern (leg) (https://www.gephebase.org/search-criteria?/and+Trait=~Trichome+pattern+(leg)^#gepbase-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^#gepbase-summary-title) | | | |
| Taxon A | | Taxon B | |
| | Latin Name | | Latin Name |
| Drosophila melanogaster (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Drosophila+melanogaster^#gepbase-summary-title) | | Drosophila melanogaster (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Drosophila+melanogaster^#gepbase-summary-title) | |
| | Common Name | | Common Name |
| fruit fly | | fruit fly | |
| | Synonyms | | Synonyms |
| Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melangaster | | Sophophora melanogaster; fruit fly; Drosophila melanogaster Meigen, 1830; Sophophora melanogaster (Meigen, 1830); Drosophila melangaster | |
| | Rank | | Rank |
| species | | species | |
| | Lineage | | 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; Ephydroidea; Drosophilidae; Drosophilinae; Drosophilini; Drosophila; Sophophora; melanogaster group; melanogaster subgroup | | 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; Ephydroidea; Drosophilidae; Drosophilinae; Drosophilini; Drosophila; Sophophora; melanogaster group; melanogaster subgroup | |
| | Parent | | Parent |
| melanogaster subgroup () - (Rank: species subgroup) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351) | | melanogaster subgroup () - (Rank: species subgroup) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=32351) | |
| | NCBI Taxonomy ID | | NCBI Taxonomy ID |
| 7227 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227) | | 7227 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7227) | |
| | is Taxon A an Intraspecies? | | is Taxon B an Intraspecies? |
| No | | No | |

GENOTYPIC CHANGE

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

Unknown (<https://www.gephebase.org/search-criteria?/and+Presumptive Null=~Unknown^#gephebase-summary-title>)

Molecular Type

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

Aberration Type

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

Molecular Details of the Mutation

Not identified

Experimental Evidence

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

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 A%; Lai EC; Schlatterer 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 μm^2 . 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*)) (<https://www.gephebase.org/search-criteria?/or+Taxon ID=7227^/and+Trait=Trichome pattern/and+groupHaplotypes=true#gephebase-summary-title>)

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS