

## GEPHE SUMMARY

	Gephebase Gene	GephelD
c1 ( <a href="https://www.gephebase.org/search-criteria/?and+Gene Gephebase=c1">#gephebase-summary-title)</a>	GP00000167	Main curator
	Entry Status	Martin
Published		

## PHENOTYPIC CHANGE

	Trait Category		
Morphology ( <a href="https://www.gephebase.org/search-criteria/?and+Trait Category=Morphology">#gephebase-summary-title)</a>	Trait		
Coloration (seed) ( <a href="https://www.gephebase.org/search-criteria/?and+Trait=^Coloration (seed)">#gephebase-summary-title)</a>	Trait State in Taxon A		
Zea mays ssp. Mays - white seeds - allele c1-p	Trait State in Taxon B		
Zea mays ssp. Mays - colored seeds - allele C1	Ancestral State		
Taxon A		Taxonomic Status	
Domesticated ( <a href="https://www.gephebase.org/search-criteria/?and+Taxonomic Status=^Domesticated">#gephebase-summary-title)</a>			
Taxon A	Latin Name	Taxon B	Latin Name
Zea mays ( <a href="https://www.gephebase.org/search-criteria/?and+Taxon and Synonyms=^Zea mays">#gephebase-summary-title)</a>	Zea mays ( <a href="https://www.gephebase.org/search-criteria/?and+Taxon and Synonyms=^Zea mays">#gephebase-summary-title)</a>		
-		-	
Zea mays var. japonica; maize; Zea mays L.; Zea mays mays species	Common Name		Common Name
	Synonyms		Synonyms
Zea mays var. japonica; maize; Zea mays L.; Zea mays mays species	Rank		Rank
	Lineage		Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; PACMAD clade; Panicoideae; Andropogonodae; Andropogoneae; Tripsacinae; Zea		cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; PACMAD clade; Panicoideae; Andropogonodae; Andropogoneae; Tripsacinae; Zea	
Zea () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4575">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4575</a> )	Parent	Zea () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4575">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4575</a> )	Parent
4577 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4577">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4577</a> )	NCBI Taxonomy ID	4577 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4577">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4577</a> )	NCBI Taxonomy ID
Yes	is Taxon A an Infraspecies?	Yes	is Taxon B an Infraspecies?
	Taxon A Description		Taxon B Description
Zea mays ssp. Mays - white seeds - allele c1-p		Zea mays ssp. Mays - colored seeds - allele C1	

## GENOTYPIC CHANGE

C1	Generic Gene Name	UniProtKB Zea mays
c1; C1-I; MYB1; Myb37; C1-B73; c1-I-2K1; GRMZM2G005066; Z438D03.27	Synonyms	GenebankID or UniProtKB
-	String	
	Sequence Similarities	
GO:0043565 : sequence-specific DNA binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0043565">https://www.ebi.ac.uk/QuickGO/term/GO:0043565</a> )	GO - Molecular Function	
GO:0044212 : transcription regulatory region DNA binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0044212">https://www.ebi.ac.uk/QuickGO/term/GO:0044212</a> )		
	GO - Biological Process	
GO:0030154 : cell differentiation ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0030154">https://www.ebi.ac.uk/QuickGO/term/GO:0030154</a> )		
	GO - Cellular Component	

GO:0005634 : nucleus (<https://www.ebi.ac.uk/QuickGO/term/GO:0005634>)

Presumptive Null

No (<https://www.gephbase.org/search-criteria?/and+Presumptive+Null=%22No%22#gephbase-summary-title>)

Molecular Type

Cis-regulatory (<https://www.gephbase.org/search-criteria?/and+Molecular+Type=%22Cis-regulatory%22#gephbase-summary-title>)

Aberration Type

Insertion (<https://www.gephbase.org/search-criteria?/and+Aberration+Type=%22Insertion%22#gephbase-summary-title>)

Insertion Size

1-9 bp

Molecular Details of the Mutation

5bp insertion in the proximal promoter that creates a new binding site for VP1; a transcription factor that regulates kernel maturation; so that the pigment pathway is turned on while the kernel matures; giving blue kernels

Experimental Evidence

Linkage Mapping (<https://www.gephbase.org/search-criteria?/and+Experimental+Evidence=%22Linkage+Mapping%22#gephbase-summary-title>)

Main Reference

The Viviparous-1 gene and abscisic acid activate the C1 regulatory gene for anthocyanin biosynthesis during seed maturation in maize. (1992) (<https://pubmed.ncbi.nlm.nih.gov/1532784>)

Authors

Hattori T; Vasil V; Rosenkrans L; Hannah LC; McCarty DR; Vasil IK

Abstract

The Viviparous-1 (Vp1) gene is required for expression of the C1 regulatory gene of the anthocyanin pathway in the developing maize seed. We show that VP1 overexpression and the hormone, abscisic acid (ABA), activate a reporter gene driven by the C1 promoter in maize protoplasts. Cis-acting sequences essential for these responses were localized. Mutation of a conserved sequence in the C1 promoter abolishes both ABA regulation and VP1 trans-activation. An adjacent 5-bp deletion blocks ABA regulation but not VP1 trans-activation. The latter mutant reconstructs the promoter of c1-p, an allele that is expressed during seed germination but not during seed maturation. We suggest that VP1 activates C1 specifically during maturation by interacting with one or more ABA-regulated transcription factors.

Additional References

Evolution of anthocyanin biosynthesis in maize kernels: the role of regulatory and enzymatic loci. (1996) (<https://pubmed.ncbi.nlm.nih.gov/8807310>)

## RELATED GEPHE

Related Genes

3 (colored plant 1, pericarp color1 (P1), r1 colored1) (<https://www.gephbase.org/search-criteria?/or+Taxon+ID=%224577%22/and+Trait=Coloration/and+groupHaplotypes=true#gephbase-summary-title>)

Related Haplotypes

No matches found.

## EXTERNAL LINKS

## COMMENTS