

GEPHE SUMMARY

r1 colored1 (https://www.gephebase.org/search-criteria?/and+Gene Gephabase=~r1 colored1^#gephebase-summary-title)	Gephebase Gene	GepheID
	GP00000947	
	Entry Status	Martin
Published		Main curator

PHENOTYPIC CHANGE

Morphology (https://www.gephebase.org/search-criteria?/and+Trait Category=~Morphology^#gephebase-summary-title)		Trait Category	
Coloration (seeds) (https://www.gephebase.org/search-criteria?/and+Trait=~Coloration (seeds)^#gephebase-summary-title)		Trait	
Zea mays ssp. Mays - white seeds		Trait State in Taxon A	
Zea mays ssp. Mays - blue seeds - R-Navajo (R-nj) allele		Trait State in Taxon B	
Taxon A		Ancestral State	
Domesticated (https://www.gephebase.org/search-criteria?/and+Taxonomic Status=~Domesticated^#gephebase-summary-title)		Taxonomic Status	
Taxon A		Taxon B	
Zea mays (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=~Zea mays^#gephebase-summary-title)		Zea mays (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=~Zea mays^#gephebase-summary-title)	
-		-	
Zea mays var. japonica; maize; Zea mays L.; Zea mays mays		Zea mays var. japonica; maize; Zea mays L.; Zea mays mays	
species		species	
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) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4575)		Zea () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4575)	
4577 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4577)		4577 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4577)	
is Taxon A an Intraspecies?		is Taxon B an Intraspecies?	
Yes		Yes	
Zea mays ssp. Mays - white seeds		Zea mays ssp. Mays - blue seeds - R-Navajo (R-nj) allele	

GENOTYPIC CHANGE

Z138B04_Z333J11.11	Generic Gene Name	UniProtKB Zea mays
Z138B04_Z333J11.11	Synonyms	Q8S483 (http://www.uniprot.org/uniprot/Q8S483)
-	String	GenebankID or UniProtKB
-	Sequence Similarities	AF466202 (https://www.ncbi.nlm.nih.gov/nuccore/AF466202)
-	GO - Molecular Function	
GO:0046983 ; protein dimerization activity (https://www.ebi.ac.uk/QuickGO/term/GO:0046983)	GO - Biological Process	
-	GO - Cellular Component	
-		Presumptive Null

No (https://www.gephebase.org/search-criteria?/and+Presumptive Null=~No^#gephebase-summary-title)	Molecular Type
Unknown (https://www.gephebase.org/search-criteria?/and+Molecular Type=~Unknown^#gephebase-summary-title)	Aberration Type
Insertion (https://www.gephebase.org/search-criteria?/and+Aberration Type=~Insertion^#gephebase-summary-title)	Insertion Size
1-10 kb	Molecular Details of the Mutation
insertion of transposable element Ac	Experimental Evidence
Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Linkage Mapping^#gephebase-summary-title)	Main Reference
Evolution of anthocyanin biosynthesis in maize kernels: the role of regulatory and enzymatic loci. (1996) (https://pubmed.ncbi.nlm.nih.gov/8807310)	Authors
Hanson MA; Gaut BS; Stec AO; Fuerstenberg SI; Goodman MM; Coe EH; Doebley JF	Abstract
Understanding which genes contribute to evolutionary change and the nature of the alterations in them are fundamental challenges in evolution. We analyzed regulatory and enzymatic genes in the maize anthocyanin pathway as related to the evolution of anthocyanin-pigmented kernels in maize from colorless kernels of its progenitor, teosinte. Genetic tests indicate that teosinte possesses functional alleles at all enzymatic loci. At two regulatory loci, most teosintes possess alleles that encode functional proteins, but ones that are not expressed during kernel development and not capable of activating anthocyanin biosynthesis there. We investigated nucleotide polymorphism at one of the regulatory loci, cl. Several observations suggest that cl has not evolved in a strictly neutral manner, including an exceptionally low level of polymorphism and a biased representation of haplotypes in maize. Curiously, sequence data show that most of our teosinte samples possess a promoter element necessary for the activation of the anthocyanin pathway during kernel development, although genetic tests indicate that teosinte cl alleles are not active during kernel development. Our analyses suggest that the evolution of the purple kernels resulted from changes in cis regulatory elements at regulatory loci and not changes in either regulatory protein function nor the enzymatic loci.	
Regulatory switch enforced by basic helix-loop-helix and ACT-domain mediated dimerizations of the maize transcription factor R. (2012) (https://pubmed.ncbi.nlm.nih.gov/22778424)	Additional References

RELATED GEPHE

3 (c1, colored plant 1, pericarp color1 (P1)) (https://www.gephebase.org/search-criteria?/or+Taxon ID=~4577^/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title)	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS

@TE