GEPHE SUMMARY

Gephebase Gene
Cf-2.1 and Cf-2.2 (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^Cf-2.1 and Cf-2.2^#gephebase-summary-title)

GepheID
GP00000180

Entry Status
Published

Main curator
Courtier

PHENOTYPIC CHANGE

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

Trait
Pathogen resistance (leaf mold fungus ; root parasitic nematode) (https://www.gephebase.org/search-criteria?/and+Trait=^Pathogen resistance (leaf mold fungus ; root parasitic nematode)^#gephebase-summary-title)

Trait State in Taxon A
Lycopersicon pimpinellifolium - resistant ; Lycopersicon esculentum Moneymaker - resistance re-acquired from L. pimpinellifolium

Trait State in Taxon B
Lycopersicon esculentum sensitive strains

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

Common Name
-

Synonyms
Lycopersicon pimpinellifolium; Solanum pimpinellifolium var. racemigerum; currant tomato; Lycopersicon pimpinellifolium (L.) Mill.; Solanum pimpinellifolium L.

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
4084 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4084)

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
-

Synonyms
-

String
-

Sequence Similarities
-

GO - Molecular Function
-

GO - Biological Process
-

GO - Cellular Component

UniProtKB Solanum pimpinellifolium
Q41398 (http://www.uniprot.org/uniprot/Q41398)

GenebankID or UniProtKB
AAC15779 (https://www.ncbi.nlm.nih.gov/nuccore/AAC15779)

GO:0016021 : integral component of membrane
(https://www.ebi.ac.uk/QuickGO/term/GO:0016021)

Presumptive Null

Yes (https://www.gephebase.org/search-criteria?/and+Presumptive Null=^Yes^#gephebase-summary-title)

Molecular Type

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

Aberration Type

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

Deletion Size

-

Molecular Details of the Mutation

loss of the two genes Cf-2.1 and Cf-2.2 (see Dixon et al. 1998) in cultivated tomato - resistance re-acquired from related species

Experimental Evidence

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

Main Reference

The tomato Cf-2 disease resistance locus comprises two functional genes encoding leucine-rich repeat proteins. (1996) (https://pubmed.ncbi.nlm.nih.gov/8608599)

Authors

Dixon MS; Jones DA; Keddie JS; Thomas CM; Harrison K; Jones JD

Abstract

In plants, resistance to pathogens is frequently determined by dominant resistance genes, whose products are proposed to recognize pathogen-encoded avirulence gene (Avr) products. The tomato resistance locus Cf-2 was isolated by positional cloning and found to contain two almost identical genes, each conferring resistance to isolates of tomato leaf mould (C. fulvum) expressing the corresponding Avr2 gene. The two Cf-2 genes encode protein products that differ from each other by only three amino acids and contain 38 leucine-rich repeat (LRR) motifs. Of the LRRs, 20 show extremely conserved alternating repeats. The C-terminus of Cf-2 carries regions of pronounced homology to the protein encoded by the unlinked Cf-9 gene. We suggest that this conserved region interacts with other proteins involved in activating plant defense mechanisms.

Additional References

The tomato Cf-5 disease resistance gene and six homologs show pronounced allelic variation in leucine-rich repeat copy number. (1998) (https://pubmed.ncbi.nlm.nih.gov/9811798)
Dual disease resistance mediated by the immune receptor Cf-2 in tomato requires a common virulence target of a fungus and a nematode. (2012) (https://pubmed.ncbi.nlm.nih.gov/22675118)

RELATED GEPHE

Related Genes

1 (Cf-4/9) (https://www.gephebase.org/search-criteria?/or+Taxon ID=^4084^/and+Trait=Pathogen resistance/or+Taxon ID=^4081^/and+Trait=Pathogen resistance/and+groupHaplotypes=true#gephebase-summary-title)

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

Diverse family of paralogous genes ; @Introgression