

GEPHE SUMMARY

Pto (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^Pto^#gephebase-summary-title)	Gephebase Gene	GP00000937	GepheID
	Entry Status	Martin	Main curator
Published			

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 esculentum Rio Grande - resistant		Trait State in Taxon B	
Lycopersicon esculentum Rio Grande - sensitive		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	Taxon B	Latin Name
Solanum lycopersicum (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Solanum+lycopersicum^#gephebase-summary-title)		Solanum lycopersicum (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Solanum+lycopersicum^#gephebase-summary-title)	
tomato	Common Name	tomato	Common Name
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	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	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; Iamiids; Solanales; Solanaceae; Solanoideae; Solaneae; Solanum; Lycopersicon	Lineage	cellular organisms; Eukaryota; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; Iamiids; Solanales; Solanaceae; Solanoideae; Solaneae; Solanum; Lycopersicon	Lineage
Lycopersicon () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=49274)	Parent	Lycopersicon () - (Rank: subgenus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=49274)	Parent
4081 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4081)	NCBI Taxonomy ID	4081 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4081)	NCBI Taxonomy ID
is Taxon A an Infraspecies?		is Taxon B an Infraspecies?	
Yes	Taxon A Description	Yes	Taxon B Description
Lycopersicon esculentum Rio Grande - resistant		Lycopersicon esculentum Rio Grande - sensitive	

GENOTYPIC CHANGE

pto	Generic Gene Name	UniProtKB Solanum lycopersicum
101268866	Synonyms	GenebankID or UniProtKB
4081.Solyc05g013320.1.1 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=4081.Solyc05g013320.1.1)	String	AF220603 (https://www.ncbi.nlm.nih.gov/nucleotide/AF220603)
	Sequence Similarities	
Belongs to the protein kinase superfamily.		
	GO - Molecular Function	
GO:0005524 : ATP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0005524)		
GO:0004674 : protein serine/threonine kinase activity		

(<https://www.ebi.ac.uk/QuickGO/term/GO:0004674>)

GO:0004672 : protein kinase activity (<https://www.ebi.ac.uk/QuickGO/term/GO:0004672>)

GO - Biological Process

GO:0046777 : protein autophosphorylation

(<https://www.ebi.ac.uk/QuickGO/term/GO:0046777>)

GO - Cellular Component

GO:0005886 : plasma membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0005886>)

GO:0009506 : plasmodesma (<https://www.ebi.ac.uk/QuickGO/term/GO:0009506>)

Presumptive Null

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

Molecular Type

Unknown (<https://www.gephebase.org/search-criteria?/and+Molecular+Type=^Unknown^#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

Map-based cloning of a protein kinase gene conferring disease resistance in tomato. (1993) (<https://pubmed.ncbi.nlm.nih.gov/7902614>)

Authors

Martin GB; Brommonschenkel SH; Chunwongse J; Frary A; Ganal MW; Spivey R; Wu T; Earle ED; Tanksley SD

Abstract

The Pto gene in tomato confers resistance to races of *Pseudomonas syringae* pv. tomato that carry the avirulence gene *avrPto*. A yeast artificial chromosome clone that spans the Pto region was identified and used to probe a leaf complementary DNA (cDNA) library. A cDNA clone was isolated that represents a gene family, at least six members of which genetically cosegregate with Pto. When susceptible tomato plants were transformed with a cDNA from this family, they were resistant to the pathogen. Analysis of the amino acid sequence revealed similarity to serine-threonine protein kinases, suggesting a role for Pto in a signal transduction pathway.

Additional References

RELATED GEPHE

Related Genes

4 (Cf-2.1 and Cf-2.2, Cf-4/9, Mi1.2, MLO1) (<https://www.gephebase.org/search-criteria?/or+Taxon+ID=^4081^/and+Trait=Pathogen+resistance/and+groupHaplotypes=true#gephebase-summary-title>)

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS