

GEPHE SUMMARY

MYB-FL ([https://www.gephebase.org/search-criteria?/and+Gene Gephebase+MYB-FL^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Gene+Gephebase+MYB-FL+Gephebase-summary-title))

Gephebase Gene GP00001589

Entry Status Prigent

Published

GepheID Main curator

PHENOTYPIC CHANGE

Morphology ([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))

Trait Category

Coloration (flower ; UV absorbance) ([https://www.gephebase.org/search-criteria?/and+Trait=^Coloration \(flower ; UV absorbance\)^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Trait+Coloration+Gephebase-summary-title))

Trait

Petunia inflata bee pollinated (purple) flower without UV absorbance but UV reflective

Trait State in Taxon A

Petunia axillaris hawkmoth pollinated (white with abundant volatiles at dusk) flower with UV absorbance

Trait State in Taxon B

Taxon A

Ancestral State

Interspecific ([https://www.gephebase.org/search-criteria?/and+Taxonomic Status=^Interspecific^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Taxonomic+Status+Interspecific+Gephebase-summary-title))

Taxonomic Status

Taxon A	Latin Name	Taxon B	Latin Name
Petunia integrifolia ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+Synonyms+Petunia+integrifolia+Gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Petunia integrifolia^#gephebase-summary-title</a> )	Petunia axillaris ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+Synonyms+Petunia+axillaris+Gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Petunia axillaris^#gephebase-summary-title</a> )		
-	-		
violet-flowered petunia; Petunia integrifolia (Hook.) Schinz & Thell., 1915	large white petunia; white moon petunia; Petunia axillaris (Lam.) Britton, Stern & Poggenb.; Petunia axillaris		
species	species		
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; Solanales; Solanaceae; Petunioideae; Petunia	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; Solanales; Solanaceae; Petunioideae; Petunia		
Petunia () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4101">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4101</a> )	Petunia () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4101">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4101</a> )		
4103 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4103">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4103</a> )	33119 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=33119">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=33119</a> )		
is Taxon A an Intraspecies?	is Taxon B an Intraspecies?		
No	No		

GENOTYPIC CHANGE

MYB-FL

Generic Gene Name UniProtKB Petunia axillaris subsp. axillaris

Synonyms A0A0S3CVD3 (<http://www.uniprot.org/uniprot/A0A0S3CVD3>)

String 0

Sequence Similarities

GO - Molecular Function

GO:0003677 : DNA binding (<https://www.ebi.ac.uk/QuickGO/term/GO:0003677>)

GO - Biological Process

GO - Cellular Component

GO:0005634 : nucleus (<https://www.ebi.ac.uk/QuickGO/term/GO:0005634>)

No ([https://www.gephebase.org/search-criteria?/and+Presumptive Null=^No^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Presumptive+Null+No+Gephebase-summary-title))

Presumptive Null

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

Molecular Type

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

Aberration Type

100-1000 kb

Insertion Size

A 977-kb insertion 12 bp upstream of the predicted TATA-binding box is causing upregulation of the promoter

Molecular Details of the Mutation

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

Experimental Evidence

MYB-FL controls gain and loss of floral UV absorbance, a key trait affecting pollinator preference and reproductive isolation. (2016) (<https://pubmed.ncbi.nlm.nih.gov/26656847>)

Main Reference

Sheehan H; Moser M; Klahre U; Esfeld K; Dell'Olivo A; Mandel T; Metzger S; Vandenbussche M; Freitas L; Kuhlemeier C

Authors

Adaptations to new pollinators involve multiple floral traits, each requiring coordinated changes in multiple genes. Despite this genetic complexity, shifts in pollination syndromes have happened frequently during angiosperm evolution. Here we study the genetic basis of floral UV absorbance, a key trait for attracting nocturnal pollinators. In *Petunia*, mutations in a single gene, MYB-FL, explain two transitions in UV absorbance. A gain of UV absorbance in the transition from bee to moth pollination was determined by a cis-regulatory mutation, whereas a frameshift mutation caused subsequent loss of UV absorbance during the transition from moth to hummingbird pollination. The functional differences in MYB-FL provide insight into the process of speciation and clarify phylogenetic relationships between nascent species.

Abstract

Additional References

## RELATED GEPHE

1 (anthocyanin2 (an2)) (<https://www.gephebase.org/search-criteria?/or+Taxon+ID=4103^/and+Trait=Coloration/or+Taxon+ID=33119^/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title>)

Related Genes

No matches found.

Related Haplotypes

## EXTERNAL LINKS

## COMMENTS

Non-null mutation