

GEPHE SUMMARY

Gephebase Gene		GepheID
PH4/GmMYB-G20-1 (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=~PH4/GmMYB-G20-1~#gephebase-summary-title)	GP00000862	
Entry Status	Martin	Main curator
Published		

PHENOTYPIC CHANGE

Trait Category	
Morphology (https://www.gephebase.org/search-criteria?/and+Trait Category=~Morphology~#gephebase-summary-title)	Trait
Coloration (flowers) (https://www.gephebase.org/search-criteria?/and+Trait =~Coloration (flowers)~#gephebase-summary-title)	
Trait State in Taxon A	
Glycine max; purple-blue flowers	
Trait State in Taxon B	
Glycine max; blue flowers	
Ancestral State	
Data not curated	
Taxonomic Status	
Domesticated (https://www.gephebase.org/search-criteria?/and+Taxonomic Status=~Domesticated~#gephebase-summary-title)	

Taxon A		Taxon B	
Latin Name		Latin Name	
Glycine max (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=~Glycine max~#gephebase-summary-title)		Glycine max (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=~Glycine max~#gephebase-summary-title)	
Common Name		Common Name	
soybean		soybean	
Synonyms		Synonyms	
soybean; soybeans; Glycine max (L.) Merr.; Glycine max; cv. Wye		soybean; soybeans; Glycine max (L.) Merr.; Glycine max; cv. Wye	
Rank		Rank	
species		species	
Lineage		Lineage	
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetales; rosids; fabids; Fabales; Fabaceae; Papilionoideae; 50 kb inversion clade; NPAAA clade; indigoferoid/millettioid clade; Phaseoleae; Glycine; Soja		cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetales; rosids; fabids; Fabales; Fabaceae; Papilionoideae; 50 kb inversion clade; NPAAA clade; indigoferoid/millettioid clade; Phaseoleae; Glycine; Soja	
Parent		Parent	
Soja () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1462606)		Soja () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1462606)	
NCBI Taxonomy ID		NCBI Taxonomy ID	
3847 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3847)		3847 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3847)	
is Taxon A an Intraspecies?		is Taxon B an Intraspecies?	
No		No	

GENOTYPIC CHANGE

Generic Gene Name		UniProtKB Petunia hybrida
PH4		Q2TCH0 (http://www.uniprot.org/uniprot/Q2TCH0)
Synonyms		GenebankID or UniProtKB
-		AAR14143 (https://www.ncbi.nlm.nih.gov/nucleotide/AAR14143)
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)		
Presumptive Null		
Yes (https://www.gephebase.org/search-criteria?/and+Presumptive Null=~Yes~#gephebase-summary-title)		
Molecular Type		

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

Aberration Type

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

SNP Coding Change

Nonsense

Molecular Details of the Mutation

Substitution creating premature Stop (codon 158)

Experimental Evidence

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

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	-	-	-

Main Reference

Nonsense mutation of an MYB transcription factor is associated with purple-blue flower color in soybean. (2011 Jul-Aug) (<https://pubmed.ncbi.nlm.nih.gov/21566002>)

Authors

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Abstract

Previous studies revealed that the recessive allele of the W2 locus generated purple-blue color and high vacuolar pH of flower petals in soybean. The location of W2 gene was reportedly close to simple sequence repeat marker Satt318 in molecular linkage group B2. We used information from the soybean genome to clone a candidate gene for W2. An MYB transcription factor gene belonging to G20 group was found in the vicinity of Satt318. Full-length cDNAs were cloned from purple-flowered cultivar Harosoy (W2 allele) and purple-blue flowered cultivars, Nezumisaya and w2-20 (w2 allele), by reverse transcription-PCR and designated as GmMYB-G20-1. Its open reading frame was 1083 bp long that encoded 361 amino acids in Harosoy. GmMYB-G20-1 had 53.7% similarity in amino acid sequence with the PH4 gene of petunia controlling blueness and vacuolar pH of flower petals. GmMYB-G20-1 of Nezumisaya and w2-20 had 3 base substitutions compared with that of Harosoy. The first substitution generated a stop codon in the MYB domain, resulting in truncated polypeptides. Cleaved amplified polymorphic sequence (CAPS) marker was developed to detect the base substitution. The polymorphic CAPS marker co-segregated with alleles at the W2 locus in the F(2) population. These results suggest that GmMYB-G20-1 might correspond to the W2 gene.

Additional References

RELATED GEPHE

Related Genes

4 (Flavonoid 3'-hydroxylase (F3'H), flavonoid 3';5'-hydroxylase (F3'5'H), flavonoid 3'-hydroxylase (F3'H), R/glyma09g36983) (<https://www.gephebase.org/search-criteria?/or+Taxon+ID=~3847^/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title>)

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS