

GEPHE SUMMARY

opaque2 (O2) (https://www.gephebase.org/search-criteria?/and+GeneGephebase=~opaque2 (O2)^#gephebase-summary-title)	Gephebase Gene	GepheID
	GP00000753	
	Entry Status	Main curator
Published		

PHENOTYPIC CHANGE

		Trait Category	
Physiology (https://www.gephebase.org/search-criteria?/and+TraitCategory=~Physiology^#gephebase-summary-title)		Trait	
Lysine content (endosperm) (https://www.gephebase.org/search-criteria?/and+Trait=~Lysine content (endosperm)^#gephebase-summary-title)		Trait State in Taxon A	
Zea mays - hard translucent endosperm		Trait State in Taxon B	
Zea mays - soft opaque endosperm with lysine contents - Crow		Ancestral State	
Taxon A		Taxonomic Status	
Domesticated (https://www.gephebase.org/search-criteria?/and+TaxonomicStatus=~Domesticated^#gephebase-summary-title)			
Taxon A		Taxon B	
Zea mays		Zea mays	
(https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=~Zea mays^#gephebase-summary-title)		(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)		Zea () - (Rank: genus)	
(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4575)		(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4575)	
4577		4577	
(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4577)		(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4577)	
is Taxon A an Intraspecies?		is Taxon B an Intraspecies?	
No		No	

GENOTYPIC CHANGE

O2	Generic Gene Name	UniProtKB Zea mays
	Synonyms	P12959 (http://www.uniprot.org/uniprot/P12959)
	String	GenebankID or UniProtKB
-		X16618 (https://www.ncbi.nlm.nih.gov/nuccore/X16618)
4577.GRMZM2G015534_P01		
(http://string-db.org/newstring.cgi/show_network_section.pl?identifier=4577.GRMZM2G015534_P01)		
	Sequence Similarities	
Belongs to the bZIP family.		
	GO - Molecular Function	
GO:0003700 : DNA-binding transcription factor activity		
(https://www.ebi.ac.uk/QuickGO/term/GO:0003700)		
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)		

Yes (#ghepbase-summary-title)	Presumptive Null
Coding (#ghepbase-summary-title)	Molecular Type
Deletion (#ghepbase-summary-title)	Aberration Type
1-9 bp	Deletion Size
1bp deletion predicted to cause premature termination of translation	Molecular Details of the Mutation
Linkage Mapping (#ghepbase-summary-title)	Experimental Evidence
Transposon tagging and molecular analysis of the maize regulatory locus opaque-2. (1987) (https://pubmed.ncbi.nlm.nih.gov/2823388)	Main Reference
Schmidt RJ; Burr FA; Burr B	Authors
Genetic analyses suggested that the opaque-2 (o2) locus in maize acts as a positive, transacting, transcriptional activator of the zein seed storage-protein genes. Because isolation of the gene is requisite to understanding the molecular details of this regulation, transposon mutagenesis with the transposable element suppressor-mutator (Spm) was carried out, and three mutable o2 alleles were obtained. One of these alleles contained an 8.3-kilobase autonomous Spm, another a 6.8-kilobase nonautonomous Spm, and the third an unidentified transposon that is unrelated to Spm. A DNA sequence flanking the autonomous Spm insertion was verified to be o2-specific and provided a probe to clone a wild-type allele. Northern blots indicated that the gene is expressed in wild-type endosperm but not in leaf tissues or in endosperms homozygous for a mutant allele of the O2 gene. A transcript was detected in endosperms homozygous for mutations at opaque-7 and floury-2, an indication that O2 expression is independent of these two other putative regulators of zein synthesis.	Abstract
Molecular analysis of opaque-2 alleles from Zea mays L. reveals the nature of mutational events and the presence of a hypervariable region in the 5' part of the gene. (1995) (https://pubmed.ncbi.nlm.nih.gov/7750742)	Additional References

RELATED GEPHE

No matches found.	Related Genes
1 (#ghepbase-summary-title)	Related Haplotypes

EXTERNAL LINKS

COMMENTS