

GEPHE SUMMARY

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

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

GENOTYPIC CHANGE

PH4	Generic Gene Name	UniProtKB Petunia hybrida
-	Synonyms	GenebankID or UniProtKB
-	String	
-	Sequence Similarities	
GO:0003677 : DNA binding (https://www.ebi.ac.uk/QuickGO/term/GO:0003677)	GO - Molecular Function	
GO:0005634 : nucleus (https://www.ebi.ac.uk/QuickGO/term/GO:0005634)	GO - Biological Process	
-	GO - Cellular Component	
Yes (https://www.gephebase.org/search-criteria?/and+Presumptive+Null=^Yes^#gephebase-summary-title)	Presumptive Null	
		Molecular Type

Coding ([https://www.gephebase.org/search-criteria?/and+Molecular Type=%Coding%#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular%20Type=%5ECoding%5E#gephebase-summary-title))

Aberration Type

SNP ([https://www.gephebase.org/search-criteria?/and+Aberration Type=%SNP%#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration%20Type=%5ESNP%5E#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](https://www.gephebase.org/search-criteria?/and+Experimental%20Evidence=%5ELinkage%20Mapping%5E#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%2Fand+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+TaxonID=%5E3847%2Fand+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title))

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS