

GEPHE SUMMARY

	Gephebase Gene		GepheID
Cf-4/9 (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase+^Cf-4/9^#gephebase-summary-title)		GP00000181	
Published	Entry Status	Martin	Main curator

PHENOTYPIC CHANGE

	Trait Category		
Physiology (https://www.gephebase.org/search-criteria?/and+Trait+Category+^Physiology^#gephebase-summary-title)			
	Trait		
Pathogen resistance (https://www.gephebase.org/search-criteria?/and+Trait+^Pathogen+resistance^#gephebase-summary-title)			
	Trait State in Taxon A		
Lycopersicon pimpinellifolium - resistant			
	Trait State in Taxon B		
Lycopersicon esculentum Moneymaker - sensitive			
	Ancestral State		
Data not curated			
	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 pimpinellifolium (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+^Solanum+pimpinellifolium^#gephebase-summary-title)		Solanum lycopersicum (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+^Solanum+lycopersicum^#gephebase-summary-title)	
-	Common Name		Common Name
		tomato	
	Synonyms		Synonyms
Lycopersicon pimpinellifolium; Solanum pimpinellifolium var. racemigerum; currant tomato; Lycopersicon pimpinellifolium (L.) Mill.; Solanum pimpinellifolium L.		Lycopersicon esculentum var. esculentum; Solanum esculentum; Solanum lycopersicum var. humboldtii; tomato; Lycopersicon esculentum Mill.; Solanum esculentum Dunal; Solanum lycopersicum L.; Lycopersicon lycopersicum; Lycopersicon esculentum; Solanum lycopersicon	
species	Rank		Rank
		species	
	Lineage		Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; Solanales; Solanaceae; Solanoideae; Solaneae; Solanum; Lycopersicon		cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; Solanales; Solanaceae; Solanoideae; Solaneae; Solanum; Lycopersicon	
	Parent		Parent
Lycopersicon () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=49274)		Lycopersicon () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=49274)	
4084 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4084)	NCBI Taxonomy ID	4081 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4081)	NCBI Taxonomy ID
No	is Taxon A an Intraspecies?	Yes	is Taxon B an Intraspecies?
			Taxon B Description
			Lycopersicon esculentum Moneymaker - sensitive

GENOTYPIC CHANGE

	Generic Gene Name		UniProtKB Solanum lycopersicum
Cf-4A		Q7DLS4 (http://www.uniprot.org/uniprot/Q7DLS4)	
	Synonyms		GenebankID or UniProtKB
-		Y12640 (https://www.ncbi.nlm.nih.gov/nuccore/Y12640)	
	String		
-			
	Sequence Similarities		
-			
	GO - Molecular Function		
-			
	GO - Biological Process		
-			
	GO - Cellular Component		

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

Presumptive Null

No ([https://www.gephebase.org/search-criteria?/and+Presumptive Null="+No^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Presumptive+Null=))

Molecular Type

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

Aberration Type

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

Molecular Details of the Mutation

partial loss of two gene coding regions located in tandem; resulting in a chimeric gene

Experimental Evidence

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

Main Reference

Novel disease resistance specificities result from sequence exchange between tandemly repeated genes at the Cf-4/9 locus of tomato. (1997) (<https://pubmed.ncbi.nlm.nih.gov/9413991>)

Authors

Parniske M; Hammond-Kosack KE; Golstein C; Thomas CM; Jones DA; Harrison K; Wulff BB; Jones JD

Abstract

Tomato Cf genes confer resistance to *C. fulvum*, reside in complex loci carrying multiple genes, and encode predicted membrane-bound proteins with extracytoplasmic leucine-rich repeats. At least two Cf-9 homologs confer novel *C. fulvum* resistance specificities. Comparison of 11 genes revealed 7 hypervariable amino acid positions in a motif of the leucine-rich repeats predicted to form a beta-strand/beta-turn in which the hypervariable residues are solvent exposed and potentially contribute to recognition specificity. Higher nonsynonymous than synonymous substitution rates in this region imply selection for sequence diversification. We propose that the level of polymorphism between intergenic regions determines the frequency of sequence exchange between the tandemly repeated genes. This permits sufficient exchange to generate sequence diversity but prevents sequence homogenization.

Additional References

RELATED GEPHE

Related Genes

1 (Cf-2.1 and Cf-2.2) ([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](https://www.gephebase.org/search-criteria?/or+Taxon+ID=))

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

Diverse family of paralogous genes