

GEPHE SUMMARY

	Gephebase Gene	GephelD
MYB1 (https://www.gephebase.org/search-criteria?/and+GeneGephebase=%MYB1%#gephebase-summary-title)	GP00001458	Main curator
Published	Entry Status	Prigent

PHENOTYPIC CHANGE

	Trait Category
Morphology (https://www.gephebase.org/search-criteria?/and+TraitCategory=%Morphology%#gephebase-summary-title)	Trait
Coloration (flower) (https://www.gephebase.org/search-criteria?/and+Trait=%Coloration(flower)%#gephebase-summary-title)	Trait State in Taxon A
Common morning glory with purple flower	Trait State in Taxon B
Common morning glory with white flower	Ancestral State
Taxon A	Taxonomic Status

Taxon A	Latin Name	Taxon B	Latin Name
<i>Ipomoea purpurea</i> (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=%Ipomoea purpurea%#gephebase-summary-title)		<i>Ipomoea purpurea</i> (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=%Ipomoea purpurea%#gephebase-summary-title)	
common morning-glory	Common Name	common morning-glory	Common Name
Convolvulus purpureus; Pharbitis purpurea; common morning-glory; Convolvulus purpureus L., 1762; <i>Ipomoea purpurea</i> (L.) Roth, 1787; <i>Pharbitis purpurea</i> (L.) Voigt, 1845; <i>Pharbitis purpurea</i>	Synonyms	Convolvulus purpureus; Pharbitis purpurea; common morning-glory; Convolvulus purpureus L., 1762; <i>Ipomoea purpurea</i> (L.) Roth, 1787; <i>Pharbitis purpurea</i> (L.) Voigt, 1845; <i>Pharbitis purpurea</i>	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; Solanales; Convolvulaceae; Ipomoeae; Ipomoea	Lineage	cellular organisms; Eukaryota; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; Solanales; Convolvulaceae; Ipomoeae; Ipomoea	Lineage
Ipomoea () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4119)	Parent	Ipomoea () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4119)	Parent
4121 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4121)	NCBI Taxonomy ID	4121 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4121)	NCBI Taxonomy ID
is Taxon A an Infraspecies?		is Taxon B an Infraspecies?	
Yes	Taxon A Description	Yes	Taxon B Description
Common morning glory with purple flower		Common morning glory with white flower	

GENOTYPIC CHANGE

myb1	Generic Gene Name	UniProtKB <i>Ipomoea purpurea</i>
-	Synonyms	GenebankID or UniProtKB
-	String	
-	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)		

Yes (https://www.gephebase.org/search-criteria?/and+Presumptive Null=^Yes#gephebase-summary-title)	Presumptive Null
Coding (https://www.gephebase.org/search-criteria?/and+Molecular Type=^Coding#gephebase-summary-title)	Molecular Type
Deletion (https://www.gephebase.org/search-criteria?/and+Aberration Type=^Deletion#gephebase-summary-title)	Aberration Type
10-99 bp	Deletion Size
2 deletions; 6-bp and 19-bp long; the larger produces a frameshift and a premature stop	Molecular Details of the Mutation
Candidate Gene (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=^Candidate Gene#gephebase-summary-title)	Experimental Evidence
Neutral evolution of the nonbinding region of the anthocyanin regulatory gene <i>Ipmyb1</i> in <i>Ipomoea</i> . (2005) (https://pubmed.ncbi.nlm.nih.gov/15944366)	Main Reference
Chang SM; Lu Y; Rausher MD	Authors
Plant transcription factors often contain domains that evolve very rapidly. Although it has been suggested that this rapid evolution may contribute substantially to phenotypic differentiation among species, this suggestion has seldom been tested explicitly. We tested the validity of this hypothesis by examining the rapidly evolving non-DNA-binding region of an R2R3-myb transcription factor that regulates anthocyanin expression in flowers of the genus <i>Ipomoea</i> . We first provide evidence that the W locus in <i>Ipomoea purpurea</i> , which determines whether flowers will be pigmented or white, corresponds to a myb gene segregating in southeastern U.S. populations for one functional allele and one nonfunctional allele. While the binding domain exhibits substantial selective constraint, the nonbinding region evolves at an average $K(a)/K(s)$ ratio of 0.74. This elevated rate of evolution is due to relaxed constraint rather than to increased levels of positive selection. Despite this relaxed constraint, however, approximately 20–25% of the codons, randomly distributed throughout the nonbinding region, are highly constrained, with the remainder evolving neutrally, indicating that the entire region performs important function(s). Our results provide little indication that rapid evolution in this regulatory gene is driven by natural selection or that it is responsible for floral-color differences among <i>Ipomoea</i> species.	Abstract
	Additional References

RELATED GEPHE

3 (bHLH2, Chalcone synthase D (CHS-D), flavonoid 3'-hydroxylase (F3'H)) (https://www.gephebase.org/search-criteria?/or+Taxon ID=^4121^/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title)	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS