

## GEPHE SUMMARY

### Gephebase Gene

-

### Entry Status

Draft

### GepheID

GP00002082

### Main curator

Courtier

## PHENOTYPIC CHANGE

### Trait Category

Morphology

### Trait

flower organization +fruit fertility

### Trait State in Taxon A

-

### Trait State in Taxon B

-

### Ancestral State

-

### Taxonomic Status

-

### Latin Name

-

### Common Name

-

### Synonyms

-

### Rank

-

### Lineage

-

### Parent

-

### NCBI Taxonomy ID

-

### is Taxon A an Intraspecies?

No

### Taxon A

### Latin Name

-

### Common Name

-

### Synonyms

-

### Rank

-

### Lineage

-

### Parent

-

### NCBI Taxonomy ID

-

### is Taxon B an Intraspecies?

No

### Taxon B

## GENOTYPIC CHANGE

### Generic Gene Name

-

### Synonyms

-

### String

-

### Sequence Similarities

-

### GO - Molecular Function

-

### GO - Biological Process

-

### GO - Cellular Component

-

### Presumptive Null

-

### Molecular Type

-

### Aberration Type

-

### UniProtKB

GenebankID or UniProtKB

#### Molecular Details of the Mutation

-

#### Experimental Evidence

-

#### Main Reference

[Parthenocarpic apple fruit production conferred by transposon insertion mutations in a MADS-box transcription factor. \(2001\)](#)

#### Authors

Yao J; Dong Y; Morris BA

#### Abstract

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

#### Related Genes

No matches found.

#### Related Haplotypes

No matches found.

## COMMENTS