GEPHE SUMMARY

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

GepheID
GP00000305

Entry Status
Published

Main curator
Martin

PHENOTYPIC CHANGE

Trait #1

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

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

Trait State in Taxon A
Lycopersicon pennellii

Trait State in Taxon B
Solanum lycopersicum LA2371

Trait #2

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

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

Trait State in Taxon A
-

Trait State in Taxon B
-

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

Common Name
-

Synonyms
Lycopersicon pennellii; Lycopersicon pennelllii; Lycopesion pennellii; Solanum pennelli; Lycopersicon pennellii (Correll) D'Arcy; Solanum pennellii Correll

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
28526 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 28526)

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?
Yes

Taxon B Description
Solanum lycopersicum LA2371

GENOTYPIC CHANGE

Generic Gene Name

fasciated

Synonyms

SlYABBY2b; 100191118

String

4081.Solyc11g071810.1.1 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=4081.Solyc11g071810.1.1)

Sequence Similarities

-

GO - Molecular Function

-

GO - Biological Process

GO:0007275 : multicellular organism development (https://www.ebi.ac.uk/QuickGO/term/GO:0007275)
GO:0045165 : cell fate commitment (https://www.ebi.ac.uk/QuickGO/term/GO:0045165)
GO:0010158 : abaxial cell fate specification (https://www.ebi.ac.uk/QuickGO/term/GO:0010158)

GO - Cellular Component

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

UniProtKB Solanum lycopersicum

B2YHV8 (http://www.uniprot.org/uniprot/B2YHV8)

GenebankID or UniProtKB

EU557674 (https://www.ncbi.nlm.nih.gov/nuccore/EU557674)

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

Possibly 7-bp and 6- to 8-kb insertion in the first intron

Experimental Evidence

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

Main Reference

Regulatory change in YABBY-like transcription factor led to evolution of extreme fruit size during tomato domestication. (2008) (https://pubmed.ncbi.nlm.nih.gov/18469814)

Authors

Cong B; Barrero LS; Tanksley SD

Abstract

Plant domestication represents an accelerated form of evolution, resulting in exaggerated changes in the tissues and organs of greatest interest to humans (for example, seeds, roots and tubers). One of the most extreme cases has been the evolution of tomato fruit. Cultivated tomato plants produce fruit as much as 1,000 times larger than those of their wild progenitors. Quantitative trait mapping studies have shown that a relatively small number of genes were involved in this dramatic transition, and these genes control two processes: cell cycle and organ number determination. The key gene in the first process has been isolated and corresponds to fw2.2, a negative regulator of cell division. However, until now, nothing was known about the molecular basis of the second process. Here, we show that the second major step in the evolution of extreme fruit size was the result of a regulatory change of a YABBY-like transcription factor (fasciated) that controls carpel number during flower and/or fruit development.

Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS