

GEPHE SUMMARY

	Gephebase Gene	Gephebase=^self-pruning (sp) (#https://www.gephebase.org/search-criteria/?and+Gene Gephebase=^self-pruning (sp)^#gephebase-summary-title)	GephelD
	Entry Status	Martin	Main curator
Published			

PHENOTYPIC CHANGE

Trait Category			
Morphology (#https://www.gephebase.org/search-criteria/?and+Trait Category=^Morphology^#gephebase-summary-title)	Trait		
Vegetative/Reproductive state switch (#https://www.gephebase.org/search-criteria/?and+Trait=^Vegetative/Reproductive state switch^#gephebase-summary-title)	Trait State in Taxon A		
Solanum lycopersicum domesticated - Sp/Sp	Trait State in Taxon B		
Solanum lycopersicum domesticated - M82 line - sp/sp	Ancestral State		
Taxon A		Taxonomic Status	
Domesticated (#https://www.gephebase.org/search-criteria/?and+Taxonomic Status=^Domesticated^#gephebase-summary-title)			
Taxon A		Taxon B	
	Latin Name		Latin Name
Solanum lycopersicum (#https://www.gephebase.org/search-criteria/?and+Taxon and Synonyms=^Solanum lycopersicum^#gephebase-summary-title)	Solanum lycopersicum (#https://www.gephebase.org/search-criteria/?and+Taxon and Synonyms=^Solanum lycopersicum^#gephebase-summary-title)		
tomato	Common Name		Common Name
Lycopersicon esculentum var. esculentum; Solanum esculentum; Solanum lycopersicum var. humboldtii; tomato; Lycopersicon esculentum Mill.; Solanum esculentum Dunal; Solanum lycopersicum L.; Lycopersicon lycopersicum; Lycopersicum esculentum; Solanum lycopersicon	Synonyms	Lycopersicon esculentum var. esculentum; Solanum esculentum; Solanum lycopersicum var. humboldtii; tomato; Lycopersicon esculentum Mill.; Solanum esculentum Dunal; Solanum lycopersicum L.; Lycopersicon lycopersicum; Lycopersicum esculentum; Solanum lycopersicon	Synonyms
	Rank		Rank
species	Lineage		Lineage
cellular organisms; Eukaryota; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; Iamiids; Solanales; Solanaceae; Solanoideae; Solaneae; Solanum; Lycopersicon		cellular organisms; Eukaryota; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; Iamiids; Solanales; Solanaceae; Solanoideae; Solaneae; Solanum; Lycopersicon	
Lycopersicon () - (Rank: subgenus) (#https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 49274)	Parent	Lycopersicon () - (Rank: subgenus) (#https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 49274)	Parent
4081 (#https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4081)	NCBI Taxonomy ID	4081 (#https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4081)	NCBI Taxonomy ID
is Taxon A an Infraspecies?		is Taxon B an Infraspecies?	
Yes	Taxon A Description	Yes	Taxon B Description
Solanum lycopersicum domesticated - Sp/Sp		Solanum lycopersicum domesticated - M82 line - sp/sp	

GENOTYPIC CHANGE

SP	Generic Gene Name	UniProtKB Solanum lycopersicum
-	Synonyms	GenebankID or UniProtKB
4081.Solyc06g074350.2.1 (#http://string-db.org/newstring_cgi/show_network_section.pl?identifier= 4081.Solyc06g074350.2.1)	String	U84140 (#https://www.ncbi.nlm.nih.gov/nuccore/U84140)
	Sequence Similarities	
Belongs to the phosphatidylethanolamine-binding protein family.	GO - Molecular Function	
-	GO - Biological Process	

GO:0010228 : vegetative to reproductive phase transition of meristem

(<https://www.ebi.ac.uk/QuickGO/term/GO:0010228>)

GO:0009910 : negative regulation of flower development

(<https://www.ebi.ac.uk/QuickGO/term/GO:0009910>)

GO - Cellular Component

GO:0005737 : cytoplasm (<https://www.ebi.ac.uk/QuickGO/term/GO:0005737>)

GO:0005634 : nucleus (<https://www.ebi.ac.uk/QuickGO/term/GO:0005634>)

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

P76L due to CCT>CTT

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

The SELF-PRUNING gene of tomato regulates vegetative to reproductive switching of sympodial meristems and is the ortholog of CEN and TFL1. (1998)

(<https://pubmed.ncbi.nlm.nih.gov/9570763>)

Authors

Pnueli L; Carmel-Goren L; Hareven D; Gutfinger T; Alvarez J; Ganal M; Zamir D; Lifschitz E

Abstract

Vegetative and reproductive phases alternate regularly during sympodial growth in tomato. In wild-type 'indeterminate' plants, inflorescences are separated by three vegetative nodes. In 'determinate' plants homozygous for the recessive allele of the SELF-PRUNING (SP) gene, sympodial segments develop progressively fewer nodes until the shoot is terminated by two consecutive inflorescences. We show here that the SP gene is the tomato ortholog of CENTRORADIALIS and TERMINAL FLOWER1, genes which maintain the indeterminate state of inflorescence meristems in *Antirrhinum* and *Arabidopsis* respectively. The sp mutation results in a single amino acid change (P76L), and the mutant phenotype is mimicked by overexpressing the SP antisense RNA. Ectopic and overexpression of the SP and CEN transgenes in tomato rescues the 'indeterminate' phenotype, conditions the replacement of flowers by leaves in the inflorescence and suppresses the transition of the vegetative apex to a reproductive shoot. The SELF-PRUNING gene is expressed in shoot apices and leaves from very early stages, and later in inflorescence and floral primordia as well. This expression pattern is similar to that displayed by the tomato ortholog LEAFY and FLORICAULA. Comparison of the sympodial, day-neutral shoot system of tomato and the monopodial, photoperiod-sensitive systems of *Arabidopsis* and *Antirrhinum* suggests that flowering genes that are required for the processing of floral induction signals in *Arabidopsis* and *Antirrhinum* are required in tomato to regulate the alternation between vegetative and reproductive cycles in sympodial meristems.

Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS