

GEPHE SUMMARY

Mi1.2 (https://www.gephebase.org/search-criteria/?and+GeneGephebase=%Mi1.2^#gephebase-summary-title)	Gephebase Gene	GP00000655	GephelD
	Entry Status	Martin	Main curator
Published			

PHENOTYPIC CHANGE

	Trait Category		
Physiology (https://www.gephebase.org/search-criteria/?and+TraitCategory=%Physiology^#gephebase-summary-title)	Trait		
Pathogen resistance (parasite) (https://www.gephebase.org/search-criteria/?and+Trait=%Pathogen+resistance+(parasite)^#gephebase-summary-title)	Trait State in Taxon A		
Lycopersicon peruvianum - resistant	Trait State in Taxon B		
Lycopersicon esculentum - sensitive	Ancestral State		
Data not curated	Taxonomic Status		
Intraspecific (https://www.gephebase.org/search-criteria/?and+TaxonomicStatus=%Intraspecific^#gephebase-summary-title)			
Taxon A		Taxon B	
Solanum peruvianum (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=%Solanum+peruvianum^#gephebase-summary-title)	Latin Name	Solanum lycopersicum (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=%Solanum+lycopersicum^#gephebase-summary-title)	Latin Name
-	Common Name	-	Common Name
Lycopersicon peruvianum; Solanum peruvianum var. dentatum; Peruvian tomato; Lycopersicon peruvianum (L.) Mill.; Solanum peruvianum L.	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; lamiids; Solanales; Solanaceae; Solanoideae; Solaneae; Solanum; Lycopersicon	Lineage	cellular organisms; Eukaryota; Viriplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphylophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; lamiids; 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
4082 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4082)	NCBI Taxonomy ID	4081 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4081)	NCBI Taxonomy ID
No	is Taxon A an Infraspecies?	No	is Taxon B an Infraspecies?

GENOTYPIC CHANGE

Mi-1.2	Generic Gene Name	UniProtKB Solanum lycopersicum O81137 (http://www.uniprot.org/uniprot/O81137)
-	Synonyms	GenebankID or UniProtKB AF039682 (https://www.ncbi.nlm.nih.gov/nucleotide/AF039682)
-	String	
Belongs to the disease resistance NB-LRR family.	Sequence Similarities	
GO:0043531 : ADP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0043531)	GO - Molecular Function	
-	GO - Biological Process	
-	GO - Cellular Component	
-		Presumptive Null

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

Main Reference

The nematode resistance gene Mi of tomato confers resistance against the potato aphid. (1998) (<https://pubmed.ncbi.nlm.nih.gov/9707547>)

Authors

Rossi M; Goggin FL; Milligan SB; Kaloshian I; Ullman DE; Williamson VM

Abstract

Resistance against the aphid *Macrosiphum euphorbiae* previously was observed in tomato and attributed to a novel gene, designated Meu-1, tightly linked to the nematode resistance gene, Mi. Recent cloning of Mi allowed us to determine whether Meu-1 and Mi are the same gene. We show that Mi is expressed in leaves, that aphid resistance is isolate-specific, and that susceptible tomato transformed with Mi is resistant to the same aphid isolates as the original resistant lines. We conclude that Mi and Meu-1 are the same gene and that Mi mediates resistance against both aphids and nematodes, organisms belonging to different phyla. Mi is the first example of a plant resistance gene active against two such distantly related organisms. Furthermore, it is the first isolate-specific insect resistance gene to be cloned and belongs to the nucleotide-binding, leucine-rich repeat family of resistance genes.

Additional References

The nematode-resistance gene, Mi-1, is associated with an inverted chromosomal segment in susceptible compared to resistant tomato. (2004) (<https://pubmed.ncbi.nlm.nih.gov/14963654>)

The tomato Mi-1 gene confers resistance to both root-knot nematodes and potato aphids. (1998) (<https://pubmed.ncbi.nlm.nih.gov/9853621>)

RELATED GEPHE

Related Genes

1 (RCR3) ([https://www.gephebase.org/search-criteria?/or+Taxon ID=%4082%/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=%4082%/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