

GEPHE SUMMARY

-	Gephebase Gene	GP00002082	GepheID
Draft	Entry Status	Courtier	Main curator

PHENOTYPIC CHANGE

	Morphology (https://www.gephebase.org/search-criteria?/and+Trait+Category=^Morphology^#gephebase-summary-title)	Trait Category	
	flower organization +fruit fertility (https://www.gephebase.org/search-criteria?/and+Trait=^flower organization +fruit fertility^#gephebase-summary-title)	Trait	
-		Trait State in Taxon A	
-		Trait State in Taxon B	
-		Ancestral State	
-		Taxonomic Status	
	Taxon A		Taxon B
-	Latin Name	-	Latin Name
-	Common Name	-	Common Name
-	Synonyms	-	Synonyms
-	Rank	-	Rank
-	Lineage	-	Lineage
-	Parent	-	Parent
-	NCBI Taxonomy ID	-	NCBI Taxonomy ID
-	is Taxon A an Intraspecies?	-	is Taxon B an Intraspecies?
No		No	

GENOTYPIC CHANGE

-	Generic Gene Name		UniProtKB GenebankID or UniProtKB
-	Synonyms	()	
-	String		
-	Sequence Similarities		
-	GO - Molecular Function		
-	GO - Biological Process		
-	GO - Cellular Component		
-			Presumptive Null
-			Molecular Type
-			Aberration Type
-			Molecular Details of the Mutation
-			Experimental Evidence
-			Main Reference
	Parthenocarpic apple fruit production conferred by transposon insertion mutations in a MADS-box transcription factor. (2001) (https://pubmed.ncbi.nlm.nih.gov/11158635)		
			Authors

Fruit development in higher plants normally requires pollination and fertilization to stimulate cell division of specific floral tissues. In some cases, parthenocarpic fruit development proceeds without either pollination or fertilization. Parthenocarpic fruit without seed has higher commercial value than seeded fruit. Several apple (*Malus domestica*) mutants (Rae Ime, Spencer Seedless and Wellington Bloomless) are known to produce only apetalous flowers that readily go on to develop into parthenocarpic fruit. Through genetics, a single recessive gene has been identified to control this trait in apple. Flower phenotypes of these apple mutants are strikingly similar to those of the *Arabidopsis* mutant *pistillata* (*pi*), which produces flowers where petals are transformed to sepals and stamens to carpels. In this study, we have cloned the apple PI homolog (MdPI) that shows 64% amino acid sequence identity and closely conserved intron positions and mRNA expression patterns to the *Arabidopsis* PI. We have identified that in the apetalous mutants MdPI has been mutated by a retrotransposon insertion in intron 4 in the case of Rae Ime and in intron 6 in the case of Spencer Seedless and Wellington Bloomless. The insertion apparently abolishes the normal expression of the MdPI gene. We conclude that the loss of function mutation in the MdPI MADS-box transcription factor confers parthenocarpic fruit development in these apple varieties and demonstrates another function for the MADS-box gene family. The knowledge generated here could be used to produce parthenocarpic fruit cultivars through genetic engineering.

Additional References

RELATED GEPHE

No matches found.

Related Genes

No matches found.

Related Haplotypes

EXTERNAL LINKS

COMMENTS