GEPHE SUMMARY

Gephebase Gene
FW2.2 (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^FW2.2^#gephebase-summary-title)

GepheID
GP00000383

Entry Status
Published

Main curator
Martin

PHENOTYPIC CHANGE

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 esculentum; Lycopersicon pennellii

Trait State in Taxon B
Solanum lycopersicum

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

Common Name
-

Synonyms
Lycopersicon (Mill.) Seithe; Lycopersicum

Rank
subgenus

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

Parent
Solanum () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4107)

NCBI Taxonomy ID
49274 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 49274)

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
ORFX

Synonyms
ORFX; 101245309

String
4081.Solyc02g090730.2.1 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=4081.Solyc02g090730.2.1)

Sequence Similarities
-

GO - Molecular Function
-

GO - Biological Process
-

GO - Cellular Component

UniProtKB Solanum lycopersicum
Q9LKV7 (http://www.uniprot.org/uniprot/Q9LKV7)

GenebankID or UniProtKB
AY097179 (https://www.ncbi.nlm.nih.gov/nuccore/AY097179)

-

Presumptive Null

Unknown (https://www.gephebase.org/search-criteria?/and+Presumptive Null=^Unknown^#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

Not identified

Experimental Evidence

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

Main Reference

fw2.2: a quantitative trait locus key to the evolution of tomato fruit size. (2000) (https://pubmed.ncbi.nlm.nih.gov/10884229)

Authors

Frary A; Nesbitt TC; Grandillo S; Knaap E; Cong B; Liu J; Meller J; Elber R; Alpert KB; Tanksley SD

Abstract

Domestication of many plants has correlated with dramatic increases in fruit size. In tomato, one quantitative trait locus (QTL), fw2.2, was responsible for a large step in this process. When transformed into large-fruited cultivars, a cosmid derived from the fw2.2 region of a small-fruited wild species reduced fruit size by the predicted amount and had the gene action expected for fw2.2. The cause of the QTL effect is a single gene, ORFX, that is expressed early in floral development, controls carpel cell number, and has a sequence suggesting structural similarity to the human oncogene c-H-ras p21. Alterations in fruit size, imparted by fw2.2 alleles, are most likely due to changes in regulation rather than in the sequence and structure of the encoded protein.

Additional References

Comparative sequencing in the genus Lycopersicon. Implications for the evolution of fruit size in the domestication of cultivated tomatoes. (2002) (https://pubmed.ncbi.nlm.nih.gov/12242247)

RELATED GEPHE

Related Genes

2 (CLV3, fasciated) (https://www.gephebase.org/search-criteria?/or+Taxon ID=^49274^/and+Trait=Fruit size/or+Taxon ID=^4081^/and+Trait=Fruit size/and+groupHaplotypes=true#gephebase-summary-title)

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS