GEPHE SUMMARY

Gephebase Gene
anthocyanin2 (an2) (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^anthocyanin2 (an2)^#gephebase-summary-title)

GepheID
GP00000087

Entry Status
Published

Main curator
Martin

PHENOTYPIC CHANGE

Trait Category
Morphology (https://www.gephebase.org/search-criteria?/and+Trait Category=^Morphology^#gephebase-summary-title)

Trait
Coloration (fruit) (https://www.gephebase.org/search-criteria?/and+Trait=^Coloration (fruit)^#gephebase-summary-title)

Trait State in Taxon A
Capsicum annuum

Trait State in Taxon B
Capsicum chinense

Ancestral State
Data not curated

Taxonomic Status
Domesticated (https://www.gephebase.org/search-criteria?/and+Taxonomic Status=^Domesticated^#gephebase-summary-title)

Taxon A

Latin Name
Capsicum annuum (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Capsicum annuum^#gephebase-summary-title)

Common Name
-

Synonyms
Capsicum annuum L.; Capsicum annum; Capsicum capsicum

Rank
species

Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; Solanales; Solanaceae; Solanoideae; Capsiceae; Capsicum

Parent
Capsicum (peppers) - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4071)

NCBI Taxonomy ID
4072 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4072)

is Taxon A an Infraspecies?
No

Taxon B

Latin Name
Capsicum chinense (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Capsicum chinense^#gephebase-summary-title)

Common Name
-

Synonyms
Scotch bonnet; bonnet pepper; habanero; piri piri; rocotillo; Capsicum chinense Jacq.

Rank
species

Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; Solanales; Solanaceae; Solanoideae; Capsiceae; Capsicum

Parent
Capsicum (peppers) - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4071)

NCBI Taxonomy ID
80379 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 80379)

is Taxon B an Infraspecies?
No

GENOTYPIC CHANGE

Generic Gene Name
AN2

Synonyms
-

String
-

Sequence Similarities
-

GO - Molecular Function
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)

UniProtKB Petunia integrifolia
A4GRU8 (http://www.uniprot.org/uniprot/A4GRU8)

GenebankID or UniProtKB
()

Presumptive Null
No (https://www.gephebase.org/search-criteria?/and+Presumptive Null=^No^#gephebase-summary-title)

Molecular Type
Cis-regulatory (https://www.gephebase.org/search-criteria?/and+Molecular Type=^Cis-regulatory^#gephebase-summary-title)

Aberration Type

Unknown (https://www.gephebase.org/search-criteria?/and+Aberration Type=^Unknown^#gephebase-summary-title)

Molecular Details of the Mutation

unknown

Experimental Evidence

Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=^Linkage Mapping^#gephebase-summary-title)

Main Reference

The A locus that controls anthocyanin accumulation in pepper encodes a MYB transcription factor homologous to Anthocyanin2 of Petunia. (2004) (https://pubmed.ncbi.nlm.nih.gov/14997303)

Authors

Borovsky Y; Oren-Shamir M; Ovadia R; De Jong W; Paran I

Abstract

Pepper plants containing the dominant A gene accumulate anthocyanin pigments in the foliage, flower and immature fruit. We previously mapped A to pepper chromosome 10 in the F(2) progeny of a cross between 5226 (purple-fruited) and PI 159234 (green-fruited) to a region that corresponds, in tomato, to the location of Petunia anthocyanin 2 (An2), a regulator of anthocyanin biosynthesis. This suggested that A encodes a homologue of Petunia An2. Using the sequences of An2 and a corresponding tomato expressed sequence tag, we isolated a pepper cDNA orthologous to An2 that cosegregated with A. We subsequently determined the expression of A by Northern analysis, using RNA extracted from fruits, flowers and leaves of 5226 and PI 159234. In 5226, expression was detected in all stages of fruit development and in both flower and leaf. In contrast, A was not expressed in the sampled tissues in PI 159234. Genomic sequence comparison of A between green- and purple-fruited genotypes revealed no differences in the coding region, indicating that the lack of expression of A in the green genotypes can be attributed to variation in the promoter region. By analyzing the expression of the structural genes in the anthocyanin biosynthetic pathway in 5226 and PI 159234, it was determined that, similar to Petunia, the early genes in the pathway are regulated independently of A, while expression of the late genes is A-dependent.

Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

1 (https://www.gephebase.org/search-criteria?/or+Gene Gephebase=^anthocyanin2 (an2)^/and+Taxon ID=^4072^/or+Gene Gephebase=^anthocyanin2 (an2)^/and+Taxon ID=^80379^#gephebase-summary-title)

EXTERNAL LINKS

COMMENTS