GEPHE SUMMARY

Gephebase Gene
CmACS-7 (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^CmACS-7^#gephebase-summary-title)

GepheID
GP00000187

Entry Status
Published

Main curator
Martin

PHENOTYPIC CHANGE

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

Trait
Flower sex determination (male organs) (https://www.gephebase.org/search-criteria?/and+Trait=^Flower sex determination (male organs)^#gephebase-summary-title)

Trait State in Taxon A
Cucumis melo

Trait State in Taxon B
Cucumis melo

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
Cucumis melo (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Cucumis melo^#gephebase-summary-title)

Common Name
muskmelon

Synonyms
muskmelon; Oriental melon; Cucumis melo L., 1753; Cucumis melo var. markuwa Markino; Cucurbita melo L.

Rank
species

Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; fabids; Cucurbitales; Cucurbitaceae; Benincaseae; Cucumis

Parent
Cucumis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3655)

NCBI Taxonomy ID
3656 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3656)

is Taxon A an Infraspecies?
No

Taxon B

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

Common Name
muskmelon

Synonyms
muskmelon; Oriental melon; Cucumis melo L., 1753; Cucumis melo var. markuwa Markino; Cucurbita melo L.

Rank
species

Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; fabids; Cucurbitales; Cucurbitaceae; Benincaseae; Cucumis

Parent
Cucumis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3655)

NCBI Taxonomy ID
3656 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3656)

is Taxon B an Infraspecies?
No

GENOTYPIC CHANGE

Generic Gene Name
ACS7

Synonyms
1-amino-cyclopropane-1-carboxylate synthase 7; ACCS7; ATACS7; T25K17.10; T25K17_10; At4g26200

String
3702.AT4G26200.1 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier= 3702.AT4G26200.1)

Sequence Similarities
Belongs to the class-I pyridoxal-phosphate-dependent aminotransferase family.

GO - Molecular Function
GO:0042802 : identical protein binding (https://www.ebi.ac.uk/QuickGO/term/GO:0042802)
GO:0016847 : 1-aminocyclopropane-1-carboxylate synthase activity (https://www.ebi.ac.uk/QuickGO/term/GO:0016847)
GO:0030170 : pyridoxal phosphate binding

UniProtKB Arabidopsis thaliana
Q9STR4 (http://www.uniprot.org/uniprot/Q9STR4)

GenebankID or UniProtKB
ACG70850 (https://www.ncbi.nlm.nih.gov/nuccore/ACG70850)

(https://www.ebi.ac.uk/QuickGO/term/GO:0030170)

GO - Biological Process

GO:0009693 : ethylene biosynthetic process
(https://www.ebi.ac.uk/QuickGO/term/GO:0009693)
GO:0009835 : fruit ripening (https://www.ebi.ac.uk/QuickGO/term/GO:0009835)

GO - Cellular Component

-

Presumptive Null

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

Molecular Type

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

Aberration Type

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

SNP Coding Change

Nonsynonymous

Molecular Details of the Mutation

A57V

Experimental Evidence

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

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	-	-	-

Main Reference

A conserved mutation in an ethylene biosynthesis enzyme leads to andromonoecy in melons. (2008) (https://pubmed.ncbi.nlm.nih.gov/18687965)

Authors

Boualem A; Fergany M; Fernandez R; Troadec C; Martin A; Morin H; Sari MA; Collin F; Flowers JM; Pitrat M; Purugganan MD; Dogimont C; Bendahmane A

Abstract

Andromonoecy is a widespread sexual system in angiosperms characterized by plants carrying both male and bisexual flowers. In melon, this sexual form is controlled by the identity of the alleles at the andromonoecious (a) locus. Cloning of the a gene reveals that andromonoecy results from a mutation in the active site of 1-aminocyclopropane-1-carboxylic acid synthase. Expression of the active enzyme inhibits the development of the male organs and is not required for carpel development. A causal single-nucleotide polymorphism associated with andromonoecy was identified, which suggests that the a allele has been under recent positive selection and may be linked to the evolution of this sexual system.

Additional References

RELATED GEPHE

Related Genes

1 (CmWIP1) (https://www.gephebase.org/search-criteria?/or+Taxon ID=^3656^/and+Trait=Flower sex determination/and+groupHaplotypes=true#gephebase-summary-title)

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS