

	Gephebase Gene	GepheID
CmACS-7 (#gephebase-summary-title)	GP00000187	Main curator
	Entry Status	
Published	Martin	

Trait Category	Trait	Trait State in Taxon A	Trait State in Taxon B	Ancestral State	Taxonomic Status
Physiology (https://www.gephebase.org/search-criteria?/and+TraitCategory=~Physiology^#gephebase-summary-title)	Flower sex determination (male organs) (https://www.gephebase.org/search-criteria?/and+Trait=~Flower sex determination (male organs)^#gephebase-summary-title)	Cucumis melo	Cucumis melo	Data not curated	Domesticated (https://www.gephebase.org/search-criteria?/and+TaxonomicStatus=~Domesticated^#gephebase-summary-title)

Taxon A		Taxon B	
	Latin Name		Latin Name
Cucumis melo (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=~Cucumis melo~#gephebase-summary-title)		Cucumis melo (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=~Cucumis melo~#gephebase-summary-title)	
	Common Name		Common Name
muskmelon		muskmelon	
	Synonyms		Synonyms
muskmelon; Oriental melon; Cucumis melo L., 1753; Cucumis melo var. markuwa Markino; Cucurbita melo L.		muskmelon; Oriental melon; Cucumis melo L., 1753; Cucumis melo var. markuwa Markino; Cucurbita melo L.	
	Rank		Rank
species		species	
	Lineage		Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetales; rosids; fabids; Cucurbitales; Cucurbitaceae; Benincaseae; Cucumis		cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetales; rosids; fabids; Cucurbitales; Cucurbitaceae; Benincaseae; Cucumis	
	Parent		Parent
Cucumis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3655)		Cucumis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3655)	
	NCBI Taxonomy ID		NCBI Taxonomy ID
3656 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3656)		3656 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3656)	
	is Taxon A an Intraspecies?		is Taxon B an Intraspecies?
No		No	

Generic Gene Name	UniProtKB Arabidopsis thaliana
ACS7	Q9STR4 (http://www.uniprot.org/uniprot/Q9STR4)
1-amino-cyclopropane-1-carboxylate synthase 7; ACCS7; ATACS7; T25K17.10; T25K17_10; At4g26200	GenebankID or UniProtKB ACG70850 (https://www.ncbi.nlm.nih.gov/nuccore/ACG70850)
3702.AT4G26200.1 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier= 3702.AT4G26200.1)	String
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	

(<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

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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