

GEPHE SUMMARY

MYB1 ( <a href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=~MYB1~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=~MYB1~#gephebase-summary-title</a> )	Gephebase Gene	GP00002089	GepheID
Published	Entry Status	Courtier	Main curator

PHENOTYPIC CHANGE

Morphology ( <a href="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</a> )	Trait Category
Coloration (flowers; seeds; stems) ( <a href="https://www.gephebase.org/search-criteria?/and+Trait=~Coloration+(flowers;+seeds;+stems)~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait=~Coloration+(flowers;+seeds;+stems)~#gephebase-summary-title</a> )	Trait
Ipomoea nil - bright blue flowers with colored stems and dark-brown seeds	Trait State in Taxon A
Ipomoea nil - recessive c-1 mutant - white flowers with red stems and colored seeds	Trait State in Taxon B
	Ancestral State
	Taxon A
Domesticated ( <a href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=~Domesticated~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=~Domesticated~#gephebase-summary-title</a> )	Taxonomic Status

Taxon A	Latin Name	Taxon B	Latin Name
Ipomoea nil ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Ipomoea+nil~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Ipomoea+nil~#gephebase-summary-title</a> )	Ipomoea nil ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Ipomoea+nil~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Ipomoea+nil~#gephebase-summary-title</a> )	Ipomoea nil ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Ipomoea+nil~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Ipomoea+nil~#gephebase-summary-title</a> )	Ipomoea nil ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Ipomoea+nil~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Ipomoea+nil~#gephebase-summary-title</a> )
Japanese morning glory	Common Name	Japanese morning glory	Common Name
Convolvulus nil; Pharbitis nil; Japanese morning glory; qian niu; Convolvulus nil L., 1762; Ipomoea nil (L.) Roth, 1797; Pharbitis nil (L.) Choisy, 1834	Synonyms	Convolvulus nil; Pharbitis nil; Japanese morning glory; qian niu; Convolvulus nil L., 1762; Ipomoea nil (L.) Roth, 1797; Pharbitis nil (L.) Choisy, 1834	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliopsida; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; Solanales; Convolvulaceae; Ipomoeae; Ipomoea	Lineage	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliopsida; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; Solanales; Convolvulaceae; Ipomoeae; Ipomoea	Lineage
Ipomoea () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4119">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4119</a> )	Parent	Ipomoea () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4119">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4119</a> )	Parent
35883 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=35883">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=35883</a> )	NCBI Taxonomy ID	35883 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=35883">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=35883</a> )	NCBI Taxonomy ID
No	is Taxon A an Intraspecies?	No	is Taxon B an Intraspecies?

GENOTYPIC CHANGE

myb1	Generic Gene Name	Q4QS21 ( <a href="http://www.uniprot.org/uniprot/Q4QS21">http://www.uniprot.org/uniprot/Q4QS21</a> )	UniProtKB Ipomoea purpurea
-	Synonyms	Q	GenebankID or UniProtKB
-	String		
-	Sequence Similarities		
GO:0003677 : DNA binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0003677">https://www.ebi.ac.uk/QuickGO/term/GO:0003677</a> )	GO - Molecular Function		
-	GO - Biological Process		
GO:0005634 : nucleus ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005634">https://www.ebi.ac.uk/QuickGO/term/GO:0005634</a> )	GO - Cellular Component		
Yes ( <a href="https://www.gephebase.org/search-criteria?/and+Presumptive+Null=~Yes~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Presumptive+Null=~Yes~#gephebase-summary-title</a> )			Presumptive Null
			Molecular Type

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

Aberration Type

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

Deletion Size

1-9 bp

Molecular Details of the Mutation

frameshift mutation caused by a 2 bp deletion

Experimental Evidence

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

Main Reference

Isolation of cDNAs for R2R3-MYB, bHLH and WDR transcriptional regulators and identification of c and ca mutations conferring white flowers in the Japanese morning glory. (2006)  
(<https://pubmed.ncbi.nlm.nih.gov/16446312>)

Authors

Morita Y; Saitoh M; Hoshino A; Nitasaka E; Iida S

Abstract

The transcriptional regulators for anthocyanin biosynthesis include members of proteins containing an R2R3-MYB domain, a bHLH (basic helix-loop-helix) domain and conserved WD40 repeats (WDRs). Spatial and temporal expression of the structural genes encoding the enzymes for anthocyanin biosynthesis is thought to be determined by combinations of the R2R3-MYB, bHLH and WDR factors and their interactions. While the wild-type Japanese morning glory (*Ipomoea nil*) exhibits blue flowers with colored stems and dark-brown seeds, the c mutants display white flowers with red stems and colored seeds, and the ca mutants exhibit white flowers with green stems and ivory seeds. Here, we characterize the tissue-specific expression of three MYB genes, three bHLH genes and two WDR genes in *I. nil*. We also show that the recessive c-1 and ca alleles are frameshift mutations caused by a 2 bp deletion and 7 bp insertions in the genes for the R2R3-MYB and WDR transcriptional regulators designated as InMYB1 and InWDR1, respectively. In addition to defects in flower, stem and seed pigmentations, the ca mutants were found to show reduced trichome formation in seeds but to produce leaf and stem trichomes and root hairs normally. Except for the gene for chalcone synthase E in the ca mutant, all structural genes tested were coordinately reduced in both c-1 and ca mutant flower limbs. However, slight but significant expression of the genes for chalcone synthase D, chalcone isomerase and flavanone 3-hydroxylase in the pathway for flavonol biosynthesis was detectable in c-1 and ca mutants, whereas no such residual expression could be observed in other genes involved in the later anthocyanin biosynthesis pathway. The biological roles of the C-1 and Ca genes in *I. nil* epidermal traits and their evolutionary implications are also discussed.

Additional References

## RELATED GEPHE

Related Genes

2 (flavonoid 3'-hydroxylase (F3'H), WDR1) (<https://www.gephebase.org/search-criteria?/or+Taxon+ID=~35883^/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title>)

Related Haplotypes

No matches found.

## EXTERNAL LINKS

## COMMENTS

MYB1 is also named R2R3-MYB and is closely related to the petunia (*Petunia hybrida*) AN2 gene.