

GEPHE SUMMARY

	Gephebase Gene	GephelD
MYB-FL (https://www.gephebase.org/search-criteria/?and+Gene Gephebase=^MYB-FL^#gephebase-summary-title)	GP00001590	Main curator
	Entry Status	Prigent
Published		

PHENOTYPIC CHANGE

	Trait Category
Morphology (https://www.gephebase.org/search-criteria/?and+Trait Category=^Morphology^#gephebase-summary-title)	
Coloration (flower ; UV absorbance) (https://www.gephebase.org/search-criteria/?and+Trait=^Coloration (flower ; UV absorbance)^#gephebase-summary-title)	Trait
Petunia axillaris hawkmoth pollinated (white with abundant volatiles at dusk) flower with UV absorbance	Trait State in Taxon A
Petunia exserta hummingbird pollinated (bright red non-scented) flower without UV absorbance but UV reflective	Trait State in Taxon B
	Ancestral State
Taxon A	Taxonomic Status
Interspecific (https://www.gephebase.org/search-criteria/?and+Taxonomic Status=^Interspecific^#gephebase-summary-title)	

Taxon A		Taxon B	
	Latin Name		Latin Name
Petunia axillaris (https://www.gephebase.org/search-criteria/?and+Taxon and Synonyms=^Petunia axillaris^#gephebase-summary-title)	Petunia exserta (https://www.gephebase.org/search-criteria/?and+Taxon and Synonyms=^Petunia exserta^#gephebase-summary-title)		
-		-	
	Synonyms		Synonyms
large white petunia; white moon petunia; Petunia axillaris (Lam.) Britton, Stern & Poggenb.; Petunia axillaris	Petunia exserta Stehmann, 1987		
species	Rank	species	Rank
	Lineage	cellular organisms; Eukaryota; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; Solanales; Solanaceae; Petunioideae; Petunia	Lineage
	Parent	Petunia () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4101)	Parent
Petunia () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4101)	NCBI Taxonomy ID	323115 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 323115)	NCBI Taxonomy ID
33119 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 33119)			is Taxon B an Infraspecies?
		No	
No			

GENOTYPIC CHANGE

MYB-FL	Generic Gene Name	UniProtKB Petunia exserta
-	Synonyms	AoA0S3CVC7 (http://www.uniprot.org/uniprot/AoA0S3CVC7)
-	String	GenebankID or UniProtKB
-	Sequence Similarities	0
-	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)		Presumptive Null

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

Molecular Type

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

Aberration Type

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

Deletion Size

1-9 bp

Molecular Details of the Mutation

A 1-bp deletion in exon 3 causing a frameshift resulting in a truncated protein

Experimental Evidence

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

Main Reference

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/>)

Authors

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

Abstract

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.

Additional References

RELATED GEPHE

Related Genes

3 (anthocyanin2 (anz), bHLH2, WDR1) ([#gephebase-summary-title\)](https://www.gephebase.org/search-criteria?/or+Taxon ID=^33119^/and+Trait=Coloration/or+Taxon ID=^323115^/and+Trait=Coloration/and+groupHaplotypes=true)

Related Haplotypes

1 ([#gephebase-summary-title\)](https://www.gephebase.org/search-criteria?/or+Gene Gephebase=^MYB-FL^/and+Taxon ID=^33119^/or+Gene Gephebase=^MYB-FL^/and+Taxon ID=^323115^)

EXTERNAL LINKS

COMMENTS

possibly null mutation?