GEPHE SUMMARY

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

GepheID
GP00000539

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

Trait State in Taxon A
Solanum cheesmaniae

Trait State in Taxon B
Solanum lycopersicum Cnr/Cnr

Ancestral State
Taxon A

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

Taxon A

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

Common Name
-

Synonyms
Lycopersicon cheesmaniae; Lycopersicon cheesmanii; non Solanum cheesmanii Geras.; Lycopersicon cheesmaniae L.Riley; Solanum cheesmaniae (L.Riley) Fosberg

Rank
species

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

Parent
Lycopersicon () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 49274)

NCBI Taxonomy ID
142759 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 142759)

is Taxon A an Infraspecies?
No

Taxon B

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

Common Name
tomato

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

Rank
species

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

Parent
Lycopersicon () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 49274)

NCBI Taxonomy ID
4081 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4081)

is Taxon B an Infraspecies?
No

GENOTYPIC CHANGE

Generic Gene Name
101256245

Synonyms
CNR-SPL; LeSPL-CNR

String
4081.Solyc02g077920.2.1 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=4081.Solyc02g077920.2.1)

Sequence Similarities
-

GO - Molecular Function
GO:0003700 : DNA-binding transcription factor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0003700)
GO:0046872 : metal ion binding (https://www.ebi.ac.uk/QuickGO/term/GO:0046872)
GO:0003677 : DNA binding (https://www.ebi.ac.uk/QuickGO/term/GO:0003677)

UniProtKB Solanum lycopersicum
Q0PY35 (http://www.uniprot.org/uniprot/Q0PY35)

GenebankID or UniProtKB
DQ672601 (https://www.ncbi.nlm.nih.gov/nuccore/DQ672601)

GO - Biological Process

GO:0006351 : transcription, DNA-templated (https://www.ebi.ac.uk/QuickGO/term/GO:0006351)

GO:0009908 : flower development (https://www.ebi.ac.uk/QuickGO/term/GO:0009908)

GO - Cellular Component

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

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

Aberration Type

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

Molecular Details of the Mutation

Stable methylation in a 286bp region of the promoter

Experimental Evidence

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

Main Reference

A naturally occurring epigenetic mutation in a gene encoding an SBP-box transcription factor inhibits tomato fruit ripening. (2006) (https://pubmed.ncbi.nlm.nih.gov/16832354)

Authors

Manning K; TÃ¶r M; Poole M; Hong Y; Thompson AJ; King GJ; Giovannoni JJ; Seymour GB

Abstract

A major component in the regulatory network controlling fruit ripening is likely to be the gene at the tomato Colorless non-ripening (Cnr) locus. The Cnr mutation results in colorless fruits with a substantial loss of cell-to-cell adhesion. The nature of the mutation and the identity of the Cnr gene were previously unknown. Using positional cloning and virus-induced gene silencing, here we demonstrate that an SBP-box (SQUAMOSA promoter binding protein-like) gene resides at the Cnr locus. Furthermore, the Cnr phenotype results from a spontaneous epigenetic change in the SBP-box promoter. The discovery that Cnr is an epimutation was unexpected, as very few spontaneous epimutations have been described in plants. This study demonstrates that an SBP-box gene is critical for normal ripening and highlights the likely importance of epialleles in plant development and the generation of natural variation.

Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS